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**Alternative Strategies for Public Transport Improvement
in Developing Countries: A Case Study of Beirut**

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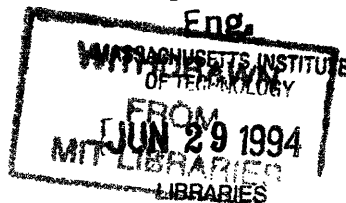
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Abstract

In a rapidly growing urban environment in developing countries, good urban transport systems are one of the key elements in making any city more efficient. During the past decade, many countries in the world have turned to private sector involvement in urban public transport to improve efficiency, believing that the private sector is inherently more efficient than the public sector. This thesis addresses the main objectives in providing urban public transport and describes the aspects of the provision (i.e., regulation, financing, and planning) and production (i.e., ownership, operation, and management and equipment) of public transport service that may vary with different models of public/private sector participation. Six models are presented and evaluated: public monopoly, private monopoly, contracting out, threatened competition, regulated competition, and deregulation. The discussion of advantages and disadvantages implies that each model may have the potential for public transport improvement under certain circumstances. The thesis proposes a general framework for assessing alternative improvement strategies from each base model of public/private sector participation. Complementarily, possibilities of foreign participation in urban public transport improvement in developing countries are also discussed as a means of accessing competitive capacity beyond that available in the local economy. Finally, the thesis focuses on a case study of Beirut and applies the general assessment framework to the Beirut case. Public transport in Beirut consists of buses operating as a public monopoly and unregulated private jitneys, both of which currently have serious problems. Alternative strategies are presented and evaluated in the context of Beirut for the bus and jitney systems along with some possible foreign participation options. Further prioritization and selection of the strategy is best done by the Beirut government, in light of its own constraints and preferred objectives.

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Dedication

This thesis is dedicated to my family
for their great encouragement and support.

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The completion of this thesis was helped and supported by many people.

First, I would like to acknowledge my thesis supervisors and mentors, Fred Salvucci and Nigel Wilson. Their help has been invaluable. When I was lost, their patience and kindness in guiding me in this work always encouraged me, and their help has been beyond the call of duty. I am very grateful to both of them for their help. I wish to make clear that all the shortcomings remaining in this work are my sole responsibility.

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I would also like to thank all my friends I made here at M.I.T. My classmates, roommates, 1.00 TA colleagues, and other friends in Boston all made my year here more enjoyable. I will never forget this exciting life with them. I would like to give special thanks to my classmate and roommate, Prodyut Dutt, who gave me much advice for this research as an informal consultant, and to my classmate, Nageswar Rao, who helped me to submit this thesis from Japan.

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Table of Contents

Abstract	2
Dedication	3
Acknowledgments	4
Table of Contents	5
List of Tables	8
List of Figures	8
1 Introduction	9
1.1 Background	9
1.2 Definition	12
1.3 Objectives.....	14
1.4 Process of Analysis	15
1.4.1 Literature Review.....	15
1.4.2 Approach to Be Taken	18
1.5 Thesis Organization	21
2 Objectives for Urban Public Transport	22
2.1 Mobility and Social Equity	22
2.2 Congestion Reduction	23
2.3 Cost Efficiency.....	24
2.4 Service Quality.....	26
2.5 Long-Term Sustainability	28
2.6 Summary	29
3 Dimensions for Public/Private Sector Participation.....	32
3.1 Provision of Services	32
3.1.1 Regulation	32
3.1.2 Financing.....	35
3.1.3 Planning	35
3.2 Production of Services	37
3.2.1 Ownership	37
3.2.2 Operation.....	39
3.2.3 Maintenance and Equipment.....	40
3.3 Summary	41
4 Models of Public/Private Sector Participation	42
4.1 Public Monopoly	42
4.1.1 Advantages.....	43
4.1.2 Disadvantages	44
4.1.3 Example: Mexico City	46
4.2 Private Monopoly.....	47
4.2.1 Advantages.....	48
4.2.2 Disadvantages	49
4.2.3 Example: Singapore	51
4.3 Contracting Out.....	52
4.3.1 Advantages.....	54
4.3.2 Disadvantages	55
4.3.3 Example: Bangkok	56

4.4 Threatened Competition	57
4.4.1 Advantages	58
4.4.2 Disadvantages	59
4.4.3 Example: New South Wales	60
4.5 Regulated Competition	62
4.5.1 Advantages	63
4.5.2 Disadvantages	63
4.5.3 Example: Buenos Aires.....	64
4.6 Deregulation	66
4.6.1 Advantages	67
4.6.2 Disadvantages	68
4.6.3 Example: Colombo	69
4.7 Summary	71
5 Framework for Assessment.....	73
5.1 Structure of the Framework	73
5.2 Alternative Strategies for Improvement.....	76
5.2.1 Public Monopoly	76
5.2.1.1 Improvement Options within the Model	76
5.2.1.2 Movements to Other Models.....	78
5.2.2 Private Monopoly	81
5.2.2.1 Improvement Options within the Model	82
5.2.2.2 Movements to Other Models.....	83
5.2.3 Contracting Out.....	85
5.2.3.1 Improvement Options within the Model	85
5.2.3.2 Movements to Other Models.....	87
5.2.4 Threatened Competition.....	89
5.2.4.1 Improvement Options within the Model	89
5.2.4.2 Movements to Other Models.....	90
5.2.5 Regulated Competition	92
5.2.5.1 Improvement Options within the Model	92
5.2.5.2 Movements to Other Models.....	94
5.2.6 Deregulation.....	96
5.2.6.1 Improvement Options within the Model	96
5.2.6.2 Movements to Other Models.....	97
5.3 Application to a Case Study	100
5.3.1 Existing Conditions.....	100
5.3.2 Alternative Strategies	101
5.4 Summary	102
6 Possibilities of Foreign Participation	103
6.1 Scope	103
6.2 Types	106
6.3 Problems to Be Resolved	110
6.3.1 Projects.....	110
6.3.2 Technology Transfer	113
6.4 Foreign Participation in Public Transport	115
6.4.1 Possible Types of Foreign Participation	115
6.4.2 Restrictions under Each Model	118
6.5 Summary	119

7 Existing Conditions in Beirut.....	121
7.1 Introduction.....	121
7.2 Demand-Related Factors.....	122
7.2.1 Socioeconomic Characteristics	122
7.2.2 Physical Characteristics	124
7.3 Public Transport Service.....	127
7.3.1 Administrative Framework	128
7.3.2 Bus Services.....	129
7.3.3 Jitney Services.....	133
7.4 Summary	135
8 Alternative Strategies for Beirut	137
8.1 Goals and Criteria for Evaluation	137
8.1.1 Bus Services.....	139
8.1.2 Jitney Services.....	142
8.2 Alternative Strategies	145
8.2.1 Bus Services.....	146
8.2.1.1 Strategy 1: Improvement within Public Monopoly.....	148
8.2.1.2 Strategy 2: Movement to Private Monopoly	151
8.2.1.3 Strategy 3: Movement to Contracting Out.....	153
8.2.1.4 Strategy 4: Movement to Threatened Competition.....	155
8.2.1.5 Strategy 5: Movement to Regulated Competition.....	157
8.2.1.6 Strategy 6: Movement to Deregulation	160
8.2.2 Jitney Services.....	162
8.2.2.1 Strategy 1: Improvement within Deregulation.....	164
8.2.2.2 Strategy 2: Movement to Public Monopoly	166
8.2.2.3 Strategy 3: Movement to Private Monopoly	168
8.2.2.4 Strategy 4: Movement to Contracting Out.....	171
8.2.2.5 Strategy 5: Movement to Threatened Competition.....	173
8.2.2.6 Strategy 6: Movement to Regulated Competition.....	175
8.2.3 Foreign Participation Options	177
8.2.3.1 Option 1: Foreign Participation in Financing Only	178
8.2.3.2 Option 2: Foreign Participation as Advisory Consultation	180
8.2.3.3 Option 3: Partial Foreign Participation	181
8.2.3.4 Option 4: Full Foreign Participation	183
8.3 Summary	185
9 Summary and Conclusions.....	190
9.1 Summary	190
9.2 Future Research.....	193
References	196

List of Tables

Table 4.1 Six Models and the Dimensions in Public/Private Sector Participation	72
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List of Figures

Figure 1.1 Flowchart of the Process.....	19
Figure 5.1 Assessment Framework	75
Figure 8.1 Recommended Strategies for the Bus System	187
Figure 8.2 Recommended Strategies for the Jitney System.....	188

1 Introduction

1.1 Background

Over the past several decades, many countries in Asia, Africa, and Latin America have seen unprecedentedly rapid urbanization. It is predicted that rapid demographic growth will add 600 million more people to cities in developing countries during the 1990s.¹ As a consequence, city boundaries have been substantially expanded and there have been much higher levels of industrial and commercial activities. A well-functioning urban transport system is one of the key factors to make any city more efficient, and this rapid urban expansion has placed heavy new demands on urban transport systems, creating many transportation problems to be solved by city governments in developing countries. Thus, pressure on urban transportation systems in the cities of the developing world is likely to increase substantially in the future.

Public transport systems provide the most efficient means of moving large numbers of people, especially in dense urban areas. In many developing countries, buses,² in particular, are the major mode of urban public transport, and are often the only one affordable to the urban poor, but bus services are often unable to satisfy demand fully. Systems, often operating with substantial deficits, are often severely overstrained, uncomfortable, unreliable, and even unsafe. This situation often makes potential passengers turn to more costly modes of transport, walk long distances, or forgo trips. In

¹ The World Bank, Urban Policy and Economic Development: An Agenda for the 1990s, A World Bank Policy Paper, April 1991, p. 16.

² In this thesis, buses include not only conventional buses but also any minibuses and microbuses of capacity 20 passengers or more.

many cities privately operated paratransit vehicles, such as vans, jitneys, and shared taxis, have appeared and played a significant role in urban public transport. Paratransit, which can provide great mobility and flexibility, has helped to meet urban transport demand; at the same time, however, it has become one of the major causes of considerable traffic congestion in cities. Without greater efforts to deal with the problems of moving people and goods, many cities will continue to have public transport systems that fail to achieve their goals and impair city efficiency.

During the past decade, many countries in the world have turned to private sector involvement in public services for better efficiency. Urban public transport has not been an exception; in fact, it has been the subject of experimentation with varying forms of ownership and regulation. Many cities in the developing world as well as those in the developed world have experimented to some extent with different forms of ownership and regulation of urban public transport. The primary motivation is a widespread belief that the private sector is inherently more efficient than the public sector. Unlike the traditional regulated private monopolies which were the dominant form of urban public transport in the developed world before the 1960s, current forms of private sector involvement or "privatization" are quite diverse in terms of dimensions such as regulation, ownership, management, and planning.

These new private sector involvement strategies appear to have been successful in quite a few cities of the developed world and they have thus become a vital transportation and policy issue. However, further questions arise in their application to cities in developing countries. One of them is what kind of forms the private sector involvement strategy should take when it is applied to the developing world. Can strategies taken in Britain or

the U.S. be applied in the developing world without making any modifications? Also, it is important to recognize that strategies successfully used in certain cities may not be appropriate in cities with quite different characteristics. For example, the private minibus system in Buenos Aires, Argentina, has been successful in sustaining a high-quality, competitive, profitable system, but it may not be equally successful in other developing cities.

Another question is whether private sector involvement is the most suitable strategy for a developing city to take in order to revitalize the urban public transport system. Larger public undertakings may tend to be more costly and less efficient and therefore may need to be heavily subsidized. Since subsidization is such a burden for governments in developing countries, the objective of reducing or eliminating public subsidies has often led to encouraging greater private sector involvement. However, governments should not ignore the option of improving the public transport system while maintaining the existing public and private sector roles, which could be the most effective strategy. It should also be recognized that on occasion public takeovers can revive public transport systems, as in the case of Mexico City.³

In short, various strategies may be effective for urban public transport improvement, and one should not focus exclusively on increasing private sector involvement. In order to consider options systematically, it is useful to build a framework including all the

³ Allen, John G., "Transport Organization and the Latin American Megacity," Massachusetts Institute of Technology, Department of Urban Studies and Planning, February 1993, pp. 8-9.

possible alternatives that include improving performance within the existing model and changing public/private sector roles.

A complementary issue to be considered for public transport improvement in developing countries is the possibility of increasing effective foreign participation. Often there is no private sector capacity in the local economy to provide effective public transport service; hence, foreign participation may be the only alternative to a public production system. Although bus and paratransit systems are not so capital- or technology-intensive as other public transportation modes such as railways and subways, there are still many ways in which foreign participation can help to improve these systems. Two obvious examples are financing equipment purchase and transfer of vehicle maintenance technology. As is the case with general foreign participation, however, there exist many problems to be solved such as those of spare parts, project duration, and so forth. Therefore, in order to make the best of foreign participation, it is necessary to take these problems into account when considering foreign participation in the alternative strategies.

1.2 Definition

"Privatization" is a comparatively recent word. Although in a dictionary it is defined narrowly as a movement from public to private ownership or control, in most literature it is used with a broader meaning. In this thesis, the author will treat "privatization" as an act of changing from an arrangement with high government involvement to one with less, or changing to an arrangement in which the private sector plays a more important role.⁴

⁴ Savas, E. S., Privatization: The Key to Better Government, Chatham House Publishers, Inc., 1987, p. 88.

For discussions about privatization, it is useful to clarify two different concepts: provision and production of public transport services.⁵ The former concept, provision, covers policy decisions and includes all the planning-related activities such as regulation, financing, and planning. The latter concept, production, means ownership, operation, and maintenance of equipment and services. A government can decide to allow the private sector to take responsibility for part or all of provision and/or production. This distinction will be especially useful in characterizing different models of public/private sector participation.

Since this thesis focuses on urban public transport in developing countries, the term "developing countries" should also be clarified. It is loosely used to denote those countries in Africa, Asia, and Latin America which are at a relatively early stage in their economic development and which receive financial and other assistance from foreign sources.⁶ However, in order to examine a variety of strategies for public transport improvement, when suitable examples are not available from the countries generally referred to as "developing," they are taken from developed countries.

"Technology transfer" is one of the key issues in this thesis. This term has basically two meanings: one which has been used as an idea of development assistance, and the other which has been used as a transfer of military technology to the general public. In this thesis the former meaning should be taken; more precisely the term means a planned and

⁵ Kolderie, Ted, "The Two Different Concepts of Privatization," Public Administration Review, July/August 1986, p. 286.

⁶ Roth, Gabriel, The Private Provision of Public Services in Developing Countries, Oxford University Press, 1991, Chapter 1, p. 4.

rational movement of information and technique on how to perform some task, simple or complex. Different from the historic technology diffusion, "technology transfer" should result from some carefully considered planning and programming for controlled action, with feedback and monitoring of the success or failure of the results.⁷

Finally, the term "paratransit" should be clarified. There are a number of definitions of "paratransit," based on several different criteria.⁸ In this thesis "paratransit" is defined as intra-urban passenger transportation service usually in highway vehicles operated on public streets and highways in mixed traffic. The following characteristics may make this definition more precise: it is provided by private or public operators; it is available to the general public; it has variable or semi-fixed routes; rides are shared by several passengers; and it does not include any vehicles of which capacity is 20 passengers or more. The actual names of vehicles used as "paratransit" vary from city to city or from literature to literature, but it may include vans, jeeps, jitneys, shared taxis, pedal or motor rickshaws, and so forth.

1.3 Objectives

The purpose of this thesis is to develop a general framework for assessing alternative improvement strategies for urban public transport in developing countries in terms of public and private sector roles and to apply it to the case of Beirut. The following are specific objectives:

⁷ Spencer, Daniel L., Technology Gap in Perspective: Strategy of International Technology Transfer, Spartan Books, 1970, p. 29.

⁸ Vuchic, Vulkan R., Urban Public Transportation: Systems and Technology, Prentice-Hall, 1981, p. 593.

1. To provide a basis to analyze alternative roles for the public and private sectors by describing the objectives in providing urban public transport and the aspects of public transport service that may vary with different models.
2. To describe and analyze the different models of public/private sector participation in urban public transport with examples, evaluate each of them by outlining its advantages and disadvantages in the context of developing countries, and propose alternative strategies for improvement on each model.
3. To describe and analyze need, scope, forms, and issues of foreign sector participation in urban public transport, investigating the possibility of application in each model of public/private sector participation, concentrating on the issues of technology transfer.
4. To apply the general approach to the Beirut case; i.e., to identify the existing conditions of each mode of urban public transport, and propose and evaluate alternative strategies for improvement on each mode including any movement from one model of public/private sector participation to another and also including possibilities of foreign sector participation.

1.4 Process of Analysis

1.4.1 Literature Review

There is some literature discussing privatization of urban public transport in developing countries. Most of the existing literature is basically favorable towards privatization, though some literature is critical of it.

Studies undertaken by the World Bank concluded that bus services are more likely to be viable and capable of meeting growing demands if:

- They are owned by private operators, or by public corporations following commercial practices;
- Different operators compete on the same route, so that they must be responsive to customer's needs and innovative in finding ways to cut costs;
- Operators are allowed to choose the vehicles they use, to meet different levels of demand;
- Consumers can choose between different qualities of service;
- Bus services are informally regulated by cooperatives and route associations formed by bus operators themselves;
- There is a minimum of government regulation of bus services, particularly of fares, so as to encourage the private sector.⁹

While many of these conclusions may be reasonable, it is questionable whether these are the only solutions that apply universally to cities in developing countries with a substantial variety of constraints. Some constraints may keep the bus system from satisfying some of the conditions above and suggest a different direction. Therefore, in order to create alternative strategies for urban public transport, it might be more logical to consider the initial constraints peculiar to the city as an input and systematically consider alternative strategies for improvement.

⁹ The World Bank, Urban Transport, A World Bank Policy Study, 1986, pp. 23-27.

Mantell described and evaluated four models of public/private sector participation:¹⁰ deregulation, regulated competition, threatened competition, and contracting out.¹¹ These models are all important and will be included in this thesis. Two more models could be added to cover the full range of public/private sector participation: public monopoly and private monopoly. Of the four models, she concluded that the contracting out model is the most attractive and powerful strategy in terms of cost, service, and public policy goals in many situations. Although she added that further evidence should be provided on whether it is an alternative model everywhere, it is likely that the contracting out model will be one of the attractive "destination" models when considering any strategies for movement from one model to another in this thesis.

On the other hand, even advocates of privatization point out that there is no guarantee that private management will always be more efficient. Gomez-Ibanez and Meyer argued that a newly privatized state enterprise may have few incentives to be efficient or market-oriented if it operates as a monopoly or in a non-competitive market, for example, while contracting out may not reduce costs if the operator selection process is rigged or not competitive. Private contractors may hold back on the quantity or quality of services they render unless their performance is monitored, and the costs of such monitoring could

¹⁰ Although she used the words "strategies for private sector participation" to describe these four models, the author has replaced them by the words "models of public/private sector roles" to be consistent in this thesis.

¹¹ Mantell, Nicole A., "Alternative Strategies for Private Sector Participation in Urban Mass Transit," Master's Thesis, Massachusetts Institute of Technology, January 1993, pp. 41-93.

offset the savings in contractor efficiency in some cases.¹² This implies that there may be room for improvement in any of the models of public/private sector participation.

Sclar et al. also criticized the contracting model in a work critical of privatization. They concluded that the comparison of public agencies and private contractors is not fair, in that public "system" costs are essentially compared with private "route" costs. They also justified public sector involvement in urban public transport by saying that the metropolitan community must either suffer with the chaos of uncoordinated services or create a new and probably more costly bureaucracy to coordinate the diverse operations. In order to establish a more credible basis for consideration of alternatives, in this thesis the author attempts to systematically evaluate the various options.

1.4.2 Approach to Be Taken

The approach to be taken for assessing alternative improvement strategies for urban public transport in a specific developing country can be divided into two main parts: the first part is a proposal of a general framework for assessment which should be common to all developing countries; and the second part is the application of the framework to a specific case. The flowchart in Figure 1 shows how the main factors are interrelated one to another.

¹² Gomez-Ibanez, Jose A., and John R. Meyer, "The Political Economy of Transport Privatization: Successes, Failures and Lessons from Developed and Developing Countries," Final Report Prepared for the U.S. Department of Transportation under the University Transportation Center, Harvard University, September 1992, Chapter 1, p. 5.

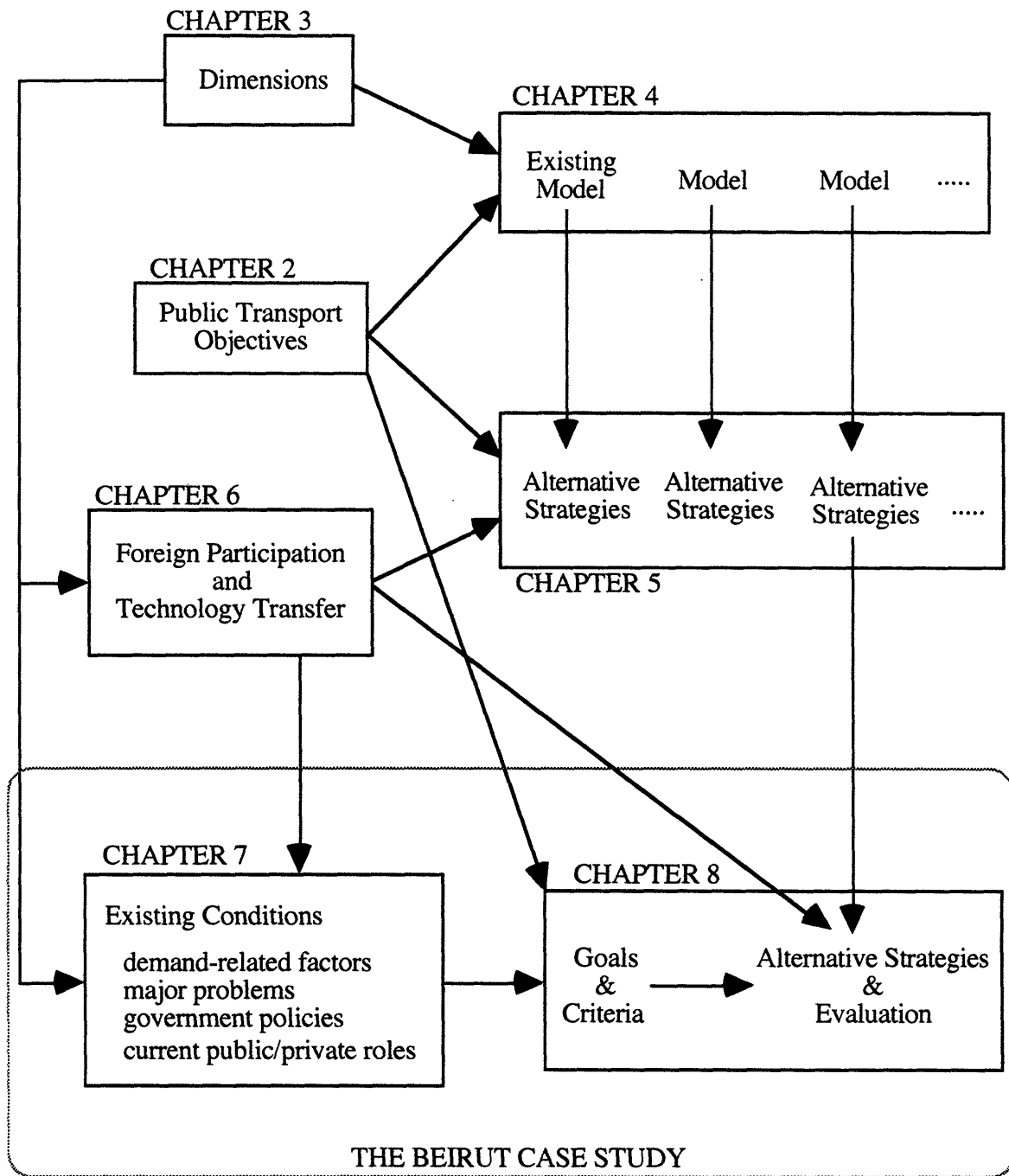


Figure 1.1 Flowchart of the Process

The general framework consists of two main parts: models of public/private sector participation and alternative strategies for change. There are six models included in this thesis: public monopoly, private monopoly, contracting out, threatened competition, regulated competition, and deregulation. Each model can be characterized in terms of four dimensions: regulation, ownership, management, and planning. As for the advantages and disadvantages of each model, they are analyzed in light of the urban public transport system's objectives. For specific objectives, some models will prove to be more attractive and powerful than others.

Alternative strategies for evolution from each model should contain not only improving in itself but also any possible movement to another model, whether or not it may be called privatization. Here, one important issue for developing countries is that possible foreign participation should be taken into account for each of these alternative strategies as a means of expanding the competitive options. Some strategies may be modified as a consequence. A more detailed description about the general framework is given later in this thesis.

The second part, the application of the framework to a specific case, should begin with a full description of the existing conditions of urban public transport in the specific case, i.e., Beirut. The conditions should include all the demand-related factors, current public/private sector roles in each dimension, major problems, and current government policies including foreign participation. In particular, current public/private sector roles in each dimension will help to locate the initial point of each existing transport mode in terms of the six models described in the first part.

When it becomes clear which model is the starting point, all the strategies for evolution from this base model should be considered for further evaluation. Evaluation of these alternative strategies can be done in light of the goals and criteria, which should be formed from the general objectives for the urban public transport system and the existing conditions in Beirut. Since the strategies may involve foreign participation, especially technology transfer, it should be given explicit consideration. Evaluation of the alternative strategies will be completed by presenting all the strengths and weaknesses for each strategy, to be ready for the government's review and selection.

1.5 Thesis Organization

The next chapter describes possible objectives for urban public transport, especially from the viewpoint of developing countries. The third chapter describes dimensions of the models of public/private sector participation. The fourth chapter describes the six models of public/private sector participation with examples, clarifying each dimension, and then analyzes advantages and disadvantages of each model in light of the objectives for urban public transport. The fifth chapter presents the structure of a framework for assessment, proposes alternative improvement strategies for each model, and describes application of the framework to a case study. The sixth chapter discusses issues of foreign participation and technology transfer, examining possibilities of foreign participation in the alternative strategies. The seventh chapter focuses on the Beirut case, and describes the existing condition of the public transport system and its related factors. The eighth chapter identifies the existing model and its alternative strategies, and then evaluates the strategies by presenting strengths and weaknesses. The final chapter summarizes the conclusions of this thesis and proposes further research.

2 Objectives for Urban Public Transport

This chapter discusses five main objectives for urban public transport including: mobility and social equity, congestion reduction, cost efficiency, service quality, and long-term sustainability. The first two objectives are the primary objectives in that they are the reasons why urban public transport should be provided; the rest are the secondary objectives to be considered in deciding how best to provide urban public transport.

2.1 Mobility and Social Equity

A primary objective for public transport is to provide opportunity for mobility for all people. This is important both for social equity, to provide reasonable access for all people, and for overall economic efficiency, to expand the relevant market places for goods, services, and labor in the entire urban area. However, because of the nature of the public transport market, the provision of services may not result in a level and a quality of services optimal for society. Considering mobility and social equity in terms of both economic and physical access should be one of the objectives for urban public transport.¹³

Economic access means affordable fares for the majority of people. Households in developing countries usually devote large proportions of their incomes to transportation. Fares should be kept as low as possible to provide mobility for the poor. One way

¹³ Soegijoko, Budhy T. S., "Intermediate Public Transportation for Developing Countries, Case Study: Bandung, Indonesia," Ph.D. Thesis, Massachusetts Institute of Technology, June 1982, p. 181.

governments can achieve this is to regulate the fares directly; this in turn may lead governments to assist the operators financially with direct or indirect subsidies.

Physical access means frequency of service, and extensiveness and density of routes. Urban public transport should give access to employment, shopping, and other opportunities for those without cars. This implies that basic services should be provided even in unprofitable areas and routes. Subsidization can also help to fulfill this requirement; in particular, governments may sometimes encourage or require cross-subsidies. It is a means whereby profits from some routes are used to run less profitable routes. By using cross-subsidy, marginal routes which have social value can be maintained without additional subsidy and the absolute level of subsidy is kept as low as possible.

2.2 Congestion Reduction

Traffic congestion refers to the condition whereby more vehicles are attempting to use a facility than it can handle with acceptable levels of delay. Traffic congestion results in the deterioration of the quality of urban living.¹⁴ Although they have fewer vehicles, traffic congestion in the cities of the developing world is usually much worse than it is in the cities of the developed world. In Bangkok or Lagos, for example, the average vehicle moves only about half as fast as the average vehicle in Frankfurt or London.¹⁵ The underlying reasons for such a difference include lower levels of infrastructure

¹⁴ Kaysi, Isam, "Urban Traffic Congestion: Consequences and Potential Relief Measures," The First National Conference on Transport, Republic of Lebanon, May 1992.

¹⁵ Armstrong-Wright, Alan, "Urban Transport in LDCs," Finance and Development, Vol. 23, No. 3, September 1986, p. 45.

development, absence of traffic and parking regulations, and lack of discipline of most drivers.

