Office of Utilities Regulation

Economic Regulation of Bus and Taxi Services in the KMTR

A Consultative Document

OFFICE OF UTILITIES REGULATION

October 2001

Abstract

The Office of Utilities Regulation (OUR) Act provides for the Office to regulate the provision of public passenger transport services in Jamaica by road, rail and ferry. While it has not yet been formally assigned specific responsibilities, the Office anticipates that this will be done during the current fiscal year. This consultative document forms part of an extensive consultation process that will assist the Office in the discharge of its functions. The focus is on the economic regulation of bus and taxi services in the Kingston Metropolitan Transport Region (KMTR). Another document relating to public transport in rural Jamaica will be issued at an appropriate time. The objective is to address the issues in the KMTR firstly then move into the rural areas. A number of issues are covered including (a) economic regulatory tools such as price cap and rate of return; (b) fare structures; (c) subsidies; and (d) transfers.

Comments From Interested Parties

Persons who wish to express opinions on this Consultative Document are invited to submit their comments in writing to the OUR. Comments are invited on all aspects of the issues raised; especially the specific questions identified in Chapters 2 through 5. Respondents may opt not to provide answers to all the questions listed - failure to do so will in no way reduce the consideration given to the responses.

Responses to this Consultative Document should be sent by post, fax or e-mail to: -

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36 Trafalgar Road,
Kingston 10
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Responses are requested by December 31, 2001. Any confidential information should be submitted separately and clearly identified as such. In the interests of promoting transparent debate, respondents are requested to limit as far as possible the use of confidentiality markings. Respondents are encouraged to supply their responses in electronic form, so that they can be posted on the OUR's Website (or a link included where the respondent wishes to post its response on its own website).

In order to facilitate the broadest possible participation in the consultation process the OUR may arrange appropriate forums where the issues can be discussed.

Comments on responses

As in all the OUR's consultation periods, there will be a specific period for respondents to view other (non-confidential) responses and to make comments on them. The comments may take the form of either correcting a factual error or putting forward counter-arguments. Comments on responses are requested by January 31, 2002.

Arrangements for viewing responses

Those who wish to view the responses that the OUR may receive should make an appointment by contacting Lesia Gregory at the OUR by one of the following means:

Telephone: (876) 968 6053 (or 6057-8)
Fax: (876) 929 3635
E-mail: lgregory@our.org.jm

The appointment will be confirmed by a member of the OUR's staff. At the pre-arranged time the individual should visit the OUR's office at:

3rd Floor,
PCJ Resource Centre,
36 Trafalgar Road,
Kingston 10.

The individual may request photocopies of the responses which will be provided at a price which reflects the cost to the OUR of using its photocopying facilities.

Timetable

The timetable for the consultation is summarized in the table below. This includes an indicative timing for the Determination Notice.

Summary of timetable on consultation

Event	*Date*
First consultation	October 31, 2001
Responses to this document	December 31, 2001
Comments on responses	January 31, 2002
Second consultation	March 15, 2002
Responses to second document	May 15, 2002
Comments on responses	May 31, 2002
Determination Notice	Tentative[1]

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[1]The Determination Notice cannot be issued until the legal and/or policy instruments are properly established.

CHAPTER 1: Introduction

1.0 Section 4 of the Office of Utilities Regulation (Amendment) Act 2000 mandates the Office of Utilities Regulation (OUR) to regulate the provision of public passenger transportation by road, rail or ferry. (It is worth noting that the OUR's responsibility is expected to be limited to economic regulation but to date there is no formal determination to that effect). Consistent with its policy of transparency the Office, with this document, is initiating a consultation process by setting out the issues and its thinking on the economic regulation of the sector, specifically buses and taxis in the KMTR. At the time of writing, this responsibility had not been formally assigned but the Office anticipates that this will be done before the end of the financial year 2001/2002.

1.1 Public transportation plays an important role in the development of any economy. It provides people with the opportunity to travel to work, school or other places. In addition, it facilitates the movement of goods. In some areas, especially rural, the economic livelihood of citizens would be severely restricted without access to some form of public transportation. Therefore, the provision of an efficient and effective public transportation system becomes a major issue for public policy.

Mission and Objective of the OUR in the Sector

1.2 The mission of the OUR is "to contribute to national development by creating an environment for the efficient delivery of utility services to the customers whilst ensuring that service providers have the opportunity to make a reasonable return on investment.[2]"

1.3 The overall objective of the OUR in the sector is to promote and ensure an economically efficient and sustainable public passenger transport system in Jamaica, thus providing the means for citizens to move from place to place as they set about their economic, recreational or educational activities.

