COMPETITION AND SUPPLY
IN LONDON TAXIS

By M. E. Beesley*

I. INTRODUCTION

In recent years, the growth in taxis and hire cars in the United Kingdom has been in remarkable contrast with other sectors of local passenger transport, particularly with the buses owned and operated by the large organisations characteristic of the bus industry. Very little, however, is known about the economics of these sectors; indeed for the hire cars, which till 1976 were completely unregulated and therefore unregistered, even the overall scale of activity is much in doubt. This paper concentrates on the comparatively well-documented London taxi trade, and presents some results of research designed to improve our economic understanding of it.

We are concerned with several related issues. London's taxi trade is one of the very few in the developed world in which there is no quantity control over the entry or exit of cabs or drivers, and it is probably unique in combining this with significant quality controls — on the cab, producing a uniform special vehicle, and on the drivers, requiring high standards of previous conduct and specialised knowledge of London. The bearing of these features on the competition between the taxi trade and other modes, and on its capacity to adapt to changing economic circumstances, is of great interest in forming urban transport policy, an area which Denys Munby always considered of outstanding importance in the range of transport issues ([1], page 173).

We comment here on:

- reasons for the growth trends in the trade;
- taxi competition with hire cars; and, most important —
- changes in the real cost of taxi output, and the main apparent reason for these.

The history of London taxis shows a marked increase since the mid-fifties in the number of taxis and drivers licenced. As Table 1 shows, since 1960 this contrasts sharply with the fortunes of what are usually regarded as taxis' near public transport competitors, buses and underground. Taxis' nearest competitors are, however, hire cars. The shares of total public passenger transport held by these four modes is an important starting point for a discussion of the reasons for relative growth and decline. Unfortunately, we have relatively firm data only for 1969, when the Report of the Maxwell Stamp Committee [2] provided figures for taxi and private

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care-hire which, with much reservation, can be turned into yearly passenger miles. We can therefore directly estimate shares only for 1969.

The most doubtful figure is for hire cars. From figures in the Report, we might suppose that the hire car trade performed roughly 752 million passenger miles in 1969.¹ Taxis can be set at about 197 million passenger miles.² Comparable figures for bus and underground in 1969 were 3,103 million and 3,105 million respectively [3]. So private hire cars plus taxis performed some 13.3 per cent of total public passenger mileage of 7,157 million. If we can assume that private hire plus taxi passenger miles expanded, between 1963 and 1976, at the same rate as taxis in service, the comparable figures for 1963 and 1976 become 9.6 per cent and 19.4 per cent respectively. This probably underestimates private hire growth in the 1970s. A fortiori, we are fairly safe in assuming that private hire and taxis now provide one-fifth of (local) public passenger transport in London, measured in passenger miles. (In value terms, their shares are higher, of course. For example, in 1976, the price of a 2.5-mile taxi fare for one person was about 3.6 times the fare by bus.) Thus it can be concluded that, as taxis operate under similar economic conditions to private hire, we are considering phenomena of considerable importance to the development of public passenger transport as a whole.

II. GROWTH OF THE TAXI TRADE IN LONDON

Judgements about policies towards public transport modes, as for other industries, should be framed with the help of predictions about their likely growth and, as part of this, their likely competitive relations with each other. The predictions have largely to rest on interpretations of past events. Partly because of lack of data, accounts of the taxi trade, including official committees of inquiry such as that of Runciman in 1953 [4] and Maxwell Stamp in 1969 [2], have conspicuously failed to provide explanations. On the demand side, for example, R. G. D. Allen’s estimate of “near unit” price elasticity for the Runciman Committee in 1953 is still the sole quoted reference for London, and is indeed still often used for other taxi industries as well. (It was based on returns from five large proprietors, covering about 15 per cent of all cabs; there are reasons, to be dealt with later, for supposing the true estimate then to be considerably less than the quoted figure.)

The main reason for a paucity of explanations, however, is that very complex influences have been, and are, at work. On the supply side, to a degree perhaps not fully realised by past commentators, the London taxi trade consists of two independent parts: the suppliers of cabs, the proprietors, and those able to demand them, the

¹In [2], p. 58, we are told that hire cars average 108 miles and six jobs per shift, and that the average duration of an engaged journey is 40 minutes. Elsewhere we learn that hire cars average 33,000 miles running a year, that there were probably 20,000 hire cars all told, and that the average job serves 1.9 passengers. Forty minutes at 15 mph = 10 miles per engaged journey (possibly rather more, as 15 mph is slow). Six jobs = 60 or so engaged miles per shift = 60 per cent engaged mileage; 60 per cent of 33,000 miles × 20,000 × 1.9 = 752 million miles.

