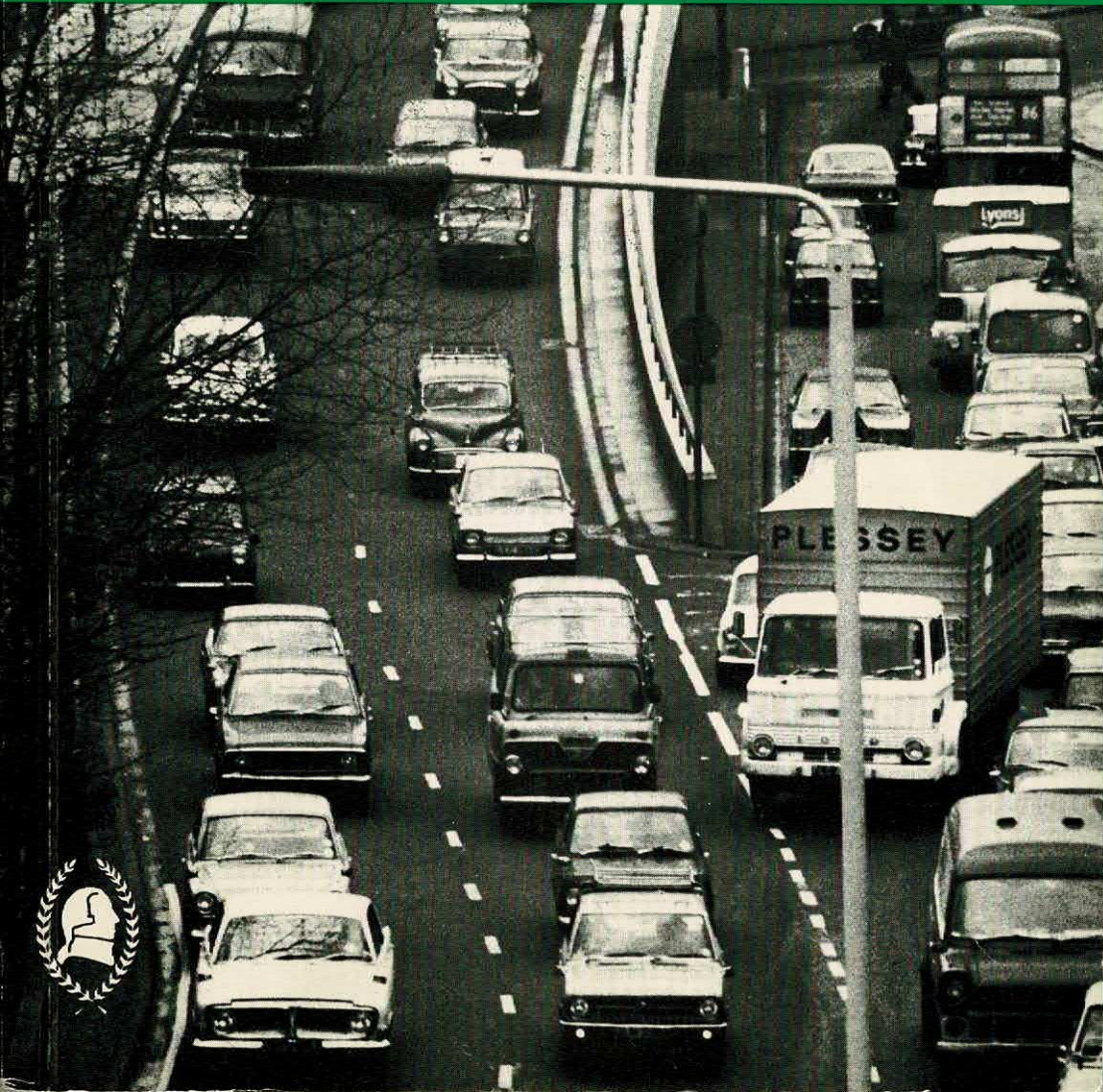


WHEELS WITHIN CITIES

PRIVATE ALTERNATIVES
TO PUBLIC TRANSPORT

By Gabriel Roth and Anthony Shephard



**WHEELS
WITHIN CITIES**

**New Alternatives for
Passenger Transport**

By

Gabriel Roth

and

Anthony Shephard

**The Adam Smith Institute
London**

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'The price of monopoly is upon every occasion the highest which can be got. The natural price, or the price of free competition, on the contrary, is the lowest which can be taken . . . The one is upon every occasion the highest which can be squeezed out of the buyers, or which, it is supposed they will consent to give: the other is the lowest which sellers can commonly afford to take, and at the same time continue their business.'

Adam Smith, *The Wealth of Nations*, Book 1, Chapter 7.

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Foreword

By DR. EAMONN BUTLER

This book challenges the very core of the accepted wisdom as to how urban transport can best be provided. It does so by outlining in fascinating and powerful examples, how new *free-enter* alternatives to traditional public transport systems have sprung up and proved their worth throughout the world.

Publicly-owned city transport systems are plagued everywhere with poor reputations and financial losses. There is a now-familiar vicious circle of rising costs, fare increases, declining services, lower passenger support, and even higher subsidies.

Yet there is ample evidence that private alternatives can easily and effectively provide the services so poorly delivered by the beleaguered mammoths. In cities from Argentina to Zaire, there exist flourishing, privately-owned, profitable modes of transport that are able to provide residents with fast, frequent, convenient services. They are typically owner-operated fleets of small vehicles with strange names such as *sherut*, *dolmus*, *matras*, *por puestos* and *publicos*. But competition ensures the public a complete, flexible service without the waiting time associated with the larger but less frequent buses of conventional systems. The authors are particularly qualified to describe these developments. Gabriel Roth has advised transport authorities throughout the world in his role with the Economic Development Institute of the World Bank; and Anthony Shephard played a key role in the development of informal public transport in Hong Kong and Kuala Lumpur.

It may take a long time before British transport authorities foresake their empires of glittering steel and admit that the same can be done more effectively by small-scale, private operators. But the authors suggest a practical way in which the transition towards the new system can be made least painfully. Only time and experience will tell whether the small-scale private alternatives that have worked so well abroad will achieve similar success here, but the record of existing public transport provision has already convinced the public that some sort of change is long overdue.

Acknowledgements

Prophets are generally not honoured in their own country. The paratransit prophets and practitioners are no exception. In the developed world they are barely taken seriously; in the developing nations where the market practises what they preach, they are ignored or at best tolerated because decision-makers hanker after the big and costly systems that earn prestige but gobble up resources. The authors want to acknowledge first of all the support and encouragement of Jimmy Yu, an unsung poet of small informal urban transportation systems, whose work at the Urban Mass Transportation Administration has set in motion research initiatives all over the world to find better ways of identifying and dealing with the urban mobility needs of the late twentieth century. He and his colleagues have aided and made possible the work of researchers like Ron Kirby to whom we are indebted for the information on Cairo's jitneys. We also acknowledge that host of pioneers whose contributions are cited under our source references.

Our special thanks go to Dan Roos and Multisystems for supporting our research within the framework of his major paratransit study, Professor Clark Oglesby of the University of California, and Ken Orski, founder of the Corporation for Urban Mobility, all of whom reviewed the text, and to the Ford Motor Company for helping to make this research available in the UK. Our appreciation goes to George Wynne, one of the co-authors of the original version of this report. Dr Gough Jacobs and Dr David Maunder of the Transport and Road Research Laboratory kindly helped with photographs. A special expression of gratitude is reserved for the individuals and institutions too numerous to mention here who answered our queries and gave us access to their case studies, research, and photographs. Pam Loos of the Council for International Urban Liaison and Sonia Molina of the Economic Development Institute had an important role in readying the text for publication. They all share in whatever contribution the following pages can make in the search for alternatives to the costly, cumbersome, and unprofitable monopolies that provide public transportation in our cities. For mistakes and omissions the authors alone are responsible.

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1. Free Enterprise Urban Transport Abroad

This report challenges the conventional wisdom that public transport in cities cannot be provided at a profit; that it has to be supplied by publicly-owned or franchised monopolies; and that services have to be slow and costly. We will describe a number of public transport systems abroad (largely, but not exclusively, in developing countries) that operate at a profit, and will indicate what could be done to enable the United Kingdom to develop networks of fast, reliable urban public transport services that are responsive to users' needs, and provided at prices that most can afford.

Following this overview, Chapter 2 gives examples of different types of urban public transport that run at a profit while providing good service; Chapter 3 attempts to distil from the evidence the characteristics of successful urban public transport systems; Chapter 4 reviews the private provision of public transport in US cities and considers the possibilities of their expansion; Chapter 5 answers some common objections; and Chapter 6 suggests how the lessons from abroad might be applied in Britain.

Throughout the report, the term *public transport* will be used to mean transport *available* to the public. Whether systems are *publicly owned* or *privately owned*, whether they are trains, buses, minibuses, taxis or rickshaws, they will be covered by the generic heading *public transport*.

Examples of successful public transport systems

Minibuses in Hong Kong and Kuala Lumpur. Minibus services in Hong Kong and Kuala Lumpur were introduced to meet pressing needs that the normal services could not satisfy. They have become extremely popular, with the result that the authorities currently limit their numbers to 4,350 in Hong Kong and 440 in Kuala Lumpur to protect the ordinary franchised services. In consequence, the fortunate owners of licences obtain substantial capital gains from their vehicles.