Structure of Document

1.4 This consultative document addresses a number of pertinent issues and sets out the Office's thinking on the economic regulation of bus and taxi service provisions in the Kingston Metropolitan Transport Region (KMTR). Subsequent chapters are organized as follow: Chapter two presents an overview of the present public passenger transport system and discusses possible ways forward; Chapter three examines three economic regulatory models that may be used to regulate the sector; Chapter four explores four different fare structures that could be adopted; Chapter five looks at the issue of subsidies for bus operations and speaks to the issues of an

[2] See the OUR's Citizen's Charter.

electronic fare system and transfers. The document concludes with a list of consultation questions.

CHAPTER 2: Present and Proposed Structure of Sector

Introduction

2.0 The public passenger transportation sector in Jamaica is comprised of road, rail, air and ferry. Rail transport system has been inoperative for a number of years. However, the Government of Jamaica (GOJ) is currently negotiating a concession to restart this service. The only ferry service that exists operates between downtown Kingston and Port Royal and is controlled by the Ports Authority of Jamaica. Air transportation is mostly used for the movement of people between the major urban areas in the country viz. Kingston, Ocho Rios, Port Antonio, Montego Bay and Negril. However, these modes are small compared to road. Most of Jamaica's transportation needs are met by road in the form of buses and taxis. The focus of this document is on the provision of public passenger services by buses and taxis in KMTR.

Bus Transportation in KMTR

2.1 The Jamaica Omnibus Service (JOS) controlled the provision of public passenger transport services in the Corporate Area from the late 1960's to the early 1980's. This was replaced as matter of policy by a system of independent operators (often referred to as the 'one man one bus system'). This system was not sustainable mainly as a result of poor service quality, ineffective management practices by owners and indiscipline. Consequently, in mid-1990's the GOJ attempted to reform the system by issuing franchise licences to companies to operate in the KMTR. Five franchise licences were issued to three organizations. However, before the end of the decade, it became clear that franchise holders were not delivering acceptable services as commuters' dissatisfaction escalated over the period. As a result the GOJ assumed control of the sector in 1999.

2.2 In 1999 the state owned Jamaica Urban Transit Company (JUTC) commenced operation in the Eastern franchise and a year later took control of two more franchises – Spanish Town and Papine. By March 2001, the two remaining franchises - Constant Spring and Portmore were acquired.

2.3 With these final acquisitions, the JUTC now has an exclusive licence for the provision of bus transport services in the KMTR. The company leases buses and depots from another state owned company, Metropolitan Management Transport Holdings Limited (MMTH).

Taxi Service in KMTR

2.4 In recent years taxi services in the KMTR region have experienced significant growth. This can be attributed mainly to the increased demand

for seats, and commuters' preferences such as time. The growth in demand has seen an influx of individual operators, both legal and illegal, in the system.

2.5 Two types of taxi services are provided in the KMTR – Hackney carriage and route services. Hackney carriage service is where operators are allowed to offer service to commuters without restrictions to a specific route or geographic area. Route service is where operators are permitted to provide service on clearly defined routes**.**

Problems in the Taxi industry

2.6 Taxi services in the KMTR have become a real cause for concern in recent times. Several problems are identified:

- **Illegal operators** – Many of the present operators are illegal and this poses significant risk to commuters and the public at large. If a passenger is injured while travelling, the vehicle's insurance will not cover that person. However, a judgement can be made against the owner and/or operator;

- **Service** – Service is generally below standard and drivers are sometimes unpleasant;

- **Vehicles** – Some vehicles are below the road-worthiness standards set by the government;

- **Reckless driving** – Many operators drive recklessly on the roads which put passengers at higher risks of losing their lives or suffering injuries;

- **Pricing** – No proper monitoring of the pricing structure that is in place.

Policy Options for Taxi Service

2.7 The following are a list of options the GOJ might want to consider in its regulation of taxi service in the KMTR:

- The re-start of the metering programme discussions and implementation of the system;

- The enforcement of quality of service standards;

- Enforcement of policy on route taxis.

2.8 In addition the GOJ, through the Transport Authority (TA), could promote more competition in the taxi market by issuing unlimited licenses to present and prospective operators. In doing so, the GOJ would be

allowing the market to determine how many seats are needed and effectively force out operators who cannot compete on price and quality. However, due diligence must be exercised in implementing this approach. The problem of controlling operators who are licensed to provide a particular service from offering another might be difficult to monitor. So, holders of hackney carriage licences may violate the provisions of their agreement and offer route services at times. The same may be true for route operators.

