

**THE DUBLIN TAXI MARKET:
RE-REGULATE OR STAY QUEUING?**

Studies in Public Policy

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THE DUBLIN TAXI MARKET: RE-REGULATE OR STAY QUEUING?

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and Oliver Hogan

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Executive summary

- 1 In Dublin, passengers queue for taxis at many times of the day, most times of the year, and often for periods in excess of an hour. Taxis in most cities provide both immediate service and delivery to the location chosen by the customer. In Dublin, taxis now provide only the second service since waiting times for taxis frequently exceed those for public transport.
- 2 The excess demand for taxis has arisen solely because supply has been restricted (since 1978) while demand has grown enormously. It is likely that demand has more than doubled in twenty years, fuelled by economic growth, demographic change, tourism and attitudes towards drinking and driving. In contrast, the supply was constant at 1,824 from 1978 until 1992 when it was increased by 150 to 1,974. In the last year, a further 400 licences have been issued, bringing the total to 2,374. The increase in supply over the twenty years is less than 30 per cent, yet the demand for taxis is probably more than double the current supply.
- 3 Much of the excess demand for taxis has been absorbed by hackneys. These are private hire vehicles that may not initiate hirings at taxi ranks, while cruising, or by using in-vehicle communications. As a result, they compete with taxis mostly for telephone bookings, but are less efficient than taxis because they have a high proportion of one-way hirings, being generally required to return to base each time. Hackney numbers grew from 800 in 1992 to about 3,000 in 1997 when a moratorium was imposed on new licences.
- 4 Excess *demand* has a high cost both because that trade which does occur is inefficient and because much trade does not occur at all. The former involves longer waiting times and probably higher fares. The latter leads to increasing the use of private cars, undermining campaigns against drinking and driving, and other effects. We calculate that the total cost of excess demand exceeds £150m. The immediate beneficiaries of the restriction in supply are the owners of taxi licences, but the benefits get whittled away in terms of higher values on taxi licences. In the end, society is a

net loser. Disabled users of taxis bear a disproportionate burden of this cost.

- 5 The main rationale for the restriction on entry is that increasing the margins earned by licensees encourages them to behave more responsibly, leading to a safer and higher quality service. There are three problems with this argument. First, other policy instruments such as enforcement of quality standards may be more effective. Second, the increased margins get eroded away by the spiralling value of licences on the secondary market (currently around £80,000). Third, the system of restricting entry creates rents for existing owners of licences. They then have an incentive to lobby and argue that no new licences should be issued in order to keep the licence value high.
- 6 The economic literature on taxi regulation suggests that fare controls are necessary to avoid overcharging, but that controls on entry are not required. Many cities do not have controls on entry. Amongst these, the most positive experiences are reported from those where fare controls are maintained. The only systematic problem that has accompanied entry deregulation is that quality standards have fallen as the market expands. However, this is a reason for improved quality standards, rather than an argument against removing entry controls.
- 7 The existing regulatory system has failed. It has prevented the supply from growing with demand as it should. This failure will continue as long as entry is regulated, even if new licences are issued. Ironically, the issue of more licences may perpetuate the problem, because it may reduce the pressure for the fundamental reform: namely the removal of the entry controls.
- 8 Our central proposals are as follows.
 - a) Entry to the market should be deregulated within a short time frame of not more than three years. At that time, any suitably qualified applicant should be awarded a licence.
 - b) Fare control should be retained.
 - c) Supply should be increased before entry deregulation by awarding a second licence to each of the holders of the original 1,974 licences. This should be done in two stages: the 800 licensees who most recently purchased a licence on the secondary market should be issued with an additional licence now, the remaining 1,174 one year later. We believe

that the excess demand in the market is sufficient to absorb at least this number of extra licences.

- d) Quality standards for drivers and vehicles should be tightened up and enforcement of the law made rigorous and there should be an improved, user-friendly mechanism for making, receiving and acting upon both complaints and compliments.
 - e) After entry is deregulated, the regulator should focus on maintaining and enforcing quality standards and fine-tuning fare controls to equate supply and demand. The regulator should also be charged with devising and implementing a system to measure excess demand in the market that uses the fare controls to ensure adequate supply.
 - f) The structure of regulation should be changed, with the elected body making general policy decisions and setting performance criteria for an independent regulator. In turn, the regulator should be answerable to that elected body for the performance of the regulatory system.
 - g) Hackneys should be allowed greater freedom to hire, and should be subject to the same quality standards as taxis.
 - h) The local authorities should desist from imposing taxation on the market. This leads to high taxi fares, greater use of private cars, and aggravates other problems.
- 9 Alternative proposals have been made to the authorities following reviews of the market by Faber (1998), the Dublin Taxi Forum and other groups. All of these proposals envisage that entry would be deregulated after ten years or not at all, and that there would be a modest increase in supply each year for a number of years. None of the proposals would eliminate queues for taxis within the next five to ten years. One proposal to put shelters and seating at taxi ranks even suggests that passenger queues could be a permanent phenomenon.
- 10 None of the reviews addresses the problem of delivering progressively on a commitment to deregulation. This was a major flaw in an earlier review in 1992. It recommended a gradual increase in the number of licences over time, but then no new licences were issued after the first tranche of 150. There is a danger that history could repeat itself with a small increase in supply, followed by stagnation until the next crisis.

- 11 We consider that our proposals are superior for several reasons.
 - a) The worst queues would be eliminated within one year when the second group of licences is issued.
 - b) Existing licensees would be compensated for the reduction in the value of their licences by being able to sell (or keep) one or both licences.
 - c) It would be difficult for the authorities to back out of the proposals midway because of the licences promised to the second group of licensees and because of the short time frame.
 - d) Using fares to regulate supply and demand in the market would not give rise to such strong interest groups on either side of the market. In particular, with free entry there would be no monopoly rents to protect.
 - e) Rapid deregulation of entry will free up those taxis that are wheelchair accessible so that improved service can be provided to disabled passengers.
- 12 However, if the authorities prefer to deregulate the market by gradually issuing licences over a number of years, then they should now sell those new licences forward in order to demonstrate a commitment to continuing the process of deregulation. Thus they would auction a number (preferably as high as possible) of licences to come into use in each year from now on. Policy reversal would be difficult because the authorities would have to buy back these licences.
- 13 We do not consider that compensation should be paid to existing licensees. A taxi licence has economic value solely because of the monopoly profit it enables the holder to earn in its use or by its sale. It would be contrary to good economic policy to reward monopolists in this way.
- 14 Several major reports and this policy paper have now contributed to the policy debate. There is virtual unanimity that the number of taxis needs to be increased and there is no disagreement on the retention of fare controls. The debate now centres on whether entry should be deregulated and on the speed with which new licences should be issued in the market.
- 15 Further consultation or discussion of these issues is neither necessary nor acceptable. The time for action has arrived. Local authorities and central government must now deliver compre-

hensive re-regulation of the taxi market. They should substantially increase taxi licences over the next two to three years, commit to removing entry barriers, and reform the system for regulating the market. Alternative policies could be open to the interpretation that they amount to window-dressing, with the inference of continued capitulation to the vested interests of a small industry lobby over the broader consumer welfare. Alternatives may give partial relief of the problem for a short period of time, but they will not address the fundamental problem that is created by the restriction on entry to the market. Unless this is tackled resolutely, Dublin will continue to lack an effective taxi service.

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Introduction

This paper examines the question of how the Dublin taxi market should be regulated. We first describe the history and current position of the market, both in terms of its structure and regulatory framework (chapter 2). At the end of 1997 the market was characterised by excess demand, the result of a virtually stagnant number of taxi licences with rapidly growing demand. New licences issued in 1998 are wholly insufficient to meet this demand. The market has responded with an explosion in the number of hackneys, but these are prevented by law from direct competition with taxis. The immediate cause of the problem is that the authorities have failed to issue new licences, in a climate of strong opposition from the taxi industry. The fundamental problem is that any system that restricts entry to a market in this way may be susceptible to this type of lobbying.

This raises the question of whether a restriction on the *number* of taxi licences is necessary or desirable. We argue that it is neither, and base this on an examination of the economic literature on the regulation of taxi markets and on the experience of cities that regulate their taxi markets differently.

In surveying the economic literature in chapter 3, we find there is general agreement that price competition does not work well in the taxi market because it is costly for buyers to compare prices. In markets where there are extreme economies of scale, a legal restriction on entry may be the most effective policy instrument to achieve efficient supply in the market. This does not apply in the taxi market. Thus while economic theory suggests that the regulation of fares is necessary, it does not justify regulation of entry.

In chapter 4 we examine the practice of regulation across cities. Regulation of both fares and entry has been common internationally but recent years have witnessed a removal of such controls. In cities where both fares and entry have been deregulated, it is not obvious that prices have adjusted to costs and there is no strong evidence against the hypothesis that monopoly prices can be achieved. Where entry has been deregulated and fare controls have been maintained, the market has expanded considerably. This experience generally

supports fare controls and entry deregulation, but it also suggests that entry deregulation should be accompanied by improved quality standards.

Chapter 5 addresses a number of policy issues other than the regulation of fares and entry. The questions of peak loading and flexible supply have implications for using part-time or shift employment in the taxi market. We outline how efficiency of matching relates to the level of fares and argue that the taxi market should not be used as a source of revenue for the authorities, no matter how tempting that might be. We also examine such questions as the distinction between taxis and hackneys, drink driving and the accessibility of taxis for persons with disabilities.

In chapter 6 we argue for a comprehensive *re-regulation* of the market, as outlined in Table 1. The emphasis is on the term re-regulation because we propose a new regulatory structure that strengthens some features of the existing regulatory regime and removes others. In particular, we advocate that entry to the market should be totally deregulated, that fare controls should be maintained, and that the standards of service, safety and quality and their regulation should be improved. The move to full entry deregulation should be staggered by the issuing of a second licence to each existing licensee. This would compensate existing licence holders and simultaneously demonstrate a strong commitment to full deregulation of entry.

Table 1: Summary of proposed re-regulation of the taxi market

<i>Aspect</i>	<i>Current</i>	<i>Proposed new regulation</i>
Entry	Limited	Entry by all that meet quality standards Stagger deregulation of entry over a short time-period
Fares	Controlled	Keep system of maximum fare control
Quality	Regulated	Higher standards and better enforcement

The Dublin taxi market

2.1 System of regulation

The Dublin taxi market is heavily regulated. Since 1961, suppliers of taxi services must meet quality standards, may not price freely and, since 1978, the effective position has been that new suppliers can only enter by replacing existing ones except when the licensing authorities issue new licences.¹ We outline below the main features of regulation of the market.

Drivers: All taxi drivers must be in possession of a Public Service Vehicle (PSV) licence, be of good character, and have a knowledge of the area where they work. In addition, they must be available for work for at least forty hours per week, not work more than eleven hours per day and not engage in another occupation which might impair their efficiency.² In principle, this excludes part-time drivers from the market. The tests of driving skills and knowledge of the city are once-off and there is no requirement for ongoing training or testing. Enforcement of these standards is by the Garda Commissioner (the Carriage Office).³

Vehicles: Standards relate to size, seat capacity, safety and roadworthiness.⁴ Enforcement of these standards is also by the Carriage Office. There is no regulation of other aspects of quality such as comfort of seating, cleanliness, receipt-issuance, etc. Licences issued since 1992 require vehicles to be accessible to disabled persons.

¹The area of taximeter operation is also limited. In 1995 the Dublin Corporation taximeter area was increased from a radius of ten miles from the city centre to fifteen miles (see Statutory Instrument No 136 of 1995, Schedule 1). In March of this year, the taximeter area was changed to include the four electoral areas (see footnote 7).

²Statutory Instrument No 273 of 1968, Section 6. Also as set out in Statutory Instruments Nos 226 and 292 of 1978.

³Road Traffic Act of 1961, especially Part 7. The Minister for the Environment was empowered to license vehicles and drivers, to enforce regulations, and to specify the location of taxi ranks. These tasks are, in turn, delegated to the Garda Commissioner.

⁴Statutory Instrument No 136 of 1995, Section 17.

Fares: Fares are controlled by a schedule of maximum fares for hiring, per mile, waiting, baggage, unsociable hours etc. Appendix 2 gives details of fare controls. The legislation allowing for price controls was the 1961 Act. In September 1995 the task of regulating prices was transferred from the Department of the Environment to the relevant local authorities. Any change in the level of fares allowed is a reserve function of the authority, which means that it must be voted upon by its elected members.⁵ Enforcement of the fares is undertaken by the Carriage Office and metering by Forbairt.