Route associations in Buenos Aires and Calcutta. In some cities, individual bus owners form an association to operate a bus route. Each member of the association owns and operates his own bus, while the association has the responsibility of operating a particular route. These associations, which have to compete against other public transport buses, have rules to regularize the relationships between members; for example, buses have to keep to timetables so as not to 'steal' customers from following buses. In the case of Buenos Aires, virtually all city buses are operated by route associations which compete against one another. (Buenos Aires is the only known example of a major city in which bus services were 'de-municipalized' and returned to the private sector; the results are generally considered to have been a spectacular success.) In Calcutta, the private operators make enough profit to stay in business, while the public operating company, which charges the same fares and has the best routes, runs at a substantial deficit.

The jeepneys of Manila. The jeepney services, which were first operated by surplus US Army jeeps (hence the name 'jeepneys'), offer an alternative service to that provided by the regular bus companies. Jeepneys are generally owned by individuals, though many are organized into route associations. Fares are at similar levels to those of the normal bus companies, but while the bus companies are in financial difficulty, many of the operators of the 28,000 licensed jeepneys are anxious to get more licences to expand their services.

The dolmus of Istanbul and the minibuses of Cairo. Similar in principle to the jeepneys, the dolmus have been established in Turkey for many years. Cairo's minibuses, on the other hand, developed recently and rapidly in the light of official encouragement.

School buses in Singapore. In Singapore, where school buildings are used for separate morning and afternoon shifts, and where neither shift coincides with business hours, school bus operators are empowered to enter into monthly contracts with office workers to take them from home to work on a regular basis. Casual pickup of workers is not allowed under this scheme, which gives each school bus operator six assured trips each day. There is, additionally, another supplementary service in Singapore that

allows private operators to ply for hire along designated routes, but only in peak periods.

The matatu of Nairobi. These minibuses, similar in some way to those operating in Hong Kong and Kuala Lumpur, complement the services of the conventional bus company, and are particularly important in serving slum areas untouched by the regular service. The government of Kenya, with the help of the World Bank, is planning to establish a financing agency to finance the purchase of minibuses by private operators with a view to relieve urban unemployment and simultaneously to improve public transport.

The publicos of Puerto Rico. Puerto Rico's publicos (shared taxis and minibuses) have been established for many years as a service that offers faster travel than the bus, at a higher fare. They have maintained their financial viability right into the 1980s, while the conventional bus system has been unable to cover its costs without subsidy.

Characteristics of successful public transport systems

The characteristics of successful services may be summarized as follows.

Ownership. Almost without exception, ownership is private. Privately owned firms, especially when subject to competition, tend to have lower costs than public agencies and to make more productive use of their resources, as one might expect.

Size of firm. The successful transport providers tend to be small firms, often owning one or two vehicles, reflecting the fact that there are few economies of scale in the provision of transport. This allows management to have close control over vehicle operation and maintenance and over the disposal of the revenues.

Size of vehicle. Many successful schemes use comparatively small vehicles — minibuses or shared taxis. This is often due to legal restrictions that prohibit the use of standard-sized buses by 'informal' operators. However, despite the fact that small vehicles require more drivers per passenger seat, they have important advantages in terms of their low capital and maintenance costs, higher speed on congested roads, and increased frequency.

Route associations. Many successful operations involve a route association, whereby a number of private operators band together to run a route in common.

Sunday bus services to taxi operators instead of operating a fleet for a few hundred passengers. Between 300 and 400 passengers use the Sunday service at a subsidized fare that is slightly higher than the bus fare, but much less than a taxi fare. On weekday, Phoenix's buses carry about 40,000 passengers.

Experience with informal public transport. With the introduction of the automobile and the motor-bus, the first offer of public transport using these vehicles were by individuals and small groups. It is pointless to speculate whether the *jitneys* of the past and the multiplicity of bus and car services which blossomed briefly in Britain and Europe would still provide better service than the institutionalized monopolies that forcibly replaced them.

Many attempts have been made to persuade planners and operators alike to experiment and loosen their attitudes to public transport. A reluctance to admit that industrial countries can learn from 'backward' territories has been a fundamental obstacle. It has normally been left to the very institutions that provide public transport to suggest changes to their own operations. Not surprisingly, those changes recommended have been peripheral. In Europe, 'feeder' bus services, dial-a-bus, and similar proposals designed not to affect major transit arrangements have rarely proved their worth.

In the United States, although IPT has not been accepted as a major competitor with municipal monopoly services, there has been more willingness to combat undue dependence on the automobile. Shared taxis operate in many US cities. Subscription services, whereby passengers (such as commuters) contract to travel on a regular basis by private bus or minibus, are a popular and growing mode of travel to work, as are van pools, which are similar to subscription services with the difference that the driving is done by one of the passengers. Route associations of individual bus operators are found in New Jersey, and enable small family firms to provide route coverage at a profit.

Effect on the automobile. Public transport monopolies have proved incapable of offering an effective alternative to the private car in speed, convenience, and sometimes even in cost. Most major towns in Britain, Europe, and the United States have found it impossible to cater for private commuter cars and difficult if not impossible to stem the use of urban road space by private cars.

some countries (Britain is one), the use of private cars is encouraged by their acceptance as a tax-deductible perquisite for employees. It is estimated that around sixty per cent of cars parking in Central London fall into this category. IPT in the form of commuter co-operatives or other peak-hour services should make a major impact in this regard. The major reason for the inability of traffic authorities to contain peak-hour congestion is the lack of a comfortable and comprehensive public transport offer that could justify appropriate measures to discourage private-car use. IPT will not replace the private car and individual taxi, but it comes nearer to their door-to-door convenience and comfort than any other mode of transport.

Taxis. When hired individually (and approximately seventy per cent of taxi rides in London are taken by single occupants), taxis are another form of the private car, and any extension in the volume and quality of public transport may be expected to affect taxis equally. Of course, cab-sharing (as in the model of Washington DC and other cities), may help taxi operators to remain competitive and to provide higher taxi availability to the public. Alternatively, many present operators could become 'maxi-taxi' or jitney operators themselves.

A practical implementation programme

IPT is not an instantly effective panacea for the linked problems of inadequate public transport and traffic congestion. Nor is it suggested that the mixture of public transport in Hong Kong or Buenos Aires is necessarily the ideal pattern for London, New York, or Paris. Certainly, however, in all cities where congestion is a problem and public transport is inadequate, there is a case for examining not if, but how, IPT could help the situation. The objective of policy clearly ought to be to encourage market forces to produce better transport services. The following measures would serve this objective in the United Kingdom.

Removal of regulatory obstacles. The powers of government and local authorities to franchise monopoly transport operations should be removed and public transport operation made open to all who can offer service in safe vehicles. Traffic Commissioners' powers should be confined to the quality and safety aspects of licensed services.

Abolition of control over fares. Fare fixing may be appropriate under conditions of monopoly franchises, but not when competition is allowed. Operators could be required to display their fares without being required to have them approved by local officials.

Agreed fares for shared taxis. There has to be a simple understanding between taxi drivers and sharing passengers. A declared rate per mile is probably the most effective method whereby the driver computes the mileage as each passenger enters and charges the rate for the distance. So-called 'mini-cabs' already operate all over Britain on a similar basis except that they do not ply for hire. In any event, it is clear that comparatively minor and simple changes in present metering systems would be sufficient to make cab-sharing possible in Britain, as it is elsewhere. But there are a number of more sophisticated methods in common use abroad, as described in Chapter 4.

2. Financially Viable Systems

The minibuses of Hong Kong

Three quarters of the five million population of Hong Kong occupy less than twenty square miles of land concentrated around the harbour. Two large bus companies, a tramway company and two ferry companies, all of them privately owned and managed, served the mass transit requirements of Hong Kong unchallenged until the early 1960s.

Two popular forms of public transport became more common after 1960 and 1961, when some of the regulations against them were relaxed (although many illegal services continued to operate alongside the franchised ones). The first of these was the *pak-pai che* or *pak-pai*, so called because it has ordinary white registration plates. These were simply illegal taxis and hire-cars operating from convenient telephones or plying for hire on an individual or shared basis. The other was the *dual purpose vehicle* (DPV), introduced to take care of a recognized need for the joint carriage of passengers and market goods from the rural areas into the Kowloon urban area. The DPVs were all in fact used *ab initio* as illegal twelve-seater minibuses in and around Kowloon and the major outlying towns.

By 1967, there were some 2,500 DPVs, and probably about the same number of *pak-pais*. The communist strikes of that year left the bus and tram companies operating at about half strength and DPVs were invited to extend their operations to Hong Kong Island.

The recovery of the bus and tram companies did not diminish the popularity of the DPVs, and these were duly legalized in 1969. The ceiling figure determined by the government was 3,000 new-styled *public light buses* (PLBs), but this was liberally interpreted and 3,600 were licensed in one major operation. The maximum unladen weight was 2,000 kg and the maximum seating capacity fourteen. The annual licensing fee was fixed at HK\$3,000 (£270). There are now over 4,300 PLBs in operation and they account for around 1.5 million passenger trips a day.

Characteristics

PLBs may charge any fare. Most in fact charge a flat fare regardless of distance, and peak-hour increases are common. They operate all over the colony on routes which they choose to indicate on the vehicles together with the fare. The predominant nature of the services is indicated by a 1980 survey estimating that two-thirds of the purchase price of a vehicle is recovered in a year.