2.9 The price of licences should reflect the cost of using the infrastructure provided by the government and any externalities that may result from the provision of the service namely traffic congestion and air pollution.[3] (This pricing strategy is not presently applied to other road users so it might be difficult to impose it on taxi operators. However, this might be an option the GOJ would want to explore in the future). Since this approach will naturally increase the cost of providing the service, it is anticipated that current and potential operators will endeavour to evade the system. So, to ensure the success of this option, the GOJ may need to increase the penalty of operating illegally.

Q2.1: What other measures can the GOJ implement to improve taxi service provision?

Q2.2: Do you think the GOJ should liberate the taxi market by offering unlimited licenses? Explain.

[3] Visit www.vtpi.org/opprice.htm for more detail.

CHAPTER 3: Economic Regulatory Tools

Introduction

3.0 The objective of regulation is to obtain results which parallel those that would be achieved in a competitive market (assuming optimality in the competitive market). This view is well supported by Bonbright: "Regulation, it is said, is a substitute for competition. Hence its objective should be to compel a regulated enterprise, despite its possession of complete or partial monopoly, to charge rates approximating those which it would charge if free from regulation but subject to market forces of competition. In short, regulation should be not only a substitute for competition, but a closely imitative substitute."[4] In regulating the economic activity of the sector, it is important that the OUR develop and implement effective economic regulatory models that will send the appropriate signals to encourage economic efficiency. Three of these models will be discussed in this chapter - rate of return, price-cap and yardstick.

Rate of Return

3.1 This method of pricing utility services has, for over 100 years, been the main economic regulatory tool used by regulators across the world; however, its popularity has been declining in recent times. Under rate of return regulation, rate levels are set to provide the utility with the opportunity to cover all of its necessary costs, including cost of capital. Although the utility may recover more or less than its full cost in the short run, its total cost is generally equated with total revenue in the long run. In other words, if the company consistently falls below the required rate of return, it has the option of filing a rate application with the regulator. The regulator, on the other hand, has the option of accepting or rejecting an application. If the application is accepted, the regulator would generally endeavour to differentiate between prudent and imprudent costs, during the review process. This is critical since without such examination the firm would have little or no incentives to reduce costs. The new rates would normally be set to provide the company with the opportunity to earn its required rate of return. See Appendix A for more details on this model.

3.2 Economic theory suggests that the absence of competitive pressures in a market will lead to a lower rate of productivity gains than if competition existed. Firms that are subject to competition will always endeavour to be at the forefront of technology in order to maintain the competitive edge. So, even though regulators are typically successful in detecting excessive costs and imprudent expenditures, it is generally argued that they do not force prices and costs down as rapidly as would competitive forces.

[4] See "Principles of Public Utility Rates" by Bonbright (1966), p.93. Published by Columbia University Press, New York.

Price-Cap Regulation

3.3 Price cap regulation is designed to provide utilities with the incentives to lower costs by increasing efficiency.

3.4 The price cap is generally equal to the rate of inflation minus a productivity factor "X" (CPI-X). The cap is usually fixed for a specific period, five years for example. The company is permitted to sell its products and services at average prices up to but not exceeding the cap. The idea is to have prices change over time in a manner that simulates the pattern in competitive markets, where the market-clearing price level will reflect the net effect of input cost inflation, which tends to push costs and prices upward, and technological improvements and productivity increases within the industry, which tend to push costs and prices downward. See Appendix B for more details on this model.

3.5 Effectively, the aim is to reduce the real costs of providing the service to consumers by forcing the company to become more efficient. So, instead of passing on all of the increased costs to customers, the company is expected to absorb a portion through productivity gains. Also, since increased efficiency will mean more profits it provides a powerful incentive for the firm to continue to reduce costs.

3.6 One of the arguments against price cap regulation is setting the correct productivity or "X" factor. Even though this factor is generally set on a forward-looking basis, regulators cannot accurately predict what will happen in the future. This can pose serious problems in the future. If the "X" factor is set too low then the company might earn above normal profits while if it is set too high it might mean financial disaster for the company.

Yardstick Regulation

3.7 In this form of regulation the regulator uses data from other companies in similar industries to determine the rates the regulated company should charge its customers. The assumption is that the company should be able to perform as well as or even better than companies operating in similar environments. One of the reasons for applying this approach is that, there might be no costing data or even if data is available, it might not be reliable.