Entry: Restrictions on the number of taxi licences were introduced in 1978.⁶ Licence numbers are decided by Dublin Corporation on its own behalf and on behalf of the other local authorities.⁷ Again this is a reserve function. Although new entry to the market is not currently possible (unless new licences are issued), entry does occur when a licence transfers, but this involves no new supply on the market. We refer to the purchase of an existing licence as the secondary market for licences so as to distinguish it from the issue of new licences by the local authorities. The Corporation does not prevent sale on the secondary market (except for new licences for a number of years after they are issued), but it does charge a renewal fee of £3,000 for each transfer.

Licence fees: The authorities charge fees for new licences and for the renewal of existing licences every two years. The fee for a new taxi licence increased from £100 in 1992 to £15,000 in 1998. The biennial renewal fee for an existing licence increased from £100 to £450 in May 1997. Around the same time, the fee for a new hackney licence increased from £100 to £1,000.

Hiring: Taxis may be hired by telephone, while on the street, or at designated taxi ranks. Taxi ranks are designated by the local authority and their distribution does not necessarily reflect the distribution of demand, or keep pace with changes in it.

⁵This function was transferred to local authorities by Statutory Instrument No 136 of 1995 (see Schedule 7).

⁶Statutory Instrument No 292 of 1978.

⁷The four local authorities in Dublin are Dublin Corporation, Fingal, Dun Laoghaire-Rathdown and South Dublin. The 1995 regulation (SI No 136) enabled each to establish its own taximeter area, but they have agreed to co-operate in the formation of a single large taximeter area covering all four districts.

Hackneys: These are private hire vehicles with no external identification. They may not hire at taxi ranks, while moving or standing on the street, or initiate hirings by two-way communication in the car. Thus they are only available by telephoning or calling in person to a hackney office. Hackneys, unlike taxis, may not use bus lanes. Hackney fares are not regulated. Until 1995, licensing of hackneys was undertaken by the Carriage Office without restrictions on entry. When this function was transferred to Dublin Corporation in 1995, the legislation empowered the Corporation to put a moratorium on numbers.⁸

Complaints: Complaints regarding overcharging or the quality of the taxi may be made to the Carriage Office. It is fair to say that most taxi users are probably unaware of the procedure for complaint.

Table 2: Regulatory functions and agencies responsible

<i>Aspect</i>	<i>Agency</i>
Setting maximum taxi fares	Local authorities
Issuing of taxi licences	Local authorities
Transfer of taxi licences	Local authorities
Issuing of hackney licences	Local authorities
Quality of drivers	Carriage Office
Quality of vehicles	Carriage Office
Complaints process	Carriage Office
Metering	Forbairt

The regulation is clearly fragmented, with various authorities regulating different aspects of the market (see Table 2). This is further complicated by the fragmentation of responsibility for urban areas between four different local authorities. While these authorities co-operate under the aegis of Dublin Corporation, each must vote on any important measure. Vehicle and driver standards are determined largely by law and enforced by the Carriage Office. The responsibility

⁸An agreement exists between local authorities on the issuing of hackney licences that is similar to that for taxis (see footnote 7) so that Dublin Corporation acts on behalf of all four.

for wider legislation rests with central government. The effective regulation and management of the market thus requires both highly sophisticated co-ordination between the different agencies and unity of purpose among them.⁹ More generally, there appears to be no formal link between the regulation of the taxi market and public transport and infrastructure for the city generally. For this reason the present system does not permit proper management of the taxi service in Dublin.

2.2 Market structure and performance

SUPPLY The total supply of taxi services is the product of the number of licensed vehicles and the amount of time that each operates. shows how the number of taxis in Dublin has varied since 1970 (see also Figure 1 on page 00). Numbers grew gradually until 1978 when the first control was introduced. From 1978 until 1992, the number was static at 1,824 until an increase of 150 was granted. A further increase of 400 has occurred since late 1997, bringing the total number at the time of writing to 2,374. All the licences issued since 1992 are for wheelchair accessible taxis, bringing their total to 550. Information on the operating time per taxi is not available, but it would be surprising if this had not increased in response to the restriction in numbers. At present, many taxis are operated by several drivers, thus plying for trade for most, if not all, hours of the week.

Table 3 : Taxi licences in Dublin since 1970

<i>Year</i>	1970	1971	1972	1973	1974	1975	1978-92	1992-7	1998
Taxis	1,389	1,232	1,395	1,437	1,561	1,664	1,824	1,974	2,374

Source: Dublin Corporation

Unlike many other cities, taxis in Dublin are owned in a diffuse manner, usually singly by owner-drivers. A few companies or individuals own or control groups of licences, but the number of licences affected is probably considerably less than 25 per cent of

⁹For example, if Dublin Corporation wished to increase licence numbers and was concerned about quality falling, it would have to negotiate with the Carriage Office for improved quality standards or enforcement. However, there is no mechanism by which it can pay for this extra service, even if it was worthwhile.

total supply.¹⁰ Most drivers obtain two-way radio service from a telephone dispatcher but there is no control or ownership in this relationship. Thus taxis operating under a particular dispatcher are generally individually owned.

The market is also supplied by hackneys.¹¹ These do not compete directly with taxis but for some users, especially those booking by phone, they are reasonably close substitutes. Annual data on the number of hackney licences are not available, but their number has increased dramatically over the last five years from a figure of about 800 in 1992 to over 3,000 in August 1997 when a moratorium on new licences was imposed.¹² This moratorium was lifted on 1 September 1998. At the time of writing, data on new hackney licences issued were not available.

Overall therefore the supply on the market has been restricted by the regulatory authorities, but much more so in the case of taxis than hackneys.

DEMAND Demand for taxi services is not directly observable because the level of activity in the market is determined solely by supply. This is generally true in any market where there is excess demand, because entry to the market has been restricted.

We first wish to substantiate our conclusion that there is excess demand for taxis. This is illustrated by the queues for taxis that exist in the city and that have been a common feature in Dublin for a number of years. Quantitative surveys of this excess demand have been undertaken on a number of occasions.¹³ The results support the common observation that the queues for taxis are frequent and lengthy. These queues are longest around Christmas, at weekends, and at night when public transport closes down. In the worst periods,

¹⁰See Jerome Reilly in the *Irish Independent* on Saturday 22 November 1997 for detailed information.

¹¹These are private hire vehicles and are described in section 2.1 above.

¹²The reason why the data are so poor is that in September 1995 Dublin Corporation took over the regulation of market from the Carriage Office which appears to have kept no records of licence numbers. The Corporation estimates that 1,400 licences were in use at that time and it is on this basis that the figure of 3,000 is reached. However, it could be higher.

¹³These include a private survey during 1990 and 1991 commissioned by the Dublin City Centre Business Association, a Dublin Corporation Survey on 15 December 1995, a comprehensive survey for Faber (1998) conducted over the period October to December 1997 and an RTE *Prime Time* programme broadcast on 27 November 1997.

waiting times of ninety minutes are common. The most comprehensive of the surveys, that by Oscar Faber (see Faber 1997 and 1998), showed that over 50 per cent of all customers at taxi ranks must wait for a taxi, regardless of the time of the day and/or the day of the week. This indicates that it is not just a peak demand problem. For example, from 7am to 7pm, 51.6 per cent of passengers in the city centre waited. Similar problems exist in relation to telephone bookings, where some calls fail to secure a taxi. Waiting times can be long, and particularly so for wheelchair accessible taxis.

Such queues are likely to reveal an underestimation of the true demand for taxis because many would-be passengers will not wait, preferring instead to walk, use public transport or use private cars. This is likely to be particularly the case during the day, when public transport is available. For example, if the average wait for a bus on a principal route is five minutes, then taking a bus becomes a much closer substitute for taking a taxi. Thus shorter queues during the day do not necessarily mean that there is less excess demand at these times.

This excess demand is in spite of the increase in the number of hackneys. In areas of the city poorly served by taxis at peak times, or where there are few taxi ranks, hackney offices have sprung up. These operate as substitutes for taxi ranks in that passengers can wait for the next available hackney. Queues at these offices also occur.

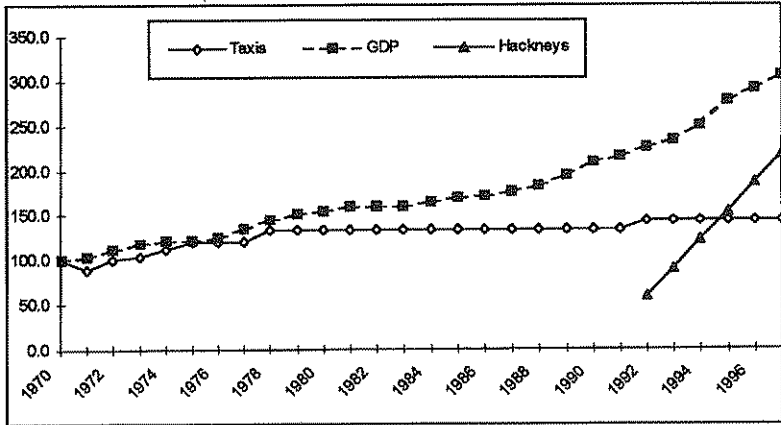
The fact that such serious excess demand can persist for many years without sufficient increase in taxi numbers or other response from the regulatory authorities suggests that the current system of regulation is incapable of adjusting the supply in the market to meet the demand. This is a point to which we return below.

One of the proposals made later in this paper is that every existing licence holder should be awarded a second licence. Because this would increase the number of licences by 1,974, we demonstrate that the market can support this number of taxis.¹⁴ Thus we do not estimate the actual number of taxis that the market would support, but rather establish that this number exceeds 4,348. As we argue

¹⁴This proposal was made in December 1997 when there were 1,974 licences in the market. It would be inappropriate to extend this offer to those who have obtained the 400 new licences issued in 1998 because they have not paid the high secondary market value. Thus we propose to give a licence to each of the holders of the pre-1997 licences (this is 1,974) which, when added to the existing supply of 2,374, would bring the total in the market to 4,348.

that free entry should determine the supply in the market, there is little to be gained from estimating what the actual level of demand would be.

Figure 1: Number of taxi and hackney licences and GNP



Note: GNP is at constant prices with 1970 = 100

In estimating the increase in the level of demand over the last twenty years, our approach is to examine how factors that affect demand have altered since 1978, the last time when supply in the market could be said to be equal to demand. GDP measures the overall level of activity in the economy. No measure is available for Dublin, but the national figure has more than doubled between 1978 and 1997. Figure 1 graphs an index of the number of taxis and GDP (setting the 1970 values at 100 for ease of comparison). Simple extrapolation based on national GDP would suggest that approximately 4,500 taxis are needed to supply the level of demand in 1998. However, there are reasons to believe that the increase in the demand for taxis may be proportionately greater than average changes in economic activity.

First, the demographic profile has changed in favour of adults who are more likely to be taxi users. Table 4 shows the population of Dublin (in thousands) in 1977 and 1996. The overall population increase of 13 per cent conceals an increase of 65 per cent in the population cohorts of 25 years of age and upwards over the same period. There has also been a substantial expansion around the periphery of Dublin.

Table 4: Changes in Dublin population: 1977-96

Age cohort	0-14	15-24	25-44	45-64	65- over 25	Total	
1996	234	197	326	199	101	626	1057
1977	291	267	165	145	68	378	936
Change	-57	-70	161	54	33	248	121
Per cent change	-20	-26	98	37	49	65	13

Source: Labour Force Survey estimates of the population of Dublin. Figures are in thousands.

Table 5: Passenger numbers at Dublin Airport: 1979-96

Year	1978	1996	increase	per cent increase
Airport traffic	2.5m	9.1m	6.6m	262

Source: Aer Rianta

Second, tourism has increased by more than growth in domestic demand over this period. One of the most intensive sources of tourist demand is captured by passenger traffic at Dublin airport which has almost quadrupled from 2.5 million passengers in 1978 to over 9 million in 1996 (see Table 5), a trend that has not abated since 1996.

Third, the law on drinking and driving and its enforcement have both been tightened over this period. This would be expected further to increase the demand for taxis. Ironically, the advent of night buses may also have increased the demand for taxis. By creating a critical mass of late night activity in the city centre, these services may have paradoxically increased the overall demand for taxis.

These factors suggest that 4,400 underestimates the current level of demand for taxis. This is supported by the fact that queues persist despite a total of 2,400 taxis and over 3,000 hackneys.¹⁵ On this basis we contend that giving an extra 1,974 licences would not completely satisfy the excess demand in the market.

¹⁵Hackney and taxi numbers cannot be added together because taxis are carrying passengers for a greater proportion of the time. Hackneys have lower two-way occupancy rates because the restrictions on hiring limit their ability to obtain return passengers.

