Performance of State Transport Undertakings: Regional and Socio-Economic Dimensions

Dissertation submitted to the Jawaharlal Nehru University
in partial fulfilment of the requirements for
the award of the Degree of
MASTER OF PHILOSOPHY

N. Balasubramanian

CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI—110067.

1988

जवाहरलाल नेहरु विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067

Centre for the Study of Regional Development
School of Social Sciences

DECLARATION

Certified that the dissertation entitled "Performance of State Transport Undertakings: Regional and Socio-Economic Dimensions", submitted by N. Balasubramanian, is in partial fulfilment of the requirements for the award of the Degree of Master of Philosophy of this University. This dissertation has not been submitted for any other degree of this or any other University. This is his own work.

We recommend that this dissertation be placed before the examiners for evaluation.

[AMITABH KUNDU]
SUPERVISOR

[A.K. MATHUR]
CHAIRMAN

Dated: July, 1988.

Gram : JAYENU Tel. : 667676, 667557 Telex : 031-4967 JNU IN

ACKNOWLEDGEMENTS

I express my sincere thanks to Prof. A. Kundu for his valuable guidance, encouragement and inspiration without which I would not have completed this work in the present form.

I got benefitted from all the other learned faculty members of the Centre for the Study of Regional Development during my four years of association with the Centre. I acknowledge their contribution in the development of my ideas.

I must acknowledge the following Libraries/Sources who offered me generous help and support in collecting the needed information: Association of State Road Transport Undertakings (ASRTUC), New Delhi; Central Institute of Road Transport (CIRT), Pune; Planning Commission, New Delhi; School of Planning and Architecture (SPA), New Delhi; Town and Country Planning Organization (TCPO), New Delhi; Jawaharlal Nehru University (JNU) Library.

My gratitudes are with the University Grants Commission (UGC) and the Council for Scientific and Industrial Research (CSIR) for their research fellowships (UGC - 1986-87; CSIR - 1987-88 and thereof).

N. Balasubramanian.

20-7-1988
New Delhi-67

[N. Balasubramanian]

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER - I

INTRODUCTION

One of the planks for building an egalitarian society to achieve socio-economic emancipation for large majority of toiling masses in the country, was considered to be the policy of nationalisation of industries. It is in this background that the, State participation in road transport was initiated in 1950. Of late, the nationalised road transport industries in India are facing serious problems and their survival are at stake. The State Transport Undertakings (STUs) seem to have earned a considerable disfavour from their governing bodies both at Central and State level on account of their poor financial performances in terms of recurring losses. The focal point of discussion has been that the state transport undertakings are encountering serious crisis in terms of their physical and economic performance. Moreover, it has been observed that there are large gaps in the performance of STUs operating in different parts of the country. It is in this context, the present study makes an attempt to analyse the performance of state transport undertakings over time using empirical data. An attempt has been made to analyse the physical and financial performance of these transport undertakings and assess to what extent the state transport undertakings have promoted the process of balanced development in the region. The study endeavours to answer the questions like whether the

state transport undertakings performing better, whether they contribute adequately towards regional development or, whether there is a trade-off between economic efficiency and the contribution to regional development etc.

Objectives

The objectives of the study are the following:

i) to critically analyse the Organisational Structure of State Transport Undertakings in India,

ii) to analyse and compare the physical performance of state transport undertakings operating in different parts of the country taking the regional and socio-economic factors into consideration,

iii) to analyse and compare the operational economics and cost-revenue structure of STUs operating in different regional and economic conditions,

iv) to analyse and compare the physical and operational performance of metropolitan and city transport undertakings in India,

v) to examine the relationship or interdependence between the development of transport and the economic development,

vi) to examine the reasons for the reemergence of privatisation lobby in the area of road passenger transport in the country and see if this has any relation with the performance of state transport undertakings, and

vii) to suggest recommendations for policy implementation.

Plan of Study

The study is divided into eight chapters. After the introduction, the second chapter examines the Government's approach towards road passenger transport industry in India since the commencement of the First Five Year Plan. Here, an attempt has been made to answer the question whether the lobby of privatisation of road passenger transport made its way into the scene very recently, or it has been there even in the earlier planning periods and gradually got into the present shape.

The third chapter comprises the following four parts. Firstly, the genesis of state transport undertakings in India is briefly given. Secondly, the organisational structure of state transport undertakings is being briefly discussed. Thirdly, some of the key issues relating to the functioning of STUs like capital structure and the pricing policy is analysed. Finally, a brief and descriptive analysis of the problems facing the Municipal transport undertakings has been

The fourth chapter provides a review of literature of studies on the performance of state transport undertakings in India. This survey of the literature should provide a useful starting point and a perspective for comparison for the evaluation exercise attempted in the subsequent chapters in the present study.

The fifth chapter deals with the physical performance of state transport undertakings. Here, an attempt has been made to analyse the variations in the physical performance of STUs operating under different sets of regional and socio-economic conditions. Inter-state variations in the physical performance of STUs during the period under study has been analysed. For this purpose, the state transport undertakings are classified on the basis of their (a) Organisational Enactments, (b) Organisational Structure, (c) Socio-economic conditions of the States in which they operate, and (d) Geographical location of the States.

In the sixth chapter, an attempt has been made to analyse the operational economics and the cost-revenue structure of state transport undertakings operating in different parts of the country for the period under consideration. The cost components like personnel, material, taxes, interest and depreciation are considered. The regional and spatial variations in the cost-revenue structure

is analysed. For the purpose of the analysis, the STUs have been classified in a fashion similar to that of the fourth chapter.

In the seventh chapter, an attempt has been made to compare and analyse the variations in physical and operational performance of Metropolitan and City Transport Undertakings during the period under study. Here, an attempt has also been made to identify the factors responsible for restraining the efficiency of city transport undertakings.

The final chapter deals with suggestions and recommendations for policy implementation.

CHAPTER - II

ROAD PASSENGER TRANSPORT - THE EMERGING POLICY PERSPECTIVE

In this chapter, an attempt has been made to analyse how the transport has been viewed since the First Five Year Plan, and also to examine the reasons for the reemergence of privatisation lobby in the area of road passenger transport in the country and see if this has any relation with the performance of the state transport undertakings.

The transport sector, especially the public passenger transport has occupied a place of key-importance in the overall framework of the development plans. The transport is viewed as an essential ingredient to progress. "Road transport plays an important role in the economy of the country, and is particularly suitable for short and medium distances. It also offers a number of other advantages such as flexibility, reliability, speed and door to door service. Road transport thus forms an indispensible element of the national transportation system."[1]

Passenger Motor Transport is a public utility and as such it is the duty of a welfare state to provide most economical and comfortable service to the public. With this

---

1. Seventh Five Year Plan, 1985-90, Vol.I. pp.219-220.

view, the Road Transport Corporations Act of 1950 was enacted, which speaks of establishment of corporations for permitting and enlarging the transport systems and providing the economical and comfortable services to the public. "Nationalisation of Passenger motor transport was not for its own sake, but, it was for a definite object that is to provide adequate, efficient, economical and well co-ordinated services in public interest".[2] Therefore, the choice whether the bus transport service in a particular state or part of it should be run in the public sector or entrusted to private enterprise has to be determined by considerations other than economic advantage to the travelling public. The criterion of efficiency can also be considered suspect given the bureaucratic culture and constraints in which the undertaking has to function and the political compulsions that shape Government's approach to determination of fares, handling of labour etc.

One of the first industries to be taken over by the Government in different parts of the country after independence was road transport. But, now the Government seems to be willing to denationalise at least a part of road transport services. The demands for denationalisation of the road transport is not a new phenomenon. Its roots can be traced in the earlier Five Year Plans. Ever since the First Five Year Plan, a section of policy makers, scholars and

---

2. Krishna Kant, "Analytical Study of Nationalised Motor Transport", 1983.

administrators have been arguing for giving more scope to private bus operators in the country. Perhaps, this lobby has acquired more strength during the eighties.

In the course of their report on the First Five Year Plan, the Planning Commission has observed, "State participation in public road transport is intended to achieve greater efficiency and economy in operation and management with a large number of small operators functioning separately will not be able to do. Only large organisations with adequate financial resources can provide the workshop and other facilities which are essential for rendering efficient service and realising the economies resulting from large-scale operation. It is further added that the benefit of such economies can be passed onto the consumers as well as the transport worker if commerical road transport is under public ownership."[3]

The Road Transport Reorganisation Committee of 1959, known as Masani Committee, is also of the view "that the formation of efficient and viable enterprises should be encouraged in all reasonable and legitimate ways..... The Committee does not think that an operator with a single bus can be expected to guarantee efficient or regular service on

---

3. The First Five Year Plan-Report, 1960, p.483.

any scheduled route."[4] The Committee had also recommended a liberal policy for the issue of permits to the road transport industry on the grounds of a free choice for consumers. The Second Plan had a proposal "to secure the participation of railways in road transport undertakings in the State Sector." There is a need that road transport must gradually "acquire the character of a well organised industry, working on the basis of responsibility to the community as a whole functioning as supporting role in opening-up the countryside and stimulating the growth of the less developed regions."[5] The above pronouncements and policy measures amply illustrate the great significance of the formation of big road transport units in India.

In the report on Second Five Year Plan, the Planning Commission observed that "the majority of private operators are small individual owners without resources who cannot extend their operation on sound and business like lines".[6] While the Second Five Year Plan summary opined that "in regard to passenger transport services, the Planning Commission has recommended that programmes for the expansion of nationalised services should be suitably phased and the terms on which permits are granted to private operators

---

4. The Road Transport Reorganisation Committee Report, March 1959, p.30.

5. Ishwari Prasad, "National Transport Policy" 1985. pp.153-54.

6. The Second Five Year Plan, Report p.474.

liberalised."[7] A similar view has been expressed in the Second Plan Draft also. "As agricultural and industrial production increased, the pressure on the transport system began to be felt, especially from the mid-year of the first plan. To meet this situation.....measures to liberalise licencing policies and remove other obstacles hampering the development of road transport in the private sector have been pursued."[8]

The Third Five Year Plan observed that "the share of nationalised undertakings in the total passenger services by road is expected to remain unchanged, participation of private sector also was suggested to ensure that the state government undertakings, which are likely to grow into large monopolies in future do not come into unfettered competition with the railways, which are a Central Government monopoly."[9] While recognising the importance of road transport in the development of national economy, the fourth plan stated "although there have been substantial investments in development of transport and considerable expansion of transport capacities, imbalances have emerged from time to time. Priority will be given to the strengthening of services on the existing routes. A large part of the

---

7. The Second Five Year Plan Summary, 1956, p.149.

8. The Second Five Year Plan, 1956, pp.459-60.

9. The Third Five Year Plan, p.554.

expansion of road transport is expected to be in the private sector."[10]

The Sixth Plan draft of Janata Government, was very much different from the earlier plans, in the sense, it expressed its "sincere concern over the mounting losses incurred by STUs, and the government's willingness to improve the conditions by an upward revision of fares. It also envisaged the positive role, the road passenger transport can play in decongesting large towns and cities."[11] But, the plan was terminated before its full tenure because of the sudden fall of Janata Government and returning to power by the Congress later in 1980. The Draft Sixth Plan, (1980-85) observed that "where the losses being incurred by the STUs are the result of present uneconomic fares, fare revisions will be considered. Serious efforts will be made during the plan period to run State Road Transport Corporations on a profitable basis both by improving the utilisation indicators and through suitable pricing policy."[12]

Since 1980, both government and the National Transport Policy Committee have formulated various guidelines in favour of partial privatisation of the road passenger transport in India. It has been argued that the report of the NTPC was

---

10. The Fourth Five Year Plan, Draft,1969-74. pp.338-345.

11. The Draft Sixth Five Year Plan 1978-83 (Revised) p.396.

12. The Draft Sixth Five Year Plan, 1980-85, p.662.

against the public sector in Transport, particularly in road transport. In the opinion of the NTPC the nationalisation of goods transport is not worthwhile and therefore they recommend that the State Governments may consider denationalising the limited uneconomic goods services presently operated in some states if it is found that private operators can deliver the goods without any dislocation to traffic. The Committee also recommends for increasing attention should be paid to adequate facilities for institutional finance to the private operators whether goods, passenger or intermediate public transport. "The privatisation of transport, as indicated and recommended by the NTPC, can be seen in atleast three aspects of policy frame. They are (a) a relaxation of administrative control over the private agencies of transport, (b) the running of the public sector transport on commercial lines, and (c) the recommendations for the encouragement and introduction of private entrepreneurs into the areas of transport which were exclusively the domain of public sector."[13]

The NTPC has introduced a non-conventional idea into field of transport. The Committee has recommended that private enterprise should be introduced and encouraged in the transport sector. This can be seen as a direct advocacy of

---

13. Ishwari Prasad, op.cit. p.266.

philosophy of privatisation in an economy which had aimed at achieving the commanding heights for the public sector. On the whole, it was generally argued that the NTPC found the trucking industry to be working satisfactorily and therefore, it was not in favour of its reorganisation. "The Committee's recommendation for amending the Motor Vehicle Act of 1939, was based on the criterion of profitability rather than the goals and needs of the Indian economy."[14] Thus, it may be argued that NTPC Report was inclined towards partial privatisation of road passenger transport in the country. There was a distinct shift of emphasis toward liberalisation. This could well be viewed as a fundamental change in the transport policy during the eighties. Economic liberalisation seems to be part of a general change in the attitude of the Government towards the economy as a whole; transport being no exception.

The Seventh Plan Document has observed that "in the interest of optimal use of existing resources, it would be preferable to consolidate existing state road transport corporations than to provide for their proliferation during the Seventh Plan. Considering the demand for passenger transport in the context of the difficult resource position, the alternative of private operators meeting the shortfall would be actively pursued within the framework of an assured

---

14. Ibid. p.154

policy regarding the future role of private transport."[15] It was further restressed in the Annual Plan 1985-86, which states that "the major thrust in the Seventh Plan is to consolidate the operations of the existing road transport corporations. Priority has been accorded for replacement of over-aged vehicles, upgradation of technology and improvement in productivity. In non-nationalised areas, private sector is to be encouraged to operate to meet the traffic needs."[16]

"The Annual Plan 1987-88, also underscores the need for improving the performance of state transport undertakings, both physical and financial. Private sector participation is to be pursued vigourously within the framework of an assured policy regarding the future role of private sector transport".[17]

It is sometimes argued that the country's inability to meet the challenge of food, clothing and shelter shortage due to the Government putting resources in the public sector enterprise where private entrepreneurs could have done the job. There are certain functions which only the Government sector can do, but there are others that can be done by the private sector, perhaps equally or more efficiently. These

---

15. The Seventh Five Year Plan, 1985-90, Vol.I. pp.219-220.

16. Annual Plan 1985-86, p.145

17. Annual Plan 1987-88, p.220

scholars would further argue that the State should basically confine itself to its limited role of maintaining law and order and designing appropriate fiscal and monetary policies to guide or facilitate the smooth functioning of the economy. This viewpoint can be seen emerging clearly in the World Bank Report, where it is argued that

> "Faced with resource constraints and perhaps recognising that some services are best provided by private enterprises, the government has highlighted in the Seventh Plan an inclination towards a larger role for the private sector in transportation. Further nationalisation of passenger road transport undertakings will not be allowed and the further growth of passenger road transport will occur in the private sector."18

"The parameters governing the extent of private sector participation in passenger transport in Delhi had been settled in consultation with the planning commission. The policy to have privatisation to the extent of 40 per cent was a clear Government policy though not specifically mentioned in the Seventh Plan document."[19] All these measures, undoubtedly, are designed to encourage private enterprise in road passenger transport in India.

Despite the policy measures restraining the expansion and development of nationalised road passenger transport in certain regions, the road transport industry, in general, has

---

18. The World Bank Report, 1986. p.83

19. The Hindustan Times, Mar, 29, 1988. p.6

not done too badly in reducing the regional disparities, and also in improving the regional economy, as may be seen in the latter analysis. It was observed that among the several structural changes occuring since independence in the Indian economy within the transportation sector, the most significant one would be the growing prominence of the road transport both at national as well as regional levels. The fast growth of the road transport in the planning era seems to be linked up with the policies of balanced regional development. The dramatic changes in the motor vehicle technology and their adoption in this country in recent decades also contribute to this tilt in favour of the road transport. "The importance of road transport vis-a-vis railways has increased considerably in the post-independence era. This in a way has corrected the colonial distortion and oriented the transport system to the balanced regional development of the country."[20]

However, the role and objectives of the nationalised road passenger transport undertakings has not been defined properly, and this ambiguity makes it very difficult, if not impossible, to compare and assess the performance of state transport undertakings in India. Indeed, there lies a great difficulty in finding out how the nationalised road passenger transport undertakings that are supposed to function on "business principles" can be expected to promote balanced

---

20. Amitabh Kundu and P.V.Venkatakrishnan, (1985) p.139-159.

development in the country and also to contribute to the achievement of plan targets.

There cannot be any dispute that efficiency, productivity and profitability should be the concern of both public sector transport undertakings and private bus operators, especially in a country like India where the capital is scarce. Moreover, that the objective of the equity providing assess of the poor to the transport system connecting backward and remote areas in order to incorporate them in the national development system should be the responsibility which neither of the two sectors can choose to ignore. It will be our endeavour to see in the following chapters how the public sector transport undertakings have performed in the context of achieving economic efficiency and socio-economic objectives.

CHAPTER - III

THE ORGANISATIONAL STRUCTURE OF STATE TRANSPORT UNDERTAKINGS IN INDIA

In this chapter, an attempt has been made to analyse the organisational structure of state transport undertakings. This chapter is comprised of the following four sections. Firstly, a genesis of the state transport undertakings is briefly discussed. Secondly, the organisational structure of STUs is analysed. Thirdly, some important issues constraining the efficient functioning of state transport undertakings like capital structure and pricing policy are briefly analysed. Finally, a brief and descriptive analysis of the problems facing the Municipal transport undertakings in India is also given.

The key role of transport in development of the economy has been undoubtedly recognised since the inception of the first plan. The state participation in road transport was initiated in 1950. "It was introduced to provide efficient and adequate passenger services as well as goods transport to meet, particularly, the needs of hilly and underdeveloped areas, the latter being little interest to private operators."[1]

The State Transport Undertaking is defined as a road transport service, where such undertaking is carried on by-

---

1. Seventh Five Year Plan, 1985-90, Vol.I p.219-220.

i) the Central Government or a State Government,

ii) any road transport corporation, established under section 3 of the Road Transport Act, 1950 (64 of 1950),

iii) any Municipality or any Municipal Corporation,

iv) any Company set-up under the Companies Act (Act I of 1956) owned by the Central Government or one or more State Governments."[2]

The objectives of State Road Transport Corporations as laid down in the Road Transport Act, 1950, as follows:

"(a) to provide advantages to the public, trade and industry by the development of road transport;

(b) to co-ordinate any form of road transport with any other form of transport;

(c) to improve the road transport facilities in any area and provide efficient and economical system of road transport service therein."[3]

---

2. "Compendium of Transport Terms" (1984), CIRT, Pune. p.1.

3. A, Prasad, in ASRTU Seminar Vol.1, New Delhi, 1985. page. 75.

Section 18 of the RTC Act, 1950 guidelines:

"It shall be the general duty of a Corporation to exercise its power as progressively to provide or secure or promote the provision of an efficient, adequate, economic and properly coordinated system of road transport service in the state."4

While Section 20 of the Act, adds,

"It shall be the principle of a Corporation that in carrying on its undertaking, it shall act on business principle."5

In India, today i.e. as on 31st March 1987, there are sixty six nationalised road transport undertakings have been operating, of which Twentyone (21) are State Road Transport Corporations which are formed by the Corporations Act of 1950, Twenty Seven (27) transport undertakings working as Companies which were established under the Companies Act of 1956, Eight (8) are Government Departmental Undertakings and Ten (10) as Municipal undertakings which are established under the B.P.M.C. Act, 1949. "They have altogether run about 88,809 buses and employing nearly 6.91 lacs of personnel as on 31.3.87."[6] In fact, the road passenger transport undertakings are the second largest State Government Enterprises, after State Electricity Boards, both in terms of capital employed and employment generation.

---

4. Mahesh Chand (1985) in ASRTU Seminar Vol.I pp.29-35.

5. Ibid.

6. Report of the Performance of STUs, 1985-86 and 1986-87. p.2.

Genesis of State Transport Undertakings in India

On the basis of the recommendation of Wedge Wood Committee Report in 1937, a comprehensive Motor Vehicle Act, 1939 was formulated to ensure the growth of road transport on the basis of healthy competition in industry itself and with the railways. This Act which is in force even today, provided for the creation of Regional and State Transport Authorities to control motor vehicle operation, standards of maintenance, etc. Later in October 1946, a White Paper on Road co-ordination was presented to the Constituent Assembly by the First Interim Government in which they considered the formation of TRIPARTITE COMPANIES with Government interest for ensuring co-ordination of transport services, avoidance of wasteful competition and protection of Government finance. The whole purpose was to allow the existing operators to come together under the aegis of Government for promotion and better control. Later, the Road Transport Corporations Act was passed in 1948 to enable State Governments to form Corporations for running passenger transport services. This Act declared ultra vires by the courts was replaced by another Act of Parliament known as Road Transport Corporations Act 1950.[7]

TH-2623

The Parliament had amended the Motor Vehicle Act of 1939, in 1956 and added Chapter IV-A to it. "This chapter

---

7. P.G. Patankar (1984), pp.41-42.

DISS
388.4
B183 Pe
TH2623

contains special provisions providing the necessary powers to the State Governments to monopolise the road transport under the Act itself. This Chapter was again amended in 1969 to give more effective powers to the State governments, so that the nationalisation of road transport could be done expeditiously."[8] The chapter IV-A of the Motor Vehicle Act has been added to the Nineth Schedule of the Constitution in 1977 by 42nd Amendment of the Constitution. It was argued that this amendment has made the nationalisation of road transport very easy as the constitutional validity of the scheme cannot now be challenged. And hence, since this amendment, the litigation regarding nationalisation of road transport reduced to a great extent.[9] However, in reality, this is not so. It is true that in India, the need for nationalising the passenger transport has been fully accepted at the policy level. But, there is an important hurdle in the nationalisation of the passenger road transport is that nationalisation has to be done within the constraints laid down by the Motor Vehicle Act, 1939. Even after its amendment in 1956 and the subsequent inclusion of Chapter IV-A, "the Motor Vehicle Act recognises the State Transport Corporations only as an operator like any other private operator and the STUs are required to contest their claims

---

8. Matadin (1983), p.10.

9. Ibid, p.10.

vis-a-vis the private operators before the various authorities."[10]

Under the Road Transport Corporations Act, 1950, the Government of India through the Ministry of railways is participating in the share capital of the state transport corporations. In fact, this is a kind of financial participation by the Central Government in the state corporations and is being channelised through the Ministry of Railways with a view to achieve better rail-road coordination. For this purpose, a nominee of the Indian Railways is on the board of directors of the state corporations. However, this arrangement is far from satisfactory. "The Ministry of Railways is responsive to the needs of the road transport development and the railway representatives on the board of management of the state corporations can make little contribution except by way of routine objections to opening up new routes which seemingly conflict with railway interest."[11]

It is true that the objectives with which the STUs were created are only partially valid today as the nationalisation policy got unfortunately diluted. Because, even after nearly four decades of the commencement of nationalisation of road passenger transport, the share of

---

10. Santosh Sharma, "Productivity in Road Transport" 1985 pp.123-24.

11. Ibid. p.141-42.

nationalised state transport undertakings (based on fleet) as on 31 March, 1987 works out to be 40.4 percent. Maharashtra, Punjab, Haryana and Gujarat are the only states where nationalisation is 100 percent. A good number of studies reveal that "the failure of nationalisation is mainly due to plying of 'private buses' - in the form and style of Tourist-omni-buses or temporary States Carriage Permit Holders or in any other name and style, are operating parallely causing all sorts of infringements and operating clandestinely over the nationalised routes having higher traffic density only."[12] Some argue that it is better for STUs to have competition for the sake of improving quality of services. Though this argument convey some reasons, it needs mention here that the ground rules are not properly practiced by private operators. Moreover, unfortunately for STUs and fortunately for private operators who are mostly individuals, the ground rules are not uniform in practice. Their code of conduct are flexible and undergo changes with respect to time and circumstances. These inadequacies ought not to be overestimated, but they exist and not appear to be diminishing. This is partly because road passenger transport has remained a relatively low-priority area at a time when demand has mush-roomed.

Organisational structure of State Transport Undertakings

There are three types of organisational structure found in the state transport undertakings. They are the four-tier

---

12. Dilip K. Goswami, ASTRU Seminar Vol.I. p.35.

system, the three-tier systems and the two-tier system. The following section gives a brief description of all three systems so as to understand the nature of functioning of various state transport undertakings in the country.

The four-tier system, which consist of the Depot, the Division, the Region and the Head Office. This system is under operation in some of the larger corporations, in terms of their fleet strength, like Maharashtra SRTC, Andhra Pradesh SRTC, Karnataka SRTC, Uttar Pradesh SRTC and Kerala SRTC, and also in relatively smaller corporations like Assam SRTC (899) and Orissa SRTC (702). The reason for this highly decentralised form of organisational structure was attributed to "the top management is more involved in day-to-day operating problems and less with policy issues."[13] It was also pointed out that "the problem of centralisation is further aggrevated by the fact that within the headquarters set-up there is concentration of powers at the top management level. The deficiencies mentioned above tend to get aggrevated with every increase in the volume of traffic and consequent increase in the number of depots and divisions."[14]

Thus, in this set-up, the depot is the basic operational unit, the Head Office of the apex level is the policy-making

---

13. MSRTC, Report of the Adminstrative Set-up Committee, 1973, p.12.

14. Ibid. p.12-14.

and controlling unit and the division has been constituted as an integrated unit of management with workship and stores. While the region is a co-ordinating, inspecting and monitoring level, incharge of a few divisions without any workshop attached. The Central workshop takes care of body building, engine and unit overhauls, including fuel injection pumps, which are under the direct control of the Head Office. The divisional workshops take care of heavy accident repairs and reconditioning and the depot workshops attend to daily maintenance. In some corporations, operationally it is the depot and division that are important whereas in some others, it is the depot and region.

The three-tier system which consist of the depot, the division and the Head Office. The transport undertakings having three-tier system are Bihar SRTC, Calcutta STC, Gujarat SRTC, M.P., Rajasthan SRTCs, J&K, H.P., Pepsu SRTCs, Nagaland and Punjab STs. In this set-up, there is only the division, between the depot and Head Office, with necessary Stores and workshop facilities. The depot workshop takes care of normal maintenance, minor repairs, etc. The divisional workshop takes care of major assemblies, RTO passing, body and unit replacements etc., and the Central Workshop deals with engine overhauls, tyre retreading, etc.

"The two-tier system, is also known as Tamil Nadu set-up, which comprise the Depot and the Head Office. While the nationalised passenger road transport services are

established under the Road Transport Corporations Act, 1950, as in the form of Corporations, it is organised in the form of Companies in Tamil Nadu. The only other exception in this regard is the Orissa Road Transport Company."[15] The Tamil Nadu systems is unique in the country for having a multitude of undertakings but also in some of the important respects, such as the number of levels within the organisation, the Board set-up, the workshop set-up and the policy regarding manning of the executive positions."[16] The depot is the basic unit of operational management while the Head Office is responsible for the routine maintenance of vehicles and operations. Thus, the administrative distance between the Head Office and the depot is considerably reduced. The workshop set-up in Tamil Nadu is again a two-tier system comprising the depot workshop and the central workshop. The depot workshop takes care of the fitness certificate work and unit replacements apart from routine maintenance. The central workshop attends to engine and unit overhauls, body building and tyre retreading.

Capital Structure

It has been generally felt that the investments in the transportation sector in the various Five Year Plans have not been adequate to meet either the market demand or what is

---

15. P.Subramanyam, "Organisational set-up of Road Transport" 1987, p.229.

16. Ibid. p.229.

required to fulfil the socio-economic objectives postulated in the plans. This was recognised by the National Transport Policy Committee, 1980 as well, which says:

> "Despite sizeable expenditure, it is found that transport sector capacity has continuously lagged behind requirements of the economy. Despite continuous efforts made since 1951 to augment the capacity of various modes of transport; the transport sector has generally experienced bottlenecks and capacity shortages. The imbalance between demand and supply of transport facilities has adversely affected the smooth functioning of the economy, so much so that difficulties and problems arose in almost every part of the country."[17]

Government of India also recognised this and stated,

> "There has been a progressive decline in the share of transport in the total plan outlay, and if this trend continues, it could damage the nation's economy."[18]

---

17. The Report of NTPC, May 1980 p.2

18. Views of the Govt. and Plan of Action on the Recommendations of the NTPC, May 1982.

Table 3.1

PUBLIC SECTOR EXPENDITURE IN TRANSPORT SECTOR

Rs. in crores

Sub Sector	First Plan 1951-56	Second Plan 1956-61	Third Plan 1961-66	Annual Plan 1966-69	Fourth Plan 1969-74	Fifth Plan 1974-79 (out lay)	1974-78 Expendi-ture	Sixth Plan 1980-85	Seventh Plan 1985-90
RAILWAYS	217	723	1326	509	934	2202	1523	5100	12335
% OF RLYS TO TOTAL TRANSP. EXPENDITURE	50.0	65.7	66.9	49.3	37.0	40.6	37.4	41.1	53.7
ROADS	135	224	440	309	862	1353	1198	3439	5200
% OF ROADS TO TOTAL TR. EXPENDITURE	31.1	20.4	22.1	30.0	34.1	25.0	29.4	27.7	22.6
ROAD TRANSPORT	12	18	27	55	128	461	368	1196	1990
% OF R.T. TO TOTAL TR.EXPENDITURE	2.8	1.6	1.4	5.3	5.1	8.5	9.0	9.6	8.7
TOTAL TRANSPORT	434	1100	1983	1032	2522	5420	4078	12412	22971
EXPENDITURE ON TRANSPORT AS % OF TOTAL PLAN EXPENDITURE	22.1	23.5	23.1	15.6	16.0	13.8	14.1	12.7	12.76

SOURCE: FIVE YEAR PLAN REPORTS, PLANNING COMMISSION, GOVT. OF INDIA, NEW DELHI

Table 3.1 shows that there has been a significant decline in the share of transport sector in the total plan expenditure. From 22 percent in the first plan, it came down to a mere 12.7 percent in the Seventh Plan. There has been, more or less, a continuous decline from the third plan onwards. The share of road transport to total transport expenditure show a consistent increase till the Sixth Plan, while in the Seventh plan the road transport registered a decline of one percent from sixth plan to seventh plan. While the share of railways to the total transport expenditure has shown considerable increase during the seventh plan. Thus, it is clear that transport sector as a whole is being side-lined over the years and the case is similar for road transport too. This needs immediate attention in the view point of the role of road transport in the process of balanced regional development in India.

The Pricing in State Transport Undertakings in India

There can be no disagreement that prices and efficiency are the two of the principal problem areas in the field of nationalised road passenger transport industry, in India. Perhaps, fare structure could well be one of the major factors on which the financial viability of STUs is immensely depend upon. The various aspects of fare structure namely, basis of fixing, frequency of revision, whether any inbuilt provisions should exist in the system to adjust itself for any contingencies and about the authority who should handle the very question of fare strucutre - are some of the issues

regarding the pricing policy of STUs needs an immediate analysation.

Far too little attention has been paid so far to the question of the method of determination of fares. All STUs normally follow uniform pattern throughout the state whether they are plying in remote areas where the demand is low or they ply in areas where passenger response is tremendous, STUs have the same method of calculating fares. At present, fares are fixed on the basis of stages which are themselves a function of the number of kilometres run. Thus, the fare fixed depends not on the popularity of the route but on the number of kilometres travelled. This does not take into account the fact that the demand on different routes is not same.

The present procedure for fare increase is extremely cumbersome, dilatory and circumscribed by the political compulsions of the state governments. Whenever it becomes necessary to revise bus fare due to the increase in cost of operation, cost of spares etc. the STUs are required to submit the proposal to the Government for according necessary sanction for revision of fare. As per provisions of the Motor Vehicle Act, it is necessary to issue the notification for calling objections and suggestions and mandatory hearings to the objectors takes considerably long time for actual implementation of the revision. Various studies have revealed that "it is an experience that the proposals submitted to the Government are finalised after a period of

two or three years and, hence, the loss sustained during the pendancy of the proposal remains as it is. It was argued, in view of the above fact, for a specific amendment to the Motor Vehicle Act made and power of revision of fare be given to the concerned STUs."[19] This was also stressed by the NTPC (1980), but was turned down by the Government on the condition that such "a freedom to STUs would conflict with the objective of Government in creating a transport system which provides service at the least resource cost to society."[20]

In most STUs, especialy those where 100 per cent nationalisation has taken place, the undertakings have to run a large number of uneconomical routes. There are obligatory services which have to be provided regardless of whether or not there is adequate load factor. "In Maharashtra, for instance, a policy decision has been taken that no person will have to walk for more than 3 kms in order to catch a State Transport bus. This necessarily implies that a large number of trips have to be organised even if adequate response from the consumer is not available."[21] The losses made in one sector should be made-up by profits in another.

---

19. S.A. Pujari, ASRTU Seminar Vol.I. p.74.

20. View of Govt. & Plan of Action on NTPC, 1982.

21. M.P. Pinto (1985), p.104.

In certain undertakings like the BEST, this is possible through the electric supply. But, such options are not readily available to other STUs.

Here, it will not be out of place to mention about the case of Indian Airlines. "The 47th Report pertaining to Indian Airlines, of the Parliament's Committee on Public undertakings stated that "two-third of Indian Airlines services are "uneconomical", and added that out of 152 services operated by the Airlines in 86-87, only 53 services met the total operating costs."[22] Despite such a "distressing performance" Indian Airlines has been making huge profits of Rs.90 crores to Rs.100 crores annually during the last few years. This the Committee says, leads to an "inescapable condition" that the fares on the long distance operations have been jacked upto such an extent to cover the losses incurred in short-travel operations mainly due to low fares and high operation costs. Such a discreminatory or differential fares is not possible for STUs, under the present system of fare fixation.

---

22. The Hindu, New Delhi, April 30, 1988, p.6.

It has been argued time and again that every year fare structure for the passengers should be revised in consideration of increase in expenditure for bus, spare parts, diesel, tyres, wages etc. or sudden rise in the main commodities. It was also argued that a formula has to be evolved to ascertain as to how much increase in the fare should be implemented. Fare structure should be based on definite commercial standards. If the fare structure is below the standard sc fixed for any class of the community, it should be made clear who will bear and give the deficit income and in what proportion.

However, on account of the socio-economic conditions of the common people of India, and administrative policies, the transport service being shadowed by political considerations, transport service cannot function purely as a common commercial institution, though it is a commercial adventure.

The most important consideration with the STUs presently is to revise their fare structure in order to cover at least their cost of operation including depreciation, interest charges and the taxes. Unless the prices are fixed on cost-plus basis, it is very difficult to ensure profitability in the public sector transport undertakings. It is to be kept in mind that the bus fares in India is still very low and yet the STUs are to function normally without subsidy.

The Functioning of Municipal Transport Undertakings

The Municipal transport undertakings were established under the Municipal Corporations Act (B.P.M.C. Act of 1949). There are ten Municipal Undertakings operating as on 31.3.87. However, Ahmedabad MTS, BEST, Kolhapur MTU, Pimpri-Chindhwad MT, Pune MT and Sholapur MTU are the ones which report their performance statistics to CIRT, Pune, regularly. It needs mention here that transport undertakings under Municipal Corporation Act pose a different picture. "For transport undertakings under the Municipal Corporations Act, there is no provision in clear terms for capital investments required for transport service. It is voluntary undertaking under the said Act. Such undertakings are subject to the policies sanctioned by the Municipal Corporation Board."[23]

Members of the Board are elected representatives of the citizens of the city. These members are elected periodically. The working of the transport undertaking is influenced largely by the inclination of mind of such

---

23. C.S. Sharma (1985), ASRTU Seminar Vol.I, p.52.

periodically elected members. In this concern, as the administrative policies lie in the hands of the elected members of the Board and as they do have inclination to look after the interest of the citizens than for the interest of the undertaking.

The revenue from ticket proceeds is the only major source of income. However, this source is restricted in as much as the fares to be charged are to be fixed by the State Government and are required to be approved by elected councillors of Municipal Corporations. Further, there is limit to which fares can be increased in case of city transport undertakings. "Since the Municipal Transport Undertakings are not independent corporations, they have no share-capital of their own. Further these undertakings are not entitled to I.D.B.I. refinance facilities, nor do they get any loans from institutions like L.I.C., Government Finance Corporations etc."[24] Hence, they are required to raise resources either by open market borrowing (which is very limited) or by taking loans from Banks at high rates of interest from time to time, for purchasing buses and other capital works. Various studies reveal that, for this they have to provide for loan instalment and the interest, in their annual budgets, repayment of capital loan instalments and the interest creates a heavy financial burden on the current revenue, leaving practically no scope for capital formation to take up development activities.

---

24. S.A. Pujari (1985), ASRTU Seminar Vol.I p.68-69.

CHAPTER - IV

PERFORMANCE OF THE STATE TRANSPORT UNDERTAKINGS - A REVIEW OF LITERUATRE.

This chapter provides a review of literature of studies on the performance of state transport undertakings in India. Most States have a legislative commitee to assess the performance of their state enterprises on the pattern of the Central Parliament's Committee on Public Undertakings. But, "these state legislative committees are far less active than the Committee of Parliament, and they have to rely on the report and assistance of the State Accountant General for preparing their reports on the state enterprises. However, these reports provide much useful insight into the working and problems of the state level public enterprises". [1] As far as state transport undetakings are concerned, the Central Institute of Road Transport(CIRT), Pune, as the training and research wing of the Association of State Road Transport Undertakings (ASRTU), is uniquely placed as a storehouse of data and information and the common meeting forum for managers at all levels from almost all STUs in the country. The CIRT, brings out publications of data on operational, physical, and financial aspects of various STUs operating in different parts of the country for every year. For comparative purpose, similar data for the previous year is also furnished in each of the volumes. In order to make the publications more useful and meaningful, taking

---

1. Laxmi Narain (Ed.) ,"Autonomy of Public Enterprise" 1982, pp. 144-7.

into consideration the requirement of different users, important defiitions of the parameters and indices are given for ready reference.[2]. Similarly, the data regarding STUs' social obligations are also provided. It also brings out the review of performance of STUs of each year. Some important parameters of physical and financial terms were selected and the STUs are classified on the basis of their performance.[3]

A large number of Scholars and Research Institutions have tried to analyse the physical and financial performance of the state transport undertakings in India. Although certain other primary and secondary data are used in their analyses, the primary source of the data has been the Central Institute of Road Transport (CIRT) Publications. In the present chapter an attempt has been made to provide a broad overview of the performance of transport undertakings on the basis of the studies conducted by other Scholars and Institutions. This survey of the literature should provide a useful starting point and a perspective for comparison for the evaluation exercise attempted in the subsequent chapters in the present study.

Agashe[4] did a study on the performance of Maharashtra SRTC during the period between 1960-61 and 1981-82. The physical indices like Fleet utilisation, Vehicle utilisation, Fuel efficiency, tyre performance and average bus kms per

---

2. Report on the Performance of Nationalised R.T.Us 1985 - 86 & 1986-87.
3. Ibid. p. 282
4. L.G. Agashe, "How to make STUs financially viable" 1985 p.139-172.

employee (manpower productivity) were chosen for the study. The study observed that F.U. went up from 77 percent in 1960-71 to 86.3 percent in 1981-82. While vehicle utilisation increased to 253 kms in 81 -82 from just 200 kms in 1960 -61 . The tyre performance and manpower productivity also went up during the same period. While fuel efficiency shows a declining trend, it was further observed that the increase in the expenditure on staff, H.S.D.Oil, tyres, spare parts and taxes is the reason for the losses incurred during 1960-61 to 1981-82.

Kundu and Venkatakrishnan[5] studied the physical perfor mance of the nationalised road transport undertakings as a whole, for the period between 1972 - 73 and 1982 - 83. The study points out that the physical parameters have shown significant increase from 1972 - 73 to 1982-83. The fleet strength went up by 32 percent and fleet utilisation increased from 79 percent to 84 percent during the same period. The capital productivity index, measured in kilometers per bus owned per day increased from 239.7 kms in 1972 - 73 to 261.3 kms in 1982 - 83. Manpower productivity and as well as material (fuel and tyres) productivities, kilometre per bus (on road) per day and average kilometre were also recorded significant increase. The study concluded that physical efficiency of STUs as a whole shows considerable increase in seventies and early eighties.

---

5. A Kundu and P.U. Venkatakrishnan, (1985) , Vol. II pp. 139-172.

Satyanarayana[6] made a unique attempt to estimate the reduction in cost structure of nationalised road transport undertakings, if STUs achieve the performance (efficiency) of viz. Gujarat SRTC'c fuel, Haryana ST's staff, and Andhra SRTC's tyre, in the sense with the best trends in the country, STUs will make about Rs. 850 crores reduction in their costs. The average cost per kilometre in the above mentioned areas for all STUs will be 251.79 paise, against the actual All-India average of 387 paise in 1983-84 . If all STUs could save this difference of 135.21 paise, then they were estimated to reduce about Rs. 838.75 crores in their total cost. However, it is not possible for all STUs to achieve the best performance immediately due to difference in their operating conditions, work and workers-culture etc. But, if STUs achieve 50 percent of this saving, they save about Rs. 400 crores a year, and making many STUs financially viable. It was further observed that without any change in the existing fare structure, the financial viability can be significantly improved by certain policy changes in interest payment, MV taxes and depreciation. It was recommended for a reduction in MV taxes and also in the excise duty on chassis purchased by STUs. The study further points out that if the average of best Five STUs in each of these areas be worked out, it can be seen that the staff cost will be 70 paise per kilometre, H.S.D. 80 paise/Km, tyre cost per km will be 27 paise per km etc. and total cost per kilometre will be 301 paise. Hence if all STUs achieve the average of the best five amongst them, STUs can save about Rs. 533

6. Satyanarayana, "Making S.TUs financially viable through cost control" (19850 , Vol. II, pp. 189-92.

crores annually.

Ram Mohan Rao [7] analysed the performance of STUs in general, and observed that STUs were doing well till 1977. Later, they began to incur losses due to inflationary trends in the economy which was further aggrevated by the hike in oil prices, and thus, resulted in considerable damage to the financial position of STUs. The study observed that the costs on staff, fuel, tyres, stores, motor vehicle taxes, and interest charges have shown an increaing trend and hence the poor financial performance. The study concluded that STUs notwithstanding some of their inherent handicaps, can become financially viable and remain so, if there is resistance on carefully set standards of physical performance; they are left free to carryout their functions in accordance with business principle and a measure of fare elasticity is afforded to them so long as their physical performance does not slib below accepted norms.