3.8 One of the problems with this approach is identifying companies in a similar environment to the one in question. Moreover, the rates set by the regulator might not be a true reflection of the company's costs.

Regulation of Bus Services

3.9 The Office is of the view that the full economic cost of providing bus service should be computed and presented to the relevant authority irrespective of the economic regulatory tool applied. The decision would

then be left to the GOJ to arrive at an acceptable subsidy level if these rates are perceived to be too high.[5] Since JUTC is just an operating company, the return on capital would represent the leasing fees payable to MMTH for the use of its buses and depots.

3.10 Since fuel costs represent a substantial portion of JUTC's operating expenses and given the volatility of oil prices on the world market, the Office is of the view that a fuel adjustment parameter could be included in the model to account for the fluctuations in oil prices. (A similar principle is applied to the Jamaica Public Service Company Limited). The adjustments could be made on a monthly or quarterly basis. An adjustment would be deemed necessary if the change in fuel prices is different from the change in the inflation rate for the period. Only the incremental change should be reflected in the rates.

Regulation Taxi Services

3.11 It is the view of the Office that route taxis operating on routes that are not served by the JUTC be regulated under rate of return and yardstick regulations. The rationale for regulating these operators is to provide some form of protection for consumers since operators will have the option of pricing their services at any level they consider reasonable. Taxis that operate on routes served by the JUTC will not be regulated. The idea is that, since bus fares are regulated then taxi operators will have to price their services reasonably enough to compete effectively with the JUTC.

3.12 The OUR is of the view that hackney carriage taxis should also be regulated under a rate of return and yardstick methodologies. Given the nature of the sector, it is believed that these tools will yield the best results at this time.

Q3.1: Which of the models discussed above should the OUR implement for the provision of bus service? Explain.

Q3.2: Do you think that taxi services should be regulated under rate of return and yardstick regulations? Explain.

Q3.3: What other forms of economic regulation should the Office take into consideration? Explain.

[5] See Chapter Five for various issues relating to subsidy

CHAPTER 4: Fare Structures and Time-of-Day Pricing

Introduction

4.0 The regulator must address a number of issues and should also consider a number of approaches in developing and implementing a fare structure best suited for the market. Also, it is important that commuters are familiar with the pricing structures of operators such that they can make meaningful decisions on their travelling choices. This chapter explores three types of fare structures being considered by the OUR at this time. Detailed analyses, including advantages and disadvantages of each, are discussed. The chapter also examines issues relating to time-of-day pricing.

Objectives of Fare Structures

4.1 In ideal situations fare structures are designed to achieve at least the following:

- **Pricing equity** – passengers should only pay for the services they demand. For example, cross subsidization should be minimized or eliminated.
- **Economic cost recovery** – fare structures should be designed so that operators of the service recover the full economic cost of their operations. This means that services will be priced based on true economic costs.
- **Maintenance of equity –** the structure should ensure that each individual, irrespective of economic group, has reasonable access to the system.

Fare Structures[6]

4.2 The fare structures to be analyzed are:

- Flat fares
- Distance based fares
- Zone based fares

Flat Fares

4.3 This is a system where a single fare is charged irrespective of the distance travelled within a clearly defined geographic area, example the KMTR. This is common in some areas across the country where operators collude and charge passengers one price for travel in and around a specific area irrespective of the pick up or drop off point. This structure is also common

[6] See Appendix C for a summary of the different fare structures discussed in the chapter.

in many major cities across the world such as Toronto (Canada), Chicago, New York (USA) as well as Adelaide in Australia.[7]

Advantages of Flat Fares

4.4 The most profound advantage of using this structure is its simplicity. Unlike other fare systems, operators do not need to know passengers destinations to issue tickets. Also, the possibility of passengers travelling beyond the distance paid for is not a factor.

Disadvantages of Flat Fares

4.5 There is no relationship between fares and costs. In general, people travelling longer distances impose greater costs on the system than those traveling shorter distances. This imbalance between fares and costs means that an implicit cross-subsidy occurs - commuters travelling shorter distances are subsidizing those travelling longer distances. This imbalance could lead to distortions in travel patterns. The number of short distance trips could be below the market level, as commuters perceive the price to be relatively high compared to that of longer distances. This implies that long distance trips will increase thus imposing additional costs on the system.