COSTS OF EXCESS DEMAND The costs of excess demand in the market are borne largely by consumers, both by taxi users and non-users of taxis. The cost to taxi users is reflected in high fares and high waiting times. The total cost to users of high fares can be estimated by the corresponding benefits to the taxi industry in terms of monopoly rents, as reflected in the price of a taxi licence on the secondary market, the primary market being issue of new licences for fees by the authorities). Official data on the prices in the secondary market are not recorded, but Barrett (1991) demonstrates the steady increase during the 1980s. In recent years, the price has varied around £80,000, suggesting a total monopoly rent of £150 million, or an annual equivalent of £12m at current interest rates.¹⁶ This is entirely a cost to the users of taxi services and it does not fully reflect the cost of passenger waiting times.

The costs of non-use of taxis includes the losses due to trips not taken, to people drinking and driving because taxis are not generally available, and to people putting themselves at risk by walking in areas where they should use a taxi. Putting a monetary value on these losses would be difficult, but it would appear that £12m per annum substantially underestimates the total cost to consumers of the excess demand in the market.

EFFECTS OF FREE ENTRY Deregulation of entry would have two major effects on the costs of supplying taxi services. The main effect would be the drop in fixed costs due to not having to pay the licence cost of £80,000. Whether or not this is paid, it counts as an opportunity cost because the owner could sell the licence and realise the capital. This would be equivalent to a reduction of approximately £6,400 in the fixed cost of running a taxi.¹⁷ On the other hand, the usage of taxis would likely fall both in terms of hours on the road, and the occupancy while working. The latter would increase variable costs because taxi drivers would be idle in their cars more often while

¹⁶The total present value of 1,974 licences at a value of £75,000 each is approximately £150m. At an interest rate of 8% this would be equivalent to an annual perpetual flow of £12m. In other words, licence holders must each earn £6,400 per annum to meet the capital cost of holding a licence, whether this value is what they paid for the licence or the opportunity cost to them of not selling it. If a finite time horizon were chosen, this would increase the capital cost.

¹⁷See footnote 16. We have erred on the side of caution and chosen a low figure. Faber (1998) estimates this figure at £15,400 based on a higher interest rate and shorter time horizon of seven years.

working.¹⁸ However, if occupancy rates fell substantially, taxi drivers could avoid these higher variable costs by working fewer hours. Thus the increase in variable costs is likely to be of second order significance relative to the reduction in fixed costs. As a result, a regulator that reflected consumer interests could possibly lower fares if entry to the market were deregulated. This is in stark contrast to the increases in fares that accompanied the 400 new licences issued in 1998.¹⁹ Deregulation of entry to the taxi market would also have major effects on the hackney market. It is likely that many of the existing hackney licences would convert to taxi licences, which are more efficient because fewer restrictions apply to them. Thus the hackney market would shrink. The extent to which hackney services would continue would depend on the efficacy of regulation. If the regulator sets maximum taxi fares that are too high or too low (all the time or at certain times of the day or week), or if there are insufficient taxi ranks in certain areas of the city, then some passengers are likely to use hackneys as substitutes. Thus the hackney market would usefully compensate for regulatory failure, as it has done in recent years. Conversely, rapid growth in hackney usage should trigger changes in the regulation of the taxi market because hackney carriage, as currently constituted, is fundamentally less efficient than taxi service. Changes designed to make hackneys more competitive with taxis would not alter this analysis, but would simply make the hackney market more responsive to regulatory problems.

QUALITY AND STANDARDS In general, there is little quantitative information available on quality or standards in the market. The Carriage Office does not publish any information on complaints received and how they have been followed up (or on any other aspect of the market). Information on how to make complaints is not readily accessible or obvious to the consumer, and the average passenger would need to be quite determined to make a complaint. There is no transparency about the complaints process in the sense that it is

¹⁸Teal and Berglund (1987) reported that trips per shift fell by approximately 30 per cent and trips per taxi by slightly more within one to two years of deregulation in four US cities.

¹⁹We discuss the fare increases later in this chapter. The actual numbers are given in Appendix 2.

impossible to be certain that complaints are made or followed up.²⁰ This is in sharp contrast to cities such as New York where there is a widely advertised freephone (1800) number for making complaints.

Survey work by Faber (1998) suggests moderately high levels of satisfaction with the taxi service in Dublin. In general, helpful and friendly drivers and high quality of vehicles received better ratings than the overall level of satisfaction with the service. A consistent complaint reported by business and by groups representing the disabled is that there is "cream-skimming" (whereby less profitable hirings are refused). This is not surprising in view of the excess demand.

2.3 Regulatory decision-making

The current regulatory system has failed in that it has prevented supply from growing with demand. Even if new licences were issued, the basic problem that the system itself is susceptible to capture by the industry lobby would persist (see also section 3.4 for a discussion of the theoretical issues). Hence, the issue of new licences would be a short-term alleviation of symptoms, and not a remedy of the fundamental malaise that would prevent recurrence of the same symptoms at a later stage. In this subsection, we examine how the regulatory process deals with the problem of excess demand, both in terms of issuing new licences and in terms of implementing more fundamental reform. Our focus is particularly on the question of entry deregulation.

1978 Fare controls have existed for some time, but the entry restrictions were first introduced in 1978 in response to a 1976 report on taxi and hackney services commissioned by the National Prices Commission and undertaken by Hyland Associates (1976). The report found acute public dissatisfaction with the quality of the taxi service, with complaints of "cream-skimming", overcharging, broken meters and high fares. At that time, taxi drivers argued that a restriction on the number of licences would solve these problems and this solution was adopted.

In hindsight, Hyland Associates (1976) is best explained by

²⁰This statement is made on the basis of a complaint of overcharging documented by one of the authors in which the complainant was informed that no formal action would be taken because the amount of the overcharging was small.

regulatory capture. Other policy options, such as proper enforcement of the law, were available and would have provided a more direct instrument to tackle the problems of quality and standards at their source. On the other hand, it is not obvious that a restriction on the number of licences would be a good tool to control "cream-skimming", overcharging etc. No consideration appears to have been given to the possibility that entry restrictions would create monopoly rents, and no criteria were established by which new licences should be issued.²¹ In addition, the Hyland Report also rejected higher peak-time fares, suggesting either failure to understand how prices operate to allocate scarce resources or acceptance of the industry preference to keep the market supplied by full-time drivers only.

1992 The next major review of the market occurred in 1992 when an inter-departmental committee examined the market. It concluded that the removal of entry controls would impair quality standards, based partly on evidence from UK cities where quality standards fell after entry deregulation. Again, little consideration was given to the need to strengthen quality standards in law (especially as the market expands with free entry) and to enforce these standards properly.

The Inter-Departmental Committee (1992) recognised that excess demand was a problem at that time and suggested that the number of licences should be increased gradually over time. This resulted in the once-off increase of 150 licences for wheelchair accessible taxis (where the excess demand was most acute). This increase was inadequate to cope with the excess demand at that time, as indicated both by Figure 1 on page 9 and by the subsequent explosion in hackney numbers. In presuming that taxi numbers could be increased gradually over time, the committee underestimated the extent to which the lobbying power of the industry could be mobilised to prevent, or at least delay, new licences being issued. As a result, its recommendations for increased taxi licences were not implemented, apart from the first tranche issued.

The lesson, if any, is that if a review of regulation in a market is to be effective, its analysis and conclusions must incorporate the political reality that lobbying power can have an impact on

²¹This is a common problem in Ireland and has occurred in the licensing of liquor sales and in licensing pharmacies. See Fingleton (1997) for details.

frustrating the implementation of its proposals for change. Otherwise, its recommendations, however worthy, stand little chance of implementation.

1997/8 The most comprehensive review on the market was undertaken by Oscar Faber and associated consultants on behalf of the four local authorities in Dublin between September 1997 and June 1998. An Interim Report published in December 1997 recommended new licences and higher fares. These recommendations were implemented in January 1998, with the new licences being issued for £15,000 each. The Final Report issued in June 1998 suggested 350 new licences should be issued each year for ten years, following which entry to the market should be deregulated. It also undertook a detailed analysis of the management of the market and the issues of quality and standards. The proposals are now under consideration by the authorities. We refer to these as Faber (1997) (the Interim Report) and Faber (1998) (the Final Report).

We first consider the element of the report first implemented – the fare increase, introduced in January 1998. It is difficult to see how this additional cost to consumers could have had the beneficial effect of reducing waiting times. The restriction in supply is due to the small number of taxis, rather than to the under-utilisation of the existing taxi fleet. Thus an increase in fares would only be likely to generate at best a marginal increase in the supply of taxi services.²² A much more plausible explanation is that the increase in taxi fares was implemented at least partly as an attempt to compensate existing licensees for the downward pressure that the increase in taxi licence numbers would put on the value of licences. This is consistent with the fact that following the price increases, the value of a licence on the secondary market was not reduced. It is also supported by the fact that 200 new licences were issued without major taxi industry protest, whereas the 200 issued the previous October (without any fare increase) resulted in a protest that brought the city to a standstill.²³ Moreover, the higher fares did not rely on arguments

²²The Interim Report suggested detailed changes in different aspects of the fare structure in order to use relative prices to deal with peak loading. Such fine tuning is unlikely to have any effect when there is high excess demand. In addition, the impact of this fine tuning is diminished by the fact that only the *increases* were implemented with the *reductions* being “postponed”.

²³It led to intervention by the Taoiseach (Prime Minister) who established the Forum that we discuss below.

that low fares were discouraging entry to the market (i.e. that the new licences to be issued would not be purchased because of low or inadequate returns). Even if that had been the case, the fee for new licences could have been decreased from £15,000 (see below) to reduce costs. Although consumers may have benefited from a reduction in waiting times due to the 200 new licences,²⁴ this reduction in waiting times could have occurred without a fare hike.

Another significant policy change was the increase in the licence fee from £100 to £15,000. This was not explained by any change in associated administrative costs, but appears to be simply an imposition of taxation on the supply of taxis. In chapter 5 below we argue that the licence fee should be as low as possible because taxi usage has positive social benefits. The introduction of this taxation means that the licensing authorities now regulate a market from which they obtain sizeable revenue from restricted supply. It is not difficult to foresee a situation where the dual objectives of regulating the market and generating revenue from it would be in conflict: increasing supply would tend to reduce the revenue that could be generated. The high licence fee for the new licences may also be seen as an implicit commitment not to deregulate entry quickly, because this could push the secondary market value of a licence to below the £15,000 paid for the new licences.

Several other aspects of Faber (1998) could create the impression that its recommendations are designed to minimise the negative impact of any deregulation on the taxi industry. First, it will take ten years to increase the supply enough to eliminate queuing in the market. This is longer than the five-year and seven-year time horizons used by Faber (1998) to evaluate the annual cost of a licence on which fare increases are justified.²⁵ There is no compelling reason why deregulation should take so long, other than that it will reduce distress to the taxi industry.

Second, the justification for increasing fares on the basis of an examination of taxi revenues and costs raises problems. The measurement of taxi costs and revenues is ultimately dependent on revenue information provided by the industry, which is liable to exaggerate

²⁴Faber (1998) reports that 37 per cent of respondents would consider higher fares acceptable in return for reduced waiting times. Such an answer would be useful to a monopolist who wished to know how much rent could be extracted from the market.

²⁵On page 59 they base calculations on paying back a licence within five years, and in Appendix 1 over seven years.

the true position. A more serious problem is that such analysis requires the regulator to decide what is a fair wage for those operating in the industry. This is not an appropriate decision for a regulator to take, especially as the market can be allowed to determine the industry wage. This could be done by allowing fare increases when supply on the market is inadequate (i.e. when queuing of passengers occurs). Moreover, it is not obvious that the group of drivers that is most disadvantaged, namely "cosies",²⁶ would benefit at all from this fare increase. Criticisms can also be made of the other justifications for the fare increase.²⁷

Third, the recommendation to put weather shelters and seating at taxi ranks is fundamentally a pro-industry proposal. While it appears at first sight to be worthy and sensible, on reflection it suggests a change in the long-term nature of taxi ranks.²⁸ Instead of being spaces designated for taxis to wait for passengers, taxi ranks (or passenger ranks!) would become places for passengers to wait for taxis. This would make them little different from bus-stops, albeit for a more expensive (and sometimes infrequent) form of public transport. There is an "opium for the masses" feature to the proposal: it gives short-term benefit to passengers, thus enabling the continuation of the cause of their discomfort. A fundamental characteristic of a taxi service (and an explanation for its price premium over other forms of transport) is immediacy of supply, so a passenger should reasonably expect to find a taxi waiting almost always.²⁹ The provision of shelters and seating creates an expectation that passengers will have to wait on a regular basis and for some time into the future. It is difficult therefore to see how it can be consistent with fundamental reform of the market over any reasonable time horizon.

On the other hand, Faber (1998) has put forward many welcome suggestions for long overdue reforms of the market. This is particularly true in regard to the ongoing testing of drivers and vehicles,

²⁶Persons who drive taxis but do not own a licence.