Mahesh Chand [8] analysed the financial performance of twenty-five transport undertakings for the period between 1960-61 and 1979-80. Financial indicators like capital turnover , cost recovery ratio, revenue per vehicle kilometre, revenue capital ratio, and cost revenue ratio were considered for this purpose. It was observed that all the above indicators show considerable variation. Revenue-capital ratio shows the highest variation among all the indicators. Cost-

---

7. Ram Mohan Rao (1985), Vol. II pp. 234-240

revenue ratio, which should have been less than 100.0 to make some profit was found to be more than 100.0 for all the undertakings, but for a few companies of Tamilnadu. Observing such a high variation in values of indicators, the study pointed out that bigger undertakings are performing relatively better. City transport undertakings recorded high cost of operation due to low speed, high staff -bus ratio, etc. A similar analysis was done for (i) SRTC with more than 1500 buses, (ii) companies, (iii) city transport undertakings, and (iv) other state undertakings. The study observed that average cost for city transport undertakings was the highest followed by other (small size) state undertakings in 1979-80 . It concludes that the companies of Tamilnadu, in general, show relatively better financial performance than other types of transport undertakings. Pandian RWCL and Kattobomman TCL, in particular, recorded the best performance in the period 1960-61 to 1979-80.

Kundu and Venkatakrishnan,[9] in their study mentioned earlier, have analysed the financial performance of STUs during the period between 1972 - 73 and 1983 - 84. It observed that the loss per effective kilometer was just 14 paise in 1972 - 73 which went upto 48 paise in 1983-84 at current prices. The increase, it was argued, was much higher than

8. Mahesh Chand, "Financial Performance of Public Road Transport Undertakings" in IRT Newsletter Article No.93, Source: Lok Udyog Vol. XVI No. 1 April 1982, pp.29-35.See also Vol. I. pp. 13-23.

9. A. Kundu and P.V. Venkatakrishnan, 1985, op.cit. pp.139-172

the increase in the wholesale price index in the country. It concluded that the road transport (passenger) in India is subsidised much more in eighties through the General Exchequer than in the early seventies. The Study further takes into account the gross margin and gross profit per unit of capital employed, and observed that STUs were doing relatively better than the Central Government Undertaking in seventies. However, the trend has got changed in eighties and thus, it is an indication that the financial performance of STUs is not that encouraging as it used to be in the earlier years. The Study reveals that the STUs do not have much equity capital and also that they are becoming increasingly dependent on the institutional credit, bearing a rate of interest higher than the government loans.

It is often argued that state transport undertakings are in the service of the nation, and they operate many uneconomic routes. And are also operating in far flung areas such as hilly, tribal, dense forests and vast deserts. Thus, STUs not only contribute to the economic activities, but also serve at social planks and hence, these factors to be kept in view while determining the tax structure for STUs. Moreover, the taxes on STJs considered as a major factor of losses and poor financial performance. A good number of studies on state transport undertakings, conclude with a remark that the taxes put most STUs in red. Hence,

it would be worthwhile to review a few studies on STUs in this regard.

Prasad [10] analysed the financial performance of thirty four (34) nationalised transport undertakings in the country for the period 1979 - 82. It observed that all STUs were losing money in the period under study. STUs finance their losses either by inadequate funding of their reserve funds or by withholding tax payments to the states. Since in many cases deficits are larger than these two primary sources of finance, they have to borrow on the domestic financial markets, thus increasing their debt burden. Debt capital as a proportion of total capital of STUs increased from 9 percent in 1973 - 74 to over 20 percent in 1980-81. The Study observed that STUs have been fairly successful in keeping their costs close to the country's general inflation rate but are operating at a loss, mainly on account of uneconomic fares, kept low as a deliberate policy of state governments. It was further observed that the largest transport undertakings in terms of revenue are those belonging to Maharashtra, Andhra Pradesh, Gujarat, Karnataka and Uttar Pradesh State road transport corporations. The first four pay taxes which are higher than their recorded losses, while U.P. SRTC's taxes account for 60 percent of the operational loss. In 1982 - 83, the twenty-three (23) transport undertakings chosen for the study, had combined loss of Rs. 110 million while they paid Rs. 2694 million in taxes. The study

10. A Prasad ,"An overview of the Public Passenger Transport Organisations in India", 1985, New Delhi, pp.75-95.

concludes that STUs are being taxed too heavily. However, it observed that metropolitan and city transport undertakings are taxed less heavily than the regional transport undertakings.

The CIRT[11], did a study of the financial performance of all STUs for the period between 1976-77 and 1982-83 . It observed that STUs have always suffered from a lack of adequate funding. Though STUs have access to all sources of funds like loans from commercial banks and financial institutions, by and large, they have to rely on Government. For instance, 73 percent of the capital structure in STUs accounted for by Government contributions which is debt in nature, entails an annual expenditure of a colossal sum of Rs. 95 crores per annum as interest charge at about 6 to 7 percent. The paper concluded that many STUs are reported to have operating surplus (revenue - operating cost other than interest and taxes)and can, therefore, meet a minimum dividend rate to the governments.

However, to lay the responsibility of the financial deficit of STUs on the taxation may not be totally fair. Because, it is argued that the government levies taxes for the services and infrasturctural support they provide to the STUS and it is not possible to determine the optional

11. " How to make STUs Financially Viable", CIRT, in Vol. II, p. 173-188.

degree of taxation unless all their costs taken into consideration. NTPC, also recognises this difficulty and observed that it should be taken into account that unlike railways, road transport does not pay directly for the maintenance and capital costs of road works. There is a need for rationalised and uniformity of the Motor Vehicle taxes and the methods of tax assessment.

Georgi [12] made a survey on cost-benefit analysis and public investment in Tranposrt, in general. The Study applied the technique of cost-benefit analysis to bridge the gap between the general thinking on economic issues and its practical application in the affairs of everyday life and also the channelising resources in a more appropriate manner. The Study reveals that the difficulty of identifying at least the direct benefits of a project in the transport infrastructure in an appropriate way is due, to the fact that in this sector there is no well-functioning price system such as exists in other sectors of a market economy. The investment plans in transport projects should be tested in the same way as private entrepreneurs, the aim of the cost-benefit analysis is to maximise the benefits to economy as a whole and not private profits. Since the existing systems of charges or taxes for transport infrastructure cannot serve the investment planners as indicators of benefits, hence, with regard to economic feasibility, i.e. efficiency, they can therefore be neglected, though they are, or atleast

12. Georgi Hanspeter, "Cost-benefit analysis and Public investment in transport. A Survey", London Butter Worths, London, 1973.

might be, relevant to financial planning. To calculate the benefits of a infrastructure project, therefore, one or more indicators have to be found.

The Study arrives at a conclusion that any infrastructure project is beneficial only if the investment succeeds in reducing private costs by an amount greater than the investments. An increase in investment outlays will therefore be desirable as long as the benefits - cost difference is greater than zero. Such an increased investment in a transport project will lead to, apart from the normal rise in transport demand which accompanies economic growth, a further demand for transport services will undoubtedly created by an increase in infrascture capacity. The characteristics of the transport infrastructure have, however, made it plain that decisions in this part of the economy, as in some others, cannot be left entirely to the market. Even if infrastructure prices existed, however, the market mechanism alone would not suffice to determine economic efficiency of infrastructure installations. The conclusion to be drawn is that even though numerous problems (of forecasting etc.) have not yet been adequately solved, cost-benefit, analysis has at least the advantage that it can exclude from consideration projects which are more or less problematical from the overall economic stand point, and can so prevent an irrational use of national resources.

Gupta [13] made an attempt in highlighting the various problems of mass transportation in metropolitan cities with special reference to Delhi Transport Corporation. In handling the optimisation ploblems of a mass transport system, a flexible and an appropriate multiple objective technique namely, goal programming, has been applied to highlight the multifactor decision situations for a public bus transport system. The study developed three types of goal programming models for DTC in which several conflicting objectives have been considered from the view point of users, operators, and the society by giving varying priorities according to the needs of the system. The analysis pertaining to the period between 1973 - 74 and 1980-81. It shows that some of the operational parameters like average number of buses on road, average number of passengers carried, average kilometres operated and average number of trips operated, all on daily basis, increased by 115, 155, 167 and 168 percent respectively during the period under study. The parameters have shown an increasing trend over the years. In contrast to this the average number of passengers per bus kilometre declined by 5.8 percent during this period hinting towards sub-optimum utilisation of passenger carrying capacity.

---

13. M.P. Gupta, "Metroplitan Transport Systems" National Publishing House, New Delhi, 1983.

The study further observed that despite the increase in fleet size, greater kilometerage covered through more trips and increase in demand, the analysis based on the parameters like average operational cost per kilometre and average earnings per kilometre revealed that the D.T.C. is becoming more and more inefficient over time. The average yearly increase in operational cost per kilometre during 1973-74 to 1980-81 was 7.56 percent as against the average yearly increase in earnings per kilometre which was only 7.14 percent. The per kilometre difference in operational cost and earnings shows a mixed trend although a consistent deficit is clearly visible for all the years in the period under study. The poor financial performance was attributed to the problems of managerial, inter-personal and the problems related to scheduling.

Patankar [14], in his detailed study, analysed the physical, operational and financial performance of nationalised road transport undertakings in India, during the period between 1970 - 71 and 1982-83. The study observed that operational economics of STUs was fairly satisfactory over the years. However, the average financial results were certainly disquieting. The financial losses was attributed to the sharp rise in the costs of basic inputs like fuel, tyre, and spares etc. and fare rises lagging far behind the steep increase in operational costs. The study further points out that operational cost as a whole has not increased

14. P.G. Patankar, "Road Passenger Transport in India", CIRT, Pune 1984.

in the same proportion as prices of major inputs, which indicates that transport operations in the nationalised sector were not in any way more inefficient if not better than private operators.

The study observed that at the national level the consumption of petroleum products in 1983-84 was about 35.4 million tonnes, out of which the H.S.D. component constituted about 33 percent i.e. 11.8 million tonnes, the road transport industry alone consumed as much as 70 percent to 75 percent of the total H.S.D. requirement i.e. about 8.4 mil. tonnes. A review of diesel oil consumption by various fleet operations in India observed that the output per litre varies from 2.66 km to 4.83 km. A majority of fleet operates at 3.50 km to 3.99 kilometres per litre. An optimum performance of 5 kilometre per litre is attainable, if this is achieved, the organisations in public sector alone could entail a saving of about Rs. 620 million at a level of operation at prices as existed on 31.3.83. It observed that conservation of oil has become extremely important and a number of specific steps were suggested to improve the fuel conservation in STUs.

The study estimated the total expenditure on tyres by public sector road transport industry alone accounts for about Rs. 179 crores per year, and in 1982-83 the share of tyres was 8 percent of the total cost of operation. It

was observed that the average tyre performance shows a declining trend over the years. The study recommends for STUs to have retreading plants on their own to improve the tyre life rather than to send their tyres to outside firms at exorbitant rates with the disadvantage of lower retreadability factor.

The operational cost was analysed, element by element, in order to examine cost effectiveness of STUs. The analysis reveal that nearly 69 percent of the total cost is accounted for by materials and personnel. The component-wise variation in cost among various STUs was measured by estimating the coefficient of variation in the year 1976-77. It was observed that the variation in the case of material cost was minimum. The implication is that a small reduction in the material cost per kilometre would result in significant and sizeable saving in the overall cost of operations since the material cost accounted for the highest percentage of the total cost, in 1976-77 . Variation in the element of personnel cost is seem to be more than the variation in material cost. While the cost on account of depreciation shows a great variation than material and personnel costs. This shows that depreciation policies and methods are not uniform among STUs. Similarly the large variation in the case of interest cost element is mainly due to differences in the capital structure of STUs, and the interest rates attached to various sources of debt capital. The taxes shows the maximum variation due to varying tax rates in different state.

The study also emphasised that financial performance of STUs must be gauged on the basis of profit and loss after considering total costs and not on the basis of surplus and deficit where taxes are excluded from the cost of operation. The study concluded that STUs are responsible for ensuring reasonable margin of profit whatever be the level of tax incidence. It was argued that the concept of "return on investment" is not less significant since STUs are enjoined to act on commercial principles in carrying out their activity.

Satyanarayana[15] analysed the physical and financial performance of STUs for the period during 1973-74 to 1981-82. The study basically centred on APSRTC. The performance of APSRTC was compared with Gujarat SRTC and Kattabomman TCL. While the city services of APSRTC was compared with Pallavan TCL, BEST undertaking and Ahmedabad MTS. The study classified the cost factors into controllable and non-controllable factors. The physical and operational parameters like fleet utilisation, vehicle utilisation, occupancy ratio, schedule-staff ratio, consumption of stores, fuel, tyres etc. are grouped under controllable factors. While inflation and governmental influence are classified as non-controllable cost. The increasing in the controllable cost was attributed to Government's inability and inflation. The study observed that the Corporation (APSRTC) was not allowed to increase the fares at a time when the costs were going up. On the other hand Government is levying too much of motor vehicle tax and, thereby Government is responsible for increasing losses in APSRTC.

The study further pointed out that out of accumulated loss of Rs. 66.55 , the city services of APSRTC alone accounted for Rs. 30.93 crores, while the fleet on the city serves contributed about 10 percent of the total fleet of APSRTC. It was also observed that during the period under study, the total cost of operation per kilometre increased by more than 130 percent and the fuel cost increased from 17 to 23.8 percent. The study recommends for a reduction in Motor Vehicle tax on city services and any loss the corporation incurs on city services for reasons beyond its control must be made good by the Government by way of subsidy. The study recommends for an increase in the fare by one paise per passenger kilometer. The study concluded that Government and state transport authorities are responsible for the financial losses.

The basic objective of the study was to find out a solution to the losses incurred by A.P. SRTC. It analysed the working of the APSRTC. The major recommendation was to split APSRTC into small and independent corporations, each with a fleet strength of about 1000 buses, covering two districts and about 12 to 15 depots. The study recommends for a two tier workshop structure in APSRTC. In case the splitting was not considered possible, it recommends for a highly decentralised regional set-up with a policy board at the Head Office.

Subramaniam [16] analysed the organisational set-up of road transport with special reference to Andhra Pradesh SRTC. The data pertaining to the period between 1973-74 and 1981-82 were taken for physical and financial analysis. The study observed that APSRTC shows a declining trend in its profitability since 1973-74. The corporation was making profits in the early years, except for the years 1969-70 and 1972-73. Since 1973-74, the corporation recorded gradual decline in the profits and it started losing from 1977-78 onwards . The accumulated loss was estimated to be about Rs. 66.55 crores in 1981-82. The study viewed that the organisational structure of A.P.SRTC was responsible for the decline in its operational performance. The study points out that smaller undertakings both in terms of fleet strength and organisation set-up are more efficient than larger undertakings. The performance of APSRTC was compared with the performance of larger undertakings like Maharashtra SRTC and Gujarat SRTC and also with smaller ones like the companies belonging to Tamilnadu. The efficiency indicators like Fleet utilisation, vehicle utilisastion, occupancy ratio, fuel efficiency, number of break-downs and accidents etc. were considered for the analysis. The study concluded that the transport companies belonging to Tamilnadu were doing relatively better than others both in terms of physical and financial performances.

The study analysed the organisational structure

16. P.Subramanyam, "Organisastional set-up of Road Transport: A Focal Study of APSRTC, "B.R. Publishing Corporation, Delhi, 1987.

of APSRTC, MSRTC, GSRTC and the companies of Tamilnadu in detail. The study observed that the transport undertakings belonging to Tamilnadu seem to be having relative advantages over the others. The study recommends for a similar set-up in Andhra Pradesh also. The study concluded that organisational structure is responsible for the poor financial performance of STUs. It further stressed that larger transport undertakings (in size) are doing relatively poor, or in other words smaller corporations as in Tamilnadu are doing well. The study feels that the size of APSRTC is too large to control hence, it recommends for splitting APSRTC into smaller subsidiary corporations and decentralisation of power.

An Overview of the review of literature

The studies reviewed in the present chapter, by and large, have analysed the performance of state transport undertakings during the period between 1971-72 to 1981-82. All of them having one thing common in their findings that the state transport undertakings have shown significant improvement in their physical performance over the years. For example, fleet utilisation, vehicle utilisation, tyre performance and manpower productivity are some of the physical parameters which recorded considerable increase over the years.

They have little disagreement with that the financial

performance of STUs shows significant decline, in general. The cost of operation shows sharp increase in many STUs over the years. The reasons for the financial losses were attributed to the increase in the cost of personnel, material, taxes and interest. The studies revealed that the cost of operation is relatively higher in city transports than the regional transport undertakings. The road transport in India is subsidised much more in eighties than the earlier years.

It was observed that personnel and material costs account for 70 percent of the total cost of operation. The percentage share of material cost to the total cost shows a decline over the years.

The studies viewed that the STUs are heavily taxed by the Central and State Governments. However, the metropolitan transport undertakings are taxed less heavily than the regional transports. State Transport Undertakings do not have much equity capital and also that they are increasingly dependent on the institutional credit and this leads to increased interest burden.

The organisational structure was blamed for the financial losses. It was observed that the larger undertakings in terms of fleet strength are less efficient than smaller undertakings. The companies of Tamilnadu were found performing better than other forms of transport undertakings. Splitting of larger undertakings into small sized transport undetakings is also suggested.

CHAPTER V

AN ANALYSIS OF THE PHYSICAL PERFORMANCE OF STUs

(1977-78 TO 1986-87)

An attempt has been made in this chapter to analyse the physical performance of state transport undertakings for the period between 1977-78 and 1986-87. Some important physical efficiency parameters like Fleet utilisation, vehicle utilisation, fuel efficiency, tyre performance, index of carrying capacity and man power productivity are considered for the analysis. The state transport undertakings are classified on the basis of their (i) Organisational Enactments, (ii) Organisational Structure, (iii) socio-economic conditions of the states under which the STUs operate, and (iv) Geographical regionalisation of the States. The variations in the physical performance of state transport undertakings both within and between different regions have been analysed within a comparative perspective.

There can be little disagreement that STUs have shown considerable improvements in the level of physical performance over the years. However, it can hardly be disputed that there are wide variations in the performance of state transport undertakings operating in different parts of the country. The factors responsible for the variations in the physical performance of STUs across the States are many. Here, an attempt has been made to identify some of them. In this analysis, organisational, economical and geographical factors are taken into consideration for comparing the

physical performance of different STUs. There has been virtually no attempt, so far, to analyse and compare the performance of STUs from this view point. It is in this context, the present study differs from the existing studies on state transport undertakings both in its approach and orientation.

The following parameters of physical efficiency are considered for the purpose. They are

1. Percentage Fleet Utilisation:(F.U.):- Fleet utilisation, also termed as vehicular utilisation, is the ratio of the number of vehicles on road to the fleet held by the unit.

$$\% \text{ F.U.} = \frac{\text{Number of vehicles on road}}{\text{Number of vehicles held}} \times 100$$

2. Vehicle Utilisation (V.U.): It is defined as kilometers done per vehicle on road per day. It indicates the extent of use (in kms) of the vehicles on road.

$$\text{Average V.U.} = \frac{\text{Av. gross/effective kms done per day}}{\text{Av. no. of vehicles on road per day}}$$

3. Fuel efficiency (KMPL): This is simply the number of kilometres done/obtained from one litre of diesel. KMPL is calculated as under:

$$= \frac{\text{Total gross kms covered by the vehicle}}{\text{Total litres of fuel consumed by the vehicle}}$$

4. Tyre Performance: This is nothing but the average cumulative kilometers per tyre (both new and retreaded). It is the total kms given by a tyre in its original (new) and retreaded lines, i.e. from the date of its fitment on the vehicle as new tyre up to the time of its removal finally for scrapping.

5. Index of Carrying Capacity: This is the ratio of average passengers per bus per day to the average seating capacity.

$$= \frac{\text{Average Passengers per bus per day}}{\text{Average Seating Capacity}}$$

6. Man Power Productivity (M.P.P) The Transport Compendium[1] gives the definition of productivity per employee as "the total effective kilometre operated during a period divided by the total number of employees on rolls gives the productivity per employee during that period. However, in the performance statistics[2] for 1985-86 and 1986-87, it is calculated as below:

$$\text{M.P.P.} = \frac{\text{Vehicle Utilisation (kms)}}{\text{Staff ratio per vehicle on road}}$$

While the staff-ratio is calculated as

$$\text{Staff-ratio} = \frac{\text{Total Staff - other staff}}{\text{Average Number of vehicles on road}}$$

---

1. "Compendium of Transport Terms", CIRT, Pune, 1984, p.55.

2. Report on the "performance of Nationalised RTUs 1985-86 and 1987." CIRT, Pune p.147.

other-staff include the following:

(a) staff for production activity (bus body building, tyre retreading plant, springs, etc.)

(b) staff for civil engineering, construction (Depots, Workshops, Bus-stations, Shelter & Officers)

(c) Staff for Printing Press (tickets)

Though there are as many as sixty-six (66) transport undertakings have registered themselves with the Association of State Road Transport Undertakings (ASRTU), New Delhi as on 31st March 1987, the present analysis confines only to thirty-eight (38) of them because of the following two reasons. Firstly, comparable data are not available for all the years for some STUs, and secondly, a few of the STUs are either newly formed or carved out from the earlier ones.

The physical performance of state transport undertakings is analysed and compared in the following four different ways. They are as follows:

(i) The State Transport undertakings are classified on the basis of their Organisational Enactments (Legislations). The CIRT, Pune classify STUs on the basis of their organisational enactments viz. Corporations, which are formed under the Road Transport Corporation Act, 1950, Companies, formed under the Companies Act, 1956 and Government Departments and Municipal Undertakings

established under the Acts pertaining to them respectively.

(ii) The STUs are grouped into three categories on the basis of their organisational structure viz. (a) Four-tier system, (b) Three-tier system, and (c) two-tier system.

(iii) The states in India are classified into different economic regions and thereby, the variations in the performance of STUs in different economic regions are analysed and compared between and within regions.

(iv) The states are classified into different regions on the basis of their geographical location in order to bring out the regional variations in the performance of STUs in different geographical regions within a comparative perspective.

The analysis pertaining to (i) and (ii) needs little explanation because they are self-explanatory. Most of the existing literature and studies on STUs are based on either of these two classifications. However, (iii) and (iv) need some explanation.

Classification of STUs by Economic and Geographical Regions

The states are classified into Five major categories on the basis of their overall socio-economic development. They are (i) Relatively Developed States, (ii) Medium developed States, (iii) Relatively backward States, (iv) Most Backward

States, and (v) Hilly and North-Eastern States. Here, the main emphasis is to make an inter-state comparison. Hence, different transport undertakings operating in a single state are computed together and their average is taken as the average of the respective state.

In the analysis pertaining to the geographical regionalisation, the states are grouped under Five major geographical regions viz. (i) Northern States, (ii) Eastern States, (iii) Central States (iv) Western States, and (v) Southern States. The variations in the physical performance of STUs both within and between different geographical regions are analysed and compared for the period under consideration.

There is only one single transport undertaking operating throughout the nook and hook of the state in the states like Andhra Pradesh, Bihar, Haryana, H.P., J&K, Karnataka, Kerala, Madhya Pradesh, Rajasthan and Uttar Pradesh. Whereas in states like Tamil Nadu (where there are as many as 15 undertakings as on 31.3.1988), Maharashtra (Five Municipal Transport Undertakings beside MSRTC), Punjab (Pepsu RTC and S.T. Punjab), Orissa (Orissa SRTC and Orissa RTC), West Bengal (Durgapur STC, North Bengal and Calcutta STCs), and Gujarat (GSRTC and Ahmedabad MT), there are more than one transport undertakings in operation. So, in view of the above mentioned discrepancy, it has been decided that the figures of physical efficiency indicators of all transport undertakings operating in a single state are computed

together and the average of the same is considered for the analysis here.

While doing the analysis enough care has been taken not to allow extraneous factors distorting the analysis. For example, the Metropolitan Transport Undertakings, whose performance characters cannot be compared with regional transport undertakings, due to various reasons are excluded when computing the averages for the region or state. Hence, BEST undertaking, Calcutta STC and Pallavan TCL are, therefore not included while computing the averages for Maharashtra, West Bengal and Tamil Nadu respectively.

There is only one single transport corporation is under operation in the States like Andhra Pradesh, Bihar, Haryana, Karnataka, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Rajasthan and Uttar Pradesh and therefore the data regarding physical efficiency of the respective State Road Transport Corporations in the above states are considered as the state's average for the period under study. For the remaining states, the following is adapted.

Maharashtra: The indices of physical parameters of Maharashtra SRTC, Puna MT, Pimprichind MT, Kolhapur MTU, Sholapur MTU are added-up and the average of these five undertakings is considered as the average for Maharashtra.

Gujarat: The physical performance figures of Gujarat SRTC and Ahmedabad MT are added-up and the average of these two undertakings considered as Gujarat's average.

Orissa: The average of Orissa SRTC and Orissa RTC.

Punjab: The average of S.T. Punjab and Pepsu RTC.

West Bengal: The average of North Bengal STC and Durgapur STC.

Tamil Nadu: In 1977-78, the following companies are considered and their average was taken as the state's average. The companies are Anna TCL, Cheran TCL, Cholan RWCL, Deeran Chinnamalai TCL,[3] Kattabomman TCL, Pandiyan RWCL, and Thiruvalluwar TCL. While in 1986-87, beside the above Seven Companies the following six companies are also taken into consideration. They are Annai Satya TCL, Jeeva TCL, Nasamony TCL, Maruthu Pandiar TCL, Thanthai-Periyar TCL, and Pattukotai Alagiri TCL.

North-Eastern States: The North-Eastern States are grouped under one category due to the homogenity in their physical terrain and other socio-economic conditions, in general. Moreover, none of the North-Eastern States can neither be treated as a single state nor can be compared with any other state due to various reasons as mentioned above. Hence,

---

3. Though Deeran Chinnamalai TCL as such was non-existent in 1977-78, it was included in 1977-78 because it was carried out from Cholan TCL.

they are classified under one single category. Though there are seven states in the North-Eastern region, comparable data is available only for Assam, Manipur, Tripura, and Nagaland State Transports. So, these four alone considered for the present analysis.

Physical Performance of STUs classified by Organisational Enactments

The analysis include thirty eight transport undertakings of which nineteen are Corporations, nine Companies, four Government Departmental Undertakings and six Municipal Undertakings. Tables 5.1 to Table 5.4 provides the basis for the analysis.

Fleet Utilisation (F.U.)

Corporations:

The average percentage fleet utilisation of transport corporations was lower than the national average percentage fleet utilisation in 1977-78 and also in 1986-87. The transport corporations belonging to Bihar, West Bengal and Orissa have shown considerable decline in their fleet utilisation in 1986-87. While Andhra Pradesh, Karnataka, Delhi, Madhya Pradesh and Uttar Pradesh SRTCs have registered significant increase in their level of fleet utilisation during the same period.

Companies

The transport companies recorded the highest fleet utilisation in the country in 1977-78 and 1986-87 as well. The percentage fleet utilisation of the companies was higher than the average fleet utilisation of Corporations, Government Departments and Municipal Undertakings. The transport companies belonging to Tamil Nadu had registered uniformly higher percentage fleet utilisation during the period under study.

Government Departments:

The average fleet utilisation of Government Departmental Undertakings was marginally lower than national average fleet utilisation in 1977-78. Because of the relatively lower percentage fleet utilisation in Nagaland ST the average has gone down in 1977-78 and 1986-87 as well. Punjab & Haryana STs show significant increase in their fleet utilisation in 1986-87.

Municipal Undertakings:

The average percentage fleet utilisation of municipal transport undertakings was higher than national average, and was also higher than the average fleet utilisation of the companies in 1977-78. But, in 1986-87, the fleet utilisation show a negative growth. Barring Pune MT and Ahmedabad MT, the municipal transport undertakings show a marginal decline in their fleet utilisation from

1977-78 to 1986-87. The average fleet utilisation was lower than national average F.U. in 1986-87.

VEHICLE UTILISATION

Corporations: The average vehicle utilisation of the transport corporations was lower than national average during 1977-78 and 1986-87 as well. However, it was higher than average vehicle utilisation of Government Departments and Municipal Undertakings in 1977-78 and was higher than the average of the latter in 1986-87. The average shows some improvements from 1977-78 to 1986-87. Almost all the Corporations registered some improvements in their Vehicle Utilisation in 1986-87.

Companies: The transport companies recorded the highest vehicle utilisation (in kms) in the country during both points of time considered for the study. The companies belonging to Tamil Nadu registered uniformly high V.U. during the period under study. Thiruvalluvar TCL recorded the highest V.U. with 562 kms and 653 kms in 1977-78 and 1986-87 respectively.

Government Departments: The average vehicle utilisation of Government Departmental Undertakings was the lowest in the country during 1977-78 and also in 1986-87. Nagaland and Haryana STs show considerable decline during the period under study.

Municipal Undertakings: The average vehicle utilisation of municipal undertakings was lower than national average in both points of time under consideration. However, it was higher than the average V.U. of Government Departments and Corporations in 1986-87. The vehicle utilisation in Pimpri-Chind MT was higher than national average and was also relatively high with 296 kms in 1986-87.

Fuel Efficiency

Corporations:

The average fuel efficiency (in kms) of transport corporations was higher than national average in both points of time under study. It was also higher than the average fuel efficiency of Government Departments and Municipal Undertakings during the same period. The Transport Corporations, barring Bihar, Kerala, Orissa and West Bengal SRTCs, show significant increase in their fuel efficiency from 1977-78 to 1986-87.

Companies:

The average fuel efficiency of the transport companies was the highest in the country during 1977-78 and also in 1986-87. The transport companies belonging to Tamil Nadu, in particular, recorded high growth in fuel efficiency during the period under study.

Government Departments:

The average fuel efficiency of STUs of Government Undertakings was lower than national average in 1977-78 and 1986-87. There is not much variation in fuel efficiency between STUs of this category in 1977-78. Haryana ST shows significant decline, while Punjab ST shows considerable increase in their fuel efficiency from 1977-78 to 1986-87. The fuel efficiency was better only to the average fuel efficiency of municipal undertakings.

Municipal Undertaings:

The average fuel efficiency of municipal transport undertakings is not only lower than national average but also the lowest in the country during both points of time under consideration. The trend shows some improvement in 1986-87.

Tyre Performance

Corporations:

The average tyre performance (in kms) of transport corporation was the lowest in the country during 1977-78 and also in 1986-87. There are wide variations in the tyre performance between the corporations. The tyre performance was significantly poor in the transport corporations belonging to Tripura, Manipur, Himachal Pradesh and Kerala in 1977-78. The trend show considerable improvement in 1986-87. The transport corporations belonging to Andhra Pradesh,

Gujarat, Delhi, Rajasthan and Uttar Pradesh have shown significant growth in their tyre performance during the period under study.

Companies:

The average tyre performance of the companies was lower than national average in 1977-78. But, it rose up to 118,000 kms in 1986-87 from about 50,000 kms in 1977-78. The tyre performance of companies in 1986-87 was higher than national average, and was also higher than the averages of Government Departments and Corporations. The Companies of Tamil Nadu have shown remarkable incrase in their tyre performance during the period under study.

Government Departments:

Comparable data for governmental undertakings in 1977-78 was not available. The average tyre performance is lower than national average in 1986-87. Haryana ST shows very low tyre performance and the Punjab ST's was not encouraging either.

Municipal Undertakings:

The average tyre performance of municipal transport undertakings was the highest in the country during both points of time under study. The municipal undertakings recorded high increase in their tyre performance from 1977-78 to 1986-87.

Table 5.1

Physical Performance of STUs classified by Organisational Enactments (1977-78)

Name of STU	F.U. (%)	V.U. (kms)	Fuel Effi. (kms)	Tyre Per formance (kms)	Index of carrying capacity	M.P.P. (kms)
CORPORATIONS						
1. A.P.SRTC	93.30	306.49	4.30	NA	11.83	29.02
2. Assam STC	75.27	197.00	4.30	61000	NA	21.62
3. Bihar STC	60.61	215.00	4.15	71585	2.67	25.68
4. Calcutta STC	59.24	151.00	3.12	55557	NA	12.44
5. Delhi T.C.	73.24	228.00	3.64	57500	NA	20.57
6. Gujarat SRTC	79.34	280.11	4.47	70000	11.81	28.93
7. Himachal Prad RTC	84.30	151.00	3.10	32228	2.83	32.12
8. J&K RTC	80.00	144.00	NA	NA	2.97	NA
9. Karnataka SRTC	73.60	266.80	3.96	49104	12.21	29.09
10. Kerala SRTC	84.00	270.80	3.90	37213	15.38	27.02
11. M.P.SRTC	80.44	225.34	4.19	54259	NA	27.11
12. Maharashtra SRTC	83.10	245.10	4.12	49783	8.12	26.72
13. Manipur STC	61.00	107.00	2.99	25672	NA	8.62
14. North Bengal STC	61.40	210.00	3.80	67220	8.92	13.20
15. Orissa SRTC	90.00	199.00	4.30	52172	3.40	25.84
16. Pepsu RTC	90.00	186.00	3.57	NA	6.25	34.25
17. Rajasthan SRTC	79.00	264.00	4.08	NA	4.90	32.83
18. Tripura STC	62.92	179.88	3.67	16446	2.08	15.07
19. U.P.SRTC	77.46	219.73	4.50	NA	4.96	23.62
Average	76.22	212.96	3.89	49981.35	7.02	24.09
All India Average	79.97	234.66	3.82	51978.90	12.33	28.40

Source: Report on the Performance of NRTUs 1977-78 and 1978-79. CIRT, Pune

Table 5.2

Physical Performance of STUs classified by Organisational Enactments (1977-78)

Name of STU	F.U. (%)	V.U. (kms)	Fuel Effi. (kms)	Tyre Per formance (kms)	Index of carrying capacity	M.P.P. (kms)
COMPANIES						
1. Anna TCL	86.00	335.00	3.89	51255	N.A.	52.01
2. Cheran TCL	85.00	275.00	3.73	49305	17.23	40.32
3. Cholan TCL	84.00	325.00	3.82	NA	17.00	43.62
4. Kattabomman TCL	87.60	324.00	4.01	NA	16.74	34.80
5. Pandian TCL	91.60	308.00	3.63	47064	16.50	39.74
6. Thiruvalluvar TCL	87.10	562.00	4.27	NA	2.37	58.35
7. Deeran Chinnamalai TCL	84.00	325.00	3.82	NA	17.00	43.62
8. Pallavan TCL	86.80	217.00	3.64	59171	N.A.	23.95
9. Orissa RTC	79.00	204.00	4.20	47000	4.84	21.93
Average	85.67	319.44	3.89	50759	13.09	39.81
GOVT. DEPARTMENTS						
1. Haryana	94.00	256.70	3.80	NA	5.84	45.03
2. S.T. Punjab	85.00	227.80	3.70	NA	7.15	38.87
3. Sikkim ST	83.00	78.00	3.80	NA	NA	17.33
4. Nagaland	56.00	150.00	3.50	NA	9.24	NA
Average	79.50	178.12	3.70	NA	7.41	33.74
MUNICIPAL UNDERTAKINGS						
1. Ahmedabad MTs	79.18	182.90	3.63	91154	27.00	19.70
2. BEST Undertaking	92.00	222.20	2.84	53232	38.85	15.49
3. Kolhapur MTU	88.00	189.00	3.70	45617	32.65	18.49
4. Pune MT	82.88	220.00	NA	NA	34.65	19.11
Average	85.51	203.52	3.39	63334.3	33.28	18.19
All India	85.51	203.52	3.39	63334.3	33.28	18.19

Table 5.3

Physical Performance of STUs classified by Organisational Enactments (1986-87)

Name of STU	F.U. (%)	V.U. (kms)	Fuel Effi. (kms)	Tyre Per formance (kms)	Index of carrying capacity	M.P.P. (kms)
CORPORATIONS						
1. A.P. SRTC	95.40	302.00	4.85	93543	11.86	34.35
2. Assam STC	67.00	198.00	4.05	NA	5.17	17.15
3. Bihar STC	42.80	211.20	3.88	NA	1.68	12.60
4. Calcutta STC	58.80	156.00	2.84	49471	13.24	8.48
5. Delhi TC	86.30	224.00	3.59	92161	29.47	18.63
6. Gujarat SRTC	81.30	308.00	4.90	85300	10.48	40.91
7. H.P. RTC	NA	NA	NA	NA	NA	NA
8. J&K RTC	NA	NA	NA	NA	NA	NA
9. Karnataka SRTC	87.40	289.70	4.30	76617	13.62	39.95
10. Kerala SRTC	72.30	296.50	3.68	64841	19.36	21.51
11. M.P.SRTC	87.10	229.00	4.13	62644	2.92	25.84
12. Maharashtra SRTC	89.10	273.50	4.30	65588	9.53	31.72
13. Manipur STC	48.60	136.50	3.44	35000	1.63	10.76
14. North Bengal STC	NA	NA	NA	NA	NA	NA
15. Orissa SRTC	81.80	232.20	3.95	76622	13.24	27.22
16. Pepsu RTC	NA	NA	3.93	NA	NA	NA
17. Rajasthan SRTC	80.80	268.00	4.61	91583	4.16	33.33
18. Tripura STC	NA	NA	NA	NA	NA	NA
19. U.P. SRTC	84.30	222.00	4.35	89660	3.84	27.20
Average	76.64	223.11	4.05	74002.5	9.28	24.97
All India Average	82.15	264.84	3.95	94609.6	15.30	30.64

Source: Report on the Performance of NRTUs 1985-86 and 1986-87. CIRT, Pune.

Table 5.4

Physical Performance of STUs classified by Organisational Enactments (1986-87)

Name of STU Corporations	F.U. (%)	V.U. (kms)	Fuel Effi. (kms)	Tyre Per formance (kms)	Index of carrying capacity	M.P.P. (kms)
COMPANIES						
1. Anna TCL	92.80	367.00	4.14	131069	12.69	45.53
2. Cheran TCL	92.50	290.00	3.81	105492	20.66	40.50
3. Cholan TCL	94.20	383.90	4.45	NA	19.75	50.78
4. Kattabomman TCL	95.60	346.00	4.39	149387	15.49	48.01
5. Pandian TCL	96.10	319.00	4.17	127872	23.25	40.22
6. Thiruvalluvar TCL	87.90	653.00	4.09	116620	2.56	66.09
7. Deeran Chinnamalai TCL	94.00	375.00	4.13	109956	19.47	50.06
8. Pallavan TCL	88.00	216.00	3.49	136867	39.39	24.32
9. Orissa RTC	85.60	248.00	4.10	70000	3.76	29.34
	91.85	355.32	4.08	118407.8	17.44	43.87
GOVT. DEPARTMENTS						
1. Haryana	95.90	218.00	3.29	70280	7.38	53.98
2. S.T. Punjab	94.10	237.00	3.99	83000	7.28	41.07
3. Sikkim ST	NA	NA	NA	NA	NA	NA
4. Nagaland ST	64.10	117.00	NA	NA	NA	14.04
	84.70	190.90	3.64	76640	7.33	36.36
MUNICIPAL UNDERTAKINGS						
1. Ahmedabad MTS	84.20	182.40	3.73	141196	22.74	15.94
2. BEST Undertaking	85.60	221.00	2.94	109463	35.43	17.25
3. Kolhapur MTU	82.10	219.00	3.78	126009	23.00	18.64
4. PCMT	55.00	292.00	3.60	NA	23.14	27.71
5. Pune MT	89.50	224.40	NA	NA	32.88	19.89
6. Sholapur MTU	79.00	215.00	3.77	NA	25.43	27.67
Average	79.23	226.30	3.56	125556	27.10	21.18
All India Average	82.15	264.84	3.95	94609.6	15.30	30.64

Index of carrying capacity

Corporations:

The average index of carrying capacity of transport corporations was lower than national average carrying capacity during both points of time. The corporations, barring Delhi TC and Kerala SRTC, recorded relatively poor carrying capacity during the period under study.

Companies:

The index of carrying capacity of companies was higher than national average index in 1977-78 and 1986-87. Almost all the companies of Tamil Nadu, barring Thiruvalluvar TCL, have shown significant improvements during the period under study.

Government Departments:

The average carrying capacity of Government Departmental Undertakings was lower than national average index during both points of time under study. The index was also lower than the averages of Companies and Municipal Undertakings during the same period.

Municipal Undertakings:

The average index of carrying capacity of municipal undertakings was the highest in the country, during 1977-78 and also in 1986-87. Almost all the municipal undertakings have recorded uniformly higher index of carrying capacity.

However, the trend show a decline in 1986-87. All the municipal undertakings have shown significant decline in their carrying capacity from 1977-78 to 1986-87.

Man Power Productivity

Corporations:

The average man power productivity of the corporations has been lower than national average and also the lowest among all the transport undertakings in 1986-87. There are variations in manpower productivity within corporations, and this has led to very low average. There has been hardly any increase in the average M.P.P. from 1977-78 to 1986-87.

Companies:

The average manpower productivity of companies was the highest in the country during 1977-78 and 1986-87. The M.P.P. shows significant increase during the period under study. All the companies, excepting Pallavan TCL and Orissa RTC, show uniformly higher increase in their M.P.P. from 1977-78 to 1986-87. Thiruvalluvar TCL recorded for the highest manpower productivity with 58 kms and 66 kms in 1977-78 and 1986-87 respectively.

Government Departments:

The average manpower productivity of municipal undertakings was higher than the national average, and was also higher than the average M.P.P. of Corporations and Municipal undertakings during 1977-78 and 1986-87, as well.

The M.P.P. shows significant increase in Punjab and Haryana STs during the period under consideration.

Municipal Undertakings:

The average manpower productivity of municipal transport undertakings was the lowest in the country during the period under study. There is only a marginal increase in M.P.P. registerd from 1977-78 to 1986-87.

An Overview of the Physical Performance of STUs classified by Organisational Enactments

By and large, there has been significant increase in the physical performance of state transport undertakigs, in general, during the period under study. It can be stated from the analysis that the transport undertakings that are corporations and companies have been doing relatively better in their physical performance than STUs belonging to Government Departments and Municipal Undertakings during the period between 1977-78 and 1986-87. The companies belonging to Tamil Nadu have registered high growth in their physical performance than other forms of transport undertakings during the period under study.

The transport undertakings operating under Government Departments and Municipal Undertakings also have shown significant improvements in their physical performance from 1977-78 to 1986-87. All the physical efficiency indicators such as fleet utilisation, vehicle utilisation, fuel

efficiency, tyre performance, index of carrying capacity and manpower productivity have registered significant increase at the national level also. Thus, nationalised road transport undertakings in India, in general, have shown considerable improvements in their physical efficiency during the period under study.