Modal usage is another factor contributing to urban traffic congestion. In particular, dramatic growth in automobile use without increased infrastructure leads to severe congestion inhibiting public safety, goods movement, and bus, jitney, and taxi movement. Effective use of public transport may substantially facilitate the alleviation of the area-wide congestion problem. For this reason, it may be desirable to provide better public transport options by restraining use of private automobiles and by enhancing the quality of public transport. Since traffic congestion is a serious urban problem in many developing countries, congestion reduction should be said to be one of the main objectives for urban public transport.

2.3 Cost Efficiency

One of the main objectives in producing urban public transport is to be more efficient in cost. Achieving cost efficiency implies that required level of service is provided with the minimum resources; in other words, production of services is maximized for a given level of inputs. Cost efficiency can be represented by several factors, such as the real operation costs measured in terms of cost per hour, the load factor measured in terms of passenger-miles per vehicle-mile, vehicle utilization measured in terms of vehicle miles per hour, and so forth.¹⁶

¹⁶ Armstrong-Wright, Alan, and Sebastien Thiriez, Bus Services: Reducing Costs, Raising Standards, World Bank Technical Paper Number 68, Washington D.C., 1987, pp. 49-56.

Inputs are comprised of capital and labor with developing countries generally characterized by scanty (high-cost) capital and ample (low-cost) labor. Hence, although urban transport problems have sometimes tempted governments to spend vast amounts of money on subways and other rail transit systems, these capital-intensive projects may not always be the most cost-effective, given the relative prices of capital and labor inputs. More labor-intensive projects may be more appropriate for developing countries to achieve this objective. Since labor seems especially important in developing countries, labor issues such as labor costs or observation of the work rules are closely related to cost efficiency.

In situations where the private sector is more involved in public transport, introduction of competition into the public transport market can also create a better environment to achieve this objective. Competitive forces, coupled with the desire to maximize profit or simply to remain in business, provide incentives for operators to attempt to improve cost efficiency. In a purely competitive situation, only companies that have maximized cost efficiency can survive. Therefore, under competition, operators tend to become more responsive to customers' needs and more innovative in finding ways to cut costs.

It should also be added that the desire to reduce subsidies can serve as a motive for cost efficiency. Urban mobility is such an important objective that public transport has been often subsidized justifiably by governments. However, subsidies can be a serious burden especially to governments in developing countries, taking a considerable proportion of their annual expenditures. In addition, subsidies may not always be properly planned or appraised. Actual effects in some cases can be quite different from those intended; subsidies can lead to further cost inefficiency, greater deficits, and a need for additional

subsidies. In cases where a major impact of a subsidy is to permit wage increases or continuation of inefficient vehicle utilization, overstaffing, or other inefficient practices, elimination or reduction of the existing subsidy is sometimes advocated as a means to force a more efficient and cost-effective system.¹⁷ Thus, subsidy reduction may also be used as a means to improve cost efficiency.¹⁸

2.4 Service Quality

Another main objective is service quality, implying that the amount and quality of services produced in urban areas are at an optimal level. Not only number of vehicles, but also areas served, average waiting time, fares, and comfort are main factors included in the service quality. In a sense, these are factors which affect the cost of a trip to the passenger, but are not perceived directly by the producer as costs; therefore, efforts to improve cost efficiency by the producer by eroding service quality may simply transfer costs to customers and actually reduce efficiency. Better accessibility, regularity, and reliability of services can attract more passengers. In this sense, service quality is extremely important for government in order to increase public transport ridership and meet the social objectives, and for the private sector to increase profit and survive in the market. In particular, in developing cities, a majority of people are dependent on public transport services, for a wide range of trip purposes, distances, and destinations. In order to provide a better quality of services, one should consider providing not only different

¹⁷ The World Bank, 1986, p. 22.

¹⁸ This may not actually be an effective strategy. If labor union is strong, elimination of the subsidy may lead to service cuts on less utilized routes while high wages are continued on the remaining network.

schedule or routes of services, but also different public transport modes for different customers' needs.

Better quality of services can be achieved by encouraging competition. To gain more ridership in a competitive environment, companies have incentives to provide a better quality of services than others. However, too much competition may in turn worsen the quality of services; passenger vehicles may race with each other, thus impairing safety, and excessive numbers of vehicles with inadequate ridership can require higher fare levels to be sustainable.

Safety is an important issue everywhere, but it is especially important in the developing world, because it is often impaired. In developing countries, traffic accident rates are excessively high for all types of vehicles, including public transport. In a number of cities there is particular concern about the safety of paratransit vehicles. As a result, there is a pressing need to tighten up the enforcement of vehicle inspections, insurance requirements, and road safety measures.

Another factor to be mentioned in terms of service quality, and also related to the safety issue, is maintenance of equipment such as vehicles and the relevant facilities. Although the condition of maintenance of equipment directly affects the service quality, in many developing countries, it is often seriously deficient. Under tight economic conditions, the fleet consists of many old or secondhand vehicles which are more difficult to maintain and more frequently need repair. Inadequate maintenance results from various factors: lack of spare parts, high repair cost, shortage of trained mechanics, absence of necessary maintenance facilities, or difficulty of drawing up maintenance budgets. Ill-maintained

vehicles not only impair safety, but also reduce the number of operable vehicles, causing a decrease of the amount of services. The quality of bus maintenance is of prime importance if the running order and appearance during service are to be as high quality as possible.¹⁹

2.5 Long-Term Sustainability

The objective of long-term sustainability has several meanings. First, as far as possible, investments and services should be financially self-sustaining, with the total costs being recovered so that growing demands can be met. In the case of public transport, for example, it may be desirable that fares need to cover the total operating costs as much as possible, so that services can be provided without government subsidies. Even where this is the case, the expected future cash flow may not be enough for the providers to recover their original investment. Although there are some other ways to recover the original investment such as tax collection, a high return on investment through fares within a reasonable period of time may be desirable.

Secondly, public transport should have a realistic prospect of future expansion in both provision and production of services. This can be helped by careful consideration of interactions between the different operators and also between the various modes of urban transportation including private automobiles.

¹⁹ Bourgoin, M., "Implications of the Evolution of the Urban Motorbus in the African Countries," First African Symposium on Public Transport, Abidjan, Ivory Coast, December 1978, p. 331.

Thirdly, urban public transport should, in the long run, encourage economic growth and vitality of the city or even the country by its high performance. For this purpose, it is essential to create consistent, comprehensive, and coordinated policies in terms of the interaction between urban public transport and other factors of city planning policies such as housing and land use policies.

Fourthly, environmental sustainability is increasingly a major issue. Public transport should help to keep the urban environments free of harmful or unacceptable levels of pollution and noise. Another aspect is the energy-saving objective; private automobiles are the least energy-efficient mode of urban travel, with public transport vehicles usually providing a much higher level of passenger-miles per unit of energy consumed. While there are some direct regulatory ways to fulfill these two objectives, increasing the modal usage of public transport may be one of the most important ways to fulfill these objectives as well as the congestion reduction objective.

2.6 Summary

The basic purpose of public transportation is to move the greatest number of people to desired destinations in a safe and comfortable manner for a reasonable level of expenditure over a sustained period of time. Although all the urban public transport objectives fundamentally reflect this ultimate purpose, the discussion in this chapter implies that there are a variety of objectives.

Congestion reduction, cost efficiency, and service quality are relatively short-term objectives. These objectives take into account the more immediate needs in urban public transport system's performance. Accomplishment of the long-term objectives, that is,

mobility and social equity, and sustainability, will be facilitated by satisfaction of the short-term objectives. However, it is not automatic, and therefore these long-term objectives need to be the bases of evaluation.

Also, some objectives are different from others in terms of the viewpoints. As mentioned earlier, mobility and social equity, and congestion reduction are the primary objectives; they are governments' or societal objectives. On the other hand, cost efficiency, service quality, and long-term sustainability are the secondary objectives; these are rather pursued by operators or owners in general. Because of this, it is likely that some objectives will conflict with each other, and governments may need to decide which ones to give priority to.

In Jakarta, for example, the government is spending 15 % of its urban services expenditures on public transport.²⁰ This is because fare restrictions in the cities are bankrupting the private bus companies, causing the government to step in to assure continuation of the public transport service. Raising fares to be more self-sustainable is likely to be politically unacceptable because of the social equity concern. Subsidized transit, which may lead to inefficiency of costs, may make sense in terms of the social equity objective.

In summary, a city has its own constraints which may cause each of these public transport objectives to have a different priority. In other words, the constraints of a city, combined

²⁰ Gakenheimer, Ralph, Lionel Lennox, and Lee Rogers, Urban Transportation: National Urban Development Strategy, Jakarta, August 1984.

with these objectives, form its own goals and criteria to evaluate and prioritize the alternative strategies discussed later in this thesis.

3 Dimensions for Public/Private Sector Participation

The models for public/private sector participation in public transport are based on different roles in both the provision and production of services. However, these models can be more fully defined by characterizing dimensions for public/private sector participation. These dimensions are regulation, financing, planning, ownership, operation, and maintenance and equipment. Provision of services includes the first three dimensions, i.e., regulation, financing, and planning, while production of services includes ownership, operation, and maintenance and equipment.

3.1 Provision of Services

3.1.1 Regulation

Government regulation of public transport services can be divided into two aspects; one that is related to vehicles and services, and the other that is related to infrastructure. The former type of regulation can take several forms: safety regulation; environmental protection; restriction of entry to the system; stipulations for routes and levels of service; fare regulation; and employment regulation. The latter type of regulation includes general traffic rules which may also regulate public transport vehicles' driving maneuvers such as loading and unloading passengers.

Safety regulation derives from the need to ensure that passengers are carried safely and that danger to other road users is minimized. Safety differs from some other areas of regulation in that it cannot be left to market forces or to operators themselves, regardless of the extent of private involvement in urban public transport; therefore, it should always have the highest priority. Nevertheless, in many developing cities, safety regulation is

neglected or unsatisfactory, especially in case of paratransit services which appeared unofficially and have grown in number. Because paratransit vehicles are often unofficial, their operation sometimes receive no control from government; in some cases, even adequate driving permits are not required. Usually safety can be regulated in two forms: initial and periodic vehicle safety inspection, and drivers' licensing system which requires adequate driving skills. In any case, care should be taken that the regulation does not unfairly favor any particular type, model, or make of vehicles.

Environmental protection regulation assures that urban environments are kept free of harmful or unacceptable levels of pollution. This is another area that cannot be left in the hands of operators or market forces and therefore governments must take responsibility. It is rare in developing countries that environmental protection is considered by itself, but it is sometimes combined with safety regulation in the form of vehicle inspections. Governments should set standards to protect public health, and thus control the amount of pollution that may be caused by public transport and other sources.

The purpose of restricting entry to the system is to limit the number of operators serving the entire city, areas, or routes. Although it is often argued that access to the market should not be unduly restricted in the interests of the ready availability of satisfactory services, restrictions are often used to avoid excessive, or unhealthy competition. Entry restriction is also used to protect a monopoly or to encourage formation of cooperatives²¹ by prohibiting entry of individual operators, in order to assure more coherent schedules and routes, and adequate profitability for proper equipment renewal.

²¹ Cooperatives are described in Section 3.2.

Stipulations for routes and levels of service may include frequency, hours of operation, routes to be served, type and number of vehicles, and other aspects of the quality or quantity of service. These stipulations usually operate in conjunction with restriction of entry to the system and fare regulation. While it is true that such regulations inhibit the benefits of sound competition, these regulations are needed to provide services required to meet certain social objectives. One problem is that it is difficult and costly to enforce and monitor these regulations, and often the regulatory power is "captured" by the producers' interest in achieving monopoly profit, rather than protecting the consumers' interest in high-quality, sustainable service.

Fare regulation has also been a controversial issue. Governments have long faced the dilemma between the conflicting concerns of cost recovery and social equity. However, in many developing countries, fare regulation has been politically and socially established for a long time, reflecting the primacy of the social equity objective.

Employment regulation may include conditions on wage rates, benefits, length of shifts, and numbers of employees. These restrictions are primarily for the benefit of employees. A policy of privatizing government-owned public transport will often be opposed by labor unions, because privatization often causes a reduction of employees' wage rates and even layoffs. In such cases, governments may take some measures to cope with the opposition, such as guaranteeing that employee's wage rates will not be reduced or that employees will not be laid off for at least a certain period of time, by employment regulation.

3.1.2 Financing

Capital and operational financing is another factor which can be defined in the public-private spectrum. Financing is closely related to subsidization; i.e., the degree of public (or private) sector involvement in financing can be measured by how heavily the public transport mode is subsidized by the government. Publicly owned transport is usually subsidized to some extent, often as a result of public takeover of failing private companies. On the other hand, privately owned transport is usually not subsidized, at least directly.²² In the case of operational financing, some modest aid may be provided, for example, in the form of exemptions from fuel or other taxes normally paid by other businesses; in the case of capital financing, the form may be the provision of government-purchased vehicles or facilities. Very few of the private sector systems, however, receive cash payments from the government to offset deficits, because avoiding the heavy and growing burden of subsidies is often a major motivation for privatization in the first place, and governments usually insist on direct control of production if major subsidy is involved.

Thus, financing is closely related to subsidization, and subsidization in turn usually depends on the ownership of the public transport mode.

3.1.3 Planning

Planning has primarily been defined as an activity that formulates the appropriate actions and measures to be taken in order to transform a present system to a future form that meets the foreseen short- or long-term demand according to certain goals and

²² Gomez-Ibanez and Meyer, Chapter 3, p. 14.

objectives.²³ Thus, planning has a rather broad scope. For the discussion in this thesis, planning may be divided into three types: capital planning, operational planning, and city-wide service planning. Since all the planning tasks except for city-wide service planning could also be considered as a part of management, the private sector can take the responsibility of performing these tasks, either by owning the public transport system itself or through a management contract. Even in this case, government may still have to be involved in the planning tasks, because the private sector has different objectives which may not be optimal for society.

Capital planning includes improvement of infrastructure, acquisition of new equipment, construction and extension of facilities, and rehabilitation of equipment and facilities. As these items indicate, capital planning tasks are generally medium- or long-term in scope. Also, most of these tasks are directly related to maintenance and equipment.

Operational planning tasks are short-term and are directly related to the operation of services. It includes routing, scheduling, fare setting, labor allocation, market research, advertising, transfer programs, special discount programs, and so forth. In particular, the importance of market research should be emphasized, because a thorough knowledge of the travel desires of different groups is necessary for more effective service design. Unfortunately, however, marketing tasks are usually neglected in public transport management in most developing countries.²⁴ Few public transport executives give

²³ Giannopoulos, G. A., Bus Planning and Operation in Urban Areas: A Practical Guide, Avebury, 1989, pp. 49-52.

²⁴ Fielding, Gordon J., Managing Public Transit Strategically, Jossey-Bass Publishers, 1987, pp. 182-204.

sufficient attention to customers and their needs and how these needs relate to agency goals and services.

City-wide service planning may include coordination with other transport modes including private automobiles, and rather long-term planning of network expansion and reorganization. These should be considered in conjunction with other city planning policies such as housing, land use, and transportation network planning policies. Therefore, unlike other parts of planning, city-wide service planning is something which cannot reasonably be performed by the private sector. Although in most cases it is under the jurisdiction of government, it is often ignored even by public producers of transit.

3.2 Production of Services

3.2.1 Ownership

Ownership covers two types of facilities; one is the vehicles themselves, and the other is infrastructure including all the facilities and the rights-of-way for vehicle operation. In developing countries, the most common scheme for providing urban public transport services is a mixed system of public and private ownership.²⁵ Often conventional buses are operated by a public organization while significant minibus services are provided by private operators. Generally, street infrastructure including bus stops is owned and regulated by the public sector, while terminals may be either public or private and maintenance facilities usually belong to the vehicle owners.

Public ownership means that the public transport organization is fully owned by some public body which invariably is some form of local, regional, or central government

²⁵ Gomez-Ibanez and Meyer, Chapter 3, pp. 1-3.

authority or organization. The operator in these cases is the public authority itself or a government-owned company, or it may be a separate entity having the legal form of a private company.

Private ownership, on the other hand, can mean that the public transport organization is owned by some private entities such as private companies, cooperatives, route associations, or individuals. It is likely that bus transit is owned by private companies because of its economies of scale, while paratransit is owned by cooperatives, route associations, or individuals. Cooperatives are organizations of individual operators, which exercise informal supervision and control over the operators in addition to providing miscellaneous services. In the case of cooperatives, vehicles are jointly owned by a number of individuals, and costs and revenues are also shared. Route associations are groups of individuals or small firms which lay down rules to prevent the members from "stealing" passengers from each other and to establish reliable schedules to increase the attraction of the route to passengers. In the case of individuals, independent owners rent out or operate their vehicles, and responsibility for the transport service rests on the individual.

Some hybrid forms are possible, however, even in a single public transport mode. In Bangkok, Calcutta, or Jakarta, conventional buses are run both by a government-owned company and by a private one. Also, in the contracting out case, when the operators have their own vehicles, it can be called mixed ownership because the vehicles are owned by the private sector while some facilities such as bus terminals are owned by the public sector. As another hybrid form, in some West African cities, several important urban bus companies are owned jointly by the government and private investors. This is called

"mixed economy" company ownership where a portion of the shares is owned by the public and the remainder by the private sector.²⁶ In some cases, a large share of the company is held by an overseas bus manufacturer or supplier. In Dakar, for example, the government holds 67 percent of the shares of the bus company, French vehicle builder Renault holds 24 percent, and other private sector ownership accounts for 9 percent.

It appears that the trends are towards more privately owned or mixed economy public transport organizations; however, the bulk of the organizations tend to remain under public control.

3.2.2 Operation

Operation covers two main things: vehicles and infrastructure. Operation of public transport vehicles can be done by the public or private sector, or a mixture of both, as for example, with partial contracting out. The public sector can contract out operations by each route, so there can exist a partial privatization case where a certain percentage of services are contracted out to the private sector while the remaining services are operated by the public sector. Another mixed case is that of a "mixed economy" company, because the general assembly of public and private share-holders is responsible for the operation. Operation of infrastructure can also be done by the public or private sector, or both. However, it is more likely to remain the responsibility of the public sector than is operation of vehicles, because of the nature of infrastructure as public utility.

²⁶ Giannopoulos, p. 35.

3.2.3 Maintenance and Equipment

Maintenance includes cleaning, repair, and preventive inspection of vehicles. Usually vehicle operators are supposed to take on this important task, but it is often neglected in developing countries because of the shortage of maintenance facilities, spare parts, mechanics, and budget. Maintenance also covers all the infrastructure such as terminals, garages, and roads. Although maintenance of all of these may not be the responsibility of vehicle operators, these are also often not in a good condition due to the shortage of funds. For example, major urban roads are sometimes not properly surfaced, and this also can cause vehicle breakdowns.

Supply of vehicles and infrastructure may also be unsatisfactory. Sometimes vehicles imported from the developed world are not built to standards suitable for developing countries. There may also be the case of secondhand imported vehicles which do not function efficiently, causing the need for more frequent repair and maintenance. Infrastructure such as garages, terminals, bus stops, and street networks may not be properly designed due to budget problems or other reasons.

The need for better maintenance and equipment planning and the development of these programs adapted to local operating conditions should be emphasized as an important factor of public/private sector roles, when an improvement plan for urban public transport is considered. Again, this part of management can be contracted out to other companies. Also, in some West African cities, there are cases where this aspect of management has been taken better care of by creating a joint company with overseas manufacturers or suppliers.

3.3 Summary

This chapter has defined six dimensions for public/private sector participation, which will facilitate describing the models of public/private sector participation in the next chapter. These dimensions, regulation, financing, planning, ownership, operation, and maintenance and equipment, are all important aspects in discussing improvement for urban public transport. However, it should be added that, apart from regulation and ownership, tasks such as financing, planning, operation, and maintenance and equipment may not respectively correspond to the components of a public transport organization. That is to say, these tasks are not independent by themselves in the organization, and they cannot be detached one from another. For example, a part of planning tasks such as routing and scheduling may be done by the operations division in the private sector, marketing may be done under a totally different division, and capital planning may be combined with maintenance and equipment. Again, these dimensions are primarily for the convenience of defining models and proposing alternative strategies in terms of public/private sector participation.

4 Models of Public/Private Sector Participation

This chapter describes six models for public/private sector participation in urban public transport: public monopoly, private monopoly, contracting out, threatened competition, regulated competition, and deregulation. The chapter also clarifies each dimension, analyzes advantages and disadvantages of each model, and gives examples.

4.1 Public Monopoly

Public monopoly is full public provision and production; it is a situation in which all the services are provided by the public sector. Vehicles and facilities are owned by some public body which invariably is some form of local, regional, or central government authority or organization. Operation of vehicles and facilities is usually done by employees of the public authority itself or a government-owned corporation which is also responsible for maintenance and equipment of vehicles and possibly infrastructure²⁷. All the capital and operational planning from service scheduling to system expansion is also done by the public sector. Public subsidies for capital and operation are commonly viewed as an option for performing these tasks. Although subsidies may be a burden for governments in developing countries, they are often deemed more acceptable when applied in a public monopoly context.

In some cases, public monopoly may serve as an important political symbol of independence from former colonial regimes, especially in Africa where the urban bus

²⁷ A public monopoly is likely to control its own garages, terminals, and bus stops, while streets and traffic signals are likely to be controlled by a different public authority.

services in the largest cities were often provided by monopoly franchises granted to European companies.²⁸

4.1.1 Advantages

The public monopoly model has excellent potential for achieving the primary objectives for urban public transport, mobility and social equity, and congestion reduction, because theoretically the public sector can directly reflect the government policies which presumably agree with the community's objectives. For example, it can hasten the replacement of smaller public transport vehicles with larger conventional buses that would use congested street space more efficiently. In addition, it is often believed that the public sector is best able to deal with other externalities such as environmental and energy concerns, because in this model it is relatively easy to coordinate with other government policies.

Since all the services are provided by the public sector, the model also may have the potential for efficiency by rationalizing route networks and eliminating redundant services if the public sector pays close attention to the passengers' changing travel needs. It may also be possible to design a consistent, long-term system expansion plan with substantial capital investment. The public sector may be able to realize all this potential, provided that there exist effective and experienced managers and planners as well as financial resources.

It should also be recognized that public monopoly is a relatively stable model. Because urban public transport is so important for society, a case can be made that government

²⁸ Gomez-Ibanez and Meyer, Chapter 2, p. 9.

should be responsible for the provision and production of services, because the private sector may not find public transport a sufficiently attractive long-run business opportunity. It is only the public sector that can revitalize the deteriorated urban public transport when the private sector fails, and public monopoly is often believed to be the most effective means for such intervention, and possibly the only legally available option.

4.1.2 Disadvantages

Paradoxically, the fact that the public monopoly is presumed to reflect the public good may place the institution in a position of monitoring itself. This may manifest itself in high levels of environmental pollution, excessively large vehicles with infrequent service, lack of attention to customers, and wage and salary substantially above or below the prevailing level in the economy.

Most of the other disadvantages of the public monopoly model result from issues associated with lack of employee or organizational incentives. First, as opposed to private operators who usually view their customers as the source of revenue and their production costs as a threat to profitability and therefore experience a consistent incentive to improve revenue and reduce costs with an ultimate risk of going out of business, public sector organizations tend to have less incentive to strive for cost-effectiveness, to compete for revenues, or to sustain the high degree of consistent effort necessary to overcome the numerous day-to-day problems. For example, some public organizations are plagued by revenue loss due to faults or irregularities in the fare collection system, adding seriously to their other losses.²⁹ As a consequence, in many developing cities, publicly owned transport systems tend to cost more to run than comparable transport

²⁹ Armstrong-Wright and Thiriez, p. 9.

systems run by the private sector. Also, little incentive to maintain vehicles causes lower ratios of operable vehicles to the total fleet.

Secondly, the model lacks organizational flexibility, because incentives are provided only indirectly and intermittently through the political system by voters, legislators and appointed commissions. If cost efficiency is not achieved, then this indirect process may take some time to make adjustments. In many situations, adequate adjustments may never be made.³⁰ In other cases, political control of the production can lead to great instability as leadership and management, and even the rank and file of employees are changed when election change the government, leading to employee incentives which are political and often unrelated to quality of service. The lack of flexibility may also result in overstaffed organizations. Public bus organizations often have staffing ratios (staff per operating bus) of between 10 and 15, which are very high compared to those of around five in the case of private bus corporations.³¹

Thirdly, public transport systems of this model are commonly subsidized. Not only can subsidies become a serious burden for governments, but also the model may have the risk of removing incentives to reduce costs, falling short of providing the benefits expected from the level of subsidies. In the public monopoly context, this is because the institutional pressures are political and intermittent rather than continuous and market-driven, and the political pressures are dominated by the interests of the bureaucracy and labor rather than broader public concerns such as mobility, equity, or environment.

³⁰ Pagano, Anthony, "Private Sector Alternatives for Public Transportation," Transportation Quarterly, Volume 38, Number 3, July 1984, p. 437.

³¹ Armstrong-Wright and Thiriez, p. 7.

Consequently, a public monopoly may serve less of the public need at higher costs, and pressure to avoid increasing subsidy may be reflected in service cutbacks rather than managerial effectiveness designed to reduce costs and attract more customers.

4.1.3 Example: Mexico City

In Mexico City, bus services were provided by numerous private firms and paratransit modes until 1981 when a public authority called Ruta 100 was established to bring together the various private enterprise urban bus operations with aged and poorly maintained vehicles. Ruta 100 was created by revoking concessions held by private operators, a move opposed by many of these firms.³² Under this single public management, there have been continuous review of the route system and identification of new transport needs, provision of new vehicles, and maintenance and refurbishment of the fleet.

There are six divisional coordinating bodies for the Federal District, each in charge of directing, controlling and monitoring the fleet, staff, technical and financial resources of the 37 local management sections. Due to the shortage of component supplies locally, and to reduce calls on foreign exchange, Ruta 100 has undertaken a program of rehabilitation involving cannibalization of 1,500 buses beyond repair and rebuilding of parts by the local operating units. Also, due to the environmental requirements of Mexico City's high altitude atmosphere, Ruta 100 has been implementing measures to control vehicle emissions and noise levels. Thus, Mexico City's bus system clearly benefited from public sector intervention. The biggest problem may be that the system is

³² Allen, p. 8.

heavily subsidized by the government; operating costs are financed by fares (29 %) and subsidy/grants (71 %).³³

At the end of the 1980s Ruta 100 was transferred to private ownership; indeed, service concessions were returned to the very bus cooperatives which the government had bought out in 1981. This action was not due to a failure of Ruta 100, Mexico's broader economic crisis forced the government to take this action. However, unlike the situation prior to 1981, the private operators are now able to conduct the planning necessary to carry out the Ruta 100 improvements.³⁴ After all, the public monopoly intervention may have been an effective strategy to upgrade the fleet.

4.2 Private Monopoly

Private monopoly is a situation in which most part of the provision and production of public transport services are under the control of a single private company. Regulations by governments may cover safety and environmental standards, entry to the transit market, fares, routes, levels of service, and so forth. Ownership, operation, and maintenance and equipment of vehicles are solely by the private sector, but those of infrastructure are partly characterized as the public sector (e.g., infrastructure such as streets). Private transit monopolies sometimes receive capital or operational subsidies from the government, but this is not common. Capital and operational planning is done by the private sector within the framework of government regulation.

³³ Bushell, Chris, ed., Jane's Urban Transport Systems, Jane's Information Group, 1992, pp. 212-213.

³⁴ Allen, p. 9.

In the U.S., there existed many privately owned public transport monopolies until around the 1950s. The private companies enjoyed the monopoly status, because the transit markets were protected and the private companies were insulated from the threat of competition.³⁵ However, the situation became unstable and eventually led to public buy out and full public provision and production. The public buyouts were often promoted by the private companies as the only way to recapture value for their assets which had no market value. Similarly in developing countries, private monopolies sometimes appeared as a transition to privatization or "publicization," but nowadays very few cases exist under this model.

4.2.1 Advantages

In the private monopoly model, government regulation of entry to the transit market often protects the private monopolies from the threat of competition. One underlying reason to keep private monopoly is the government's belief that the provided services will be more consistent and coordinated than the "chaotic" situation involving multiple operators. Furthermore, if the government policy concerning the private monopoly is focused on broad social objectives such as mobility, equity, and environment while the private company focuses on cost efficiency and customer service, this model may produce better outcomes than public monopoly.

In addition, this model can benefit from its position in the private sector. The model gives better chances to overcome the bureaucratic inertia and to reduce the pressure for political hiring and labor domination which are chronic problems in the case of public

³⁵ Lave, Charles A., Urban Transit: The Private Challenge to Public Transportation, Pacific Institute for Public Policy Research, 1985, p. 17.

monopoly. Also, the model relieves or eliminates governments' financial burden of subsidization.