²⁷Comparisons with other cities can fail to take account of local cost factors and, in particular, the stringency of quality standards. Comparisons are made with the consumer price index and a transport cost index but these do not measure costs properly and, even if they did, would result in the continuation of any previous errors.

²⁸In contrast, an accompanying proposal to provide better lighting at taxi ranks would increase passenger security and would not alter the purpose of a taxi rank.

²⁹We accept that there are times, such as New Year's Eve, special events, etc, when passengers may have to wait, but do not accept that passengers should have to wait for taxis on any regular basis.

the relaxation of restraints on the hackney market, the review of the number and distribution of taxi ranks, the sharing of taxis, and the availability of information on fares and complaints.

Overall, however, some of the recommendations put forward in Faber (1998) may play directly into the hands of the taxi industry. A particular concern is the lack of any binding commitment to deregulation of entry. In suggesting that 350 new licences be issued each year for ten years, the report has not incorporated into its analysis the possibility that the resolve of the authorities, even if high now, will weaken after one or two years. It is thus possible that its most radical proposal for reform may suffer the same fate as the Inter-Departmental Committee (1992) with 350 new licences issued in the first year only and no progress thereafter.

In the same period as Faber (1998) was written, the Taoiseach established a Forum on the Taxi Industry. This body brought together representatives of government departments, regulatory bodies, and the taxi industry. The Forum's recommendations, issued in September 1998, were that control on the number of taxis should remain, but that 200 new licences should be issued each year for four years, after which new licences should be issued only if there is "significant unmet demand".

Given the absence of representatives of consumers or hackneys, it is not surprising that the proposals reflect the taxi lobby's view. This is illustrated by the lack of acceptance that regulation of entry has failed in the past and the absence of any proposal to rectify this for the future. It is also illustrated by statements like "competition between taxis and hackneys is unfair" and "taxis ... need to be protected from the hackney business". The fact that a body that represents the interests of taxi drivers recommends new licences might seem like progress in the debate. However, it is reasonable to speculate that this is a strategy designed to diffuse support for deregulation of entry and thereby to release the steam that has built up behind the case for fundamental reform of the market.

Finally, a third report conducted by Brendan Lynch on behalf of two bodies representing taxi drivers was published in August 1998. The document proposes that the problem lies not in the taxi market, but in poor public transport, traffic congestion, bad planning, unsatisfactory location of new business and housing. Ironically, it advocates restrictions on parking that would be likely to increase the demand for taxis. Most competitive industries would be happy with problems in other markets that increased demand for their

services and would seek to take advantage in plenty. Overall, this report is weak on any substantial economic analysis of the market.³⁰

In summary, the last year has seen a flurry of work on the taxi market, including this paper. There would appear to be general acceptance, outside of existing suppliers in the market, that entry to the market should be deregulated, although there is concern with how long this might take. It is now time for the authorities to act. We believe that they must make a binding commitment to deregulating the market over a relatively short time horizon. Clearly we believe that our own proposal would achieve this. However, if the Faber (1998) recommendations are preferred, we would advocate that the pace of new licences should be faster and that licences should be sold forward so that the decision could not be reversed or watered down in later years. Unless such a commitment is made, the issuing of a few hundred new licences this year will not signal any fundamental reform.

³⁰It relies on scaremongering and blaming others; and it is ultimately a statement of a wish-list for *existing* taxi drivers that makes no pretence to an analysis of the market.

The economic literature on taxi regulation

The taxi market is unique in several regards. First, supply and demand can never meet in the usual sense: there will always be mismatch with both empty taxis and customers waiting. Second, aspects of vehicle and driver quality are unobservable to customers. Third, customers can not easily shop around for the "best price". Fourth, taxis provide a public transport service. For these reasons, taxi markets have been regulated in many cities. The basis for this regulation has been subject to extensive economic analysis and we review that literature here. We consider the regulation of price, entry and quality standards, and conclude this section with a discussion of regulation in general.

3.1 Fare controls

There are two reasons why price competition may not work in the taxi market. The first is the difficulty customers have in searching for a lower price and the second is the ability of taxis to exploit customers who are not well informed.³¹ We deal with these in turn.

Diamond (1971) showed how monopoly pricing could prevail in a market if customers have search costs.³² This is because a supplier who undercuts others would not attract extra sales because it is costly for customers to search for such lower prices.³³ In the taxi market, these search costs would include the cost of waiting to find a second price, the psychological costs of saying no to a high-price driver and the risk of losing a relatively good offer. If there are very few customers and many taxis, the balance of power between the customer

³¹In addition, if entry is restricted, prices may be high anyhow due to scarce supply. Regulation of prices would then lead to queuing.

³²Douglas (1972) and Shreiber (1975) discuss price competition in the taxi market.

³³Klemperer (1995) surveys the literature on competition in markets with customer switching costs. Corry (1991) interviewed taxi-company managers and found a reluctance to lower nominal fares on the basis that the public "showed little initial awareness of inter-company price differences" and that they "would not respond in sufficient numbers to price reductions to compensate any given company for those fare reductions".

and the taxi might be different, however the taxi is still more mobile than the customer.

The size of any search costs depends on the number of taxis available. If there is excess demand (scarce supply), price comparisons will be more difficult to make. The size of the search costs also depends on the location of the customer. Search costs are likely to be high for someone hiring a taxi at a random point on the street. For a customer at a taxi rank, better price comparison might be possible, but this could be impaired by baggage or by the social convention that the customer should hire the first taxi in the rank.³⁴ If different taxis charge different hiring fees and mileage rates, customers may not be able to compare prices very easily. An issue that has received little attention in the literature is the ability of customers to make price comparisons when a service is priced in a complex manner.³⁵ Even if taxis advertised hiring rates and mileage cost on their doors, customers might not be able to compare what fare they would actually pay because they are purchasing a relatively complex multi-dimensional product.³⁶

In many instances, people choose taxis over other forms of transport to save time or to avoid inclement weather. Here the cost of waiting for a second offer is particularly high and taxi drivers who are stopped would be able easily to exploit this fact and charge a higher fare.

On the other hand, for customers hiring by telephone, waiting costs and psychological costs are lower, and the main search cost is that of a telephone call.³⁷ Fares are usually quoted as a composite for the journey, rather than as a formula. In addition, companies may have an incentive to acquire a reputation for setting low prices and this would work better with telephone bookings where the customer

³⁴See Shreiber (1977).

³⁵This arises in many markets but the goods are often large once-off purchases so that it may pay the customer to make detailed price comparisons. An example similar to taxis might be found with mobile phones where each supplier offers a range of price formulae.

³⁶The fare depends on time and distance, and other variables. Consider the following two relatively simple fare schedules. *Schedule A*: fixed fee of £1.20 plus 60p per kilometre and 15p per minute waiting. *Schedule B*: fixed fee of £1.60 plus 70p per kilometre and 14p per minute waiting. Even a highly informed customer might not know relevant information such as journey time.

³⁷It might be easier for taxi drivers to maintain collusion at a taxi rank as any supplier who undercut could immediately be identified by competitors. This might not apply to undercutting by telephone.

chooses the company than with taxi-ranks where the matching is random. Overall, therefore, one would expect more intense price competition in the telephone hiring market than in the markets for random on-street or taxi-rank hirings.

This point holds regardless of whether taxi users are well-informed or not about prices in the market. The second point relates to the over-charging of those who are poorly informed. This could include visitors to the city, infrequent users,³⁸ or those clearly disadvantaged by heavy baggage or a journey through a less safe part of town. The distinction between overcharging and monopoly pricing is subtle. Overcharging could involve charging more than the monopoly price that would be charged to an informed customer, or could take the form of price discrimination, where people are charged according to their perceived willingness to pay. As a result, a cogent argument for price regulation has been to avoid overcharging at airports and train-stations when relatively uninformed and disadvantaged travellers are hiring taxis.³⁹ The traditional solution to these problems has been the regulation of taxi fares and the installation of meters. The regulated price depends on the distance and time of the journey plus any hiring or other fixed charges (see Appendix 1 for an example for the Dublin market). The meter allows the customer to verify the distance travelled which is usually the largest component of the fare.

Some economists contend that regulation of maximum fares is not necessary if there is free entry to the market.⁴⁰ The basis for this argument is that search costs are not high and price comparison by customers will force taxi suppliers to compete on price. This argument is more convincing with regard to telephone hirings, particularly in the United States where the majority of hirings are by telephone,⁴¹ large taxi fleets exist, and local telephone calls have zero marginal cost.⁴²

³⁸Teal and Berglund (1987) cite evidence that 40 per cent of demand for taxi services (in San Diego and Seattle) is by people who use taxis once a month or less.

³⁹For example Schuurmans-Stekhoven (1996) reported significant overcharging (and overcrowding) at taxi ranks at airports in New Zealand.

⁴⁰See Coffman (1977) and Williams (1980a, 1980b).

⁴¹Teal and Berglund (1987) report that between 70 and 80 per cent of hiring in US cities is by telephone.

⁴²Ironically, this argument works best if the taxi fleets are larger, that is, if the market is more concentrated.

In summary, there would appear to be some theoretical rationale for believing that competition among taxis would work in the market for telephone hirings, but less confidence in the ability of price competition to operate in the market for street hirings.

3.2 Entry to the market

There are three main reasons why entry to the taxi market has been regulated. The first is known as the "excess entry" result.⁴³ This arises where there are economies of scale and too many suppliers enter a market. The market failure is that fixed costs are incurred unnecessarily, pushing up average costs. In the context of taxis, free entry could lead to lower occupancy rates and hence higher costs per journey travelled. A second argument for regulation of entry is that it reduces both traffic congestion and overcrowding at ranks (large numbers of taxis standing at ranks).⁴⁴ A third justification is that free entry would lead to reductions in quality standards. One version of this argument (made above) is that more intense competition would give incentives to reduce quality standards. Another is that free entry would encourage greater levels of part-time work which might reduce quality. This could also give rise to "cream-skimming" where certain operators refuse uneconomic journeys.

We deal first with the effects of free entry on the cost of supplying a taxi service. Excess capacity in the taxi market is valuable in that it reduces customer waiting times. Thus it does not present the same type of welfare costs as in other markets. In other words, customers would be willing to pay for some excess capacity.⁴⁵ To the extent that fixed costs⁴⁶ in the taxi market are relatively

⁴³The result was developed by Chamberlin (1933). For a recent account, see Armstrong, Cowan and Vickers (1994) or Suzumura (1995).

⁴⁴One type of congestion in the taxi market arises from a negative externality among customers. A customer who hires a taxi imposes higher waiting costs (and hence higher prices) on other users. Hackner and Nyberg (1996) develop a theoretical model of congestion generally and Hackner and Nyberg (1995) apply this to the taxi market. They find that with congestion, taxis can charge prices above cost.

⁴⁵DeVany (1975) models the price of taxis as being the fare plus the cost of waiting time along the following lines $price = fare + h(t)$ where $h(t)$ is the monetary value of the time t spent waiting. Excess capacity would reduce the waiting time $h(t)$ so that consumers would be better off even if the fare had to rise by a little.

⁴⁶Fixed costs are borne regardless of the volume of work undertaken by a taxi. They would include insurance (if it did not vary with workload) and any fixed or annual licence fee. Fixed costs would not include the costs of the car because the cost of depreciation varies with output, a second-hand market exists, and because cars can have alternative uses (e.g., domestic) even when "marked" as taxis. Other variable costs include labour, fuel, and other running costs.

low,⁴⁷ any productive inefficiency arising from excess entry would be minor. In many cities, taxi services are supplied by part-time employment, indicating that an economic return can be obtained without operating at optimal capacity. Moreover, in many markets characterised by very high fixed costs such as cement production, there are no restrictions on entry. Thus there would appear to be little reason to be concerned with excess entry in the taxi market.⁴⁸ The fact that more taxis would increase traffic congestion is merely a manifestation of a more fundamental problem with the pricing of public infrastructure. As such, it applies to private cars as much as to taxis and it would be invidious to single out taxis for special attention without a systematic approach to road pricing. Indeed, in so far as taxis provide a useful public service, it could be argued that they should be favoured, as they are in many cities, for example by permitting access to bus lanes.

Overcrowding by taxis at ranks is likely to occur if there are high fixed costs of operating a taxi and the economic return per hiring is high. This creates intense competition among drivers. Other policy measures, however, can mitigate this problem. If licence fees are set at a low or zero level, the cost of leaving a taxi idle is not so high. A reduction in the hiring fee also reduces overcrowding. We argue below that a good regulatory system should use excess supply or demand to determine whether fares should be reduced or increased, which would require periodic measurement of market performance. Such a system would put additional collective pressure on taxis not to overcrowd taxi ranks, as this would precipitate a fare reduction.⁴⁹

The impact of deregulation on quality standards is difficult to assess a priori but it is possible that deregulation of entry could reduce quality of service in the absence of quality standards. This is not an argument against deregulation of entry, but rather an argument for improved quality standards if entry is deregulated. In particular, the improvement of quality standards should focus on ensuring equivalent standards for part-time and full-time work.