Physical Performance of STUs Classified by Organisational Structure

The state transport undertakings are grouped into three categories on the basis of their organisational structure as noted earlier in this chapter. Twentyseven transport undertakes of which seven STUs having four-tier structure, eleven STUs having three-tier structures and nine STUs having two-tier structure are considered for the analysis. The variations in the physical performance of STUs have been analysed and compared both within and between the three different organisational systems and also with the national average physical performance for the period between 1977-78 and 1986-87. Table 5.5 to Table 5.8 provide the basis for the analysis.

Fleet Utilisation

Four-tier system::

The average percentage fleet utilisation of transport undertakings having four-tier system was higher than national average and also higher than the average percentage F.U of STUs having three-tier system during 1977-78 and 1986-87, as

well. There is hardly any increase in the fleet utilisation from 1977-78 to 1986-87. However, the percentage fleet utilisation shows significant increase in Andhra Pradesh, Karnataka, Maharashtra and Uttar Pradesh SRTCs during the period under consideration.

Three-tier System:

The transport undertakings having three-tier system recorded the lowest fleet utilisation in 1977-78 and 1986-87. The variations in F.U. between STUs of three-tier system is very sharp. The average F.U. has not increased from 1977-78 to 1986-87. Bihar, Calcutta and North-Bengal and Nagaland transport undertakings show significant decline in their Fleet Utilisation during the period under study.

Two-tier System:

The average percentage fleet utilisation is not only higher than national average but also the highest among all three systems in 1977-78 and 1986-87, as well. The level of F.U. is uniformly high in all the companies of two-tier system during the period under study.

Vehicle Utilisation (V.U.)

Four-tier System:

The average vehicle utilisation (in kms) of STUs having four-tier system was lower than national average in 1977-78, but, the trend improved in 1986-87 and was higher than the

average V.U. The level of V.U. is higher than the average V.U. of STUs of three-tier system in 1977-78 and also in 1986-87. All the STUs of four-tier system have shown significant improvement in their vehicle utilisation during the period under study.

Three-tier System:

The average vehicle utilisation of STUs of three-tier system was lower than national average and it was also the lowest in the country during the period under study. The vehicle utilisation was relatively higher in Gujarat and Rajasthan SRTCs in 1986-87. Rest of the STUs of three-tier system recorded low vehicle utilisation during the period under study.

Two-tier system:

The companies having two-tier system recorded the highest vehicle utilisation (in kms) in the country in 1977-78 and 1986-87. Almost all the transport undertakings of two-tier system, barring Pallavan TCL and Orissa RTC, have registered significant increase in their vehicle utilisation during the period under study.

Fuel Efficiency

Four-tier System:

The average fuel efficiency of STUs having four-tier system was relatively higher than the average fuel efficiency of STUs of three-tier and two-tier system in 1977-78 and

Table 5.5

Physical Performance of STUs classified by Organisational Structure (1977-78)

Name of STU Corporations	F.U. (%)	V.U. (kms)	Fuel Effi. (kms/ Lit)	Tyre Effi-ciency (kms/Ltr)	Index of Car.Cap. Av.Stg cap	M.P.P. (kms)
FOUR TIER SYSTEM						
1. A.P. SRTC	93.30	306.49	4.30	N.A.	11.83	29.02
2. Assam STC	75.27	197.00	4.30	61000	N.A.	21.62
3. Karnataka SRTC	73.60	266.80	3.96	49104	12.21	29.09
4. Kerala SRTC	84.00	270.80	3.90	37213	15.38	27.02
5. Maharashtra SRTC	83.10	245.10	4.12	49783	8.12	26.72
6. Orissa SRTC	90.00	199.00	4.30	52172	3.40	25.84
7. U.P. SRTC	77.46	219.73	4.50	N.A.	4.96	23.62
Average	82.39	243.56	4.19	49854.4	9.31	26.13
TWO-TIER SYSTEM						
1. Anna TCL	86.00	335.00	3.89	51255	N.A.	52.01
2. Cheran TCL	85.00	275.00	3.73	49305	17.23	40.32
3. Cholan TCL	84.00	325.00	3.82	N.A.	17.00	43.62
4. Kattabomman TCL	87.60	324.00	4.01	N.A.	16.74	34.80
5. Pandian TCL	91.60	308.00	3.63	47064	16.50	39.74
6. Thiruvalluvar TCL	87.10	562.00	4.27	N.A.	2.37	58.35
7. Deeran Chinnamalai TCL	84.00	325.00	3.82	N.A.	17.00	43.62
8. Pallavan TCL	86.80	217.00	3.64	59171	N.A.	23.95
9. Orissa RTC	79.00	204.00	4.20	47000	4.84	21.93
Average	85.67	319.44	3.89	50759	13.09	39.81
All India Average	79.97	234.66	3.82	51978.9	12.33	28.40

Source: Report on the Performance of NRTUs 1977-78 and 1978-79. CIRT, Pune

Table 5.6

Physical Performance of STUs classified by Organisational Structure (1977-78)

Name of STU Corporations	F.U. (%)	V.U. (kms)	Fuel Effi. (kms)	Tyre Per formance (kms)	Index of carrying capacity	M.P.P. (kms)
THREE-TIER SYSTEM						
1. Bihar STC	60.61	215.00	4.15	71585	2.67	25.68
2. Calcutta STC	59.24	151.00	3.12	55557	NA	12.44
3. Gujarat SRTC	79.34	280.11	4.47	70000	11.81	28.93
4. H.P. RTC	84.30	151.00	31.00	32228	2.83	32.12
5. J&K RTC	80.00	144.00	NA	NA	2.97	NA
6. Madhya Pradesh RTC	80.44	225.34	4.19	54259	NA	27.11
7. North Bengal STC	61.40	210.00	3.80	67220	3.92	13.20
8. Pepsu RTC	90.00	186.00	3.57	NA	6.25	34.25
9. Rajasthan SRTC	79.00	264.00	4.08	NA	4.90	32.83
10. Nagaland ST	56.00	150.00	3.50	NA	9.24	NA
11. Punjab ST	85.00	227.80	3.70	NA	7.15	38.87
Average	74.12	200.38	3.76	58474.8	6.30	27.27
All India Average	79.97	234.66	3.82	51978.9	12.33	28.40

Source: Report on the Performance of NRTUs 1977-78 and 1978-79. CIRT, Pune

Table 5.7

Physical Performance of STUs classified by Organisational Structure (1986-87)

Name of STU Corporations	F.U. (%)	V.U. (kms)	Fuel Effi. (kms/ Ltr)	Tyre Effi-ciency (kms/Ltr)	Index of Car.Cap. Av.Stg Cap	Man Power (kms)
FOUR TIER SYSTEM						
1. A.P.SRTC	95.40	302.00	4.85	93543	11.86	34.35
2. Assam STC	67.00	198.00	4.05	NA	5.17	17.15
3. Karnataka SRTC	87.40	289.70	4.30	76617	13.62	39.95
4. Kerala SRTC	72.30	296.50	3.68	64841	19.36	21.51
5. Maharashtra SRTC	89.10	273.50	4.30	65588	9.53	31.72
6. Orissa SRTC	81.80	232.20	3.95	76622	13.24	27.22
7. U.P. SRTC	84.30	222.00	4.35	94660	3.84	27.20
Average	82.47	300.41	4.21	78645	10.94	28.44
TWO TIER SYSTEM						
1. Anna TCL	92.80	367.00	4.14	131069	12.69	45.53
2. Cheran TCL	92.50	290.00	3.81	105492	20.66	40.50
3. Cholan TCL	94.20	383.90	4.45	NA	19.75	50.78
4. Kattabomman TCL	95.60	346.00	4.39	149387	15.49	48.01
5. Pandian TCL	96.10	319.00	4.17	127872	23.25	40.22
6. Thiruvalluvar TCL	87.90	653.00	4.09	116620	2.56	66.09
7. Deeran Chinnamalai TCL	94.00	375.00	4.13	109956	19.47	50.06
8. Pallavan TCL	88.00	216.00	3.49	136867	39.39	24.32
9. Orissa RTC	85.60	248.00	4.10	70000	3.76	29.32
Average	91.85	355.32	4.08	118407.8	17.44	43.87
All India Average	82.15	264.84	3.95	94609.6	15.30	30.64

Source: Report on the Performance of NRTUs 1985-86 and 1986-87. CIRT, Pune

Table 5.8

Physical Performance of STUs classified by Organisational Structure (1986-87)

Name of STU Corporations	F.U. (%)	V.U. (kms)	Fuel Effi. (kms)	Tyre Per formance (kms)	Index of carrying capacity	M.P.P. (kms)
THREE-TIER SYSTEM						
1. Bihar STC	42.80	211.20	3.88	NA	1.68	12.60
2. Calcutta STC	58.80	156.00	2.84	49471	13.24	8.48
3. Gujarat SRTC	81.30	308.10	4.90	85300	10.48	40.91
4. Himachal P. RTC	NA	NA	NA	NA	NA	NA
5. J&K RTC	NA	NA	NA	NA	NA	NA
6. Madhya Pradesh RTC	87.10	229.00	4.13	62644	2.92	25.84
7. North Bengal STC	NA	NA	NA	NA	NA	NA
8. Pepsu RTC	NA	NA	NA	NA	NA	NA
9. Rajasthan SRTC	90.80	268.00	4.61	91583	4.16	33.33
10. Nagaland ST	64.10	117.00	NA	NA	NA	14.04
11. Punjab ST	94.10	237.00	3.99	83000	7.28	41.07
Average	74.14	218.04	4.04	74399.6	6.62	25.18
All India Average	82.15	264.84	3.95	94609.6	15.30	30.64

Source: Report on the Performance of NRTUs 1985-86 and 1986-87. CIRT, Pune

1986-87 as well. The fuel efficiency in all the STUs of four-tier system has been uniformly high and it was higher than national average during the period under study.

Three-tier System:

The level of fuel efficiency of STUs having three-tier system was the lowest in 1977-78 and 1986-87. However, the trend showing improvement in 1986-87. The average fuel efficiency is higher than national average in 1986-87. Almost all the STUs, barring Calcutta STC and Bihar SRTC, have shown significant increase in the level of fuel efficiency during the period under study.

Two-tier System:

The average fuel efficiency of STUs of two-tier system was higher than national average during both points of time under consideration. The average fuel efficiency was also higher than the average fuel efficiency of STUs of three-tier system in 1977-78 and 1986-87. All the STUs of two-tier system, excepting Pallavan TCL, have shown considerable improvements in their fuel efficiency from 1977-78 to 1986-87.

Tyre Performance (in kms)

Four-tier System:

The average tyre performance (in kms) of STUs of four-tier system was lower than national average in 1977-78 and

1986-87. There has been marked improvements in tyre kms for all STUs in 1986-87, and it was higher than the average tyre performance of three-tier system in 1986-87. A.P.SRTC and U.P.SRTC have recorded significant improvements in their tyre performance in 1986-87. By and large, the level of tyre performance of STUs of four-tier system has improved during the period under study.

Three-tier System:

The data regarding tyre performance was available not for all the STUs having three-tier system. It can be seen that they recorded the lowest average tyre kms in 1986-87. Rajasthan alone exceeds the national average in its level of tyre performance in 1986-87.

Two-tier System:

The average tyre kms of STUs having four-tier system was lower than national average in 1977-78, and was also lower than the average tyre kilometres of STUs of three-tier system. But, in 1986-87 the companies show significant growth in tyre kms, and it was higher than the average tyre performance of STUs of four-tier and three-tier systems. Almost all STUs of two-tier system recorded uniformly a higher growth rate in their tyre performance during the period under study.

Index of Carrying Capacity

Four-tier System:

The index of carrying capacity of four-tier system was lower than national average in 1977-78 and 1986-87 as well. However, the index was higher than the index of three-tier system during the same period. Karnataka SRTC shows consistently higher index of carrying capacity both in 1977-78 and 1986-87. Almost all STUs of four-tier system show significant increase in their index of carrying capacity during the period under study.

Three-tier System:

They recorded the lowest index of carrying capacity in 1977-78 and 1986-87. It was lower than national average also. There has been hardly any increase in the average carrying capacity from 1977-78 to 1986-87. None of the STUs of three-tier system has shown any improvement in their carrying capacity during the period under consideration.

Two-tier system:

The index of carrying capacity of STUs of two-tier system was the highest in 1977-78 and 1986-87. It was also higher than national average. Barring Orissa RTC and Thiruvalluvar TCL, the Companies have shown consistent increase, and the indices were much higher than national average in 1977-78 and 1986-87, as well.

Manpower Productivity

Four-tier System:

The aveage manpower productivity of STUs of four-tier system was lower than national average in 1977-78 and 1986-87. The average was lower than the average M.P.P. of three-tier and two-tier systems. However, Karnataka, Andhra Pradesh and Maharashtra SRTCs recorded relatively higher manpower productivity and the figures are higher than national average in both points of time. Most of the STUs of four-tier system show significant growth in their manpower productivity in 1986-87.

Three-tier System:

The average M.P.P. of STUs of three-tier system was lower than national average during both 1977-78 and 1986-87. There are wide variations in M.P.P. among STUs of three-tier system. The average M.P.P. was the lowest among all three forms of organisations in 1986-87. The manpower productivity declined from 1977-78 to 1986-87. Almost all STUs of three-tier system, excepting Rajasthan RTC, and Punjab ST registered a significant decline in their manpower productivity from 1977-78 to 1986-87.

Two-tier System:

The manpower productivity of STUs of two-tier system was not only higher than national average but also the highest among all three systems during both 1977-78 and 1986-87. The companies of Tamil Nadu in general, have shown significant growth in their M.P.P. during 1977-78 to 1986-87. Thiruvalluvar TCL recorded the highest M.P.P. (in kms) in the

country with about 58 kms and 66 kms in 1977-78 and 1986-87 respectively.

An Overview of the Physical Performance of the STUs classified by Organisational Structure

The level of physical efficiency of STUs of all three organisational systems namely, Four-tier, three-tier and two-tier, have shown significant increase from 1977-78 to 1986-87. The STUs having four-tier system and also the companies of two-tier system have been doing relatively better than the STUs of three-tier system, in general. The companies of Tamil Nadu in particular, have shown significant improvements in their level of physical efficiency during the period under study. Though the average physical efficiency indices of STUs of three-tier system are relatively lower than the averages of STUs of two-tier and four-tier systems, they do have registered significant improvements in their vehicle utilisation, fuel effiency and tyre performance during the period under study.

Physical Performance of STUs Classified by Economic Regions

An attempt has been made here, to analyse and compare the variations in the physical performance of state transport undertakings operating under different set of socio-economic conditions. An inter-state analysis of the physical performance of STUs is attempted by classifying the States into different economic regions. As noted earlier, the

average performance of different transport undertakings operating in a single state is considered as the average of the concerned state. The Tables 5.9 and 5.10 provide the basis for the analysis. The different economic regions and the States that belong to each region are the following:

i) Relatively Developed States: It include Maharashtra, Gujarat, Punjab and Haryana.

ii) Medium Developed States: This region include the states of Tamil Nadu, Karnataka, West Bengal and Kerala.

iii) Relatively Backward States: The states belonging to this category are Uttar Pradesh, Madhya Pradesh and Andhra Pradesh.

iv) Most Backward States: The States of Bihar, Orissa and Rajasthan belonging to this region.

v) Hilly and North Eastern States: It consist of Jammu & Kashmir, Himachal Pradesh, Sikkim and Northern-eastern states.

Fleet Utilisation (F.U.)

Relatively Developed States:

The average percentage fleet utilisation of STUs operating in the developed states was higher than national average in 1977-78 and 1986-87. The F.U. was also higher than the average percentage fleet utilisation of STUs belonging to the medium developed states, most backward stats and the north-eastern states during both points of time under

study. The average F.U. showing encouraging trend during the period under consideration.

Medium Developed States:

The average fleet utilisation of STUs operating in the medium developed states was lower than national average in 1977-78 and also in 1986-87. Both West Bengal and Kerala recorded alarming decline in their F.U. from 1977-78 to 1986-87. On the other hand STUs belonging to Tamil Nadu and Karnataka have shown significant improvement in their fleet utilisation during the period under study.

Relatively Backward States:

The average fleet utilisation of STUs of relatively backward states was higher than national average during both points of time under consideration. The F.U. was highest among all the economic regions in 1986-87. Madhya Pradesh, Uttar Pradesh and Andhra Pradesh, all of them have registered significant improvements in their F.U. and it is uniformly high during the period under study.

Most Backward States:

The average fleet utilisation of STUs operating in the most backward states was the lowest among all the economic regions during 1977-78 and 1986-87. The low and declining fleet utilisation in Bihar resulting in low average F.U. for the region. Rajasthan and Orissa have registered considerable increase in their F.U. during the period under

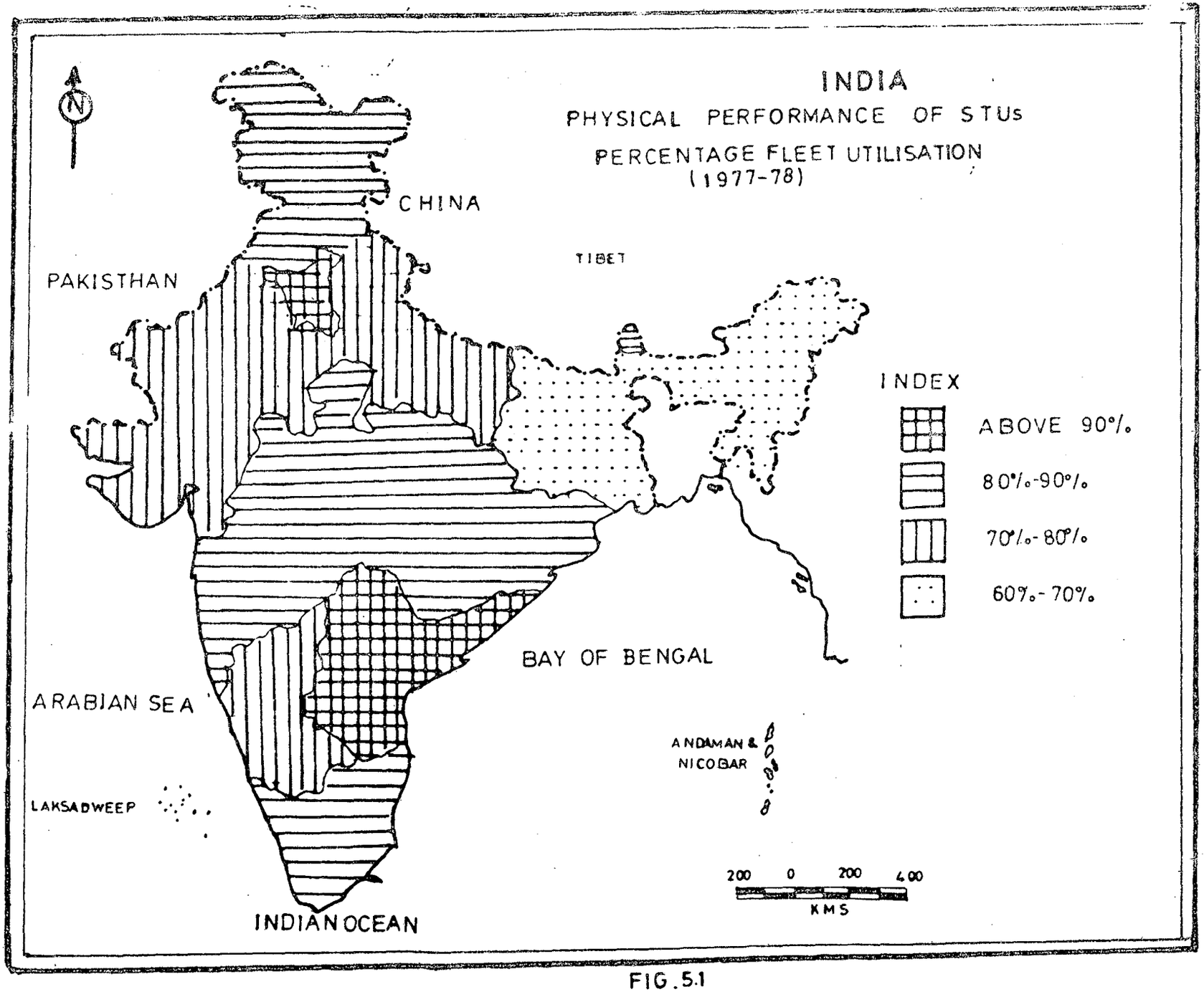

INDIA
PHYSICAL PERFORMANCE OF STUs
PERCENTAGE FLEET UTILISATION
(1977-78)
N
CHINA
TIBET
PAKISTHAN
INDEX
ABOVE 90%
80%-90%
70%-80%
60%-70%
BAY OF BENGAL
ARABIAN SEA
ANDAMAN &
NICOBAR
LAKSADWEEP
200 0 200 400
KMS
INDIAN OCEAN

FIG. 5.1

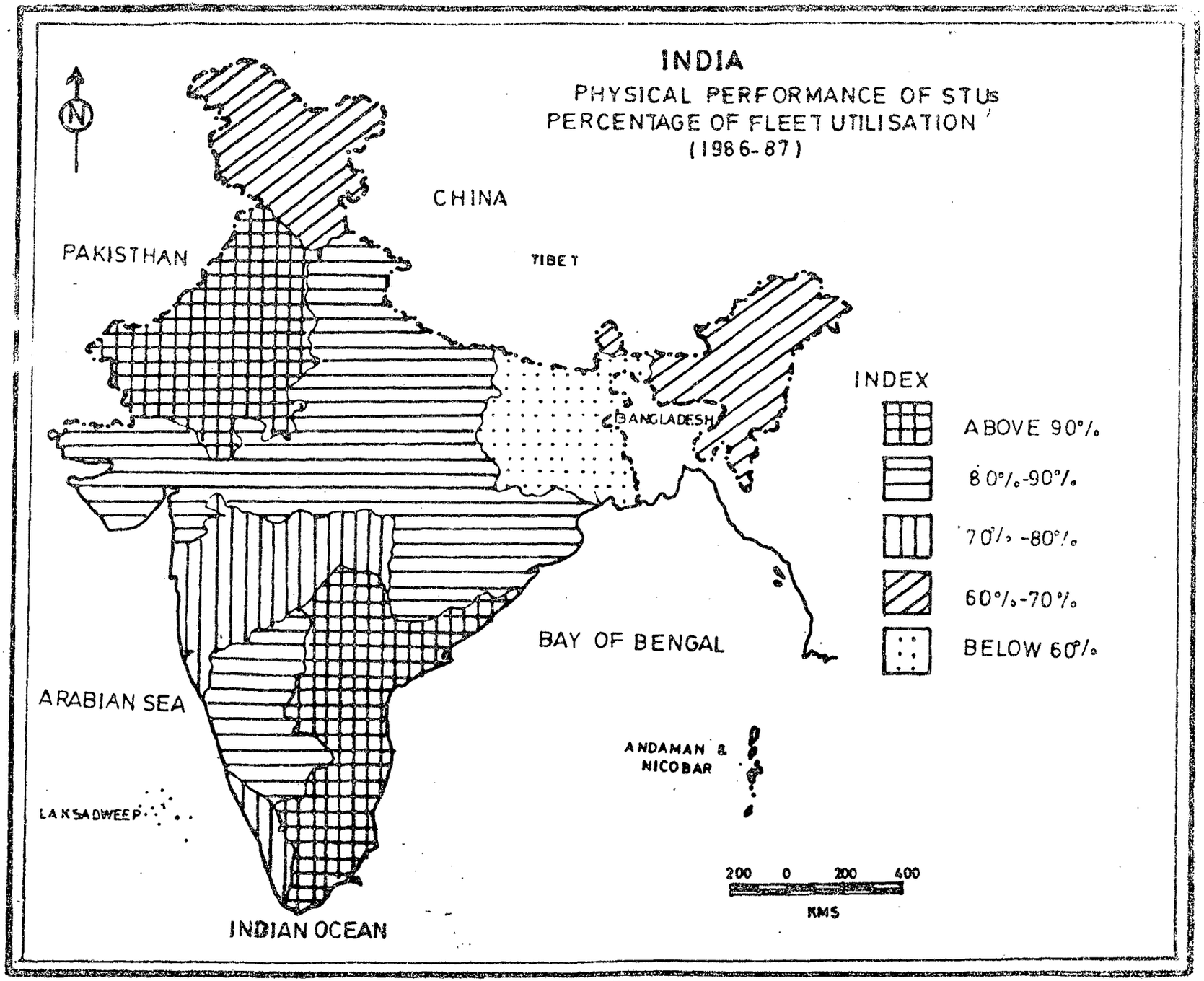

INDIA
PHYSICAL PERFORMANCE OF STUs
PERCENTAGE OF FLEET UTILISATION
(1986-87)
N
CHINA
PAKISTHAN
TIBET
BANGLADESH
INDEX
ABOVE 90%
80%-90%
70% -80%
60%-70%
BELOW 60%
BAY OF BENGAL
ARABIAN SEA
ANDAMAN &
NICOBAR
LAKSADWEEP
200 0 200 400
KMS
INDIAN OCEAN

FIG. 5·6

study.

Hilly and North Eastern Stats:

Though the average fleet utilisation of STUs of hilly and North-eastern states was lower than national average, it was higher than the average F.U. of STUs operating in the medium developed and most backward states of India in 1977-78. Comparable data is available only for the North-eastern States, which show a marginal decline in their fleet utilisation.

Vehicle Utilisation(V.U.)

Relatively Developed States:

The average vehicle utilisation of STUs of developed states was higher than national average in 1977-78, but it came down, and was the lowest V.U. in the country during 1986-87. Barring Haryana, rest of the states have recorded significant increase in their vehicle utilisation during the period under study.

Medium Developed States:

The average vehicle utilisation of STUs operating in the medium developed states was higher than national average and also the highest among all the economic regions in 1977-78 and 1986-87. Barring West Bengal, rest of the states have shown considerable increase in their vehicle utilisation during the period under study. The vehicle utilisation in Tamil Nadu, in particular has recorded significant increase

in 1986-87.

Relatively Backward States:

The average vehicle utilisation of STUs of relatively backward states was higher than national average, and was also higher than the average vehicle utilisation of all the regions but for the medium developed states in 1977-78 and 1986-87. There is no increase in the V.U. from 1977-78 to 1986-87. The V.U. in Andhra Pradesh is more encouraging during the period under study.

Most Backward States:

The average vehicle utilisation of most backward states was slightly higher than national average in 1977-78, but, it was lower than national aveage in 1986-87. Rajasthan alone exceeded the national average in its vehicle utilisation in 1977-78 and 1986-87, while Bihar and Orissa recorded poor level of vehicle utilisation. However,Orissa show encouraging trend in 1986-87.

Hilly and North Eastern States:

The vehicle utilisation in the hilly areas and North Eastern states was the lowest in the country. Comparable data is not available for 1986-87. The North-eastern states show a decline in their vehicle utilisation during the period under study.

Fuel Efficiency (in kms)

Relatively Developed States:

The average fuel efficiency of STUs of developed states was lower than national average during 1977-78 and 1986-87. The aveage fuel efficiency was, in fact, lowest among all economic regions, barring the North-eastern States. Gujarat and Punjab show encouraging trend in their fuel efficiency. Haryana recorded significant decline during the period under study.

Medium Developed States:

The medium developed states also recorded relatively low level of fuel efficiency, lower than the national average in 1977-78 and also in 1986-87. The average fuel efficiency was lower than the averages of STUs of backward states. Tamil Nadu and Karnataka have shown significant increase in their fuel efficiency, while West Bengal and Kerala show considerable decline during the period under study.

Relatively Backward States:

The fuel efficiency of STUs operating in the relatively backward states was highest among the economic regions in the country, during both 1977-78 and 1986-87. The average was very much higher than the national average. Though M.P. and U.P. show a marginal decline in their fuel efficiency in 1986-87, still the figure was higher than the fuel efficiency of most of the states in the country. All three states belonging to this region recorded uniformly higher fuel

Table 5.9

Physical Performance of STUs classified by Economic Regions (1977-78)

Name of State	F.U. (%)	V.U. (kms)	Fuel Effi. (kms/ Lit)	Tyre Per formance (kms)	Av.Pas.Bs. / Av.St.Cap.	M.P.P. (kms)
RELATIVELY DEVELOPED STATES						
1. Maharashtra	84.66	218.03	3.91	47700	25.14	21.44
2. Gujarat	79.26	231.50	4.05	80577	19.40	24.31
3. Punjab	87.50	206.90	3.63	NA	6.70	36.56
4. Haryana	94.00	256.70	3.80	NA	5.84	45.03
Average	86.35	228.28	3.84	64138.5	14.27	31.83
MEDIUM DEVOLOPED STATES						
1. Tamil Nadu	86.47	350.57	3.88	49208	14.47	44.63
2. Karnataka	73.60	266.80	3.96	49104	12.21	29.09
3. West Bengal	61.40	210.00	3.80	67220	8.92	13.20
4. Kerala	84.00	270.80	3.90	37213	15.38	27.02
Average	76.36	274.54	3.88	50686	12.74	28.48
RELATIVELY BACKWARD STATES						
1. Madhya Pradesh	80.44	225.34	4.19	54259	NA	27.11
2. Uttar Pradesh	74.76	219.73	4.50	NA	4.96	23.62
3. Andhra Pradesh	93.30	306.49	4.30	NA	11.89	29.02
Average	82.83	250.52	4.33	54259	8.39	26.58
MOST BACKWARD STATES						
1. Bihar	60.61	215.00	4.15	71585	2.67	25.68
2. Orissa	84.50	201.50	4.25	49586	4.12	23.88
3. Rajasthan	79.00	264.00	4.08	NA	4.90	32.83
Average	74.70	226.83	4.16	60585	3.89	26.58
HILLY & NORTH EASTERN STATES						
1. Jammu & Kashmir	80.00	144.00	NA	33300	2.97	NA
2. Himachal Pradesh	84.30	151.00	3.10	32228	2.83	32.12
3. Sikkim	83.00	78.00	3.80	NA	NA	17.73
4. N.Eastern States	63.79	158.47	3.61	34372	5.66	15.10
Average	77.77	132.86	3.50	33300	3.82	21.65
All India Average	79.69	220.82	3.93	52095.6	9.25	27.55

Source: Report on the Performance of NRTUs 1977-78 and 1978-79. CIRT, Pune

Table 5.10

Physical Performance of STUs classified by Economic Regions (1986-87)

Name of State	F.U. (%)	V.U. (kms)	Fuel Effi. (kms/ Lit)	Tyre Performance (kms)	Av.Pas.Bs. / Av.St.Cap.	M.P.P. (kms)
RELATIVELY DEVELOPED STATES						
1. Maharashtra	78.94	245.58	3.86	95798	22.79	25.12
2. Gujarat	80.24	245.50	4.26	88227	18.74	30.30
3. Punjab	94.10	237.00	3.96	83000	7.28	41.07
4. Haryana	95.90	218.80	3.29	70280	7.38	53.98
Average	87.29	236.72	3.84	84326.2	14.04	37.61
MEDIUM DEVELOPED STATES						
1. Tamil Nadu	93.23	398.30	4.14	126560	15.85	49.62
2. Karnataka	87.40	289.70	4.30	76617	13.62	39.95
3. West Bengal	46.20	204.00	3.31	NA	5.40	16.35
4. Kerala	72.30	296.50	3.68	64841	19.36	21.51
Average	74.78	297.12	3.85	89339	13.55	31.85
RELATIVELY BACKWARD STATES						
1. Madhya Pradesh	87.10	229.00	4.13	62644	2.92	25.84
2. Uttar Pradesh	84.30	222.00	4.35	94660	3.84	27.20
3. Andhra Pradesh	95.40	302.00	4.85	93543	11.86	34.35
Average	88.93	251.00	4.44	83615.6	6.20	29.13
MOST BACKWARD STATES						
1. Bihar	42.80	211.20	3.88	NA	1.68	12.60
2. Orissa	83.70	240.10	4.02	73311	8.50	28.28
3. Rajasthan	90.80	268.00	4.61	91583	4.16	33.33
Average	72.43	239.76	4.17	82447	4.78	24.73
HILLY & NORTH EASTERN STATES						
1. Jammu & Kashmir	NA	NA	NA	NA	NA	NA
2. Himachal Pradesh	NA	NA	NA	NA	NA	NA
3. Sikkim	NA	NA	NA	NA	NA	NA
4. N.Eastern States	61.92	130.62	3.63	43442	1.98	12.89
Average	61.92	130.62	3.63	43442	1.98	12.89
All India Average	79.62	249.22	4.01	81885	9.69	30.15

Source: Report on the Performance of NRTUs 1985-86 and 1986-87. CIRT, Pune

efficieny during the period under study.

Most Backward States:

The average fuel efficiency of the most backward states was higher than national average in 1977-78 and also in 1986-87. The average fuel efficiency was also higher than the average fuel efficieny of developed states. Bihar show a marked decline, but Rajasthan recorded significant increase in its fuel efficiency during 1977-78 to 1986-87.

Hilly and North-Eastern States:

The average fuel efficiency of this region was the lowest in the country. The comparable data for 1986-87 is not available. North eastern states show a marginal improvement in fuel efficiency during the period under consideration.

Tyre Performance(in kms)

Relatively Developed States:

The average tyre performance of STUs belonging to developed states was higher than national average in 1977-78 and 1986-87. The average figure was second only to the average tyre performance of medium developed states in 1986-87. Maharashtra has shown considerable increase in tyre performance from 1977-78 to 1986-87. Haryana recorded low level of tyre performance in 1986-87.

Medium Developed States:

The average tyre performance of STUs operating in medium developed states show a peculiar picture. It was lower than national average in 1977-78, but recorded the highest tyre performance in 1986-87. This perhaps, due to the significant growth in the level of tyre performance in companies belonging to Tamil Nadu in 1986-87. Karnataka and Kerala also recorded encouraging trend in tyre performance during the period under study.

Relatively backward States:

Comparable data of tyre performance is available only for Madhya Pradesh in 1977-78. However, the tyre performance in Uttar Pradesh and Andhra Pradesh was higher than national average in 1986-87. All three states belonging to this region show encouraging trend in the level of tyre performance during the period under consideration.

Most Backward States:

The average tyre performance of STUs belonging to this region was higher than national average in 1977-78 and also in 1986-87. The STUs operating in Orissa and Rajasthan have shown considerable increase in 1986-87.

Hilly and North Eastern States

The tyre performance of STUs in these states was low in

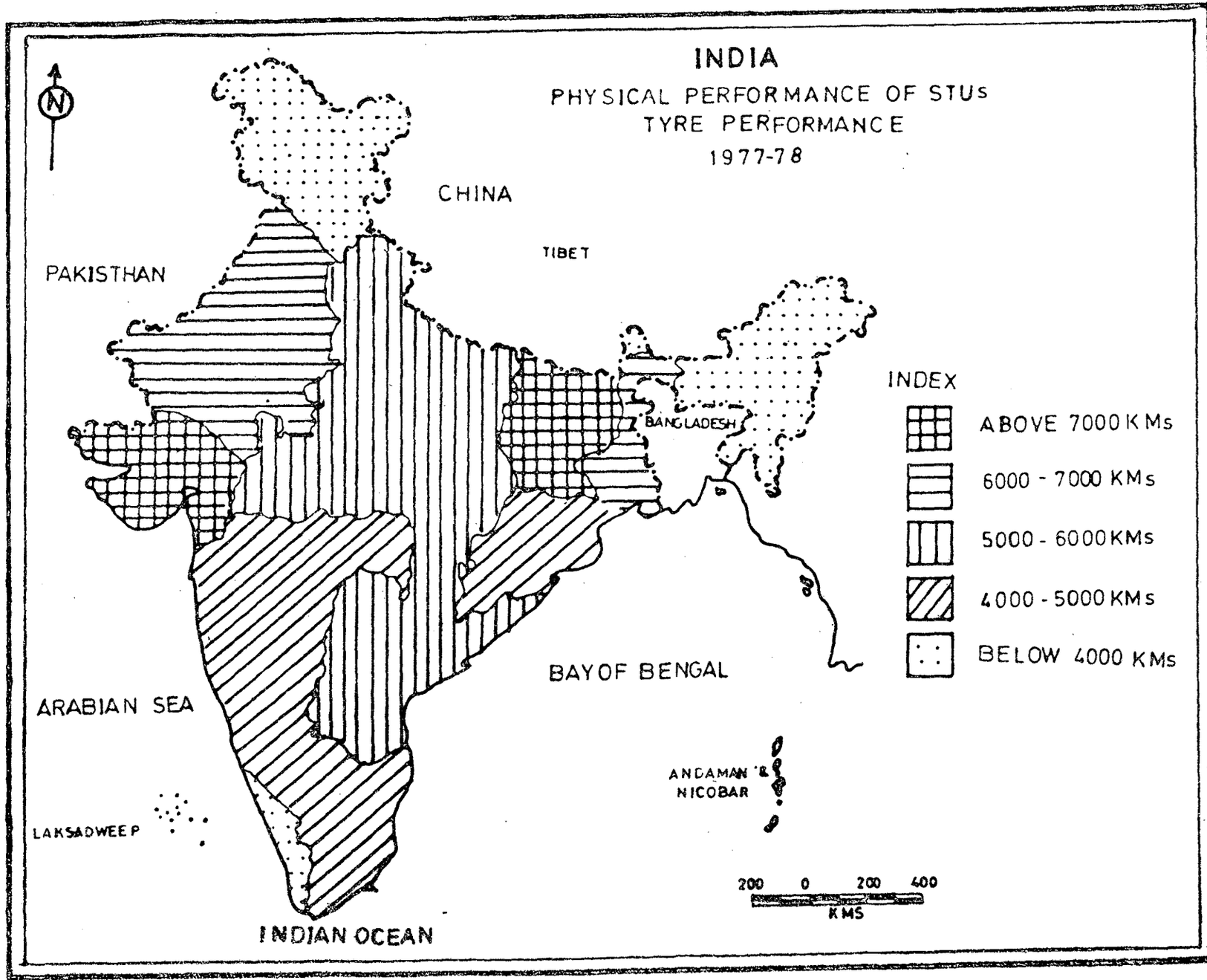

INDIA
PHYSICAL PERFORMANCE OF STUs
TYRE PERFORMANCE
1977-78
N
CHINA
TIBET
PAKISTHAN
BANGLADESH
INDEX
ABOVE 7000 KMs
6000 - 7000 KMs
5000 - 6000 KMs
4000 - 5000 KMs
BELOW 4000 KMs
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR
LAKSADWEEP
200 0 200 400
KMS
INDIAN OCEAN

FIG. 54

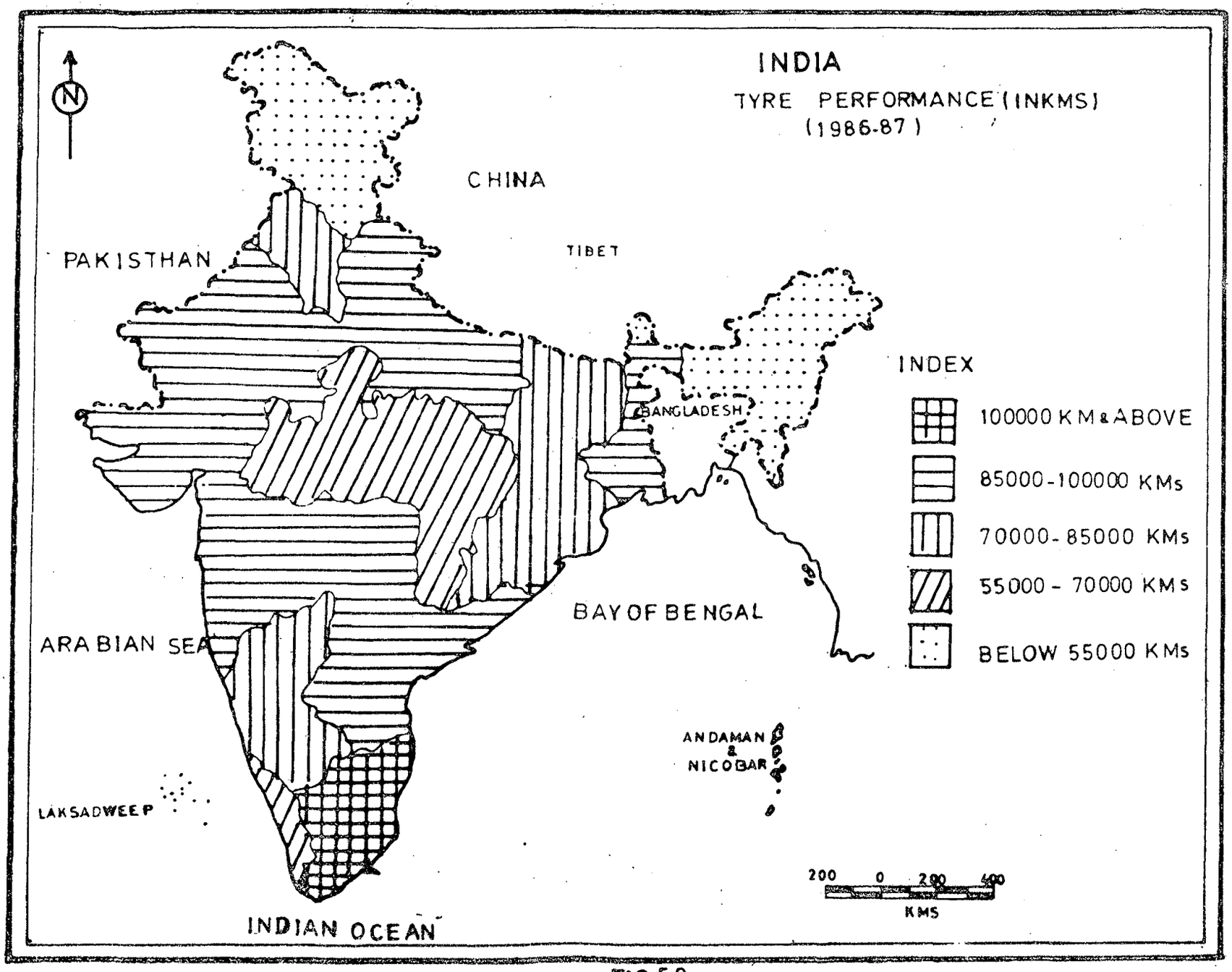

INDIA
TYRE PERFORMANCE (INKMS)
(1986-87)
CHINA
TIBET
PAKISTHAN
BANGLADESH
INDEX
100000 KM & ABOVE
85000-100000 KMs
70000-85000 KMs
55000 - 70000 KMs
BELOW 55000 KMs
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR
LAKSADWEEP
INDIAN OCEAN
200 0 200 400
KMS

FIG.5.9

1977-78, perhaps, due to the rugged terrain and the weather conditions could well be responsible for poor tyre performance. Comparable data is not available in 1986-87. North-Eastern States show marginal increase in the level of performance during the period under consideration.