The argument of economies of scale was also previously used to support monopoly operation of bus systems. Bus operations were believed to be more efficient if the systems were large to defray the cost of management and supervisory overhead. However, the argument has been questioned by growing evidence and experience; large, more bureaucratic bus systems may also increase the complexity of oversight and the loss of information about actual conditions and ridership, thus offsetting any potential savings. A recent study by Viton shows that bus systems may even exhibit diseconomies of scale in cost.³⁶ In terms of value to riders, there may still exist economies of scale; that is, it may be more valuable to get a bus ride in a system which has a more extensive network even if the cost per passenger-mile goes up. If this is the case, system-wide service planning by a single organization may make sense, but there is still no reason for a private production monopoly.

4.2.2 Disadvantages

The private monopoly model may encourage operators to maximize returns by providing infrequent and overloaded services. Private monopoly as such tends to provide services which are less likely to fulfill the fundamental societal objectives for urban public transport. Because of the low levels of service which may be the monopolists' optimal decision, the poor in particular are disadvantaged, and those who are willing to pay for

³⁶ Viton, Philip A., "Consolidations of Scale and Scope in Urban Transit," Regional Science and Urban Economics 22, North-Holland, 1992, pp. 25-49.

something better are forced into using private automobiles or taxis, which will increase traffic congestion, environmental pollution, and energy consumption.

Further government regulation in an attempt to overcome such a situation (e.g., regulated levels of service and fares) has tended to fall short of expectations and tend to turn profits into losses. The past examples of private monopolies in the U.S. have shown that government regulation and control may exacerbate socially undesirable operational and financial performance of the monopolies. As costs rise, for example, transport systems come under financial pressure to increase fares, but governments are under contrary pressure to keep fares at existing levels. Unless the system is subsidized, it will then have to eliminate some of its less profitable services. Once again, however, governments will be inclined to yield to pressure from those whose services are threatened and to insist on maintaining money-losing operations to certain standards.³⁷ This can lead to a lack of replacement of the fleet or other reduction of capital, and eventually to a demand by the private sector that the government buy out the system. Thus, the model may become unstable. The government may also find it politically difficult or legally impossible to subsidize a monopoly, and so they might contract out for marginal routes.

It should also be mentioned that, as is the case with the public monopoly model, operators in private monopolies have less incentive toward cost efficiency and service quality, because they are insulated from competition. Lack of incentive is also more likely to cause the vicious circle mentioned above.

³⁷ The World Bank, 1986, p. 21.

4.2.3 Example: Singapore

In Singapore, there was a private sector monopoly in the conventional bus system from 1973 to 1983. Before 1973, buses were run by several small private companies providing only overcrowded and low-quality service. With the accelerating trend of serious traffic congestion resulting from a rapid increase of private automobile ownership, the government faced the pressure to improve the existing bus system. In 1973, a single privately-owned company was formed by the amalgamation of all the existing private companies at the instigation of the government.³⁸

The new private company³⁹, Singapore Bus Service (SBS), worked cooperatively with the government, rather than being directly regulated. With government assistance, new specialist managers were introduced, and SBS pursued a progressive and efficient operating policy. In addition, a two million dollar comprehensive bus study encompassing network design, scheduling, fare systems, and fleet policy, was undertaken by British and Swedish consultants. With their assistance, significant manpower savings were achieved through increased one-man operation with the installation of an automated driver-operated ticketing system and split-shift workings. The fleet was doubled between 1974 and 1983. As a result, SBS made considerable profits, which allowed further fleet and facility improvements.

³⁸ Bushell, pp. 330-332.

³⁹ Strictly speaking, it was not a monopoly, because there existed two licensed small companies providing bus services during the peak hours to assist in dealing with the commuter flows.

The success of SBS was not only because of the assistance given by the government and the foreign consultants, but also because of the government's consistent and severe transportation policy, that is, the comprehensive road-pricing traffic restraint scheme introduced in 1975. All low-occupancy private vehicles entering the central business district during the morning peak hours (between 7:30 and 10:15 a.m.) have been required to display a special area license disc for which an additional fee is charged. Private automobiles with four or more occupants, commercial vehicles, and buses are exempt. Thus, the government used its public control of the street infrastructure in combination with strong policy regulation of the private monopoly to achieve its goals. Provision of inexpensive parking facilities at the periphery of the licensed area was also included in the scheme to encourage drivers to use buses or to share their cars, but these were not well utilized and have been discontinued.

The monopolistic situation ended when another privately-owned company was permitted to take over operations on 12 routes from SBS in 1983, under a government policy of licensing a second major bus operator. After the two fare increases by SBS in 1982, this new policy was designed to encourage efficiency by introducing competition. Although direct on-the-road competition is not envisaged, further routes could be handed over if the new operator proves more efficient.

4.3 Contracting Out

Contracting out is a model in which the public authority delegates operating responsibility for public transport services to private companies through contracts. Usually the operation of transit service routes is awarded to the lowest bidder through competitive contract. The public authority decides which routes should be contracted out

and specifies in the contract fares, schedules, vehicle characteristics, and service and safety standards. The competitive market responds to the requests of the public authority and one (or more) contractor is selected through the bidding process to provide each service for a specified length of time.⁴⁰ Alternatively, the contracts may be designed with elements of internal cross-subsidy. That is, profits during the peak periods may offset losses on the same line during the off-peak periods, or profitable routes may be combined with unprofitable routes in the same contract. Light density routes or times of day could be contracted to smaller buses with lower capital and labor costs. In short, contract structure is a major issue in this model.

Poorly traveled routes will likely involve subsidies by the public sector with the successful bidder asking for the lowest subsidy. Well-traveled routes may break even or enjoy a surplus. Bidders for these routes might pay the public sector instead, with the contractor offering the highest payment receiving the job.⁴¹

Contracting out may be characterized as a model with private production and public provision. The public authority can exercise regulatory power by including various standards in the contracts with the private operators. It also owns most of the facilities, while vehicles belong either to the private operators or to the public authority. Operation of vehicles is the responsibility of private companies each of which is usually in charge of different routes. Maintenance and equipment of vehicles are generally the responsibility of the operator, i.e., the private sector; however, this part of management can also be separately contracted out to other private companies specializing in vehicle acquisition

⁴⁰ Mantell, pp. 50-51.

⁴¹ Pagano, p. 440.

and maintenance. The operation, maintenance, and construction of infrastructure are basically governments' responsibilities, though these tasks can also be separately contracted out to other private entities. Operational financing relies on the public sector in that governments can subsidize the private operators for unprofitable routes, while capital financing has to be done by the vehicle owners themselves, i.e., the private sector in most cases. Most of the planning tasks are in the hands of the public sector, implying that the public authority is still responsible for ensuring the service quality and performance of the private transit operators.

There are two forms of contracts, though some hybrid forms are also possible: cost contracts and revenue contracts.⁴² Cost contracts require the contractor to provide a specified level of service, collect cash fares and turn them over to the public authority. The contractor receives an agreed payment irrespective of the fare revenue collected, provided that the terms of the contract are fulfilled. With revenue contracts the operator keeps the fares and the contract price is related to the expected losses on the route rather than the costs.

4.3.1 Advantages

This model has good potential for cost efficiency. If the bidding process is arranged in the competitive market so that inefficient operators will be outbid by more efficient operators, the private sector has an incentive to keep bid prices down, thus achieving efficiency. Hence, cost efficiency may closely depend on the competitiveness for the market.

⁴² Giannopoulos, pp. 41-42.

The potential for greater cost efficiency also implies that government deficit may be reduced by moving to this model of production. If the private operators provide services more effectively and at a lower cost than the public sector, then contracting out the transit services may not only reduce government subsidies (for unprofitable routes) but also provide a source of revenues (from profitable routes).

This model can provide a comprehensive and coordinated system for society, because the government authority retains control of all aspects of the provision of service. In other words, the model can produce an optimal level and quality of service that fulfills the primary objectives for urban public transport such as mobility and social equity, and traffic congestion reduction, provided that contracts are well structured and monitored.⁴³

Furthermore, the contracting out model has one other unique advantage; since contracting out can be done at the level of individual routes, it is possible to contract out only a portion of services. Therefore, the public sector can contract out, for example, only a few unprofitable routes while retaining a different model for other routes. Also, by contracting out only peak-hour services, the public sector may substantially reduce additional capital and labor costs, even though the private sector is "skimming the cream" by taking away the lucrative (peak-hour) services.

4.3.2 Disadvantages

One weakness of the contracting out model is that, in the case of cost contracts, the contractor may not treat the passengers as customers or pay attention to customer service

⁴³ Mantell, p. 78.

issues, because all (or part of) the compensation to the contractor comes from the government agency.

Another weakness is the difficulty of efficiently monitoring performance to ensure that the terms in the contract are fulfilled. Private operators may hold back on the quantity or quality of services they render unless their performance is monitored. New technology such as vehicle locator systems, automatic vehicle identification, and advanced communications may make close monitoring feasible, but monitoring is generally costly. In some cases, monitoring and contract administration may offset the savings in operators' efficiency; often, customer complaint mechanisms are the most cost-effective monitoring systems.

The public authority may also have difficulties if the existing private operators have highly marginal performance, questionable management ability, vehicle and facility maintenance, or little understanding about contracting policies.⁴⁴ Contracting out may not reduce costs if the bidding process is rigged or not competitive. In particular, essential factors of production such as bus fleets or maintenance facilities may be under monopoly control, so that competition is substantially restrained. In order to apply this model, it is the responsibility of the public authority to foster a fair, competitive transit market with high-quality participants.

4.3.3 Example: Bangkok

In Bangkok most of the conventional bus services run by the public corporation were unprofitable. Although Bangkok Mass Transit Authority (BMTA) had losses of 40

⁴⁴ Lave, p. 63.

million dollars (1985), it was under pressure to increase bus services for alleviation of traffic congestion. In 1985, BMTA decided to turn increasingly to the private sector to run routes on a contract basis. Private operators bid on the amount of money to be paid or received by them, depending on the extent to which they expect the routes to be profitable or unprofitable. Under the revenue contract, the private operators, using their own buses or buses leased from BMTA, supply services at specified performance levels and fares. By using route inspectors and mobile radios, the performance of the private operators can be adequately monitored. The private operators are also in charge of vehicle maintenance at the depots and support facilities provided by BMTA.

Competitive bidding arrangements seem to have given the private operators an incentive to keep costs down. As a result, despite the low fares set for the social equity concern and the competition with minibuses, they are able to make a profit. In addition, BMTA receives over 12 million dollars per annum in payments from contracted private operators. Although this amount of money only covers the interest of the bank loans, BMTA is currently planning the renewal of almost the total fleet of buses (5,574 buses in 1991).

Contracting out is a relatively new model in developing countries with few examples to date, but it seems to be growing. Bus systems in Istanbul and Kingston also have similar experience to Bangkok.

4.4 Threatened Competition

The threatened competition model uses the threat of competition to achieve the same benefits. Operators are required (usually by contract) to meet service and fare standards

or have their services competitively tendered.⁴⁵ Threatened competition is also a component of many contracted out services where the government has the option of extending the contract without a new bidding process.

This model is clearly different from the contracting out model in some other respects. First, contracts are based on areas or groups of routes rather than individual routes. Second, each area or group of routes is served exclusively by one private operator; i.e., each private operator has its own franchised area(s). Third, provision of services would be determined by the private sector rather than the public sector; the model can be roughly characterized as regulated private provision and production.

In this model, there is government regulation in the form of contracts containing the minimum service standards. Vehicles and facilities are owned by the private sector, and operation and maintenance and equipment of vehicles are totally in the hands of the private sector, but infrastructure has public sector involvement. As for operational financing, the private sector can receive subsidies only if the area is considered to be unprofitable. Most of the capital and operational planning tasks are the responsibility of the private sector, in that private operators are expected to perform over the minimum service standards set by governments.

4.4.1 Advantages

Through the threat of competition, the threatened competition model has the potential to produce a cost-efficient, high-quality service. It should be especially effective if there are multiple operators so that the threat of competition may be perceived as real by the

⁴⁵ Mantell, pp. 47-48.

operators. Simultaneously, through the government regulation in the form of contracts, the model has the potential to meet the primary objectives for urban public transport such as mobility and social equity, and congestion reduction. Well coordinated services are also likely to be achieved, because each area is served by a single private operator.

This model can also serve as a good transitional model from private monopoly to a more competitive environment. This may be easier when there are several private monopoly operators serving adjacent areas or regions with similar conditions. On the contrary, this may be more difficult when the entire city or region is served by a single private monopoly operator and there are no other potential operators around.

4.4.2 Disadvantages

How effective the threatened competition model will be depends on how seriously private operators take the threat of competition. If the threat is not taken seriously by private operators, they may have little incentive to provide services efficiently because there is no perceived competition. As a result, operating costs may be higher than other alternative models with competition.

There are two situations in which the threat of competition may not work well. First, if there are not enough existing franchised areas or potential operators. Second, if the private sector negotiators are too skillful, or if the contract renewal or bidding process is not effective.

4.4.3 Example: New South Wales

The government of New South Wales was faced with increasing social welfare demands and a likely decrease in the availability of funds. Consequently, the government saw a need to reduce expenditure on public transport and, at the same time, to increase service levels of the existing private franchised bus industry. The choice was between deregulation, contracting out, or acceptance of the existing franchised bus system. In regard to deregulation, there was a concern about destroying the viable private bus industry already existing in the outer suburbs on a franchised-area basis. In addition, the government as well as the private bus industry both believed that competition should be encouraged in all facets of bus services, including planning. Even though options of deregulation and contracting out had been ruled out for the above reasons, the government was still not happy with the franchised system that previously operated in the suburbs of Sydney. It lacked any real performance standards, was not subject to any significant competitive pressures, and required a costly level of regulation.⁴⁶

However, it was believed that these problems with the franchised system could be overcome. As a result, the Passenger Transport Act of 1990 was introduced which incorporates the concept of a competitive franchised system, or threatened competition. In setting the framework for the non-subsidized urban private bus services, the government decided to issue performance-based contracts on a franchise basis with competition between franchise areas. The following are the major components of the new Passenger Transport Act:

⁴⁶ Graham, Roger L., "Commercially Viable Bus Services Are Encouraged by Legislation in N.S.W., Australia," Second International Conference on Privatization and Deregulation in Passenger Transportation, Tampere, Finland, June 1991.

- Existing operators in a franchise area (meeting the minimum safety and maintenance standards) are offered the first opportunity to accept a commercial contract, which lasts five years.
- Services that are not provided by the commercial market will be tendered and non-commercial contracts will be issued for shorter time periods.
- The evaluation of the contracts is not based on costs. Rather, it is based on the extent to which the prospective operator is willing to exceed the prescribed minimum service standards.
- At the end of the five year commercial contract term, the operator has reasonable expectation of renewal if the performance standards have been met. If they are not met the services will be competitively tendered.
- There are four main service standards: fares, frequency levels, fleet standards and operational performance. The threshold for each of these standards is set at the average achieved by commercial operators so that there is (indirect) competition between the franchised areas.

In the New South Wales case, competition has been developed between franchised areas by means of: tendering for new services, where tenders are evaluated on service standards; tendering for services which fall well below the industry average; and the requirement that all operators progressively lift their standards to at least the industry average.

Threatened competition is a new model, and although it should be feasible in developing countries, there are few explicit examples yet.

4.5 Regulated Competition

The regulated competition model incorporates the benefits of a competitive, cost controlled environment (through direct competition in the market) and a coordinated transit system. Governments in most cases regulate safety and maintenance standards, fares, entry to the system, and routes. They can also regulate levels of service, employment standards, or environmental criteria. Governments are responsible for monitoring the performance of private operators, although the monitoring system in this model may not be as comprehensive as in contracting out because there is no contract between the private operators and the government authority.⁴⁷

Although the range of government intervention may vary from case to case, this model may be characterized as public and private provision and private production in a broad sense. Vehicles are owned by the private sector, while most infrastructure is owned by governments. Operation and maintenance and supply of vehicles are the responsibility of the private sector, while infrastructure are operated, maintained, and equipped mainly by the public sector, with some scope for private sector participation in management of bus garages and other facilities. Subsidies are seldom available except for seriously unprofitable routes. Capital and operational planning is done by the private sector within the constraints of government regulation.

⁴⁷ Mantell, p. 45.

4.5.1 Advantages

Benefit first derives from the competition in the market. The regulated competition model can give strong incentives to provide better services. That is, the model has potential for improved cost efficiency due to competition for fares in the public transport market, and this may result in reduction of government subsidies. Also, because the operators compete for more passengers which directly lead to more profits, they will be more concerned with service quality issues.

Benefits may also derive from government regulations. Governments can regulate the fares to meet the social objectives, especially to meet equity concerns. Government regulations can also help to produce a comprehensive and coordinated service. Regulations can force operators to carry unprofitable, weak routes and provide off-peak services and generally ameliorate (or mitigate) the private operators' desire to be cost efficient and maximize profits.

4.5.2 Disadvantages

One major drawback is that this for-profit regulated competition model can be applied only where the demand for the transit service is high. Where the demand is not so high, governments may have to lay down more regulations to meet the social objectives. Such interventions often fall short of expectations, causing some private companies to go out of business, because transport systems become less able to provide adequate service at acceptable fares.

Fares are often regulated at relatively low levels in the belief that they will benefit the community. Even if private operators are currently profitable, their profitability will

decline if governments are reluctant or slow to allow fares to increase during periods of cost escalation, generated by a wide variety of causes, including general inflation and urban congestion increases. As a result, private operators may have to withdraw from part or all of their services.

While fare regulation is intended for the benefit of the community, it could also indirectly adversely affect the community. Through regulation, governments may impose flat fares on all bus trips throughout the city, regardless of distance, to protect the urban poor. However, with flat fares private operators will be encouraged to make the shortest trips possible in order to maximize returns. Unless the route structure is properly regulated by the government, this may create the need for many passengers to take several buses in order to reach their destination. For example, in Medellin, Columbia, where high-density residential areas are located north of the central business district and the industrial areas are located in the south, the route structure led to inconvenience for many commuters by forcing them to change buses in the central business district and pay two fares.⁴⁸

4.5.3 Example: Buenos Aires

The Buenos Aires "colectivo" bus system is one of the best examples of the regulated competition model. Colectivos first appeared in Buenos Aires in the late 1920s. Starting as shared-ride taxis, the colectivos grew over the next several decades into substantial-sized minibuses. A private transport company managed to create a monopoly by forcing some colectivos into its ownership, but it began experiencing serious financial problems.

⁴⁸ Armstrong-Wright and Thiriez, pp. 40-41.

Unable to make a profit, the transport company went into bankruptcy in 1948 and was bought out by the government in 1952.⁴⁹

There was little change under government ownership, as the public sector made little investment in the system, and it continued to lose money. In 1955 the government transferred most of the publicly-owned colectivos to the employees and by 1963 all colectivos were privately owned.

Now the colectivos are private, for-profit buses operating under the supervision of the Federal Ministry of Public Works and Services which regulates fares, routes, and minimum frequencies. The colectivos receive no direct capital or operational subsidies from the government, though fuel prices are subsidized. They compete in the market against one another using medium-sized, 25 seat buses operating at very high frequencies. The colectivos are an important part of life in Buenos Aires. The demand for colectivos is very high, accounting for 80 percent of all public transport trips and 54 percent of total trips, more than twice the share of the private car.⁵⁰

Almost half the operators are owner-drivers, each of whom is responsible for the expenses of their own vehicle. Colectivo operators are organized into route associations, called "empresas." The members control the "empresas" on a basis of one vehicle, one vote, and any disputes are settled by voting at a members meeting. Some "empresas" have their own maintenance facilities that employ a certain number of inspectors and mechanics. Services are highly competitive, and routes, which are often very long, run

⁴⁹ Allen, p. 7.

⁵⁰ Bushell, p. 58.

parallel to one another along major streets. Passengers benefit from frequent service, but problems include fare evasion and accidents, particularly at the city's numerous railway crossings, as colectivo drivers hurry to maintain their schedules.⁵¹

4.6 Deregulation

The deregulation model involves removing or easing controls over entry to and exit from the system, fares, levels of service, markets served (routes), and employment and standards. Safety or maintenance regulation is often retained even in this model, usually in the form of issuing permits to private operators meeting these standards. In developing countries, this model may occur when the informal paratransit sector stays outside government control because of its "informality." This model may enable private operators to best achieve cost efficiency and service quality by introducing free competition with minimum government intervention.

It may not be so clear where to draw a distinction between the deregulation model and the regulated competition model. In fact, public transport systems can take any location in the spectrum between complete deregulation and perfectly regulated competition. However, in this thesis, the deregulation model is characterized by government regulation only on safety and maintenance standards. Though there are no other regulations required in this model, there may exist some requirements to notify government of any changes in advance, such as increase of fares or initiation or termination of a service. The only scope for public sector involvement in the system may be ownership, operation, and maintenance and equipment of some infrastructure such as terminal facilities and streets.

⁵¹ Allen, p. 7.

Thus, the deregulation model may be referred to as almost completely private provision and production.

4.6.1 Advantages

In the deregulation model, there is no government intervention except for safety and maintenance regulations. This means that private operators are financially independent, and that subsidy and cross-subsidy are reduced or eliminated. These may be seen as an advantage by some.

For private operators, the model may have the greatest potential to give an incentive to achieve the lowest input costs because of the competition in the public transport market. Private operators enjoy the freedom to decide fares, routes, levels of service, labor costs, work rules, and so forth, although these will be determined through the competitive market. In particular, if private operators have no difficulty in operating and maintaining any specific type of vehicles, vehicles chosen by operators with practical knowledge of road conditions, level of demand, and operating costs are more likely to be cost-effective and appropriate than vehicles specified by regulation.⁵² Thus, free from government intervention, private operators may be able to make a reasonable return, thereby encouraging the supply of services and investment in expansion.

Consumers also benefit from this model if there is high enough demand. Although there is no regulation of fares, competition may also reduce the chances of excessive fares being charged. The optimum routes and levels of service determined by the competitive, high-demand market may also agree with customers' needs. Customers may be able to

⁵² The World Bank, 1986, p. 25.

choose from a variety of vehicle types or routes. If deregulation is introduced to complement a public subsidized system, the deregulated producers may serve different market niches for higher frequency and less crowded service at higher prices, while the public entity provides a basic lower-fare service.

Deregulation may be beneficial particularly where the government is seen as incapable of fair regulation, either because of corruption or excessive orientation to producers' interests; in such a case, the deregulation model allows the market power of customers to play a stronger role.

4.6.2 Disadvantages

The deregulation model may have difficulty satisfying the primary objectives for urban public transport. Under free competition, it is likely that the low-density areas, unprofitable routes, and off-peak services will be neglected, while high-demand areas or routes are likely to be over-served. This situation may not be appropriate in terms of mobility and social equity, and this problem will become more manifest in cities where public transport demand is not so high. Also, for reasons of cost efficiency or competitive advantage, private operators may choose to operate large number of smaller vehicles, which may in turn create serious road congestion and environmental problems.

Another concern about the effects of deregulation may be the lack of fare and service coordination, and system-wide public information and planning. This is likely to create an unstable situation for customers; it may result in large increase of fares, interruption of services, or even withdrawal of operators. It may also bring disadvantages from the operators' perspective, such as unfair competition, predatory practices, and inefficient use

of facilities causing, for example, "bus traffic jams." In addition, if one operator is more powerful than others, the model may lead to private monopoly, creating de facto barriers for new operators to enter the market.

In addition, excessive competition may also create some undesirable side effects. If the competition is severe, highly motivated and sometimes aggressive driving behavior of private operators may impair the safety and quality of services. Reports of aggressive driving by highly motivated private operators are fairly common in developing countries, particularly in cities where a large number of small companies or individual owner-operators are plying the same routes.⁵³ Also, intense competition in the public transport market may keep the net income of private operators very low, leading to inadequate investment for system expansion.

4.6.3 Example: Colombo

In Colombo, Sri Lanka, bus services are provided by two subsidiaries of the government Central Transport Board (CTB), and by independent private companies operating buses and minibuses. Private bus services are subject to relatively little government regulation. Bus operators select their own routes, set their own fares, and determine when they will begin daily operations and when they will stop. The government does, however, impose stringent requirements with regard to safety, insurance, and vehicle inspection.⁵⁴

The private transport sector in Colombo benefited greatly from the liberalization of national economic policies in the late 1970s. First, the easing of import restrictions

⁵³ Gomez-Ibanez and Meyer, Chapter 3, p. 8.

⁵⁴ The World Bank, 1986, p. 28.

stimulated purchases of new vehicles. Then, in 1979, with the overcrowding and inadequate service by CTB, the government put an end to its monopoly on public transport services. Despite the competition with the heavily subsidized and well-established CTB bus services, the private bus industry developed very rapidly and now operates nearly 4,000 vehicles in the Greater Colombo area, while the two subsidiaries under CTB together operate 2,400 buses. About 90 percent of the buses are in the 15-35 capacity range, most Japanese-built.⁵⁵

Although the private bus operators are permitted to set their own fares, these are greatly influenced by CTB fares, which are held artificially low. As a result, some private operators have found it difficult to compete, while others have resorted to overloading and other bad practice. A few unprofitable routes have been shunned by private operators and are served by CTB buses, which have become chronically overloaded. The government is formulating special arrangements to overcome this problem.

The overall effect of deregulation has been a better balance between supply and demand, particularly at peak periods, and generally in the form of more frequent and less crowded bus service. CTB's operations and large subsidy are likely to be reduced as the private sector increases its share of the public transport market.

⁵⁵ The capacity of private buses used to range from 30 to 60 passengers. However, impetus has been given to the minibuses by recent civil unrest, with informal cooperation with CTB allowing the minibuses to use CTB bus stations. See Bushell, p. 76.

4.7 Summary

This chapter discussed six models of public/private sector participation in urban public transport and gave examples of each. As Table 4.1 summarizes, the public monopoly, private monopoly, contracting out, threatened competition, regulated competition, and deregulation models each exhibit different combinations of public and private roles for the dimensions of public/private sector participation. Furthermore, the distinction between vehicles and infrastructure, or capital and operation helped to clarify public/private sector participation in each dimension.

In addition, the identification of advantages and disadvantages showed several attributes of each model, some of which may become more explicit or serious under certain constraints surrounding a specific urban public transport system. Despite these different attributes of the six models, the examples pertaining to each model suggest that each may have potential for improving public transport under certain circumstances.

Table 4.1 Six Models and the Dimensions in Public/Private Sector Participation

		Public Monopoly	Private Monopoly	Contracting Out	Threatened Competition	Regulated Competition	Deregulation
Regulation	Vehicles	Yes	Yes	Yes*	Yes*	Yes	Minimum
	Infrastructure	Yes	Yes	Yes	Yes	Yes	Yes
Financing	Capital	PU	PR (& PU)	PR	PR	PR	PR
	Operation	PU	PR (& PU)	PU	PR (& PU)	PR (& PU)	PR
Planning	Capital	PU	PR & PU	PU	PU & PR	PU & PR	PR
	Operation	PU	PR & PU	PU	PU & PR	PU & PR	PR
Ownership	Vehicles	PU	PR	PR (or PU)	PR	PR	PR
	Infrastructure	PU	PR & PU	PU	PR & PU	PU	PR & PU
Operation	Vehicles	PU	PR	PR	PR	PR	PR
	Infrastructure	PU	PR & PU	PU (& PR)	PR & PU	PU & PR	PR & PU
Maintenance & Equipment	Vehicles	PU	PR	PR (or PU)	PR	PR	PR
	Infrastructure	PU	PR & PU	PU (& PR)	PR & PU	PU & PR	PR & PU

* The model is regulated in the form of contracts.

PU : Public Sector

PR : Private Sector

5 Framework for Assessment

Based on the options for public/private sector participation, and on the advantages and disadvantages of the models described in the previous chapter, this chapter presents a framework for assessment, proposes alternative improvement strategies for each model, and describes the procedures for application of the framework to a case study.

5.1 Structure of the Framework

There are two broad alternatives for each model: a strategy for improving the system within the present model, and strategies for possible movement to other models. The former type is, in other words, a strategy to improve the existing system without changing the basic roles of the public and private sectors. This type of strategy is selected when governments think that there is still a good chance of improvement to be expected from the existing model, and that any movement to another model requires too large a step to take in practice. On the other hand, the latter type of strategy is selected if it seems better to take a drastic action and change in a more fundamental way the roles of the public and private sectors in the system.

Such decisions of government are greatly affected by the initial conditions governing the system. The goals of the urban public transport system can be interpreted and prioritized in many ways according to these various conditions. Interpreting the goals means defining more concrete objectives in the context of the specific public transport system, and placing priorities on these objectives. The prioritized objectives can be considered as the criteria for evaluation of alternative strategies.

Each model will have its own potential strategies for improvement; the number of strategies and the directions of movements will differ depending on the base model. The selection of a strategy will, again, differ depending on the specific criteria. Since the criteria change from time to time and also from city to city, it is necessary to assess all the possible strategies from each base model. That is to say, to cover all the models and all the possible strategies from each base model, it is necessary to build a comprehensive framework for assessment.