⁴⁷Hackner (1995, page 204) illustrate that fixed costs are low and that sunk costs are even lower. Sunk costs refer to fixed costs that are committed to the market in the sense that they cannot be recovered on exit. For example, if licences are tradable, then any licence fee is a fixed cost but not a sunk cost.

⁴⁸We deal with the effects of high licence fees below.

⁴⁹The corresponding problem of taxis leaving ranks undersupplied in order to get a fare increase would be unlikely to occur unless entry to the market was restricted. Thus good price regulation would require free entry.

More generally, there is a considerable body of argument against regulation of entry to markets on the grounds that such regulation cannot improve the market, even if the market fails.⁵⁰ First, the regulation of entry to an industry can have a serious impact on competition within the industry. It may facilitate collusion among suppliers, especially as this is not affected by the usual threat of entry. Moreover, if licences are not fully tradable inefficient operators would have less reason to minimise costs.⁵¹ Thus entry restrictions could result in additional productive inefficiency, and possibly also X-inefficiency.⁵²

Second, regulation of entry will create rents in the market in the form of positive values on taxi licences. If licences are fully tradable (see footnote 51), then the rents will be high. As a result, suppliers in the market may engage in socially wasteful rent-seeking behaviour in order to prevent re-regulation of the market when this becomes necessary. Third, as costs and demand conditions changed over time, the regulatory system might not adjust, creating further welfare losses.

There is much evidence in taxi markets of the validity of these concerns with regulation of entry. The fact that taxi licences trade for positive (and sometimes high) values is direct evidence that the restriction of entry leads to prices above cost and illustrates the level of economic rents and market power created by this licensing.

Overall, therefore, the theoretical literature suggests that regulation of entry is likely to be a poor policy but that regulation of prices may be required. Some authors (Beesley 1973) who have developed specific models conclude that price regulation without entry regulation is desirable. Beesley and Glaister (1983) go further and argue that regulation of entry is a bad policy. DeVany (1975) finds that free entry is better, provided that price regulation is set at the right level, while authors such as Hackner and Nyberg (1995)

⁵⁰See Armstrong et al (1994, pages 106-111) and Suzumura (1995, pages 197-200) for an elaboration of these arguments.

⁵¹Making licences fully tradable in markets where entry is restricted encourages productive efficiency. An inefficient licensee bears a high opportunity cost associated with holding a licence as it is worth more to a more efficient potential supplier. Enabling trade would encourage the licences in existence to be allocated to the most efficient potential suppliers.

⁵²X-inefficiency, a term coined by Leibenstein (1966), occurs when firms fail to minimise costs for a given level of output. In contrast, productive inefficiency occurs when the scale of output is inefficient.

fail to consider the political economy arguments against regulation when they argue for entry controls.

In summary, there would appear to be little or no public interest benefit in restricting numbers in the taxi market. If anything, restrictions on entry may be detrimental to the public interest, resulting in suboptimal supply.

3.3 Quality

The economic literature has devoted little attention to the question of regulation of quality, seemingly because it attracts little controversy. The rationale for regulating quality is that customers cannot observe quality, either of cars or of drivers. In a totally unregulated market, operators who skimmed on quality would obtain a cost advantage. The result would be suboptimal quality in the market, with poor quality taxis undercutting and driving out the better quality service. Both customers and suppliers would suffer as a result. Coincidence of interests gives general agreement among consumers and producers on the need to regulate quality.

The main issues are the level of the qualitative standards that are set and how the regulation of quality responds to changes in the market (such as expansion). We note two points. First, higher quality standards will reduce the number of suppliers in the market. Hence any qualitative regulations have inherent quantitative implications, especially if there is free entry to the market. In other words, higher quality standards increase costs and, to keep supply at a given level, prices would have to rise. Second, deregulation of price or entry would require either higher qualitative standards or tighter enforcement of existing standards. Anything that makes the market more keenly competitive will increase the incentives of suppliers to skimp on quality. Thus one would expect deregulation of price or entry to lead to a reduction in standards if no change in standards was made.

3.4 Regulatory capture and the political economy of regulation

Regulatory capture refers to a situation in which a market regulator largely reflects the interests of the regulated industry in its actions instead of the interests of consumers: we say that the regulator has been "captured" by the regulated industry.⁵³

⁵³See Stigler (1971), Posner (1974), and Peltzman (1976).

This happens primarily because the regulator needs information about the market that only the industry can supply. Capture can occur either because the information provided by the industry is misleading (to the benefit of the industry) or because the close relations that develop between the regulator and the industry cloud the regulator's objectives.

For the taxi market, the regulator might need to have information about costs in order to regulate price or entry. If the suppliers of taxi services convinced the regulator that costs were higher than they really were, then the regulator might implement a higher fare structure, giving the industry some monopoly profit or rent. Capture could also occur with regard to entry, where the interest of the industry to restrict entry would conflict with the consumer interest in having free entry.

The possibility of regulatory capture means that regulation may not improve on the free market. This does not mean there should be no regulation. Rather, regulation should only be used where strictly necessary and, in such cases, the institutions of regulation should be designed so as to minimise the possibility of capture. Several features of the institution would reduce the possibility of capture. First, the regulator should be given a clear objective: for example, to regulate price in the interests of consumers. Second, the process of regulation should be completely transparent. Thus any arguments presented to the regulator by the industry should be public, and any decisions of the regulator should be accompanied by published reasoning that explains how the decisions relate to the stated objectives.⁵⁴

A third issue that has implications for the political independence of the regulator is the political economy of regulation. Consider a regulatory measure that results in less profits for an industry but gains for consumers that, on aggregate, outweigh the losses to industry. An example might be a reduction in local telephone charges. Such a measure would be for the common good and so it is desirable that it be undertaken. However, if market variables are determined by the strength of political or lobbying power, then it is unlikely that the correct levels will be chosen. This is because the industry always consists of a small, focused and well-organised group, whereas the consumers who benefit are typically a large and diffuse group. Each

⁵⁴For example, the decisions of the Competition Authority contain detailed reasoning of this kind.

firm in the industry has a lot to lose from tighter regulation and will exert great effort against the regulation. Each consumer, by comparison, has only a small gain and, because consumers are less organised, the greater aggregate gain of consumers will not be reflected in any lobbying. Moreover, such lobbying is socially wasteful, and a system of regulation that encourages it would compound the problems.

The political economy analysis of regulation recognises the importance of economic vested interests in determining political outcomes. One solution is to have a regulator that is independent from the political process (but answerable to politicians for ensuring that the market meets clear performance targets). Given this independence combined with transparency, the regulator can implement measures that are good for society. Moreover, the industry has less incentive to lobby because it knows that it is less likely to be successful. Politicians quite properly appoint the regulator, and insist on transparency of process but they are removed from the day-to-day decisions.⁵⁵

The taxi market exemplifies these political economy arguments. The suppliers in the market are a relatively small, focused and highly vocal group whereas consumers comprise a large and diffuse population.⁵⁶ A system of regulation based on decision-making by elected representatives is likely to give rise to a large amount of lobbying and inevitably decisions that reflect the interests of taxi suppliers. Thus good regulation necessitates political independence and transparency.⁵⁷

3.5 Summary

This survey of the literature leads us to a number of conclusions. With regard to prices, unregulated fares could result in monopoly pricing, especially in the street-hiring market. The initial effect of deregulation would depend on the starting position. A fare rise

⁵⁵This model of independent regulation has long been used in the US and has more recently become common in other countries, most notably but not exclusively in the UK and New Zealand. In Ireland, the Competition Authority and the recently created Office of Telecommunications Regulation have been established as independent institutions for similar reasons.

⁵⁶In the Dublin market, for example, there are several thousand drivers, but several million users of services, especially if one includes business visitors and tourists.

⁵⁷Transparency is required to compensate for the reduction in direct political accountability. It would involve the clear specification of regulatory objectives, open procedures and written reasoning to accompany decisions so that one can observe how decision relates to the objectives.

would not be conclusive evidence of monopoly pricing because, if the regulated fare had been too low, a move towards competitive prices would cause a fare increase to "catch-up" with market conditions.

With regard to entry, deregulation would be expected to increase supply and reduce waiting times. This increases the regulatory burden with respect to quality and management of the market and successful deregulation of entry would need to be accompanied by measures to ensure quality standards and the efficient organisation of the market. We now go on to examine the experience of deregulation where it has occurred.

International lessons from deregulation

Taxi markets have traditionally been heavily regulated, but many cities (particularly in the United States and Great Britain) and some countries (Sweden and New Zealand) have deregulated their taxi markets in the last twenty years.⁵⁸

In most cases, this deregulation affected both price and entry to the market. We attempt here to summarise these experiences. Comparisons with the Dublin market should be made carefully, as there may be substantial differences in population density and in the use of telephone rather than street hirings.

4.1 Prices

The biggest effect of deregulation of taxi fares is likely to be the initial adjustment to a new equilibrium price. The direction and magnitude of the price jump will depend both on any bias in the previous regulatory price (relative to true taxi costs) and on the effect of deregulation on taxi costs. If the regulated price was too high, the jump should be downwards.⁵⁹ Similarly, if de-regulation of entry results in lower values on taxi plates, then prices would be expected to fall in line with lower fixed costs. Thus it may be extremely difficult to discern whether deregulation leads to monopoly pricing, even if nominal taxi fares fall.⁶⁰

Authors who have studied the effects of deregulation on price have without exception (to the best of our knowledge) reported increases in nominal fares. Teal and Berglund 1987 analysed the effects of deregulation in seven US cities with populations above

⁵⁸Unless otherwise stated, the sources of information in this section are Morrison (1997) for New Zealand, Hackner and Nyberg (1995) for Sweden, and Teal and Berglund (1987) for the United States.

⁵⁹Conversely, higher prices would be expected if the regulated fare had failed to keep up with cost increases.

⁶⁰The distinction between the nominal and real (inflation adjusted) fares receives much attention from authors but is not a suitable benchmark for the initial adjustment. Even for subsequent movement in prices, it may be biased if taxi costs change at a different rate to average prices.

250,000 and found fare increases in all except Sacramento. Their benchmark was the level of fares in regulated cities and they found that fare increases in deregulated cities were higher than in those that maintained regulation.⁶¹ This suggests some level of monopoly pricing may have occurred. Fares in Sweden increased in real terms by varying amounts, except in medium-sized municipalities where fare per distance decreased. Fares in New Zealand fell in real terms but increased in nominal terms. Morrison (1997) analysed the two largest taxi companies in the Wellington market and found that the consumer was paying less in real terms in 1994 than in 1989 when the market was deregulated. These results are supported by at least four surveys of fare changes which have been conducted in Wellington since deregulation. For over 60 per cent of companies, fares for certain journey types increased nominally but fell in real terms.

Another effect of deregulation is the creation of price dispersion in the market. We distinguish between price dispersion that is common to all suppliers (for example, higher prices at certain times of the day) and price differences among suppliers for identical products.

In terms of the variation in prices that is common across the market, the main distinction would appear to be between street and telephone hirings, with a greater increase in the price of street hirings relative to telephone hirings. This effect is particularly pronounced at (but not confined to) taxi ranks in airports where higher fare increases were found in San Diego, Seattle, Phoenix and New Zealand.⁶²

This is consistent with the theory that suggests price competition in the market for street hirings is likely to be weaker. Other variations in the fare according to the time of day and the number of passengers were noted but, taken in isolation, these offer little insight into the proximity of fares to underlying costs.

The variation in the prices charged by different suppliers for identical products may offer greater insight. In an intensely price competitive market, such dispersion would be low, although perhaps not quite at the zero level imposed by regulation. However, if suppliers offer different services, then greater dispersion would still be consistent with keen competition. The main dimension in which

⁶¹Using fares in cities that continue to be regulated as a benchmark could also be biased, especially if the regulated fares are set at too high or too low a level.

⁶²Reported by Teal and Berglund (1987) for the US and Morrison (1997) for New Zealand.

the service could be differentiated in the taxi market would be if some companies offered lower waiting times.