The PLBs were, however, criticized for congregating on major routes and causing congestion there. Some transport planners argued that they should be banned from major corridors and relegated to the provision of feeder services to the franchised bus companies. These criticisms posed a dilemma for the Hong Kong government, which in essence had to choose between consumer sovereignty and planner sovereignty. By their patronage, consumers demonstrated their preference for the more comfortable PLBs on which all passengers had seats. The government attempted to resolve the problem by introducing *maxicabs*, which can be described as 'franchised PLBs'. The differences between these services are summarized in Table 1.

By the end of 1982 there were 579 maxicabs operating in Hong Kong on a total of fifty-three routes, compared to over 4,000 PLBs. The government has tried to expand further the maxicab network and to encourage ordinary PLBs to join the scheme, but has met with limited success. More generous weight and dimensions rules for PLBs were introduced in December 1982 to allow for greater comfort and air-conditioning.

It is outside the scope of this report to pursue the question raised by Hong Kong's policy towards the PLBs. Suffice it to say that they are an effective and financially viable form of public transport, and that they receive strong support from their customers despite the doubts of the professional transport planners. The taxi business, incidentally, also does well in Hong Kong. The fleet expands at the rate of 1,200 a year and 9,834 vehicles were licensed at the end of 1980. New licences, which are allocated through government auctions, fetch the equivalent of almost £25,000. Most taxis are operated as family businesses.

TABLE 1
Characteristics of maxicabs and PLBs in Hong Kong

Characteristics	Maxicabs	PLBs
Route structure	Routes fixed by authority as feeder services, avoiding major bus corridors.	No fixed routes. PLBs go along busy streets where customers can be picked up easily.
Fares	Fares fixed by authority according to a scale based on mileage. No differential between peak and off-peak periods.	No fixed fares. Often a high price is charged in peak hours and a low fare (sometimes lower than buses) during slack periods.
Timetables	Timetable detailing hours of operation and frequency of service laid down by the authority.	No fixed timetable. Driver may cease service at any time. Sometimes operate late at night for much higher fares.
Form of ownership	The whole fleet under central control and staffed by regular drivers.	Varied. There are owner-drivers, vehicles on rent to drivers, and salaried drivers.
Maintenance facilities	Required to provide garage maintenance and depot facilities.	Maintenance by contracting with garages. Usually park overnight at PLB stands.
Restrictions	Fixed routes authorized by authority. Maxicabs are allowed to set down passengers in some busy main streets.	Most of the busy main streets have some form of PLB restriction.

The minibuses of Kuala Lumpur

Kuala Lumpur, the capital of Malaysia, is a rapidly expanding urban area with a population of about one million. Public transport service has traditionally been provided by eight private bus companies, each franchised to operate over a specific sector in the area. In the early 1970s, the authorities were concerned by the deterioration of the public transport system and the rapid rise in the use of private cars that was associated with it. The problem facing Kuala Lumpur was one with which many city managements are familiar: the franchises granted to the private bus companies

enabled them to provide a service which was considered adequate in the 1950s and 1960s and for which the companies received revenues which were then considered fair. However, the spread of private car ownership led to a decline in bus speeds, service standards, ridership, and profitability. The government was reluctant to allow the bus companies to raise fares because of the effect on living costs; and it was also concerned that, even if permissions were given, the bus companies might not improve their service. The possibility of taking the buses into public ownership was considered, but was not an attractive alternative; the government suspected that this would create as many problems as it would solve.

Malaysians were familiar with the informal public transport services provided in other cities in southeast Asia, and decided to introduce such services in Kuala Lumpur. They invited Anthony Shephard, who had been Transport Commissioner in Hong Kong when the Public Light Buses were introduced there, to design a scheme for Kuala Lumpur. He recommended that applications for licences to run services along specific long-distance routes be invited. To encourage the minibuses to be used for long trips, he recommended that they charge a flat fare of M40¢ (about 12p) compared to the M5¢ (about 1.5p) per mile charged by the conventional bus services.

The scheme was introduced as part of an urban transport project supported by the World Bank. The World Bank favoured the introduction of the minibuses although its funds were not required to finance them: the operators were able to tap other sources of finance. Over 2,000 applications were received in response to the government's invitation. By the end of 1975 there were about 100 minibuses plying routes in the city; by October 1976 the number had risen to 320, and by 1978 to 400, but since 1980, the number has been kept at 440.

Effect of restrictions

As a result of the freeze on numbers, the minibus service, which was conceived as an all-seated service for long-distance commuters, became degraded by overcrowding and standing passengers. The ratios of load to seating capacity (based on fifty-eight seats for a

conventional bus and sixteen for a minibus) were sixty-eight per cent in the morning and seventy-eight per cent in the evening peak periods for conventional buses, and 114 per cent and 125 per cent, respectively, for the minibuses (the figures above 100 per cent representing standing passengers).

Another consequence of the scarcity of minibuses was their windfall profitability. Transport experts in Malaysia estimated the annual return on investment for an operator who had a licence at thirty-seven per cent (the return was lower for operators who had to rent their vehicles, or their licences, or both). A characteristic of the minibus is its relatively high occupancy rate compared to the conventional bus. Surveys carried out in 1978 indicated that in peak periods, the minibus accounted for thirty-five per cent of all bus trips to the central area, and fifty-three per cent of the passenger miles (the percentage of passenger miles accounted for was higher than the percentage of trips because the average trip length by conventional bus was 2.4 miles compared to 5.1 miles by minibus). Thus, a fleet of 400 sixteen-seat minibuses 'produced' more passenger-miles than did the 600 fifty-eight-seat conventional buses that were estimated to have been operating at the time.

It might be asked why, given the pressure on the minibuses, the government did not issue more licences. One of the reasons for this was that the minibuses were taking traffic from the conventional buses, and the authorities were reluctant to license more minibus capacity when there were under-utilized, full-sized buses. As in Hong Kong, the government had to choose between consumer sovereignty and planner sovereignty. The fact that it had difficulty in coming down fairly and squarely on the side of the consumer does not alter the fact that the minibuses in Kuala Lumpur, as in Hong Kong, were (and are) financially viable by any standard.

Private buses in Buenos Aires

Buenos Aires, the capital of Argentina, has a population of nine million living in an area exceeding 1,500 square miles. It has a variety of transport modes, the most important being the *microbus* (or *colectivo* in the local jargon) which accounts for fifty-four per cent of all trips and seventy-five per cent of public transport trips.

TABLE 2
Estimated Costs, Revenues and Profits of Kuala Lumpur Minibuses¹

Costs (M\$)²		
1. Wages ³		19,800
2. Depreciation ⁴		6,000
3. Fuel		7,500
4. Repair		7,500
5. Office		1,000
6. Tax		1,440
7. Insurance		1,800
	Total Costs	45,040
Revenues (M\$)		
8. Fares		58,500 (£17,3
	Total Revenues	58,500
Profit (M\$)		13,460 (£4,00
Annual Return on M\$36,000 (£10,700) minibus: 37%		

Notes

1. Average figures derived from interviews by government staff during 1978.
2. All costs in M\$.
3. Wages: driver M\$350/month and conductor M\$300/month; two-shift operation wages for inspectors.
4. Depreciation: a six-year life for a M\$36,000 vehicle and a five-year life for a M\$30,000 vehicle give the same annual depreciation of M\$6,000.

The colectivos were developed in the 1920s when, as a result of a general economic crisis, many people could not afford to take taxis on their own. These vehicles were therefore used by groups of passengers, with fares being paid by each passenger individually. They ran on fixed routes which were chosen by the taxi drivers themselves. The shared taxi quickly showed certain virtues of its own and was favourably received by the general public because it offered more flexibility, faster journeys, and greater frequency than the underground and electric tramways. The colectivo vehicle developed from a seven-seater to an eleven-seater; subsequently it grew to fourteen and seventeen seats, finally reaching twenty-five seats which is the typical unit providing service today.

The micro-buses offered stiff competition to the tramways and the underground systems, and this caused the government to establish in 1936, a corporate enterprise which was supposed to have had a total monopoly in supplying the city with public transport services.

Nevertheless, several micro-bus lines remained in existence until 1951, when a national enterprise, Transportes de Buenos Aires, took charge of all the services, including those of the corporate enterprise.

However, the service operated by the Transportes de Buenos Aires deteriorated rapidly both in quality and financial viability. By 1959, it was losing the equivalent of £830,000 per year. In 1962, the situation became intolerable and Transportes de Buenos Aires was dissolved. All the transport services, except the underground railway, were turned over to private companies. The trams and trolleybuses were dropped out of service and were replaced by full-sized buses. It is significant, however, that many of these were subsequently replaced by the twenty-five-seat micro-buses.

Route associations

The micro-buses still operate profitably and provide a level of service that is praised by all visitors to Buenos Aires. The organizational unit of the service is the route association (*empresa*), which is an association of owner-drivers empowered to serve just one route. The owners joining an *empresa* have to abide by its rules, which govern such matters as schedules and fares.

The *empresa* is the formal employer of the drivers and assumes all the responsibility arising from the labour laws. The vehicle owners choose and replace the drivers and pay the operating expenditures of the vehicle. The income goes to the vehicle owners who either turn it over to a common fund for distribution among members of the *empresa*, prorate it according to the mileage run by each vehicle, or divide it through any other method that the *empresa* may agree.