The concept of using such a framework is shown in Figure 5.1. The first stage means the initial roles of the public and private sectors in the system. Suppose that the initial situation of the existing public transport system is described as Model A. There are six alternative strategies indicated as arrows; strategy (a) is improving Model A, and strategies (b), (c), (d), (e), and (f) are movements from Model A to Models B, C, D, E, and F respectively. One of these six strategies may be selected for the second stage based on the evaluation criteria. Once the model has evolved, the criteria may also change, because the newly adopted model or strategy may affect the environment, or simply because conditions may change as time elapses. This process is repeated to determine the transition strategies from each stage to the following one. Thus, the system shifts from one model to another, but the basic framework for assessment includes the same combinations of models and strategies. This indicates that the framework for assessment itself need not change over time. The next section describes these strategies, that is, the components of the framework.

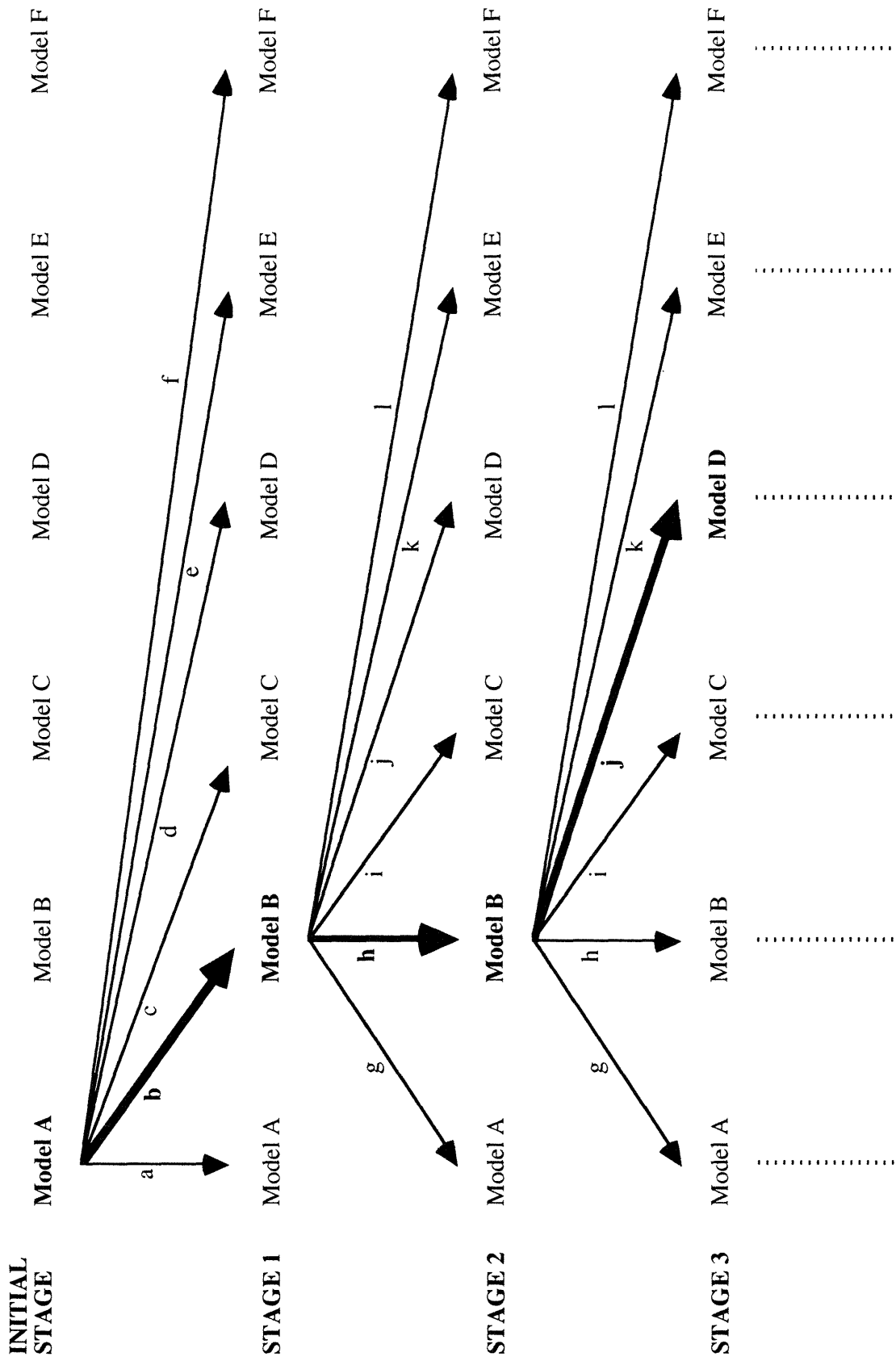


Figure 5.1 Assessment Framework

5.2 Alternative Strategies for Improvement

This section describes alternative improvement strategies for each model. Strategies are presented by each “base” model. For each base model, improvement options within the model itself are presented first, and then the other strategies involving movements to other models are discussed.

5.2.1 Public Monopoly

Public monopoly is the most obvious model when governments want to meet the primary objectives for urban public transport such as mobility and social equity, congestion reduction, environmental protection, and energy saving, without any reliance on the private sector. It is also attractive when governments are planning large-scale network expansion or improvement, or transport technology modernization which may involve substantial capital investment or procurement of funds. This may include the case in which governments need to revitalize a deteriorated urban public transport system and there is no viable private sector option available, or in which foreign technology or finance is required and the stability of a government presence is required to satisfy the consensus of either country.

5.2.1.1 Improvement Options within the Model

It is possible for a publicly owned transport system to perform satisfactorily, if it operates with a measure of independence and pursues commercial practices in order to resolve the issues related to incentives, organizational flexibility, and subsidy reduction.

The public sector may be able to give employees incentives to reduce costs and improve quality of services by setting easily quantifiable performance measures in the

organization based on revenues, fare collection, real labor hours, number of accidents or breakdowns, ratio of operable vehicles, and so forth.⁵⁶ Payments might be clearly linked to these performance measures, for example, through incentive and penalty clauses either individually or, more appropriately, on a work group basis.

To make the organization more flexible, the public sector may, before anything else, obtain and exercise its authority to hire and replace staff. Top management can then relate staffing levels to the true workload, by clearly defining the responsibilities of each staff member. In this way, the achievements expected of each staff member can also be monitored and related to their payments.

Substantial subsidy reduction may be achieved through these actions, but it may be more thoroughly satisfied by taking a more direct approach. The public sector should take rational policies to ensure that the social and economic benefits resulting from subsidies are accurately assessed and outweigh the true cost of services provided to meet the social objectives; also, subsidies need to be reassessed periodically to ensure that they remain appropriate.

These options may be facilitated by creating a semi- or fully-autonomous public corporation. The key point here is the separation of the policy-making function from the operating functions; this separation can strengthen both functions. That is, the policy-making function can be less heavily influenced by the institutional pressure of the production bureaucracy and labor. Also, a more independent production entity can be less subject to the political pressures on hiring and compensation levels. This separation

⁵⁶ Armstrong-Wright and Thiriez, pp. 14-17.

of the policy-making function from the operating functions also creates the potential for the policy-making entity to consider using competitive private sector production capacity. Creation of an operating corporation may also lead to the potential for part of its shares to be held by the general public and permit the contracting out of special functions such as cleaning or maintenance of vehicles. Thus, through appropriate restructuring of a public monopoly within the public sector, the potential to consider partial privatization can be created.

In Bombay, India, for example, a semi-autonomous public corporation called the Bombay Electric Supply and Transport Undertaking (BEST) has a high degree of financial and operational independence, but increases in bus fares require the approval of the authority and are subject to limits prescribed by the state government.⁵⁷ BEST pursues prudent management and financial policies and strives to improve efficiency and viability. The bus services are subject to comprehensive monitoring (for bonus payment) and a detailed costing system. Bus maintenance activities are also effective and well scheduled. As a result, over the years, BEST has consistently achieved a high level of output at low cost.

5.2.1.2 Movements to Other Models

When cities find that public undertakings of bus services are too fraught with difficulties and impose too heavy a burden on public resources, they may turn to private sector participation.

⁵⁷ The World Bank, 1986, p. 24.

Private Monopoly

It is unlikely that there exists a single buyer large enough to take over a city's entire public transport system. Instead, a private monopoly situation can be formed when all the shares of the public corporation are sold to individual investors or possibly to the employees. The change is simply from one monopoly supplier to another; however, the organization can have more flexibility with less political interference and seek for more commercial objectives such as profit maximization with attendant cost efficiency actions. This movement may happen when governments want to improve service quality by reducing political interference in hiring and management, to reduce their burdens such as subsidizing and managing public transport, or to give the corporation a stronger profit motive while keeping consistent, coordinated services provided by a single supplier and using cross-subsidy to support weak routes. Particularly if the public policy component is retained within the government, the government may retain the right to issue competitive franchises or to contract out for some services if the private monopoly does not perform adequately.

Contracting Out

The movement to contracting out may be easy when there are enough potential private operators in the transit market, especially when they can afford to buy their own vehicles so that governments will not have to provide vehicles for them. Also, this strategy can be relatively easily applied because the public sector can contract out only a part of services as an experiment. This is facilitated if the government policy setting unit is separate from the operating corporation. As is the case with Bangkok, Istanbul, and Kingston, this movement is likely to happen when there are many unprofitable routes and governments want to achieve private operators' cost efficiency by encouraging indirect competition

through the bidding process. This movement is also advantageous in that governments can reduce the operating task and subsidies but they can still plan a consistent, coordinated service network. In addition, governments can adopt this strategy to contract out specific functions; for example, in Boston, the Massachusetts Bay Transportation Authority (MBTA) has contracted out bus cleaning services separately to private companies. If there is no existing private sector capacity, dividing and privatizing functional or geographical units of the public operator, possibly with worker ownership, may be the best first step. Finally, when the provision functions are in a different public agency than the production public monopoly, the public producer can be allowed to compete for the contracted services, so that competitive pressures improve the performance of the public producer as well. This model appears to have achieved substantial cost savings in London.

Threatened Competition

When governments want to give most of the provision function as well as the production function to the private sector, movement to threatened competition may be an attractive strategy. For this purpose, governments should divide service routes into several groups properly so that fair competition can occur among the private operators. It is also necessary that there should be enough potential private operators to take responsibility for management activities. Taking this strategy does not mean that the government need not retain any provision functions; in fact, adequate policy-making and planning are required of the government in dividing the system into viable parts and structuring the contracts especially at the initial stage, and oversight function should always be retained and effectively utilized by the government. However, once all the conditions are met and the threatened competition is set up, governments' tasks are substantially reduced.

Regulated Competition

As the Buenos Aires case shows, one way that the movement to regulated competition can happen is through the government's policy to transfer the publicly-owned vehicles and rights-of-way for operation to multiple private entities (the employees in the Buenos Aires case). Another way may be the government's policy to allow private companies to enter the transit market which may cause "mixed" ownership in the transition period. This movement may happen when governments' public transport services deteriorate and they want to improve cost efficiency by introducing direct competition among private operators. This movement may be suitable if demand is expected to be high enough for competition in the market to be sustainable. Governments' policies to meet the social objectives can be effected only indirectly through regulation.

Deregulation

The conditions underlying the movement to deregulation may be similar to those in the case of regulated competition. However, competition will be more severe, because of easier entry to the market and less regulation of services. Governments cannot mandate their policies except for safety and maintenance issues; therefore, lack of service coherence may become a problem. Also, it is likely that private operators will use smaller vehicles which need less initial investment. This strategy may seem attractive if there is low confidence in the capacity of government to play an effective and honest role.

5.2.2 Private Monopoly

The private monopoly model may be attractive when governments desire consistent and coordinated public transport services run by a single company, but when they want to

entrust the operating functions with the private sector in order to reduce political interference in the company's wage standards, work rules, service designs, and so forth.

5.2.2.1 Improvement Options within the Model

In this model, sometimes government intervention negatively affects the performance of private monopoly operators. Simple enforcement of government regulation may result in conflicts with monopoly operators' objectives and force them to go out of business. As the Singapore case implies, government regulation should be accompanied by government consultation of producers and consumers. In this way the conflict between objectives of governments and those of monopoly operators may be minimized. Furthermore, introduction of experienced consultants from governments or other sources may ease this problem.

Introduction of experienced consultants from the government or foreign sources may also overcome the internal problems such as employees' lack of incentives for better, lower-cost service and bureaucratic inflexibility in a similar way as in the public monopoly model. In brief, the improvement options to give the company more profit incentive and flexibility are: clearly defining the responsibilities of each staff member; monitoring performance in terms of revenues, fare collection, real labor hours, number of accidents or breakdowns, and ratio of operable vehicles; and linking payments to these performance measures, for example, by introducing incentive clauses, possibly on a group basis.

Since the private operator in this model is closely related to the government in that it is the only private entity with a coordinated service network, it may be relatively easy for the government to cooperate with the private operator for improvement of the system.

For example, the government can make public transport more advantageous and attractive than private automobiles by reinforcing automobile regulations or constructing bus lanes. In these respects, government's decisions about the planning and management of public transportation seem quite influential in improving this model.

5.2.2.2 Movements to Other Models

In many cases deteriorated private monopoly systems move to public ownership, i.e., the public monopoly model; however, movements to other models may also be possible.

Public Monopoly

In the situation in which public transport services provided by a private monopoly deteriorate and there are no other potential private operators, the only way to maintain the services may be via public buy out and full public provision and production, because there may be no willingness to directly subsidize a private monopoly. While this is a common movement, it may not be the best long-run structure for the system; however, this can be an effective temporary state while a better long-term solution is sought, because it may often be easier to move to other models via public monopoly after removing the legal rights of the private monopoly through purchase or other legal action. As a more active case, even when private monopolies are providing efficient services, this movement may happen if governments want to manage and operate public transport systems directly to meet the social objectives better, as in the case of Singapore.

Contracting Out

The contracting out model may be attractive when private monopoly services deteriorate and government decides to assume overall responsibility for the services but does not

wish to operate the services directly or does not wish to purchase the private monopoly. It may be less expensive to contract for services that the private monopoly is no longer willing to provide, or even for all services. Services may be contracted out to the private company, to some groups of the former employees of the private monopoly, and/or to other potential private operators. This movement may work if there are enough contractors to cover all the routes and to make competition in the bidding process effective. However, substantial initial investment in vehicles is necessary for contractors and this may be a problem unless the government also provides vehicles and maintenance facilities. If these are not provided, most of the system may be contracted to the former monopoly, at least initially. Even so, the government might still want to take this strategy, because having at least some competition may be the only politically acceptable way for the government to contract with and subsidize the former private monopoly.

Threatened Competition

The movement to the threatened competition model may happen when private monopoly services are deteriorating and the monopoly can no longer sustain its legal objectives but the government does not wish to purchase the assets which have no market value. This strategy may be taken when governments want to make the services more efficient with the help of competition while still keeping the advantages of private systems. Governments can urge this movement either by dividing the existing private monopoly company into several small firms with similar service areas, or by allowing other private companies to enter the market and handing over some service routes or areas. However, governments will have to negotiate some concessions in order to create viable enterprises by agreeing to higher fares, less service, or subsidies which the former private monopoly did not enjoy.

Regulated Competition or Deregulation

The movement from private monopoly to the regulated competition or deregulation model may happen when governments want to improve cost efficiency by introducing direct competition into the transit market and the private monopoly is unable to meet its legal obligations. Governments can begin this movement by relaxing entry regulations into the market as a condition of rate, route, or subsidy relief to the monopoly, but this is most likely to be where demand is high enough to sustain competition in the market. Whether to move to regulated competition or to deregulation may depend on the balance between how much government wants to maintain regulatory control to reflect their policies and how much they want to obtain the cost-efficiency benefits of competition. One could imagine that the government could open entry to competition along with a rate increase (resulting in regulated competition), or simply deregulate fare and entry, as a way to retain service without a buyout when a private monopoly is no longer viable.

5.2.3 Contracting Out

The contracting out model may be the most appropriate where government policy places a high priority on service and fare coordination to satisfy social objectives, and also in unprofitable or non-commercial markets where extensive subsidy is required. This model works best where there are enough potential private operators to make the bidding process competitive and thus a competitive market can be fostered by the government.

5.2.3.1 Improvement Options within the Model

There are three major issues to be considered as the improvement options for this model: restructuring contracts, fostering a competitive market, and monitoring private operators' performance.

If the contractual agreements are characterized as cost contracts, the contractor may not treat the passengers as customers or pay sufficient attention to customer service issues, because almost all primary compensation to the contractor comes from the government agency. The improvement option for this may be to move to revenue or hybrid contracts in which contractors retain at least a portion of the fares and thus have direct financial incentive to improve customer relations and service quality. In addition, clear contract design including fare, safety, and service standards to prevent any service deficiencies may make this model more effective.

In order to foster a corruption-free, competitive market, governments should: (1) widely publicize and fully disclose information so that all potential interested contractors have sufficient information to form the basis for a bid; (2) limit the size of contract and award enough contracts to avoid reliance on a single large company and to allow a significant fraction of the bidders to succeed; and (3) stagger the contracts so that they can be awarded at different times thus sustaining bidders' interest, and establish lower and upper limits on the number of contracts that any one bidder can be awarded at one time.⁵⁸ These improvement options also apply in contracting out other management tasks such as vehicle maintenance to the private sector.

Effective monitoring of the operators' performance may be done by the oversight authority itself, through outside contract assistance, or through high-technology equipment such as vehicle locator systems, automatic vehicle identification, and

⁵⁸ Cox, Wendell, and Jean Love, "International Experience in Competitive Tendering," Second International Conference on Privatization and Deregulation in Passenger Transportation, Tampere, Finland, June 1991, p. 6.

advanced communications. In addition, direct customer-activated complaint mechanisms are a useful and cost-effective complement to all of these. Government should select one of these ways according to its own goals and criteria.

In addition, in order to make this model more effective, it may be desirable that government retain some presence in the transit market. By keeping some operation services under the public sector, governments can retain the option of direct public sector operation, for fear that the bidding process should not work well for certain routes (i.e., when there are no private bidders, or their bidding prices are not reasonable).

5.2.3.2 Movements to Other Models

Contracting out is a relatively new model, and no movements have yet occurred from this model. However, the conceivable movements from this model are as follows.

Public Monopoly

The movement to the public monopoly model may happen when governments find that contracting out does not work well because there are not enough bidders or potential private operators to make competition for the public transport market effective. As a result, governments may have to take direct responsibility for operating vehicles. One advantage may be that this movement as well as the opposite one can take place incrementally, simply by changing the amount of the system subject to contract.

Private Monopoly

The movement to the private monopoly model may happen when governments find that there is a single powerful private company that wins virtually all the contracted

competitive tenders and is also performing well, making the bidding process unnecessary and ineffective. In this case, in order to redress such problems, government would rather abandon the contracting out model and entrust the single private company with all the services including operations of the unprofitable routes. Governments still retain the right to restrict the scope of the company's activities through regulation to meet the social objectives. This movement can occur only indirectly if a single powerful private operator wins most of the tenders. However, such a condition may be controllable by establishing the upper limit that any one bidder can be awarded at one time. Therefore, this movement may not be an effective strategy to be added in the assessment framework.

Threatened Competition

The movement to the threatened competition model may become easy if there are constantly several bidders or private operators which end up obtaining contracts with almost equal size and number of routes. In such stable markets, governments may move to the threatened competition model and contract with these companies by areas or packages of routes, along with management tasks if they want to give up the planning function.

Regulated Competition or Deregulation

The movement to regulated competition or deregulation may happen in situations of high demand, where substantial unsubsidized service is feasible and sustainable and governments want to encourage greater cost efficiency and higher service quality by abandoning the bidding process and introducing more direct competition in the market. Such a movement may imply, in a sense, that government has given priority to the operators' objectives. However, governments can still retain the right to intervene by

regulating fares, routes, levels of service, and so forth in the regulated competition model, while governments leave the full responsibility with private companies except for safety and maintenance regulations in the deregulation model.

5.2.4 Threatened Competition

The threatened competition model may be the most appropriate when there are several private operators each of which serves an area or a group of routes on a franchise basis under similar conditions. The model will work well only when the threat of competition is perceived as real by the operators. If governments want to entrust management and operation tasks to the private sector, this model may also be attractive.

5.2.4.1 Improvement Options within the Model

Since there are very few examples of this model, the improvement options are only theoretical. First, in order to prevent unfair contract renewal or bidding processes, the contracts should contain clearly prescribed minimum standards of services which may allow fair renewal, and the criteria for selection of operators should be clarified. In addition, to make the threat of competition more realistic to the operators, frequent evaluation of the operators may be desirable.

Effective monitoring of the operators' performance is also necessary for more reliable evaluation. As described in the contracting out model, this may be done by the oversight authority itself, outside assistance through contracts, or high-technology equipment.

5.2.4.2 Movements to Other Models

The threatened competition model is a new model with no explicit examples found in developing countries. The following are conceivable movements from this model.

Public Monopoly

The movement to the public monopoly model could happen in two ways. One way is that a private company, which falls well below the industry average service standards, is deprived of its area or package of routes. When no other private companies want to bid for the new contract, the area or package of routes are taken over by the public authority. Thus, the public monopoly situation may gradually evolve, and it is at least in part in the government's interest, because the conditions of depriving private operators of their areas are set up by the government in the contracts. Another way is that governments simply want to abandon the model and take over the entire service for some reason, for example, when they conclude that the threat of competition does not work well and the system is beginning to deteriorate, or when they plan to make a major change in the system itself.

Private Monopoly

Movement to the private monopoly model may happen naturally, especially when the number of the divided service areas is small. If one private operator's service performance is superior to others and another operator's is inferior to others, it is likely that the efficient operator will take over services of the inefficient operator(s) at the end of the contract. Thus, one outstanding operator may eventually take over all the services and form a private monopoly. It may also be possible that governments adopt this movement when they want an entirely coordinated, consistent public transport system operated by the private sector. Alternatively, however, a government corporation might

take over some of the territory of the poorer operator, rather than allowing a total private monopoly. The result might be a side by side public and private monopoly, in a variant of threatened competition.

Contracting Out

The movement to contracting out may happen when governments want to assume the responsibility for planning, reduce the monopolistic characteristics in the system, and encourage competitive bidding directly in order to reflect government's objectives more directly. This is an alternative when the transit market is declining and subsidies begin to be necessary. For adoption of this strategy, it would be necessary to establish rules prohibiting one or two firms from winning all the contracts, or this might degenerate into a private monopoly.

Regulated Competition or Deregulation

The movement to the regulated competition or deregulation model may happen when the "threat" of competition does not work well and governments want to give more incentives for cost efficiency and service quality to private operators by directly introducing competition into the market. Whether to move to regulated competition or to deregulation may depend on the balance between how much governments want to reflect their policies through regulation and how much they want to benefit from competition. However, deregulation may seem more attractive if the government does not have the capacity to regulate competently and honestly.

5.2.5 Regulated Competition

Regulated competition may be the most attractive when governments want to encourage private operators to seek greater cost efficiency and higher service quality by introducing direct competition in the market without relinquishing planning responsibility. Governments can simultaneously achieve the social objectives such as mobility and social equity or congestion reduction by laying down regulations on fares, routes, levels of service, and so on, though this process may be relatively indirect, because there is no contract between public authorities and private operators.

5.2.5.1 Improvement Options within the Model

Under regulated competition, services on low-density or unprofitable routes may become a problem. However, these routes can be provided by requiring private operators to serve them along with other profitable routes as a package, by offering the combined routes to new private operators if the existing ones are reluctant, by direct government operation, or by contracting out these routes with explicit government subsidy.

In this model, a significant part of service planning is the government responsibility through regulation, and good regulatory practices may be very important in leading to success. These include routes, fares, service levels, and number and type of vehicles. Permitting only owner-drivers to operate on the routes may also be effective in giving operators incentives to provide better service and to prevent a monopoly situation.

Among types of regulations, fare regulation is particularly complex; it is intended for the benefit of the society, but artificially low regulated fares may cause severe financial problems to private operators on weak routes. Fares high enough to cover cost on weak

routes will result in profit on well used routes. Given that fare regulation is necessary, governments should make every effort to: relate fares to the average cost on the routes based on full cost recovery; remove excessive regulations to encourage appropriate different types and standards of service; revise fares promptly taking into account changing conditions, in particular, cost and ridership; and attempt to structure routes with adequate cross-subsidy so that large discrepancy in profitability among routes may not be built up.

In Montevideo, Uruguay, for example, the public authority has reduced the chances of controversy over fare increases by linking fares to a bus operating cost index and by making small fare adjustments as a routine matter. The use of such an index makes it easier to justify fare increases and, together with small, regular increases, improves the chances of gaining public acceptance.⁵⁹

As the Buenos Aires case shows, in situations where vehicles are operated by independents, formation of informal organizations such as route associations and cooperatives may be quite useful for better service coordination. With mutual assistance, independent operators may greatly benefit from these organizations because: vehicles are dispatched according to the schedule so that better service can be provided and unreasonable competition can be avoided; purchase of vehicles and spares may be facilitated; and facilities such as terminals and workshops can be provided. Governments can also encourage individual operators to set up such informal organizations through regulation by requiring all entrants to the transit market to join the appropriate association. Moreover, governments can make use of the informal organizations in a

⁵⁹ Armstrong-Wright and Thiriez, p. 42.

different way; for example, in the case of Daejeon, Korea, to maintain equity among the operators, the informal organizations are required periodically to rotate their service areas which consist of both profitable and unprofitable routes.

5.2.5.2 Movements to Other Models

Public Monopoly

Movement to public monopoly may happen when most of the private operators are failing financially but government is unable to relax the regulations because of social objectives. If the public operator is the "producer of the last resort" who enters the markets being underserved by private operators, this movement might happen gradually as private operators fail in more and more routes. Thus, the only way to keep the services may be the public takeover, which is often followed by substantial subsidization for keeping the services.

Private Monopoly

Movement to private monopoly may happen under similar conditions as the movement to the public monopoly model, but there exists one single private company which has survived the competition and continues to provide efficient, viable services under government regulation. If it were not for regulations prohibiting or limiting the ability of private firms to acquire other routes, this movement might naturally happen as a result of severe competition. However, government may prevent this through anti-monopoly regulation so that this movement typically may not occur.

Contracting Out

Movement to the contracting out model may happen either in a situation where demand is very high and direct competition in the market is perceived as too chaotic or disruptive, or where demand is low and the problem of unprofitable routes is more serious. In this strategy, governments will take more responsibility for planning and service coordination as well as subsidizing unprofitable routes. However, this strategy may be seen as preferable to the incremental growth of public or private monopoly.

Threatened Competition

When there are too many unprofitable routes for governments to handle under this model, another option may be the movement to the threatened competition model. Governments can contract out areas or packages of routes together with management tasks, giving private operators the exclusive right to the market in less profitable areas, and the right to set their own service standards in order to avoid subsidy. This type of movement involves substantial weakening of both public regulatory control and weakening of competitive pressures, but retains some coordination of services and may also avoid or postpone subsidy.

Deregulation

Movement to deregulation may happen when most private operators are gaining very little or no profit under strict government regulations and governments decide to relax their regulations, especially fare regulation, in order to avoid government subsidies, or when government cannot regulate competently either because of lack of capability or corruption or because the regulatory responsibility is seen as excessively polarized and the government wants to avoid the pressures of operators, labor, and the riding public.

The mobility and social equity concern may become more serious as a result. Also, the movement to deregulation often implies transition to paratransit and smaller vehicles, possibly increasing congestion.

5.2.6 Deregulation

The deregulation model may be the most attractive when governments want to encourage private operators to improve cost efficiency and service quality by introducing direct competition in the market, where there is high enough demand that the social equity concern is not primary, and when the government lacks the capacity to regulate effectively. This may occur as an explicit policy as in the United Kingdom outside London, or through default during periods of government instability as in Beirut, Lebanon. In the case of paratransit, this model may help paratransit to serve as supplementary public transport service to meet the existing demand in place of deficient conventional bus systems.

5.2.6.1 Improvement Options within the Model

Since it is a minimally regulated model, the scope of governments' influence within this model is rather limited.

For unprofitable but socially desirable routes, since governments cannot require private operators to serve unprofitable routes through regulation, governments can only either contract them out with explicit government subsidies, or directly operate these routes.

Even under the deregulation model, governments can enforce vehicle inspections, insurance requirements, and road safety measures through residual regulation. Also, it is

possible for governments to provide facilities such as on-street bus stops and off-street terminals, and perhaps system-wide public information.

In this model, formation of some informal organizations such as route associations and cooperatives may be even more useful for better coordinated services than in the regulated competition model, because it is more likely that most private operators are independents who may produce uncoordinated services and excessive competition in the absence of major government regulation. It should also be recognized that such organizations may also act to limit competition in undesirable ways, such as by restricting entry or fixing fares.

An alternative approach might be limited regulation such as vehicle size and/or fare regulations required as a condition of access to public terminals or congested streets, or even limits on market entry in those key markets, effectively introducing regulated competition elements in limited areas. Requiring route and schedule notification and publicity may also partially mitigate the problems of deregulation.