Index of Carrying Capacity

Relatively Developed States:

The index of carrying capacity was the highest among all economic regions in 1977-78 and 1986-87. Almost all the STUs operating in this region show encouraging trend in their carrying capacity from 1977-78 to 1986-87.

Medium Developed States:

Medium developed states also recorded for a higher index of carrying capacity in 1977-78 and 1986-87. The index was second only to the average index of the developed states. Barring West Bengal, rest of the states show significant increase in their carrying capacity from 1977-78 to 1986-87.

Relatively backward States:

The index of carrying capacity of STUs of relatively backward states was lower than national average during both 1977-78 and 1986-87. The index shows significant decline in 1986-87. Andhra Pradesh alone recorded for relatively higher carrying capacity in 1986-87.

Most Backward States:

The index of carrying capacity of STUs operating in the region was comparatively very low, much lower than national average in 1977-78 and also in 1986-87. Orissa alone show some improvement in the level of carrying capacity during the period under study.

Hilly and North Eastern States:

The carrying capacity of STUs operating in hilly and north-eastern states was lower than national average, and also the lowest among all economic regions. Since the comparable data is not available in 1986-87, the trend could not be analysed. The North-eastern states show a declining trend in their carrying capacity from 1977-78 to 1986-87.

Manpower Productivity

Relatively Developed States:

The average manpower productivity of STUs of the relatively developed states was higher than national average, and was also the highest among all economic regions in 1977-78 and 1986-87. Almost all the States show significant improvement in their M.P.P. in 1986-87. The STUs operating in Punjab and Haryana have shown considerable growth in M.P.P. during 1986-87.

Medium Developed States:

The average manpower productivity of STUs of medium developed states was higher than national average in 1977-78

and 1986-87. The M.P.P. was second only to the average man power productivity of the developed states. West Bengal recorded very low M.P.P. in both points of time. Tamil Nadu and Karnataka have shown significant increase in their M.P.P.

Relatively Backward States:

The average M.P.P. of relatively backward states was lower than national average during 1977-78 and also in 1986-87. The trend show marginal improvement in 1986-87. The trend show marginal improvement in 1986-87. Rajasthan and Uttar Pradesh have recorded considerable increase in their manpower productivity in 1986-87.

Most Backward States:

The average manpower productivity of most backward states also was lower than national average in 1977-78 and 1986-87. The average M.P.P. show a decline in 1986-87, due to the drastic decline of manpower productivity in Bihar. Both Rajasthan and Orissa show increase in their M.P.P. during the period under study.

Hilly and North Eastern States:

The man power productivity of hilly and north-eastern states was the lowest in the country during 1977-78. The M.P.P. is higher than the national average in Himachal Pradesh. The comparable data is available only for the North-Eastern states which show a decline in their M.P.P. during 1977-78 to 1986-87.

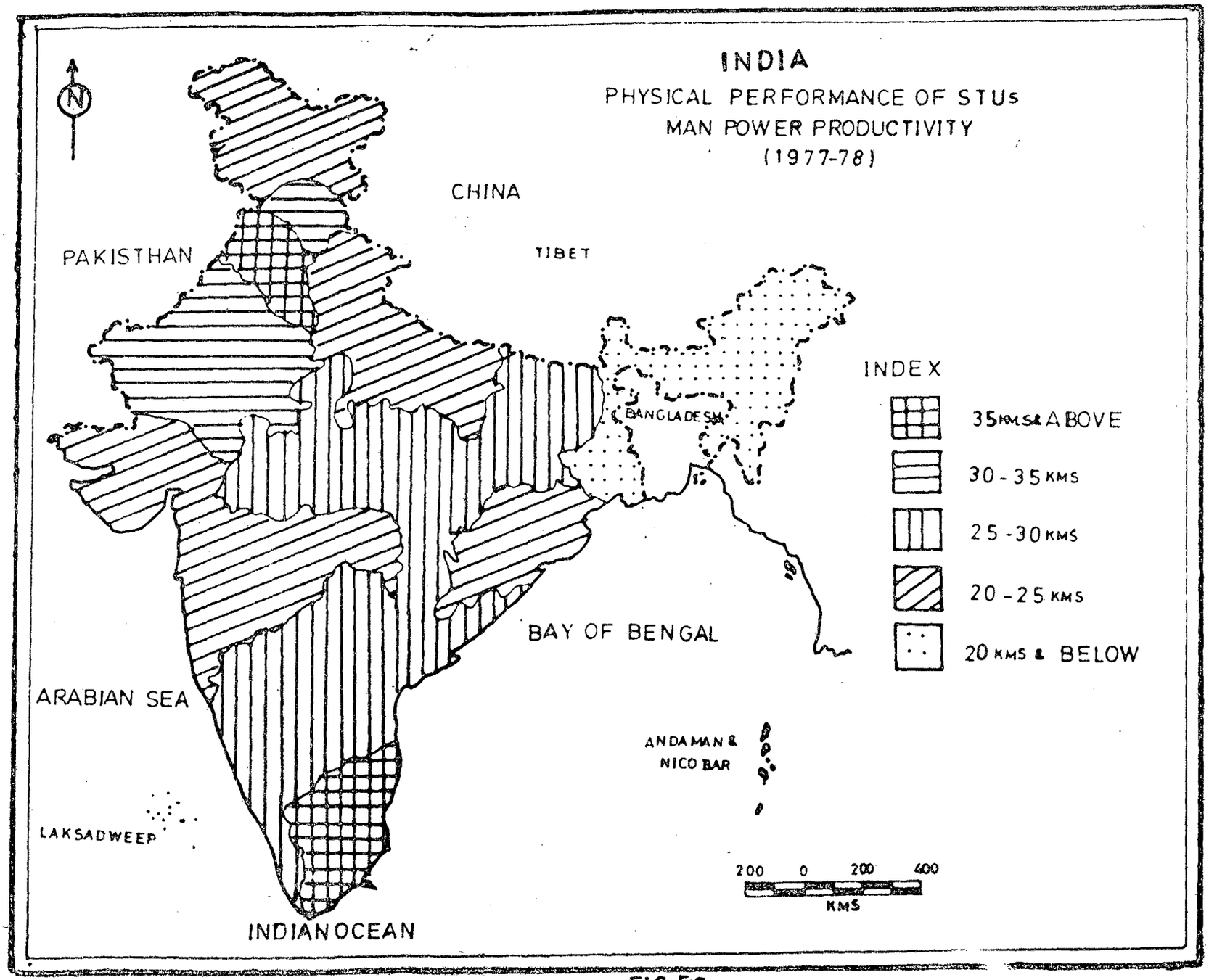

INDIA
PHYSICAL PERFORMANCE OF STUs
MAN POWER PRODUCTIVITY
(1977-78)
N
CHINA
PAKISTHAN
TIBET
BANGLADESH
INDEX
35 KMS & ABOVE
30 - 35 KMS
25 - 30 KMS
20 - 25 KMS
20 KMS & BELOW
BAY OF BENGAL
ARABIAN SEA
ANDAMAN &
NICOBAR
LAKSADWEEP
200 0 200 400
KMS
INDIANOCEAN

FIG. 5·5

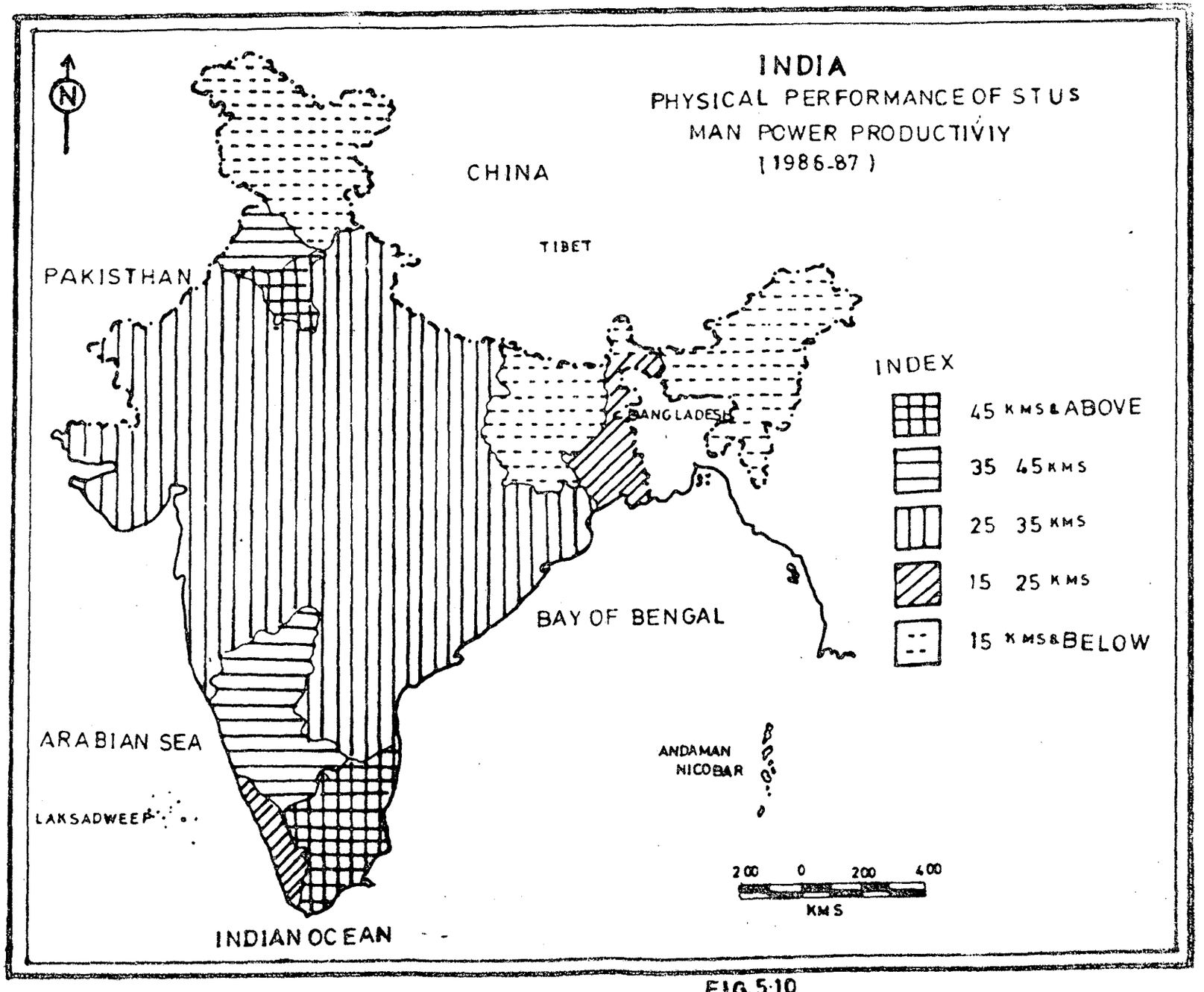

INDIA
PHYSICAL PERFORMANCE OF STUS
MAN POWER PRODUCTIVIY
(1986-87)
N
CHINA
TIBET
PAKISTHAN
BANGLADESH
BAY OF BENGAL
ARABIAN SEA
LAKSADWEEP
ANDAMAN
NICOBAR
INDIAN OCEAN
INDEX
45 KMS & ABOVE
35 45 KMS
25 35 KMS
15 25 KMS
15 KMS & BELOW
200 0 200 400
KMS

FIG. 5.10

An Overview of the Performance of the STUs classified by Economic Regions

The physical efficiency of the STUs in most states has recorded significant improvement in terms of the selected physical efficiency indicators. Both the developed and backward states have been showing a higher growth in physical performance during the period from 1977-78 to 1986-87. All the backward states, barring Bihar, have registered considerable improvements in their physical efficiency. The trend of physical performance is fairly satisfactory in the relatively developed states like Punjab, Gujarat, Tamil Nadu and Karnataka, and in the relatively backward states like Andhra Pradesh, Uttar Pradesh and Rajasthan. The physical performance trend is very much encouraging in the above states during the period under study.

Physical Performance of STUs Classified by Geographical Regions

This section of the analysis deals with the spatial variations in the physical performance of STUs operating in different parts of the country. A kind of inter-state comparison has been made. The states are classified into five regions on the basis of their spatial or geographical location. The inter-regional and intra-regionalvariations in the physical performance of STUs are analysed during the period 1977-78 to 1986-87. Table 5.11 and 5.12 provide the

basis for the analysis.

The major geographical regions and the states that belong to each of the regions is given below:

i) Northern States: The states belonging to this region are Jammu & Kashmir, Himachal Pradesh, Punjab and Haryana.

ii) Eastern States: This include the North-Eastern States, Sikkim, West Bengal and Bihar.

iii) Central States: Uttar Pradesh, Madhya Pradesh, & Orissa.

iv) Western States: It consists of Rajasthan, Gujarat & Maharashtra.

v) Southern States: This include Andhra Pradesh, Karnataka, Tamil Nadu and Kerala.

FLEET UTILISATION:(F.U)

Northern States: The average fleet utilisation of STUs of Northern states was higher than national average, and it was also the highest among all the regions in the country during 1977-78 and 1986-87, as well. The level of fleet utilisation in the Northern states was uniformly high and consistently increasing during the period under study.

Eastern States: The average F.U. of STUs of Eastern States

was not only lower than national average but also was the lowest in the country during 1977-78 and 1986-87. There has been significant decline in F.U. in 1986-87. All the states of this region show declining trend. The declining trend in West Bengal and Bihar is quite alarming.

Central States: The average level of fleet utilisation of STUs belonging to Central States was higher than national average in 1977-78 and 1986-87. The average F.U. was also higher than the average F.U. of STUs of Eastern and Western States in 1986-87. All three states belonging to Central region have recorded uniformly higher level of F.U. in 1986-87. trend is highly encouraging for the Central States as a whole during the period 1977-78 to 1986-87.

Western States: The average F.U. of STUs operating in the western states was higher than national average in 1977-78 and 1986-87. In 1977-78, the F.U. of STUs of Western States was better than the average F.U. of Eastern and Central States, while in 1986-87 it was better only to the average of Eastern states. However, the F.U. has considerably increased in 1986-87.

South States: The average fleet utilisation of southern states was higher than national average, and it was also higher than the averages of rest of the regions excepting the northern states during both 1977-78 and also in 1986-87. Barring Kerala, all the Southern States registered

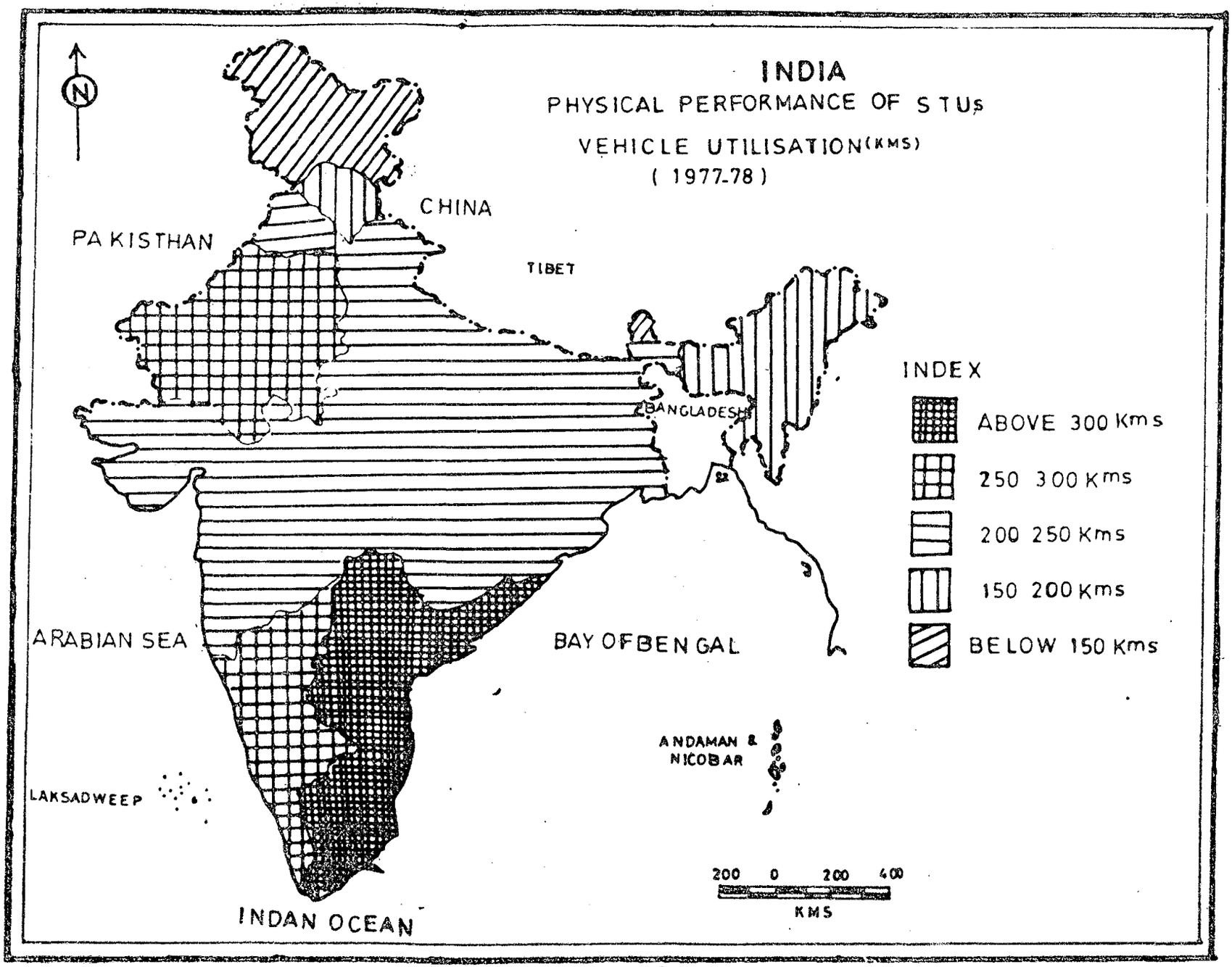

INDIA
PHYSICAL PERFORMANCE OF STUs
VEHICLE UTILISATION(KMS)
(1977-78)
N
CHINA
PAKISTHAN
TIBET
BANGLADESH
INDEX
ABOVE 300 Kms
250 300 Kms
200 250 Kms
150 200 Kms
BELOW 150 Kms
ARABIAN SEA
BAY OF BENGAL
ANDAMAN & NICOBAR
LAKSADWEEP
INDAN OCEAN
200 0 200 400
KMS

FIG. 5-2

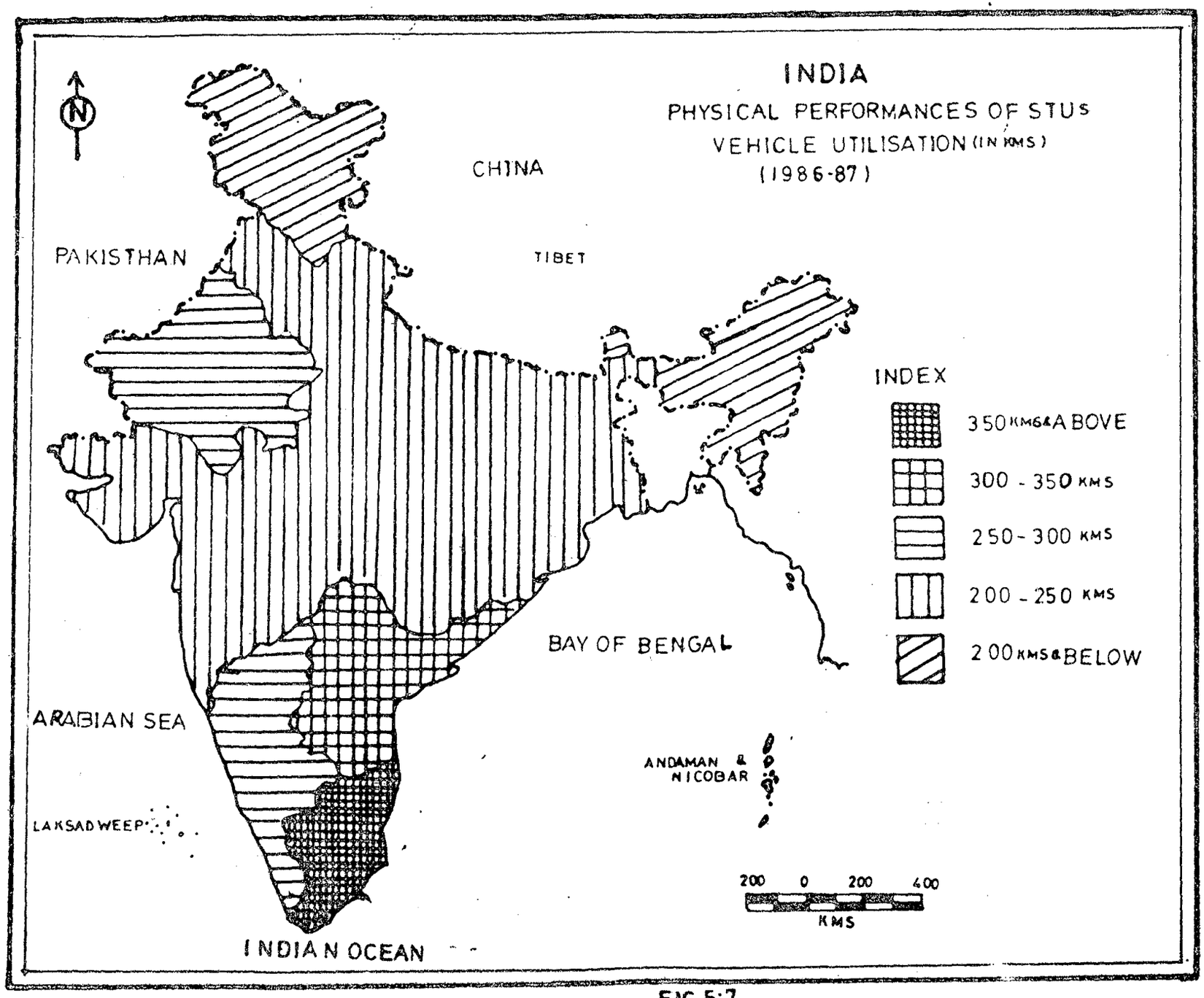

INDIA
PHYSICAL PERFORMANCES OF STUS
VEHICLE UTILISATION (IN KMS)
(1986-87)
N
CHINA
PAKISTHAN
TIBET
INDEX
350 KMS & ABOVE
300 - 350 KMS
250 - 300 KMS
200 - 250 KMS
200 KMS & BELOW
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR
LAKSADWEEP
200 0 200 400
KMS
INDIAN OCEAN

FIG.5·7

significant increase in their fleet utilisation during the period under consideration.

Vehicle Utilisation

Northern States: The average vehicle utilisation of STUs operating in the northern states was lower than national average in 1977-78 and 1986-87. It was also lower than the average V.U. of all other regions, but for the Eastern States. Haryana shows significant decline in its vehicle utilisation in 1986-87. The average V.U. of northern states as a whole has shown considerable increase during the period under study.

Eastern States: The average V.U. of Eastern States was not only lower than national average, but also the lowest in the country durin g 1977-78 and also in 1986-87. Almost all the states in Eastern Region have registered significant decline in V.U. during 1977-78 to 1986-87.

Central States: The average vehicle utilisation of central states was lower than national average in both pooints of time under study. The average V.U. was higher than the averages of Northern and Eastern States in 1986-87. However, the level of V.U. has shown improvements in all the Central states during 1986-87.

Western States: The average vehicle utilisation of STUs operating in the western region was higher than national

average in 1977-78 and 1986-87. The average V.U. was also higher than the averages of the Eastern and Central states. All States belonging to the western states have shown significant increase in vehicle utilisation during 1977-78 to 1986-87.

Southern States: The Southern States recorded for the highest vehicle utilisation in the country in 1977-78 and 1986-87, as well. All four states of southern region show significant increase in vehicle utilisation in 1986-87. Tamil Nadu,in particular, recorded the highest V.U. in the country during the period under study.

Fuel Efficiency

Northern States: The average fuel efficiency of STUs of the Northern states was the lowest in 1977-78 and was similar in 1986-87 also. Haryana shows significant decline in fuel efficiency during 1986-87. The fuel efficiency of the northern states as a whole, is considerably low during the period 1977-78 to 1986-87,

Eastern States: The average fuel efficiency of the STUs that are operating in the eastern states was lower than national average during both points of time under study. However, it was better than the average fuel efficiency of STUs of Northern region in 1977-78. The fuel efficiency was lowest in the country in 1986-87. It has also declined considerably during the period under study.

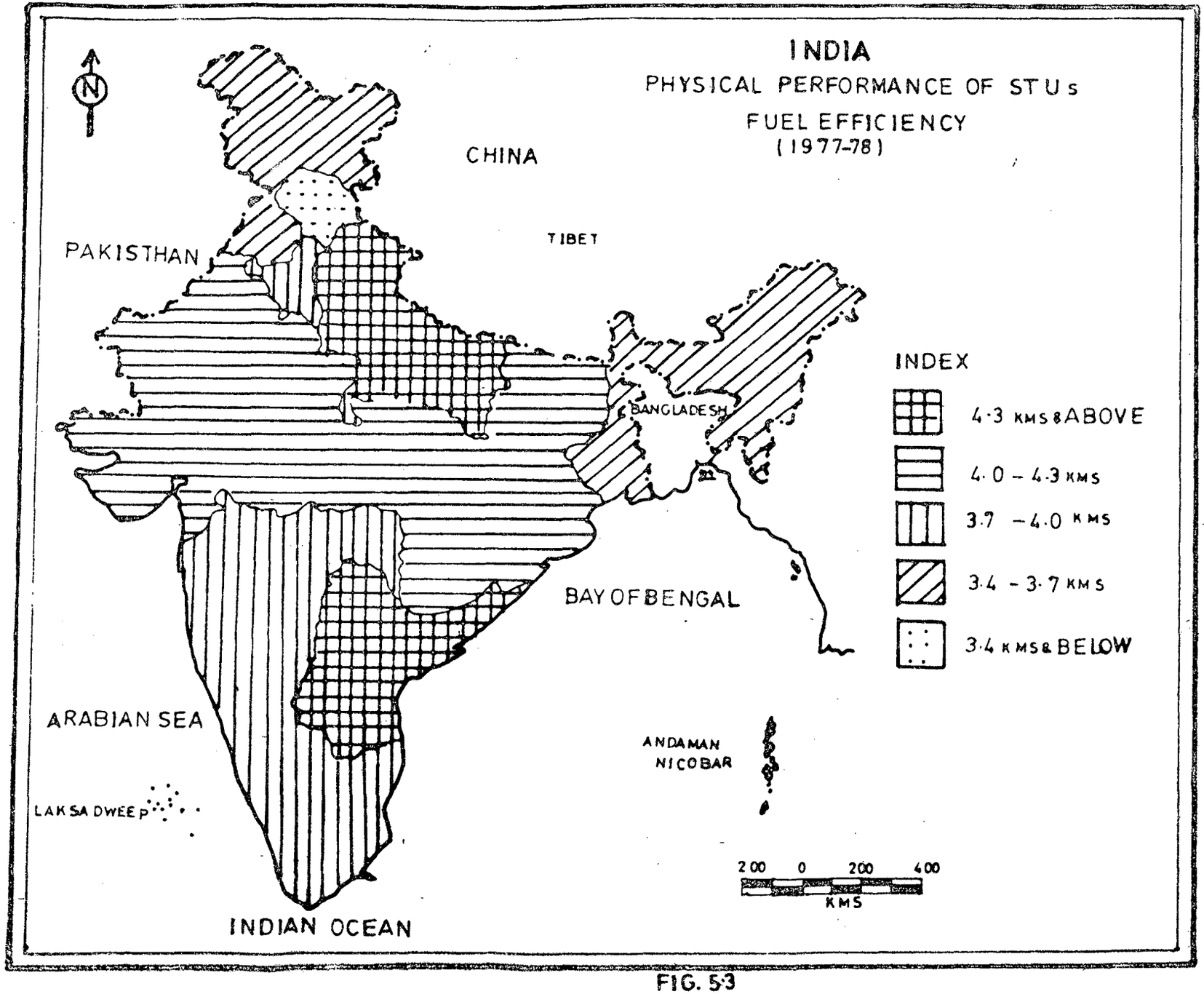

INDIA
PHYSICAL PERFORMANCE OF STUs
FUEL EFFICIENCY
(1977-78)
CHINA
TIBET
PAKISTHAN
BANGLADESH
BAY OF BENGAL
ARABIAN SEA
LAKSADWEEP
ANDAMAN
NICOBAR
INDIAN OCEAN
INDEX
4·3 KMS & ABOVE
4·0 – 4·3 KMS
3·7 – 4·0 KMS
3·4 – 3·7 KMS
3·4 KMS & BELOW
200 0 200 400
KMS

FIG. 5·3

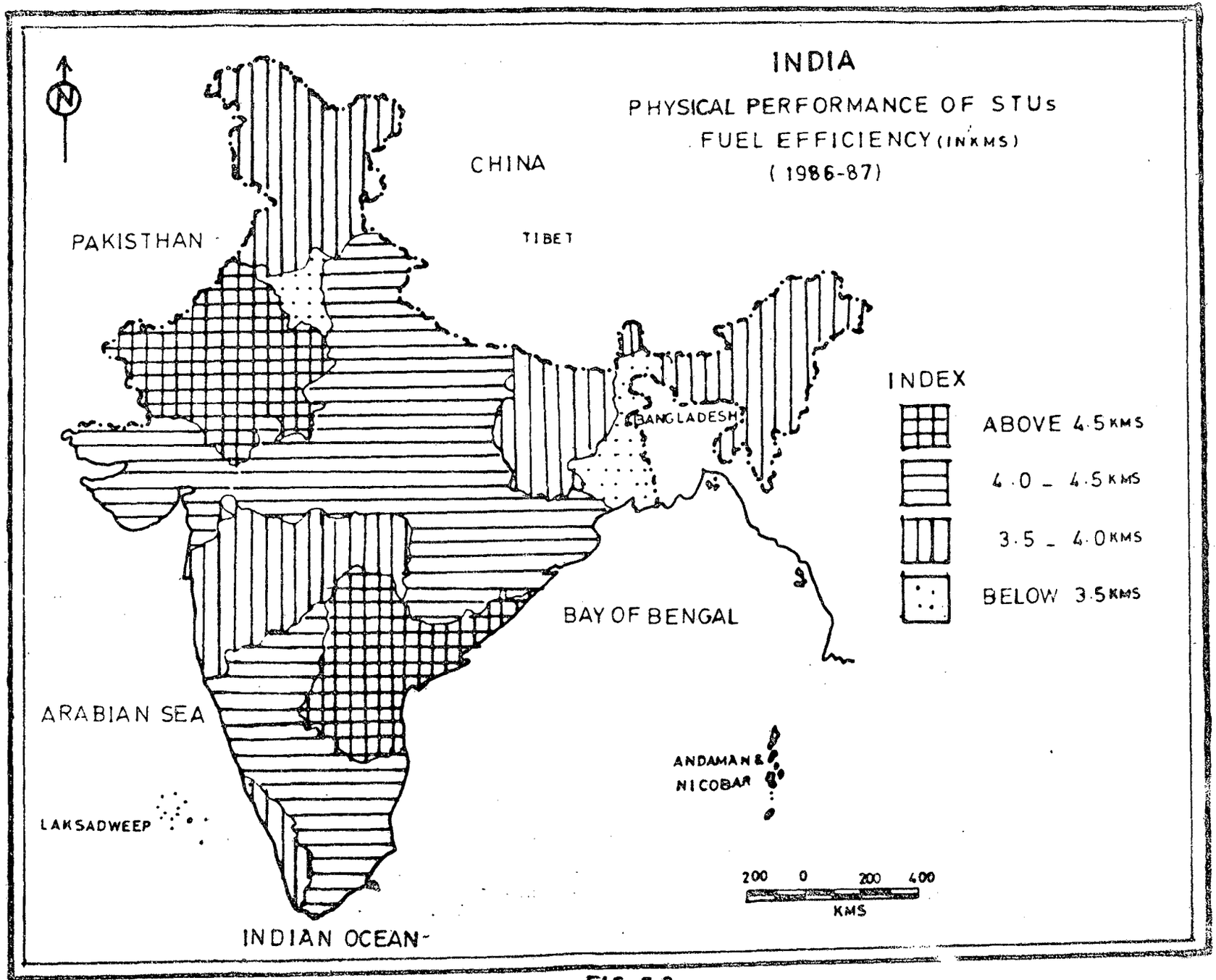

INDIA
PHYSICAL PERFORMANCE OF STUs
FUEL EFFICIENCY (IN KMS)
(1986-87)
CHINA
PAKISTHAN
TIBET
BANGLADESH
BAY OF BENGAL
ARABIAN SEA
INDIAN OCEAN
LAKSADWEEP
ANDAMAN & NICOBAR
INDEX
ABOVE 4.5 KMS
4.0 - 4.5 KMS
3.5 - 4.0 KMS
BELOW 3.5 KMS
200 0 200 400
KMS

FIG. 5.8

Central States:

The average fuel efficiency of central states was higher than national average in 1977-78 and 1986-87. In fact, it was the highest in the country 1977-78. Though there is a marginal decline in fuel efficiency in 1986-87, the STUs of central states still manages to show a figure better than national average.

Western States:

The average fuel efficiency of STUs of Western States was higher than national national average in 1977-78 and 1986-87. It was the highest in the country during 1986-87. Gujarat and Rajasthan recorded for significant increase in fuel efficiency in 1986-87. The fuel efficiency trend show significant increase during the period under study.

Southern States:

The average fuel efficiency was higher than national average in both 1977-78 and 1986-87. The average fuel efficiency was the highest in 1986-87. Barring Kerala three states have shown significant increase in fuel efficiency from 1977-78 to 1986-87.

TYRE PERFORMANCE (in kms)

Northern States:

Comparable data in 1977-78 is available only for Himachal Pradesh, which was lower than National average. The average tyre kms of STUs of Northern states was lower than national

average in 1986-87. The tyre kms of Punjab was above national average in 1986-87.

Eastern States:

The average tyre performance of STUs of eastern states was higher than national average in 1977-78. Both West Bengal and Bihar recorded fairly high tyre kms well above the national as well as the averages of all other regions in 1977-78. However, in 1986-87, the tyre performance data is not available for comparison. North-eastern states have shown some improvement in their tyre kms in 1986-87.

Central States:

The average tyre kms of STUs of central states was lower than national average in 1977-78 and 1986-87. Uttar Pradesh alone recorded relatively higher tyre kms in 1986-87. The average tyre kms was lower than the average tyre kms of southern and western states in 1986-87. All the STUs of central states have shown significant increase in their tyre performance during the period under study.

Western States:

STUs of the western states recorded for the highest average tyre kms in both 1977-78 and 1986-87. All the states of western region registered uniformly higher tyre performance in 1986-87. The increase in tyre kms was very much significant in Maharashtra in 1986-87.

Table 5.11

Physical Performance of STUs classified by Geographical Region (1977-78)

Name of State	F.U. (%)	V.U. (kms)	Fuel Effi. (Kms/ Lit)	Tyre Performance (kms)	Av.Pas.Bs. / Av.St.Cap.	M.P.P. (kms)
NORTHERN STATES						
1. Jammu & Kashmir	80.00	144.00	3.51	N.A.	2.97	N.A.
2. Himachal Pradesh	84.30	151.00	3.10	32228	2.83	32.12
3. Punjab	87.50	206.90	3.63	N.A.	6.70	36.56
4. Haryana	94.00	256.70	3.80	N.A.	5.84	45.03
Average	86.45	189.65	3.51	32228	4.58	37.90
EASTERN STATES						
1. N.Eastern States	63.79	158.47	3.61	34372	5.66	15.10
2. Sikkim	83.00	78.00	3.80	N.A.	N.A.	17.73
3. West Bengal	61.40	210.00	3.80	67220	8.92	13.20
4. Bihar	60.61	215.00	4.15	71585	2.67	25.68
Average	67.20	163.36	3.84	57725.6	5.75	17.92
CENTRAL STATES						
1. Uttar Pradesh	74.76	219.73	4.50	N.A.	4.96	23.62
2. Madhya Pradesh	80.44	225.34	4.19	54259	N.A.	27.11
3. Orissa	84.50	201.50	4.25	49586	4.12	23.88
Average	79.90	215.52	4.31	51922.5	4.54	24.87
WESTERN STATES						
1. Rajasthan	79.00	264.00	4.08	N.A.	4.90	32.83
2. Gujarat	79.26	231.50	4.05	80577	19.40	24.31
3. Maharashtra	84.66	218.03	3.91	47700	25.14	21.44
Average	80.97	237.84	4.01	64138.5	16.48	26.19
SOUTHERN STATES						
1. Andhra Pradesh	93.30	306.49	4.30	N.A.	11.83	29.02
2. Karnataka	73.60	266.80	3.96	49104	12.21	29.09
3. Tamil Nadu	86.47	350.57	3.88	49208	14.47	44.63
4. Kerala	84.00	270.80	3.90	37213	15.38	27.02
Average	83.34	298.66	4.01	45175	13.47	32.44
All India Average	79.69	220.82	3.93	52095.6	9.25	27.55

Source: Report on the Performance of NRTUs 1977-78 and 1978-79. CIRT, Pune

Table 5.12

Physical Performance of STUs classified by Geographical Regions (1986-87)

Name of State	F.U. (%)	V.U. (kms)	Fuel Effi. (kms/ Ltr)	Tyre Performance (kms)	Av.Pas.Bs. ------ Av.St.Cap.	M.P.P. (kms)
NORTHERN STATES						
1. Jammu & Kashmir	NA	NA	NA	NA	NA	NA
2. Himachal Pradesh	NA	NA	NA	NA	NA	NA
3. Punjab	94.10	237.00	3.96	83000	7.28	41.07
4. Haryana	95.90	218.80	3.29	70280	7.38	53.98
Average	95.00	227.90	3.62	76640	7.33	47.52
EASTERN STATES						
1. N.Eastern States	61.92	130.62	3.63	43442	1.98	12.89
2. Sikkim	NA	NA	NA	NA	NA	NA
3. West Bengal	46.20	204.00	3.31	NA	5.40	16.35
4. Bihar	42.80	211.20	3.88	NA	1.62	12.60
Average	50.30	181.94	3.60	43442	3.02	13.94
CENTRAL STATES						
1. Uttar Pradesh	84.30	222.00	4.35	94660	3.84	27.20
2. Madhya Pradesh	87.10	229.00	4.13	62644	2.92	25.84
3. Orissa	83.70	240.10	4.02	73311	8.50	28.28
Average	85.03	230.36	4.16	76871.6	5.08	27.10
WESTERN STATES						
1. Rajasthan	90.80	268.00	4.61	91583	4.16	33.33
2. Gujarat	80.24	245.50	4.26	88227	18.74	30.30
3. Maharashtra	78.94	245.58	3.86	95798	22.79	25.12
	83.32	252.86	4.24	91869.3	15.23	29.58
SOUTHERN STATES						
1. Andhra Pradesh	95.40	302.00	4.85	93543	11.86	34.35
2. Karnataka	87.40	289.70	4.30	76617	13.62	39.95
3. Tamil Nadu	93.23	398.30	4.14	126560	15.85	49.62
4. Kerala	72.30	296.50	3.68	64841	19.36	21.51
Average	87.08	321.62	4.24	90390.2	15.17	36.35
All India Average	79.62	249.22	4.01	81885	9.69	30.15

Source: Report on the Performance of NRTUs 1985-86 and 1986-87. CIRT, Pune

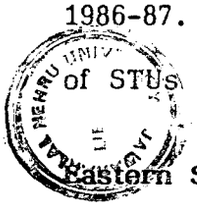
Southern States:

The average tyre kms of southern states was lower than national average in 1977-78, and was also more or less the lowest tyre kms in the country. But, in 1986-87, the tyre kms improved remarkably. Almost all southern states have shown significant increase in their tyre kilometres during the period under study.

INDEX OF CARRYING CAPACITY

Northern States:

The index of carrying capacity of STUs of northern states was lower than national average in 1977-78 and 1986-87. The index was also lower than western and southern states in 1986-87. There has been some increase in the carrying capacity of STUs operating in the northern states in 1986-87.



Eastern States:

The average was lower than national average in 1977-78 and 1986-87. However, the average carrying capacity was higher than the averages of northern and central states. But, in 1986-87 the carrying capacity of eastern states was the lowest in the country. There has been significant decline in carrying capacity of STUs of eastern states during the period under study.

Central States:

The carrying capacity of STUs of central states was lower than national average in 1977-78 and 1986-87. The carrying capacity of central states was better only to the average of eastern states, in 1986-87. The index recorded a marginal increase in 1986-87 due to the significant increase in Orissa. By and large, the index of carrying capacity of STUs operating in central states is rather low and unsatisfactory during 1977-78 to 1986-87.

Western States:

The index was higher than national average in 1977-78 and 1986-87. It was the highest in 1977-78, while second only to the carrying capacity of STUs of southern states in 1986-87. The index show a marginal decline in 1986-87, all states belong to western region show declining trend in the index of carrying capacity during the period under study.

Southern States:

The index was higher than national average in 1977-78 and 1986-87. It was the highest in 1986-87. All four states show encouraging trend in their carrying capacity during the period under consideration.

MANPOWER PRODUCTIVITY (in kms)

Northern States:

The average man power productivity of STUs of northern region was higher than national average in 1977-78 and 1986-87. The M.P.P. shows considerable increase in 1986-87. The average M.P.P. of northern states was the highest among the all regions in 1977-78 and also in 1986-87. There has been consistent increase in man power productivity in the northern states during the period under study.

Eastern States:

The average M.P.P. of eastern states was the lowest in the country during both 1977-78 and 1986-87. The average M.P.P. show a decline in 1986-87.

Central States:

The average man power productivity of central states was lower than national average in 1977-78 and in 1986-87, as well. There has been some increase in average M.P.P. in 1986-87. Uttar Pradesh and Orissa have shown marginal increase in M.P.P. during the period under consideration.

Western States:

The average M.P.P. was lower than national average in 1977-78 and 1986-87. But, the average M.P.P. shows improvements

in 1986-87. The M.P.P. of western states was higher than the average of eastern and central states in 1986-87. All three states grouped under western region recorded significant increase in their M.P.P. during 1977-78 to 1986-87.