Distance Based Fares

4.6 Distance based fare structure is set based on the distance travelled. A variant of distanced based fare structure was the common practice in the KMTR until recently a zone-based system was introduced by the TA. However, it is still the method used to set fares in some rural areas especially between major towns. The route from Montego Bay to Kingston is a typical example. Commuters travelling to points between these two cities pay less than passengers who complete the journey. It is worth noting that the price/distance relationship is not smoothly incremental.

Advantages of Distance Based Fares

4.7 There is a more direct relationship between the fare charged and the distance a passenger travels when compared to flat and zone based pricing. This means that operators are able to price services based on their costs. Further, distance based fares are perceived as fair by passengers because they only pay for the service they consume. In addition, there is the potential for collecting more revenue assuming the price elasticity of demand is low.

Disadvantages of Distance Based Fares

4.8 The main argument against distance-based fare structure is that passengers have an incentive to understate the distance to be travelled so over-riding is difficult to detect unless the bus crew check tickets at various

[7] See Appendices 1 and 2 of "An enquiry into Pricing of Public Passenger Transport Services: Fare Structure for Public Transport" for a listing of different fare structures practised across the world. www.ipart.nsw.gov.au/

stages of the journey. This approach would impose additional costs on the system.

Zone Based Fares

4.9 Zone based fare structure is a system where commuters pay a particular fare based on the zone travelled in. This can be structured to include flat, or distanced based rates. A city, for example, may be divided into different zones. This is the present structure being applied in the KMTR for bus operations.

Advantages of Zone Based Fares

4.10 Zone fare system is quite simple and easier to administer than distance based fare. Since a ticket is only valid for travel within a particular zone, fare evasion and overriding are minimized between zones. Also, zone pricing can allow free transfer between buses within a specified zone.[8] This encourages increased public usage, as commuters perceive this to be added value for money.

Disadvantages of Zone Based Fares

4.11 Zone fares are set at average cost which, like flat fares, would suggest that passengers travelling shorter distances are subsidizing those travelling longer distances within a zone. Thus, the system encourages high cost long distance travel and discourages low cost short distance travel within the zone. Further, zonal boundaries might not be clearly defined which could impose unnecessary burden on passengers.

Time-of-Day Pricing

4.12 Time-of-day pricing exists where the price of travelling varies with the time of day. There are two basic forms: peak and off-peak. The rationale for assuming differences in sensitivity to fare changes among peak vs. off-peak passengers is the observation of significantly different elasticities for both periods. Studies in the United States indicate that for a given area, off-peak period elasticities for bus riders are typically 1.5 to 2 times as high as peak elasticities. Also, it has been shown that the difference between peak and off-peak fares needs to be at least twenty-five percent (25%) in order to have any positive effect on commuters' decisions.[9]

4.13 Typically, peak fares are set higher than off-peak fares as it is argued that it is more costly to operators to transport passengers during this period. Operators have to increase their fleet of buses and number of workers to meet the increase demand for the service in this period; in addition, travelling times are usually longer due to traffic congestion. This means increased fuel costs and other expenses. Furthermore, since demand in

[8] See chapter five for a detailed discussion on transfer.
[9] See "Common issues in Fare Structure Design" by S. LaBelle and D. Fleishman. http://www.fta.dot.gov/library/technology/symops/LABELLE.htm

this time period is more inelastic - a change in price will lead to a smaller proportionate change in demand, pricing services higher during this period is practical since demand and revenue are not adversely affected.

4.14 Off-peak fares are generally set lower than peak as it is assumed that it is less costly to operators during this period since they have greater flexibility in controlling their costs. Additionally, since the demand for service is more elastic during this period, it would not be economically viable to charge higher prices. Also, it might be government's policy to encourage people to travel more during off-peak periods so as to reduce congestion on the roads during peak periods or to control the increased demand for fuel.

Advantages of Time-of-Day Pricing

4.15 This can be an effective tool in controlling commuters travel patterns thus reducing congestion, fuel and other costs to the economy. Further, if the system is properly organized, it could mean increased revenue for operators.

Disadvantages of Time-of-Day Pricing

4.16 The major disadvantage of time-of-day pricing is that it can be complicated for both commuters and operators. There might be conflicts between passengers and operators regarding the changeover between peak and off-peak periods.

Regulation of Bus Services

4.17 The Office is of the view that the present zone based fare structure is the appropriate system for the KMTR at this time. However, it is proposing that time-of-day pricing be introduced into this structure, that is, the present system could be adjusted to accommodate peak and off-peak pricing. The OUR also believes that this approach would be more effective if it is applied in an electronic smart card fare collection environment[10].