5.2.6.2 Movements to Other Models

Public Monopoly

Movement to public monopoly may happen when governments' intention to let private operators have the best opportunity to achieve their economic viability falls short of expectations and private operators provide only poor, high-priced, and unstable services. If governments are faced with the need to maintain services, then the only option may be public takeover and movement to public monopoly. This might develop if the public operator is the operator of the last resort and has enough subsidy and power to expand

into markets underserved by the private operators. Also, if the government changes political philosophy, a subsidized public monopoly might enter the market since the private operators have no exclusive franchise.

Private Monopoly

The movement to the private monopoly model may happen naturally. One case is that one of the private operators is more powerful in competition than others and forces the other operators out of business. Another case is that two private entities merge together or one private entity absorbs another, thus gradually creating an oligopolistic and then monopolistic situation. This movement cannot be prohibited by government due to the deregulation policy, and so government may accept such a natural movement to the private monopoly model tacitly, as long as the monopoly operator is providing efficient, coordinated services. However, with full deregulation, government may have difficulty in preventing the emergence of a dominant operator in the desirable markets providing recognizable and better coordinated services with no regulation and avoiding the less desirable markets. Therefore, government may want to begin laying down regulations in order to meet the social objectives, thus moving to the standard private monopoly model.

Contracting Out

Movement to contracting out may not happen directly, because governments may want to first try regulated competition, which is an easier transition while reflecting government policies. However, when governments have contracted out some unprofitable routes as part of the improvement strategy of the deregulation model and find out it is effective, governments may want to contract out all the routes. This movement may be worth considering especially when problems such as inappropriate fares and excessive

competition become serious, or when the government wants to prevent the development of strong private or public monopolistic providers.

Threatened Competition

The movement to the threatened competition model may not be realistic. However, when there are several private companies which are rather stable and viable in providing services, they may informally develop their own service areas and not compete with each other. Furthermore, when governments want to have more consistent, coordinated services and set minimum acceptable service standards with most of the management tasks left to the private sector while avoiding or minimizing subsidy, it may seem attractive to prohibit random market entry of deregulation and accept the de facto domination in different areas, introducing the threat of competition with a formal process. This may not be feasible if the market consists of small companies or individuals.

Regulated Competition

Movement to the regulated competition model appears relatively easy. This may happen when governments want to increase aspects of regulation such as fare and service standards to meet the social objectives. In developing countries, this movement may also happen when governments want to restrict the number of paratransit vehicles for congestion reduction, or at least to restrict them to feeder services on secondary streets or in outlying areas. This is especially common in Asian cities such as Bangkok, Jakarta, or Manila.⁶⁰

⁶⁰ Ibid., Chapter 3, p. 3.

5.3 Application to a Case Study

This section explains the process of applying this assessment framework to a specific case as will be presented in Chapters 7 and 8.

5.3.1 Existing Conditions

The first task in a case study is to describe the context of the problem, that is, the existing conditions in urban public transport system. These are used for identification of the base model of public/private sector participation and for formation and prioritization of the objectives to be used as criteria for evaluation of alternative strategies. The existing conditions of the city to which the framework for assessment is applied may be divided into two kinds: conditions within the public transport service system itself, and those outside the system but affecting the system whether directly or indirectly.

The latter may be called general characteristics of the city, but, more precisely, they include factors related to public transport demand as well as the context within which the alternative strategies may operate. The demand-related factors comprise socioeconomic and physical characteristics of the city. Socioeconomic characteristics include employment, income, and automobile ownership; and demographic indices such as population, population densities, and growth rates. Physical characteristics encompass city structure and street network; these may include traffic congestion, main traffic flows, land use, and so forth.

The former, conditions within the public transport system itself, should include each existing public transport mode. For each mode, the dimensions of public/private sector participation, major problems, and current government policies should be described. The

descriptions of public/private sector participation will help to locate the initial point of each existing transport mode at one of the six models. The current government policies should include foreign participation and technology transfer issues. In addition to these conditions, the administrative framework for the public transport system should be identified, including an analysis of how the primary institutions and interest groups are related one to another. Finally, the political philosophy of the government in power is a major factor and should be described.

5.3.2 Alternative Strategies

Once the existing mix of public/private sector participation are clear, it should be easy to identify the existing model as an initial point and the alternative strategies originating from it. The model and its alternative strategies should be adapted to the context of the specific case, and all the alternative strategies are evaluated according to the selected criteria. The criteria are the city's objectives for urban public transport translated in more concrete and realistic terms and given priorities according to the city's specific constraints; therefore, the criteria should be formed from the urban public transport system's general goals as discussed in Chapter 2 and the existing conditions in the case. The evaluation of the alternative strategies will be complete by presenting strengths and weaknesses of each strategy in terms of the city's goals and criteria. In particular, it is important to identify the institutional frames of the transportation policy function, the pressures upon it by various interest groups, and how they will change in each alternative, in order to evaluate the alternatives with a realistic understanding of the implementation process required to produce the desired outcome, and the structure that will sustain the new equilibrium and assure a better outcome.

5.4 Summary

This chapter has presented a framework for assessment of alternative improvement strategies for each model, and described the procedures of application of the framework to a case study.

The discussion of alternative strategies for each base model implies that there is often room for improvement within each model, and that most of the strategies are possible and therefore worth considering within the framework. However, in light of the effective elimination of some unrealistic strategies, the framework may seem to have a unique structure. In fact, each model in the framework has arrows reflecting possible movements to itself and most of the other models, though some movements prove to be easier or more difficult than others. Some more arrows could have been removed, but it may be better to keep these movements to make the framework as general as possible so that it can be applied to any case study. In a given case, however, all the strategies may not need to be evaluated.

The framework presented in this chapter could be immediately applied to a case study. Before that, however, it would be helpful to discuss the importance of options for foreign participation in urban public transport in developing countries. The conclusions of possibilities of foreign participation to be discussed in the next chapter may add some foreign participation options to some of the strategies which might not be realistic within the locally available private sector capacity in many developing countries.

6 Possibilities of Foreign Participation

This chapter discusses possibilities of foreign participation in urban public transport improvement in developing countries. Broadly in the case of developing countries, some models or strategies discussed in the previous chapters may be beyond the local capacity. In some cases, without foreign participation, the only option for complex organizations such as bus systems may be a public monopoly, because the government is the only large entity. It is hoped that the potential of foreign participation will provide more alternatives, supplementing the gaps in the local private sector.⁶¹ At the same time, foreign participation often raises major political questions, particularly in countries having a prior colonial phase. Foreign participation may occur through explicit capital movements, transfers of organizational networks directly in the form of joint ventures, or through transfers of technical assistance. First, scope and types of foreign participation are described. Then, problems to be considered and resolved are discussed in terms of projects and technology transfer. Finally, possibilities of foreign participation in the public transport sector are discussed.

6.1 Scope

Four main types of foreign participation are seen: finance only, advisory consultation, participation in part of the service, and participation in the whole service. Each case implies a different type of relationship between foreign consultants or engineers and

⁶¹ This may be true even in the case in which the foreign participation is by firms owned by governments of foreign countries, because, as well as the local private sector, they can provide alternatives by creating competition from which the developing country may benefit.

national or local staff. Any one of these four cases may be appropriate in a given situation, depending on the nature of the task, the availability and degree of competence of the local staff, and local managers' managerial style.

In the finance only case, the client, which is a recipient country or a multilateral agency, identifies the needs and communicates them to the foreign financial source, which may be a private firm, a firm owned by a foreign country, the government of a foreign country, or a multilateral firm or agency. Then the financier provides support in the form of grants or loan. In the case of public transport, the financial support may be utilized for purchase of vehicles or other equipment, or for construction of facilities such as bus terminals or garages through domestic or foreign firms.⁶² The distinguishing element in this finance only case is the capital which does not include any attempt to develop local skills. The original role of the World Bank, which is one of the multilateral agencies, was limited to finance only; it was just a project lender as a financial intermediary between its capital-exporting countries and capital-importing member countries, though nowadays it is a much broader and more policy-based development agency.

In the second case, that is, advisory consultation, foreign consultants are brought in to diagnose a problem in the system, and give advice or managerial skills to improve the situation: what is wrong, what part of the system needs attention, how it can be improved, and what is required. The recipient country sometimes also assesses the capability of the

⁶² If another foreign firm, government, or agency is involved in this stage, it is considered as another foreign participation with a different scope and type.

foreign consultants to perform the requests.⁶³ Direct transfer of capital may often accompany this advisory or managerial assistance role. The amount of advisory or managerial talent required by a developing country may depend on both the degree of the system deficiency and the relative importance of the sector involved. In public transport, this case may include organizational reform and policy planning such as service coordination.

The third case, participation in part of the service, is based on the idea that development consists mainly of the introduction or transfer of organizational framework, skills, and technologies. It is important that the skills be transferred so as not to create a long-term dependency. Foreign experts are placed in an advisory role, but they are expected to contribute technical advice, and to transfer skills and technologies to their counterparts. Investment of capital also occurs in this case; some portion of the sector in developing countries may be owned by foreign investors who also supply the foreign personnel required. In the public transport sector, this case may include foreigners' direct participation in capital and operational planning, and maintenance of vehicles and infrastructure. Technology transfer may often happen in the form of on-the-job training. However, as will be discussed in the later section of this chapter, technology transfer is not an easy task in many respects; for example, one danger in technology transfer may be that foreign experts tend to slip into the performer role when the counterparts are unenthusiastic or unavailable. If such a situation develops, the whole undertaking may fall apart as soon as the experts leave.

⁶³ Lethem, Francis, and Lauren Cooper, Managing Project-Related Technical Assistance: The Lessons of Success, World Bank Staff Working Papers, Number 586, July 1983, p. 37.

In the last case, that is, participation in the whole service, unlike the other three cases, foreign experts have some authority and responsibility over the whole system. This case can take several forms: the foreign organization takes responsibility for management of the entire system through contract; the foreign organization literally becomes a partial owner of the company by holding some of its shares; or the foreign organization becomes tied in with an institution in a developing country.⁶⁴ Although, in any of these forms, there is always a risk that the suggestions of foreign experts will not be implemented and that their advice will be ignored, experience shows that foreign experts and their local colleagues often develop a strong working relationship, and that the national staff back up the experts and incorporate their advice and services into the work program.⁶⁵ In public transport, the "mixed economy" companies existing in West African cities may apply in this case.

6.2 Types

In 1961, the Development Assistance Committee (DAC) was established under the Organization for Economic Cooperation and Development (OECD), for the purpose of acting as a forum for the discussion of common problems between the growing number of western countries which supplied aid to developing countries.⁶⁶ DAC consists of eighteen donor countries,⁶⁷ who are considered to be the major source of information on

⁶⁴ Joint ventures are a special form of this.

⁶⁵ Ibid., p. 40.

⁶⁶ Selim, Hassan M., Development Assistance Policies and the Performance of Aid Agencies, St. Martin's Press, 1983, pp. 31-32.

⁶⁷ Participating in the work of the DAC are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the U.K., the U.S.A., and the EEC.

the total flow of financial resources from the developed market economies. The flow covered by the reports of DAC in general and for each member country has been classified into four main types: official development assistance (ODA), other official flows (OOF), grants by private voluntary agencies, and private flows at market terms (PF).

ODA and OOF are both considered as governmental aid. ODA defined by DAC should meet the following criteria:

- It is provided for developing countries or multilateral aid agencies by the public sector or agencies including national and local governments.
- The objective of the capital flow is non-commercial; i.e., it is devoted solely to the objective of the recipient country's development.
- It is offered on highly concessionary terms; the rate of interest, amortization, and maturity on a loan should be softer than the commercial terms of a normal market transaction. To put it in concrete terms, the grant element⁶⁸ is at least 25 percent.

⁶⁸ Grant elements are determined by the interest rate and the grace period, and they can be expressed by the following formula:

$$GE = 100 \cdot \left(1 - \frac{r/a}{d}\right) \cdot \left(1 - \frac{\frac{1}{(1+d)^{aG}} - \frac{1}{(1+d)^{aM}}}{d(aM - aG)}\right)$$

(*d*: discount rate, *r*: annual interest rate, *G*: grace period, *a*: annual number of payments, and *M*: amortization period).

The flows of resources which do not meet these criteria are classified as OOF. Both ODA and OOF are divided into bilateral and multilateral aid. Bilateral aid indicates the flows are provided directly from one donor country to one recipient country, while multilateral aid indicates the flows provided by donor countries through their contributions to multilateral institutions such as the World Bank or the Asian Development Bank. Since both ODA and OOF are governmental aid, the basic objective is to assist the government of the recipient country in executing its development plans and policies. In this sense, public transport service provided or produced by government can be a target of this type of foreign participation. In other words, it is highly unlikely that this type of foreign participation occurs in a public transport system which is totally outside the government's control.

Grants by private voluntary agencies are also known as aid activities by non-governmental organizations (NGO). A good deal of these funds go to supply commodities for relief work, but a substantial amount finances overseas personnel or training in one form or another.⁶⁹ The flow of people supplied by voluntary agencies varies greatly in character. Most of them provide services which they think developing countries should have, although these may not always be the priority needs for economic growth. A good many of the people supplied are carrying out social, relief, religious, or trade union work; they also include doctors and teachers, and a good many of them provide personnel for educational institutions. Due to the growth of organizations of young volunteers, this type of flows has been increasing. However, because of its special

⁶⁹ Maddison, Angus, Foreign Skills and Technical Assistance in Economic Development, Development Center of the Organization for Economic Cooperation and Development, Paris, 1965, p. 37.

nature, this type of foreign participation is not highly relevant to public transport improvement.

All the other forms of private flows are classified as PF, with the dominant form being private direct investment.⁷⁰ In the case of direct investment, capital flows largely to industries in which the investing country has the comparative advantage but in which it is possible for the recipient country to gain. The great difference from official flows may be that foreign private investors are usually commercially motivated, for example, to promote exports. However, this type of foreign participation is beneficial to the recipient country as well, in that foreign direct investment promotes the dissemination of valuable knowledge and entrepreneurship in the form of research and development, production technology, marketing skills, managerial expertise, and so on.⁷¹ It may also involve the transfer of a whole productive and organizational complex; consequently, the return on foreign direct investment includes, at least conceptually, much more than the return on capital.⁷²

In the 1980s, the amount of ODA flows grew remarkably, while those of OOF and PF were stagnant. As a result, the proportion of ODA flows to the total flows to developing

⁷⁰ Other forms are private export credits, bilateral portfolio investment, and multilateral portfolio investment.

⁷¹ Ichikawa, Hiroya, "Japanese Direct Investment and Development Finance," in Shafiqul Islam, ed., Yen for Development: Japanese Foreign Aid and the Politics of Burden Sharing, Council on Foreign Relation Press, New York, 1991, pp. 141-142.

⁷² Meier, Gerald M., Problems of Cooperation for Development, Oxford University Press, 1974, pp. 92-93.

countries has significantly increased. This is why ODA has attracted the world's attention especially in recent years.

6.3 Problems to Be Resolved

As the proportion of ODA flows to the total flow of resources has increased, foreign participation in developing countries has become more of a government policy issue, thus attracting more public attention. At the same time, quality of assistance to developing countries is being more actively discussed in many respects. Critics point out many problems in current foreign development projects, especially in technology transfer. This section focuses on technology transfer and describes these problems, dividing them into those which are related to projects but seem to have a great influence on technology transfer, and those which are directly related to technology transfer itself.

6.3.1 Projects

The first problem is that the duration of projects is often limited and hard to extend for both donor and recipient countries. Reasons for this are closely related to financial constraint of projects which will be discussed later, but the limited duration of projects may often make technology transfer more difficult. For more effective consideration of appropriate technology and project schedules, it may be necessary that feasibility studies be more thorough. However, because the duration of projects are limited, too much emphasis on feasibility studies may result in tightening the subsequent project schedule, thus taking up the time which might have been used for smooth technology transfer.

Financial constraints may also make technology transfer difficult. Under a limited budget, it is very hard to pay for enough foreign machinery, equipment, and expertise,

which are often very expensive for a developing country. Above all, developing countries are suffering from the high cost of foreign experts, who may be one of the key requirements for successful technology transfer. Financial problems may also cause a situation in which successfully transferred technology cannot be put to practical use due to the lack of further projects and therefore cannot take root in the developing country.

More generally speaking, the design of projects may also affect technology transfer in relation to locally available capabilities which are not considered. Project designers should be able to recognize at the feasibility analysis stage how their choices of technology, institutional arrangements, or pace of implementation will affect the number and type of experts required to implement the project during both the investment and operational phases. In addition, project designers should assess the available human resources at a very early stage in the project cycle, and ensure that both donor and recipient countries understand and accept the project's requirements for trained manpower, maintenance and equipment, and recurrent budgetary expenditures.⁷³

Negligence or poor performance of maintenance service should be added to the list of potential problems. This problem has been acute over the years, and it seems that it is not improving significantly. Generally, donor countries are loath to provide financing for maintenance or other recurrent costs over an extended period. While there is usually a provision for financing of some maintenance costs, there is a presumption that recipient countries should pick up the financing of maintenance and other recurrent costs either upon completion of projects or after a specified period. This approach rests on the premise that this is the best way to assure the commitment of the aid recipient to the

⁷³ Lethem, pp. 23-24.

project. Donor countries also view financing recurrent costs in general and maintenance in particular as providing financing for current consumption rather than investment, that is, something they like to avoid.⁷⁴

On the recipient country side, provision of maintenance funding is usually inadequate, notwithstanding commitments to donor countries. In cases where user charges can be used to defray costs, charges are frequently too low and thus put a squeeze on maintenance services; in cases where user charges are not readily feasible, funding from general revenues cannot be obtained because tax revenues are usually scarce and maintenance costs are given lower priority than other costs such as provision or construction of infrastructure. There are several hypotheses as to why maintenance is given lower priority than other areas in developing country resource allocation even though the benefit-cost ratio in such activities is often very high. First, provision of new infrastructure is politically more attractive. Second, it appears that provision or construction of infrastructure represents more technically challenging and interesting tasks for both government officials and engineers. Third, maintenance is, so to speak, an "invisible" task, and as such it may be relatively easy to evade the responsibility; a little neglect of vehicle maintenance may not draw people's attention while that of vehicle operation causes immediately inconvenience to passengers. One solution to the maintenance problem may lie in finding institutional linkages that tie maintenance to the main body of projects.

⁷⁴ Krueger, Anne O., Constantine Michalopoulos, and Vernon W. Ruttan, Aid and Development, The Johns Hopkins University Press, 1989, pp. 133-134.

Finally, it should also be mentioned that there is sometimes a bias politically in the relationship between the donor country and the local government or private sector organization. As described before, a major role of foreign participation should be to supplement the private sector capacity available in the local market and thereby strengthen competitive pressures. However, because foreign participation requires government participation for political considerations, there may be a tendency for assistance to be channeled to government agencies rather than a private entity. Therefore, special attention may be required if the foreign participation is to strengthen the private sector capacity.

6.3.2 Technology Transfer

The first problem to be mentioned in terms of technology transfer itself is the problem deriving from the difference of technology levels. That is to say, technology transfer becomes difficult due to the wide gap between the technology being transferred and the existing technology in a recipient country. Experts from donor countries may say that they are able to transfer high technology at least to their counterparts with the highest knowledge and skills in the recipient country, but that there is simply no adequate system to disseminate the technology all over the country, which, they say, is not their fault. However, technology which will not spread in the recipient country is not appropriate after all, and therefore donor countries still need to adapt the technology to be transferred to suit local capabilities.

Part of this problem may result from the capital- or technology-intensive bias of donor countries. The technology developed by developed countries may be more capital- or technology-intensive than appropriate in a developing country context. Such

incompatibility is frequently disguised, however, by price distortions in developing countries. Furthermore, on the donor country side, there is an administrative bias in aid giving toward large projects with high capital and technology requirements; the effort of organizing, obtaining the necessary internal approvals, and overseeing the implementation of a single \$100 million project may be much smaller than the effort required to fund ten \$10 million projects.⁷⁵

Another problem of technology transfer is mixture of technologies from multiple donor countries. Flows of resources from many donor countries to one recipient country may lead to a chaotic mixture of technologies, each of which requires different operation and maintenance standards, construction methods, spare parts and so forth. If developing countries are to have a coherent policy for the use of foreign technologies, they should create a technical assistance programming authority to coordinate all bilateral and multilateral technical assistance programs.

Retention of the transferred technology is also a serious issue to be considered in developing countries. Even if the local engineers are able to acquire technology through the development assistance project, it is sometimes hard to retain the transferred technology, because these engineers may move to other work with better employment conditions or emigrate to other (mostly developed) countries due to the typically poor employment conditions of the system. Retention of technology is difficult also because, as mentioned before, successfully transferred technology sometimes cannot be put to practical use due to the lack of further projects and therefore cannot spread in a developing country.

⁷⁵ Ibid., pp. 127-128.

Frequently there are also problems in training local staff. Sometimes quality and quantity of trainees become a problem, because few trainees are selected on the basis of ability with bureaucratic politics and patronage playing more important roles.⁷⁶ Even if there are no such problems, trainees may lack enthusiasm to absorb the technology; or even if they have acquired the technology, they may be unwilling to apply and spread the technology so as to retain their individual advantage. Although these problems are recipient countries' internal problems, donor countries' may be able to alleviate them by effectively structuring the contract and monitoring system to ensure that technology transfer will take place according to the designed schedule.

6.4 Foreign Participation in Public Transport

This section discusses the possibilities of foreign participation in urban public transport in developing countries. First, possible ways of foreign participation are discussed for each of the dimensions described in Chapter 3. Then, it is discussed how these possible ways are restricted under each model of public/private sector participation.

6.4.1 Possible Types of Foreign Participation

Regulation

Regulation of vehicles and infrastructure is the privilege of the public sector and is closely related to government policy; hence, foreigners cannot direct regulation of transportation in developing countries. However, national or local government can obtain advice on what and how to regulate public transportation. This is usually accompanied through other consultations focusing on planning or operation. Therefore, it may be more

⁷⁶ Ozgediz, Selcuk, Managing the Public Service in Developing Countries, World Bank Staff Working Papers, Number 583, July 1983, p. 31.

reasonable to consider possible ways of foreign participation in planning or operation rather than regulation per se. As for monitoring, new technologies such as automatic vehicle identification may facilitate a greater role for the private sector by easing the task of monitoring the performance of private operators, and transfer of these new technologies are clearly within the scope of foreign assistance.

Financing

Developing countries suffer shortages of foreign currency which strongly constrains their economic and social activity. In public transport, foreign exchange is needed for financing of both capital and operations. Capital financing is for purchase or replacement of vehicles and construction of facilities and infrastructure. Operational financing is for consultation on planning activities, staff training, and purchase of spare parts or energy. Developed countries can provide developing countries with capital and operational financing through grants or loans. Donor countries can provide financing only, or together with technology transfer by taking some advisory roles or participating in part or all of the system. In other words, financing accompanies all the forms of foreign participation.

Planning

First, foreign consultants can take some advisory roles in the institutional restructuring such as movement from one model of public/private sector participation to another, or change in the structure of the institution including relationships with national or local government. Since this is likely to be an internal and political issue in a developing country, the initiative should be taken by national or local government, and foreign consultants can only provide advice on these issues.

Second, as for capital and operational planning, developing countries can employ foreign consultants as advisors or managers on a short-term contract to let them participate in some planning tasks of capital and operation and teach local or national staff in the form of on-the-job training so that they can take over. Also, developing countries can send selected personnel for training to donor countries. In any case, when foreign participation takes place in capital and operational planning, it is expected that management technology of public transport can be substantially transferred to developing countries. Therefore, planning may be one of the most important dimensions in terms of foreign participation.

Ownership

It is not common that foreign organizations take part in public transport ownership, i.e., that they actually own the vehicles or infrastructure of a public transport system. However, this may happen in the case of direct private investment. For example, French vehicle manufacturer Renault owns vehicles and facilities of the bus systems in Dakar and Abidjan, by holding shares in the bus companies. Foreign ownership of public transport companies may mean that the foreign organization participates in the whole service.

Operation

Foreign experts can give advice on the operation of vehicles and infrastructure. However, since operation usually needs a large number of employees, foreign experts do not participate in actual operation unless unusual expertise is needed. Foreign experts may be involved in the training of drivers, conductors, or operators of facilities. As

mentioned before, they can also play an important role in management of operation such as monitoring or operational planning.

Maintenance and Equipment

One of the biggest problems in maintaining a fleet of vehicles is the difficulty of recruiting and retaining a sufficient supply of skilled mechanics to maintain the vehicles. As for infrastructure, it is often poorly maintained, although the paving and drainage of public transport routes may bring very high rates of return. In developing countries, there is a shortage of these types of employees. Donor countries can transfer these technologies by taking advisory or managerial roles or by directly participating in maintenance of vehicles and infrastructure. Furthermore, in order to reduce developing countries' dependence on importing vehicles, infrastructure, and spare parts, donor countries can transfer part of the manufacturing system into developing countries. Since some of the manufacturing process is very labor-intensive, considerable savings can be achieved by the transfer of this production stage to developing countries. At the same time, jobs are created on a permanent basis at comparatively little investment cost. Thus, maintenance and equipment also have great possibility of foreign participation.

6.4.2 Restrictions under Each Model

In the public monopoly model, since all the dimensions are characterized as the responsibility of the public sector, any type of foreign participation described in the previous subsection is possible, whether it is in the form of official foreign assistance or private entrepreneurial investment. In this sense, the public monopoly model may be the easiest model in which to incorporate foreign participation.

In the private monopoly model, although most of the dimensions are characterized as the responsibility of the private sector, it may be possible to obtain official foreign assistance through the national government's mediation. As for private foreign participation, it may be possible to obtain direct assistance from foreign investors. Therefore, any type of foreign participation is also possible in this model.

Unlike the above two models, the other models, contracting out, threatened competition, regulated competition, and deregulation, may have some restrictions in terms of scope and type of foreign participation. For each model, in dimensions characterized as the responsibility of the public sector, it is still possible to obtain any type of foreign participation; however, in dimensions characterized as the responsibility of the private sector, basically only private investment is feasible, because there are multiple private operators in competition with one another and therefore it is usually not allowed for official foreign agencies to select one operator and give it assistance. However, there are some exceptions even in this case; it may be possible for multiple private operators to obtain official foreign assistance from which benefit will accrue evenly to each private operator. This kind of official foreign assistance may include: loan programs for purchase of vehicles (i.e., in the dimension of capital financing); aid for operation of common facilities and infrastructure (infrastructure operation); or supply of common facilities and maintenance program for vehicles (maintenance and equipment).

6.5 Summary

This chapter has discussed possibilities of foreign participation in urban public transport improvement in developing countries. First, scope, types, and problems of foreign participation were described. Then, in terms of urban public transport, possibilities of

foreign participation in each dimension of public/private sector participation, and the restrictions of these possibilities under each model were discussed. These possibilities are alternative options as to how to make use of foreign participation for public transport improvement. Some options are selected through negotiations between donor and recipient countries, and a combination of the selected options will become a real foreign participation project with a particular scope and type.

Any such proposed project should be closely interrelated with the strategy for public transport improvement which the government selects. That is to say, the foreign participation project should support the improvement options of public/private sector participation model to which the public transport system is trying to move. However, the degree of such interrelation may vary according to the characteristics or contents of the project, and therefore there may be several possible projects even under the same strategy. In the application to a case study, some of these conceivable projects may be presented along with the strengths and weaknesses of each combination of the project and strategy. It is also hoped that the problems to be considered and resolved in terms of projects and technology transfer, which were discussed in this chapter, will help to clarify these strengths and weaknesses.

7 Existing Conditions in Beirut

This chapter focuses on the existing conditions in Beirut, which has been selected as a case study for application of the framework. The context of the problems consists of the public transport service itself and the demand-related factors revolving around it.

7.1 Introduction

Beirut is the capital of the Republic of Lebanon. Lebanon has a long history of commercial activity, and had long enjoyed a high standard of living relative to other Middle Eastern countries, serving as a center of commerce, finance, tourism, and education. While agriculture employs the majority of the labor force, it contributes only a small portion to the national income. The service sector, involved in such activities as banking, insurance, transit trade, shipping, petroleum pipelines, and tourism, was the most important to the economy. Industries, such as food processing, cement, and textiles, also made a significant economic contribution. However, 15 years of civil war and foreign military presence have devastated the Lebanese economy.⁷⁷ The war has also resulted in lack of a comprehensive national development plan which could have provided some order to the distribution over the whole country of commercial, manufacturing, and service industries as well as health and educational services. All such industries and services have instead been concentrating in the Beirut area.

The "Schema Directeur (SD)" for the Beirut Metropolitan Region (BMR) conducted by the Mass Institute (a Lebanese private firm) shows that the city of Beirut extends over an

⁷⁷ Andersen, Roy R., Robert F. Seibert, and Jon G. Wagner, Politics and Change in the Middle East: Sources of Conflict and Accommodation, Prentice Hall, 1993, p. 360.

area of 218 square kilometers (2.1 percent of the area of Lebanon) but houses around 1.3 million residents who account for about 45 percent of the total population of Lebanon.⁷⁸ Beirut's infrastructure including the road network has been severely neglected during the war years and is in great need of rehabilitation and repair. Moreover, basic public services such as public transit are nowhere near where they should be in order to support the revitalization of Beirut.