Southern States:

The average man power productivity of southern states was higher than national average in 1977-78 and also in 1986-87. It was also higher than the averages of east, central and western states. All the southern states, excepting Kerala, have shown significant increase in their man power productivity in 1986-87.

AN OVER VIEW OF THE PHYSICAL PERFORMANCE OF STUs CLASSIFIED BY GEOGRAPHICAL REGIONS

The physical efficiency of state transport undertakings have been showing significant improvements in all the geographical regions, in general, during the period 1977-78 to 1986-87. However the physical performance of STUs operating in the eastern region which include the north eastern states, Sikkim, West Bengal and Bihar is not that encouraging during the period under study. All the above four states of eastern region have registered significant decline in their physical performance in 1986-87. The low physical efficiency of STUs belonging to the north-eastern states can be perhaps attributed to the reasons beyond their control in general. But,

the poor efficiency of STUs of West Bengal and Bihar during the period under study seems to be quite unreasonable on any accounts. However, the physical performance of STUs operating in rest of the regions is quite encouraging. The improvements in the physical performance of STUs that belong to the southern states are very significant during the period under study.

SUMMARY OF RESULTS

There can be little or no disagreement that the state transport undertakings in India, as a whole, have shown. Significant improvements in their physical performance during the period 1977-78 to 1986-87. The transport undertakings belonging to Tamilnadu, in particular registered relatively higher growth than the other forms of transport undertakings during the period under study. The transport corporations also have shown considerable improvements in physical efficiency which is higher than the increase in the physical performance of STUs operating under Municipal Undertakings and Government Departments. However, the STUs of government departments and municipal undertakings too have registered modest increase in their physical performance during the period under study.

For example, See P. Subramanium, "Organisational Set Up of Road Transport" (1987) and J. Satyanarayana, "The Working of the APSRTC".

Table 5.13

Capacity Utilization and Productivity of STUs as a whole 1976-77 to 1986-87

PARTICULARS	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
1. Total Fleet	56040	58123	61661	65248	69550	73890	75708	76639	80184	83986	88809
2. Fleet Utilization(%)	79	80	79	78	84	84	82	84	84	85	88
3. Vehicle Utilization (average, perday, on road)	239.7	243.6	249.7	254.8	257.5	261.3	257.0	262.6	261.4	267.1	272.4
4. Vehicle Utilization (total fleet held)	189.4	194.9	197.3	198.8	216.3	219.4	212.8	221.1	219.6	227.0	238.9
5. Bus kms/employee (Man Power Productivity)	26.3	27.2	26.3	26.6	26.1	27.4	26.9	28.4	28.1	28.7	30.2
6. Bus Kms/Litre of Diesel (Fuel Efficiency)	4.07	4.10	4.08	4.10	4.10	4.10	4.02	4.07	4.07	4.13	4.21
7. Tyre Performance (Averge per tyre)	54	58	62	61	61	62	62	63	67	70	76

Source: Report on the performance of Nationalised Road Transport Undertakings, Compiled by CIRT, Pune, from time to time.

Transport undertakings having four-tier organisational structure have shown relatively better performance than in the STUs of three-tier structure as against the general observation. However, the performance of STUs of two-tier system was the best among on the three organisational structures during the period under study.

The Physical efficiency has shown considerable improvements during 1977-78 to 1986-87 in the larger transport undertakings such as Maharashtra, Andhra Pradesh, Gujarat, Karnataka and Uttar Pradesh SRTCs. On the other hand relatively smaller transport undertakings, interms of fleet strength, operating in the states of Bihar and West Bengal, in particular, have registered low performance during the same period.

No definite pattern, or trend of change in physical performance could be identified from the analysis based on the classification of STUs by economic regions. In other words, both the developed and as well as the backward states, in general, have registered significant improvements in their

physical efficiency during the period under study. On the other hand, relatively developed states like Maharashtra* and Haryana have shown considerable decline in some of the physical efficiency indicators like fleet utilisation, vehicle utilisation and fuel efficiency during the period under study. The transport undertakings belonging to West Bengal (one of the developed states) and Bihar (a backward state) have registered for the lowest physical performance in 1977-78 and 1986-87, as well. Almost all the states, barring West Bengal, Bihar and the North-Eastern states, have recorded significant improvements in the physical performance during the period under consideration.

A definite pattern emerges out of the analysis of STUs based on Geographical Regionalisation. The State transport undertakings belonging to all the regions, excepting the Eastern states, have shown consistently improving trend in the physical performance during the period from 1977-78 to 1986-87.

The physical performance trend is relatively more encouraging in the STUs operating in the southern, the central and

---

* Here, Maharashtra include MSRTC and other Municipal undertakings in Maharashtra, barring the BEST undertaking.

and the western states. The eastern region, which consisting the north eastern states, Sikkim, West Bengal and Bihar have registered the lowest physical performance during the period under study.

CHAPTER VI

AN ANALYSIS OF OPERATIONAL PERFORMANCE OF STATE TRANSPORT UNDERTAKINGS (1977-78 to 1986-87)

An attempt has been made, here, to analyse the variations in the operational economics and the cost-revenue structure of State Transport Undertakings in India, during the period 1977-78 to 1986-87. Firstly, the Variations in the percentage share of the cost elements such as personnel, material, taxes, interest and depreciation are analysed. The spatial variations in the cost structure of state transport undertakings is analysed for the period under study. Secondly, a sort of cost-revenue analysis is carried out within a comparative perspective for the same period. Finally, the trends in cost and the revenue and the regional variations in the operational performance of the State transport undertakings operating under different set of socio-economic conditions, is brought out, in general. For the purpose of analysis here, the STUs have been classified in a fashion similar to the one adapted in Chapter V.

"Passenger transport operations lead to the production a service which is paid for by those who enjoy it. Thus, there is a cost incurred in producing the transport service and a revenue arising out of its consumption." [1] Operational economics is nothing but the existing relationship between the cost and the revenue. In other words, how far the cost and the revenue are synchronized with each other could well be taken as the operational economics, in general. It is often argued that "taxes and interests should not be considered

---

1. P.G. Patankar, "Road Passenger Transport in India", 1984, p.71.

for comparing the performance of STUs since the tax rates vary from state to state. It is further argued that through taxes the transport industry contributes to developmental programmes of the states and, therefore, the operating cost should exclude the taxes. As regards interest, it is often viewed as a financial cost and, therefore, not an element of the total operating cost."[2] But, it can be considered as a return on the total capital. On the other hand, it is argued that the Government levies taxes on STUs for the services and infrastructural support that provided to them. The NTPC also argued that it should be taken into account the fact that unlike the railways, the road transport does not pay directly for the maintenance and capital costs of road works. As regards interest, it can be argued that if the Government had made that investment in any other sector instead of transport, it would have received certain amount of return for the investment. Hence, interest is considered as a component in the operating cost. Furthermore, the basic purpose of the present exercise is to bridge the gap between the cost and the revenue, and, therefore, taxes and interest are considered for the analysis.

Following indicators are considered for the analysis.

i) Personnel Cost : The costs involved in employing the personnel in (a) traffic, (b) workshop and maintenance, (c) other staff, and (d) P.F. Welfare & Superannuation etc.

ii) Material Cost : The cost involved in fuel, lubricants, auto spare parts, tyres and tubes, and reconditioning of assy. & buses.

---

2. Ibid pp. 71-73.

iii) **Taxes :** It consist of the motor vehicle tax, passenger tax, other taxes on vehicles, and miscellaneous taxes.

iv) **Interest :** It include the interests to Central Government, State Government and interest on borrowings.

v) **Depreciation :** The analysis confines to the depreciation on vehicles only.

vi) **Cost per kilometre (CPKM in Paise) :** The cost of operation in absolute terms does not by itself indicate the efficiency or otherwise of the service operated. Hence, a relative measure of costs has to be worked out to compare the cost of producing the service with the rate of earnings. Cost per kilometre is one of such relative measures, which is computed by selecting effective kilometre as a unit of measurement. The CPKM is computed by dividing the total cost of operations by the total effective kilometres.

vii) **Traffic Revenue or Operating Revenue (Per km in Paise) :** Traffic Revenue is the income realised from transportation of passengers and incidental sources related to transportation of passengers constitutes traffic revenue. The sources of traffic revenue include sale of passenger tickets, charges for accompanied luggage, reservation charges, casual contract services, and Postal Mail charges. Since the income from the above source is directly related to actual conveyance or operations, it is also known as 'Operating Revenue.'

viii) **Other Revenue (Per km in Paise) :** Income from other sources not directly related to transportation of passengers constitutes other

revenue or miscellaneous or non-operating revenue. For example, the revenue earned from advertisements, royalties, interest on investments, rents from hire of property and other miscellaneous sources.

ix **Total Revenue/Earnings per kilometre (EPKM)**

Revenue in absolute terms without reference to kilometres will not correctly reflect the 'profitability' of the operation. The EPKM is calculated as under:

$$EPKM = \frac{\text{Total Earnings}}{\text{Total Effective Kilometres}}$$

The EPKM is expressed in terms of paise.

Operational Economics of STUs classified by Organisational Enactments

In this exercise, thirtyeight transport undertakings are considered for the analysis, of which nineteen are transport corporations, nine companies, four Government Departmental Undertakings and six are Municipal transport undertakings. The variations in the percentage share of different cost components to the total cost is analysed during the period between 1977-78 and 1986-87. Table 6.1 to Table 6.8 provide the basis for the analysis.

"It is considered that by informing productivity of personnel and material, cost per unit of operation can be economised. Therefore, cost on personnel and material can be classified as controllable costs."[3] While some other scholars have classified the personnel and material costs as direct

---

3. "The Compendium of the Transport Terms", CIRT, Pune, 1984. p.60-62.

operational cost.[4] On the other hand, taxes and interest are the costs which are beyond the control of the transport undertakings, and are dependent mostly on the policies of the Government. Depreciation, to a large extent, dependent on the decisions taken by the Board of Directors of the transport undertakings, in general. Therefore, taxes, interest and depreciation are classified as non-controllable costs.

CONTROLLABLE COSTS (Personnel and Material)

Corporations :

There has been a marginal decrease in the average percentage of controllable costs to the total cost during the period under study. The reduction in the percentage share of material costs is very significant in most STUs. But, the percentage of personnel cost has registered considerable increase during 1977-78 to 1986-87. The average percentage of controllable costs of the corporations was the lowest in the country in 1986-87, and it was also less than the national average in 1977-78 and in 1986-87. The variations in the percentages of controllable costs between corporations have shown considerable decrease in 1986-87. The percentage share of material cost was higher than the personnel cost in 1977-78, but, the trend got reversed in 1986-87. Most STUs have registered significant decline in the share of material costs during the period under study.

Companies :

The percentage of Controllable costs of the transport companies has registered

---

4. Santosh Sharma, "Productivity in Road Transport", ASRTU, New Delhi. p. 230.

Table 6.1

Operational Economics of STUs classified by Organisational Enactments

(1977-78) (Paise/Eff. Km)

Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
CORPORATIONS									
1. APSTRACT	66.29	71.86	138.15	31.78	3.33	22.23	57.34	208.08	206.40
2. Assam STC	76.95	96.42	173.37	13.58	7.66	N.A.	21.24	224.06	212.16
3. Bihar STC	77.61	78.15	155.76	39.50	19.36	25.78	84.64	249.75	180.72
4. Calcutta STC	239.28	184.69	423.97	6.98	148.13	65.37	220.48	666.28	251.66
5. Delhi TC	97.72	93.79	191.51	5.34	51.73	25.35	82.42	279.21	158.96
6. Gujarat SRTC	70.24	64.76	135.00	54.95	7.19	22.32	84.44	231.99	223.58
7. H.P. SRTC	72.00	117.00	189.00	10.00	12.00	35.00	57.00	251.00	224.00
8. J&K SRTC	61.00	98.00	159.00	N.A.	6.00	N.A.	6.00	170.00	167.00
9. Karnataka SRTC	69.70	71.24	140.94	28.82	8.27	20.92	58.01	222.72	216.97
10. Kerala SRTC	86.41	82.75	169.16	30.50	5.90	12.40	48.80	224.97	210.00
11. M.P. SRTC	44.66	72.38	117.04	53.86	12.73	15.75	82.34	204.20	205.18
12. Malar SRTC	74.33	83.32	157.65	46.90	6.85	19.99	73.74	242.26	256.15
13. Manipur STC	108.00	102.00	210.00	7.00	35.00	N.A.	42.00	270.00	220.00
14. N. Bengal STC	113.00	87.00	200.00	2.00	35.00	26.00	63.00	278.00	158.00
15. Orissa SRTC	50.00	71.00	121.00	15.00	16.00	15.00	46.00	184.00	178.00
16. Pepsu RTC	50.02	90.18	140.20	14.12	15.05	18.62	47.79	192.95	168.30
17. Rajasthan SRTC	50.00	94.00	144.00	4.00	12.00	20.00	36.00	185.00	174.00
18. Tripura STC	108.75	123.63	232.38	4.89	41.48	40.73	87.10	331.63	193.03
19. U.P. SRTC	59.00	66.00	125.00	26.00	14.00	28.00	68.00	193.00	194.00
Average	82.89	92.00	174.90	21.95	24.08	25.84	71.87	253.11	199.89
All India	75.32	91.10	166.43	23.28	17.82	- 22.22	63.32	236.95	207.04

Source : Report on the Performance of Nationalised Road Transport Undertakings, 1977-78 and 1978-79 CIRT, Pune.

Table 6.2

Operational Economics of STUs classified by Organisational Enactments

(1977-78) (Paise/Eff. Km.)

Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
COMPANIES									
1. Anna TCL	36.00	81.00	117.00	42.00	5.00	14.00	61.00	184.00	195.00
2. Cheran TCL	43.00	77.00	120.00	43.00	7.00	24.00	74.00	211.00	227.00
3. Cholan TCL	47.00	86.00	133.00	41.00	6.00	10.00	57.00	194.00	203.00
4. Kattabomman TCL	52.40	73.60	126.00	38.10	5.40	14.80	58.30	190.90	204.70
5. Pandian RWCL	56.00	80.00	136.00	42.00	4.00	21.00	67.00	209.00	232.00
6. Thiruvalluvar TCL	43.50	68.60	112.10	23.60	7.00	21.50	52.10	174.30	174.00
7. Deeran Chinnamalai TCL	47.00	86.00	133.00	41.00	6.00	10.00	57.00	194.00	203.00
8. Pallavan TCL	78.20	89.00	167.20	21.30	7.60	12.50	41.40	219.90	223.00
9. Orissa RTC	68.80	78.70	147.50	15.10	4.30	19.20	38.60	186.10	177.00
	52.43	79.98	132.42	34.12	5.81	16.33	56.26	195.91	204.30
GOVT. DEPARTMENTS									
1. Haryana ST	41.60	73.60	115.20	29.00	9.40	11.90	50.30	170.40	173.50
2. S.T. Punjab	42.50	75.90	118.40	15.00	9.70	14.80	39.50	165.20	163.00
3. Sikkim ST	30.00	175.00	205.00	4.00	0	0	4.00	209.00	222.00
4. Nagaland ST	99.00	148.00	247.00	6.00	N.A.	N.A.	N.A.	296.00	236.00
	53.27	118.12	171.40	13.50	9.55	13.35	36.40	210.15	198.25
MUNICIPAL UNDERTAKINGS									
1. Ahmedabad MTS	126.87	82.66	209.47	9.91	34.07	20.90	64.88	285.82	238.41
2. BEST	123.88	86.71	210.59	20.82	22.29	48.26	91.37	361.86	320.23
3. Kolhapur MTU	93.00	89.00	182.00	14.00	3.00	21.00	38.00	231.00	245.00
4. PCMT	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
5. Pune MT	108.20	80.91	189.11	13.96	18.47	11.55	43.98	238.67	210.83
6. Solapur MTU									
Average	112.97	84.82	197.79	14.67	19.45	25.42	59.54	279.33	255.61
All India	75.32	91.10	166.43	23.28	17.82	22.22	63.22	236.95	207.04

Source : Report on the Performance of Nationalised Road Transport Undertakings, 1977-78 and 1978-79 CIRT, Pune.

Table 6.3

Operational Economics of STUs classified by Organisational Enactments (1986-87)

(Paise/Eff. Km.)

Name of State	Per.	Mat.	P.M.	Taxes	Int.	Dep.	T+I+D	T.Cost.	T.Rev.	O.Rev.	T.Rev.
CORPORATIONS											
1. A.P. SRTC	156.40	125.80	282.00	49.90	16.70	41.60	108.20	415.90	409.50	13.40	422.90
2. Assam STC	249.00	179.00	428.00	10.00	62.00	36.00	108.00	556.00	363.00	9.00	372.00
3. Bihar STC	259.70	170.90	430.60	32.40	169.30	63.90	265.60	736.10	307.40	81.90	389.30
4. Calcutta STC	607.70	280.00	896.00	8.50	153.20	158.90	320.60	1239.20	417.20	19.40	436.60
5. Delhi TC	284.20	187.40	471.60	8.60	402.00	37.10	447.70	764.40	248.30	11.00	334.60
6. Gujarat SRTC	143.70	126.40	270.10	91.30	24.10	35.60	151.00	441.20	360.80	15.40	376.20
7. H.P. SRTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
8. J& K SRTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
9. Kerala SRTC	129.40	168.50	297.90	67.00	24.00	43.80	134.80	454.50	431.90	11.00	442.90
10. Karnataka TC	236.00	191.00	427.00	38.00	36.00	28.00	102.00	546.00	460.00	7.00	[illegible]
11. M.P. SRTC	117.70	205.70	323.40	65.90	43.10	28.50	137.50	483.10	411.80	6.80	418.60
12. Maharashtra SRTC	180.50	163.50	344.00	83.90	16.20	34.10	134.20	512.80	480.90	13.30	494.20
13. Manipur STC	471.00	157.00	628.00	14.00	65.00	151.00	230.00	878.00	482.00	231.00	713.00
4. N.Bengal STC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
15. Orissa SRTC	120.00	173.00	293.00	66.00	51.00	35.00	152.00	487.00	382.00	28.00	410.00
16. Pepsu RTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
17. Rajasthan SRTC	130.00	144.00	274.00	102.00	14.00	25.00	141.00	448.00	449.00	7.00	456.00
18. Tripura STC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
19. U.P. SRTC	141.00	146.00	287.00	9.00	32.00	48.00	89.00	376.00	369.00	14.00	381.00
Average	230.45	172.73	403.18	46.17	79.18	54.75	180.10	595.58	405.20	33.44	436.73
All India	201.38	183.08	384.46	39.50	49.88	48.97	138.35	537.26	404.12	23.80	427.92

Source : Report on the Performances of NRTUs 1985-86 and 1986-87, CIRT, Pune.

Table 6.4

Operational Economics of STUs classified by Organisational Enactments (1986-87)

(Paise/Eff.Km.)

Name of State	Per.	Mat.	P+M	Taxes	Int.	Dep.	T+I+D	T.Cost	T.Rev.	O.Rev.	T.Rev.
COMPANIES											
1. Anna TCL	107.00	144.00	251.00	49.00	15.00	46.00	110.00	379.00	366.00	10.00	376.00
2. Cheran TCL	114.00	163.00	277.00	51.00	16.00	49.00	116.00	414.00	396.00	19.00	415.00
3. Chelan RWCL	108.00	135.00	243.00	44.00	14.00	48.00	106.00	371.00	359.00	13.00	372.00
4. Kattabimman TCL	103.00	143.00	246.00	47.00	13.00	52.00	112.00	374.00	357.00	9.00	366.00
5. Pandian RWCL	138.00	160.00	298.00	55.00	18.00	52.00	125.00	448.00	404.00	17.00	421.00
6. Thiruvalluvur TCL	95.70	143.50	239.20	24.80	15.70	50.80	91.30	342.00	329.20	11.90	341.10
7. Devanchir TCL	96.00	147.00	243.00	45.00	12.00	62.00	119.00	381.00	369.00	11.00	380.00
8. Pallavan TCL	251.30	182.40	433.70	19.60	28.90	39.40	87.90	538.90	480.40	25.40	505.80
9. Orissa RTC	139.00	175.00	314.00	66.00	37.00	33.00	136.00	464.00	355.00	11.00	366.00
	128.00	154.76	282.76	44.60	18.84	48.02	111.46	412.43	379.51	14.14	393.65
GOVT. DEPARTMENTS											
1. Haryana ST	90.60	145.90	236.50	24.10	14.70	14.40	53.20	310.00	314.00	10.00	324.00
2. S.T. Punjab	113.20	173.50	286.70	32.40	13.90	25.80	72.10	373.50	263.10	9.30	[illegible]
3. Sikkim NT	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
4. Nagaland ST	329.00	616.00	945.00	7.00	N.A.	N.A.	N.A.	952.00	435.00	3.00	438.00
	177.60	311.80	489.40	21.16	14.30	20.1	62.65	545.16	337.36	7.50	344.86
MUNICIPAL UNDERTAKINGS											
1. Ahmedabad MTS	269.40	167.60	437.00	13.00	46.70	24.40	84.10	570.70	460.80	17.50	478.80
2. BEST	323.30	195.30	518.60	38.90	55.20	89.10	183.20	799.30	596.50	42.00	638.50
3. Kolhapur MTU	289.30	198.70	488.00	25.40	21.40	43.90	90.70	586.40	491.90	7.50	499.40
4. PCMT	187.00	205.00	392.00	33.00	o	o	33.00	433.00	340.00	16.00	356.00
5. Pune MT	263.10	179.40	442.50	25.30	16.70	25.00	67.00	580.30	561.30	25.90	587.20
6. Solapur MTU	201.00	166.00	367.00	17.00	N.A.	N.A.	N.A.	N.A.	381.00	35.00	416.00
Average	255.51	185.33	440.84	25.43	35.00	45.60	106.03	593.94	471.91	23.99	495.90
All India	201.38	183.08	384.46	39.50	49.88	48.97	138.35	537.26	404.12	23.80	427.92

Source : Report on the Performances of NRTUs 1985-86 and 1986-87, CIRT, Pune.

a marginal increase during the period under study. The material cost recorded a decline of 3 percentage points, but the personnel cost increased by about 5 percentage points during 1977-78 to 1986-87. The companies have registered significant decline in the percentage share of material costs during the period under study. The variations in the controllable costs is minimum in the companies.

Government Departments :

The percentage of controllable costs recorded considerable increase in the STUs of Government Departments during the period under consideration. It was also the highest in the country during 1977-78 and 1986-87. Both the personnel and the material costs have shown considerable increase in all the Government Departmental transport undertakings. The share of material cost is uniformly higher than the personnel cost in all the STUs.

Municipal Undertakings

The percentage of controllable costs of municipal transport undertakings has registered an increase of 4 percentage points, from 1977-78 to 1986-87. Both the personnel and the material costs show upward trend, however, the increase in personnel cost is more than the material cost. Pune MT recorded a decline in the share of controllable costs in 1986-87. The percentage of controllable costs was the least in BEST undertaking during the period under study. The percentage of controllable costs was higher than the averages of all STUs, but for the Government Departments in 1986-87.

TAXES, INTEREST AND DEPRECIATION (Non-Controllable Costs)

Corporations :

The percentage of Non-Controllable Costs such as taxes, interest and depreciation of transport corporations as a whole has increased by 2 percentage points during 1977-78 to 1986-87. The percentage of taxes, interest and depreciation to the total cost of transport corporations was higher than the averages of companies, Government Departments and Municipal undertakings in 1986-87. The average percentage of taxes and depreciation was less than to percent during 1977-78 and 1986-87, as well. They both show considerable decline during the period under study. While the average percentage of interest was about 13 percent in 1986-87. The percentage of non-controllable costs as a whole, has not registered significant increase in the corporations during the period under study.

Companies :

The percentage of taxes, interest and depreciation of the Companies was higher than national average during 1977-78 and 1986-87. But, the percentage of non-controllable costs as a whole has registered a decline in 1986-87. The taxes, in particular, recorded a decline of about 7 percentage points during the period under consideration. Though the interest shows an increase, it was less than 5 percent of the total cost in 1986-87. The percentage of non-controllable costs is was about 25 percent in all the companies, barring Pallavan TCL, in 1986-87. Almost all the companies of Tamil Nadu have shown considerable decline in the percentage of non-controllable costs during the period under study.

Government Departments :

The percentage of non-controllable costs of Government Departmental transport undertakings is less than the national average, and was also less than the average percentage of non-controllable costs of STUs belonging to the Corporations and Companies, during 1977-78 and 1986-87. The trend could not be identified since the data is not available for Sikkim and Nagaland STs in 1986-87. But, Punjab and Haryana STs have registered significant decline with percentage of non-controllable costs during the period under study.

Municipal Undertakings :

The percentage share of non-controllable costs of municipal transport undertakings was the lowest in the country in 1986-87. They show considerable decline of about 4 percentage points during the period 1977-78 to 1986-87. All the three cost elements i.e. taxes, interest and depreciation registered a decline in 1986-87. The percentage of non-controllable costs was just about 17 percent in 1986-87, the lowest in the country during the period under study.

An Over View of Operational Economics of STUs Classified by Organisational Enactments

The percentage share of personnel and material costs have been the major constituents of the total operating cost in State Transport Undertakings, in general. The controllable costs accounting for 60 percent to 70 per cent of the total cost in the case of Transport Corporations and Companies and the share is about 80 percent to 85 percent in transport undertakings of Government Departments and Municipal Undertakings, during the period

Table 6.5

Operational Economics of STUs classified by Organistional Enactment
(1977-78)

(The figures are the percentage increase of costs and revenue per Eff. Km)

	Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost
1.	A.P. SRTC	31.85	34.53	66.38	15.27	1.60	10.68	27.55	100
2.	Assam STC	34.34	43.03	77.37	6.06	3.41	N.A.	9.47	100
3.	Bihar SRTC	31.07	31.29	62.36	15.81	7.75	10.32	33.88	100
4.	Calcutta STC	35.91	27.71	63.62	1.04	22.23	9.81	33.09	100
5.	Delhi TC	35.00	33.59	68.59	1.91	18.52	9.07	29.51	100
6.	Gujarat SRTC	30.27	27.91	58.18	23.68	3.09	9.62	36.40	100
7.	H.P. RTC	28.68	46.61	75.29	3.98	4.78	13.94	22.70	100
8.	J&K RTC	35.88	57.64	93.52	N.A.	3.52	N.A.	3.52	100
9.	Karanataka SRTC	31.29	31.98	63.28	12.94	3.71	9.39	26.04	100
10.	Kerala SRTC	38.40	36.78	75.18	13.55	2.62	5.51	21.69	100
11.	M.P. SRTC	21.87	35.44	57.31	26.37	6.23	7.71	40.32	[illegible]
12.	Maharashtra STC	30.68	34.39	65.07	19.35	2.82	8.25	30.43	100
13.	Maniur STC	40.00	37.70	77.70	2.59	12.96	N.A.	15.35	100
14.	N. Bengal STC	40.64	31.29	71.93	0.71	12.58	9.35	22.66	100
15.	Orissa SRTC	27.17	38.58	65.75	8.15	8.69	8.15	25.00	100
16.	Pepsu RTC	25.92	46.73	72.65	7.31	7.79	9.65	24.76	100
17.	Rajasthan SRTC	27.02	50.81	77.83	2.16	6.48	10.81	19.45	100
18.	Tripura SRTC	32.79	37.27	70.06	1.47	12.50	12.28	26.26	100
19.	U.P. SRTC	30.56	34.19	64.75	13.47	7.25	14.50	35.22	100
	Average	32.74	36.35	69.09	8.67	9.51	10.20	28.38	100
	All India	31.78	38.44	70.22	9.82	7.52	9.37	26.71	100

Source : Performance Statistics compiled by the CIRT 1977-78.

Table 6.6.

OPerational Economics of STUs classified by Organistional Enactment

(1977-78) (The figures are in percentages to the total cost)

Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
COMPANIES									
1. Anna TCL	19.56	44.02	63.58	22.82	2.71	7.60	33.15	100	
2. Cheran TCL	20.37	36.49	56.86	20.37	3.31	11.37	35.07	100	
3. Cholan TCL	24.22	44.32	68.54	21.13	3.09	5.15	29.38	100	
4. Kattabomman TCL	27.44	38.55	65.99	19.95	2.82	7.75	30.53	100	
5. Pandian RWCL	26.79	38.27	65.06	20.09	1.91	10.04	32.05	100	
6. Thiruvalluvar TCL	24.95	39.55	64.30	13.53	4.01	12.33	29.89	100	
7. Deeran Chinnamalai TCL	24.22	44.32	68.54	21.13	3.09	5.15	29.38	100	
8. Pallavan TCL	35.56	40.47	76.03	9.68	3.45	5.68	18.82	100	
9. Orissa RTC	36.96	44.28	79.24	8.11	2.31	10.31	20.74	100	
	26.76	40.82	67.58	17.41	2.96	8.33	28.70	100	
GOVT. DEPARTMENTS									
1. Haryana ST	24.41	43.19	67.60	17.01	5.51	6.98	29.50	100	
2. S.T. Punjab	25.72	45.94	71.66	9.07	5.87	8.95	23.91	100	
3. Sikkim ST	14.35	83.73	98.08	1.92	0	0	1.92	100	
4. Nagaland ST	33.44	50.00	83.44	2.02	N.A.	N.A.	N.A.	100	
	25.34	56.20	81.54	6.42	4.54	6.35	17.31	100	
MUNICIPAL UNDERTAKINGS									
1. Ahmedabad MTS	44.36	28.92	73.28	3.46	11.92	7.31	22.69	100	
2. BEST	34.23	23.96	58.19	5.75	6.15	13.33	25.25	100	
3. Kolhapur MTU	40.25	38.52	78.77	6.06	1.29	9.09	16.44	100	
4. PCMT	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
5. Pune MT	45.33	33.90	79.23	5.84	7.73	4.83	18.40	100	
6. Solapur MTU	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
Average	40.44	30.36	70.80	5.25	6.96	9.10	21.31	100	
All India	31.78	38.44	70.22	9.82	7.52	9.37	26.71	100	

Source : Performance Statistics compiled by the CIR 1977-78.

Table 6.7

Operational Economics of STUs classified by Organisational Enactments (1986-87)

(The figures are in percentages to the Total cost)

Name of State	Per.	Mat.	P+M	Taxes	Int.	Dep.	T+I+D	T.Cost	T.Rev.	O.Rev.	T.Rev.
CORPORATIONS											
1. A.P. SRTC	37.55	30.24	67.30	12.00	4.01	10.00	26.01	100	96.83	3.17	100
2. Assam STC	44.78	32.19	76.97	1.79	11.15	6.47	19.42	100	97.58	2.42	100
3. Bihar SRTC	35.28	23.21	58.49	4.40	22.99	8.68	36.08	100	78.96	21.04	100
4. Calcutta STC	49.03	23.32	72.35	0.68	12.36	12.82	25.87	100	95.55	4.45	100
5. Delhi TC	37.17	24.51	61.68	1.12	52.59	4.85	N.A.	100	N.A.	N.A.	N.A.
6. Gujarat SRTC	32.57	28.64	61.21	20.69	5.46	8.06	34.22	100	95.90	4.10	100
7. H.P. RTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
8. J&K RTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
9. Karntaka SRTC	28.47	37.07	65.54	14.74	5.28	9.63	29.65	100	97.51	2.49	100
10. Kerala SRTC	43.22	34.98	78.20	6.95	6.59	5.12	18.68	100	98.50	1.50	100
11. M.P. SRTC	24.36	42.57	66.93	13.64	8.92	5.89	28.46	100	98.37	1.63	
12. Maharashtra SRTC	35.19	31.88	67.07	16.36	3.15	6.64	26.17	100	97.30	2.70	100
13. Manipur STC	53.64	17.88	71.52	1.59	7.40	17.19	26.19	100	67.60	32.40	100
14. N.Bengal STC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
15. Orissa SRTC	24.64	35.52	60.16	13.55	10.47	7.18	31.21	100	93.17	6.83	100
16. Pepsu RTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
17. Rajasthan SRTC	29.01	32.14	61.15	22.76	3.12	5.58	31.47	100	98.46	1.54	100
18. Tripura STC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
19. U.P. SRTC	37.50	38.82	76.32	2.39	8.51	12.76	23.66	100	96.85	3.15	100
Average	38.69	29.00	67.69	7.75	13.29	9.19	30.23	100	92.78	7.22	100
All India	37.48	34.07	71.55	7.35	9.28	9.11	25.74	100	94.43	5.57	100

Source : Report on the Performances of NRTUs 1985-86 and 1986-87, CIRT, Pune.

Table 6.8

Operational Economics of STUs classified by Organisational Enactments (1986-87)

(The figures are in percentages to the Total cost)

Name of State	Per.	Mat.	P.M.	Taxes	Int.	Dep.	T.I.D.	T.Cost	T.Rev.	O.Rev.	T.Rev.
COMPANIES											
1. Anna TCL	28.23	37.99	66.22	12.92	3.95	12.13	29.02	100	97.34	2.66	100
2. Cheran TCL	27.53	39.37	66.90	12.31	3.86	11.83	28.01	100	95.42	4.58	100
3. Cholan RWCL	29.11	36.33	65.49	11.85	3.77	12.93	28.57	100	96.50	3.50	100
4. Kattabam TCL	27.54	38.23	65.77	12.56	3.47	13.90	29.94	100	97.54	2.46	100
5. Pandian RWCL	30.80	35.71	66.51	12.27	4.01	11.60	27.90	100	95.96	4.04	100
6. Thiruvalwar TCL	27.98	41.95	69.93	7.25	4.59	14.85	26.69	100	96.53	3.47	100
7. Daranchir TCL	25.19	33.58	63.77	11.81	3.14	16.27	31.23	100	97.10	2.90	100
8. Pallavan TCL	46.63	38.84	80.47	3.63	5.36	7.31	16.31	100	94.97	5.03	100
9. Orissa RTC	29.95	37.71	67.66	14.22	7.97	7.11	29.31	100	96.99	3.01	100
	31.03	37.52	68.55	10.81	4.56	11.64	27.01	100	96.40	3.60	100
GOVT. DEPARTMENTS											
1. Haryana ST	29.22	47.06	76.28	7.74	4.74	4.64	17.16	100	96.91	3.09	100
2. S.T. Punjab	30.30	46.45	76.75	8.67	3.72	6.90	19.30	100	96.51	3.49	100
3. Sikkim NT	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
4. Nagaland ST	34.55	64.70	99.26	0.74	N.A.	N.A.	N.A.	100	99.31	0.69	100
	32.57	57.19	89.36	3.88	2.62	3.68	N.A.	100	97.82	2.18	100
MUNICIPAL US											
1. Ahmedabad MTS	47.20	29.36	76.56	2.27	8.18	4.27	14.73	100	96.34	3.66	100
2. BEST	40.44	24.43	64.87	4.86	6.90	11.14	22.90	100	93.42	6.58	100
3. Kolhapur MTV	49.33	33.88	83.21	4.33	3.64	7.48	15.46	100	98.49	1.51	100
4. PCMT	43.18	47.34	90.52	7.62	N.A.	N.A.	N.A.	100	95.50	4.50	100
5. Pune MT	45.33	30.91	76.25	4.35	2.87	4.30	11.54	100	95.58	4.42	100
6. Solapur MTU	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
Average	43.01	31.20	74.21	4.28	5.89	7.67	17.84	100	95.16	4.84	100
All India	37.48	34.07	71.55	7.35	9.28	9.11	25.74	100	94.43	5.57	100

Source : Report on the Performances of NRTUs 1985-86 and 1986-87, CIRT, Pune.

1977-78 and 1986-87. The percentage of controllable costs show a declining trend in transport corporations. While they show significant increase in STUs of Government Departments and Municipal Undertakings during the period under study. Taxes, interest and depreciation, all three of them have declined in Municipal transport undertakings and Government departments during the period under consideration. The taxes, in particular, has shown significant decrease in all the four terms of State transport undertakings during the period under study.

Operational Economics of STUs classified by Organisational Structure

The variations in the operational economics is analysed and compared for the STUs classified by their organisational structure as discussed in Chapter V. Table 6.9 and Table 6.10 provide the basis for the analysis.

Personnel and Material Costs (Controllable Costs)

Four-tier System :

The average percentage of personnel and material costs of STUs having four-tier system registered a marginal increase in 1986-87. The average percentage of the controllable cost was less than national average in 1977-78 and 1986-87. It is also lesser than the average percentage of controllable cost of STUs of three-tier structure during the period under study. The percentage of material cost has declined considerably in Andhra Pradesh, Assam, Kerala, Maharashtra and Orissa SRTCs in 1986-87. The percentage of personnel cost has reduced significantly in Karnataka and Orissa SRTCs during the period under study.

Three-tier System :

The average percentage of controllable costs of STUs having three-tier structure was higher than the averages of STUs having four-tier and two tier systems, during 1977-78 and also in 1986-87. It recorded an increase of 3 percentage points for the period 1977-78 to 1986-87. The percentage of personnel cost increased considerably in all the STUs having three-tier system, during the period under study. On the other hand the percentage of material cost has considerably decreased in Rajasthan and Bihar SRTCs in 1986-87. The above two corporations have also recorded significant decline in percentage of Controllable costs as a whole, during the period under study.

Two-tier System :

The percentage of controllable costs of the STUs of two-tier system was less than national average, and was also less than the averages of STUs having four-tier and three-tier systems, during 1977-78 and 1986-87. The percentage of controllable costs show hardly any increase during 1977-78 to 1986-87. The percentage of personnel cost has increased sharply during the period under study. While, the percentage of material cost show decline in almost all the STUs of two-tier system, barring Thiruvalluvar TCL and Cheran TCL, in 1986-87.

Taxes, Interest and Depreciation (Non-Controllable Costs)

Four-tier System :

The percentage share of taxes, interest and depreciation of STUs of four-tier system was less than national average and the average percentage of non-controllable cost of STUs having three tier system in 1977-78 and

1986-87. The trend registered a decline of 2 percentage points during the period under study. The percentage of taxes and depreciation in particular, show considerable decrease in 1986-87. Almost all the STUs having four tier system recorded significant decline in the taxes during the period under study.

Three-tier system :

The average percentage of non-controllable costs as a whole of STUs having three-tier system was higher than the average of STUs having four-tier and three-tier systems during 1977-78. However, the percentage of non-controllable costs show considerable decline in 1986-87, and it was also the least in the country in 1986-87. Taxes, interest and depreciation, all of them, show significant decline in their average percentage during the period under study. Barring Rajasthan and Bihar, SRTCs, rest of them have succeeded in bringing down the percentage of non-controllable costs during the period under study.

Two-tier System

The average percentage of non-controllable costs of STUs having two-tier structure has higher than national average during both points of time under study. It was the highest in 1986-87. The percentage of taxes show considerable decline in almost all the STUs having two-tier system, barring Orissa RTC, during the period under study. All the STUs of two-tier system, excepting Pallavan TCL and Orissa RTC, have registered significant decline in the percentage of non-controllable costs during the period under consideration.

Table 6.9

Operational Economics of STUs classied by Organisation Structure (1977-78)

(The figure are in percentages to the total cost)

Name of STU	Personnel	Material	P+M	Taxes	Intent	Dep.	T+I+D	Total Cost
FOUR-TIER SYSTEM								
1. A.P. SRTC	31.85	34.53	66.38	15.27	1.60	10.60	27.35	100
2. Assam STC	33.34	43.03	77.37	6.06	3.41	N.A.	9.47	100
3. Karanataka SRTC	31.29	31.98	63.28	12.94	3.71	9.39	26.04	100
4. Kerala SRTC	38.40	36.78	75.18	13.55	2.62	5.51	21.69	100
5. Maharashtra SRTC	30.68	34.39	65.07	19.35	2.82	8.25	30.43	100
6. Orissa SRTC	27.17	38.58	65.75	8.15	8.69	8.15	25.00	100
7. U.P. SRTC	30.56	34.19	64.75	13.47	7.25	14.50	35.23	100
	32.19	36.19	68.38	12.84	4.13	9.22	26.19	100
THREE-TIER SYSTEM								
1. Bihar SRTC	31.07	31.29	62.36	15.81	7.75	10.32	33.88	100
2. Calcutta STC	35.91	27.71	63.62	1.04	22.23	9.81	33.09	100
3. Gujarat SRTC	30.27	27.91	58.18	23.68	3.09	9.62	36.40	100
4. H.P. SRTC	28.68	46.61	75.29	3.98	4.78	13.94	22.70	100
5. J&K SRTC	35.88	57.64	93.52	N.A.	3.52	N.A.	N.A.	100
6. M.P. SRTC	21.87	35.44	57.37	26.37	6.23	7.71	40.32	100
7. N.Bengal STC	40.64	31.29	71.93	0.71	12.58	9.35	22.66	100
8. Pepsu RTC	25.92	46.73	72.65	7.31	7.79	9.65	24.75	100
9. Rajasthan SRTC	27.02	50.81	77.83	2.16	6.48	10.81	19.45	100
10. Nagaland ST	33.44	50.00	83.44	2.02	N.A.	N.A.	N.A.	100
11. Punjab S.T.	25.72	45.94	71.66	9.07	5.87	8.95	N.A.	100
Average	31.80	38.40	70.20	7.85	10.54	10.30	28.69	100
All India	31.78	38.44	70.22	9.82	7.52	9.37	26.71	100

Source : Report on the Performance of NRTUs, 1977-78 and 1986-87. CIRT, Pune.