Regulation of Taxi Services

4.18 The Office is in support of the present distance based fare structure for hackney services**.** (See paragraphs 3.11 and 3.12 for discussions on which operators the Office is proposing to regulate). However, it is of the view that the system should be more formalized. Presently taxi drivers "guess" or estimate the cost of travelling from one point to the next even though the pricing mechanism is clearly displayed on cabs. The Office believes that the implementation of the metering system and the education of drivers and the public at large could minimize this problem and promote the efficiency of the pricing scheme.

[10] See chapter five for more details on electronic smart card fare collection system.

Q4.1: **Do you think the fare structure proposed by the Office in paragraph 4.17 will yield the greatest benefits at the least cost? Explain.**

Q4.2: **What other fare structures should the OUR consider? Discuss the advantages and disadvantages of each.**

Q4.3: **How do you think the implementation of meters for taxis will benefit drivers, passengers and the industry as a whole? Explain.**

CHAPTER 5: Transportation Subsidy and Other Issues

Introduction

5.0 The provision of subsidy can be of vital importance to the travelling public and the economy as a whole. Subsidies reduce the costs of travel thus making the service more accessible. Also, it can be used as a catalyst in reducing the increase use of private cars thus controlling the imposition of unnecessary costs such as traffic congestion and air pollution on the society. This chapter examines three subsidy schemes and suggests ways in they can be implemented. Also, the chapter looks at the issue of government's commitment to the sector and its importance. In addition, it covers other issues such as electronic fare collection and transfers.

Transportation Subsidy

5.1 Microeconomic theory suggests that for optimality and welfare maximization to exist, prices should be set equal to marginal cost. In a competitive market, firms would choose the level of capital necessary to meet the market determined production level. Also, since the firm is a price-taker in this market, it will ensure that the cost of producing an additional unit of output (including return on capital) is equal to the going market price. If these conditions do not hold, then the company will not be able to compete effectively in the market and will eventually exit.

5.2 The situation is quite different in an imperfect market (monopoly in this case). There are fewer restrictions on price. A monopoly can sell at whatever price it chooses. Also, because of the lack of competitive pressures, monopolies are generally more inefficient than companies operating in competitive markets.

5.3 The provision of bus service in the KMTR is contracted to one company, JUTC. In setting the economic rates for the company, the Office will take into consideration the issues discussed in paragraphs 5.1 and 5.2 above.

5.4 The rationale for pricing at economic costs is that it promotes the efficient use of scare transportation resources and also provides an opportunity for the company to remain viable. However, there are some questions to consider: (1) Will all commuters be able to pay this price? (2) If some passengers are unable to pay, should they be subsidized by the GOJ or should the GOJ offer a general subsidy that will benefit everyone? (3) Should people who can afford to pay the economic costs be asked to do so? These are some of the issues that will be discussed in the paragraphs below.

5.5 While the provision of subsidy is a matter of government policy, the Office will use this medium to promote discussion on the topic. Two options are

considered at this time: (1) a subsidy based on affordability and (2) a general subsidy[11].

5.6 ***Subsidy based on affordability****:* Only individuals who fall within a certain income category should be considered for subsidy. It should be provided to ensure that these citizens have access to basic services such as education, employment and health which might not be readily available without subsidies. People who can afford to pay the full economic costs should not be subsidized. This will send the correct pricing signals and thus reduce the level of distortions in the system.

5.7 Earnings tests would have to be conducted to determine people's level of affordability. However, since an earnings test might be difficult to perform and administer, this subsidy option might not be practical unless there is some general consensus that only a specific group of commuters such as students, senior citizens and the disabled are worthy of this benefit.

5.8 ***General subsidy:*** A general subsidy is a provision in which everyone using the system receives a reduction in the price paid for the service. A general subsidy scheme is economically justifiable and sustainable if and only if the positive externalities it generates outweigh the negatives. For example, if subsidies increase the use of public transport relative to private cars then the subsidy is justifiable. Private car use generates more negative externalities such as traffic congestion, accidents and air and noise pollutions than public transport. These are costs to the society which should be minimized at all times.

5.9 ***Combination of affordability and general subsidy:*** It is quite possible for a general subsidy to be provided and in addition, further specific subsidies for special groups such as students, senior citizens and the disabled. This is the current policy of the GOJ where the capital costs (buses and depots) and a portion of the operational costs of the JUTC are absorbed by the state.