The research in this thesis is a part of a project being conducted jointly by American University of Beirut and Massachusetts Institute of Technology, aimed at helping the city of Beirut to improve its passenger transportation during and after a period of post-war reconstruction. Elements of the overall project include developing short-term strategies to ease traffic congestion, addressing policy and organizational issues, selecting or developing specialized planning tools, understanding the long term effects of the war on spatial and travel patterns, and developing long-term transportation strategies. In particular, the research in this thesis aims to analyze the policy and organizational issues of urban public transport in Beirut and to elaborate improvement options.

7.2 Demand-Related Factors

7.2.1 Socioeconomic Characteristics

The SD considers that if the Lebanese government prepares and implements a comprehensive development plan for the whole country, the population of the BMR will be of the order of 2,150,000 in 2010, while that population may reach 2,870,000 in the absence of such a plan. This implies that there will be rapid population growth even

⁷⁸ Mass Institute, "Population et Conditions de Vie dans la Région Métropolitane de Beyrouth," November, 1986.

under the best scenario, largely because more and more people are migrating from rural areas to metropolitan regions where job opportunities are more readily available. It is predicted that overall trip-making levels in the urban areas will increase in proportion to the urban population growth.

Studies conducted in conjunction with the preparation of the SD indicated that in 1984 the ratio of employment opportunities to residing employees was 0.98 for the BMR. This ratio ranged from 1.35 in municipal Beirut to 0.44 in the further suburbs. The SD recommended that the overall ratio for the whole BMR be kept at its current level or even decreased by the year 2010 so that no more activities will concentrate in this area. Governments in developing countries usually hope as one of their major objectives that improvements on urban public transport will encourage economic growth. In the case of Beirut, this is not such an important objective for public transport, because the employment ratio is already at a satisfactory level and revitalization of the whole country seems more desirable than further urbanization.

The SD also points to the problem of the poor as epitomized in the extent of illegal settlements in the BMR which used to be a minor problem before the war started in 1975 but has grown in dimension and now involves about 15,000 residential units which house about 100,000 residents, in addition to shops and other small businesses. The travelers who suffer most from the current inadequate public transport system are those who have no car because they are poor and live in areas that are poorly served by public transport. For these poor people, public transport is an essential alternative since they have no other travel means.

In general, there is heavy reliance on the use of private automobiles. In 1991, about 1.2 million automobiles were registered in Lebanon, although this number has to be regarded with suspicion since this includes a significant number of vehicles that are no longer on the road because they either were destroyed during the war or are simply not functioning any more. The vehicles running in the BMR are likely to constitute 40 to 60 percent of the Lebanese total. This means that the automobile ownership rate in the BMR could be as high as 450 per thousand habitants. Although this figure is likely to be a significant overestimate, it is very large compared with other Middle Eastern countries.⁷⁹

Modal usage also shows that people in Beirut rely heavily on the use of private automobiles for travel. According to the traffic counts performed in 1984-85 by TEAM, buses carried less than 5 percent of midday trips, jitneys carried about 23 percent, and the remaining trips were made by private automobiles.⁸⁰ Similar figures for 1970 were 11 percent, 44 percent, and 44 percent, respectively, indicating a strong trend towards less reliance on public transport. Furthermore, the tremendous increase in the number of automobiles entering the country in the last ten years suggests that this trend may become even more pronounced unless some action is taken.

7.2.2 Physical Characteristics

Distortions in activity patterns resulting from the civil war have changed the spatial distribution of activities from pre-war patterns due to the displacement of thousands of

⁷⁹ For example, the numbers of automobiles per thousand inhabitants are approximately 188 in Saudi Arabia (1985) and 140 in the United Arab Emirates (1983).

⁸⁰ TEAM, "Comptage de Circulation de la Région Métropolitaine de Beyrouth," 1985.

families, the destruction of the Beirut city center, and the emergence of many sub-centers. The basic infrastructure and services in the Beirut area were not designed to handle the new patterns.

The passenger travel needs of any city are determined by the spatial interaction among the various land use types. Existing land use patterns in Beirut, as well as the patterns that could emerge when conditions return to normal and certain abandoned areas of the city resume their activities, will significantly affect the passenger transportation environment in Beirut. Therefore, it is hoped that the public transport services to be designed will be flexible enough to respond to the changing trip patterns.

It is expected that Beirut will play a major role in Lebanon's reconstruction by providing financial, commercial, and other services through an efficient transportation network. Beirut is thus the focal point in a large multi-modal transportation system that must support extensive passenger movement and trading activities.

However, one of the major problems facing the Beirut Metropolitan region lies in the severe congestion that travelers within this area experience. Several factors are contributing to the urban traffic congestion situation including urbanization and modal usage as described in the previous subsection. In the case of Lebanon, nearly half of the population lives within the Beirut metropolitan region thus generating heavy trip making requirements. Modal usage makes matters worse since travelers rely heavily on private automobiles for travel. At least part of the reason for this is that public transportation modes do not provide an effective alternative.

The concentration of trips at certain times of the day is another primary cause of congestion on the transportation facilities. Trips between residential areas and places of employment are the major cause of the temporal peaking. In Beirut, traffic counts indicate that during the morning peak hour almost twice as many trips are made as the average hourly trips for the 6 a.m. to 9 p.m. period.

In Beirut, as in most urban street systems, the street network represents a shared infrastructure serving overlapping purposes, which at the same time compete for space on the street, complement each other, and serve as partial substitutes for each other. The sewer and water, electricity, and telephone systems generally use the space under or over the streets and sidewalks, but maintenance and reconstruction needs constantly involve temporary impact on the functioning of the street and sidewalks. At the surface level, pedestrians, automobiles, legal and illegal jitneys, goods movement, and buses, as well as ancillary activities like loading and unloading, and parking and emergency services, all compete for space, with little enforcement of regulations and substantial congestion, adversely affecting all of these uses.

The study conducted by Cansult observed that traffic congestion had many causes including: inadequate street network, lack of discipline of most drivers, absence of traffic signals and traffic signs, absence of zoning and parking regulations, and lack of parking.⁸¹ The study suggested that the congestion problems in the BMR need quick actions that may require relatively minor cost and would mostly be a matter of proper

⁸¹ Cansult Consultants, "National Transportation Plan: Pre-Feasibility Study," Final Report for the Executive Council for Large Projects of the Republic of Lebanon, Beirut, September, 1983.

traffic management. On the other hand, experience with congestion in urbanized areas throughout the world suggests that any relief of congestion will be quickly absorbed by new growth in traffic, unless substantial improvement in public transport and automobile demand restraint occur at the same time.

In any case, the potential role that public transport may play in congestion relief is quite obvious; a conventional bus has a passenger carrying capacity that, if properly utilized, would help remove tens of automobiles from the roadways. The use of public transport may also be justified in terms of energy efficiency. The single-occupant automobile is the least energy-efficient mode of urban travel, with public transit vehicles providing a much higher level of passenger-miles per unit of energy consumed.

7.3 Public Transport Service

The public transport system in Beirut basically consists of two modes: publicly owned and operated conventional bus services, and private jitney services called "service." Although there used to be railroad services before the war started in 1975, the railroads were severely damaged by the war. Currently, there is a limited local service between Beirut and Jbeil (37 km north), with secondhand coaches purchased from the German Federal Railway (DB) making one return trip in each peak period.⁸² However, they cannot be considered as effective part of the urban public transport system until further rehabilitation work is done. Therefore, this thesis excludes the railroad services from the study.

⁸² Bushell, p. 35.

7.3.1 Administrative Framework

Before 1991, the major transportation responsibilities in Lebanon were undertaken by the Ministry of Public Works and Transportation (MPWT) which consisted of four General Directorates (GD): Urban Planning, Civil Aviation, Transportation, and Roads and Buildings. The General Directorate for Transportation supervised the operations of the semi-autonomous General Directorate for Railroads and Public Transit (GDRR & PT), which manages the public bus services in Beirut. Vehicle registration and inspection were the responsibility of the Ministry of Internal Affairs (MIA).

However, since 1991, the GD's for Civil Aviation and Transportation of the MPWT have been put under a new State Ministry for Transportation. This setup is likely to become permanent soon which will give Lebanon its first ever Ministry of Transportation (MT). According to the newly proposed government decree, the new Ministry will also assume the current responsibilities of the MIA as far as vehicle registration is concerned.

There are two other government agencies dealing with transportation plans or projects in the Beirut area specifically. One is the Council for Reconstruction and Development (CDR), which has taken up a major role in the last one to two years. The council has been doing everything from signing contracts with external funding sources to preparing plans for reconstruction of Beirut and its Central Business District (CBD), with a significant part of the planning activities taking part in cooperation with the (U.S.) Bechtel group. The other is the Municipality of Beirut, which is responsible for traffic operations within Beirut proper.

The Government of Lebanon has long suffered from a budget deficit. For example, in 1991, 60.9 percent of the total budget was from "extraordinary revenues" or deficit,

which is covered by borrowings from the Central Bank, borrowings from commercial banks through the issue of treasury bills, and from external loans. Although information on expenditures of the new MT is not available yet, the MPWT used to be in general the second of all the ministries in terms of expenditures after the Ministry of Defense, and the first in terms of long-term capital investments. Most of the MPWT's expenditures were, however, for construction of highways and buildings.

7.3.2 Bus Services

The public bus transit in Beirut is, for the moment, the only publicly owned mode of transport. It is managed by a semi-autonomous body known as the “General Directorate for Railroads and Public Transit (GDRR & PT).” The bus system in Beirut can be classified as a typical public provision and production model. As is frequently the case with public producers, there is no effective regulation or oversight, because there is no private sector involvement and the public entity is presumed to represent the public interest. The system is heavily subsidized by the government ownership belonging to the GDRR & PT, which performs all management and planning functions.

The transit route and network structure play an important role in defining the availability and focus of public transport services. For instance, before the war the city center was the focal point of the transit system with all lines radiating from it. Now, with the city center inactive for the last 15 years, the system has no major focal points. The system may need to be redesigned and expanded so as to serve more effectively current trip patterns and areas where automobile ownership levels are low.

In 1992, the bus network consisted of 11 routes, four of which carried 75 percent of the total system ridership. The buses which serve the different lines originate from two main

garages; one is located in Furn El Chebbak in the eastern part of the city while the other is located in Bir Hasan in the western part. The region covered by the bus system includes Municipal Beirut as well as some of the closer suburbs, but falls well short of covering the full Beirut Metropolitan Region (BMR). While large areas of the BMR are completely unserved, the coverage within the service area itself is not extensive. This is reflected in unacceptably high walking times for some important residential areas such as parts of the southern suburbs of Beirut. At least part of the problem lies in the fact that the road infrastructure within these residential areas is not suitable for bus operations (narrow and poorly maintained roads).

The workhorse of the bus fleet is the French Berliet/Renault, which can take up to 97 passengers with 28 seats. The system fleet consists of 70 operable buses, only 45 of which are currently being used (June 1992). This obviously constitutes a very small fleet compared to other comparably sized cities in the world. The difference between the number of operable and operating buses is due to the unavailability of buses (Bir Hasan) or drivers (Furn El Chebbak).

In 1978, the bus agency bought 220 Berliet buses, 48 of which were destroyed in the war. The remaining 172 buses suffered heavy, medium, or light damage. Moreover, because of poor driving habits stemming from inadequate training and the attitude of bus drivers toward public property, these buses encountered many problems. All three existing maintenance shops were heavily damaged during the war. From October, 1991, the bus rehabilitation program was taken over by the maintenance department, and 48 buses were repaired over a period of sixteen and half months. However, this program stopped completely in March, 1992, because of insufficient funds. There still exist 93 damaged buses which are presently inoperable because of lack of spare parts.

With a relatively large number of drivers being employed (519 drivers to run 45 buses), the unavailability of drivers to run buses probably reflects a discipline problem (many drivers do not work on a regular basis) as well as inefficient driver scheduling practices. For example, the daily hours of operation on each line are from 6 a.m. to 8 p.m. and are simply divided into two seven-hour shifts. In principle, a driver has to work six days per week for a total of 42 hours. However, even such simple driver schedules are not adhered to. In some cases the shift is reduced by the driver to six hours while in others a driver makes arrangements to work two shifts on one day to be able to skip work on another day. Such a driver is supposed to work continuously for 14 hours (with potential safety problems) but usually cuts his day short and returns the bus to the garage at 4 or 5 p.m. Drivers not showing up at all is another significant problem that results in missed trips and unreliable service.

Such a very low commitment by the drivers can partly be explained by the very low wages paid. Although government employees receive medical, social, and educational benefits from the government, this by no means compensates for the low pay. Many employees are looking for complementary outside jobs, sometimes with the implicit knowledge and approval of the administration.⁸³

Service effectiveness was measured on each route based on the passengers carried per revenue vehicle km. Depending on the route, the figures ranged from 2.2 to 14.3 passengers per vehicle-km (1991). These are low figures compared to other bus systems

⁸³ Bassil, Gebran G., "Bus Public Transit in Beirut: A Study of System Characteristics and Potential," Master's Thesis, American University of Beirut, February, 1993, pp. 30-31.

in developing countries, indicating that, except for captive riders, people in Beirut rarely use the public bus service.

As far as cost recovery is concerned, the overall cost recovery for the system is 19 percent (1992). There has been a steady increase in revenue over the years from 1989 to 1992, mainly as a result of rises in the fare. Including railroad costs and revenues in the calculations, the cost recovery decreases to 13 percent due to the total halt in railroad services. This 13 percent is low compared to the 30 percent level achieved in 1974, but this decrease is related to the conditions resulting from the war.

As stated in the annual financial bulletin issued by the GDRR & PT in 1991, salaries constituted 47 percent of total costs. When bonuses and other benefits are included, the figure becomes 80 percent. This percentage, compared to 36 percent in 1978 and 60.5 percent in 1982, can be explained by the employment in the last few years of many individuals some of whom are paid without actually working. For example, in Furn El Chebbak garage, there are 486 employees, of which 120 are drivers and collectors, to run 22 buses. On the other hand, fuel, oil, and maintenance constitute only 11.2 percent of total costs. Expenditures related to capital projects represent only 1.5 percent, indicating the absence of any such projects in recent years.

It is hoped that the bus services will be improved by expanding the service area, increasing the number of buses, and coordinating activities of the public bus system and the jitney system. The weakening of the institutional environment naturally leads to a planning approach which is more short-term and 'quick-fix' oriented. It should be noted that such appropriate improvement actions need adequate planning practices, reliable data, continuous adaptations to changing conditions and, above all, a well-staffed

municipal public transport department. Beirut has never had more than one professional transportation engineer in permanent employment.

Current government policy includes a project for public bus transport planned for the reconstruction period. As a first step, the objective is to expand and equip the bus garages and maintenance facilities of the Office of Public Transport. The scope involves civil works, new equipment, and spares for the 93 damaged buses that are presently inoperable. Second, it is also proposed gradually to replace the existing fleet, over 13 years old, with 220 new buses over a four-year period after the maintenance facilities have been rehabilitated. The project implementation period is five years, and the total cost is estimated to be 52.6 million U.S. dollars virtually all of which will come from foreign funds (52.2 million U.S. dollars). The Italian-Lebanese protocol has already allocated 19 million U.S. dollars for purchasing buses of different sizes.

7.3.3 Jitney Services

The capacity for collective action has been long inhibited by the history of ethnic and religious conflict, and the primary presence of entrepreneurial activity in the sector now occurs at a very individual level. In this sense, private jitneys, locally known as "service," are widely and extensively available as a more powerful public transport mode than conventional buses providing a relatively low service level over a rather restricted network. Thus, the "service" is much more important and pervasive than buses, provides a partial substitute for bus service, competes with bus for customers, and complements bus service in the competition with the automobile. "Service" is operated by totally private provision and production. There are no regulations imposed by the government, and the system is financially independent and unsubsidized.

The fleet consists of mostly 5-seater Mercedes taxis. Before the war in Lebanon which started in 1975, the "service" system was regulated as far as market entry is concerned. Legal jitneys would hold a "Red Plate," and the number of such plates issued was limited to around 10,650.⁸⁴ Since the war, this regulation has not been effectively enforced. Today, the fleet consists of the combination of "legal" jitneys carrying the "Red Plate" from the old regulated system, and "illegal" jitneys which perform an identical function. The total number of "service" vehicles are thus unknown.

There are currently 21 semi-fixed routes, which are flexible enough to change according to the demand. Passengers can get on and off anywhere on the routes, or sometimes they can ask their drivers to deviate from the routes for the passengers' convenience. Fares are related to distance, but also subject to negotiations. The "service" also operates as a taxi, if the vehicle is empty and the rider requests a direct point to point service at a higher fare.

"Service" is a one-man operation, and usually individual owners operate their own vehicles. Their small size and ready availability on the used market makes them affordable for individual operators. Other strengths include their maneuverability, frequency of service, ability to load and discharge quickly, and relatively high average speeds.

There are two major problems related to the "service." One is the need to increase the vehicle occupancy rate; the average passenger occupancy rate of "service" is less than

⁸⁴ Jouzy, N., and T. Nakkash, "The Use of the Passenger Car for Public Transit," International Conference on Transportation Research, Bruges, Belgium, 1973.

1.1, which is low compared to its carrying capacity of 5 passengers. Such a low occupancy rate generates low revenue to the jitneys which in turn may inhibit the proper maintenance of vehicles and require fares to be higher than would be possible if occupancy rates were higher.

The other problem is the fact that "service" contributes substantially to the current congestion problem, accounting for roughly half the automobiles on some major arteries. Therefore, in order to reduce congestion and simultaneously maintain or increase the total flow of people on the roads, it is necessary to make policies which cause not only a shift from private automobiles to public transport, but also a shift to higher passenger occupancy rates. However, there are no government policies applied or planned so far to this end. This is also made more complex in that the taxi function of the "service" relies upon the low occupancy rate for its availability.

7.4 Summary

To summarize, the city of Beirut has the following problems in terms of urban transportation:

- Destruction of the infrastructure due to the war and the subsequent rapid urban growth caused by migration from rural areas. Consequently, infrastructure development has not kept up with the urbanization.
- Heavy traffic congestion during peak hours. Unusually high automobile ownership for a developing country, no enforcement of traffic and parking regulations, road network deficiencies, and existence of many jitneys are the major causes.

- Inefficiency and low ridership of public transport modes, especially the conventional bus services. Use of private automobiles and unreliability of the transport system are closely related to this problem.
- Chronically low cost recovery in the bus system. The system needs enormous subsidies from the government.
- Lack of adequate historical information and reliable data bases. This problem lies as a crucial obstacle to making strategies for improvement.
- Uncoordinated public transport system. Operation and management problems such as very small fleet size, low levels of service, lack of facilities, and inadequacy of employment, are the primary factors.
- Inconsistent and piecemeal plans implemented only to solve the superficial problems. No long-term strategies or objectives have ever been articulated.
- Weak and ambiguous government structure, reflecting recent chronic political instability.

8 Alternative Strategies for Beirut

Based on the existing conditions in Beirut described in the previous chapter, this chapter proposes and evaluates alternative strategies for public transport in Beirut. The alternative strategies are developed using the framework described in Chapter 5 and the possibilities of foreign participation discussed in Chapter 6. Evaluation occurs both in terms of a model's inherent strengths and weaknesses and also in light of goals and criteria, based on the existing conditions and objectives for the urban public transport system in Beirut. The goals and criteria for evaluation are described first, and then the alternative strategies are presented and evaluated.

8.1 Goals and Criteria for Evaluation

The goals and criteria for evaluation of alternative strategies should include consideration of the public transport system as a single entity. Moreover, they should also include what needs to be improved first for each transport mode (i.e., buses and jitneys) to meet the objectives for urban public transport in Beirut. In the criteria for evaluation, the objectives for public transport should be interpreted in the Beirut context and clearly prioritized.

The goals and the criteria for evaluation in terms of the public transport system in Beirut as a whole are summarized as follows. First, the public transport system needs to be redesigned to handle the new activity patterns that have changed substantially as a result of the war. More importantly, the passenger transportation environment is still changing significantly; that is, conditions are returning to normal, certain abandoned areas are resuming their activities, and rapid urbanization is taking place. Therefore, in order to

meet the objectives of mobility and social equity, the public transport system must be flexible enough to cope with these changing transportation demands.

Second, in order to make the bus and jitney services more effective, more efficient use of road infrastructure will be desirable in Beirut. This may include better integration of the street network, improvement of the pavement and drainage of the streets, and enforcement of traffic and parking regulations. These tasks are under the jurisdiction of the Ministry of Public Works and are not yet being performed well. However, simultaneous accomplishment of these tasks together with public transport improvement itself is more likely to ensure success, fulfilling the objectives of congestion reduction and long-term sustainability. In this sense, coordination and collaboration with other organizations may be very important.

Third, as will be more fully discussed later, at present there is limited private sector involvement in the provision or production of urban public transport services in Beirut. In the case of the bus system which is characterized as the public monopoly model, the private sector is non-existent. In the case of the jitney system which is characterized as the deregulation model, the private sector does exist in the system; however, the private sector in this case is individual owner-operators making little profit for improvement and reinvestment. Since private sector involvement may be a powerful and attractive improvement strategy for public transport, how to encourage growth of the private sector may be worth special attention. For purposes of this analysis, the emphasis is not only on the buses and the legal and illegal jiteys, but also on their mixture and interrelationship, considering various possibilities for changed private sector participation. It should also be added that the entrepreneurial energy of the jitney operators could effectively pervade the whole public transport system with supportive strategy by the government. Thus,

competition in the private sector may be very important in achieving the objectives of cost efficiency and service quality. Foreign participation may also be critical in pursuing this goal, in that it can help to increase the private sector capacity.

Fourth, the Beirut government may need a well-staffed public transport department or authority which is able to supervise all the existing and future public transport modes including buses, jitneys, and railroads. In the current GDRR & PT, which is responsible for buses and railroads, responsibilities do not seem to be well defined. In fact, there is a lack of personnel in various sectors of the administration, while other sectors do not have enough work for their staff.⁸⁵ Such a situation may significantly impair service quality and sustainability of the system; therefore, it may be necessary to restructure the system in terms of management and organization, possibly by introducing experienced experts. In this sense, foreign participation may be helpful for the Beirut case.

8.1.1 Bus Services

The goals and criteria related to the mobility and social equity objective can be discussed from two aspects: economic access and physical access. Although there was a fare rise from 100 to 250 Lebanese liras (L.L.) in 1992, the current economic accessibility may be quite good in that the bus fares have been kept still relatively low as a flat fare. It is desirable that the fare be kept moderate also after improvement measures are taken.

As for physical accessibility, the current situation is very poor. There are only eleven routes, which do not seem to be designed to meet the new trip patterns and are being served by a total fleet of only 45 buses. At least, part of the BMR is not suitable for bus

⁸⁵ Ibid., p. 30.

operations because the roads are narrow or poorly maintained. Not only is the frequency of the service very low, but also the schedules are very unreliable due to poor driver discipline and little incentive for better service. For the purpose of equitable physical accessibility, the goal should be for the route network to cover all the areas of the BMR to meet the current trip patterns with appropriate trip frequencies, though one should also recognize that bus service may not be the best alternative on all the routes.

In Beirut, conventional buses with a capacity of 97 passengers are used for bus services. The size of the bus itself may appear to be good in terms of congestion reduction. The problem is that the ridership is currently very low; with the average number of passengers carried per revenue vehicle-km varying across routes from 2.2 to 14.3. In the current situation, use of conventional buses may be increasing congestion, polluting the environment, and consuming excessive energy. Therefore, shifting to the most appropriate size of buses depending on routes may be necessary.

As far as cost efficiency is concerned, the Beirut case apparently shows that there are several factors leading to cost inefficiency. In the bus system, there are far too many employees including 519 drivers to run just 45 buses. It seems that the labor is neither adequately allocated nor effectively supervised. As a result, the labor costs comprise nearly 90 percent of the total expenditure. Above all, the employees' lack of incentive toward cost efficiency may cause many problems such as improper fare collection and discipline problems. For the objective of cost efficiency, it may be most important to improve the system structure and to solve the employees' incentive problem, using some competitive pressures for self enforcement.

The quality of the bus service may be rated as poor with problems such as low frequencies, unreliable schedules, and long waiting and walking times, resulting in irregular and unreliable services and consequent low ridership. In addition to the small fleet size and the employees' poor attitude toward quality of service, poor maintenance of buses also exacerbates these quality problems. The lack of spare parts and equipment resulting from insufficient funds and inadequate planning is likely to be a greater cause of poor maintenance than the lack of mechanics. Supply of necessary vehicles, spare parts, and equipment could significantly improve the quality of the bus service. Congestion contributes to lack of schedule reliability, and safety is also an important issue in considering service quality. Although there are no data available indicating the safety of bus services, the services may be far from being safe, considering the unregulated traffic of Beirut. Improved enforcement of traffic regulations in general may also be necessary to improve the quality of the bus service, and stricter regulations reserving key streets or travel lanes for public transportation may be desirable.

The bus system in Beirut is, despite its small scale, heavily subsidized (81 percent of the total cost). Although subsidized transport systems do not necessarily mean that they are not sustainable in the long run, the subsidies which the Beirut bus system is receiving seem like just a gap-filling for deficit, and they do not seem to be meant to help the system be sustainable in the long term because no attempt is being made to evaluate the benefits of the subsidies. It is also doubtful if the General Directorate for Railroads and Public Transit (GDRR & PT), which is currently in charge of the bus system, has a realistic prospect of future expansion of the system, coordinating with other city planning policies. In these senses, it may be necessary to clarify the role of subsidies and also the interrelation between the national (or municipal) government and the organization in charge of providing bus services.

It should also be recognized that the Lebanese government has a proposed project involving rehabilitation of the bus garages and maintenance facilities and replacement of the existing bus fleet (with 220 new buses). Since the project has been nearly confirmed, it is highly desirable that, in terms of public/private sector participation and foreign participation in the bus system, the government will select a strategy and options pertaining to it which can incorporate the currently proposed project.

8.1.2 Jitney Services

Jitney fares depend on distances and are negotiable, but they are usually between 1,000 and 2,000 L.L., though the fare becomes higher if the passenger requests exclusive use as a taxi. Current bus fares are 250 L.L., approximately 25 percent of the jitney fares. Although the average per capita income is not clear, the jitney fares may not be reasonable, considering that the employees of the bus system are receiving salaries which range from 90,000 L.L. to 400,000 L.L. per month.⁸⁶ Furthermore, since jitneys are in fact the only public transport services widely available, jitneys are not satisfactory in terms of economic accessibility. If the bus services continue to be deficient, it is highly desirable that the jitney fares should be kept as low as possible because of the equity concern, and to attract trips from automobiles in order to reduce congestion.

On the other hand, in terms of physical accessibility which is defined as a combination of extent of service coverage and frequency, the existing jitney services may be rated as excellent. Owing to the nonexistence of effective government regulation of the jitney system, jitney services operate at times as jitneys, at other times as taxicabs, and have no route or origin/destination regulation, maximizing flexibility. In addition, the appearance

⁸⁶ Bassil, p. 31.

of many "illegal" jitneys has increased the number of available jitney services; as a consequence, the frequency is high enough to be easily accessible to most people in Beirut. However, taking into account the current high frequency of services and the low average passenger occupancy rate, this physical accessibility would not be greatly reduced even if the number of jitneys were reduced to some extent.

One of the most serious problems about the jitney system may be that jitneys are significant contributors to road congestion. This is because of the number of jitneys on the streets and their tendency to stop frequently to pick up and discharge passengers. The objective of congestion reduction itself may be better achieved by taking more direct measures such as strict enforcement of traffic and parking regulations, improvement to the road infrastructure, or restriction on the number of private automobiles; that is, strong effective regulatory presence by the government may be necessary. Furthermore, for congestion reduction it may also be desirable to restrict the number of jitney routes and/or to increase the passenger occupancy rates, within a range which does not impair physical accessibility. It would be even more conducive to congestion reduction if the occupancy rate could be improved by attracting trips from the private automobiles.

The unregulated jitney system is not subsidized, and the independent operators are economically viable; so it could be concluded that the cost efficiency is fair rather than poor. However, it seems that this apparent cost efficiency does not benefit the operators, because of the existence of destructive competition caused by virtually no regulations on the jitney services. A very large fleet consisting of "legal" and "illegal" jitneys results in a very low passenger occupancy rate, thus generating low revenues to the operators. If it is possible to do so without substantially impairing frequency of service, some measures should be taken in order to reduce the destructive competition, permit higher occupancy

to improve profitability, permit lower fares, and reduce congestion slightly. The flexibility to operate either as taxicabs or jitneys complicates this issue, because the low occupancy rate represents high availability of taxi service which may be seen as a positive feature.