Each month, the *empresa* charges each of its members for a share of the administrative expenditures corresponding to each vehicle, the salaries paid, goods and services supplied for maintenance, and (in the event that the company is financing the purchase of a vehicle) an instalment payment.

The investments in vehicles and in repair facilities are part of the company's capital. A successful operation results in an increase in the value of its shares, although these cannot be sold in the free

market. Any disputes within an empresa are settled at a member meeting, with each vehicle generally conferring the entitlement of one vote. One of the typical characteristics of the empresas is a large number of members: although a member can own several vehicles or several members can own one vehicle, on average there is one partner per vehicle. About one third of the members work as drivers of their own vehicles.

Advantages. The empresas offer several advantages. Each member is directly responsible for the operation of the unit he is in charge of, and he, aided by his family, does much of the work required to run and maintain the vehicle. The public benefits from the competition that occurs between different empresas. (No empresas can be formed with the permission of the authorities.) Labour productivity is high: on average, each micro-bus employs three persons to drive, maintain, and repair it. Each vehicle produces 1.3 to 1.6 million passenger-miles per year, so that the average labour productivity is around 480,000 passenger-miles per year per person employed. The total fleet is composed of 13,000 micro-buses; on average, sixty micro-buses are used on each route, about four per route-mile.

The micro-buses in Buenos Aires are regulated by the Ministry of Public Works and Services (MOSP) which fixes fares and minimum frequencies for individual routes and governs the formation of new empresas.

Private buses in Calcutta

One of the largest, most densely populated and poorest cities in the world, Calcutta, supports a population of some ten million in an area of fewer than 600 square miles. Private buses first appeared in the city toward the end of the nineteenth century but were banned in 1960 when all bus services were vested in the Calcutta State Transport Corporation (CSTC). The CSTC suffered from managerial and financial problems and, in 1966, was paralysed by strikes. In response to public demand before the 1967 elections and to its need for ready cash, the government of West Bengal sold permits that enabled 300 private buses to be operated. These operated at a profit, although they charged the same fares

(equivalent to about 0.25p per mile) as the money-losing CSTC, and had inferior routes. By the late 1970s, some 1,500 full-sized private buses were operating in Calcutta, in addition to about 500 private minibuses. Today, the private buses account for about two-thirds of all bus trips in Calcutta *without subsidy*. Meanwhile, the CSTC, which operates the best routes at the same fares, has to be subsidized to the equivalent of £700,000 per month by a government that is desperately short of funds for other purposes.

Key factors for success

The success of the private bus operators has been attributed to three factors. Firstly, as soon as a private bus breaks down it is repaired, often on the road, with needed parts being bought on the black market if necessary. The CSTC, in contrast, has to go through 'channels' to obtain spare parts and only half of its buses are generally on the road. Secondly, the private bus crews (who are paid a percentage of the revenues) make greater efforts to collect the fares than CSTC employees. Fare evasion is estimated to be twenty-five per cent on CSTC buses but negligible on private buses. The third factor is higher labour productivity. The State Corporation's staffing levels, at fifty employees per bus (1980), is one of the highest in the world.

A key factor in the success of the private buses in Calcutta is the phenomenon of route associations. These associations — generally one for each route — were formed voluntarily and spontaneously by the private owners. Each owner retains control over the operation and maintenance of his vehicle and receives the fares collected on it. The associations have rules to govern relationships between the members; for example, vehicles have to run on time. This is important because, as already mentioned, a bus running late tends to pick up more than its 'fair share' of passengers, at the expense of the following bus. Owners of buses which do not keep to time are fined, and the fine money is distributed among the other members. It has been reported that the fines are, in some instances, proportional to the delay, at a specified rate per minute, and paid directly to the owner of the following bus.

The private bus operators in Calcutta vividly illustrate the proposition that, given a suitable organizational framework, pri-

vately operated buses can provide and expand transport services without subsidy even when a municipal monopoly is unable to do so.

The jeepneys of Manila

The predominant public transport carrier in Manila is the *jeepney*, which has become the Filipinos' favourite form of urban transport. Their fondness for this unique vehicle is rooted in the fact that it was invented in the aftermath of the second world war when the city of Manila was just beginning its recovery from war-time devastation and neglect. The jeepney was made from the chassis of a vehicle named after — the US Army jeep. The chassis was extended at its back portion opened and adjusted to provide a central entrance and exit. The roof was curved on all sides with prominent overhangs at the back. Two upholstered benches were attached lengthwise to accommodate the passengers. Thus the jeepney became a symbol of the Filipinos' indomitability in times of crisis and of their capacity to survive. The jeepneys also nurtured Filipino ingenuity and craftsmanship as they underwent various renovations and improvements. They are locally manufactured with the bodies made of sheet steel, some gaily painted with various decorations providing a wide variety of colours and designs.

According to figures compiled by the Manila Board of Transportation, there are about 28,000 jeepneys in Manila (although unofficial estimates put the number at 60,000), compared to 2,900 buses. Jeepneys are a major form of transportation in Manila, accounting for about half of total trips, while buses and private cars (including taxis) account for about twenty-five per cent each.

The enterprising jeepney operators provide living proof that even the unskilled and poorly educated can succeed through initiative, hard work, and calculated risk-taking. As an employment medium, the jeepney industry in Manila alone gives direct employment to over 100,000 people. This includes two or three drivers for each of the 28,000 vehicles, about 10,000 jeepney operators, and several thousand more who are involved in servicing the vehicles and building bodies for them. In addition, it is estimated that a further 400,000 depend for their livelihood

one way or the other on the jeepney industry. There are, for instance, manufacturers of jeepney cassette radios, plastic ornaments, and seat upholstery, and trip dispatchers at jeepney terminals.

Since their inception, the jeepneys have provided stiff competition to the normal buses, and the representatives of each mode regularly call for the suppression of the other. Transport experts have long disputed the relative merits of jeepneys and buses in Manila, where their operations almost completely overlap. The fares are also the same, and they are equally acceptable socially. Buses are perceived by some to be more comfortable for longer journeys, while jeepneys are more agile and therefore faster for short runs. Within recent years, the conventional buses have had difficulty in maintaining their services, while jeepney operators have been agitating for more licences and have been operating illegally. This suggests that the jeepneys are the more cost-effective form of transport, and is borne out by the published figures of comparative costs of the two modes, presented in Table 3, which show the costs of a fourteen-seat jeepney are about a quarter of the costs of a fifty-eight-seat bus.

The transport policymakers in the Philippines have, since 1976, been engaged in an attempt to rationalize the urban transport system in favour of conventional buses, which they consider to be more cost-effective and fuel-efficient than the jeepneys. However, the authorities have no way of replacing the jeepneys without a massive public investment in transport that they are reluctant to undertake; the national leadership is also unwilling to deprive the tens of thousands of Filipino jeepney owners and drivers (and their families) of their primary source of income. The government therefore decided to freeze the size of the jeepney fleet and to discourage jeepney use on main roads. 'Instead of loitering over the main city roads,' declared a senior government official, 'jeepneys will now be concentrated on complementary, secondary, or feeder routes where they will virtually act as primary linkages or conveyor belts between residential areas and certain business districts.' This is not the place to discuss the wisdom, or otherwise, of transport policy in Manila: we have already mentioned the adverse effects of similar restrictions in Kuala Lumpur. Suffice it to say that the development of the Filipino jeepney

TABLE 3
Manila Bus and Jeepney Costs (1976 pence)

Cost Item	Cost per mile		Cost per seat mile	
	Bus (58 seats)	Jeepney (14 seats)	Bus (58 seats)	Jeepney (14 seats)
Depreciation	5.2 ¹	0.52	0.088	0.006
Interest	3.4	0.35	0.006	0.001
Maintenance	4.7 ²	0.59	0.081	0.004
Tyres	1.5	0.33	0.026	0.002
Fuel	3.8	3.11	0.066	0.005
Oil	0.3	0.12	0.005	0.001
Wages	6.7 ³	2.36	0.115	0.017
Management	0.3 ⁴	—	0.006	0.000
Total	25.8	7.42	0.445	0.030
Total excluding wages	19.1	5.05	0.330	0.023
Total operating costs (fuel tax)	16.9 (0.38)	6.51 (1.18)	0.292 (0.007)	0.020 (0.001)
Adjustments (factor cost of fuel)	(3.4)	(1.93)	(0.060)	(0.004)
Total excluding wages (after adjustment to exclude fuel tax)	18.7	3.88	0.323	0.023

Notes

1. Depreciation estimates are based on a capital cost of £21,296 for a fifty-five-seat bus with an expected ten-year life. The jeepney costs £2,063 for a fourteen-seat vehicle lasting on average 7.5 years. Buses average 46,500 miles/year, jeepneys 50,000 miles/year. It is worth noting that the capital cost per seat mile of a bus is about two and a half times that of a jeepney. Seventy-five per cent of depreciation cost is treated as dependent on distance travelled, with the remaining twenty-five per cent determined by time in use.

2. Maintenance costs for the two vehicle types are proportionate: 300 hours of labour time, and parts cost estimated at ten per cent of vehicle cost.

3. Wage costs of jeepneys and buses differ in wage rates paid and size of crew employed. A bus operates with a driver (@ P5/hr.) and conductor (@ P4/hr.) Jeepneys employ only a driver @ P2.5/hr.