Subsidy Provisions

5.10 Under an affordability scheme the GOJ can issue subsidy vouchers to the relevant commuters. These vouchers along with valid identification cards could be presented when passengers enter the bus. At the end of a period, a month for example, the company can present these vouchers to the government for compensation. One of the problems with this approach is that it may prove costly to administer given the fact that it might be difficult to identify the indigent.

[11] Both of these options are common in the state of New South Wales in Australia. Visit http://www.ipart.nsw.gov.au/papers/cie_pt.pdf for more options used in other states.

5.11 Under a general subsidy scheme the GOJ has several options of fulfilling this requirement. (1) It can continue its present plan cited above where the state covers the capital costs and a portion of the operational costs of the company. (2) The GOJ can choose only to subsidize all or a portion of the capital costs of the company. This means that the company would have to recover all its other costs from fares collected. (3) The GOJ can provide subsidy based on the cost per kilometer. The State can make a commitment to cover a portion of the cost for every kilometer travelled.

Subsidy Commitment

5.12 Public transportation in major urban areas across the world are generally subsidized by the state. Subsidies are provided because of the perceived benefits – economical, social, environmental and/or political. In some cities in the United States fares contribute between 20-60% of operating costs[12]. This suggests that the government is subsidizing 40-80% of these costs.

5.13 The GOJ presently provides subsidy to the JUTC however, there has to be a clear policy outlining its commitment. The lack of commitment could have significant impact on the commuting public. Passengers could be exposed rate shocks which might cripple their livelihood. Also, since subsidy will affect ridership, reasonable projections of ridership and therefore revenues, costs and appropriate fares might not be possible if subsidies are unknown.

Electronic Fare System

5.14 JUTC presently has an electronic fare collection system in use. The system can accommodate both cash and cashless transactions (using smart cards). However, it is worth noting that only the cash portion of this system is being used at this time. An electronic smart card collection system is one where operators minimize the use of cash in their operations. So, instead of passengers paying bus fares by cash when they enter a bus, a smart card is tendered.

5.15 The government and the JUTC are in the process of implementing an electronic smart card fare collection system for the bus transport in the KMTR. A major potential advantage of this system is that it could automatically provide useful data on ridership – commuter demand by class (students, for example), time of day usage, revenues earned and thus the level of theft etc. In addition, the company will be able to reduce delays at bus stops which occur as a result of commuters having to pay cash at the entrance of buses.

[12] See "Common issues in Fare Structure Design" by S. LaBelle and D. Fleishman. http://www.fta.dot.gov/library/technology/symops/LABELLE.htm

Transfer

5.16 The ideal transportation network is one where every passenger is offered a one-seat ride; that is, every commuter can enter a bus close to his current location (home, for instance) and exit within walking distance from his destination. Unfortunately, this does not happen in the real world in most cases. Transportation networks are designed such that commuters have to encounter some form of transfers in order to reach their final destinations. So, a commuter travelling from point A to point B may have to board another bus at point C in order to reach B. Factors that contribute to this situation include passenger demand and commercial viability.

5.17 The objective of offering transfers is to increase rider-ship and the revenue intake of the company. If a passenger has to pay two full fares for a journey that can be covered with the payment of a single fare, then the commuter may choose other means of transport or reduce the number of trips taken. This implies that the pricing policies of transfers have to be appealing to consumers. The basic pricing options for transfers are:

- Free transfers
- Low-priced transfers

5.18 Studies by the American Public Transit Association indicate that 63% of bus operators in the United States offer free transfers whilst 28% charge low transfer fees. The Chicago Transit Authority (CTA) priced transfers at 20% of the base fare.[13] The rationale for imposing a transfer fee is to reduce the extent of abuse and also to recover from passengers some of the cost of providing the service. However, commuters might argue against this imposition citing deficiencies in the operator's network design.

5.19 Other issues, apart from pricing, that should be considered include: (1) the number of transfers to be allowed per full fare – that is whether to permit one, two or an unlimited number in a specified time period; (2) the amount of time permitted for a transfer – that is whether one, two or more hours should be allowed after the initial boarding; (3) should "stopovers" be allowed - that is, should passengers be allowed to re-enter and continue their journeys on the same route; and (4) the average number of transfers passengers are allowed to make before they reach their final destinations. Studies indicate that 60% of passengers travelling on the Dallas Area Rapid Transit have to transfer at least once, meanwhile 25% of the commuters have to transfer two or more times before they reach their destinations.[14]

[13] See "Common issues in Fare Structure Design" by S. LaBelle and D. Fleishman. http://www.fta.dot.gov/library/technology/symops/LABELLE.htm

[14] See "Common issues in Fare Structure Design" by S. LaBelle and D. Fleishman. http://www.fta.dot.gov/library/technology/symops/LABELLE.htm

Regulation of Bus Services

5.20 The Office is of the view that the government should continue to subsidize the industry. There are clear benefits to gain from the provision of subsidies – economical, social and environmental.