As for service quality, the jitney system may be rated as good in terms of its maneuverability, route flexibility, high service frequency, ability to load and discharge quickly, and relatively high average speeds. Most of these factors are associated with the small vehicle size, and hence it may be desirable to keep these features by using a small vehicle type if this kind of service quality has a high priority. On the other hand, it is not clear that other aspects of service quality, such as safety and comfort, are also satisfactory. Considering that the shortage of revenues is inhibiting the operators from properly maintaining the vehicles and that traffic and vehicle maintenance regulations are not enforced, the safety and maintenance performance is likely to be problematic. Thus, improvements in the areas of maintenance and enforcement of traffic regulations may be important criteria in obtaining better service quality.

Currently, the jitney system may be serving a critical role in the redevelopment of Beirut as it is, de facto, the only efficient public transport mode. However, there are some concerns which may make the system's long-term sustainability uncertain. One concern is that the operators are not making enough profit for further investment as well as proper maintenance. Another concern is the totally unregulated nature of the system; that is, there are no consistent, comprehensive, or coordinated government policies because the system currently is completely beyond the government's control and jitneys operate independently of each other. Both of these concerns make the system's future expansion or effective integration into the remaining public transport system problematic. In

addition, over the long run, if incomes rise, less and less people may be willing to ride the jitneys unless conditions improve, and the cost of producing jitney service will rise to cover increased wages. Unless average occupancy can be increased and quality improved, the jitneys may lose mode share. For long-term sustainability, some effective government intervention in the system may be essential; that is, it may be desirable to build some communication channels between the government and the operators, and even among the operators themselves. Finally, it may be desirable to consider distinguishing jitney-type service from taxicab service, with jitneys encouraged to use a slightly larger vehicle and lower fare with predictable routes and higher occupancy, while taxis continue to operate in a less regulated mode.

8.2 Alternative Strategies

This section presents and evaluates alternative improvement strategies for both the bus and jitney services. The discussion in the previous section implied that there may be some common, urgent improvement actions to take, regardless of the strategy that the government will select. Such actions will be described first. Then, in each alternative strategy, ways to move to a new model are explained, if the strategy involves any movement from one model to another. Also, improvement options in the (new) model are described in the Beirut context. Each strategy is evaluated by giving its inherent strengths and weaknesses in light of the relevant goals and criteria in Beirut. In addition, four foreign participation options with different scope are described along with their strengths and weaknesses. The possibilities of adopting a foreign participation option under each alternative strategy are also discussed. Finally, the buses and jitneys today both provide competition in the market place and complement to each other; therefore, the effect of modification to one mode upon performance of the other is important to reasonable evaluation.

8.2.1 Bus Services

The existing bus system in Beirut can be characterized as a public monopoly. Before discussing the alternative strategies for the bus system, there may be several common actions which should be taken no matter which strategy the Beirut government may select.

First of all, it is necessary to rationalize the structure of the bus system. That is, GDRR & PT should exercise authority to hire and replace staff. Since there are so many employees (including management staff) that are not working productively, they should be removed unless adequate increases in buses can be procured and put into use for reasonable employment of the current staff . Achievement of this action may be facilitated by clearly defining the responsibilities of the staff in each department under the GDRR & PT and relating staffing levels to the true workload.

It is also important to give the employees incentives for greater cost efficiency and service quality, whether they will be hired by the public sector or private sector. Introduction of competition may easily create such incentives, and the entrepreneurial energy of the jitney operators may be one possible area from which to introduce more private sector competition into the bus system. If competition is not sufficiently included in the system, employees should be generally given incentives to reduce costs and improve quality of services by setting easily quantifiable performance measures in the organization such as revenues, fare collection, attendance, real labor hours, number of accidents or breakdowns, ratio of operable vehicles, and so forth. Also, it is necessary to reduce the range of the basic salaries which are currently much different from newcomers to old-timers, and link their payments to these performance measures of individuals or groups by introducing bonuses and penalties. In any strategy, monitoring

performance will be necessary. Effective monitoring can be done by the public authority itself (i.e., GDRR & PT), outside assistance through contracts, or use of high-technology equipment.

As for service improvement itself, GDRR & PT should create a bus route network which covers all the Beirut Metropolitan Region (BMR) and seems to be optimal for the society, and also determine the desirable service standards for each route, such as types and number of vehicles, safety and environmental standards, frequencies, fares, and so forth. In some strategies, such a "provision" task is performed by the private sector; even so, it may be very helpful to the government in supervising and evaluating the performance of the private sector.

Among such desirable service standards, fares, and size and number of buses may be the key factors for revitalization of the Beirut bus system. The current fare may be rated as good in terms of social equity; however, the flat fare system should be reconsidered to make the system economically more viable, if each bus line is substantially extended to cover all the Beirut Metropolitan Region (BMR). The fares should be related to the average cost on the routes and revised promptly by taking into account changing conditions. On the other hand, it is also essential that the system will operate with many more buses to provide acceptable frequencies and schedules which are strictly observed by the drivers. However, for such low ridership, minibuses may be more efficient in reducing congestion, saving energy, and minimizing pollution. Although increase in ridership can be expected as the services improve, shifting to smaller buses may be appropriate to more fully satisfy some of the public transport objectives.

In addition, since there already exists an on-going project involving rehabilitation and replacement of the bus fleet (mostly conventional buses) with foreign assistance, the government should make best use of the 220 new buses which will be soon arrive in Beirut through this project. Even if the government selects a strategy in which the private sector is involved, the government could make a bus leasing or purchasing program to let the private sector use these new buses. Furthermore, for the bus system, since the government is already dealing with a foreign equipment provider, it makes sense to consider the possibility of contracting with the provider for bus maintenance, at least for some initial period. Finally, production could be separated from provision by reorganizing these tasks into two separate entities, with the provision tasks remaining with the government while production might become partly or fully private.

There are six alternative strategies to be considered. The first one is an improvement strategy within the public monopoly model, while the other five are strategies involving movement to another model.

8.2.1.1 Strategy 1: Improvement within Public Monopoly

This strategy is to improve on the existing public monopoly model. The improvement options may include:

- In order to facilitate achievement of all the improvement options, create a public corporation which is independent of the GDRR & PT. Let the corporation be responsible for all the management and operation tasks in the bus service. Let the GDRR & PT oversee, supervise, financially support, and politically advise the corporation; that is, separate "production" from "provision" in two different government entities.

- Encourage group or individual incentives for employees related to performance, in order to improve team or individual effort.
- Implement rational policies to ensure that the social and economic benefits resulting from subsidies are accurately assessed and outweigh the true cost of services provided to meet the social objectives. Reassess the subsidies periodically to ensure that they remain valid. All the results of assessment of subsidies should be reported to the Ministry of Finance as well as to the general public.

Strengths

- It has the potential for achieving the social objectives for the bus system which are currently deficient, such as physical accessibility and congestion reduction.
- It also has the potential for system expansion with substantial capital investment, which will be necessary for revitalization of the bus system.
- It is possible within this model to privatize the maintenance function by a contract with the foreign equipment company, thus improving the performance in the problematic maintenance area, while focus is placed on managing the increased levels of service.
- As it is not clear whether potential private operators are available in Beirut, this strategy may be the safest in that it will involve the fewest risks.
- It may be the easiest to coordinate with other government organizations, such as General Directorate of Urban Planning, General Directorate of Roads Buildings, or the Municipality of Beirut.
- It enables the government to make the most of official foreign participation in the bus system, because both managing and operating entities are within the public sector.

- It is the most easily achievable improvement, because it represents the least change from the status quo. Moreover, it can be a first step which could be followed by more radical restructuring, so it leaves open many options for further private sector participation.

Weaknesses

- Because of the perceived lack of competition, it may not be easy to introduce incentives for the staff, especially to the management staff. Even after creation of a public corporation, cost efficiency and service quality may not be achieved as well as under the competition models.
- The system may receive too much political pressure over fares from the government or other constituencies. This may cause more deficits and subsidies, and service reductions.
- The sustainability of the system will depend on the government policies and financial conditions. The strategy may be abandoned at any time for the government's convenience.
- The rationalization of the staff may cause a significant number of layoffs of the public employees. As a public organization, this is likely to be difficult. Even if it is possible, there will be a strong opposition from the public employees.
- Drastic restructuring options may be hard to realize because of the reluctance of the executive staff, who also may have their payments reduced or their true workload increased.

While the strengths of this strategy seem clear and beneficial, the weaknesses seem rather vague and they may not involve major risks. Furthermore, there seems to be still plenty

of room for improvement within the current model. This strategy is very attractive and worth serious consideration for the Beirut bus system.

8.2.1.2 Strategy 2: Movement to Private Monopoly

The strategy may involve the following options:

- Create a public corporation which is independent of the GDRR & PT. Although the expected introduction of the new buses and maintenance facility should create an opportunity to fully and productively employ most or all current employees, any excess labor should be phased out. Let the corporation be responsible for all the management and operation tasks in the bus service. Then, gradually sell the shares of the corporation to the general public, to the management and the employees, or to a combination of the two. Movement to the private monopoly model will be complete when all the shares are held by private individuals.
- Let the public authority (GDRR & PT) supervise and regulate the service and performance standards of the corporation and oversee the allocation of any subsidies, whether for capital, operation, or both (i.e., "provision"). At the same time, set up a close relationship with the private corporation as more like an advisor to minimize the conflict between the objectives of the government and those of the corporation. If necessary, introduce more experienced consultants from other sources, with or without government help.
- Rely on the jitney system to provide some competition in the market to supplement government regulation in keeping the customer service orientation high, and use

measurements of the performance of the jitney system to help in regulation and evaluation of the monopoly.

Strengths

- The strategy includes creation of a public corporation as a first step, and most of the improvement options within the public monopoly model can also be applied to this strategy. This implies that, if the public monopoly is properly restructured, it may not be so difficult to adopt this strategy.
- Transfer of ownership of the corporation can take place gradually so that a moderate, natural movement can be achieved.
- The services can be kept consistent and coordinated, because they are still provided by a single organization, and "production" is also in a (separate) single organization. The single "producer" can benefit from the economy of scale in that improvement in one part of the system makes the entire system more attractive, so the single producer can capture this benefit.
- This strategy has a better chance to overcome the bureaucratic inertia which is a chronic problem in the case of the Beirut bus system. Rationalization of the staff and the structure of the system may be easier than in a public monopoly.
- There is also a better chance to reduce the government's financial burden of subsidization.

Weaknesses

- It may be questionable whether there exist private investors willing and able to buy the shares of the corporation given the state of the Beirut economy.
- Without proper regulation and advice of the government, the private corporation may tend to provide infrequent and overloaded services, which are socially inappropriate

and also may not be attractive enough to increase ridership. Fares also tend to be raised, unless regulated effectively.

- Because of the lack of direct competition, it may not be so easy or effective to give incentives to the staff, especially to the management staff. As a result, cost efficiency and service quality may not be achieved so well as with the competition models, although the pervasive nature of the jitney competition should partially offset this problem.

Although the creation of a public corporation is a major premise in taking this strategy, it has not yet occurred in Beirut. Since it is possible to create a public corporation itself within the scope of Strategy 1, immediate adoption of this strategy may be too hasty an action.

8.2.1.3 Strategy 3: Movement to Contracting Out

The strategy may involve the following options:

- Create a public corporation which is independent of GDRR & PT in order to separate "production" from "provision."
- Determine how many routes to contract out as a first stage.
- While it might be possible to sell the buses to the private contractors through a bus purchasing program with low interest, it is better to lease the government-owned buses to the private operators until the contracting out model is stable. Particularly if the government structures the new foreign supplied buses to include maintenance, the new contractors could have access to that supply of buses in that way.

- Provide incentives for reduction in staff at the public company in advance in order to encourage the employees to form groups to participate in the competitive bidding.
- Disclose all the information of the requirements to be included in the contract for each route to the potential operators (including some groups of the current bus drivers). Award the operation of each bus service route to the lowest bidder through the competitive bidding process.
- Include revenue or at least hybrid contracts so that contractors can retain part or all of the fares collected and thus provide incentives to treat passengers as customers and improve cost efficiency and service quality.
- Foster a competitive market by: widely publicizing request and fully disclosing information; limiting the size of contracts and awarding enough contracts; and staggering the contracts.
- Allow the public bus company to bid so that the competitive incentives can help to improve performance in the public company.

Strengths

- The strategy can be relatively easily applied because the public authority can contract out only a sub-set of services to see if this strategy will work well.
- By encouraging indirect competition through the bidding process, the strategy is likely to achieve improvements in both cost efficiency and service quality which are two of the major problems in the Beirut bus system.

- The government can reduce the operating task, deficit, and subsidies while it can still plan a comprehensive, consistent, coordinated service network which fulfills the social objectives of public transport.

Weakness

- It is questionable whether there will be enough potential private operators who can afford to lease the buses and are interested in providing services so that there is enough competition for bidding.

Although the weakness mentioned above stands as a potentially serious problem, this strategy seems quite attractive because of its inherent strengths and the possibility to slowly move from the existing public monopoly model by gradually increasing the number of contracted routes.

8.2.1.4 Strategy 4: Movement to Threatened Competition

The strategy may involve the following options:

- Create separate production and provision public entities as above.
- If the private operators do not seem able to purchase buses for themselves, purchase enough buses to sell or lease to the private operators. Include the requirement that the foreign bus provider maintain the buses for at least a five-year time period, so that entry of bus operating companies into the market can be easy.

- Provide incentives for retirement of excess staff in advance in order to encourage the employees to form some groups to participate in the competitive bidding at the initial stage.
- Permit some services to be provided by smaller vehicles where appropriate.
- Include in the contracts clearly prescribed standards of services which may allow fair renewal, and disclose all the information of the requirements to be included in the contract for each service area to the potential operators (including some groups of the current public bus drivers). Evaluate the bidders based on services to be provided as well as subsidy required, and award the operation of each bus service area to the best evaluated bidder through the competitive bidding process.
- Frequently evaluate and publicize their performance according to the contracts, in order to keep the threat of competition more active.

Strengths

- By giving the multiple private operators a threat of competition, the strategy is likely to improve cost efficiency and service quality which are two of the major problems in the Beirut bus system.
- The government can reduce the operating and managing tasks, deficit, subsidies, and the number of public employees, while it can still fulfill the social objectives for public transport through government regulation in the form of contracts.
- Because each area is served by a single private operator with oversight by the public authority, well coordinated services may still be achieved.

- The concept of the strategy to divide the BMR into several franchised areas may be suitable for the current conditions of Beirut where the city activities are gathered around several sub-centers.

Weaknesses

- Structuring the sectors is likely to be very difficult, and the trip pattern may change with new development.
- In Beirut, it is questionable whether there are enough potential private operators who can afford to purchase the vehicles and have the ability to manage the bus operations.
- If the threat is not taken seriously by the private operators, they have little incentive to provide services efficiently because there are no competitive factors involved. As a result, operating costs may become much higher than other alternative strategies with direct competition.
- Given the religious and ethnic divisions within Beirut, the separate companies might reflect these patterns, with no real chance of competition among them.

This strategy may involve more risks than Strategy 3 in that most of the "provision" tasks are done by the private sector of which capability is uncertain. In addition, unlike Strategy 3, it is impossible to try this strategy using just small part of the service area. This strategy may be less attractive in these respects, and it may not be useful for further consideration in the Beirut context.

8.2.1.5 Strategy 5: Movement to Regulated Competition

The strategy may involve the following options:

- Create separate production and provision public entities as above.

- Transfer the ownership of the publicly-owned buses to the employees or groups of the employees of GDRR & PT. Also, prepare the bus leasing or purchasing program (e.g., soft loans) so that any potential private operator can afford to buy the new buses, and structure the purchase of new buses to require the inclusion of maintenance, so that market entry for bus operators may be facilitated.
- Allow private operators to enter the system and operate on certain routes by issuing licenses, as long as they satisfy the government regulations and the total number of vehicles operating each route is under the public authority's limit.
- Where appropriate, allow smaller buses to be used.
- As for unprofitable routes, require successful operators to serve these routes along with some profitable routes, serve them by direct government operation, or contract them out with government subsidy.
- To assume good schedule reliability, encourage individual operators to set up informal organizations such as route associations or cooperatives by requiring participation in schedule coordination, terminal and bus stop utilization, etc.

Strengths

- Because of the competition in the market, the private operators will be more concerned with cost efficiency and service quality.
- The strategy may reduce the current public subsidy, and other roles of the public sector which have long been a serious burden for the government.

- It allows individual owner-operators, capturing some of the entrepreneurial energy of the jitney operators.
- It also allows the use of smaller vehicles where appropriate.

Weaknesses

- In Beirut, it is questionable whether there are enough potential private operators who can afford to purchase the vehicles and have the ability to manage the bus operations.
- Competition may not work well because of currently low public transport demand in Beirut.
- The government policies to meet the social objectives can be reflected only indirectly through regulations.
- Regulated competition will not work well without an efficient monitoring system.
- Individual operators cannot perceive the value of the economies of scale in service quality, whereby improved service on one line improves the attractiveness of all others; therefore, the government must play this role.
- There is no tradition of strong cooperative route associations, so a new institution needs to be built.

Considering the current low public transport demand in Beirut, it may be radical and difficult to adopt this strategy and abruptly move to the regulated competition model. In such a case, the government can alternatively just allow private operators satisfying government regulations to enter the bus system while providing services by the public sector. If any operators appear, the government can take a more natural step to move to this model by reducing the services by the public sector or relocating the public services to less well serviced routes.

8.2.1.6 Strategy 6: Movement to Deregulation

The strategy may involve most of the options described under Strategy 5. The only difference may be the option concerning government regulations, and this goes as follows:

- Set up separate public entities for provision and production of services.
- Set up regulations only for safety and vehicle maintenance standards. Allow private operators to enter the system and to operate on any permitted route by issuing licenses, as long as they satisfy these regulations, provide notice of entry with reasonable lead time, and comply with bus stop and traffic regulations.

Strengths

- Because of the competition in the market, the private operators will be more concerned with cost efficiency and service quality.
- Vehicles chosen by operators with practical knowledge of road conditions (i.e., some streets are very narrow or poorly maintained in Beirut), level of demand, and operating costs are more likely to be cost-effective and appropriate than vehicles specified by regulation, especially in the rapidly changing environment of Beirut.
- The strategy may reduce or eliminate the need for public subsidy, and other roles of the public sector which have long been a serious burden for the government.
- The optimum routes and levels of service determined by the competitive, high-demand market may also agree with customers' needs. Customers may be able to choose from a variety of vehicle types or routes.

- The public production company could continue to operate with public subsidy at least for an interim period, and the public provision entity could contract to public or private companies for services on socially important routes.

Weaknesses

- In Beirut, it is questionable whether there are enough potential private operators who can afford to purchase the vehicles and have the ability to manage the bus operations.
- It is likely that the low-density areas, unprofitable routes, and off-peak services will be overlooked, while high-demand areas or routes are likely to get more services, thus causing an equity problem and reducing the overall service quality available to the public.
- Because of cost efficiency or financial convenience, private operators may choose to operate a large number of smaller vehicles, which may in turn create serious road congestions and environmental problems.
- Deregulation may result in lack of fare and service coordination, and system-wide public information and planning. This is likely to create an unstable situation for customers; it may cause sudden large increase of fares, interruption of services, or even withdrawal of operators.
- If the competition is so severe, highly motivated and sometimes aggressive driving behavior of private operators is likely to impair safety and quality of services.

As is the case with Strategy 5, if the government finds the radical adoption of this strategy difficult, it can alternatively allow private operators to enter the system while providing the services by the public sector until enough number of private operators

begin to provide services. Since there are fewer government regulations compared to Strategy 5, this passive "action" may be easier to implement.

8.2.2 Jitney Services

The existing jitney system in Beirut can be characterized as following the deregulation model. Before the discussion of the alternative strategies, there may be several common actions which should be taken no matter which strategy the Beirut government may select.

First, in order to reduce congestion and realize smoother traffic flows, it is necessary to enforce parking and traffic regulations more strictly on the general traffic including jitneys. Improvement of the road infrastructure may also be very effective for this purpose. In addition, it may be necessary to adopt and enforce stronger regulations to reduce automobile use in order to provide reasonable-quality public transport flow.

Second, the government should obtain control of the jitney services and improve the current jitney licensing system in light of the existing safety, environmental, and congestion problems. For this purpose, although the detailed structuring will somewhat vary from model to model, it may be necessary to issue new licenses to the jitney drivers and vehicles satisfying the minimal government regulations such as driver training, vehicle inspections, safety requirements, and permitted areas or streets for operation, and to remove all the jitneys without licenses. In addition, it may also be important to impose taxes on the licenses in order to finance proper regulation and traffic enforcement, and frequently renew and check the licenses.

Third, in order to prevent excessive competition and to coordinate the services better, it may be necessary to encourage individual operators to set up some kind of organizations by requiring cooperation with route associations concerning scheduling and public information on some routes or areas. The form and organizational power may vary from model to model, but this may facilitate control of the entire system and coordination with other public transport modes such as bus services.

All the above actions may become easier to execute if GDRR & PT efficiently monitors the operators' performance. As for the vehicle size, it may not be immediately necessary to move to larger vehicles. This should be reconsidered in the future if and when the load factor increases enough to change the size or number of vehicles.

There are six alternative strategies available for improving the current situation. The first one is an improvement strategy within the deregulation model, while the other five are strategies involving movement to another model. Fixed routes and clearly distance-related fares (instead of negotiated ones) are the bases for any movement, and without these it may be hard to apply the strategies. As for fixing the routes, the "illegal" jitney operators represent a particularly interesting capacity in that they could be fairly constrained to serve specific routes or districts, and could become the basis for supplementing the inadequate bus system, possibly with minibuses. Distinguishing taxicab services, which might continue to be open to free entry with regulation only for safety and fares, from jitney services, which might be more strictly regulated regarding route and time of day may be an important feature to allow higher occupancy rates in jitneys without destroying the frequency and availability of taxi services.

8.2.2.1 Strategy 1: Improvement within Deregulation

The strategy may involve the following options:

- Develop and enforce safety regulation of drivers and vehicles.
- Encourage individual operators to set up informal organizations such as route associations or cooperatives to cooperate with the government to provide more reliable schedules.
- Continue to allow free entry for the "illegal" type of jitneys.
- It is not clear whether there exist unprofitable routes in Beirut; however, if so and they are socially desirable, either contract them out with government subsidies, or let the other mode (i.e., buses) complement these routes.

Strengths

- Because of the competition in the market, the private operators are already concerned with cost efficiency and service quality. The environment is the best for them to achieve these objectives because there is minimum government intervention.
- Competition may also reduce the chances of excessive fares being charged. The optimum routes and levels of service determined by the competitive market may also satisfy customers' needs.
- The strategy is likely to keep the current owner-operator system, which may be the most responsive to the rapidly changing demand conditions of Beirut.
- The system is financially self-sustaining without subsidy, and provides basic services.

- The system minimizes the danger of favoritism or corruption in the regulatory process by minimizing regulation.

Weaknesses

- As a result of severe competition, with no entry restriction, occupancy is low, with operators not being able to make significant profit. The flexibility to operate as taxis as well as jitneys actually requires the high availability inherent in low occupancy. For this reason, even if the load factor increases in future, they may not be able to invest in larger vehicles because free entry will keep occupancy low, and the size of the vehicles may remain as is continuing to create serious road congestion and environmental problems on the routes of high demand.
- The system may still be unstable for customers; it may experience sudden large increase of fares, interruption of services, or even withdrawal of operators.

The actions which can be taken under this strategy are rather limited. Strict deregulation means that regulations other than safety and environmental ones cannot be enforced. A stricter licensing system is possible with higher fees and stricter enforcement of vehicle and driver standards; however, the government must issue licenses to any private operator satisfying the minimal regulations, and it cannot restrict the number of vehicles. Improvement within the existing deregulation model may be significantly achieved by applying the common actions described above; however, the further improvement options under this strategy may include consideration of subdividing the operators into the legal "Red Plate" operators, who would continue to enjoy their current flexibility, and the "illegal" operators, who could be required to pay a higher fee, and who might reasonably be constrained to provide service on specific routes or districts which are less well

serviced, or to operate according to a specific schedule, or even required to purchase larger vehicles such as vans or minibuses.

8.2.2.2 Strategy 2: Movement to Public Monopoly

The implementation strategy may involve the following options:

- Limit the number of jitney licenses, with the number being adjusted from time to time by the government oversight agency.
- Create a public corporation for jitney services under the supervision of the GDRR & PT. Let the corporation be responsible for all the management and operation tasks in the jitney service; that is, let the corporation restructure all the routes, fares, levels of service, vehicle standards, and so forth, for the benefit of the society with the GDRR & PT's consultation, negotiation, and approval power.
- Take advantage of the opportunity for cross-subsidy inherent in a monopoly, and provide minimum levels of service in the off-peak hours and on unprofitable routes for higher-quality, more customer-oriented and extensive service.
- Require all jitney operators to join the public corporation as owner-operators or sell their licenses to the public corporation which could either hire drivers or sell the owner-operator right to a new owner.
- Give the employees some incentives to reduce costs and improve quality of services by setting easily quantifiable performance measures and allowing drivers to retain a

substantial percent of revenues. Link their payments to these performance measures by introducing bonuses and penalties. (Those who continue to be owner-operators would have their built-in incentive.)

- Respect the Red Plate "legal" jitneys by giving them priority rights to pick their mode and location of operation, including a right to continue to operate independently.

Strengths

- The strategy has great potential for achieving the social objectives for the jitney system which are currently deficient, such as economic accessibility and congestion reduction.
- It may be the easiest to coordinate with other government organizations, such as departments of traffic, civil works, or city planning. This strategy is also the easiest to coordinate with the public bus operator(s), mutually supplementing service routes or areas. In particular, in the public monopoly model, it may be relatively easy gradually to reallocate jitney services as the bus system is revitalized, if this is a government policy.
- The public monopoly may achieve economies of scale to facilitate modernization of the fleet, introduction of radio dispatching, etc.

Weaknesses

- Since there may be too many jitneys at present, it may be feared that the government will not buy out all the existing jitneys and hire these drivers. Therefore, this strategy may face strong opposition from the current jitney drivers, because of fear of unemployment.

- Because of the lack of competition, it may not be easy or effective to give incentives to the staff, especially to the management staff. As a result, cost efficiency and service quality may not be achieved so well as before.
- The system may receive too much political pressure over fare increases from the government or the constituencies. This may cause deficits, subsidies, or reduction in service.
- The sustainability of the system will depend on the government policies and its financial conditions. Therefore, the strategy may be abandoned at any time for the government's convenience.
- Although the movement to public monopoly may make large-scale foreign participation possible, it may not be necessary for the system to obtain foreign assistance because less skill and technology are involved due to the small vehicle size. In addition, it may be better to use valuable foreign resources for the bus system, which requires more substantial vehicles.

It may be a little too drastic for the government to buy up all the system and take the place of the private jitney drivers whose services are currently not regulated at all. However, experimental adoption of this strategy may be supported, considering that, once the system moves to the public monopoly model, it may be relatively easy later to move to another model. This strategy would be more attractive, if the public sector were powerful in the other mode, i.e., in the bus system.

8.2.2.3 Strategy 3: Movement to Private Monopoly

This implementation strategy is to move to the private monopoly model. The strategy may involve the following options:

- Limit the number of jitney licenses, subject to periodic adjustment by the government.
- Create a corporation for jitney services and sell the shares to private investors. Let the corporation be responsible for all the management and operation tasks in the jitney service; that is, let the corporation restructure all the routes, fares, levels of service, vehicle standards, and so forth.
- Require all jitney operators to join the monopoly, contributing their vehicles and licenses in exchange for stock, or to sell them to the monopoly.
- Give the employees incentives to reduce costs and improve quality of services by setting easily quantifiable performance measures for the organization. Allow drivers to keep a substantial percentage of the fares collected as appropriate to the route.
- Let the public authority (GDRR & PT) supervise and regulate the service and performance standards of the corporation. At the same time, set up a close relationship with the private corporation as more like an advisor to minimize the conflict between the objectives of the government and those of the corporation. Introduce more experienced consultants from other sources, if necessary.

Strengths

- With government intervention, the strategy has potential for achieving the social objectives for the jitney system which are currently deficient, such as economic accessibility or congestion reduction.

- By removing the destructive competition, the system may be able to make more profit by reducing the number of vehicles and shifting to larger vehicles on some routes. Thus, further investment for better service or lower fares may be possible.
- The private monopoly could achieve economies of scale to upgrade the fleet and introduce radio control, automatic vehicle identification, etc.

Weaknesses

- It may be questionable whether there exist private investors to buy the shares of the corporation in the Beirut economy.
- Without proper regulation and advice of the government, the private corporation may tend to provide infrequent and overloaded services, which are socially inappropriate.
- Because of the lack of competition, it may not be so easy or effective to give incentives to the staff.
- This strategy may face strong opposition from the current jitney drivers, because there may be fear of substantial unemployment of the current jitney drivers or at least a major change in independence.
- Because of the lack of competition, it may not be so easy or effective to give incentives to the staff, especially to the management staff. As a result, cost efficiency and service quality may not be achieved so well as before.
- Although the movement to private monopoly may make large-scale foreign participation possible, it may not be necessary for the system to obtain foreign assistance because less skill and technology are involved due to the small vehicle size. In addition, it may be better to use valuable foreign resources for the bus system, which has greater need of foreign support.