The evidence is that deregulation has led to large increases in price dispersion among companies. In both Seattle and San Diego the second largest company offered fares 15 per cent below those of the market leader (for telephone hirings). For New Zealand, Morrison (1997) looked at six companies operating standard taxi services in Wellington in 1994. Fare schedules varied with four companies offering a hiring charge of \$2, one \$1.40 and another \$1.30. Morrison, controlling for differences in waiting times, calculated the prices of three journeys for each company and found variations of up to 34 per cent between the different companies for identical journeys.⁶³ This suggests that average prices in the market are above the competitive level and that price-cutting does not increase market share.⁶⁴

Overall, the evidence on price deregulation is not overwhelming in support of reduced prices. Most authors who report increases in nominal prices offer little analysis of how those new nominal prices relate to underlying costs. In particular, most authors appear to have ignored the fact that a fall in the value of taxi plates would exert downward pressure on prices.⁶⁵ Another problem is that little attention has been given to collusion among taxi drivers to keep fares high. Where meaningful comparisons are possible, they suggest that monopoly price-cost mark-ups may be established or persist after deregulation of price.

4.2 Entry to the market

Deregulation of entry has typically resulted in substantial increases in taxi numbers. reports the effects of de-regulation in those cities for which we have been able to obtain information. In all cases, deregulation leads to an increase in taxi numbers. In the United States, the increase in numbers was relatively moderate with market sizes increasing to less than double their previous size. However, in these cities the value of a licence plate on the secondary market prior

⁶³A 10km journey from the airport had a range across the companies of 30 per cent. An evening 8km journey booked by telephone and a three minute waiting time had a range of 15 per cent across the six companies. A 5km daytime ride had a range of 34 per cent across the companies.

⁶⁴Teal and Berglund (1987) found that companies generally did not see market share rise if they cut prices. This conforms with Corry's interview evidence for New Zealand noted in footnote 33 above.

⁶⁵This might be tempered by higher costs due to reduced occupancy rates.

to deregulation was low.⁶⁶ Although most new entry in these cities was concentrated on taxi ranks which were already well served (especially at airports and hotels), waiting times fell. Given that fare controls were also removed, this adds further to the evidence that margins are higher in the street-hiring part of the market.

Table 6: Changes in taxi supply following deregulation of price and entry

Location	Increase (per cent) in	
	taxi numbers	taxi companies
New Zealand: Auckland		120
New Zealand: Christchurch		300
New Zealand: Dunedin		150
New Zealand: Wellington	105	320
Sweden: large towns	16	
Sweden: medium towns	25	
Sweden: small towns	10	
US: Indianapolis	7	
US: Kansas City	18	
US: Phoenix	83	
US: Oakland	38	
US: Sacramento	56	
US: San Diego	127	
US: Seattle	33	50
US: Tucson	33	

Source: Garling, Laitila, Marrell and Westin (1995), Gelb (1983a & 1983b), Land Transport Safety Authority (1994), Morrison (1997), and Teal and Berglund (1987).

In New Zealand the effects were more dramatic with a tripling of taxi companies (200 per cent increase) in some locations and a doubling of taxi numbers in Wellington. In all cities waiting times fell significantly. Again the price of taxi plates on the secondary market in these cities was considerably lower than in the Dublin market at present. For example, a taxi licence in New Zealand traded for about NZ\$25,000 (approximately £10,000).

Several authors have examined the effects of deregulated entry on quality and level of service. Several types of reduction in quality

⁶⁶Viscusi, Vernon and Harrington (1995) report maximum values of \$15,000 (San Diego) and \$12,000 (Seattle). The only city where the value exceeds that in Dublin is New York (\$210,000 in 1993).

are reported. In San Diego and Seattle, trip refusal/no-show rates increased, suggesting "cream-skimming". The Inter-Departmental Committee (1992) examined four UK cities and reported overcrowded and illegal taxi ranks. Other concerns have focused on driver knowledge of the city and on language and communication problems. However, these authors do not examine whether entry deregulation was accompanied by active measures to maintain or improve quality.

In New Zealand quality standards improved with deregulation. Topographical (i.e. route-finding) tests were introduced and some companies instituted internal levels of quality control over drivers with training programmes. This resulted in the emergence of a private driver-training academy. Enforcement powers were also increased with compliance officers being given permission to remove unsatisfactory drivers and vehicles from the road immediately. The New Zealand Ministry of Transport⁶⁷ in 1991 reported increases in service quality, with consumers being provided with more information. Morrison (1997) reported a wider range of niche services and better geographic coverage.

Few authors give attention to the issue of part-time drivers, although deregulation in New Zealand was accompanied by an increase in part-time employment. In London, where entry is not regulated but fares are controlled, all drivers must take the same "knowledge" test. The market is supplied by a large proportion of part-time drivers.⁶⁸ There is no evidence to suggest that this has impacted negatively on quality.

Entry deregulation affects the concentration of supply in markets where taxis are owned by companies. For the US, taxi companies consolidated or increased their share of the market. For example, Teal, Berglund and Nemer (1984) found that 40 per cent of independent cabs in the airport market in Phoenix left the industry during the fifteen month period after deregulation and, in San Diego, one-third of all taxi operators not affiliated to the two largest companies left the market within eighteen months. On the other hand, new companies emerged in New Zealand, with the number of taxi companies in Wellington increasing from five in 1989 to

⁶⁷Reported in Massey and O'Hare (1996).

⁶⁸Beesley and Glaister (1983) report that 15 per cent of all London taxi drivers have other full-time occupations.

twenty-one in 1994 (Morrison) indicating a reduction in concentration.

Vehicle productivity (i.e. vehicle kilometres carrying a customer relative to total vehicle hours supplied) declined with deregulation of entry in all cases. This effect was particularly pronounced in cases where overcrowding emerged at taxi ranks because these taxis had a low proportion of fares to time searching for fares.

Entry deregulation has typically eliminated the secondary market for taxi licences, with the price of a licence being determined solely by the administrative fees set by the licensing authority. What is likely to happen in Ireland under deregulation is that all existing hackneys would apply to become taxis, but hackney services would still be supplied, especially if taxi fares are set at too high a level. Although deregulation does cause a once-off reduction in the value of plates, there is no evidence as to the effects of deregulation on the earnings of suppliers. In New Zealand, no compensation was offered to existing plate holders.

Finally, a consistent feature of regulation of entry is the development of hackney-style services to meet the excess demand for taxis. This has happened in New York (where the number of taxi licences continues to be regulated) and in the United Kingdom. Deregulation in UK cities led to a reduction in the demand for hackney services, with evidence that many hackneys converted to taxis.

4.3 Summary

The lessons that emerge from this investigation of deregulation abroad are as follows. The effects of price deregulation are ambiguous. The empirical evidence does not enable us to refute the hypothesis that monopolistic price-cost margins are established, particularly in the market for street hirings. Entry deregulation has resulted in the enormous growth of taxi supply across a range of cities and this has created a greater burden in terms of maintaining and improving quality standards.

Public policy towards taxis

In this section, we examine those aspects of public policy towards taxi markets other than the regulation of entry and fares. The focus is on the role of taxis in overall public transport provision and its implications for licence fees, on the efficient management of the market, and on accessibility for people with disabilities.

5.1 Social benefits of taxis

Where a service has social benefits, the market will generally under-supply it and government support may be appropriate. For example, bus transport reduces congestion and pollution from private cars. Road pricing (making private motorists pay for these costs) could correct the market failure but a public subsidy to bus services is an alternative, and often more attractive, policy option.

Taxi services create social benefits, although perhaps not to the same extent as public buses. First, if taxi services complement public transport (bus and train), the provision of more taxi services will increase the use of public transport. We are not aware of any empirical evidence that taxis and public transport are complements, but it is plausible that private motorists would switch to using a combination of buses and taxis if taxi services were available.⁶⁹ For example, a bus ride in one direction might be matched by a taxi journey in the other. Alternatively, somebody wishing to travel to Dublin might consider the combination of train plus taxi a substitute for a car. Such complementarities would mean that taxis yield a social benefit.

Second, taxi services help reduce drinking and driving. In many instances public transport is not a good substitute for self-driving on social occasions. This lack of any reasonable alternative increases the incidence of drinking and driving, with social costs. Reducing

⁶⁹In contrast, Shreiber (1975, page 275) assumes that taxis and public transport are always substitutes. This is certainly the case for some (probably low) level of taxi fares or shared taxis (as in Belfast). Our argument is based on the excess demand in the Dublin market.

drinking and driving thus represents a social benefit from taxis.

Third, there are other public safety considerations arising from taxi service. These relate to the use of public transport in sparsely populated or unlit areas of the city late at night, and the dangerous competition among passengers for taxis late at night on some routes. Taxis may also assist generally in crime prevention and detection, and provide a useful source of information for the police. Some element of each of these represents a social benefit.

In addition, concern with equality raises the provision of transport service for people with a fundamental disadvantage such as an infirmity/disability that prevents them from driving or using mass public transport. Where these disadvantages are correlated with lower income, a shortage of taxis would be regressive in the sense of hurting the poor more than the rich. This might provide additional reason for the government to wish to ensure adequate supply of taxis. Massey and O'Hare (1996) note that these groups suffer disproportionately from longer waiting times in regulated markets and thus are the people who benefit most from deregulation of entry.

These arguments suggest that government policy should at least not discriminate against or restrict taxi services. Although taxis are allowed access to bus lanes, the high licence fees represent an additional taxation burden on the taxi market that suggests poor public policy. Licence fees should represent at most the administrative cost. Indeed, the social benefits could be used to argue that a small nominal fee should be charged and the administrative cost met from taxation on private cars. On the other hand, direct subsidies or other measures designed to increase the marginal return to suppliers should be avoided because these can create wasteful rents and lead to lobbying. Of course the supply of adequate taxi services at low cost should be seen as just one part of an integrated policy to encourage substitution from private to public transport.

5.2 Efficiency in the taxi market

SUPPLY AND DEMAND In a well-functioning taxi market, prices would vary by the time of the day and year in order to equate supply and demand so as to allocate scarce resources. At peak times, when many people wish to travel, prices would rise to increase the supply and moderate demand. If fare controls are needed, then regulatory rules should try to shadow these peak prices.

An example of such a regulatory rule is to measure excess demand and adjust fares accordingly: queues of passengers would

lead to higher fares and overcrowding by taxis (at ranks and elsewhere) would reduce fares. Other fine tuning according to the time of the day or week should also be undertaken. It would be impossible to eliminate completely any queues by passengers, especially when there are exceptional or random peaks in demand (e.g. New Year's Eve, a bus strike). However, passenger queues that occur regularly and predictably could be eliminated. Enabling the less-regulated hackney market to operate alongside the taxi market will act as a good check on the performance of the regulator on fare controls. Sudden increases in the hackney market would suggest the regulator has lagged behind a change in the taxi market.

Such a policy would have consequences for the industry supply, which would vary with demand more than at present. In many service markets (e.g. restaurants, retailing, transport), part-time or shift labour (full-time, but working peak shifts only) is used to meet the peaks in demand (as in the London taxi market). This is costly in markets where there are high fixed costs (e.g. public transport) as there is unused capacity at peak times, but this is not such an issue in the taxi market. An alternative solution is part-time licences that are only valid at peak times. This is less attractive because it imposes unnecessary restrictions on the market, and additional burdens on the regulator, such that prevent the market from responding to demand. More seriously, it could give rise to intense lobbying.

Current policy in Dublin prevents the efficient supply of taxi services. The lack of new licences prevents supply from meeting demand. In addition, the opportunity cost of a licence (its value on the secondary market) represents a high fixed cost that creates a strong incentive to have a taxi on the road as much as possible. Even if the number of taxis were deregulated, the licence fee of £15,000 would similarly introduce artificial economies of scale into the supply, albeit to a lesser extent than the £80,000 opportunity cost. This is another reason, along with social benefits, why licence fees should be kept low. In addition, it suggests that licences based on usage (e.g. total passenger numbers per taxi) would be superior if practical. This would not discriminate against part-time supply because part-time operators would pay according to actual supply of service, not per licence. The current rule whereby taxi drivers must be available for forty hours per week (see 2.1 above) and other rules suggest that it is not possible for somebody with a full-time job in another sector to supply part-time labour in the taxi market. This prevents the efficient supply of the market.

EFFICIENT MATCHING In addition to ensuring that supply is adequate to meet demand, a regulator should also encourage measures that increase utilisation of taxis while on the road, without reducing the effective supply.

Efficient matching between taxis and passengers that keeps taxis busy more of the time will deliver lower costs. Many of the measures to improve matching such as telephone dispatch companies are supplied by the market without regulatory intervention. However, other measures may require regulatory intervention. These include making taxis visible to passengers, permitting taxis to use radios and mobile phones, permitting hiring while driving and designating more taxi ranks that reflect the geographic distribution of demand. Such measures will increase the proportion of two-way traffic and, in enabling the market to grow, will generate economies of scale that may improve matching even further.

In Dublin, these measures exist *for taxis but not for hackneys*. Policy towards taxi ranks has perhaps been the weakest in being slow in tracking patterns of demand and this has resulted in the rise of hackney offices in certain parts of the city.