5.21 The Office supports the implementation of the smart card electronic system. This system should take into consideration the issues addressed in paragraph 4.17. It is the opinion of the Office that a smart card electronic system would significantly increase the efficiency level of revenue collection and thus reduce the level of leakage in the system.

5.22 The Office endorses the idea of transfers in the KMTR and fully supports its introduction. It is also the view of the Office that transfers will promote more use of bus transportation in the KMTR. Similar studies such as the ones mentioned in this section could be done to determine commuters' travel patterns and the effectiveness of pricing transfers.

Regulation of Taxi Services

5.23 It is the view of the Office that no subsidy should be provided to taxi operators. If operators are unable to compete in the market then they should make their exit.

Q5.1: Do you think subsidies should be made available to everyone or just selected groups? Explain.

Q5.2: What other subsidy options could be considered? Explain.

Q5.3: Do you think passengers should be charged for transfers? If yes, what percentage should they pay? Explain.

List of Consultation Questions

Q2.1: **What other measures can the GOJ implement to improve taxi service provision?**

Q2.2 **Do you think the GOJ should liberate the taxi market by offering unlimited licenses? Explain.**

Q3.1: **Which of the models discussed above should the OUR implement for the provision of bus service? Explain.**

Q3.2: **Do you think that taxi services should be regulated under rate of return and yardstick regulations? Explain.**

Q3.3: **What other forms of economic regulation should the Office take into consideration? Explain.**

Q4.1: **Do you think the fare structure proposed by the Office in paragraph 4.17 will yield the greatest benefits at the least cost? Explain.**

Q4.2: **What other fare structures should the OUR consider? Discuss the advantages and disadvantages of each.**

Q4.3: **How do you think the implementation of meters for taxis will benefit drivers, passengers and the industry as a whole? Explain.**

Q5.1: **Do you think subsidies should be made available to everyone or just selected groups? Explain.**

Q5.2: **What other subsidy options could be considered? Explain.**

Q5.3: **Do you think passengers should be charged for transfers? If yes, what percentage should they pay? Explain.**

Appendix A Rate of Return Methodology

The idea behind rate of return regulation is to equate the revenue requirements of the company with the cost of providing the service. The formula is as follow:

$$RR = O + D + T + rB$$

Where RR = revenue requirements
O = operating expenses
D = depreciation charges
T = taxes
r = cost of capital
B = rate base

The revenue requirement is the total revenue the company needs to sustain its operations over a period of time, usually one year. This should be sufficient enough to cover the total cost of providing the service.

Cost of capital is the return shareholders expect to receive on their investment in the company.

The price per unit of output is:

$$\text{Price} = \frac{\text{Revenue Requirements}}{\text{Quantity demanded}}$$

Appendix B Price Cap Methodology

The following is a description of a typical price cap model:

$PCI_t = PCI_{t-1} + (IR - X - Q ? Z)$

where:

PCI_t = price cap index for the current year;

PCI_{t-1} = price cap index for the previous year;

IR = inflation rate for the previous twelve months;

X = productivity factor;

Q = service quality factor;

Z = an exogenous factor

The productivity factor is designed to capture the effects of changes in productivity and input prices for the industry the company operates in versus the respective changes in those elements for the economy as whole or similar industries in other countries.

The exogenous factor, Z, equals potential adjustments to reflect or offset certain externalities (positive and negative) that may affect the company.

The service quality factor, Q, equals potential adjustments to reflect the company's service quality performance in accordance with standards set by the regulator.

Appendix C Summary of Fare Structures

Table 1: Strengths and Weaknesses of the Different Fare Structures

Structure	Strengths	Weaknesses
Flat	- Simple - Reduces fraud	- Little relationship between fares and cost of service provided - Clear cross-subsidization
Distance based	- Direct relationship between fares and distance travelled - Equitable pricing	- High capital cost - Overriding is possible
Zone based	- Transfer is possible - Overriding and fare evasion are minimized	-Cross-subsidization is possible -Problem identifying zones