4. Licence and insurance costs are not provided.

Source: A. A. Walters, *Costs and Scale of Bus Services*, World Bank Staff Working Paper No. 325 (Washington, DC: World Bank, 1979). Converted from US\$ at £1 = \$1.44.

industry to date provides further evidence that public transport can operate profitably and successfully in a large metropolitan area.

The dolmus/minibus system in Istanbul

Massive migration from rural areas to major urban centres in Turkey has created complex problems of urban living that have strained the capacity of the local authorities to provide even the most essential public services. One feature of this general problem has been the failure of the municipal bus and other government-operated public transport systems to meet the routine travel needs of the people. As a result of this, the dolmus/minibus system has emerged as an indigenous form of public transport in Istanbul. Today, over one-half of the daily travel needs of the public is served by the dolmus (four- or five-seater cars that can operate either as sole-use taxis or as shared taxis), and twelve-seater minibuses. In Istanbul there are currently about 16,000 dolmus (the word 'dolmus', which means 'stuffed', is used both in the singular and the plural), and about 4,000 minibuses.

Istanbul traffic options are not as simple as they might appear on the surface and the dolmus/minibuses can provide a panoply of services:

Dolmus only. Service along fixed routes is provided by some seven-seater station wagons, but mostly by five-seater vehicles distinguished by a continuous yellow band around the vehicle and/or the 'dolmus' sign placed or written on the vehicle.

Dolmus/taxi. For this kind of operation, mostly conducted in five-passenger vehicles, the operator may switch from dolmus operation to sole-use taxi operation either instantly (when congestion and demand levels are high) or on some days when he prefers to operate as a taxi.

Taxi/dolmus. This is also a mixed operation of five-passenger vehicles mainly used as taxis and occasionally as dolmus.

Taxi/on-the-way-back-dolmus. This type of operation is self-explanatory; a taxi operates as a dolmus on the return trip to the driver's home or to his usual taxi queue. (Demands for this kind of service were recently made by London taxi drivers and users.)

Taxi. A conventional taxi service is provided generally in four-passenger or five-passenger vehicles.

Minibus. An operation along a fixed route is generally carried out in minibuses seating nine or ten passengers.

Midibus. The vehicle is used as a minibus, but has a capacity of thirteen or more passengers.

There are also variations on these arrangements, such as *express dolmus* provided when demand is high, at twice regular fare (a practice resented by the travelling public); *shared taxi*, whereby a number of passengers in the waiting share a taxi to the same destination; and unlicensed dolmus services provided by private passenger cars. Some private cars operate illegally as taxi-cabs, a practice not unknown in New York and London. In peak periods, the minibuses and midibuses tend to be severely overloaded, which adds significantly to the profits of the operators and to the discomfort of the passengers. Needless to say, this overloading is associated with a restriction on the number of minibus licences and the consequent power of the operators to obtain 'abnormal' profits.

The situation of orthodox public transport in Istanbul cannot be described as a happy one. The buses operated by the franchised company are overcrowded and run at a large financial loss. The *dolmus* and minibuses provide profitable services but some members of the public resent the higher fares. Finally, private car users also object to the *dolmus* on the ground that they take up valuable road space — though *dolmus* use much less space per passenger than do the private cars. Nevertheless, there can be no doubt that the *dolmus* and minibuses of Istanbul are successful business enterprises and financially viable.

Taxis and jitneys in Cairo

Cairo, the largest urban center in the Middle East, has a population of 8.5 million spread over an area of 800 square miles. It suffers from severe traffic congestion and a heavily overloaded network of bus and tram services. In recent years the transport system was substantially improved by the development of privately-owned shared taxis and jitney services.

Metered taxis in Cairo provide two distinct kinds of service: exclusive services for which one or more passengers are carried directly from origin to destination, and (illegal) shared services in which the driver may stop along the route to pick up or drop off passengers without obtaining the permission of other passengers in the taxi. The price for the exclusive service is typically negotiated at a rate which (at least for tourists) is substantially above the

metered rate. The price for shared trips, on the other hand, is typically based on the meter. These services appear to work quite well, though there are ambiguities about the fare levels. There are also a substantial number of unmetered taxis in Cairo, some of which are inter-city taxis operating illegally. The existence of these taxis suggests that the number officially licensed for public service is insufficient — which is strange, since there are no restrictions on the number of taxis that may be licensed.

Fixed-route jitney services were allowed to operate in the late 1970s. As is usual in the Middle East, vehicles normally wait until they have a full load and then leave the terminal, rather than leaving at fixed intervals and keeping a few seats available for passengers along the route. (A similar system is operated in Amman, and by the *sherut* shared inter-city taxis in Israel.) Passengers are able to join the jitneys only at mid-route when the vehicles stop to drop passengers off. A survey in 1979 established that there were about 800 vehicles participating in the scheme, running at intervals of between three and five minutes. The system expanded rapidly in that year and the maximum legal seating capacity of the vehicles was raised from twelve to fifteen seats.

A union of taxi drivers and minibus operators runs the scheme. It carries out a variety of services, including the organization of new routes and the determination of the fares to be charged. The union also employs and pays dispatchers from a five per cent ticket tax collected by the dispatchers at the terminals. The dispatchers receive a fixed salary plus a bonus if they collect more than a certain amount of money per day. The ticket tax is also used to finance the construction of signs and waiting facilities at jitney terminals. The union representatives claim that demand exists for at least 2,000 vehicles and that the service can be substantially expanded.

The most sought-after vehicle is the locally-assembled Ramses minibus. It owes its popularity not only to its comparatively low cost (£4,800 compared to £8,300 for a VW or Mazda vehicle of the same capacity), but also to its powerful engine and its durability under Cairo driving conditions. Eighty per cent of new vehicles are said to be owned by persons outside the taxi cab industry who lease vehicles to drivers for twenty-five per cent of their fare collections. Many investors own over four vehicles.

About twenty per cent of vehicles are driven by owners. Minimum fares are three or four times the usual Cairo bus fare, which is equivalent to about 3.5p. Much of the repair and maintenance is done by the drivers themselves in small workshops.

Cairo's conventional bus and tram services do not cover their costs, and are subsidized to the equivalent of over £35 million a year. The rapid growth of high-quality informal systems provides yet another illustration of the willingness of travellers to pay for improved service and of the ability of the private sector to provide it at a profit, services on which the public sector chalks up deficits.

There are also special express *limousine* taxi services to and from the airport. The charges are fixed according to destination. One company alone operates about 500 of these vehicles.

Supplementary bus services in Singapore

In November 1973, the government of Singapore, a city-state with a population of 2.2 million people living in an area of 227 square miles, was concerned about the increasing automobile ownership and traffic congestion, and so it took a number of radical measures to improve public transport. One measure was the unification of the main bus companies into the newly formed Singapore Bus Service (SBS), Ltd. Nevertheless, public transport services were still considered to be inadequate, so the Supplementary Public Transport Services (SBTS) were introduced in March 1974. There were two schemes developed under this initiative.

Scheme A. Scheme A was introduced to cater to adult commuters and factory workers. Under this scheme, trucks, delivery vehicles and school buses are permitted to transport workers between their homes and places of work. By June 1981, a total of 2,169 vehicles had been issued with Scheme A permits, comprising 191 trucks, 379 private hire buses, and 1,599 school buses. Under Scheme A there is no restriction on the operating hours, but it is not permitted to pick up individual travellers on public roads. Payments can be by monthly contract only, at rates freely negotiated between the operators and their passengers. To appreciate the effectiveness of this scheme, it should be understood that schools in Singapore operate on a double shift system, some children going to school in the morning and others in the afternoon. Furthermore,

beginning and end of the school hours are different from the beginning and end of business hours, so that the school bus operator with a Scheme A permit is able to make six trips per day, two return trips for school children and one return trip for adult workers.

Scheme B. Scheme B was introduced to cater for peak-hour demand for public bus transport. By June 1981, twenty-seven designated routes were operating between housing centres and the central business district, and nineteen routes between housing centres and industrial areas. As of June 30, 1981, a total of 610 vehicles were licensed under Scheme B, 395 of them school buses. Under Scheme B, vehicles are allowed to pick up and set down passengers at authorized stopping points, but only during the morning and evening peak periods, which are typically 6.00am to 9.45am and 4.15pm to 7.30pm.

Scheme A proved to be more popular with operators than Scheme B; in February 1980, over eighty per cent of vehicles licensed under Scheme A were operating, but only sixty-six per cent of Scheme B. The lower popularity of Scheme B has been attributed to its less profitable operation, which stemmed from shorter operating hours and longer waiting periods at starting points.

While these supplementary services in Singapore carry a significant number of passengers — about 144,000 trips a day — their contribution is small compared to that of the SBS fleet, which carries over 2.2 million. There are other supplementary bus services in Singapore in addition to those described above: the City Shuttle Service, the Singapore Airport Bus Service, and the Air-conditioned Coach Services, which operate only in peak hours on working days and are designed to attract the car commuter by providing a high-quality bus service. All the supplementary services operate at a profit.