Sharing of taxis also improves efficiency. At present, this is entirely an arrangement between individual passengers, but the licensing authorities are currently investigating whether a formal arrangement could be introduced. This would be welcome, not just as a measure for the current situation of excess demand, but because it would reduce the average cost of taxi services.

The authorities should not enact measures that reduce the efficiency of matching, such as dividing the city into taximeter districts in which taxis from other districts may not ply for trade. This clearly reduces efficiency by restricting two-way trips.

HACKNEYS The closest substitute to a taxi is a hackney. At present, the efficient supply of hackney services is prevented by unnecessary regulations. Enabling hackneys to ply for trade on-street, to use radio and telephone contact to initiate hirings, and to be identified by external markings would increase the proportion of two-way journeys made by hackneys. This would reduce costs with benefits both for suppliers of hackney services and consumers.

Regulations should continue to allow hackneys to supply services without controls on prices or entry. However, controls on quality and standards should be similar, if not identical, to those in the taxi market. In this way, hackneys would provide a close substitute for

taxis. If similar standards apply, it would also be possible for a driver to switch easily between a hackney and a taxi licence (i.e. high supply substitutability)

A comfortable harmony would be created by competition between these two services. On the one hand, fare controls in the taxi market would restrain excessive pricing by hackneys. Hackneys would tend to supply niches in the market, such as "regulars". On the other hand, if the regulator set fare levels in the taxi market at the wrong level, the hackney market would act as a "release valve" and provide useful information for the regulator, and for the evaluation of the regulator's performance. It is likely that many hackneys would switch to taxi licences if entry to the taxi market were deregulated, so that the deregulation of entry to the taxi market would result in a shrinking of the hackney market.

PUBLIC TRANSPORT Public transport affects the demand for taxis. Gaps in public transport can create or aggravate peaks in the demand for taxis. Public transport in Dublin has a number of such gaps. The radial network neglects cross-city routes and especially those that do not bisect the centre, direct services from the airport to most parts of the city do not exist, and there is a dramatic drop in service after 11.30pm. The source of these problems lies entirely within the bus market, where regulation restricts entry and where the supply of bus services does not have to reflect demand patterns. This undoubtedly creates peaks in demand for taxis that makes the efficient management of the taxi market more difficult.

Inefficiency in the supply of public bus services provides no justification for the restriction in taxi numbers. It is entirely plausible that the introduction of an efficient schedule of public transport could increase the use of taxis. However, the demand peaks in the taxi market are made worse by regulatory failure in buses. This strengthens the arguments for re-regulation of public transport.

5.3 Accessibility

Taxis frequently provide an essential service for those for whom private cars and public transport are not available as alternatives. This group includes many of the most vulnerable, such as the infirm, elderly and disabled. The current excess demand undoubtedly affects this group disproportionately. Meeting the needs of the disadvantaged is thus one of the most compelling reasons for deregulating entry to the market as soon as possible.

A particular issue arises in relation to wheelchair accessible taxis. There are additional fixed costs in providing a suitable vehicle and there may also be higher variable costs of providing additional courtesy services. Thus the cost of supplying taxi services to these groups is higher, particularly so for wheelchair accessible vehicles.

If the market were left to its own devices, wheelchair accessible taxis would charge higher prices to reflect their higher costs. If fare controls or a commitment to non-discrimination (reflected in charging the same prices for taxi services for all groups in society) prevent the implementation of such differential pricing, under-supply of wheelchair accessible taxis might result. In addition, "cream-skimming" (refusing less economic hirings) could prevail. Equal treatment thus requires a positive incentive for the supply of wheelchair accessible vehicles.

Requiring all taxis to be wheelchair accessible⁷⁰ is an expensive option because it increases the cost of taxi services by increasing the cost of new vehicles without increasing their resale value for alternative uses. A better policy would determine a minimum number or proportion of accessible taxis. First, this will not increase taxi fares by as much (or at all if a subsidy is provided for accessible vehicles). Second, the rule that a passenger must take the first taxi at a rank could be modified for the disabled. Third, the market will act to ensure matching between those in wheelchairs and accessible taxis as, for example, if specialised dispatch services developed. This approach would work well in a situation where there is an adequate supply of taxis generally, as accessible vehicles would have a marginal advantage over other taxis in the market.

At present, 450 or 19 per cent of the taxi stock is wheelchair accessible. This represents an improvement on the situation one year ago where it was 150 or 8 per cent. The current policy of requiring new licensees to be wheelchair accessible is a good one but, in the longer term, it will be necessary to decide whether a direct subsidy should be given to accessible vehicles to make their supply costs similar to regular vehicles.

An alternative solution would be to provide subsidies to taxi users instead of to taxis. This would mean differential pricing. For example, a passenger could give a coupon to the driver that was

⁷⁰This is UK government policy and all taxis are to be wheelchair accessible by 2005. See the 1995 Public Transport Act, UK.

redeemable in respect of each hiring. Swipe cards could also be used. An advantage of such a policy would be that it could treat disabled people equally: those with cars could get an allowance towards car costs and those without cars could have allowances towards public transport or taxis.

These issues have received relatively little airing and important policy decisions are required. We have outlined some of the options in what is a very complex area. The most immediate difference that policy could make to persons with disabilities would be to increase the supply of taxis. After that, the issues raised above should be addressed.

Recommendations for the regulation of the Dublin taxi market

Our recommendations for the Dublin taxi market have already mostly emerged explicitly or implicitly in the preceding discussion but we gather them together and discuss them here. What we propose is a *re-regulation* of the market: strengthening regulation in some areas and relaxing it in others. In particular, we argue that fare controls should be retained, entry controls should be removed, quality controls should be strengthened and the system of regulation should be changed.

6.1 Fare controls

Fare controls for taxis should be retained Economic theory suggests that price rivalry is unlikely to operate effectively in the taxi market, with the result that taxis can charge excessively high fares. This is likely to be particularly acute with on-street hirings and for tourists and infrequent users. This is supported by the experience of those cities where deregulation of fares has occurred.

Fare controls should be revised regularly and adjusted to fine-tune peaks in demand With fare controls, the market cannot respond properly to changes in demand (or supply) conditions. Thus there should be a requirement to set fares at levels that eliminate predictable or regular queues. Regulatory failure should be inferred if there are passenger queues at the same time each day or each week, when the weather is inclement, or at particular times of the year. But it would be inefficient to oversupply the market to cope with exceptional peaks such as snowstorms, Christmas Eve, etc. Taxi fares might be higher at night, at weekends, in December, etc, to cope with these peaks. Some peak pricing already occurs but its effectiveness is seriously impaired by the excess demand.

A nice feature of using fare controls to regulate excess demand and supply is that it aligns the interests of consumers and suppliers better than entry controls do. Suppose that fares are low, so there is

excess demand (passenger queues). Higher fares would increase supply, but would compensate suppliers at the same time, so that industry opposition would not be intense, and possibly positive. Similarly, consumers would be compensated for higher fares by the elimination of waiting.

Excess supply (resulting from high fares) is less of a problem because the market mechanism will operate. That is, occupancy rates will fall until entry becomes unprofitable. The regulator should still be concerned if fares are too high, especially if there is overcrowding of taxi ranks because this would mean that costs and prices were higher than they needed to be. Reducing fares in this case would meet industry opposition, but less so if it is the only instrument available to the regulator. Overall, therefore, the danger of capture by the industry is reduced.

Fare controls should not be introduced for hackneys Customers in the hackney market more frequently book by telephone and tend to know the fares, so price competition is likely to be more effective. In addition, competition from taxis where fares are regulated will constrain the prices that hackneys can charge, provided that taxis are in plentiful supply.

Information about fares should be widely available The display of fares inside vehicles should continue as at present. In addition, this information could be made available at taxi ranks, bus stops and on the internet. If hackneys are allowed to have external identification, this should include a notice advising intending passengers (particularly tourists) (a) that this is not a fare-controlled taxi and (b) that fare-controlled taxis do exist.

6.2 Entry to the market

Entry to the market should be deregulated over a period of two to three years There is no compelling theoretical argument for regulating entry to the taxi market. The experience on the Dublin market suggests that market supply cannot respond to demand, no matter how often the market is reviewed. Deregulation of entry has been successful elsewhere in eliminating the problem of excess demand.

Deregulation cannot be done immediately because it would reduce the value of taxi licences on the secondary market to zero. This would penalise those licensees who recently purchased a licence and would generate enormous opposition in the market. We therefore

propose a staggered approach to increasing the supply until deregulation occurs. However, it is imperative that this be done as soon as possible and we would propose that a firm commitment should not be made to deregulation of entry, with three years being the maximum period for this to occur.

Before deregulation of entry, supply should be increased by giving each existing licensee a second licence. The 800 licensees who most recently purchased a licence on the secondary market should get the additional licence immediately and the remainder one year later. There should be no restriction on the sale of these licences to suitably qualified individuals.

This proposal would apply to only the 1,974 licences that existed in November 1997. The authority would examine the records on licence transfers and identify the 800 licensees who most recently purchased a licence.⁷¹

This group would be awarded a second licence immediately. The fact that the excess demand is at least double the current supply means that 800 new licences would still result in a substantial value for a licence on the secondary market. This group could choose to sell one or both licences in order to be compensated for the loss in the value of the licence recently purchased.

The remaining 1,174 would be awarded a second licence one year later. Members of this group would have purchased their existing licence at least eight years previously, and so would not require the same compensation as the first group. This would be reflected in the fact that the value of these licences would be lower because the excess demand in the market would have abated. One year later, licences would be awarded to any applicant who met the required standards and paid the relevant licence fee. The fast pace of entry would also mean that "cosies" (existing second drivers) would be in the best position to purchase new licences as they would be suitably qualified.

It would be wholly inappropriate for the government to compensate existing licence holders directly for the value of their plates. The value of a taxi plate on the secondary market reflects a monopoly profit in the market. Government policy (following membership of

⁷¹It is essential that the cut-off date for this is before the policy is announced: otherwise there would be huge trade in old licences in order to qualify for the first group.

the European Union and in the 1991 and 1996 Competition Acts⁷²) toward monopolies in markets with a single monopoly supplier is not just to eliminate this monopoly profit, but also to impose heavy fines (up to 10 per cent of turnover) for abuse of any such dominance. In this case, the only difference is that the monopoly position is occupied jointly by a group of suppliers. Deregulation accompanied by such compensation would be equivalent to admitting that a crime was being committed continually and rewarding the criminal for stopping. Moreover it would set a dangerous precedent for other markets, increasing the incentives for suppliers to lobby for the licensing of entry to their markets.⁷³

There is precedent for the policy we outline. When licensed haulage was deregulated in 1978, each existing licence was converted into six licences and full deregulation of entry followed in 1986. Barrett (1991, pages 86-89) shows how this resulted in expansion of the freight market as its efficiency increased.

Increases in supply must be accompanied by improved quality standards Experience elsewhere suggests that quality standards in the market may fall when there are large increases in supply following deregulation. This is not surprising given that there will be many new entrants to the market. Thus resources devoted to the enforcement of existing driver and vehicle standards would need to be increased.

There should be no restriction on the number of hackney licences
The arguments here are the same as those given for taxis.

6.3 Commitment to deregulation of entry

There are two commitment problems in the market. The first is that any increase in supply will relieve excess demand on the market and this might remove the pressure for the subsequent increase(s). The second is that there is no guarantee that deregulation of entry will take place even if promised. These problems are related in the sense that if the increases in supply continue until excess demand is

⁷²The taxi market does not come directly under this legislation because the source of the monopoly is in the licensing system and the legislation does not protect consumers from monopolies created by government intervention. See Fingleton (1997) for a discussion.

⁷³This is not a hypothetical consideration. In 1996, pharmacists persuaded the government to restrict entry to that market. A similar problem exists with pub licences.

eliminated, it will be easier to deregulate entry because the value of licences on the secondary market will then be low.

Our policy addresses these two problems directly. After the issue of the 800 licences in the first year, those due to receive the second group of 1,174 would tend to support the continued deregulation in the second year. The proposal would thus engender some support within the taxi industry for continued deregulation, although admittedly this might be weak. In addition, the market supply would be in increase by 1,974 within two years. This avoids the problem of a slow path of increasing supply along which opposition to deregulation of entry can develop. Finally, a two year plan for deregulating entry to the market would send a strong signal that the authorities are committed to fulfilling this agenda. There is some hope that the current desire for deregulation of entry will persist for a few years, but in ten years time this resolve might be lost completely.