²[2], p. 47: taxis were estimated to take 82 million passengers at an average trip length of 2.4 miles.
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<tbody>
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<td>Cabs in service Dec.</td>
<td>12,452</td>
<td>11,838</td>
<td>11,260</td>
<td>11,012</td>
<td>10,406</td>
<td>10,145</td>
<td>9,586</td>
<td>8,652</td>
<td>8,181</td>
<td>7,810</td>
<td>7,571</td>
<td>7,392</td>
<td>7,290</td>
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<tr>
<td>licensed (%)</td>
<td>44</td>
<td>50</td>
<td>57</td>
<td>61.5</td>
<td>61.8</td>
<td>58.8</td>
<td>56</td>
<td>50</td>
<td>64.5</td>
<td>56</td>
<td>51</td>
<td>52</td>
<td></td>
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<tr>
<td>Rejections</td>
<td>18,001</td>
<td>19,790</td>
<td>19,470</td>
<td>16,900</td>
<td>16,031</td>
<td>15,244</td>
<td>14,737</td>
<td>13,274</td>
<td>11,323</td>
<td>10,678</td>
<td>10,524</td>
<td>10,462</td>
<td>10,332</td>
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<tr>
<td>Drives</td>
<td>16,474</td>
<td>16,152</td>
<td>16,037</td>
<td>15,699</td>
<td>15,238</td>
<td>14,535</td>
<td>13,819</td>
<td>13,291</td>
<td>12,770</td>
<td>12,348</td>
<td>12,146</td>
<td>11,872</td>
<td>11,534</td>
</tr>
<tr>
<td>licensed (%)</td>
<td>5,559</td>
<td>5,645</td>
<td>5,497</td>
<td>5,348</td>
<td>5,392</td>
<td>5,145</td>
<td>4,977</td>
<td>4,678</td>
<td>4,392</td>
<td>4,450</td>
<td>4,489</td>
<td>4,755</td>
<td>4,358</td>
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<td>Rejections</td>
<td>842</td>
<td>728</td>
<td>1,067</td>
<td>1,151</td>
<td>1,493</td>
<td>1,441</td>
<td>1,250</td>
<td>1,170</td>
<td>1,040</td>
<td>742</td>
<td>857</td>
<td>876</td>
<td>844</td>
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<td>Failures</td>
<td>168</td>
<td>167</td>
<td>250</td>
<td>259</td>
<td>338</td>
<td>324</td>
<td>270</td>
<td>251</td>
<td>241</td>
<td>152</td>
<td>173</td>
<td>166</td>
<td>195</td>
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<tr>
<td>Failure rate (%)</td>
<td>20</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>24</td>
<td>22.3</td>
<td>22</td>
<td>21.1</td>
<td>23.2</td>
<td>22.8</td>
<td>20</td>
<td>114</td>
<td>65</td>
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<tr>
<td>licensed Dec.</td>
<td>2,301</td>
<td>2,036</td>
<td>2,244</td>
<td>1,732</td>
<td>1,835</td>
<td>2,605</td>
<td>2,822</td>
<td>2,276</td>
<td>2,119</td>
<td>1,627</td>
<td>1,466</td>
<td>1,254</td>
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<td>Accumulated licences (including suburban)</td>
<td>21,008</td>
<td>19,869</td>
<td>19,145</td>
<td>19,568</td>
<td>20,568</td>
<td>20,478</td>
<td>20,076</td>
<td>20,708</td>
<td>16,835</td>
<td>18,461</td>
<td>16,448</td>
<td>12,380</td>
<td>11,095</td>
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<td>Successful applicants</td>
<td>729</td>
<td>588</td>
<td>839</td>
<td>952</td>
<td>1,188</td>
<td>1,159</td>
<td>1,020</td>
<td>951</td>
<td>871</td>
<td>613</td>
<td>721</td>
<td>715</td>
<td>671</td>
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<tr>
<td>Successful applicants (including transfers)</td>
<td>123</td>
<td>121</td>
<td>147</td>
<td>115</td>
<td>134</td>
<td>166</td>
<td>152</td>
<td>151</td>
<td>112</td>
<td>109</td>
<td>102</td>
<td>97</td>
<td>105</td>
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<tr>
<td>London Transport journeys</td>
<td>1,422</td>
<td>1,455</td>
<td>1,473</td>
<td>1,439</td>
<td>1,413</td>
<td>1,480</td>
<td>1,502</td>
<td>1,589</td>
<td>1,733</td>
<td>1,760</td>
<td>1,753</td>
<td>1,896</td>
<td>2,004</td>
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<tr>
<td>Bus passengers, millions</td>
<td>546</td>
<td>601</td>
<td>636</td>
<td>644</td>
<td>655</td>
<td>654</td>
<td>672</td>
<td>676</td>
<td>655</td>
<td>661</td>
<td>667</td>
<td>657</td>
<td>674</td>
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</tbody>
</table>

Source: Reports of the Commissioner of Police of the Metropolitan Area, 1959–77; London Transport Executive Annual Reports.