The matatu of Nairobi

Nairobi (population 736,000), the bustling capital of Kenya, is known, among other things, for its heavy traffic congestion in the weekday peak periods. It is also the home of an informal public transport vehicle known as the *matatu* which appears in several forms:

transport. The authorities in Kenya recognize the importance of matatu operations — both to travellers and to operators — but are concerned about their safety. The matatu have a reputation for being dangerous (the light pick-ups being particularly deadly when they roll over), although there is no firm evidence that they are more dangerous than other vehicles in Kenya. The authorities are trying, with the assistance of the World Bank, to improve the matatu service by enforcing safety and insurance requirements, providing convenient maintenance facilities, and guaranteeing a loan fund to enable low-income people to buy matatu.

Shared taxis in Belfast

Profit-making urban transport is possible in developed as well as in developing countries. The shared *black taxis* of Belfast emerged in the early 1970s following disruption of conventional bus services by civil disturbances, although their sectarian use and other questionable features makes them an inappropriate model for the UK as a whole. Nevertheless, by 1977, the total number of taxis operating was estimated to range between 500 and 600.

The black taxis operate a high-frequency shared taxi service at relatively high speeds. Passengers are picked up or set down along fixed routes between the city centre and the particular areas served. Dispatchers are employed at the city end to organize passengers into taxi loads for different destinations in order to speed up the system. Fares are fixed and, what is perhaps most surprising to transport experts, are generally lower than those offered by the regular city bus service. On the other hand, comfort standards are low, with as many as eight adults in each vehicle at peak periods. But, in general, the consensus in Belfast is that the service provided by the black taxis represents an efficient and economical form of public transport for short commuter journeys. This is reflected in their patronage which, on weekdays, is estimated to cover about fifty per cent of all public transport trips on the main routes served by them. The key to the financial success of the black taxis seems to be their relatively high load factor. This is believed to have ranged from forty-three per cent to eighty-two per cent in 1974, compared to bus load factors which ranged from fifteen per cent to forty-six per cent.

Shortcomings

Four main criticisms are levelled at the black taxi operators: First, the full costs of maintenance and insurance are paid. Safety standards are often ignored, and there have been problems with insurance, stemming from the fact that the insurance companies are generally unwilling to insure the black taxis other than as private cars.

Second, the drivers have been accused of competing aggressively for passengers, of overloading, of selfish driving behaviour such as parking in restricted zones to pick up or drop off passengers, making U-turns, etc. But of course, such complaints against taxi drivers are not uncommon in other cities.

Third, the services have been criticized on the grounds that the conventional bus services are faced with unfair competition, unfair because the publicly-owned bus company has to meet uneconomic social obligations, such as providing services at peak periods and late at night, when costs cannot be covered by revenues. This general point will be discussed in Chapter 4 below.

And finally, because of their sectarian nature, the black taxis are accused of 'raising money for terrorism'. This kind of criticism is irrelevant if we are concerned only with the *transport* characteristics of the system; and the implication of the accusation in any case is that the shared taxi services are profitable (which city bus services throughout the world are not).

The publicos of Puerto Rico

For the last twenty-five years, the Commonwealth of Puerto Rico has had a dual system of public transport: conventional buses operating along fixed routes, and *publicos*, defined as 'public automobile enterprises which includes any person other than taxicab and tour enterprises, who as a public carrier, owns, controls, operates, or manages in Puerto Rico any motor vehicle of capacity not over fourteen passengers . . . over any public overland highway, regardless of whether or not such transportation is carried out between fixed or irregular terminals'.

Most of the publicos are owned by individuals and families and are driven by their owners. Fares are typically 35p (compared to 17p on the buses) and travel times are good. The vehicles are

difficult to enter and exit, especially for elderly people, but ridership is encouraged by the cleanliness and reliability of the publicos. The publicos are licensed and supervised by the Publico Service Commission of the Commonwealth of Puerto Rico.

Cost studies of publico services

Following the decision of the federal government to phase out operating subsidies for public transport, the Puerto Rico Department of Transportation is examining the possibilities of replacing some of its publicly owned bus services (which recover from the fare box only thirty-five per cent of the operating costs) by publico services. A detailed study of publicos in the city of Caguas (population 150,000), carried out in 1980, showed that about five-sixths of public transport trips were made by publicos, and only one-sixth by regular buses. It was found that, out of the thirty-nine publico routes studied, twenty-nine were financially viable in 1978, eight were not, and two had ceased operation. On average, daily costs per publico vehicle in 1980, including interest and depreciation, were estimated to be in the order of £40, while daily revenues averaged over £50.

In comparison, bus operating costs in 1980 were estimated to be £107 per day, *exclusive* of depreciation. Revenues approximated £120, which meant that the bus system was financially viable only if the vehicles were obtained free or at very low cost. Caguas' public buses operate at a lower cost than those of San Juan because drivers are not unionized and maintenance costs and standards are lower than those prevailing in the capital city, while fares are higher. Certainly the new, forty-five-seat buses provided to Puerto Rico for £97,000 each were not financially viable. It is noteworthy that publico load factors, 76% to 103%, were about double those of the buses, which were 33% to 50%.

The report concluded that the publico car system was financially and economically viable and deserved to be supported fully. The bus system was found to be not viable if conventional buses were used, and the acquisition of twenty-two-seat vehicles was recommended on the grounds that these vehicles would require no or small subsidies.

The report made a number of recommendations to improve the public transport system. These included: constructing terminals

and improving roads; strengthening the Public Service Commission; organizing an association of operators to provide service during off-peak hours, Sundays and holidays; and providing repair and maintenance shops. There was also a recommendation to increase the authorized capacity of the publicos from fourteen to seventeen passengers.

Large buses versus minibuses in Kingston, Jamaica

Kingston Metropolitan Area covers about 650,000 people, of whom eighty per cent are dependent upon public transport. Only one in four households has access to a private car. But the depressed state of the Jamaican economy for many years has not been reflected in any diminution of ridership: weekday trips are estimated at 780,000. Kingston had an effective private bus company, Jamaica Omnibus Services (JOS) until 1973, when the incumbent government nationalized it. From that time on, the number of routes and their lengths were increased with no corresponding increase in fares. Spare parts were not available and more and more buses were taken out of service. From putting out 400 buses daily out of a fleet of 450 in 1972, JOS in 1982 was reduced to being able to put only 130 a day on the road out of a nominal fleet of over 500 vehicles.

In 1974, the first minibuses began to appear on Kingston roads. Brought in by Jamaicans returning from Britain, they were mostly Volkswagen Kombi buses and Ford Transit crew-bus conversions, seating, at a stretch, twelve passengers. These illegal minibuses ('robots' in the local vernacular) were harassed by the authorities but they persisted and increased in number. In 1977 they accounted for one-third of passenger trips; by 1982 they carried eighty per cent of all passengers, JOS being left with the other twenty per cent (half of whom were children on a J10¢ fare compared with J50¢ average fare on minibuses). JOS was losing J\$2 million each month in operational deficits, financial and other charges. The new Jamaican government determined, in December 1981, to return public transport to entirely private operation and sought the help of the World Bank to propose a detailed system of competitive franchises. A Jamaican, Garnett Woodham, familiar in particular with the numerous South American systems

private mass transit, drew up guidelines for the new operations which a team of advisers (including Anthony Shephard) were asked to expand and bring into being. The Jamaica government then approved a system of ten entirely private franchises covering the whole Kingston area, which comprised forty rationalized routes instead of JOS's seventy-seven. All the routes will have access to the highly profitable central business area and all are reckoned to be individually viable. The government has also determined to lease around 200 serviceable JOS eighty-place buses to the new franchise operators, while standardizing the whole fleet, over a five year period, on its purchase of small buses designed to carry twenty-four seated and fourteen standing passengers. Detailed evaluations of various bus sizes have shown that this 'standard bus' is the best suited to most of Kingston's needs. The system has been so designed that all routes are competitive except at their extremities. It is estimated that all major defects in service, in particular peak-hour waiting and crowding, will be corrected with no increase in fare levels, except that students will no longer be subsidized below an agreed J25¢ fare compared with adult fares ranging from J75¢ to J40¢.

This is the first system, apart from Buenos Aires, to be deliberately organized around the recognition of the principles outlined in Chapter 1. It remains to be seen how well the varying interests of big operators, owning up to ten large buses, can combine to co-operate with about 1,000 minibus operators in a purpose-built franchise operation.

Other systems

Limitations of space preclude detailed descriptions of:

- * the *rickshaws* in China, in many cities often the only available method for transporting the elderly and handicapped;
- * the *bicycle rickshaws* of Penang, which provide a local industry as well as a major transport mode;
- * the *motorized rickshaws* of Karachi, which are economically accessible to many of those who cannot afford the normal taxi fare of 5p per mile;

- * the almost entire dependence of major, populous countries such as Indonesia and Nigeria on intermediate forms of profitable public transport provided by private operators;
- * the *fula-fula* of Kinshasa, accused by visiting transport experts of interfering with traffic;
- * the *por puestos* shared taxis of Caracas (*por puesto* means 'by the seat');
- * the *shared intercity taxis* that operate in Egypt, Israel, and between Malaysia and Singapore;
- * the successful return of Khartoum's bus system to private enterprise, following dissatisfaction with the municipal operations.

Sigurd Grava, who described many of the systems, summarized them as follows:

'At first glance they all appear to be different, but they are primarily because of variations in hardware — from bicycle rickshaws to sleek European minibuses. The institutional structure and basic operations are quite similar: private individuals acquire the highest technology vehicle that they can afford, and respond to the mobility demands of their neighbours at a rate that most of them can pay . . . A few billion people cannot be wrong, and there is really no need for us to painfully invent a new urban transportation mode when there are literally thousands of jitney systems in flourishing operation.'