Table 6.10

Operational Economics of STUs classified by Organisational Structures (1986-87)

(The figures are in percentages to the Total cost)

Name of State	Per.	Mat.	P+M	Taxes	Int.	Dep.	T+I+D	T.Cost	T.Rev.	O.Rev.	T.Rev.
FOUR TYRE SYSTEM											
1. A.P. SRTC	37.55	30.24	67.80	12.00	4.01	10.00	26.01	100	96.83	3.17	100
2. Assam STC	44.78	32.19	76.97	1.79	11.15	6.47	19.42	100	97.58	2.42	100
3. Karnataka SRTC	28.47	37.07	65.54	14.74	5.28	9.63	29.65	100	97.51	2.49	100
4. Kerala SRTC	43.22	34.98	78.20	6.95	6.59	5.12	18.68	100	98.50	1.50	100
5. Maharashtra SRTC	35.19	31.88	67.07	16.36	3.15	6.64	26.17	100	97.30	2.70	100
6. Orissa SRTC	24.64	35.52	60.16	13.55	10.47	7.18	31.21	100	93.17	6.83	100
7. U.P. SRTC	37.50	38.82	76.32	2.39	8.51	12.76	23.67	100	96.85	3.15	100
	36.20	34.24	70.44	9.66	7.10	7.95	24.71	100	96.80	3.20	100
THREE-TIER SYSTEM											
1. Bihar SRTC	35.28	23.21	58.49	4.49	22.99	8.68	36.08	100	78.96	21.04	100
2. Calcutta STC	49.03	23.32	72.35	0.68	12.36	12.82	25.87	100	95.55	4.45	100
3. Gujarat SRTC	32.57	28.64	61.21	20.69	5.46	8.06	34.22	100	95.90	4.10	100
4. H.P. RTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
5. J&K RTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
6. M.P. SRTC	24.36	42.57	66.93	13.64	8.92	5.89	28.46	100	98.37	1.68	100
7. N.Bengal STC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
8. Pepsu RTC	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
9. Rajasthan SRTC	29.01	32.14	61.15	22.76	3.12	5.58	31.47	100	98.46	1.54	100
10. Nagaland ST	34.55	64.70	99.26	0.74	0	0	0.74	100	99.31	0.69	100
11. Punjab ST	30.30	46.45	76.95	8.67	3.72	6.90	19.30	100	96.51	3.49	100
Average	36.40	36.73	73.13	7.26	8.93	7.22	23.41	100	94.87	5.13	100
All India	37.48	34.07	71.55	7.35	9.28	9.11	25.74	100	94.43	5.57	100

Source : Report on the Performances of NRTUs 1985-86 and 1986-87, CIRT, Pune.

An Over View of the Operational Economics of STUs classified by Organisational Structure

The percentage of personnel and material costs was about 70 percent in STUs of all three systems of organisational structure. The percentage of personnel cost show significant increase in all three categories during the period under study. The percentage of personnel cost was highest in STUs of three-tier system during 1977-78 and 1986-87. The percentage share of material cost shows significant decline in all the STUs in 1986-87. The percentage of controllable costs of STUs having four-tier system is less than the average of STUs of three-tier system. The non-controllable costs have registered significant decline in STUs of all three organisational structure during the period under study. However, the decline is more significant in STUs of three-tier and four-tier systems. The variations in the percentage of both controllable and non-controllable costs are relatively more in case of STUs having three-tier system during the period under study.

Operational Economics of STUs classified by Economic Regions

An attempt has been made to analyse the variations in the cost-structure of State transport undertakings in different economic regions as identified in Chapter V. Table 6.11 to Table 6.14 provide the basis for the analysis.

Personnel and Material Costs (Controllable Costs)

Relatively Developed States

The percentage of controllable cost of STUs operating in the relatively developed States was less than national average in 1977-78, but it was higher than the latter in 1986-87. The percentage of controllable costs show an

increase of 4 percentage points during 1977-78 to 1986-87. It was also higher than the average percentage of controllable costs of STUs operating in all other economic regions, excepting the northeastern States during both points of time under study. The percentage of personnel and as well as material costs have shown considerable increase in all the States in 1986-87. However, the increase in personnel cost is more significant than the national cost.

Medium Developed States :

The average percentage of personnel and national costs of STUs of medium developed states was higher than national average in 1977-78 and 1986-87. The percentage of controllable costs is more orders remained same in 1986-87. The percentage of personal cost is increased by about 1 percent, while the material cost gone down at the same level. The personnel cost show decrease in the STUs belonging to Karnataka and West Bengal, while the national cost has decreased in all the States, but Karnataka, during the period under study. The percentage of controllable costs as a whole, is less than the percentages of STUs operating in the developed states, relatively developed and the north eastern States, in 1986-87.

Relatively Backward States :

The percentage of controllable costs of STUs that are operating in the relatively backward states was the lowest among all the economic regions in 1977-78, but shows significant increase in 1986-87. The percentage of personnel and the material costs have registered significant increase during the period under consideration. The increase in the controllable costs of STUs belonging to Madhya Pradesh and Uttar Pradesh is more significant.

Most Backward States :

The percentage of personnel and material costs have registered significant decline in the STUs operating in most backward States during the period under study. The STUs operating in Rajasthan and Orissa, in particular, have shown considerable decline during the period 1977-78 to 1986-87. The reduction in the percentage of Material costs is highly encouraging in all the most backward States. Orissa succeeded in bringing down the percentages of both the personnel and material costs during the period under consideration. The STUs operating in this region recorded the lowest percentage of controllable costs compared with the other economic regions, in 1986-87.

Hilly and North-eastern States

The percentage of controllable costs of STUs operating in the hilly and north-eastern states have recorded the highest percentage of controllable costs in the country. Sikkim accounted for high percentage of controllable costs in the country, in 1977-78. Comparable data is available not for all the states in 1986-87. North-eastern states show a decline of 2 percentage points in its material cost but an increase of about 9 percentage points in the personnel costs during the period under study.

Taxes, Interest and Depreciation (Non-controllable costs)

Relatively Developed States :

The percentage of taxes, interest and depreciation show considerable decline in STUs operating in the relatively developed states of india during 1977-78 to 1986-87. It was the least among all the economic regions in 1986-87. Taxes, interest and depreciation, all of them show significant decline during

the period under study. All the three non-controllable elements have shown, by and large, considerable decline in all the relatively developed states in 1986-87.

Medium Developed States :

The percentage of non-controllable costs of STUs operating in the medium developed states was more or less equivalent to the national average in 1977-78 and 1986-87, as well. It was the lowest in the country in 1977-78, but in 1986-87, it was less than the average percentage of non-controllable costs of STUs belonging to the backward states only. The percentage of taxes has gone down considerably in all the states, particularly, in Tamil Nadu and Kerala. There is no increase in the share of depreciation either. The percentage of interest show an increase of 3 percentage points during the period under study.

Relatively Backward States :

The percentage of taxes, interest and depreciation show considerable decline of about 8 percentage points, from 1977-78 to 1986-87. All three states grouped under this economic region have registered significant decrease in the percentage of non-controllable costs during the period under study. Taxes and depreciation recorded a consistent decrease in all the three states in 1986-87. The decline in the percentage of taxes in Madhya Pradesh and Uttar Pradesh is very significant. However, the percentage of non-controllable costs is higher than that of the developed states during the period under consideration.

Most Backward States :

The percentage of taxes, interest and depreciation has registered considerable increase in the STUs operating in the most backward states

Table 6.11

Operational Economics of STUs classified by Economic Regions
(1977-78) (Paise/Eff. Km.)

Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
RELATIVELY DEV. STATE									
1. Maharashtra	91.84	84.41	176.25	24.95	28.32	17.51	70.78	237.31	239.99
2. Gujarat	98.52	73.71	172.23	32.43	20.63	21.61	74.67	258.90	230.99
3. Punjab	46.26	83.04	129.30	14.56	12.37	16.71	43.64	179.07	165.65
4. Haryana	41.60	73.60	115.20	29.00	9.40	11.90	50.30	170.40	173.50
	69.55	78.69	148.24	25.23	17.68	16.93	59.74	211.42	202.53
MEDIUM DEVELOPED									
1. Tamilnadu	46.41	78.88	125.30	38.67	5.77	16.47	60.91	193.88	158.00
2. Karnataka	69.70	71.24	140.94	28.82	8.27	20.92	58.01	222.72	216.97
3. West Bengal	113.00	87.00	200.00	2.00	35.00	26.00	63.00	278.00	205.52
4. Kerala	86.41	82.75	169.16	30.50	5.90	12.40	48.80	224.97	210.00
	78.88	79.96	158.85	24.99	13.73	18.94	57.66	229.89	197.62
RELATIVELY BACKWARD									
1. Madhya Pradesh	44.66	72.38	117.04	53.86	12.73	15.75	82.34	204.20	205.18
2. Uttar Pradesh	59.00	66.00	125.00	26.00	14.00	28.00	68.00	193.00	194.00
3. Andhra Pradesh	66.29	71.86	138.15	31.78	3.33	22.23	57.34	208.00	206.40
	56.65	70.28	126.93	37.21	10.02	21.99	69.22	201.76	201.86
MOST BACKWARD									
1. Bihar	77.61	78.15	155.76	39.50	19.36	25.78	84.64	249.75	180.72
2. Orissa	59.40	74.85	134.25	15.05	10.15	17.10	42.30	185.05	177.50
3. Rajasthan	50.00	94.00	144.00	4.00	12.00	20.00	36.00	185.00	174.00
	62.33	82.33	144.66	19.51	13.83	20.96	54.30	206.60	177.40
HILLY & NEn STATES									
1. Jammu & Kashmir	61.00	98.00	159.00	N.A.	6.00	N.A.	6.00	170.00	167.00
2. Himachal Pradesh	72.00	117.00	189.00	10.00	12.00	35.00	57.00	251.00	224.00
3. Sikkim	30.00	175.00	205.00	4.00	0	0	4.00	209.00	222.00
4. NEn States	98.17	117.51	215.68	7.86	28.04	NA	112.23	280.42	215.29
Average	65.29	126.87	192.16	5.46	11.51	27.83	44.80	227.60	207.07
All India	67.32	88.88	156.20	21.83	13.39	19.32	54.54	216.70	198.15

Source : Report on the Performance of NRTUs, 1977-78 and 1978-79, CIRT, Pune.

Table 6.12

Operational Economics of STUs classified by Economics Regions
(1986-87) (Paise/Eff. Km.)

Name of the State	Per	Mat.	P.M.	Taxes	Int.	Dep.	T+I+D	T.cost	T.Rev.	O.Rev.	T.Rev.
RELATIVELY DEVELOPED STATES											
1. Maharashtra	224.18	182.52	406.70	36.92	18.10	34.33	89.35	528.12	451.02	19.54	470.56
2. Gujarat	206.55	147.00	353.55	52.15	72.80	30.00	154.95	505.95	410.80	16.45	427.25
3. Punjab	113.20	173.50	286.70	32.40	13.90	25.50	72.10	373.50	263.10	9.50	272.60
4. Haryana	90.60	145.90	236.50	24.10	14.70	14.40	53.20	310.00	314.00	10.00	324.00
	158.63	162.23	320.86	36.39	29.87	26.13	92.39	429.39	359.73	13.87	373.60
MEDIUM DEVELOPED STATES											
1. Tamil Nadu	105.66	148.79	254.45	46.38	13.95	50.17	110.50	385.91	370.50	11.27	381.78
2. Karnataka	129.40	168.50	297.90	67.00	24.00	43.80	134.80	454.50	431.90	11.00	442.90
3. West Bengal	282.00	213.00	495.00	8.00	125.00	66.00	199.00	756.00	256.00	4.00	260.00
4. Kerala	236.00	191.00	427.00	38.00	36.00	28.00	102.00	546.00	460.00	7.00	467.00
	188.26	180.32	368.58	39.84	49.73	46.99	136.56	535.60	379.60	8.31	387.91
RELATIVELY BACKWARD STATES											
1. Madhya Pradesh	117.70	205.70	323.40	65.90	43.10	28.50	137.50	483.10	411.80	6.80	418.60
2. Uttar Pradesh	141.00	146.00	287.00	9.00	32.00	48.00	89.00	376.00	369.00	14.00	385.00
3. Andhra Pradesh	156.40	125.80	282.20	49.90	16.70	41.60	108.20	415.90	409.50	13.40	422.90
	138.36	159.16	297.52	41.60	30.60	39.36	111.56	425.00	396.76	11.40	408.16
MOST BACKWARD											
1. Bihar	259.90	170.90	430.60	32.40	169.30	63.90	265.60	736.10	307.40	81.90	389.30
2. Orissa	129.50	174.00	303.50	66.00	44.00	34.00	144.00	475.00	368.50	19.50	388.00
3. Rajasthan	130.00	144.00	274.00	102.00	14.00	25.00	141.00	448.00	449.00	7.00	456.00
	173.06	162.96	336.02	66.80	75.76	40.96	183.52	553.20	374.96	36.13	411.00
HILLY & NEn STATE											
1. J & K	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
2. H.P.	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
3. Sikkim	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
4. NEn States	341.66	317.33	667.00	10.33	63.50	93.50	167.33	795.33	415.00	72.00	487.50
Average	349.66	317.33	667.00	10.33	63.50	93.50	167.33	795.33	415.50	72.00	487.50
All India	178.10	176.92	355.02	42.69	46.73	41.80	131.22	505.99	379.20	20.22	399.00

Source : Report on the Performances of NRTUs 1985-86 and 1986-87, CIRT, Pune.

Table 6.13

Operational Economics of STUs classified by Economic Regions (1977-78)

(The figures are in percentages to the total cost)

Name of STU	Personnel	Material	P.M.	Taxes	Int	Dep.	T.I.D.	Total Cost
RELATIVELY DEV. STATE								
1. Maharashtra	38.70	35.56	74.26	10.51	11.93	7.37	29.81	100
2. Gujarat	38.05	28.47	66.52	12.52	7.96	8.34	28.84	100
3. Punjab	25.83	46.37	72.20	8.13	6.90	9.33	24.37	100
4. Haryana	24.41	43.19	67.60	17.01	5.51	6.98	29.50	100
	32.89	37.21	70.10	11.93	8.36	8.00	28.29	100
MEDIUM DEVELOPED								
1. Tamilnadu	23.93	40.68	64.61	19.94	2.97	8.49	31.26	100
2. Karnataka	31.29	31.98	63.27	12.94	3.71	9.39	26.04	100
3. West Bengal	40.64	31.29	71.93	0.71	12.58	9.35	22.66	100
4. Kerala	38.40	36.78	75.18	13.55	2.62	5.51	21.69	100
	34.31	34.78	69.09	10.87	5.97	8.23	25.07	100
RELATIVELY BACKWARD								
1. Madhya Pradesh	21.87	35.44	57.31	26.37	6.23	7.71	40.32	100
2. Uttar Pradesh	30.56	34.19	64.75	13.47	7.25	14.50	35.22	100
3. Andhra Pradesh	31.85	34.53	66.38	15.27	1.60	10.68	27.55	100
	28.07	34.83	62.90	18.44	4.96	10.89	34.29	100
MOST BACKWARD								
1. Bihar	31.07	31.29	62.36	15.81	7.75	10.32	33.88	100
2. Orissa	32.09	40.44	72.53	8.13	5.48	9.24	22.85	100
3. Rajasthan	27.02	50.81	77.83	2.16	6.48	10.81	19.45	100
	30.16	39.84	70.00	9.44	6.69	10.14	26.27	100
HILLY & NEn STATES								
1. Jammu & Kashmir	35.88	57.64	93.52	N.A.	3.52	N.A.	N.A.	100
2. Himachal Pradesh	28.68	46.61	75.29	3.98	4.78	13.94	22.70	100
3. Sikkim	14.35	83.73	98.08	1.92	0	0	1.92	100
4. NEn States	35.00	41.90	76.90	2.80	9.99	14.41	27.20	100
Average	28.68	55.74	84.42	N.A.	N.A.	N.A.	N.A.	100
All India	31.06	41.01	72.07	10.07	6.17	8.91	25.15	100

Source : Report on the Performance of NRTUs, 1977-78 and 1978-79, CIRT, Pune.

Table 6.14

Operational Economics of STUs classified by Economic Region (1986-87)

(The figures are in percentages to the Total cost)

Name of State	Per.	Mat.	P+M	Taxes	Int.	Dep.	T+I+D	T.Cost	T.Rev.	O.Rev.	T.Rev.
RELATIVELY DEVELOPED											
1. Maharashtra	42.44	34.56	77.00	6.99	3.42	6.50	16.91	100	95.84	4.16	100
2. Gujarat	40.82	29.05	69.87	10.30	14.38	5.92	30.60	100	96.14	3.86	100
3. Punjab	30.30	46.45	76.75	8.67	3.32	6.90	19.29	100	96.51	3.49	100
4. Haryana	29.22	47.06	76.28	7.74	4.74	4.64	17.16	100	96.91	3.09	100
	36.94	37.78	74.72	8.47	6.95	6.08	21.50	100	96.28	3.72	100
MEDIUM DEVELOPMENT											
1. Tamilnadu	27.37	38.55	65.92	12.01	3.61	13.00	28.62	100	97.04	2.96	100
2. Karnataka	23.47	37.07	65.54	14.74	5.28	9.63	29.65	100	97.51	2.49	100
3. West Bengal	37.30	28.17	65.47	1.05	16.53	8.73	26.31	100	98.46	1.54	100
4. Kerala	43.22	34.98	78.20	6.95	6.59	5.12	18.68	100	98.50	1.50	100
	35.14	33.66	68.80	7.43	9.28	8.77	25.48	100	97.85	2.13	100
RELATIVELY BACKWARD											
1. Madhya Pradesh	24.36	42.57	66.93	13.63	8.92	5.89	28.45	100	98.37	1.63	100
2. Uttar Pradesh	37.50	38.82	76.32	2.39	8.51	12.76	23.67	100	96.34	3.66	100
3. Andhra Pradesh	37.55	30.24	67.80	12.00	4.01	10.00	26.01	100	96.83	3.17	100
	32.55	37.44	70.00	9.78	7.20	9.26	26.24	100	97.20	2.80	100
MOST BACKWARD											
1. Bihar	35.28	23.21	58.49	4.40	22.99	8.68	36.08	100	78.96	21.04	100
2. Orissa	27.23	36.59	63.82	13.98	9.25	7.15	30.28	100	94.97	5.03	100
3. Rajasthan	29.01	32.14	61.15	22.76	3.12	5.58	31.47	100	98.46	1.54	100
	31.28	29.45	60.73	12.07	13.69	7.40	33.16	100	91.21	8.79	100
HILLY & NEn STATES											
1. J & K	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
2. H.P.	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
3. Sikkim	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
4. NEn States	43.96	39.89	83.85	1.29	7.98	11.75	21.03	100	85.23	14.79	100
Average	43.96	39.89	83.85	1.29	7.98	11.75	21.03	100	85.23	14.77	100
All India	35.19	34.96	70.15	8.43	9.23	8.26	25.92	100	94.93	5.07	100

Source : Report on the Performances of NRTUs 1985-86 and 1986-87, CIRT, Pune.

during the period 1977-78 to 1986-87. The percentage of depreciation, however, shows significant decline in 1986-87 in all the three States. The taxes recorded significant decline in Bihar, but a steep increase in Rajasthan in 1986-87. The increase in the percentage of non-controllable costs is significant in Rajasthan and Orissa during the period under study.

High and North-eastern States :

The non-availability of data for the States that belong to the hilly and north-eastern states has led to the comparison incomplete. The percentage of taxes was very low in STUs operating in this region. The north-eastern states have registered significant decline in all the elements of non-controllable costs during the period under study.

An Over of the Operational Economics of STUs classified by Economic Regions

The percentage of personnel and material costs recorded a decline of just 2 percentage points at the All-India level, during the period 1977-78 to 1986-87. There is neither increase nor decrease in the percentage of taxes, interest and depreciation at All-India level. The percentage of controllable costs as a whole, has shown increasing trend in STUs operating in the relatively developed states and the relatively backward states, during the period under study. On the other hand, the most backward states have registered considerable decline in the controllable costs. But, the most backward states also recorded significant increase in the percentage of taxes, interest and taxes. While, the percentage of taxes, interest and depreciation show a declining trend in the relatively developed states and the relatively backward states during the period under consideration. The percentage of taxes show considerable decline in all the economic regions, barring the most backward region. The percentage

of interest registered increase in all the economic regions, but for the relatively developed states.

Operational Economics of the STUs classified by Geographical Regions

In this section of the exercise, an attempt has been made to analyse the spatial variations in the cost-structure of the state transport undertakings operating in different Geographical regions as identified in the Chapter V. The table 6.15 and Table 6.16 provide the basis for the analysis.

Personnel and Material costs (Controllable costs)

Northern States :

The percentage of personnel and material costs of STUs operating in the northern states was the highest in the country, during 1977-78 and 1986-87. In Jammu & Kashmir it accounted for about 93 percent of the total cost in 1977-78. The STUs operating in Punjab and Haryana have registered significant increase in the percentage of personnel cost, the latter registered an increase in material costs too, during the period under study.

Eastern States :

The STUs operating in the eastern states have shown considerable decline in the percentage of controllable costs during the period under consideration. Bihar, West Bengal and North-eastern states have registered significant decline in the percentage of material cost in 1986-87. But, Bihar and north-eastern states have shown considerable increase in the percentage of personnel cost during the period under study. The percentage of controllable costs of

eastern states was less than national average and was also less than the averages of Northern, Western and Southern States in 1986-87.

Central States :

The transport undertakings operating in the central states have shown increase in the percentage of personnel and material costs during the period under study. But, the percentage of controllable costs of central states was the lowest in the country during 1977-78 and 1986-87. Madhya Pradesh and Uttar Pradesh have recorded increase in both the personnel and the material costs in 1986-87. On the other hand, Orissa succeeded in the reducing the percentage of both personnel and material costs during the period under study.

Western States :

The percentage of controllable costs of STUs operating in the Western States show a declining trend during the period 1977-78 to 1986-87. The percentage of personnel cost increased by 2 percentage points, while the material cost reduced by about 5 percentage points during the period under study. The percentage was lower than the average percentages of controllable costs of STUs operating in northern states and southern states in 1986-87. Rajasthan registered significant decline in the percentage of material costs during the period under study. Gujarat show an increase in the percentage of both personnel and material costs.

Southern States :

The southern states recorded an increase in the percentage of controll-

able costs during 1977-78 to 1986-87. All the four southern states have shown increase in the percentage of controllable costs in 1986-87. The percentage of personnel cost has increased in general, while, the material cost shows significant decline in all the states, excepting Karnataka. Though the percentage of controllable costs was less than national average, it was higher than the averages of all the regions in the country, but for the northern states in 1986-87.

Taxes, Interest and Depreciation (Non-Controllable Costs)

Northern States :

The percentage of taxes, interest and depreciation of STUs operating in northern states was lower than national average in 1977-78 and 1986-87. All the three elements of non-controllable costs have also shown declining trend in the above two states during the period under study.

Eastern States :

The STUs of the eastern states have registered considerable increase in the percentage of non-controllable costs during the period under study. The percentage was higher than national average, it was also the highest in the country in 1986-87. The increase is more significant in Bihar and West Bengal. The taxes recorded significant decline, while the interest registered considerable increase during the period, from 1977-78 to 1986-87. The percentage of interest is the highest in the eastern states in 1986-87. The percentage increase in the non-controllable costs is mainly due to the significant increase in the interest during the period under study.

Central States :

The STUs operating in the central states of India have registered significant decline in the percentage of taxes, interest and depreciation, in general, during the period 1977-78 to 1986-87. However, the percentage was higher than the averages of all, but the eastern states in 1986-87. Taxes and depreciation show considerable decline in their percentage in Madhya Pradesh and Uttar Pradesh, in 1986-87. Orissa registered significant increase in taxes, interest and depreciation during the period under consideration.

Western States :

The percentage of non-controllable costs show hardly any decrease in STUs operating in the western states. But, in interest and depreciation registered declining trend in 1986-87. Taxes show considerable increase in Rajasthan. Maharashtra recorded decline in all the three of them in 1986-87. Barring the increases in the percentage of taxes in Rajasthan, and interest in Gujarat, the non-controllable costs have shown considerable decline during the period under study.

Southern States :

The STUs operating in the southern states show a marginal decline in the percentage of non-controllable costs, in 1986-87. Barring Karnataka, rest of the states have succeeded in bringing down the percentage of non-controllable costs. The taxes show significant decline during the period under study. Karnataka recorded increase in the percentage of all the three elements during 1977-78 to 1986-87.

Table 6.15

Operational Economics of STUs classified by Geographical Regions (1977-78)

(The figures are in percentages to the total cost)

Name of STU	Personnel	Material	P.M.	Taxes	Int	Dep.	T.I.D.	Total Cost
NORTHERN STATES								
1. Jammu & Kashmir	35.88	57.64	93.52	N.A.	3.52	N.A.	N.A.	100
2. Himachal Pradesh	28.68	46.61	75.29	3.98	4.78	13.94	22.70	100
3. Punjab	25.834	46.37	72.20	8.13	6.90	9.33	24.37	100
4. Haryana	24.41	43.19	67.60	17.01	5.51	6.98	29.50	100
	28.66	48.23	76.89	6.94	4.89	8.25	20.08	100
EASTERN STATES								
1. NEn States	35.00	41.90	76.90	2.80	9.99	14.41	27.20	100
2. Sikkim	14.35	83.73	98.02	1.92	0	0	1.92	100
3. West Bengal	40.64	31.29	71.93	0.71	12.58	9.35	22.66	100
4. Bihar	31.07	31.29	62.36	15.81	7.75	10.32	33.88	100
	31.33	44.99	76.32	5.24	8.10	9.06	22.40	100
CENTRAL STATES								
1. Uttar Pradesh	30.56	34.19	64.75	13.47	7.25	14.50	35.23	100
2. Madhya Pradesh	21.87	35.44	57.31	26.37	6.23	7.71	40.32	100
3. Orissa	32.09	40.44	72.53	8.13	5.48	9.24	22.85	100
	28.00	36.61	64.61	16.29	6.33	10.44	33.06	100
WESTERN STATES								
1. Rajasthan	27.02	50.81	77.83	2.16	6.48	10.81	19.45	100
2. Gujarat	38.05	28.47	66.52	12.52	7.96	8.34	28.84	100
3. Maharashtra	38.70	35.56	74.26	10.51	11.93	7.37	29.84	100
	35.28	37.01	72.29	9.01	8.95	8.67	26.63	100
SOUTHERN STATES								
1. Andhra Pradesh	31.85	34.53	66.38	15.27	1.60	10.68	27.55	100
2. Karnataka	31.29	31.98	63.28	12.94	3.71	9.39	26.04	100
3. Tamilnadu	23.93	40.68	64.61	19.94	2.97	8.49	31.26	100
4. Kerala	38.40	36.78	75.18	13.55	2.62	5.51	21.69	100
Average	31.63	35.86	67.50	15.27	2.73	8.47	26.47	100
All India	31.06	41.01	72.07	10.07	6.17	8.91	25.15	100

Source : Report on the Performance of STUs 1985-86 and 1986-87.

Table 6.16

Operational Economics of STUs classified by Geographical Regions (1986-87)

(The figures are in percentages to the Total cost)

Name of State	Per.	Mat.	P+M	Taxes	Int.	Dep.	T+I+D	T.Cost	T.Rev.	O.Rev.	T.Rev.
NORTHERN STATES											
1. Jammu & Kashmir	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
2. Himachal Pradesh	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
3. Punjab	30.30	46.45	76.75	8.67	3.72	6.90	19.29	100	96.51	3.49	100
4. Haryana	29.22	47.06	76.28	7.74	4.74	4.64	17.16	100	96.91	3.09	100
	29.81	46.73	76.54	8.26	4.18	5.88	18.33	100	96.73	3.37	100
EASTERN STATES											
1. NEn States	43.96	39.89	83.85	1.29	7.98	11.75	21.03	100	85.23	14.77	100
2. Sikkim	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	100	N.A.	N.A.	100
3. W. Bengal	37.30	28.17	65.47	1.05	16.53	8.73	26.31	100	98.46	1.54	100
4. Bihar	35.28	23.21	58.49	4.40	22.99	8.68	36.08	100	78.96	21.04	100
	38.96	30.65	69.61	2.21	15.64	9.76	27.61	100	86.10	13.90	100
CENTRAL STATES											
1. Uttar Pradesh	37.50	38.82	76.32	2.39	8.51	12.76	23.67	100	96.34	3.66	100
2. Madhya Pradesh	24.36	42.57	66.93	13.64	8.92	5.89	28.45	100	98.37	1.63	100
3. Orissa	27.23	36.59	63.32	13.88	9.25	7.15	30.28	100	94.97	5.03	100
	28.90	39.14	68.04	10.48	8.86	8.22	27.56	100	96.61	3.39	100
WESTERN STATES											
1. Rajasthan	29.01	32.14	61.15	22.76	3.12	5.58	31.47	100	98.46	1.54	100
2. Gujarat	40.82	29.05	69.87	10.30	14.88	5.92	30.60	100	96.14	3.86	100
3. Maharashtra	42.44	34.56	77.00	6.99	3.42	6.50	16.91	100	95.84	4.16	100
	37.83	31.95	69.78	12.89	7.07	6.02	25.98	100	96.82	3.18	100
SOUTHERN STATES											
1. Andhra Pradesh	37.55	30.24	67.80	12.00	4.01	10.00	26.01	100	96.83	3.17	100
2. Karnataka	28.47	37.07	65.54	14.74	5.28	9.63	29.53	100	97.51	2.49	100
3. Tamilnadu	27.37	38.85	65.92	12.01	3.61	13.00	28.62	100	97.04	2.96	100
4. Kerala	43.22	34.98	78.20	6.95	6.95	5.12	18.68	100	98.50	1.50	100
Average	34.80	35.17	69.97	11.16	5.02	9.07	25.25	100	97.51	2.49	100
All India	35.19	34.96	70.15	8.43	9.23	8.26	25.92	100	94.93	5.07	100

Source : Report on the Performance of STUs 1985-86 and 1986-87.

An Over View of the Operational Economics of STUs classified by Geographical Regions

The percentage of personnel and material costs has been quite high in all the regions, during the period under study. It accounted for about 75 per cent in the northern states, while in rest of the regions it was about 70 percent in 1986-87. The percentage of controllable costs show increasing trend in STUs operating in the northern, central and southern states, during the period under consideration. The decline in the percentage of controllable costs is significant in the eastern states, in general. The percentage of material cost recorded consistent decline in all the regions, barring the eastern regions. While the percentage of personnel cost shows considerable increase in STUs operating in all the regions during the period under study. As regards to the taxes, interest and depreciation, they registered an increase only in the eastern states. The STUs operating in rest of the states have shown significant decline in the percentage of non-controllable costs, during the period 1977-78 to 1986-87. The percentage of taxes show considerable decline in almost all the states, excepting Karnataka, Orissa and Rajasthan, during the period under study. On the other hand the percentage of interest increased in the eastern, central and southern states. The percentage of depreciation has declined considerably in all the states, barring Karnataka, during the period, under study.

Trends in Cost and Revenue During 1977-78 to 1986-87

A critical Analysis

In this section of the analysis, an attempt has been made to identity the pattern of the increase of cost and revenue for the STUs under consideration,

during the period 1977-78 and 1986-87. The analysis tries to answer the questions like whether the revenue increase is proportionate to the cost increase, or there is a gap between them, if so, to what extent the gap make its impact on the overall efficiency of the state transport undertakings, in general. The spatial variations in the cost-revenue gap is also analysed.

Trends in Cost and Revenue of STUs classified by Organisational Enactments

Corporations :

Table 6.17 reveals that the percentage of cost increase in the transport corporations was higher than the revenue increase by about 18 percentage points during the period under study. The cost and revenue increases were higher than their respective increase at national level. The percentage increase of revenue of transport corporations was higher than the revenue increase of Companies, Government Departments and Municipal Undertakings. The revenue increase was higher than the cost increase in Andhra pradesh, Karnataka, Rajasthan and Uttar Pradesh SRTCs. By and large, the cost increase has over-taken the revenue increase in most corporations. The cost-revenue gap is quite alarming in Assam STC, Bihar SRTC and Delhi TC during the period under study. The increase in the percentage of personnel cost is significantly higher than the material cost increase in most corporations.

Companies :

It can be seen from the Table 6.18 that the cost increase overtaken the revenue increase in the transport companies also. The cost and revenue increases were less than the respective increase at the national level during the period under study. The cost increase in the companies is less than the

cost increase in other forms of transport undertakings. The cost-revenue gap is relatively smaller in the case of Cheran TCL, Cholan TCL and Deeran Chinnamalai TCL. On the other hand, the gap is very significant in Orissa RTC and Pallavan TCL during the period 1977-78 to 1986-87. Thiruvalluvar TCL was the only company which recorded for higher revenue increase than the cost increase during the period under study.

Government Departments :

The cost increase in STUs of Government Departments was the highest during the period under study. The cost-revenue gap is also the widest, with about 86 percentage points between them. Haryana ST recorded for higher revenue increase than the cost, while rest of them registered higher cost increase. The average revenue increase in Government Departmental Transport undertakings is the least in the country during the period under study. The percentage increase of personnel cost is found to be higher than the material cost increase.

Municipal Undertakings :

The cost increase in municipal transport undertakings is less than the cost increase at national level during the period under study. It was also less than the cost increase in corporations and Government Departments. The cost increase has overtaken the revenue increase in all the municipal undertakings, barring Ahmedabad MTS and Pune MT. The cost revenue gap is about 18 percentage points only.

Table 6.18

Trends in East and Revenue of STUs classified by Organisational Enactments (1977-78 to 1986-87)

(The figures are the percentage increase of costs and revenue per Eff.Km.)

	Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
COMPANIES										
1.	Anna TCL	197.22	77.77	114.52	16.66	200.00	228.57	80.32	105.97	92.82
2.	Cheran TCL	165.11	111.68	130.83	18.60	128.57	104.16	56.75	96.20	82.81
3.	Cholan TCL	129.78	56.97	82.70	7.31	133.33	380.00	85.96	91.23	83.25
4.	Kattabomman TCL	96.56	94.29	95.23	23.35	40.74	251.35	92.10	95.91	78.79
5.	Pandian RWCL	146.42	100.00	119.11	30.95	350.00	147.61	86.56	114.35	81.46
6.	Thiruvalluvar TCL	120.00	109.18	113.38	5.08	124.28	136.27	75.23	88.86	96.03
7.	Deeran Chinnamalai TCL	104.25	70.93	82.70	9.75	100.00	520.00	108.77	96.39	87.19
8.	Pallavan TCL	221.35	104.94	159.38	-8.00	280.26	215.20	112.31	145.06	126.81
9.	Orissa RTC	102.03	122.36	112.88	337.08	760.46	71.87	252.33	149.32	106.77
		144.13	93.49	113.53	30.71	224.26	194.06	98.11	110.52	92.68
GOVT. DEPARTMENTS										
1.	Haryana ST	117.78	98.23	105.29	-16.90	56.38	21.00	5.76	84.27	86.74
2.	S.T. Punjab	166.35	128.59	142.14	116.00	43.29	74.32	82.53	126.08	67.23
3.	Sikkim ST	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
4.	Nagaland ST	232.32	316.21	282.59	16.66	N.A.	N.A.	N.A.	221.62	85.59
		233.39	163.96	185.53	56.74	49.73	50.56	72.11	159.41	73.95
MUNICIPAL UNDERTAKINGS										
1.	Ahmedabad MTS	112.44	102.75	108.62	31.18	37.07	16.74	29.62	99.67	100.62
2.	BEST	160.97	125.23	146.26	86.83	147.64	84.62	100.50	120.88	99.38
3.	Kolhapur MTU	211.07	123.25	168.13	81.42	613.33	109.04	138.68	153.85	103.83
4.	PCMT	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
5.	Pune MT	143.16	121.72	133.99	81.23	-9.59	116.45	52.34	143.13	168.33
6.	Solapur MTU	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	Average	126.17	118.49	122.88	73.34	79.94	79.38	78.08	112.63	94.00
	All India	167.36	100.96	131.00	69.67	179.91	120.38	118.83.	126.73	106.68

Source : Report on the Performance of NRTUs, CIRT, Pune

An Over View of the Trends in Cost and Revenue of STUs Classified by Organisational Enactments

The cost increase has been higher than the revenue increase, in general, during the period under study. The cost increase in the companies and municipal undertakings is relatively lesser than the cost increase in other two forms of transport undertakings viz. the corporations and the Government Departments. The increase in the personnel cost has been uniformly higher than the national cost increase in most STUs. On an average, the cost-revenue gap is quite significant in all the four forms of transport undertakings. However, the gap is more alarming in some of the corporations and Government Departmental Undertakings during the period under study.

Trends in cost and revenue of STUs classified by Organisational Structure

Four-tier System :

It can be seen in the Table 6.19, the percentage of cost and revenue increases in STUs having four-tier system were marginally lesser than their respective increase at the national level. It was also less than the cost and revenue increase of STUs having three-tier system, during the period under study. The cost-revenue gap is quite significant, with about 20 percentage points which is, however, lesser than the cost-revenue gap in STUs having three-tier system. The percentage increase of personnel cost is higher than the material cost increase in all the STUs of four-tier system, barring the Karnataka SRTC during the period between 1977-78 and 1986-87. The revenue increase is relatively higher than the cost increase in Andhra Pradesh, Karnataka and Uttar pradesh SRTCs during the period under study.

Three-tier System :

The cost increase in STUs having three-tier system is relatively higher than the cost increase of STUs having four-tier and two-tier system during 1977-78 to 1986-87. The revenue increase is also the highest in STUs of three-tier system. The cost-revenue gap is significantly wider, with about 50 percentage points. The cost increase is higher than the revenue increase in all the STUs having three-tier system, excepting the Rajasthan SRTC, during the period under study. The increase in personnel cost is higher than the material cost increase in almost all the STUs. The increase of taxes seems to be relatively lesser, barring Rajasthan SRTC and Punjab ST, during the period between 1977-78 and 1986-87.

Two-tier System :

The cost and revenue increase in STUs having two-tier system is relatively lesser than their respective increases in STUs having four-tier system and three-tier system. It was also significantly lower than the cost and revenue increase at the national level during the period under study. The cost increase is higher than the revenue increase in almost all the STUs of two-tier system, barring Thiruvalluvar TCL, during the period under study.

An Over-View of the Trends in Cost and Revenue of STUs classified by Organisational Structure

The cost increase is significantly higher than the revenue increase, in general, during the period under study. The percentage increase of personnel cost is higher than the material cost increase in all the STUs. The percentage increase of taxes is very minimum and relatively insignificant in all the STUs

Table 6.19

Trends in Cost and Revenue of STUs classied by Organisational Structure
(1977-78 to 1986-87)

(The figures are the percentage increase of costs and revenue per Eff. Km)

	Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
FOUR-TIER SYSTEM										
1.	A.P. SRTC	135.93	75.06	104.12	57.01	401.50	87.13	88.69	99.87	104.89
2.	Assam STC	223.58	85.64	146.87	-26.36	709.39	N.A.	408.47	148.14	75.33
3.	Karnataka SRTC	85.65	136.52	111.36	132.47	190.20	109.36	132.37	104.06	104.12
4.	Kerala SRTC	173.11	130.81	152.42	24.59	510.16	125.80	109.01	142.69	122.38
5.	Maharashtra SRTC	142.83	96.23	118.20	78.89	136.49	70.58	81.99	111.67	92.93
6.	Orissa SRTC	140.00	143.66	142.14	340.00	218.75	133.33	230.43	164.67	130.33
7.	U.P. SRTC	138.98	121.21	129.60	-65.49	128.57	71.42	30.88	94.81	96.39
		151.16	111.35	130.09	68.12	283.95	92.75	121.95	123.35	103.03
THREE-TIER SYSTEM										
1.	Bihar SRTC	234.62	118.68	176.45	-17.92	774.48	147.86	213.79	194.73	115.41
2.	Calcutta STC	153.97	51.65	111.52	21.77	3.42	143.07	45.41	85.98	73.62
3.	Gujarat SRTC	104.58	95.18	100.07	66.15	235.18	59.49	78.78	90.18	68.26
4.	H.P. RTC	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
5.	J&K RTC	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
6.	M.P. SRTC	163.54	184.19	176.31	22.35	238.57	80.95	66.99	136.58	104.01
7.	N. Bengal STC	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
8.	Pepsu RTC	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
9.	Rajasthan SRTC	160.00	53.19	90.27	2450.00	16.66	25.00	291.66	142.16	162.06
10.	Nagaland ST	232.32	316.21	282.59	16.66	N.A.	N.A.	N.A.	221.62	85.59
11.	Punjab ST	166.35	128.59	142.14	116.00	43.29	74.32	82.53	126.08	67.23
	Average	190.77	143.00	164.64	134.98	115.26	78.20	107.35	154.06	103.60
	All India	167.36	100.96	131.00	69.67	179.91	120.38	118.83	126.73	106.68

Source : Report on the Performance of NRTUs, CIRT, Pune.

having two-tier system, barring Orissa RTC, during the period 1977-78 to 1986-87. The cost-revenue gap is significantly alarming, with about 50 percentage points, in STUs having three-tier system. While the gap is about 18-20 percentage points in the other two organisational systems. The cost increase was highest in STUs having three-tier system during the period under consideration. The transport corporations that are operating in Andhra Pradesh, Karnataka and Uttar Pradesh, which also happened to be some of the largest organisations in the country, have shown relatively better operational performance than other undertakings during the period under study.

Trends in Cost and Revenue of STUs classified by Economic Regions

Relatively Developed States

Table 6.21 reveals that the percentage of cost and revenue increase of STUs operating in the relatively developed states was significantly lesser than the increase of cost and revenue of STUs operating in all other economic regions in the country during the period between 1977-78 and 1986-87. The cost increase is higher than the revenue increase in all the states, barring Haryana. The average increase of personnel and material costs was relatively higher than the increase of taxes, interest and depreciation. The increase of non-controllable costs is just about 6 percentage points in Haryana, where the revenue increase was marginally higher than the cost increase. The cost-revenue gap is quite alarming in Punjab. The cost-revenue gap of STUs of relatively developed states has relatively smaller than all other economic regions, but for the relatively backward states, during the period under study.

Medium Developed States :

The percentage of cost increase of STUs of medium developed states was higher than the cost increases in STUs operating in the relatively developed and most backward states, during the period under consideration. While the revenue increase was lesser than all economic region, excepting the developed states. The average cost-revenue gap was higher than the cost-revenue gap of all the regions, barring the north-eastern states. The gap is more alarming in West Bengal. The revenue increase is higher than the cost increase in Tamil Nadu and Karnataka during the period under study. The increase in personnel cost is more than the national cost increase. However, the increase of controllable and non-controllable costs is more or less equivalent. The percentage increase of taxes is relatively significant in STUs belonging to Tamil Nadu and Kerala.

Relatively Backward States :

The cost increase has overtaken the revenue increase in STUs operaitng in the relatively backward states during the period under study. However, the cost increase was lesser than the cost increase of all economic regions, excepting the relatively developed states. The revenue increase is more than the revenue increase at the national level, and as well as the revenue increase in STUs of developed states. The cost-revenue gap is the smallest among all the regions during the period under study. The STUs operating in Andhra Pradesh and Uttar Pradesh have registered higher revenue increase than the cost. The percentage increase of taxes was also the least among all the regions. Uttar Pradesh recorded negative growth in the taxes during the period between 1977-78 and 1986-87. The percentage of personnel and material costs won higher than the increase of non-controllable costs.

Most Backward States :

The cost increase is significantly higher than the revenue increase, in general. The cost-revenue gap is significantly high and alarming in STUs operating in Bihar and Orissa, during the period under study. The cost and revenue increase in STUs belonging to the most backward states was the highest among all the economic regions, during the period between 1977-78 and 1986-87. The percentage of taxes, interest and depreciation (Non-Controllable costs) is significantly higher than increase of controllable costs in all three states of Bihar, Orissa and Rajasthan. While the percentage increase of taxes and depreciation is highly insignificant.