If the Faber (1998) proposals are chosen, more licences should be issued sooner and future new licences should be pre-sold now

Faber (1998) has recommended that 350 licences be issued per year over ten years, with deregulation following then. There is a serious commitment problem with this proposal and it could break down after the first year or two, as with the recommendations of the Inter-Departmental Committee (1992). Two modifications to the proposal would avoid this problem and make it similar to ours. First, the timing of deregulation should be speeded up. Ten years is a too long time for consumers to wait for the elimination of queues and could be seen as favouring the interests of the industry over those of consumers. Second, in order to commit to continued increases in supply, licences should be pre-sold now.

Thus the authorities could auction 800 licences to be valid from 1 January 1999, 800 to be valid from 1 January 2000, and 400 to be valid from 1 January 2001 and in each later year. The auction should continue until a group of licences for some year in the future has been given away for free. Full deregulation of entry would then occur in that year. This would speed up the pace of deregulation relative to the ten year schedule proposed. In addition, it would commit the authorities to continuing on the path they started (because otherwise they would have to buy back licences) and send a clear signal that deregulation of entry was inevitable.

We continue to favour our policy over this because it would offer compensation to existing taxi licence holders.

6.4 Licences

Licences to drive a taxi should be awarded on the basis of qualifications alone and, in particular, regardless of part-time or full-time availability Efficient supply in the market may require part-time or seasonal labour. It is important that supply in the market is not impaired by restrictions on this type of labour. This is independent of any safety rules on the maximum number of hours a driver may work.

Licence fees should be set to cover only the administrative costs. In particular, they should not be used to raise general revenue.

Usage-based licence fees should be examined We argued above that high licence fees on the primary market and high licence values on the secondary market increase the fixed costs of taxis and make part-time or seasonal supply of services unprofitable. In addition, the social benefits of taxi service are such that it should be promoted rather than taxed (as at present). Thus licence fees should be as low as feasible and, if possible, based on usage rather than fixed per licence.

6.5 Quality standards

There should be ongoing and regular monitoring of both driver and vehicle standards. Driver standards, particularly for new entrants, should be improved. Receipts should be issued for all journeys, in a format which identifies route and driver.

Most of these recommendations are easily justifiable and are also made in Faber (1998). In general, the focus should not just be on the technical standards but also on the factors that affect the comfort and hygiene of vehicles and the knowledge and interpersonal skills of taxi drivers.

There are two reasons why higher standards should be focused on new entrants. First, it is easiest to increase standards over time by applying those standards to new entrants, rather than trying to force them on the entire market. Second, significant deterioration in quality was observed in markets where large entry occurred after deregulation, so that there is a particular concern with monitoring the standards of new entrants as the market expands.

The quality standards for hackney drivers and vehicles should be the same as those for taxis This would enable greater competition

between taxis and hackneys in two ways. First, passengers would know that unobservable aspects of quality and safety are the same for both and could thus switch more easily between them. Second, drivers could switch between the taxi and hackney markets.

A transparent and user-friendly complaints system should be introduced The existing complaints system is inadequate. A user-friendly system could use an easy-to-remember freephone number and be widely publicised. The procedure should be sufficiently simple that the most disadvantaged and tourists could have easy access to it. Formal, written feedback on the outcome of the complaints would assist transparency. The phone service could also receive complaints.

The licensing body should oversee complaints and should have a range of sanctions available. Exemplary penalties should be allowed.

One of the problems with the current system is that complaints are overseen by a body separate from the licensing authority and one that is not particularly accountable. The threat to revoke a licence is not a meaningful sanction in response to minor violations, so it is important that temporary suspensions of licences or other small sanctions be possible. This is another reason why the licensing authority should oversee complaints.

Where "cream-skimming", overcharging or meter-tampering are proven, exemplary penalties should be used for two reasons. First, such complaints are usually difficult to prove and if the punishment is not great, there will be no deterrent effect. Second, these activities damage public confidence in the market with negative consequences for other suppliers and passengers alike.

6.6 Hackneys

Hackneys should be able to ply for trade and use two-way communications to initiate hirings but should not have access to taxi ranks. Hackneys should have external identification that states clearly that fares are not controlled and that fare-controlled taxis do exist.

Both of these measures would improve the efficiency of the hackney market, with a greater proportion of two-way hirings. At the same time, it is important that there is some distinction between hackneys and taxis and this is achieved by reserving taxi ranks for

taxis. It is important that tourists and other infrequent users of taxi and hackney services are made aware that there is a distinction between the two. Many people will be less familiar with how a hackney operates, so it is appropriate that an explanation is made on the outside of all marked hackney vehicles.

6.7 System of regulation

The existing system of regulation is deficient in that it is segmented, poorly co-ordinated and incapable of adjusting supply to match demand, with the result that the taxi market in Dublin is poorly managed and inappropriately regulated. The failure of the current system of regulation, despite various reviews and legislation, highlights the importance of designing a regulatory system that takes account of incentives. In addition, it may be difficult for any review undertaken within the current system to produce fundamental reform of that system.

We propose a taxi regulator that is accountable to an elected body but that regulates the market on a day-to-day basis independently of that regulatory body.

The regulator for the taxi market should:

- set clear quality and safety standards
- ensure that quality and safety standards are enforced (it should also have the enforcement powers that the Carriage Office has)
- award taxi and hackney licences to all suitably qualified applicants
- determine fare controls for taxis
- administer the complaints procedure
- devise and implement a system for periodically measuring how supply is meeting demand, which would clearly give warning of excess demand emerging
- publish written justification for any regulatory decisions
- submit an annual report to the elected body.

The regulator's annual report should:

- give statistics on the number of taxi and hackney licences in the market
- detail how complaints were dealt with
- outline the measurements of excess demand that were undertaken

- outline any changes in the fare structure and give the basis on which the decisions were made
- record any changes in the quality standards in the market
- be allowed to make recommendations for changes in legislation for the elected body to consider.

The elected body responsible for the taxi market should:

- appoint the regulator for a fixed term
- receive the income from licence fees and fund the regulator's office
- set performance criteria for the regulator.

The main performance criteria should include a requirement that the regulator set fare controls so as to avoid regular or predictable passenger queues. Queues would be permitted in cases of exceptional peak demand, defined clearly, perhaps in terms of number of days of the year. If peak demand occurs, for example, on fifty days of the year, it would not be exceptional. Each year, the elected body could hold a plenary meeting on the annual report, with the regulator present to answer questions and to justify regulatory decisions. Thus, for example, the regulator would have to explain sudden changes in the market, such as a surge in hackney use.

At present the elected body comprises four local authorities. This arrangement could continue, but there are also reasons why Dáil Éireann might be the appropriate body. First, the taxi supply in Dublin is a national question, having implications for visitors from outside the city and for the tourist industry. Second, the Dáil can better co-ordinate policy in this area with policy towards public transport, enforcement of standards etc, and avoid the problems of disagreement between the local authorities. Third, there is no reason why the same regulator could not act for taxi markets in other cities, if this was deemed appropriate.

Why would this system be better than the current one? First, the elected representatives would be less susceptible to industry lobbying because they could truthfully answer that they have no influence over the day-to-day running of the regulator's office. The industry, knowing this, would have less incentive to lobby for particular regulatory decisions. Second, the elected body would retain ultimate policy control both in setting performance criteria for the regulator and appointing the regulator and in requiring the regulator to justify

regulatory decisions taken on its behalf. Third, the public statement of performance criteria make the objective of the regulation clear to passengers and suppliers alike.

Conclusion

Our conclusions are simple and intuitive. There are not enough taxis in Dublin and this has arisen because the regulatory system does not work. We propose that entry to the market be deregulated and have suggested that this be done by issuing a new licence to existing holders as a first stage in the full deregulation of entry. This new entry should be accompanied by measures to improve both the quality standards and the enforcement of those standards.

Several major reports and this policy paper have now contributed to the policy debate. There is virtual unanimity that the number of taxis needs to be increased and there is no disagreement on the desirability of retaining fare controls. The debate now centres on the deregulation of entry and the speed with which new licences will be supplied to the market.

Further consultation or discussion of these issues is neither necessary nor acceptable. The time for action has arrived. It is necessary that firm and binding decisions be taken both by the local authorities and by central government so as to deliver comprehensive re-regulation of the taxi market. This should include a substantial increase in taxi licences over the next two to three years, a commitment to removing entry barriers and reform of the system and process of regulating the market. Alternative policies ultimately amount to window-dressing in our view. It is difficult to conclude other than that continued inaction, or action over a very long time-scale, reflects capitulation to the vested interests of a small industry lobby over the broader consumer welfare. Alternative policies may give partial relief of the problem for a short period of time, but they do not address the fundamental problem that is created by the restriction on entry to the market. Unless this is tackled resolutely, Dublin will continue to lack an effective taxi service.

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Appendix 1: Legislation from 1961

Road Traffic Act, 1961 Part 7, 1961 Road Traffic Act (Control and Operation of Public Service Vehicles) relates to taxis. It enabled the Minister for the Environment to legislate for the licensing of Public Service Vehicles (PSV), the licensing of PSV drivers, maximum fares and other issues including the establishment of taximeter areas and different classifications of PSVs. The Garda Commissioner was charged with the responsibility of enforcing this legislation.

S.I. No. 191, 1963 This instrument allowed maximum fares to be set by local authorities and further extended the legislation relating to the licensing of drivers and vehicles [Article 9(1)].

S.I. No. 273, 1968 The legislation relating to the licensing of drivers and vehicles was extended, particularly with relation to the requirement that drivers have a certain familiarity with local geography [Article 5(2)].

S.I. No. 200, 1970 A written undertaking would have to be provided to show that if the vehicle were licensed, it would be available on at least five days of the week for at least forty-eight hours in each week [article 4]. It also required that a driver make his services available for at least forty hours a week [Article 8].

S.I. No. 24, 1976 This amendment allowed for a pick up charge for telephone initiated hires.

S.I. No. 160, 1976 This amendment transferred the power to set maximum fares to the Minister for Industry and Commerce.

S.I. No. 292, 1978 This amendment allowed local authorities to determine entry [Article 5].

S.I. No. 226, 1978 This amendment extends S.I. No. 200 of 1970 by stipulating that, in addition to the forty-eight hour rule, that the vehicle be available for hire for at least six hours between 8am and 8pm five days a week [Article 2].

S.I. No. 273, 1983 This amendment prohibits hackneys from initiating hires by radio or telephone while in a public place [Article 2].

S.I. No. 272, 1991 Dublin Corporation allowed to issue 100 new taxi

licences. The criteria for the issue of such licences are updated [Article 4(2)].

S.I. No. 32, 1992 The power to set maximum fares reverts to the Minister for the Environment.

S.I. No. 32, 1992 Dublin Corporation allow for the issue of fifty wheelchair taxis licences. This instrument also sets out regulations regarding the minimum dimensions of wheelchair taxis and other such regulations. Further amendments are to be found in S.I. No. 358 of 1992, S.I. No. 29 of 1993, S.I. No. 193 of 1997.

S.I. No. 136, 1995 Among other things this amendment allows local authorities to declare and extend taximeter areas [Article 7]. Also, the responsibility of issuing new taxi licences and to set maximum fares was transferred to the four local authorities [Article 32(1)].

Appendix 2: Current regulated fares

Each vehicle is fitted with a *taximeter* which records the fare by a combination of distance and time. The fare is calculated by the *time standing* whenever the vehicle is standing or is travelling at not more than 7.5 miles per hour. The fare is calculated by the *distance* whenever the vehicle is travelling at more than 7.5 miles per hour.

The basic fare structure consists of a minimum fare, composed of a hiring fee and an additional minimum distance or time, plus charges per mile and per minute standing, plus additional charges. The fare structure in operation since 1 September, 1995 is listed below and, alongside, is the new fare structure introduced in January 1998.

Table 7: Structure of Fare Controls

<i>Item</i>	<i>Dec 1997</i>	<i>Jan 1998</i>
Hiring charge	140p	140p
Minimum distance/time	+40p	+50p
Minimum fare	=180p	=190p
Standard charges		
per mile	80p	90p
per minute standing	10p	15p
Additional fixed charges		
per extra passenger	40p	40p
per item of luggage	40p	40p
per animal carried	40p	40p
Additional hiring charges		
public holidays	80p	80p
telephone booking	120p	120p
Dublin Airport	130p	130p
8pm-12am, 5am-8am each day,		
all Sunday	40p	40p
12am-5am each day	40p	80p

Thus the mileage rate has increased by 12.5 per cent and the standing time charge by 50 per cent. The percentage increases for an overall journey depend on the type of journey. For a journey where the main component is mileage and standing costs (i.e., no additional fixed charges, no additional hiring charges or unsocial hours), the increase is roughly between 10 per cent and 15 per cent. In the other extreme, where there are several passengers with luggage, hiring by phone or at the airport, at unsociable hours, the percentage increase falls to between 5 per cent and 10 per cent.