3. Characteristics of Successful Transport Systems

The systems described in the above chapter, all of which are profitable, have the following characteristics:

- * ownership is private;
- * vehicles are small;
- * operating units are small;
- * route associations are part of many successful operations.

Ownership

That publicly-owned bus companies sustain losses is not entirely surprising, since the systems taken over by public authorities tend to be the ones that cannot be run at a profit by private operators. However, the losses under public ownership tend to rise rapidly, at a rate that bears little relationship to increases in service levels. The losses appear to be due to (a) the inability of subsidized systems to control costs, particularly wages, and employee productivity, and (b) the inability of publicly-owned operators to resist pressures from politicians to hold down fares and expand unremunerative services. A few examples from developed and from developing countries will illustrate the point.

United States

When the Massachusetts Bay Transportation Authority (MBTA) was set up in 1964 as a public corporation, the system was operating at a deficit of about \$15 million a year. By 1967, the managerial staff had doubled, the cost of office accommodation had soared, and the deficit had increased to \$25 million. By 1980, the deficit had increased to \$256 million and had become a burden that the local authorities were unable to meet. In the early 1970s the privately-owned bus service in Washington DC (DC Transit) was in difficulty. Testimony before Congress indicated that the Washington area bus system could pay its own way from fare collections if shifted from private to public ownership. It was duly taken over and ran a deficit of \$8.5 million in 1973, its first

calendar year. By 1974, the deficit had risen to around \$40 million and by 1976 it reached \$50 million, despite a doubling of the fare from 25¢ in 1973 to 50¢ in 1976. In fiscal 1981, the deficit on operations amounted to \$101 million, up from \$91 million in 1980. The average fare meanwhile had risen to 69¢.

United Kingdom

In 1980, the UK Transport and Road Research Laboratory published a report on the economics of publicly and privately owned bus companies. A comparison of fares carried out in various areas showed that, for a wide range of journey lengths, the fare charged on rural and inter-urban runs by private operators was twenty five per cent lower than that charged on similar services provided by publicly owned operators. Further economic analysis by the Laboratory indicated that the private operators' lower fares stemmed largely from lower unit costs, rather than from higher loads or other possible causes. The report concluded that at least some of these lower unit costs were due to the following factors:

- (a) lower garage costs resulting from the use of lower premises;
- (b) less expenditure on items associated specifically with bus networks, e.g. bus stations, information offices, bus shelters and stop signs;
- (c) lower staff costs resulting from greater flexibility. Part-time drivers were used and many full-time employees combined driving with administration or vehicle maintenance;
- (d) lower staff costs resulting from lower wage rates and advantageous working conditions. A 1978 survey indicated that the earnings of drivers in the private sector, although similar to the average for manual workers in all industries and services, were ten to fifteen per cent lower than in the public sector;
- (e) a greater proportion of one-man operations;
- (f) lower loan repayments. Public sector companies tended to borrow more than those in the private sector and their service costs were correspondingly higher;
- (g) use of a greater proportion of smaller vehicles.

Thailand

In the early 1970s, Bangkok had twenty-five franchised bus companies, all of which provided service for a basic fare of about 2.5p. The biggest company, the Nai Lert, managed by Khunying Loesak, a woman who later became Minister of Transport, was consistently profitable. One of its distinguishing characteristics was that most of the buses, all single deckers, carried a crew of three: one driver and two fare collectors. In 1976, following recommendations by European consultants, the government decided to amalgamate the twenty-five companies and to create the Bangkok Metropolitan Transport Authority. The plan was carried through despite the protests of Khunying Loesak and many of the other operators. Shortly after the buses were taken over by the city, the fares were raised by twenty per cent, yet the system started to operate at a deficit. By 1979, the BMTA was losing the equivalent of over £17 million per year, while an estimated 7,000 privately owned minibuses were running at a profit. The main reasons for the switch from profit to loss seem to have been improved wages to bus crews and reduced utilization of vehicles.

Australia

In 1975, fifty-two per cent of the buses in New South Wales, eighty-three per cent of those in Victoria, and forty-six per cent of those in Queensland were private. In Queensland and Victoria the private operators were not allowed to raise fares to meet increased costs, but received government subsidies to enable them to stay in business. Thus, both privately owned and publicly owned bus operations in Australia were subsidized but, on average, the unit costs for private operators in Australian urban areas were found to be only between one-half and two-thirds of those of the publicly owned operators providing similar services. Thus, in each city in which a comparison could be made, and in each year, the costs of the private operators were substantially lower than those of the public ones.

The reasons for the differences in costs were reported to have been due to differences in:

- (a) *Crew wage rates.* Basic wage rates for public operators'

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crews were about eleven per cent higher than those for private operators.

- (b) *Labour utilization and flexibility.* Some private operators, unlike the public services, employed part-time staff, but only a small proportion of their total employees. They benefited from greater flexibility of staff. For example, many workers combined driving with other duties, minimizing the extra staff required to cover peak periods, sickness, etc. Almost all the staff of many private operators were able to drive buses and drove them when required. In particular, mechanics often carried out driving duties during peak periods, and drivers carried out much of the cleaning and routine maintenance work.
- (c) *Maintenance and administration.* Private operators generally had smaller numbers of maintenance and administrative staff than public operators. The ratio of total employees to buses owned was typically 1–1.5 for private operators but 2–2.5 for public operators. Although public operators often averaged a greater mileage per bus, the low proportion of non-driver staff employed by private operators made a substantial contribution to their lower costs. This factor alone has been estimated to result in total staff requirements for private operators to be twenty-five per cent lower than for public ones. As labour costs were typically seventy per cent of total bus company costs, which explains a fifty per cent total cost saving for private operators.
- (d) *Capital facilities.* In general, private operators tend to have older bus fleets than the public ones. Also, they tend to buy new buses more cheaply than the public operators and to buy used buses more frequently than the public operators. The different purchasing patterns reflected greater difficulties that private operators had in finding funds for capital investment. Private operators also tend to have less elaborate and costly depot facilities than public operators, even allowing for their relative sizes. Moreover, private operators had maintenance facilities in the open rather than under cover and they provided very limited recreational facilities for staff — possibly a reflection of a smaller amount of time their staff had for recreational activities.

It is noteworthy that, although private and public operators in Australia are exempt from sales tax on new buses, private operators are required to pay a fifteen per cent sales tax on all spare parts and tyres, while public operators are exempt from this tax as well.

The typical operating costs of public and private bus operators in Australia are summarized in Table 4.

Conclusion on ownership

It may be concluded from experience worldwide that publicly owned transport operators have higher costs than privately owned ones, even when providing similar services, because they have less flexibility in making the best use of their resources and because they pay more in total to their (typically larger) workforce. In transport, as in other fields (education, medical services, and housing), the discipline of having to live within one's budget applies a constant downward pressure on costs, a pressure that is all too easily relieved by the availability of subsidies from public funds. Furthermore, the availability of subsidies makes it difficult for public sector companies to resist requests to provide — and even expand — unremunerative services.

Size of vehicle

One of the established (but questionable) principles of public transport operations is that large vehicles are more economical to operate than small ones. The reason given for this is that, with over two-thirds of bus operating costs being due to labour, it pays a bus company to have large vehicles, even if they are full for only a fraction of their working lives, so as to avoid the additional labour costs that would be required to meet peak demand with small vehicles. This reasoning, though perfectly logical, may be questioned for three reasons.

Lower capital cost. The first is that the capital cost *per seat* seems to increase with the size of the vehicle. For example, operators in San Juan, Puerto Rico, can expect to pay £11,800 for a minibus seating seventeen, but £97,000 for a full-sized bus seating fifty. Thus a full-sized bus can cost almost three times as much per unit of passenger capacity than a minibus. (Incidentally,

TABLE 4
Typical Operating Costs — Public and Private Bus Operators in Australia

Cost Item	Public operator (% of operating costs)	Private operator (% of private operator costs)
Wage/salary and related costs		
1. Driver wages	43.1 ²	30.2 ^{2,3}
2. Traffic staff salaries	3.8	1.9 ⁴
3. Vehicle repairs/maintenance wages/salaries ⁵	11.7	4.0 ⁵
4. Admin and general salaries	3.9	2.5 ⁶
	62.5	
5. Driver on-costs ⁷	9.3	2.1 ⁸
6. Other staff on-costs ⁷	3.7	1.0 ⁹
	13.0	
Non-wage/salary costs		
7. Direct operating costs — fuel, tyres etc.	6.4	6.4 ⁶
8. Vehicle repairs/maintenance, materials etc. ¹	3.7	2.7 ⁶
9. Depreciation	6.0	5.0 ¹⁰
10. Interest	3.2	3.5 ¹¹
11. Insurances, Licences and registration	3.5	4.5 ¹⁰
12. Miscellaneous general	1.7	1.0 ¹²
	24.5	
Totals	100.0	

Notes: ¹ Includes workshop and stores costs.

² Includes leave provisions.

³ Assumes seventy per cent of public operator (see text).

⁴ Assumes fifty per cent of public operator — in practice traffic staff also probably out other functions.

⁵ Assumed from analysis of various private operators by comparison with public operators. In practice much of the maintenance carried out by drivers.