Hilly and North-eastern States :

The comparable data is available only for the North-eastern states. The north-eastern states show high increase of the cost during the period under study. The increase of taxes is relatively insignificant in the north-eastern states. The percentage of controllable costs is higher than the increase of non-controllable costs. The cost-revenue gap, though significant, is relatively lesser than the gap, through significant, is relatively lesser than the gaps of West Bengal and Bihar.

An Over View of the trends in cost and revenue of STUs classified by Economic Regions

The cost increase has been relatively higher than the revenue increase in almost all the economic regions in the country during the period under study. The cost and the revenue increase of STUs operating in the developed states, in general, is significantly less than the cost and the revenue increase

of STUs operating in the developed states, in general, is significantly less than the cost and the revenue increase in the backward states. So, the relatively lesser increase of revenue in STUs belonging to the developed states could be viewed as a kind of direct subsidy to the general public who use the public transport in these states. In other words, the people who live in the developed states are more subsidised than their counterparts living in the developed states. The developed states, in general, have been playing relatively higher role in the process of balanced development through general subsidy, hence, they registered very low revenue increase during the period under study, and resulting in higher losses. For example, the developed states like Maharashtra, Gujarat, Punjab and West Bengal have registered relatively lesser revenue increase than the cost during the period between 1977-78 and 1986-87. Though the revenue increase is higher than the cost increase in the case of Tamil Nadu and Karnataka, in absolute terms they also incurring marginal losses in 1986-87. This, in a way, further substantiating the argument raised above. The relatively backward states like Andhra Pradesh, Uttar Pradesh and Rajasthan have also recorded for better performance, in terms of reducing the cost-revenue gap. In the case of Rajasthan, the cost increase is controlled during the period under study, and the percentage increase of interest and depreciation is insignificant. In Uttar Pradesh, the taxes show a negative growth and the percentage increase of non-controllable costs was also very minimum. Andhra Pradesh also succeeded in controlling the cost increase over the years and hence performing better. These three states prove that the performance can become better and viable simply by controlling the cost increase.

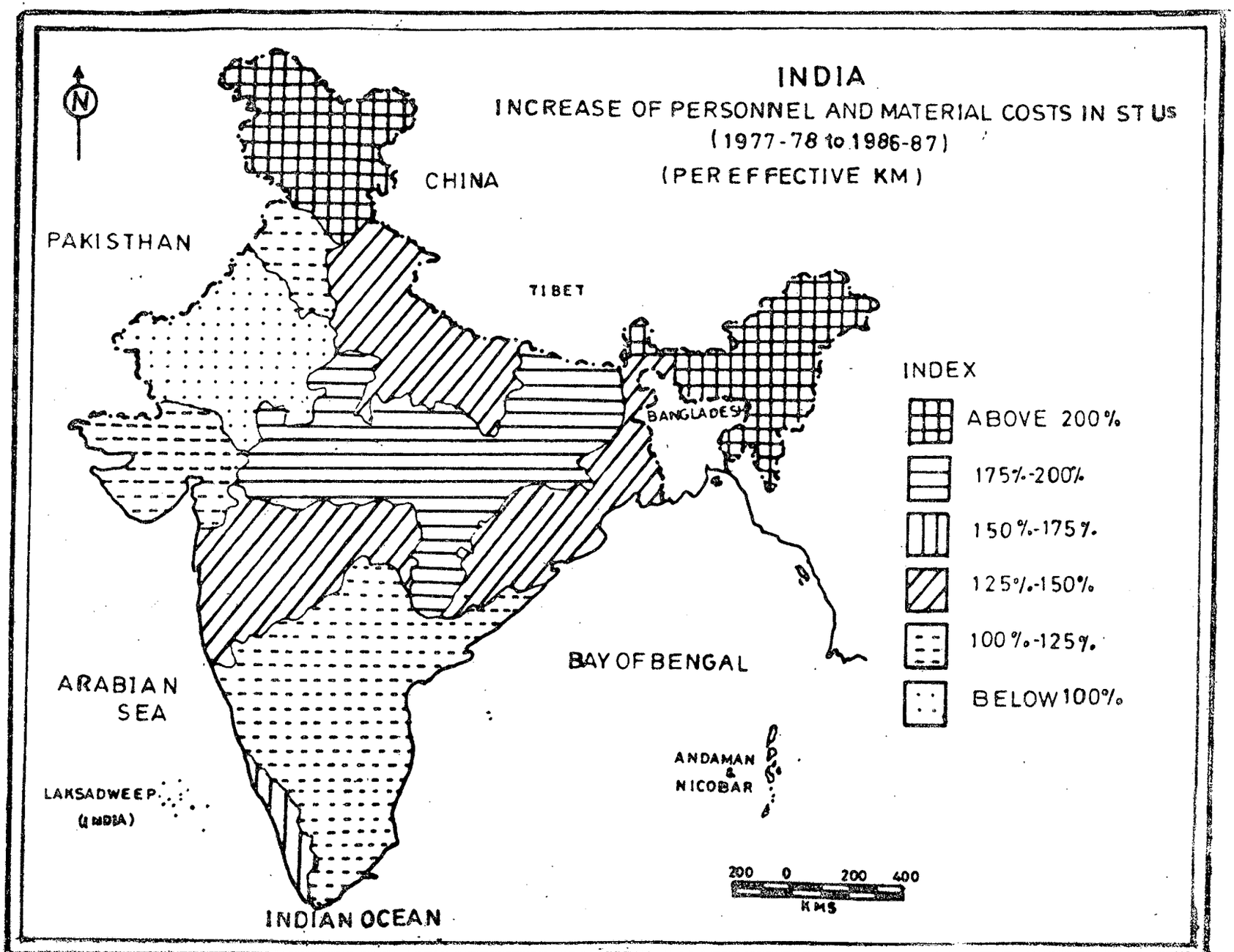

INDIA
INCREASE OF PERSONNEL AND MATERIAL COSTS IN ST Us
(1977-78 to 1986-87)
(PER EFFECTIVE KM)
N
CHINA
PAKISTHAN
TIBET
BANGLADESH
INDEX
ABOVE 200%
175%-200%
150%-175%
125%-150%
100%-125%
BELOW 100%
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR
LAKSADWEEP (INDIA)
200 0 200 400
KMS
INDIAN OCEAN

FIG. 6·1

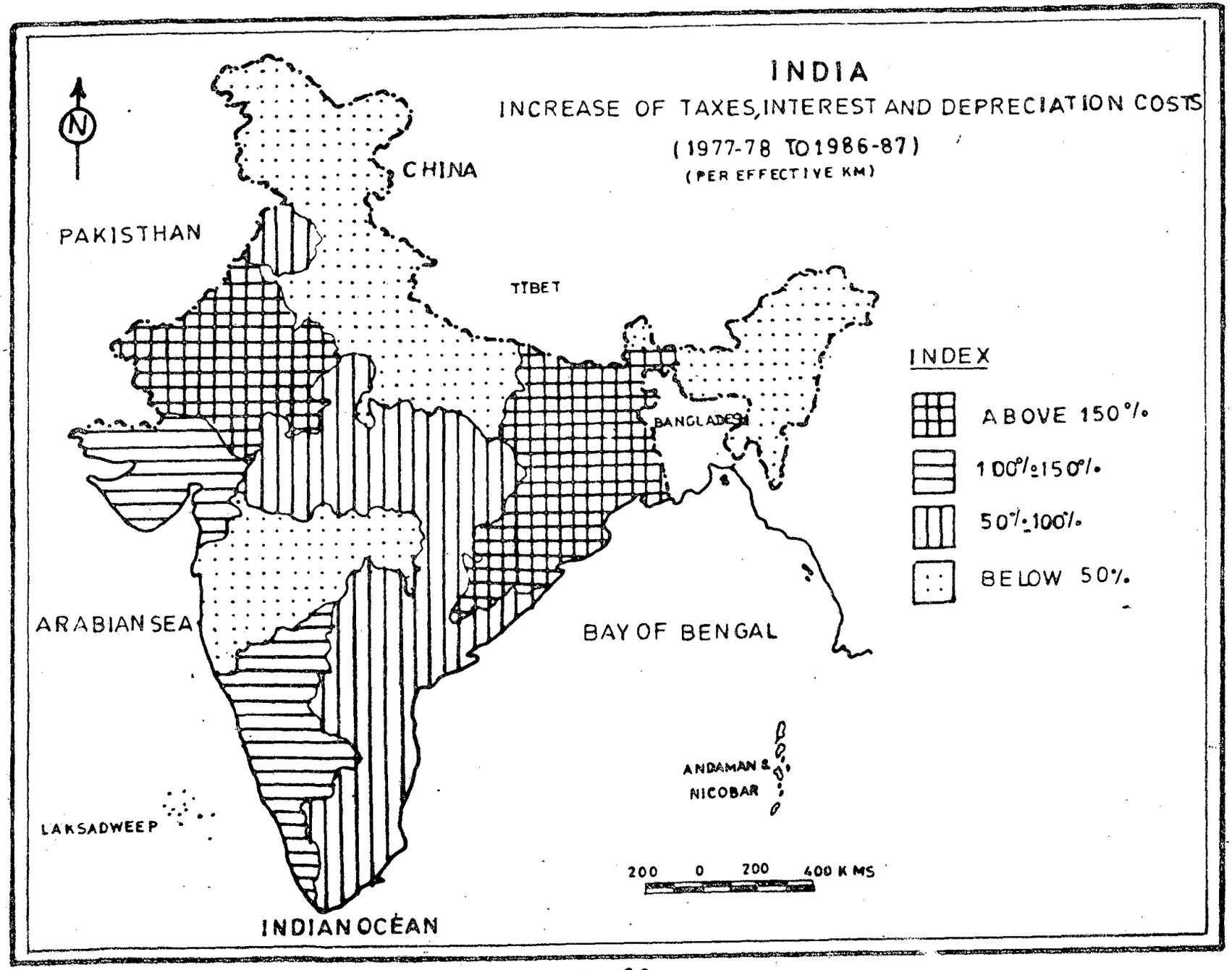

INDIA
INCREASE OF TAXES, INTEREST AND DEPRECIATION COSTS
(1977-78 TO 1986-87)
(PER EFFECTIVE KM)
N
CHINA
PAKISTHAN
TIBET
BANGLADESH
INDEX
ABOVE 150%
100%-150%
50%-100%
BELOW 50%
ARABIAN SEA
BAY OF BENGAL
ANDAMAN & NICOBAR
LAKSADWEEP
200 0 200 400 K MS
INDIAN OCEAN

FIG. 6·2

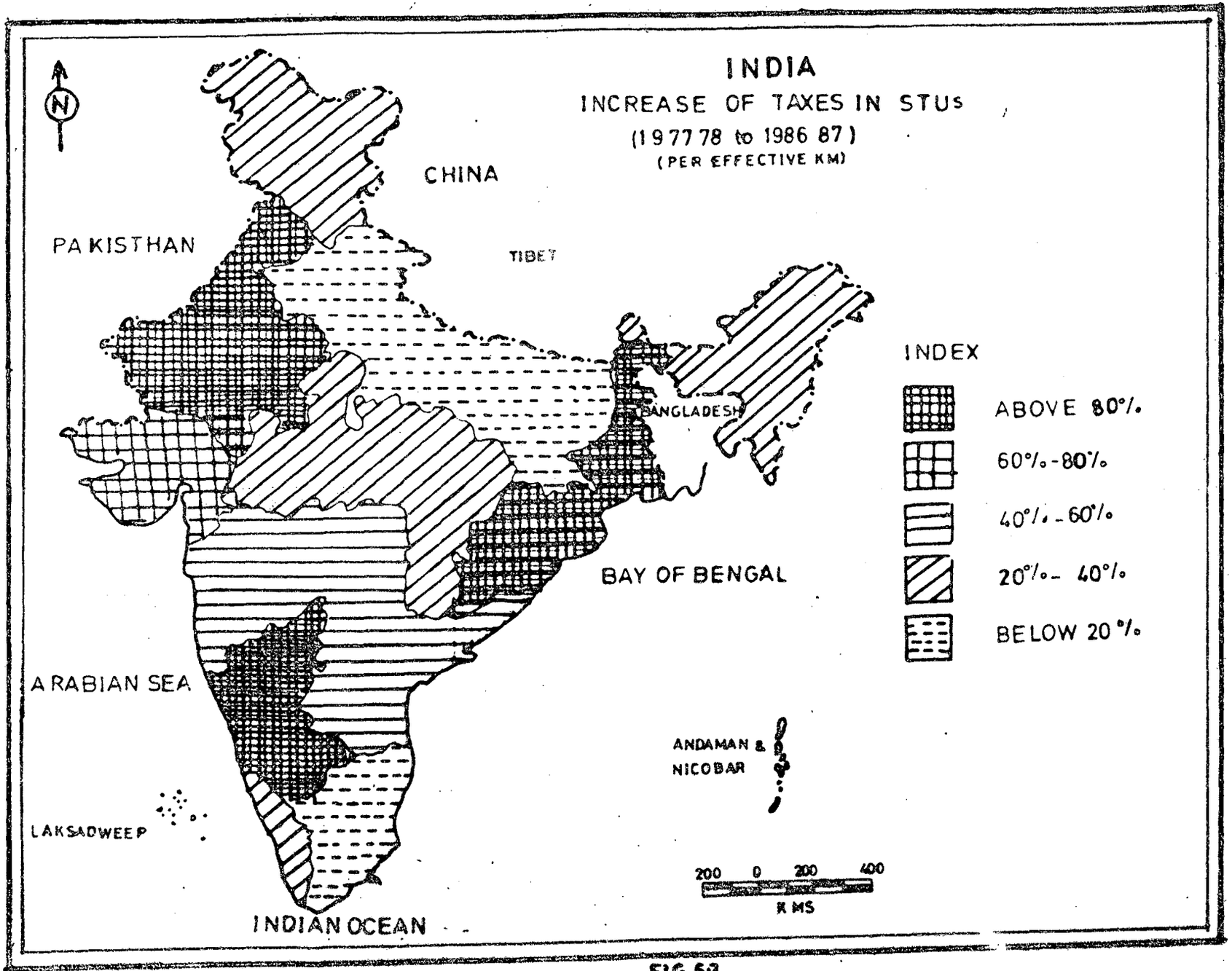

INDIA
INCREASE OF TAXES IN STUs
(1977 78 to 1986 87)
(PER EFFECTIVE KM)
N
CHINA
PAKISTHAN
TIBET
BANGLADESH
BAY OF BENGAL
ARABIAN SEA
ANDAMAN &
NICOBAR
LAKSADWEEP
INDIAN OCEAN
INDEX
ABOVE 80%
60%-80%
40%-60%
20%- 40%
BELOW 20 %
200 0 200 400
R MS

FIG. 6·3

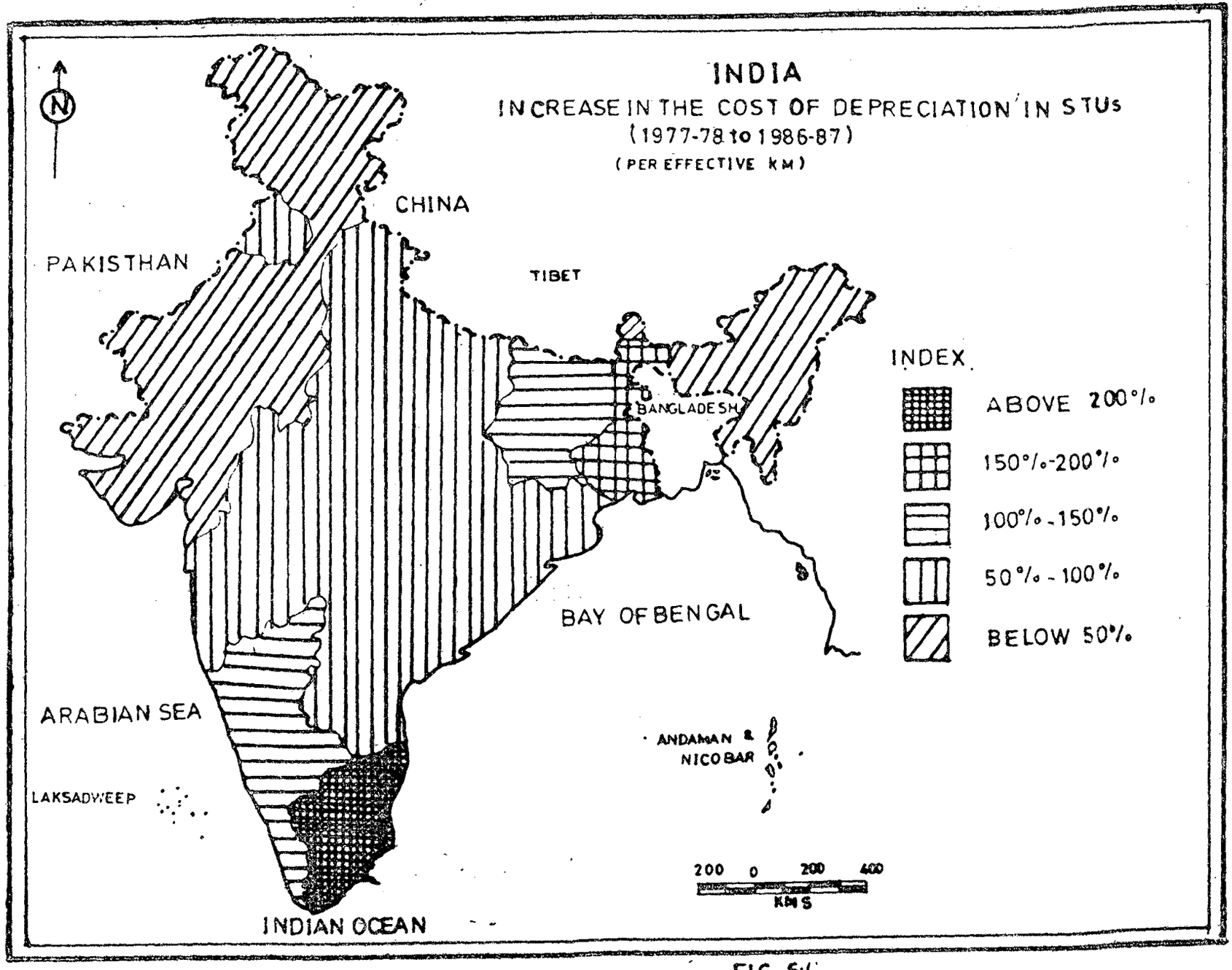

INDIA
INCREASE IN THE COST OF DEPRECIATION IN STUs
(1977-78 to 1986-87)
(PER EFFECTIVE KM)
N
CHINA
PAKISTHAN
TIBET
BANGLADESH
INDEX
ABOVE 200%
150%-200%
100%-150%
50%-100%
BELOW 50%
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR
LAKSADWEEP
200 0 200 400
KMS
INDIAN OCEAN

FIG. 6.4

Table 6.20

Trends in Cost and Revenue of STUs classified by Economic Regions
(1977-78 to 1986-87)

(The figures are the percentage increase of costs and revenue per Eff. Km)

Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
RELATIVELY DEVELOPED STATES									
1. Maharashtra	144.09	116.23	130.75	47.97	-36.09	96.05	26.23	122.54	96.07
2. Gujarat	109.65	99.43	105.27	60.80	252.88	38.82	107.51	95.42	84.96
3. Punjab	144.70	108.93	121.73	122.52	12.36	54.39	65.21	108.57	64.56
4. Haryana	117.78	98.23	105.29	-16.90	56.38	21.00	5.76	84.27	86.74
	128.08	106.16	116.44	44.23	68.94	54.34	54.65	103.09	84.46
MEDIUM DEVELOPED									
1. Tamilnadu	127.66	88.62	103.07	19.93	141.76	204.61	81.41	99.04	141.63
2. Karnataka	85.65	136.52	111.36	132.47	190.20	109.36	132.37	104.06	104.12
3. W. Bengal	149.55	144.82	147.50	300.00	257.14	153.84	215.87	171.94	26.50
4. Kerala	173.11	130.81	152.42	24.59	510.16	125.80	109.41	142.69	122.38
	138.66	125.51	132.03	59.42	362.19	148.09	136.83	132.98	96.29
RELATIVELY BACKWARD									
1. Madhya Pradesh	163.54	184.19	176.31	22.35	238.57	80.95	66.99	136.58	104.01
2. Uttar Pradesh	138.98	121.21	126.60	-65.49	128.57	71.42	30.88	94.81	96.39
3. Andhra Pradesh	135.93	75.06	104.12	57.01	401.50	87.13	88.69	99.87	104.89
	144.23	126.46	134.39	11.79	205.38	78.99	61.16	110.64	102.19
MOST BACKWARD									
1. Bihar	234.62	118.68	176.45	-17.92	774.42	147.86	213.79	194.73	115.41
2. Orissa	118.01	132.46	126.07	338.53	333.49	98.83	240.42	156.95	118.59
3. Rajasthan	160.00	53.19	90.27	2450.00	16.66	25.00	291.66	142.16	162.06
	177.65	97.93	132.28	242.38	447.79	95.41	237.97	167.76	131.73
HILLY NEn STATES									
1. J&K	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2. H.P.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
3. Sikkim	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
4. NEn States	256.17	170.04	209.25	31.42	126.46	22.49	49.09	183.62	126.43
Average	256.17	170.04	209.25	31.42	126.46	22.49	49.09	183.62	126.43
All India	164.55	99.05	127.28	95.55	248.99	116.35	140.59	133.49	101.57

Source : Report on the Performance of NRTUs, CIRT, Pune.

TRENDS IN COST AND REVENUE OF STUs CLASSIFIED BY GEOGRAPHICAL REGIONS

Northern States

The comparable data is available only for Punjab and Haryana in 1986-87 (Table 6.21). The percentage of cost and revenue of STUs operating in the Northern States was the least among all the geographical regions during the period under study. The cost-revenue gap is quite alarming in Punjab. The revenue increase is more than the cost increase in Haryana. The percentage increase of taxes, interest and depreciation was insignificant in Haryana. The cost-revenue gap of STUs of Northern States was smaller than all other regions, but for the Western States.

Eastern States

The STUs operating in the Eastern region of the country recorded the higher cost increase during the period under study. But, the percentage increase of revenue is lesser than all other geographical regions, barring the Northern states. The cost-revenue gap is alarming in all the Eastern states. However, the increase of taxes is insignifcant in North Eastern states and Bihar. The

cost-revenue gap of Eastern states is very much significant during the period under study.

Central States

The cost increase was higher than the revenue increase in STUs of Central states also. The cost increase was higher than the cost increase of Northern, Western and Southern states. The cost-revenue gap is significant in Madhya Pradesh and Orissa. The gap is larger than the cost-revenue gap of all but the Eastern states, during the period 1977-78 to 1986-87. The revenue increase is higher than the cost increase in U.P. The increase of non-controllable costs also relatively insignificant in U.P.

Western States

The cost-revenue gap is very minimum in STUs operating in Western region of the country. The revenue increase was higher than the national average, and as well as the revenue increase of all other regions, barring the Southern states. The cost-revenue gap is significant in Maharashtra. The percentage increase of non-controllable costs was significantly higher than the controllable costs' increase, in general. Maharashtra recorded negative growth in the percentage of taxes during the period under study.

Southern States

The cost increase in STUs belonging to the Southern states was lesser than the cost increase at the national level. It was also lesser than the cost increase of STUs of Eastern, Central

Table 6.21

Trends in Cost and Revenue of STUs classied by Geographical Regions
(1977-78 to 1986-87)

(The figures are the percentage increase of costs and revenue per Eff. Km)

Name of STU	Personnel	Material	P+M	Taxes	Int	Dep.	T+I+D	Total Cost	Total Rev.
NORTHERN STATES									
1. Jammu & Kashmir	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2. Himachal Pradesh	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
3. Punjab	144.70	108.93	121.73	122.52	12.36	54.39	65.21	108.57	64.56
4. Haryana	117.78	98.23	105.29	-16.90	56.38	21.00	5.76	84.27	86.74
	84.56	71.88	76.61	111.13	51.80	26.41	61.88	77.43	63.42
EASTERN STATES									
1. NEn States	256.17	170.04	209.23	31.42	126.46	22.49	49.09	183.62	126.43
2. Sikkim	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
3. W.Bengal	149.55	144.82	147.50	300.00	257.14	153.84	215.87	171.94	26.50
4. Bihar	234.62	118.68	176.45	-17.92	774.48	147.86	213.79	194.73	115.51
	272.84	104.30	173.49	26.76	478.93	223.03	369.59	199.84	84.02
CENTRAL STATES									
1. Uttar Pradesh	138.98	121.21	129.60	-65.49	128.57	71.42	30.88	94.81	96.39
2. Madhya Pradesh	163.54	184.19	176.31	22.35	238.57	80.95	66.99	136.58	104.01
3. Orissa	118.01	132.46	126.07	338.53	333.49	98.83	240.42	156.95	118.59
	138.08	146.55	142.88	48.46	223.02	81.60	92.36	130.67	104.16
WESTERN STATES									
1. Rajasthan	160.00	53.19	90.27	2450.00	16.66	25.00	291.66	142.16	162.06
2. Gujarat	109.65	99.43	105.27	60.80	252.88	38.82	107.51	95.42	84.96
3. Maharashtra	144.09	116.23	130.75	47.97	-36.09	96.05	26.23	122.54	96.07
	133.28	87.81	110.00	211.29	71.96	51.11	112.31	117.56	109.90
SOUTHERN STATES									
1. Andhra Pradesh	135.93	75.06	104.12	57.01	401.50	87.13	88.69	99.87	104.89
2. Karnataka	85.65	136.52	111.36	132.47	190.20	109.36	132.37	104.06	104.12
3. Tamilnadu	127.66	88.62	103.07	19.93	141.76	204.61	81.41	99.04	141.63
4. Kerala	173.11	130.81	152.42	24.59	510.16	125.80	109.41	142.69	122.38
Average	173.42	108.08	119.92	55.11	290.01	127.16	102.43	112.16	116.65
All India	164.55	99.05	127.28	95.55	248.99	116.35	140.59	133.49	101.57

Source : Report on the Performance of NRTUs, CIRT, Pune.

and Western states during the period under study. The revenue increase was highest in the country. The cost-revenue gap is the least among all the regions, with about just 4 percentage points. The revenue increase is higher than the cost increase in Tamil Nadu, Andhra Pradesh and Karnataka during the period under study.

AN OVER VIEW OF THE TRENDS IN COST AND REVENUE OF STUs CLASSIFIED BY GEOGRAPHICAL REGIONS

Table 6.21 reveals that the cost increase has been relatively higher than the revenue increase in all the economic regions during the period between 1977-78 and 1986-87. The cost-revenue gap is insignificant in STUs operating in the Southern states of the country. On the other hand, the cost-revenue gap is significantly high and alarming in STUs belonging to the Eastern states, in particular. The percentage increase of personnel and material costs (controllable costs) is found to be relatively higher than the increase of taxes, interest and depreciation (non-controllable costs) in STUs belonging to Northern, Central and Southern states during the period under study. While the increase of non-controllable costs was higher than the controllable costs in STUs of Eastern and Western states. The percentage increase of taxes during the period 1977-78 to 1986-87 is relatively lesser in STUs operating in the East, Central and Southern regions of the country.

Table 6.22

Operational Economics of NRTUs in India (1975-76 to 1986-87)

	In million rupees			(Paise/Egg. Km.)		
Year	T.Rev.	T.Cost	Profit/Loss	Revenue	Cost	Profit/Loss
1975-76	5542.1	5632.1	-90.0	193.4	196.6	-3.2
1976-77	6745.6	6692.8	52.8	203.2	201.6	1.6
1977-78	7538.7	7640.7	-102.0	209.9	212.7	-2.8
1978-79	8632.9	8844.0	-211.1	223.2	228.7	-5.5
1979-80	10881.9	10712.2	-535.3	239.3	251.9	-12.6
1980-81	133452.8	15610.0	-2158.1	252.1	292.6	-40.5
1981-82	17684.3	20775.8	-3091.5	310.4	364.6	-54.2
1982-83	19914.2	22293.2	-2379.0	340.7	381.4	-40.7
1983-84	22265.1	25229.2	-2964.1	359.8	407.7	-47.9
1984-85	23611.4	27762.4	-4151.0	370.3	450.4	-65.1
1985-86	27350.7	31972.2	-4621.5	404.8	473.2	-68
1986-87	31807.4	36917.0	-5109.6	417.7	484.8	-67.1

Source : Performance Statistics compiled by CIRT, Pune, from time to time.

SUMMARY OF RESULTS

The analysis of the operational performance of the state transport undertakings for the period between 1977-78 and 1986-87 reveals that the cost increase has been higher than the revenue increase in almost all the STUs, barring a few. The revenue increase was higher than the cost increase in STUs belonging to Andhra Pradesh, Haryana, Karnataka, Rajasthan, Tamil Nadu and Uttar Pradesh during the period under study.

The pecentage of non-traffic revenue to the total revenue is less than 5 per cent in most STUs in 1986-87, thus the non-traffic revenue has very little impact on the cost-revenue structure of STUs. While the percentage of non-traffic revenue constitute about 32 percentage of the total revenue in Manipur and 21 percentage in Bihar. It is to be noted here that these two states are already under crisis (of inefficiency), and if one excludes the non-traffic revenue from the total revenue, then the cost-revenue gap would be further widened. Similarly, if the non-traffic revenue is excluded, Andhra Pradesh and Uttar Pradesh SRTCs also would have recorded losses in 1986-87. The companies of Tamil Nadu also no exception to this. However, the impact of miscellaneous revenue is very little in rest of the STUs.

The personnel and material costs constitute the major portion of the total cost in all the STUs during the study. These two account for about 75 percentage to 80 percentage of the total cost in STUs operating in the states of Maharashtra, Punjab, Haryana, Kerala and Uttar Pradesh during the period 1986-87.

The percentage is about 65 percentage to 70 percentage in Gujarat, Tamil Nadu, Karnataka, West Bengal, M.P. and Andhra Pradesh. While it constitute about 60 percentage in Rajasthan and Bihar. The percentage of controllable costs (personnel and material) has shown increasing trend in the STUs operating in the relatively developed states and relatively backward states. But, these two regions recorded a decline in the percentage of taxes, interest and depreciation. The percentage of material cost also registered significant decline in most STUs during the period.

There has been significant decline in the percentage of material cost in most STUs during the period 1977-78 to 1986-87. The percentage of material cost was higher than the personnel cost in all the companies of Tamil Nadu, barring Pallavan TCL.

On the other hand, the corporations (barring Karnataka, M.P., Orissa, Rajasthan and U.P. SRTCs) and the municipal transport undertakings have registered for higher personnel cost share than the material cost. Over-staffing seems to be one of the reasons for higher increase in the personnel cost besides the wage increase and trade union problems. It was generally observed that if a bus has to operate for 10 hours, due to labout law restrictions, STU has to employ two sets of crew and thus each crew will put only 5 hours of service, this not only pushes up the staff-ratio but also the wage costs. Thus, cutting down the staff-bus-ratio by eliminating unproductive and wasteful work will be extremely desirable.

The percentage of taxes, interest and depreciation have shown significant decline in the all the municipal transport undertakings and Government Departmental undertakings during the period under study. The percentage of taxes, in particular, recorded significant decline in most STUs. Of the thirtyeight STUs considered for the study, the percentage of taxes to the total cost was about 3 per cent in seven STUs, about 4 per cent to 8 per cent in another fifteen STUs and about 10 per cent to 14 per cent in eleven more STUs, during the period 1986-87. In other words, thirtythree out of thirtyeight STUs considered, recorded less than 14 percentage as taxes in 1986-87, which is quite reasonable by any standard. The taxes accounted for about 15 per cent to 20 per cent in Maharashtra, Gujarat, Karnataka and Rajasthan SRTCs only. Therefore, the taxes cannot be blamed for the increasing cost of operation in state transport undertakings in India. Moreover, taxes, interest and depreciation show significant decline in most STUs during the period under study.

Similarly, the interest also cannot be blamed for the cost increase, in general. For example, the percentage of interest was about 5 per cent in eighteen STUs, 5 per cent to 10 per cent in another seven more STUs during the period under study. Thus, thirtythree out of thirtyeight STUs considered for the study accounted for less than 15 percentage as interest cost in 1986-87.

Widening cost-revenue gap in State Transport Undertakings could be attributed to the uneconomic fares, which have been

kept low as a deliberate policy of the Government.

Despite the significant achievements of STUs in bringing down the percentage share of material cost, taxes, interest and depreciation over time, they still show losses. Table 6.22 shows the operational performance of STUs as a whole. It can be observed from the table that the loss per effective km seems to be on a declining trend since 1985-86. The STUs seems to have stabilised their losses in the recent years.

Given the minimum required autonomy in fixing the fares the STUs can do still better, not only in improving the physical and operational performance, but also in attaining the balance development in the country.

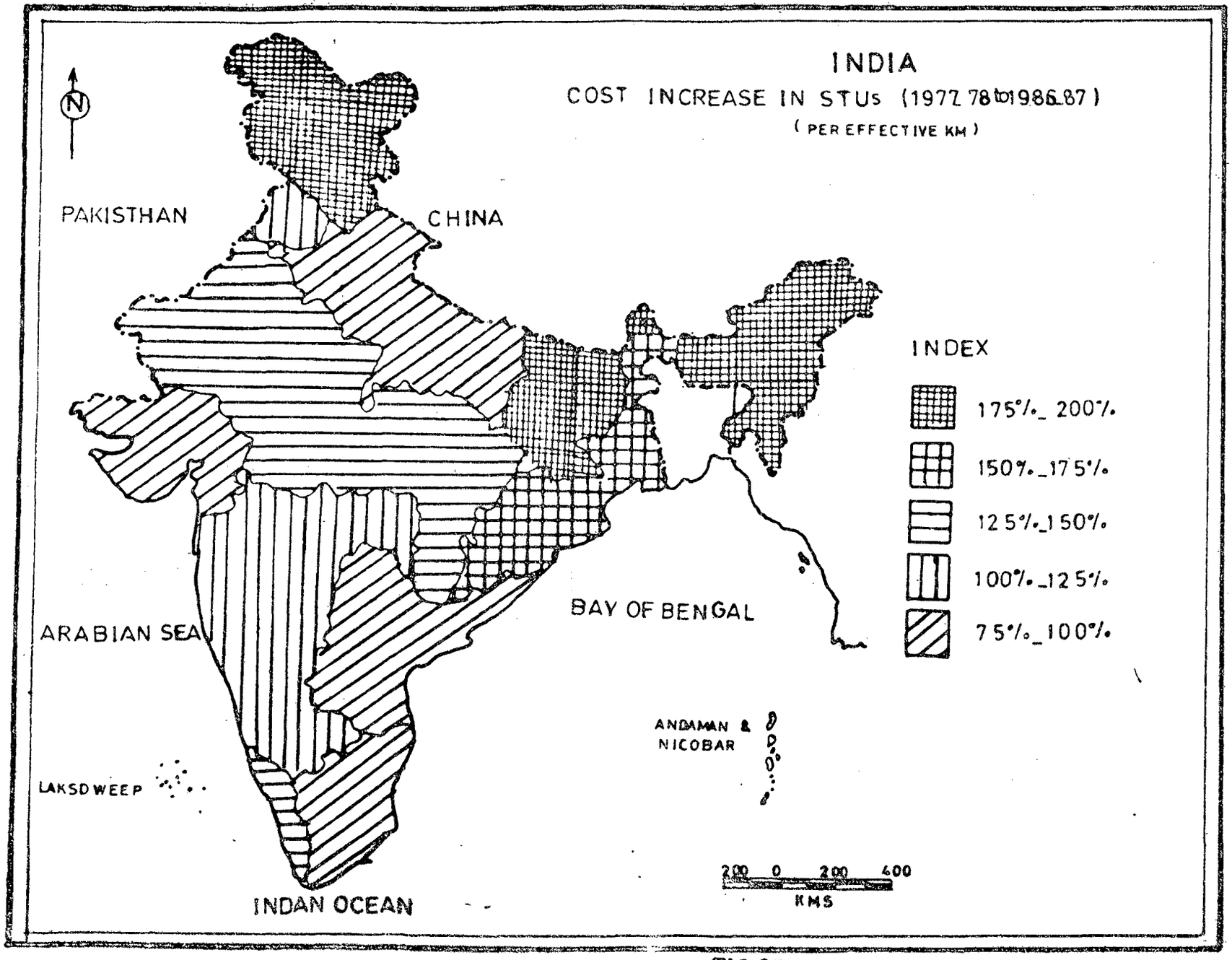

INDIA
COST INCREASE IN STUs (1977 78 to 1986 87)
(PER EFFECTIVE KM)
N
PAKISTHAN
CHINA
INDEX
175%_ 200%
150%_175%
125%_150%
100%_125%
75%_100%
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR
LAKSDWEEP
INDAN OCEAN
200 0 200 400
KMS

FIG. 6·5

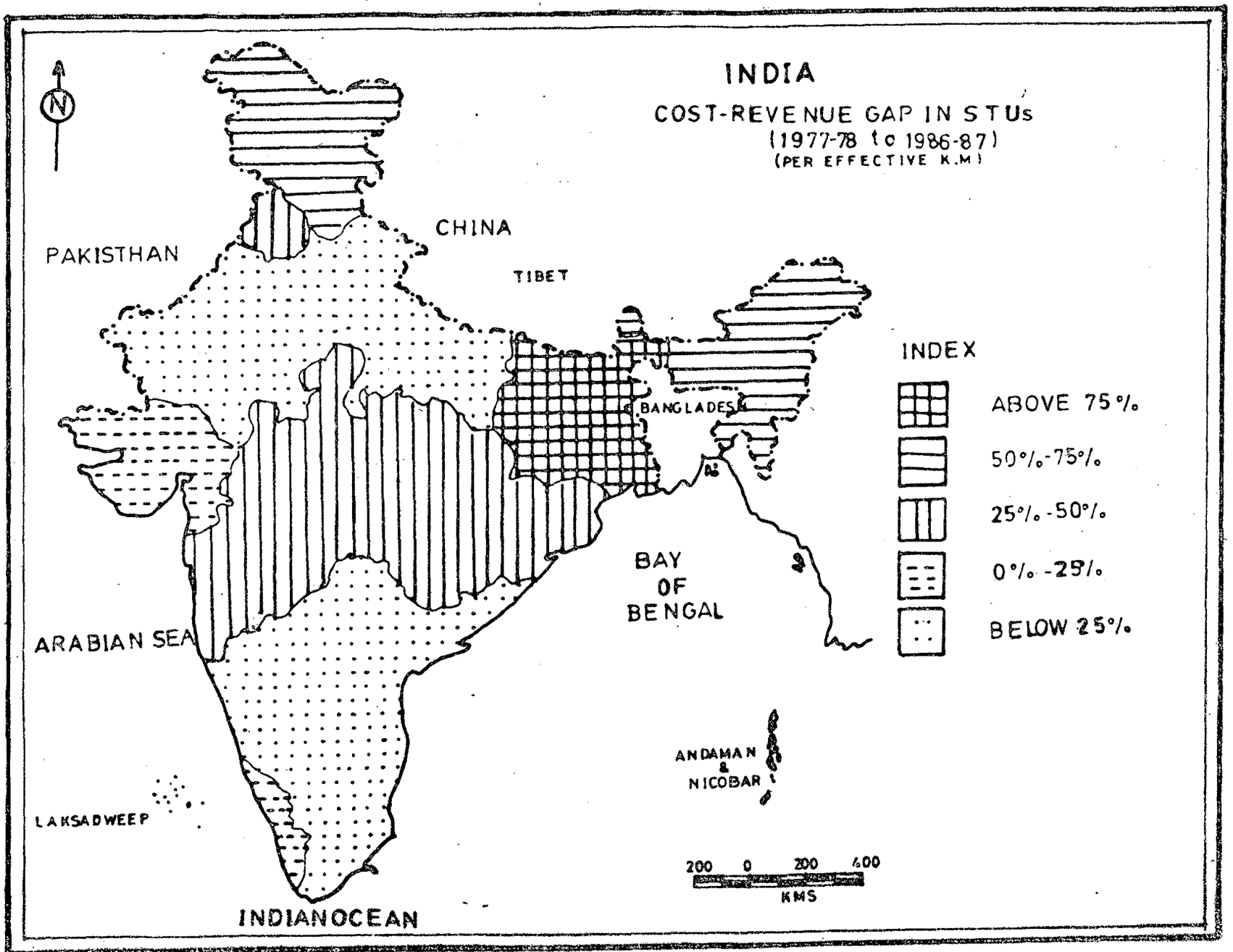

INDIA
COST-REVENUE GAP IN STUs
(1977-78 to 1986-87)
(PER EFFECTIVE K.M)
N
PAKISTHAN
CHINA
TIBET
BANGLADESH
BAY
OF
BENGAL
ARABIAN SEA
ANDAMAN
&
NICOBAR
LAKSADWEEP
INDIANOCEAN
INDEX
ABOVE 75%
50%-75%
25%-50%
0%-25%
BELOW 25%
200 0 200 400
KMS

FIG 6-7

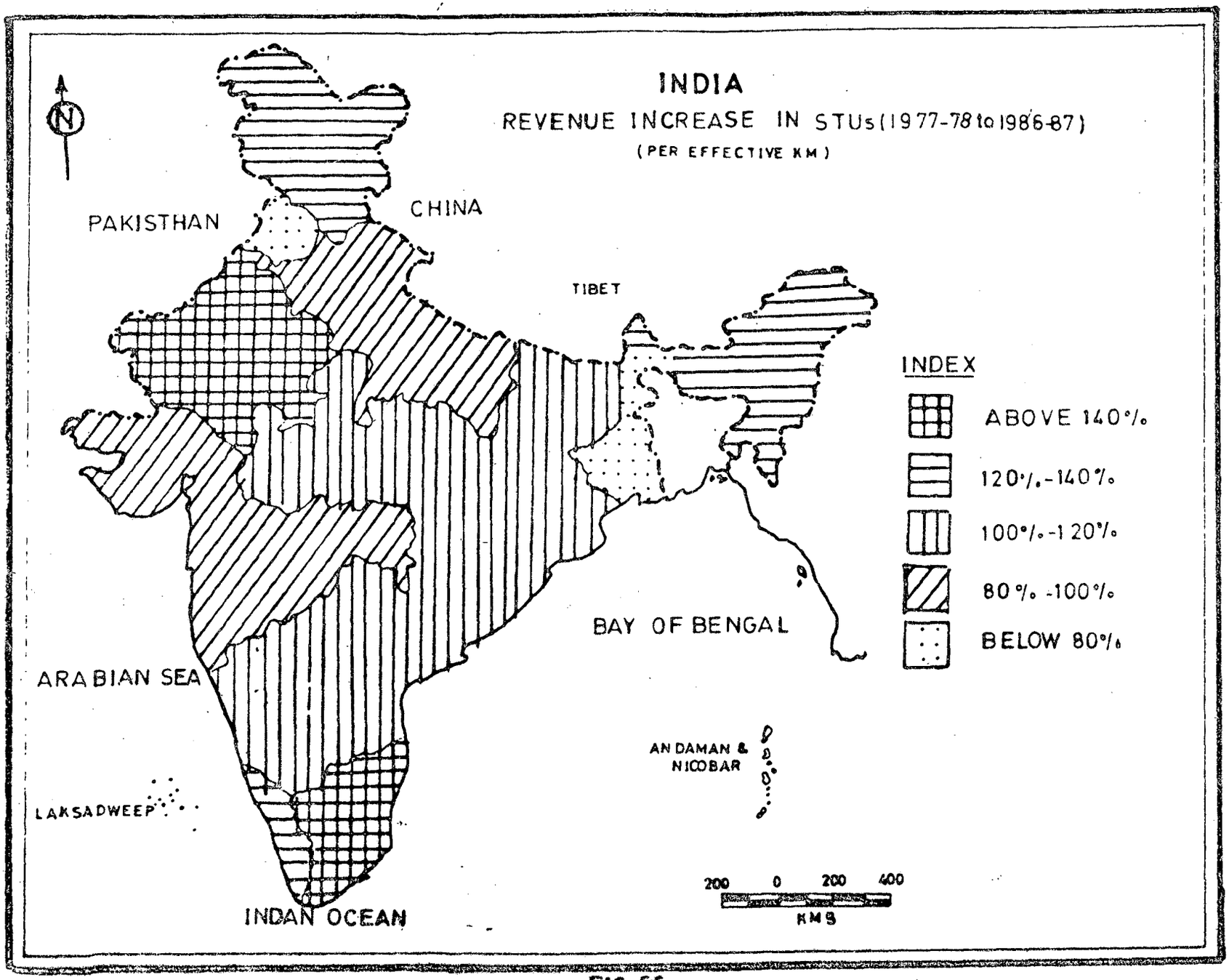

INDIA
REVENUE INCREASE IN STUs (1977-78 to 1986-87)
(PER EFFECTIVE KM)
N
PAKISTHAN
CHINA
TIBET
INDEX
ABOVE 140%
120%-140%
100%-120%
80%-100%
BELOW 80%
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR
LAKSADWEEP
INDAN OCEAN
200 0 200 400
KMS

FIG. 66

CHAPTER VII

AN ANALYSIS OF THE METROPOLITAN AND CITY TRANSPORT UNDERTAKINGS IN INDIA (1977-78 TO 1986-87)

This chapter deals with the physical and operational performance of metropolitan and city transport undertakings in India during the period under study. Apart from analysing the cost-revenue structure of the city transport undertakings, an attempt has been made to ascertain whether the public transport users are paying less than the expenditure incurred by the Government in providing the service. Beside analysing the variations in the physical and operational performance between the different city undertakings, it makes an attempt to compare them with a best performing corporation, a company and Government Departmental undertaking during the period under consideration. For this purpose, Andhra Pradesh SRTC, Cholan TCL and Haryana ST are considered. It needs mention here that the above three STUs are some of the best performing STUs in the country during the period under study. Incidentally, Andhra Pradesh SRTC is one of the largest undertaking with about 10760 passenger buses (as on 31st March,1987), Haryana ST, a medium sized undertaking with about 3090 passenger buses and Cholan TCL, a small sized with just about 650 buses. It serves the purpose to examine how far the city undertakings are succeded in achieving their performance targets as against the best performing STUs considered for the study.