As described as an option, this strategy involves creation of a public corporation in the first place. Therefore, this strategy may be more complicated than Strategy 2. Moreover, direct movement to the private monopoly model without staying in the state of public monopoly may result in showing only the weaknesses mentioned above. As such, this strategy seems unattractive for immediate implementation. It would seem more prudent to try a public monopoly first and then, if appropriate, privatize or go to a mixed corporation.

8.2.2.4 Strategy 4: Movement to Contracting Out

The strategy may involve the following options:

- Create a fixed or semi-fixed jitney service route network which covers all the Beirut Metropolitan Region (BMR) and seems to be optimal for the society, and also determine the desirable service standards for each route.
- Prohibit any individual jitney driver from providing jitney services on certain routes or areas. Instead, encourage drivers to form organizations such as cooperatives, associations, or companies, to be ready for the bidding.
- Disclose all the information of the requirements to be included in the contract for each route to the potential operator groups. Award the operation of each jitney service route to the bidder offering the highest bid or requiring the lowest subsidy through the competitive bidding process.

- Include revenue or at least hybrid contracts so that contractors can retain part of or all fares and thus have incentives to treat passengers as customers and improve cost efficiency and service quality.
- Foster a competitive market by: widely publicizing request and fully disclosing information; limiting the size of contract and awarding enough contracts; and staggering the contracts.
- Continue to allow jitneys to operate as taxicabs when not assigned to a jitney route. Also, continue to allow free market entry for taxicab operation, but limit jitney operations to those with jitney contracts.
- Give first opportunity to bid to the "legal" Red Plate operators.
- Use the revenues from the bidders to contribute to the cost of weak routes or road maintenance.

Strengths

- In the existing deregulation model, it is possible to try contracting out some congested, perhaps profitable routes. If it works well, then the strategy can be applied to all the routes. As such, this strategy can be applied gradually.
- Since there already exist enough private drivers and vehicles, the government does not have to invest much for vehicles, and hence the application of this strategy may not be so difficult.

- By encouraging indirect competition through the bidding process, the strategy is still likely to keep good cost efficiency, though it may not be as effective as competition in the market.
- The government can improve the service quality of the jitney system by planning a comprehensive, consistent, coordinated service network which fulfills the social objectives of public transport.

Weaknesses

- The public authority will be responsible for the task of managing the jitney service, which may become a serious burden for the government.
- Private operators may hold back on the quantity or quality of services they render unless their performance is effectively monitored. In particular, considering the large fleet size of jitanes, the cost of such efficient monitoring may offset the benefits from this strategy. If public feedback indicates that there are problems with certain routes or operators, it may be difficult for the government to take effective action.

As the options described above show, this strategy may be a relatively natural and smooth movement to take. The key factor for this strategy is efficient monitoring on all the routes including contracted out routes. Since the existing deregulation model will still coexist with the contracting out model at least in the transition period, restructuring the deregulation model, especially enforcing the minimal regulations, may also be an important influence on the success of this strategy.

8.2.2.5 Strategy 5: Movement to Threatened Competition

The strategy may involve the following options:

- Create a fixed or semi-fixed jitney route network, and also determine the desirable minimum service standards for each route. Also divide the service network into several groups properly so that real potential competition can occur among the private operators.
- Prohibit any individual jitney driver from providing services. Instead, encourage drivers to form organizations such as cooperatives, associations, or companies, to be ready for the first bidding. The number of organizations should be at least as many as the service areas.
- Include in the contracts clearly prescribed standards of services which may allow fair renewal, and disclose all the information of the requirements to be included in the contract for each service area to the potential operators (including some groups of the current public bus drivers). Award a franchise to serve each area to the best evaluated bidder through the competitive bidding process.
- Monitor the private operators' performance, and frequently evaluate their performance according to the contracts, in order to keep the threat of competition more active.

Strengths

- By giving the multiple private operators the threat of competition, the strategy may still achieve cost efficiency and service quality as well as before.
- Because each area is served by a single private operator and supervised by the public authority, well coordinated services may be achieved.

- The concept of the strategy to divide the BMR into several franchised areas may be suitable for the current conditions of Beirut where the city activities are gathered around several sub-centers.

Weaknesses

- Given the religious and ethnic divisions which complicate governance in Lebanon, it seems likely that groups might form around the religious and ethnic lines, and not provide credible effective potential competition.
- If the threat of competition is not taken so seriously by the private operators, they have little incentive to provide services efficiently because there is no competitive factors involved. As a result, operating costs may become much higher than before, or the service quality may erode with wait time increasing.
- If true competition is achieved, there may be some "losers" who are put out of business.
- The cost of efficient monitoring may offset the benefits from this strategy.

For adoption of this strategy, the government must first quit the existing deregulation model and divide almost all the BMR into several areas in order to start the threatened competition model. This may be the main hardship in adopting this strategy. Moreover, as mentioned as a weakness, this strategy may not be appropriate given the social and historical context; therefore, it may be better to eliminate this strategy from further consideration.

8.2.2.6 Strategy 6: Movement to Regulated Competition

The strategy includes the scope of Strategy 1 together with the following options which are related to further regulation:

- Set up standards to regulate, such as forms of private entities, types and number of vehicles, safety and environmental standards, routes, levels of service, fares, employment, and so forth, so that the social objectives can be fulfilled.
- Assign the routes to the operators satisfying the regulations by issuing license plates with a certain term of validity. If the total number of desired jitneys is less than the total number of the existing jitneys (which is possible in the case of Beirut), or if the value and ridership potential differ among routes, sell the desired number of license plates for each route by auction or lot, and let the rest function as taxicabs.
- Since the fares are to be regulated, make every effort to: relate fares to the average cost of the routes toward full cost recovery; remove other excessive regulations to encourage different types and standards of service; and revise fares promptly taking into account changing conditions, in particular, cost and ridership.
- Permit operators to operate as taxis when not engaged as jitneys, and continue to allow free entry for taxicab operation.

Strengths

- Because of the limitation of the total number of vehicles for each route, road congestion may be significantly reduced. Also, the currently low average passenger occupancy rate may increase for jitney operations, and the remaining operators may make more profit to invest for better services or permit lower fares.
- Government regulations, especially regulations of fares, routes, and levels of service, can help to meet the social objectives.

- Route structure can build in cross-subsidy to ensure service on low-profitability lines or times of day.
- The government can enforce higher standards on a route, in response to citizen complaint, by introducing more operators and providing more service (and competition) on the line.

Weaknesses

- Even in the current deregulation model, the operators are making little profit. Restrictions of access to the most successful routes may result in exacerbating this situation, especially if there are excessive operators.
- The government policies to meet the social objectives can be reflected only indirectly through regulations.

Apart from Strategy 1, which is an improvement strategy within the existing deregulation model, this strategy involves the minimum change in the existing organizational structure of the system. Nevertheless, many improvements in the Beirut jitney services can be expected of this strategy. If it is a policy for the Beirut government to leave the production and part of the provision of the jitney services in the hands of the private sector for at least a certain period of time, this strategy may be the most appropriate for the Beirut jitney system.

8.2.3 Foreign Participation Options

Foreign participation is a means to supplement locally available capacity and capital which are severely limited in the Beirut case. There are four main options based on the discussion in Chapter 6. Both official and private foreign participation is possible for

each of the following options, though their actual application may vary under each of the strategies described in the previous subsections.

For the bus system in which no private sector is currently involved, foreign participation may be very helpful in that it contributes to the expansion of the private sector roles by increasing their capacity and capital. In fact, as mentioned before, the Lebanese government has a proposed project involving rehabilitation of the bus garages and maintenance facilities and rehabilitation of the existing bus fleet. Therefore, it is highly desirable to include this existing project as one of the following foreign participation options.

The jitney system might also benefit from foreign assistance, but it is not as essential as the bus system in at least two respects. One is that, because the current fleet may be large enough, the system does not need any more vehicles unless replacement with larger vehicles is considered. The other is that, because of the small vehicles, the system involves less expertise for vehicle maintenance and lower capital requirements. On the other hand, introduction of IVHS (Intelligent Vehicle Highway System) elements such as automatic vehicle identification might make foreign participation desirable.

8.2.3.1 Option 1: Foreign Participation in Financing Only

This option focuses not on the local expertise but only on the local capital which is scarce in Beirut, especially for the bus system. In this case the government (the Ministry of Transportation and the Ministry of Public Works) identifies the need for vehicles, infrastructure (roads, traffic facilities, etc.), facilities (bus garages, terminals, maintenance shops, etc.), equipment, or spare parts, which are not domestically available in terms of technology, material, or resources. Foreign agencies are then asked for financial

assistance by the government (the Council for Reconstruction and Development). In the case of official foreign participation, the form is either grants or a soft loan; in the case of private investment, the form is a commercial loan. The government can either obtain these products provided by the foreign agencies, or give them out to other private entities in the form of subsidy or soft loan.

This option is available under all the strategies, though the form may vary from official foreign participation to private investment. In fact, the scope of the ongoing foreign participation project involving replacement and rehabilitation of the existing bus fleet is very close to this option.

Strengths

- Since it involves the least foreign manpower which is usually very expensive, it may be the easiest to realize in terms of the total project cost (in the Beirut bus system, most of this option is already taking place).
- The option may be the most powerful if the government concludes that the existing problems are concerned not with expertise, but only with capital. The government can then make the most of its domestic labor which seems to be abundant in order to execute the project in the most inexpensive way.

Weaknesses

- Since no attempt is made to develop local skills, the option should be taken only if the products provided from external sources are already familiar to Beirut in their use and maintenance. Otherwise, difficulties may result if new and complex vehicles, infrastructure, facilities, or equipment are provided.

- This option is most appropriate if there are no major faults in management or planning which could also be helped by foreign experts. In the Beirut case this may not be true, especially for the bus system.

8.2.3.2 Option 2: Foreign Participation as Advisory Consultation

In this option, foreign consultants are usually first brought in to diagnose a problem in the system, and they will give advice as to what is wrong, what part of the system needs attention, and how it can be improved. In addition to the whole scope of Option 1, this option includes advisory assistance as to how to operate and maintain the vehicles, infrastructure, facilities, or equipment (i.e., the production of services). The option may also include advice on various aspects of the provision of services, such as organizational reform, route and service planning, performance monitoring, or system-wide policy planning. The focus of this foreign participation can be on the bus or jitney system only, or more broadly on the public transport system itself including transportation infrastructure.

This option can be executed either as official or private foreign participation, and, in both cases, foreign consultants play a significant role in this option. However, as official foreign participation, some restrictions may apply under some strategies. That is, foreign experts can sometimes give advice only on the tasks left to the public authority. In the bus system, although it is not yet clear which improvement strategy the Beirut government will adopt, it may be very effective to go beyond the scope of the current ongoing project and ask the foreign experts for advice on some of the government tasks.

Strengths

- The diagnosis of the problems by foreign consultants may be very effective in defining appropriate projects, especially in the Beirut public transport system with its various problems.
- Foreign advice may reduce the problems associated with new or more complex vehicles, infrastructure, facilities, and equipment provided by foreign agencies.
- This option has good potential for transfer of useful managerial or operational skills.

Weaknesses

- Since the option involves foreign consulting and assistance in skills, the project may tend to be large and costly. This in itself may cause a problem in realization.
- Some of the problems in the Beirut bus system are quite obvious even without consultations. Therefore, the government may waste foreign exchange unless it limits and focuses the consulting effort.
- Maintenance of service may still be neglected because of the time and financial constraint of the project, since the foreign support is short-term by nature.

8.2.3.3 Option 3: Partial Foreign Participation

On top of the foreign consultants' diagnosis of the existing problems in public transport described in Option 2, this option involves more foreign consultants or engineers to participate directly in part of the provision and production of services, such as maintenance and supply of the vehicles, infrastructure, facilities, or equipment, or capital and/or operational management and planning. Foreign experts are expected to contribute technical advice, and transfer skills and technologies to their counterparts, often in the form of on-the-job training. General training of the staff may also be included in the

scope of this option. This option can be adopted as official or private foreign participation.

The form which seems attractive and also relevant to the current foreign participation option may be that the foreign sector solely or jointly with a local entity takes the responsibility for part of the system such as vehicle maintenance or management through contracts with the public authority, though it may be a more business-like relationship. For example, the foreign sector can participate in the maintenance service, if the Beirut government structures a set of contracts to maintain the vehicles and lease them to the actual operators. The maintenance and leasing contract might be attractive to foreign equipment providers, whether they are a foreign government or a private company, and encourage a longer-range point of view than might otherwise be expected from foreign consultants. In the case of the bus contract, for example, if the contract requires ongoing maintenance for a period during which skills could be transferred, the foreign option provides a privatization option which would not otherwise be available to Beirut, i.e., a local private company taking responsibility for proper vehicle maintenance which is the most problematic aspect of bus service. This bus fleet resource then could be made available to public or private entities under the entire range of the alternative strategies discussed. It would also be possible to arrange for competitive bus provision with more than one foreign bus providers.

Strengths

- Foreign assistance under this option may be very effective in the selection, operation, and maintenance of vehicles, infrastructure, facilities, and equipment.

- This option has a better chance of efficient transfer of skills and technologies than in Option 2, because foreign consultants and engineers have a greater stake in the outcome.
- It is possible to extend the duration of the "project" through contract renewals.
- Maintenance issues are more likely to be included in the project.

Weaknesses

- Partial foreign participation may not work well if deficiencies in other parts of the system are significant.
- If the local counterparts are too dependent on the foreign experts and the technology transfer does not occur properly within the restricted project duration, the system may fall apart again as soon as the experts leave.
- Similarly, since foreign experts take the initiative in part of the system, it may be likely that inappropriate technology or product will be transferred for the foreigners' convenience, unless enough agreements are made through discussion between foreign and local staff beforehand.
- There may be problems in the local staff, such as selection of the counterparts or their enthusiasm and performance.

8.2.3.4 Option 4: Full Foreign Participation

In this option, foreign experts participate in the whole system. This would occur if Beirut's bus system, jitney system, or transportation infrastructure system is operated by a foreign (public or private) transport organization through the official foreign participation. In the case of private foreign participation, this occurs when a foreign private company takes responsibility for the entire bus, jitney, or transportation infrastructure system through contract with the local organization in charge of the system

in Beirut, or when a foreign private company holds some of the shares of the local corporation in charge of the system. Strictly speaking, in either case, the system is not exclusively under foreign organization control; however, the foreign sector can participate in the "full" scope of the system including the provision and production of services.

This option could become realistic when the services are provided by a single entity instead of multiple private operators, in other words, when the system is characterized as a public or private monopoly, and when a new, more complex routing, scheduling, coordination, and control system is required or new technology such as a major shift to larger vehicles or introduction of IVHS is contemplated. If not, however, this option does not seem particularly useful.

Strengths

- Foreign experts and their local counterparts will have a strong working relationship, which may facilitate many aspects of technology transfer.
- It is likely that all parts of the system will be improved at the same time, causing no imbalance of efficiency.
- In the case of the private foreign participation, the duration of foreign participation can be longer than normal projects.
- Maintenance issues are likely to be included in the project as a part of the entire foreign undertaking.

Weaknesses

- It may be too costly because of the extent of foreign experts' role in the system. It may not be clear if there is so much skill and technology involved in the bus, jitney,

or transportation infrastructure system. It should be made clear if this option is necessary before adopting it.

- If the local counterparts are too dependent on the foreign experts and the technology transfer does not occur properly along with the local counterparts problems, the system may fall apart again as soon as the experts leave.
- Inappropriate technology or product may be transferred for the foreigners' convenience, unless enough agreements are made through discussion between foreign and local staff beforehand.

8.3 Summary

This thesis presupposes that a more effective regulation of the street system will be implemented as peace and stability return to Beirut, but anticipates that congestion will continue to be a problem because of excessive reliance on the private automobile, and that improved performance of the bus and jitney systems could provide an alternative to the automobile and help to reduce congestion, to the benefit of all, and explores various options for greater use of private sector and competition in combination with improved regulation to improve the system performance.

Based on such an assumption, this chapter proposed and evaluated alternative strategies for public transport in Beirut. The alternative strategies were proposed taking into account the framework described in Chapter 5 and the existing conditions of Beirut described in Chapter 7. The four main options of foreign participation were also described along with their strengths and weaknesses. Evaluation of these strategies were done by giving its inherent strengths and weaknesses and also those in light of the government's goals and criteria, which should be formed largely from urban public transport system's general objectives and the existing conditions in Beirut. The goals and

criteria for evaluation were described first, and then the alternative strategies were presented and evaluated.

Although the discussion of this chapter implies that each strategy has its own strengths and weaknesses, it may also be true that some strategies seem more powerful or appropriate while some seem rather weak and unrealistic in the Beirut context. In Figure 8.1, all the recommended strategies are shown for the bus system. At least, within the scope of the discussion, improvement in the existing public monopoly model (i.e., the bold arrow in the figure) seems the best for the bus system in that it represents the least change from the status quo, allows many appropriate improvements, and involves few risks. On the other hand, the system has still great potential to move to other models especially in subsequent stages. At the same time, some other strategies such as movements to private monopoly, contracting out, regulated competition, and deregulation may still deserve further consideration even in the initial stage. In comparison with these strategies, movement to the threatened competition model is less attractive and could be eliminated. It also appears beneficial for the government to consider foreign participation in the provision and maintenance of buses, particularly if arrangements are structured to facilitate technology transfer to strengthen the local private sector capacity.

For the jitney system, as Figure 8.2 shows, movement to the regulated competition model seems the easiest and most effective, leaving the option of contracting out some routes, if necessary, and the option of permitting some jitney divers to operate as taxicabs when not providing scheduled jitney services. Other strategies still left to be given further consideration are movements to public monopoly and contracting out, and improvement within the current deregulation model. Movements to private monopoly and threatened

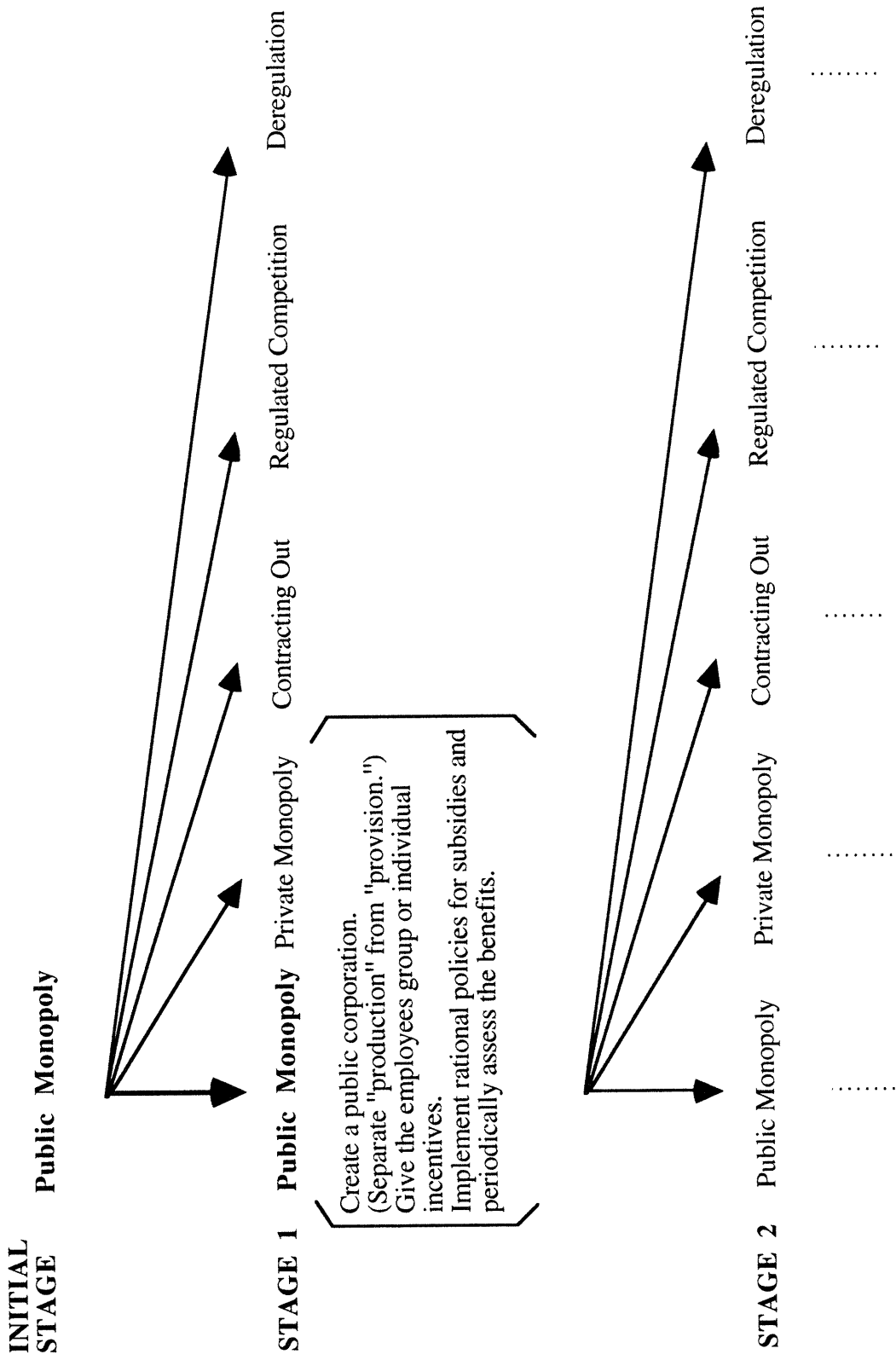


Figure 8.1 Recommended Strategies for the Bus System

**INITIAL
STAGE**

Deregulation



STAGE 1 Public Monopoly Contracting Out **Regulated Competition** Deregulation

Set up standards to regulate for social objectives.
 Assign the routes to the operators satisfying the regulations by issuing licenses.
 Relate fares to the cost and revise them promptly taking into account changing conditions.
 Continue to allow free entry for taxicab operation.

STAGE 2 Public Monopoly Contracting Out Threatened Competition Regulated Competition Deregulation



Figure 8.2 Recommended Strategies for the Jitney System

competition are relatively unrealistic and difficult to take, and therefore they may not need to be further considered.

Alternative strategies for public transport improvement were thus evaluated; however, since it may not be clear about the internal circumstances or long-term policies of the Beirut government which may be crucial in prioritizing the strategies, the selection of the most appropriate strategy should be left to the government's discretion.

9 Summary and Conclusions

9.1 Summary

In rapidly growing urban environments in developing countries, urban transport systems are one of the key factors to make any city more efficient. Although pressure on urban transportation systems in the cities of the developing world is still likely to increase substantially in the future, buses, which are the major mode of urban public transport, are often unable to satisfy demand fully, and paratransit, which has appeared to supplement inadequate bus services, is a source of traffic congestion. During the past decade, many countries in the world have turned to private sector involvement in urban public transport to improve efficiency, believing that the private sector is inherently more efficient than the public sector. In addition, at the present time, foreign participation has become vital in the provision of urban infrastructure in most developing countries. Based on this background, the objective for the first part of the thesis was to propose a general assessment framework of alternative strategies for public transport improvement in developing countries, in terms of public/private sector participation and foreign participation.

Five main objectives for urban public transport, i.e., mobility and social equity, congestion reduction, cost efficiency, service quality, and long-term sustainability, were discussed. Such a variety of objectives are different one from another in terms of the viewpoints, and hence it is the government responsibility to decide which ones should be given priority at any point in time. Alternative roles for the public and private sectors were described in terms of dimensions: regulation, financing, planning, ownership, operation, and maintenance and equipment. These dimensions are primarily for ease of

defining models and proposing alternative strategies in terms of public/private sector participation.

Six models for public/private sector participation in urban public transport were described: public monopoly, private monopoly, contracting out, threatened competition, regulated competition, and deregulation. Advantages and disadvantages of each model were analyzed and examples were given. The discussion of advantages and disadvantages showed several attributes of each model, some of which may become more important in light of specific constraints surrounding urban public transport systems. Despite these different attributes of the six models, the example pertaining to each model implies that each model may have potential for successful public transport improvement under certain circumstances.

Then the general assessment framework of alternative strategies for public transport improvement was presented; i.e., the structure of the framework for assessment was described, alternative improvement strategies for each model were proposed, and the procedures of application of the framework to a case study were described. There are two broad alternatives for each model: a strategy for improving the system within the present model, and strategies for possible movement to other models. The discussion of alternative strategies from each base model implies that there is much room for improvement within each model. It was also found that some movements seem more powerful and attractive while some seem more unrealistic and difficult to realize, and this tendency may become more explicit as the constraints surrounding a city at a certain point of time are made clearer and more concrete objectives in the context of a specific public transport system are defined.

As a complement to the assessment framework, possibilities of foreign participation in urban public transport improvement in developing countries were discussed. First, scope, types, and problems of foreign participation were described. Then, in terms of urban public transport, possibilities of foreign participation in each dimension of public/private sector participation, and the restrictions of these possibilities under each model were discussed. These possibilities are alternative options as to how to make use of foreign participation for public transport improvement. A proposed foreign participation project is supposed to support the improvement options of public/private sector participation model to which the public transport system is trying to move. However, the degree of such interrelation may vary according to the characteristics or contents of the project, and therefore, in the application to a case study, there seem to be several conceivable projects even under the same strategy.

The second part of the thesis focused on a case study of Beirut. The existing conditions in Beirut were first described, dividing the context of the problems into two aspects: the public transport system itself, and the demand-related factors revolving around it. The major problems in terms of the demand-related factors are: such rapid urban growth caused by migration from rural areas that infrastructure development cannot keep up with it; and heavy traffic congestion largely caused by very high automobile ownership, road network deficiencies, absence of proper traffic and parking regulations, and existence of many jitneys. The public transport in Beirut consists of buses and jitneys. The major problems of buses are: very small fleet size, low levels of service, neglect of work rules, inadequacy of employment, lack of facilities, and enormous subsidies from the government. The major problems of jitneys are: low passenger occupancy rates, contribution to the traffic congestion, uncoordinated operations, too little profit for further investment.

Based on the existing conditions in Beirut, the goals and criteria for evaluation were formed largely in terms of the objectives for urban public transport. By applying the assessment framework respectively to the existing bus and jitney systems, six alternative strategies were presented from the base models, i.e., the public monopoly model for the bus system and the deregulation model for the jitney system. Evaluation of these strategies were done by giving its inherent strengths and weaknesses and also those in light of the government's goals and criteria. In addition, four main options of foreign participation were described with their strengths and weaknesses, though some options have restrictions under certain strategies. It was also found that it is likely to be worth considering for the bus system to select one of the foreign participation options while it is not so likely for the jitney system. Although it is true that all the strategies have their own strengths and weaknesses, some strategies seem more powerful and appropriate while some seem rather weak and unrealistic. The discussion in this thesis may not be full enough to come up with one perfect solution and discard all the other strategies either for the bus or jitney system; however, it may at least help to identify some attractive directions for change. Final selection of these alternative strategies must be left to the Beirut government, in light of its own priorities and constraints.

9.2 Future Research

There are several areas in which this research may warrant further examination. First, the assessment framework for alternative strategies may be applied not only to developing countries, but also to developed countries. While the approach is still relevant to developed countries, further study may include reconsideration and modification of: objectives for urban public transport, models for public/private sector participation, their advantages and disadvantages, and alternative improvement strategies.

Secondly, whether applied in developing or developed countries, the alternative strategies can be prioritized, given specific constraints and objectives. Each factor to be included in the constraints may be quantified in one way or another. Then, it may be possible to create a "model" to prioritize the alternative strategies with such quantified factors (including the current public/private participation model) as input. If such a "model" can be made, it may be very helpful to select a strategy or just to see if it is time to move to another model.

Thirdly, in the Beirut case study, all the alternative strategies for public transport improvement were proposed by focusing on the organizational change or improvement and foreign participation. However, there are still several improvement options which could not thoroughly be covered in this thesis. Further study may include linking the proposed alternative strategies to the other improvement options such as: legislation and strict enforcement of the traffic and parking rules; proper city planning and improvement of the street infrastructure, including construction of bus lanes and other facilities; and discouragement of private automobile use by imposing more tax on vehicles and fuel. In order to execute these government tasks, it may be necessary for several relevant departments of the Beirut government to coordinate with one another; in other words, this type of research may be more likely to be possible with a broader viewpoint than that within public transport per se.

Finally, the question of sustainability over long periods of time needs further research. As the average standard of living rises in Beirut with the hope for return of stability, the relative viability of various modes and vehicle size may change. For example, as expectations of service quality rises, the bus services may need to become much more convenient, frequent, and less crowded in order to attract riders. On the other hand, as

wages rise, the jitney services may become a less viable mode as prices need to rise excessively to pay higher wages. A better understanding of the role of these general conditions may make clear how various strategies will change over time, and help to make the results of this research more relevant not only in Beirut but generally.

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