⁶ Based on inspection of various operators' accounts.

⁷ Includes a payroll tax, superannuation and pension payments.

⁸ Assumed at seven per cent of private driver wages.

⁹ Assumed to represent twelve per cent of private non-driver wages/salaries.

¹⁰ Assumed — see text.

¹¹ Grants for new buses not generally available to private operators.

¹² Allows for higher registration and licence fees for private operators.

Source: I. Wallis, *Private Bus Operation in Urban Areas — Their Economics and Management* (Australia: R. Travers Morgan Pty. Ltd., 1979).

the same pattern is evident when moving up to a rail car: a vehicle seating say 150 passengers, can easily cost £650,000.) The main reason for this is that small vehicles can be mass-produced and bought 'off the shelf' while large ones tend to be made on special order and assembled as special units.

Passenger waiting times. But there is a second reason favouring the small bus which, while more subtle, may be more important. For a given route capacity, small buses provide *more frequent service* than larger ones and, therefore, involve less waiting time per passenger. This factor might not matter to a franchised operator who has to bear the costs of his crew but not the waiting time of his customers; hence the preference of monopoly operators for big vehicles. However, where competition is allowed, those who provide public transport have to respond to the needs of the passengers, most of whom dislike waiting for buses. To reduce waiting it is necessary to use small vehicles providing a frequent service. It is significant that when the private bus operators took over the municipal service in Buenos Aires in 1962, one of their first actions was to replace the large municipal buses by smaller ones. More generally, whenever a private operator has the freedom to choose the size of his vehicle, he generally chooses something less than a full-sized bus.

Less traffic congestion. The small bus has other advantages: as it holds fewer passengers, it is easier to fill with people starting at one point and wishing to travel to another, so it tends to stop less frequently than large buses; and, being more manoeuvrable, it can often make its way more quickly along congested streets.

In summary, while a bus operator might like to provide service using a small number of large buses, preferably crowded, with passengers having to wait a long time for their arrival, the public prefers the speed that can in general be provided only by small vehicles. These reasons may explain why under conditions of competition, the smaller buses seem to have the edge over the larger ones.

Size of operating unit

Some businesses can only be operated by large firms. A manufacturing process requiring heavy capital investment cannot be

operated as a backyard enterprise, as became evident during China's industrialization efforts. Other operations, such as a restaurant or beauty parlour, can be successfully provided by a single operator, a family firm, or a small partnership.

The organizational unit supplying public transport ranges from the one-man bicycle rickshaw in East Asia to fleets containing thousands of buses in cities such as New York, Chicago, London, Bombay, and Bangkok. Numbers of employees per bus also vary widely, from under two in Australia to fifty-eight in the Office of Transports en Commun du Zaire (OTCZ) of Kinshasa (as of 1980). About fifty per cent of the OTCZ buses are on the road at any one time, the staffing works out at 116 people per working bus. Attempts have been made to assess the effect of fleet size on the efficiency of public transport systems but the results are inconclusive. A study comparing different sized firms in Britain reported that unit costs increase with fleet size, while the opposite effect was found in India. For the purpose of this report, it is sufficient to note that there is no clear evidence that increasing the size of bus fleets result in lower costs or higher profitability.

On the other hand, there is clear evidence that large bus operators incur financial losses under the same conditions that small operators — owner-drivers — can turn to profits. Although operators in the world over are reluctant to admit to making profits, the pressure to obtain permits to provide service and the price of which permits in some cities change hands, or are hired out, are sure indications of profitability. At home, there is a well-documented case of a route that was given up by London Transport because it lost too much money, and was subsequently operated without subsidy, by a private operator.

Advantages of small firms

The reasons for the financial viability of the small transport operator may be it a furniture-mover, a taxi driver, or a bus operator are well known and typical of other types of small business in the transport sector. The owner will be willing to work longer and less regular hours than would a paid driver in a large fleet. He will use his own vehicle (or enlist the help of family members) and is likely to do the routine servicing and maintenance himself. He will not

his own depot but will service his vehicle on the street or at a local garage. His record-keeping will be minimal: just sufficient to keep the tax inspector at bay. He will make a greater effort than a paid driver to collect fares from passengers and to ensure that the amounts collected do not get lost on the way. An extra driver can be employed if two shifts a day have to be run. Some facilities, such as a two-way radio service, can add to earnings without the owner relinquishing control of his vehicle.

There is also evidence that a high level of service over a wide area can be provided by small firms, as long as the organizational structure of the industry is appropriate. Taxis are a case in point. While some may be operated as one-man or one-woman firms, and some may be in large fleets, there is no need for any formal co-ordination to achieve an acceptable level of service. Taxis find their way to where the business is most profitable and provide an example of *co-ordination through competition*. Obviously, a single operator cannot cover a whole route, but a route can be covered by a large number of individual operators organized, if necessary, as a route association.

In passenger transport, the basic operating unit is the vehicle and, as the taxi business proves, it is possible for the owner of even one vehicle to operate it successfully at a profit. Evidence from cities in Asia and Latin America suggests that it is possible for a group of people to own a small bus and to operate it at a profit; but the owner-driver is in a particularly strong position to control the maintenance of his vehicle and the revenues obtained from customers. Hence there are real advantages to the operators of small transport units.

Route associations

In order to make the maximum contribution in the provision of transport, the individual unit does, however, have to work within an appropriate organizational framework. For example, a taxi looking for business has to be recognized by the public as being available for hire. If it is a vehicle intended to carry more than one person, its destination has to be clearly indicated. It is also important for the intending passenger to know the fare that is being charged, and the places at which vehicles can be found

readily. Some of these features are provided by route associations which are to be found in many cities in Latin America, Africa and Asia.

The essence of the route association is that each vehicle remains under the control of its owner or owners, both as regards driving and maintenance. What is shared is the route: the members of the association ply a specified route, in conjunction with others, thus offering travellers a frequent service. Fares are generally fixed by the association, but not invariably: In Hong Kong and Istanbul, for example, higher fares are charged in peak periods when demand is higher and traffic congestion more acute (a similar system obtains for Washington DC taxis, which are allowed to charge higher fares in peak periods than in off-peak ones). The revenues in some associations are retained by the individual members, and in others, pooled among the members.

The precise organization of a route association varies from city to city. Any group operating a route has an interest in increasing its numbers and also in ensuring that its members work harmoniously with one another. This means that conditions may be imposed on entry (possibly an entrance fee) and that rules are laid down to prevent members from 'stealing' traffic from fellow members by travelling behind their schedules. However, in some cities (Buenos Aires, Manila, Calcutta, and Hong Kong, for example,) route associations compete with one another so that no group has a monopoly over an entire route. There are also instances of infighting between competing groups of operators. However, route associations definitely work, serving both the public and their members.

Doubts about informal public transport

Private enterprise public transport has undoubted disadvantages as well as advantages, and raises a number of doubts, often stated, in the minds of those who are used to traditional transport systems. Sigurd Grava has listed them as follows.

- (a) *Service is provided only if it is profitable.* This disadvantage, which applies to any commodity provided by private enterprise, certainly holds. In general, only a monopoly or franchised operation can subsidize unprofitable

out of the earnings of profitable ones. However, cross-subsidization of this kind is an inefficient way to help people who cannot afford to pay the full costs of public transport, as discussed in Chapter 5.

- (b) *Low-density areas.* Although the criticism that low-density or poor neighbourhoods remain unserved is often made, there are many places in which it is not valid. For example, in Nairobi, and in many Latin American cities, it is only the informal sector that serves the poor neighbourhoods. The flexibility of informal systems often allows them to operate successfully in low-density areas which formal systems cannot service.
- (c) *High competitiveness can keep the income of drivers low.* This again, is true, but competitively low costs are part of the price of keeping fares down. Furthermore, many of the drivers who work at relatively low wages providing public transport earn more than they could in other occupations. And many earn substantial wages — enough to enable them to buy their vehicles. Certainly, they could not be engaged in the service if they did not think it worthwhile.
- (d) *Risk of protection rackets developing.* It is true that in some cities the methods used by operating groups to protect their 'territory' can be unlawful. This, however, is not a peculiarity confined to profitable informal transport. Properly organized route associations liaising fully with the authorities largely overcome this objection.
- (e) *Undisciplined driving.* It is sometimes objected that the scramble for fares necessitates an undisciplined attitude and behaviour toward traffic regulations. This seems to be a fair criticism, but one that applies to the taxi business in many cities; and private motorists are often no better. Here, too, a strict enforcement of traffic rules can cope with anti-social behaviour.
- (f) *Public agencies tend to ignore informal transport.* Frequently, public agencies tend even to attempt to eliminate IPT, since it does not present a 'proper civic image.' This is true particularly in developing countries where national leaders seeking to project a prestigious image are often embarrassed by small-scale free enterprise, one of the best

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- (g) *Maintenance of equipment can be deficient, at a cost to safety.* This can be a valid criticism, though it is fair to point out that operators of any transport system have strong incentives to avoid accidents. Local government inspection systems and regulations can help cope with this problem, as they do with metropolitan taxis in the UK.
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These, then, are some of the reported characteristics of free enterprise urban public transport throughout the world. Readers must decide whether such systems could be used to advantage in their own communities. Some of the objections that have been made regarding the proposed use of informal public transport in the United Kingdom, which include some of these points raised by Grava, are reviewed in more detail in Chapter 5.