PHYSICAL PERFORMANCE OF METROPOLITAN AND CITY TRANSPORT UNDERTAKINGS

Fleet utilisation (F.U. in percentage)

The average percentage fleet utilisation of city undertakings was more or less remained same during the period between 1977-78 and 1986-87. It was less than the national average and as well as the percentage F.U. of the best performing STUs considered for the study. However, there is some improvement in fleet utilisation in all city undertakings, barring BEST, Calcutta STC and Kolhapur MTS, during the period under study. The percentage F.U. of Pallavan TCL, Chandigarh TU and Pune MT is higher than the national average in 1986-87. If one exclude the Calcutta STC and PCMT from the analysis, the F.U. would be moderate in the remaining city undertakings.

Vehicle utilisation (V.U. in kilometers)

The average V.U. of city transport undertakings was less than national average in 1977-78 and 1986-87 as well. This is so, because the fleet V.U. tends to be very low in city transports than the V.U. in inter city and mofussil services due to the very nature of the city transport services. Though the average increase in vehicle utilisation of city undertakings is relatively less than the level of increase at the national level, they do recorded an increase of 16 kilometers from 1977-78 to 1986-87. The level of V.U. has remained, more or less unchanged in most city undertakings, barring Calcutta STC, Ahmedabad MTS and Solapur

MTU, is relatively higher than the V.U. of Haryana ST in 1986-87.

Fuel Efficiency (in kilometers)

Like more than parameters of physical efficiency, the average fuel efficiency is also less than the national average. It has however, registered marginal increase from 1977-78 to 1986-87. The fuel efficiency is very much less than the corresponding increase at the national level. It is also less than that of the best performing STUs, barring Haryana ST. BEST undertaking, Ahmedabad MTS and Kolhapur MTS have shown marginal improvements in fuel efficiency during 1986-87. On the other hand, DTC, Pallavan TCL and Calcutta STC recorded significant decline in the level of fuel efficiency in 1986-87.

Tyre Performance (in kilometers)

The tyre performance of city undertakings was about 60,300 kms in 1977-78 which increased to 100,700 kms in 1986-87. Almost all the city undertakings registered significant increase in the level of tyre performance during the period under study. The average tyre performance of city undertakings is higher than the national average and as well as the best performing STUs considered for the study. The tyre performance of DTC, Calcutta STC and Chandigarh TU is relatively poor and also less than the national average in 1986-87.

Index of Carrying Capacity

The index of carrying capacity of city undertakings is

Table - 7.1

Physical Performance of Metropolitan and City Transport Undertakings in India (1977-78)

Name of STU	F.U. %	V.U. (Kms)	Fuel Effi (Kms)	Tyre Per (Kms)	Index of carrying capacity	M.P.P. (Kms)	Staff Ratio	Break-downs/ 10000Kms	Accidents/ 100000 Kms
1. Delhi T.C.	73.24	228.00	3.64	57500	N.A.	20.57	11.08	4.87	1.87
2. BEST	92.00	222.20	2.84	53232	38.85	15.49	14.34	1.91	8.82
3. Pallavan TCL	86.80	217.00	3.64	59171	N.A.	23.95	9.06	2.00	2.40
4. Calcutta STC	59.24	151.00	3.12	55557	N.A.	12.44	12.13	20.40	1.90
5. Ahmedabad MTS	79.18	182.90	3.63	91154	27.00	19.76	9.28	14.73	2.22
6. Chandigarh T.U.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
7. Pune MT	82.88	220.00	N.A.	N.A.	34.65	19.11	11.51	2.64	1.99
8. PCM T	N.A.	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.
9. Kolhapur MTS	88.00	189.00	3.70	45617	32.65	18.49	10.22	13.00	0.71
10. Solapur MTV	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Average	**80.19**	**201.44**	**3.42**	**6037.83**	**33.28**	**18.53**	**11.08**	**8.50**	**2.84**
1.APSRTC	93.30	306.49	4.30	N.A.	11.83	29.02	10.56	0.73	0.34
2. Cholan TCL	84.00	325.00	3.82	N.A.	17.00	43.62	7.45	0.92	0.59
3. Haryana ST	94.00	256.70	3.80	N.A.	5.84	45.03	5.70	0.33	0.22
All-India	**79.97**	**234.66**	**3.82**	**51978**	**12.33**	**28.40**	**N.A.**	**N.A.**	**N.A.**

Source: Report on the Performance of NRTUs 1977-78 and 1978-79 CIRT, Pune.

Table - 7.2

Physical Performance of Metropolitan and City Transport Undertakings (1986-87)

Name of STU	F.U. %	V.U. (Kms)	Fuel Effi (Kms)	Tyre Perfo (Kms)	Index of Carrying Capacity	M.P.P. (Kms)	Staff Ratio	Break-down 10000Kms	Accidents/ 1 Lakh Kms.
1. D.T.C.	86.30	224.00	3.59	72161	29.47	18.63	12.02	4.18	1.60
2.BEST	85.6	221.00	2.94	109463	35.43	17.25	12.81	1.23	6.79
3. P.T.C.	88.00	216.00	3.49	126867	39.39	24.32	8.88	0.50	3.27
4. CSTC	58.80	216.00	2.84	49471	13.24	8.48	18.38	16.70	1.32
5.Ah MTS	84.20	182.40	3.73	141196	22.74	15.94	11.44	4.09	1.41
6.CHTU	95.90	218.80	3.29	70280	16.70	31.71	6.90	0.80	0.60
7.PMT	89.50	224.40	3.40	N.A.	32.88	19.89	11.28	0.90	3.14
8.PCMT	55.00	296.00	3.60	N.A.	23.14	27.71	10.68	7.91	0.64
9.KMTS	82.10	219.00	3.78	126009	23.00	18.64	11.62	11.35	1.12
10.SMTU	79.00	215.00	3.77	N.A.	25.43	27.67	7.77	N.A.	1.60
Average	80.00	217.26	3.44	100778	26.14	21.02	11.17	5.29	
1. APSRTC	95.40	302.00	4.85	93543	11.86	34.35	8.79	0.47	0.20
2.CTC	94.20	383.90	4.45	N.A.	19.75	50.78	7.56	0.32	0.20
3.HSTC	95.90	218.00	3.29	70280	7.38	53.98	5.65	0.13	0.18
A-India	88.00	272.40	4.21	76000	15.30	30.20	9.02	0.75	0.63

Source: Report on Performance of NRTUs 1985-86 and 1986-87, CIRT, Pune.

relatively higher than the index at the national level and as well as the best performing STUs considered for the study, during 1977-78 and 1986-87 as well. The index, however, show a decline in 1986-87. Barring Kolhapur MTS, rest of the city undertakings registered a decline in their carrying capacity during the period under study.

Man power Productivity (MPP in kms)

The man power productivity of city undertakings is far less than the MPP of best performing STUs considered for the study. It was also less than the national average during both points of time under study. DTC, Calcutta STC and Ahmedabad MTS have registered considerable decline in MPP during the period under study.

Staff-Ratio

The average bus-staff-ratio has, more or less, remained unchanged during the period between 1977-78 and 1986-87. The staff-ratio of city undertakings is, however, much higher than the national average and as well as the staff-ratio of the best performing STUs considered for the study. Calcutta STC in particular, show considerable increase in its staff-ratio in 1986-87. while DTC and Ahmedabad MTC also show a marginal increase in the staff-ratio. The staff-ratio, however, show a declining trend in BEST undertaking and Pallavan TCL during the period under study.

Breakdowns and Accidents

The number of breakdowns and accidents are higher than the national average and as well as the best performing STUs considered for the study. The occurrence of breakdowns and accidents are quite high in cities, hence the city undertakings registered significantly higher number of breakdowns and accidents than the regional transport undertakings during the period under study. Almost all the city undertakings have shown a decline in the number of breakdowns and accidents in 1986-87.

AN OVER VIEW OF THE PHYSICAL PERFORMANCE OF METROPOLITAN AND CITY UNDERTAKINGS

Table 7.1 and Table 7.2 reveal that the physical efficiency of the city undertakings, in generl, is significantly less than the national average and as well as the average performance of the best performing STUs considered, during the period under study. The FU is moderate in all the city undertakings, barring Calcutta STC and PCMT. The VU has remained more or less unchanged in the city undertakings during the period under study. The fuel efficiency, however, is rather low and far less than the national average. The level of tyre performance show considerable improvements in all the city undertakings in 1986-87. The increase in the tyre performance of city undertakings is significantly higher than the increase in the tyre performance of the regional transport undertakings. The number of breakdowns and accidents, though higher than the increase in the tyre performance of the regional

transport undertakings. The number of breakdowns and accidents, though higher than the national average, registered considerable decline in the city undertakings during the period between 1977-78 and 1986-87. The physical efficiency of the city undertakings, however, is far less than the best performing STUs considered for the study. Vehicle Utilisation, fuel efficiency and tyre performance of the city undertakings are, however, better than the Haryana ST in 1986-87.

Operational Economics of Metropolitan and City Transport Undertakings

The variations in the percentage share of different cost elements to the total cost and the cost-revenue structure between different city transport undertakings is analysed in this section. Table 7.3 to Table 7.6 provide the basis for the analysis.

Personnel and Material Costs (Controllable Costs)

The average percentage of personnel and material costs of city transport undertakings registered an increase of 4 percentage points during 1977-78 to 1986-87. It was higher than the national average and as well as the average personnel and material costs of the best performing STUs, barring Haryana ST, considered for the study. The percentage of personnel cost has registered significant increase in all the city undertakings. On the other hand, the material cost shows considerable decline. The percentage of personnel cost increase is relatively higher than the material cost increase in almost all the city undertakings during the period under consideration. The share of material cost of city undertakings

is considerably less than the material cost share at the national level and as well as the best performing STUs considered for the study. DTC and Pune MT recorded considerable decline in the percentage of controllable costs during the period under study. On the other hand, BEST undertaking and Ahmedabad MTS recorded considerable increase in both personnel and material costs. The percentage of controllable costs of DTC and BEST undertaking is relatively less than the rest of the city undertakings, the national average and as well as the best performing STUs considered for the study. Almost, all the city transport undertakings have shown considerable decline in the percentage of non-controllable costs, barring DTC. The decline is quite sharp in Calcutta STC, Ahmedabad MTS and Pune MT during the period under study. The taxes, in particular, has registered significant decline in all the city transport undertakings considered for the study. The percentage share of depreciation also registered a declining trend in almost all the city undertakings, barring Pallavan TCL and Calcutta STC.

Taxes, Interest and Depreciation (Non-controllable costs)

The average percentage of taxes, interest and depreciations of city transport undertakings have registered considerable decline during the period from 1977-78 to 1986-87. It was also less than the percentage of non-controllable costs of the best performing STUs considered for the study, barring Haryana ST. Almost, all the city transport undertakings, barring DTC, have shown significant decline in the percentage share of non-controllable costs. The

Table - 7.3
City Transport Undertakings (1977-78)(Paise/Effective Km.)

Name of Stu	Per	Mat. 2	P+M 1+2	Taxes 3	Int. 4	Dep. 5	T+I+D 3+4+5	T.Cost 6	T. Revenue 7
1. DTC	97.72	93.79	191.51	5.34	51.73	25.35	82.42	279.21	158.96
2 BEST	123.88	86.71	210.59	20.82	22.29	48.26	91.37	361.86	320.23
3. PTC	78.20	89.00	167.20	21.30	7.60	12.50	41.40	219.90	223.00
4.CSTC	239.28	184.69	423.97	6.98	148.13	65.37	220.48	666.28	251.46
5. Ah MTs	126.81	82.66	209.47	9.91	34.07	20.90	64.88	285.82	238.41
6.CHTU	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
7.PMT	108.20	80.91	189.11	13.96	18.47	11.55	43.98	238.67	218.83
8.PCMT	N.A.	N.A.	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.
9.KMTS	93.00	89.00	182.00	14.00	3.00	21.00	38.00	231.00	245.00
10.SMTU	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A
Average	**123.87**	**100.96**	**224.83**	**13.18**	**40.75**	**29.27**	**83.21**	**326.10**	**236.55**
1. APSRTC	66.29	71.86	138.15	31.78	3.33	22.23	57.34	208.08	206.40
2.CTC	47.00	86.00	133.00	41.00	6.00	10.00	57.00	194.00	203.00
3.HSTC	41.60	73.60	115.20	29.00	9.40	11.90	50.30	170.40	173.50
A-India*	75.32	91.10	166.43	23.28	17.82	22.22	63.22	236.95	207.01

Source: Report on theperformance of NRTus 1977-78 and 1978-79.CIRT, Pune.

Note: * Ref. Table 6.1 to Table 6.4(The average is Computed for 38 STUs only)

Table - 7.4

Operational Economics of Metropolitan and City Transport Undertakings (1986-87)
(Paise/Effective Km.)

Name of STU	Per (1)	Mat.(2)	P+M (1+2)	Taxes(3)	Int (4)	Dep.(5)	T+I+D	T.Cost	Tra.Re	T.R
1. D.T.C.	284.20	187.40	471.60	8.60	402.00	37.10	447.70	764.40	348.30	334.60
2.BEST	323.30	195.30	518.60	38.90	55.20	89.10	183.20	799.30	596.50	638.50
3. P.T.C.	251.30	182.40	433.70	19.60	28.90	39.40	87.90	538.90	480.40	505.80
4. CSTC	607.70	280.10	887.80	8.50	153.20	158.90	320.60	1239.20	417.20	436.60
5.Ah MTS	269.40	167.60	437.00	13.00	46.70	24.40	84.10	570.70	460.80	470.30
6.CHTU	149.00	204.00	353.00	6.00	23.00	44.00	73.00	455.00	333.00	355.00
7.PMT	263.10	179.40	442.50	25.30	16.70	25.00	67.00	580.30	561.30	587.20
8.PCMT	187.00	205.00	392.00	33.00	0	0	33.00	433.00	340.00	356.00
9.KMTS	289.30	198.70	488.00	25.40	21.40	43.90	90.70	586.40	491.90	499.40
10.SMTU	201.00	166.00	367.00	17.00	N.A.	N.A.	N.A.	N.A.	381.00	416.00
Average	**282.53**	**196.59**	**479.12**	**19.53**	**83.01**	**51.31**	**154.13**	**663.02**	**441.04**	**460.70**
1. APSRTC	156.20	125.80	282.00	49.90	16.70	41.60	108.20	415.90	409.50	422.90
2.CTC	108.00	135.00	243.00	44.00	14.00	48.00	106.00	371.00	359.00	372.00
3.HSTC	90.60	145.90	236.50	24.10	14.70	14.40	53.20	310.00	314.00	324.00
All-India*	201.38	183.08	384.46	39.50	49.88	48.97	138.35	537.26	404.12	427.92

Source: Report on the performace of NRTUs, 1985-86 and 1986-87, CIRT, Pune.

*Note: Same as in Table 7.3.

Table - 7.5

Operational Economics of Metropolitan and City Transport Undertakings (1977-78)
(The figures are in percentages to the total cost)

Name of STU.	Per 1	Mat. 2	Pt,. 1+2	Taxes 3	Int. 4	Dep. 5	T+I+D 3+4+5	T.Cost 6
1. D.T.C.	35.00	33.59	68.59	1.91	18.52	9.07	29.51	100
2.BEST	34.23	23.96	58.19	5.75	6.15	13.33	25.25	100
3. P.T.C.	35.56	40.47	76.03	9.68	3.45	5.68	18.82	100
4. CSTC	35.91	27.71	63.62	1.04	22.23	9.81	33.09	100
5.Ah MTS	44.36	28.92	73.28	3.46	11.92	7.31	22.69	100
6.CHTU	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.	N.A.
7.PMT	N.A.	N.A.	N.A.	N.A	N.A.	N.A.	N.A.	N.A.
8.PCMT	45.33	33.90	79.23	5.84	7.73	4.83	18.40	100
9.KMTS	40.25	38.52	78.77	6.06	1.29	9.09	16.44	100
10.SMTU	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Average	**37.98**	**30.95**	**68.93**	**4.04**	**12.49**	**8.97**	**25.51**	**100**
1. APSRTC	31.85	34.53	66.38	15.27	1.60	10.68	27.55	100
2.CTC	24.22	44.32	68.54	21.13	3.09	5.15	29.38	100
3.HSTC	24.41	43.19	67.60	17.01	5.51	6.98	29.50	100
All-India*	31.78	38.44	70.22	9.82	7.52	9.37	26.71	100

Source: Report on Performance of NRTUs 1977-78 and 1978-79. CIRT, Pune.

Note: Same as in Table 7.3.

Table - 7.6

Operation and Economics of Metropolitan and City Transport Undertakings (1986-87)

(The figures are in percentages to the total cost & Revenue)

Name of STU	Per	Mat	P+M	Taxes	Int.	Dep.	T+I+D	T.Cost	Traffic	Total Revenue
	1	2	1+2	3	4	5	3+4+5	6	7	8
1. D.T.C.	37.17	24.51	61.68	1.12	52.39	4.85	58.36	100	N.A.	N . A .
2.BEST	40.44	24.43	64.87	4.86	6.90	11.14	22.90	100	93.42	100
3. P.T.C.	46.63	33.84	80.47	3.63	5.36	7.31	16.31	100	94.97	100
4. CSTC	49.03	23.32	72.35	0.68	12.36	12.82	25.87	100	95.55	100
5.Ah MTS	47.20	29.36	76.56	2.27	8.18	4.27	14.73	100	96.34	100
6.CHTU	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
7.PMT	45.33	30.91	76.25	4.35	2.87	4.30	11.54	100	95.58	100
8.PCMT	43.18	47.34	90.52	7.62	N.A.	N.A.	N.A.	100	95.50	100
9.KMTS	49.33	33.88	83.21	4.33	3.64	7.48	15.46	100	98.49	100
10.SMTU	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A	N.A.	N.A.
Average	**42.61**	**29.65**	**72.26**	**2.94**	**12.51**	**7.73**	**23.24**	**100**	**95.73**	**100**
1. APSRTC	37.55	30.24	67.80	12.00	4.01	10.00	26.01	100	3.17	100
2.CTC	29.11	36.38	65.49	11.85	3.77	12.93	28.57	100	96.50	100
3.HSTC	29.22	47.06	76.28	7.74	4.74	4.64	17.16	100	96.91	100
All-India *	37.48	34.07	71.55	7.35	9.28	9.11	25.94	100	94.53	100

Source: Report on the Performance of NRTUs, 1985-86 and 1986-87, CIRT, Pune.

Note:* Same as in table 7.3.

decline is quite sharp in Calcutta STC, Ahmedabad MTS and Pune MT during the period under study. The taxes, in particular, have registered considerable decline in all the city undertakings considered for the study. The percentage share of depreciation shows a declining trend in almost all the city undertakings, excepting Pallavan TCL and Calcutta STC. Barring the phenomenol increase in the percentage of interest in DTC, the taxes, interests and depreciation have registered significant decline in the city transport undertakings during the period under study.

Trends in Cost and Revenue of the Metropolitan and City Undertakings

It can be seen from the Table 7.7 that the cost increase has overtaken the revenue increase in general. The cost increase of city transport undertakings is significantly higher than the cost increase at the national level and as well as the cost increase of the best performing STUs considered for the study. The percentage increase of personnel and material costs is significantly higher than the increase of taxes, interests and depreciation in almost all the city undertakings, excepting the DTC, during the period from 1977-78 to 1986-87. The percentage increase of taxes is relatively insignificant in Pallavan TCL, Calcutta STC and Ahmedabad MTS. On the other hand, the percentage increase of interest is considerably high in DTC, BEST, Pallavan TCL and Kolhapur MTS. The percentage increase of non-controllable costs of the city undertakings is, however, less than the national average and as well as the increase of non-controllable costs of the best performing STUs, barring Haryana ST, during the period under study. The cost-revenue

Table 7.7

Trends in Cost and Revenue at Metropolitan and City Transport Undertakings
(1977-78 to 1986-87)

(The figures are in percentages)

Name of STU	Personnel	Material	P+M	Taxes	Interest	Dep.	T+I+D	Total Cost	Total Rev.
1. Delhi TC	190.83	99.80	146.25	61.04	677.11	46.35	443.19	173.77	110.49
2. BEST	160.97	125.23	146.26	86.83	147.64	84.62	100.50	120.85	99.38
3. Pallavan TCL	221.35	104.94	159.38	-8.00	280.26	215.20	112.31	145.06	126.81
4. Caclutta STC	153.97	51.65	111.52	21.77	3.42	143.07	45.41	85.98	73.62
5. Ahmedabad MTS	112.44	102.75	108.62	31.18	37.07	16.74	29.62	99.67	100.62
6. Chandigarh TU	NA.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
7. Pune MT	143.16	121.73	133.99	81.23	-9.59	116.45	52.34	143.13	168.33
8. PCMT	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
9. Kolhapur MTS	211.07	123.25	168.13	81.42	613.33	109.04	138.68	153.85	103.83
10. Solapur MTS	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Average	128.08	94.72	112.95	48.17	103.70	75.29	85.23	103.31	94.75
1. APSRTC	135.93	75.06	104.12	57.01	401.50	87.13	88.69	99.87	104.89
2. Cholan TCL	129.78	56.97	82.70	7.31	133.33	380.00	85.96	91.23	83.25
3. Haryana ST	117.78	98.23	105.29	-16.90	56.38	21.00	5.76	84.27	86.74
All-India	167.36	100.96	131.00	69.67	179.91	120.38	118.83	126.73	106.68

Source : Report on the Performance of NRTUs 1977-78 and 1978-79 and also 1985-86 and 1986-87, CIRT, Pune.

gap is alarming in DTC and Kolhapur MTS. The gap between the percentage increase of cost and revenue, on an average, rather low with just 4 percentage points during the period under consideration. The revenue increase is higher than the cost increase in Pune MT and Ahmedabad MTS. However, Ahmedabad MTS showing financial losses in 1986-87.

The non-traffic revenue constitute 5 percentage of the total revenue in almost all the city undertakings during 1986-87. Hence, the non-traffic revenue has little impact in the revenue structure of the city transport undertakings. The average cost and revenue increases of city undertakings were considerably lesser than their corresponding increase at the national level during the period under study. The cost increase is higher than the cost increase of the best performing STUs considered. Since there is a growing gap between the increases of cost and revenue, the city transport undertakings are making relatively higher financial losses.

SUMMARY OF RESULTS

Based on the overview of the empirical results in this chapter, it can be argued that the metropolitan and city transport undertakings have been performing significantly lower than the performance at the national level and as well as the average performance of the best performing STUs considered for the study. Both physical and financial performance of the city undertakings is considerably below the national average. However, the city

undertakings have recorded improvements in the level of physical efficiency from 1977-78 to 1986-87. The indicators like fleet utilisation and tyre performance have shown considerable increase in almost all the city undertakings during the period under study. Despite the higher bus-staff-ratio, the man power producivity of the city undertakings is not that low. The number of breakdowns and accidents also show declining trend in 1986-87. Relatively poor physical performance of the city undertakings could well be attributed to various constraints and different situations under which the city undertakings have to be operated.

The cost increase of city undertakings is significantly higher than the cost increase at national level and as well as the cost increases of the best performing STUs considered, during the period under study. Despite the various constraints preventing the city undertakings from achieving their financial targets, some of them have been making profits in 1986-87. For example, Pune MT succeeded in making a profit of 7 paise per kilometer operated in 1986-87. Moreover the cost-revenue gap is moderate in BEST, Pallavan TCL and Ahmedbad MTS during the period under consideration.

The percentage of personnel cost has been quite high (about 45-50 per cent) than the regional transport undertaking and as well as the national average. On the other hand, the percentage share of taxes, interest and depreciation is very low in city undertakings than the regional transport undertakings and as well as the best performing STUs considered for the study,

barring Haryana ST. For example, the percentage of taxes ranging between 2 to 7 per cent only in city undertakings during 1986-87. Therefore, it can be argued that the taxes have little contribution in the losses incurred by city undertakings. Similarly, the percentage of interest is also less significant in city undertaking where the interest takes a major share in its operating cost during 1986-87. So, it can be stated that the city undertakings are being taxed less heavily than the regional transport undertakings.

The financial losses incurred by STUs in general and the city undertakings in particular, can be attributed to the social obligations that the STUs have to fulfil. The fares is also, to a certain extent, responsible for the financial losses. Pathankar in his study worked out that "MSRTC has been incurring an estimated loss of revenue of the order of Rs.10 crores per annum on account of the uneconomic routes operated in order to meet the social obligations"[1].

City undertakings seem to be burdened with higher staff costs due to the Motor Transport Workers Act which permits not more than 8 hrs a day, but the city services require more than 16 hrs a day. Besides the already uneconomic fares, thev are

---

1. P.G.Patankar, "Road passenger transport in India", CIRT, Pune 1984

to provide further concessions to various privileged sections of the society. Apart from the above mentioned social obligations, inadequate and poor checking play a role in making financial losses. It was stated that the inhibit susidies in the shape of passes at concessional rate for students and also for weaker sections living in the resettlement colonies and other concessions to the handicapped, police and freedom fighters had added to the financial burden on the city undertakings. The heavy administrative infra-structure, the unchecked pilferage in the stores as well as in the revenue earnings and the increasing malpractices in reimbursement of medical bills (for example, DTC) further resulted in financial losses in some of the city undertakings.

There are variations in the fare structure of city services and this has led to the disparity in the financial performance between different city undertakings. For example, for an ordinary travel of 6 kms, Chandigarh TU charged Rs.1.00 (as on 1st April, 1987), while it was 70 paise in BEST, Kolhapur MTU, Pune MT, PCMT, Solapur MTU, Ahmedabad MTS and Pallavan TCL. On the other hand, DTC and Calcutta STC charging only 50 paise for the same distance. In the light of the above, it has been said that even after the revision, the DTC's fares is the lowest among all the metropolitan transport undertakings in the country. So, it was stated that due to the low fare structure most city under-takings, particularly the DTC, were never been able to meet its liability for repayment of Government loans-capital as well as ways and means and also interest thereon.

CHAPTER - VIII

CONCLUSIONS, SUGGESTIONS AND RECOMMENDATIONS

The analysis carried out in different chapters of the study established empirically that the State Transport Undertakings in India have done well in maintaining a reasonable level of physical efficiency during the period between 1977-78 and 1986-87. Almost all the STUs, barring a few, have registered significant improvements in the level of physical efficiency during the period under study.

Contrary to the general beliefs and concerns expressed in the Newspapers, Seminars and Scholarly discussions, the fares have been kept low, in general and particularly in the city transport undertakings. As a result, the city transports undertakings incur heavier losses per killometre of operation, compared to the regional transport undertakings. Even with this subsidised fares, studies reveal that a large number of workers, school and college students in the poorer locailities do not use the public transport system as they cannot afford it. So, any increase of fares in city transports has to keep this in mind. The point is that these sections of the Society who are praised out of the public transport should not be kept out of the system. On the otherhand, various studies reveal that the urban per capita income is 2.5 times greater than the rural income. There is therefore, no economic rationale for subsidising all sections of the city population at the cost

of the people in the hinterland. It must be noted that the people in the country who have a lower level of income than that of the city dwellers have to pay for the subsidies paid to the metro dwellers. In this context, a discriminatory pricing scenario requiring general increase in tariff coupled with directed subsidies, to the weaker section, seems feasible.

At the present level of economic development, considering the individual economic capabilities and overall constraint on resources, there could be a dual policy of pricing. The economically weaker section of the population are to be subsidised while the middle and the higher income groups can be asked to pay for the total cost of operation and perhaps, a little more.

The present policy of fare stabilisation or marginal increase may be changed to connect fare with changes in the prices of the major inputs and the cost of living index. If the Railways and Indian Airlines have the freedom to adjust their fares when the need arise, it is not clear as to why the road transport should not be allowed to do the same. Moreover, there has to be a clear cut discriminating pricing scenario as is also prevailing in the Indian Airlines. There is already a difference in the fare structure betwen city transport undertakings and the regional transport undertakings. Similarly, there can be a discriminatory pricing structure within the metropolitan and large cities.

The question remained unanswered how the efficiency of STUs should be appraised in the absence of agreed standards.

There can be no common standards applicable to all the STUs. The STUs by their nature of creation and existence are likely to be serving multiple objectives such as commercial, political and social reasons which in turn has a larger role to play in the functioning of STUs. Hence, financial profitability becomes an inadequate parameter to evaluate the performance of STUs. It is often said that the balance sheet of a company conceals more than it reveals. This is certainly so in the case of the state transport undertakings.

The empirical findings as summarised above permit the following generalisations which are of considerable theoretical and practical signicance. These have been appended below.

The Nationalised Road Transport Undertakings in India, in general, have shown a remarkably high level of physical performance indicators and considerable improvements in them during the period under study.

The level of physical efficiency indicators have registered relatively higher improvements in the Corporations and the Companies comparing to the Government Departmental Undertakings and the Municipal Undertakings, during the period from 1977-78 to 1986-87.

Almost all the physical efficiency indicators have shown considerable improvements in their level in the transport companies that are operating in Tamil Nadu.

The transport undertakings having four-tier structure in general, have shown relatively better performance in the level of physical efficiency than the STUs having three-tier structure during the period under consideration.

The STUs that are operating in the relatively backward states also, barring Bihar, have shown considerable improvements in maintaining the level of physical efficiency during the period under consideration.

Though there is considerable improvement in the level of physical performance in the relatively developed states like Tamil Nadu, Punjab, Karnataka and Gujarat, the corresponding increase of STUs operating in West Bengal, Maharashtra and Haryana is not that significant. It is certainly less than the STUs operating in the relatively backward states like Andhra Pradesh, Rajasthan and Uttar Pradesh.

The physical performance of STUs operating in the Eastern States has been not only poor but its improvement has been negligible during the period under study. There is distinct decline in the physical efficiency of STUs belonging to Bihar and West Bengal.

The level of physical efficiency of STUs that are operating in the southern states is relatively higher than the STUs operating in rest of the regions.

The physical performance of Metropolitan and City Transport Undertakings has been significantly less than the

National aveage during the period under study. However, the fleet utilisation of the city undertakings is moderate and the increase in the level of tyre performance of city undertakings in considerably higher than the national average and also higher than the average tyre performance of the Corporations and Government Departments.

The **Operational performance** of the state transport undertakings, in general, is not that encouraging and not showing much improvements either.

The percentage share of personnel and material costs has been considerably high in most STUs. These two account for 60 to 70 per cent of the total cost in the Corporations and the Companies, while, for Government Departments and Municipal Undertakings it was 80 to 85 per cent.

The Transport Corporations have been showing declining trend in the percentage share of personnel and material costs during the period under consideration. On the other hand, personnel and material costs show considerable increase in Government Departments and Municipal Undertakings.

The taxes, interest and depreciation, - all of them have shown considerable decline in their percentage share to the total cost in Municipal Undertakings and Government Departments.

The percentage of taxes in particular has significantly decreased in almost all the STUs in the country during the period between 1977-78 and 1986-87.

The percentage of personnel and material costs has been relatively higher in STUs of three-tier structure than the STUs having four-tier and two-tier structure.

The vatiations in the percentage of different cost elements considered are significantly high in STUs having three-tier system.

The STUs operating in the most backward states have shown decline in the percentage of personnel and material costs, but they recorded an increase in the percentage of non-controllable costs.

The percentage of personnel and materials costs show increasing trend in STUs operating in North, Central and Southern states. The above STUs registered considerable decline in the percentage of Non-controllable costs.

The cost increase has been significantly higher than the revenue increase in most STUs during the period under study.

The cost-revenue gap is alarming in the STUs having three-tier structure, barring the Rajasthan SRTC.

The revenue in STUs that are operating in the developed states is significantly lesser than the revenue increase of STUs in backward states.

The cost-revenue gap is alarming in STUs operating in the Eastern States. On the other hand, the gap is insignificant in southern states.

The operational performance of Metropolitan and City Transport Undertakings is poorer than the national average and the regional transport undertakings.

The percentage of personnel and material costs is considerably higher in the city undertakings than the regional transport undertakings and it is also higher than the national average.

The Metropolitan and City Transport Undertakings are taxed less heavily than the inter-city and mofussil services.

The physical and operational performance of STUs operating in the hilly and North-eastern states are significantly low. Also these have registered a decline in the value of their performacne indicators during the period under study. The above STUs, however, cannot be fully blamed for their relatively poor physical and operational performance. Because, the rugged terrain, severe weather conditions, physiograpy and other socio-economic factors play a role in the low efficiency in the STUs.

The physical and operational performance of STUs in Bihar and West Bengal and also the metropolitan and city undertakings has been far less than the national average during both points of time under study. The efficiency indicators of these STUs show considerable decline during the period under study.

The STUs that are operating in the states of Haryana, Tamil Nadu, Karnataka, Andhra Pradesh, Uttar Pradesh and Rajasthan have reasonably high level of physical and operational efficiency. Moreover, there has been improvements in the value

of these efficiency indicators for the period under study.

Transportation in India is not a nutral agency because it has got some priority areas to cater to. Hence, a competitive transport under private sector would fail to achieve the objective of balanced economic development. The analysis attempted in the study undoubtedly, reveals that a good number of STUs have been doing fairly well. Moreover, there are serious regional and socio-economic constraints that are inhibiting the growth of the physical and financial performance indicators. If certain atutonomy is given in fixing the fares, the STUs can not only make themselves financially viable but can also contribute further more towards balanced economic development.

SELECTED BIBLIOGRAPHY

BOOKS

Fouracre,P.R. and Maunder,D.A.C., "A Comparison of Public Transport in Three Medium Sized Cities in India", CIRT, Pune, 1986.

Gupta,M.P., "Metropolitan Transport Systems", National Publishing House, New Delhi, 1983.

Hans Peter,Georgi, "Cost-Benefit Analysis And Public Investment in Transport : A Survey", London Butter Worths, London, 1973.

Hille,S.J. and Poist,R.S., "TRANSPORTATION: Principles and Perspectives", Danville III, Interstate, 1974.

Hoyle,B.S., "Transport And Development", Macmillan, London, 1973.

Kant;Krishna, "Analytical Study of Nationalised Motor Transport", Metropolitan Book Co.(P) Ltd., New Delhi, 1983.

Matadin, "State Monopoly in Road Transport", New Delhi,1983.

Narayan, Laxmi, (Ed.), "Autonomy of Public Enterprise", 1982.

Owen,W, "Distance And Development", The Brookings Institution, Washington, D.C., 1968.

Panduranga Rao, D, "Trends in Indian Transport System: A Districtwise Study", Inter-India Publications, New Delhi, 1985.

Patankar, P.G., "Urban Mobility in Developing Countries", Popular Prakashan, Bombay, 1978.

_____, "Road Passenger Transport in India", CIRT, Pune, 1984.

Patankar, P.G., "Indian Road Transport System Scenario in 2001", CIRT, Pune, 1987.

Pavaskar,M., "Second India Studies - Transport", Popular Prakashan, Bombay, 1978.

Prasad, Eswari, "National Transport Policy", ITP, Coordinating Committee of Indian Affiliates, New Delhi, 1985. pp.153-54.

Ramanadham, V.V., "Road Transport in India", The Universe Publishers Ltd., Lucknow, 1948.

_____, "Nationalised Road Services in Hyderbad", The Orient Longman's Publishing Co., Madras, 1955.

Ramaswami, A., "Transport Development in Tamil Nadu: An Assessment", in D.M. Nanjundappa (Ed.), Transport Planning And Finance, Karnatak University, Dharwar, 1973.

Stayanarayana, J., "The Working of The Andhra Pradesh Road Transport Corporation", CESS Hyderabad & Concept Publishing Company, New Delhi, 1985.

Sharma, K.K., "Motor Transport in Rajasthan", New Delhi, Sterling, 1975.

Sharma, Santosh, "Productivity in Road Transport", ASRTU, New Delhi, 1985.

Srivastava, K., "Transport Development in India" Rev.Ed., Mystic, Conn: Verry, 1967.

Subramanyam, P., "Organisational Set-up of Road Transport : A Focal Study of APRSTC", B.R. Pub. Corporation, Delhi, 1987.

Valette, et al., "Role of Transportation in Regional Economic Development", Lexington, Mass: Lexington Books, 1971.

REPORTS AND DOCUMENTS

The Second Five Year Plan Report, Government of India, Planning Commission.

The Second Five Year Plan Summary, 1956, Govt. of India, Planning Commission.

The Second Five Year Plan, 1956.

State Road Transport Undertakings in India Statistical Bulletin, 1957, Annual, Ministry of Transport and Shipping, Government of India, New Delhi.

The Road Transport Reorganisation Committee Report, March 1959, Government of India, Planning Commission.

The First Five Year Plan, Planning Commission, Government of India Press, Nasik Road, 1960.

The Third Five Year Plan, Government of India, Planning Commission.

Maharashtra SRTC - Report of The Administrative Set-Up Committee, 1973.

The Fourth Five Year Plan, Government of India, Planning Commission.

Report on the Performance of Nationalised Road Transport Undertakings, 1977-78 and 1978-7 , CIRT, Pune.

The Draft Sixth Five Year Plan 1978-83 (Revised) Government of India, Planning Commission.

The Draft Sixth Five Year Plan 1980-85, Government of India, Planning Commission.

The Report of National Transport Policy Committee, May 1980.

Road User Cost Study in India, A Report by Central Road Research Institute, New Delhi, January 1981.

View of the Government and Plan of Action on the Recommendations of the NTPC, May 1982, Government of India, Planning Commission, New Delhi.

"Compendium of Transport Terms", CIRT, Pune, 1984.

The Seventh Five Year Plan, 1985-90, Government of India, Planning Commission, Vol. I.

The Annual Plan 1985-86, Government of India, Planning Commission.

The World Bank Project, "INDIA ECONOMIC SITUATION AND DEVELOPMENT PROSPECTS", 1986.

Report on the Performance of the Nationalised Road Transport Undertakings 1985-86 and 1986-87 & Review of Performance 1986-87, CIRT, Pune.

The Annual Plan 1987-88, Government of India, Planning Commission.

ARTICLES

"How to Make STUs Financially Viable", Papers presented at the Seminar conducted by Association of State Road Transport Undertakings (ASRTU), Vol.I & II, New Delhi, 1985.

Krishnamurthy, V.A., "Andhra Pradesh Road Transport - A Case Study", Transport Journal, Vol.19, No-18, August 1969.

Kundu, Amitabh, "Urban Transport Consumers and Others", 1987.

Reddy, Rami, K.V., "50 years of Nationalised Bus Transport in Retrospect", Deccan Chronicle, 2 June 1983.

"Role of Public Sector in Urban Housing and Transport", Papers presented at the Seminar of Society for Development Studies/CIRIEC India, New Delhi, January 4 & 5, 1988.

"Transport Sector Working Paper", World Bank, January 1972.

Transport Industry and Trade Journal, 1963, bi-m., Praveen Corp., Sayajiganj, Baroda-5, India.

Vide, The Hindustan Times, March 29, 1988, New Delhi.

The Hindu, Gurgaon, April 30, 1988.