1 Three-yearly renewals + first time licences.
2 First full year with attendance by appointment.
3 Figures for 1960-64 including country buses and coaches; figures from 1963 onwards adjusted to exclude them.
drivers, with about half the trade supplied by owner-drivers, as measured by owners of 1 cab (see Table 1).

Cab proprietorship is a remarkably competitive trade. Entry is possible for any "fit" person, as interpreted—very even-handedly—by the Public Carriage Office. A scrutiny of several years' returns for the numbers of cabs owned by proprietors indicates not only much change in individual fleet sizes, but also very low concentration ratios, which have tended to decrease over time. Thus, for the latest year available (1976) the four-firm concentration ratio (i.e. the share of the four largest firms in total output, which is a conventional way of representing industrial concentration ratios) was as low as 7 per cent, measured by cab ownership. Cab company profits are greatly affected by how drivers decide to respond to economic opportunities. Fare and other changes first react on drivers, who (as we argue in more detail later) must in the short run be regarded as a stock which is largely independent of the current state of recruitment. Drivers' hours and efforts—and their very presence in the market, for many are thought to be part-timers—can vary greatly.

On the demand side, apart from discovering trends in relevant underlying determinants such as the scale of visitors and the growth of real incomes, the identification of competitive variables is difficult. Taxis when "plying for hire" in what is called the "cruising market", and at other times, offer a relatively high-priced, convenient service. The service depends in a complicated way on the total number of taxis in a given market area and the ratio unengaged at a particular time, because the quality of service, and the likelihood of getting a taxi when one wants it, depend on the absolute number of unengaged taxis plying at the time. Fares charged affect demand too; and, of course, so do fares of near competitors and complementary services—and their service levels. So there is necessarily inter-dependence between supply conditions, which determine the terms on which taxis will make themselves available, and demand conditions. Identification of specific influences at work is complicated further in London (as elsewhere) by the fact that mandatory fare levels are set by regulators, not in response to economic analysis, but until 1975 in response to trade representations, and since then by reference to an index of motoring costs. However, a start towards economic explanations has to start somewhere, and we can point to some main influences.

The most natural units for measuring passenger transport output—journeys or passenger miles—are denied to us in the case of taxis, except for the one estimate made in the introduction. However, Table 1 tabulates several series of interest to the present study which are used to attempt to pin-point some influences over the years 1960–77. Among them are figures for taxis, and drivers, licensed at each year-end. These are the only available proxies for output.

Taxis licensed provide probably the better measure of trends in taxi output over time, for these reasons. Taxis have a much shorter economic life than drivers, and are thus more subject to decisions to acquire new, or retire old, assets. Drivers, once licensed, have an investment for life as long as they care to incur the small cost of maintaining it. (The nature of this "investment", the age of acquiring it, etc., are discussed below.) Changes in the stock of drivers are probably small relative to taxis.

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3The regulatory authority is the Home Office. A formal model of this regulatory problem is to be found in [5].
### Table 2
Factors Affecting Taxi Growth in London 1960–76

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<tbody>
<tr>
<td>Cabs, 31 December</td>
<td>6247</td>
<td>6552</td>
<td>6806</td>
<td>7055</td>
<td>7371</td>
<td>7290</td>
<td>7392</td>
<td>7571</td>
<td>7810</td>
<td>8181</td>
<td>8652</td>
<td>9586</td>
<td>10145</td>
<td>10406</td>
<td>11012</td>
<td>11260</td>
<td>11828</td>
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<td>Visitors to Great Britain, millions</td>
<td>1.7</td>
<td>1.9</td>
<td>2.0</td>
<td>2.1</td>
<td>2.5</td>
<td>2.7</td>
<td>3.0</td>
<td>3.2</td>
<td>3.6</td>
<td>4.4</td>
<td>5.0</td>
<td>5.2</td>
<td>5.4</td>
<td>5.8</td>
<td>6.0</td>
<td>6.7</td>
<td>7.6</td>
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<tr>
<td>Real expenditure of households p.w. (UK)*</td>
<td>21.1</td>
<td>20.6</td>
<td>20.4</td>
<td>19.5</td>
<td>19.1</td>
<td>22.8</td>
<td>23.0</td>
<td>19.8</td>
<td>22.8</td>
<td>23.8</td>
<td>23.2</td>
<td>22.9</td>
<td>25.8</td>
<td>24.4</td>
<td>22.6</td>
<td>24.2</td>
<td>24.7</td>
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<tr>
<td>Taxi fares* for 2.5 miles, pence</td>
<td>22.6</td>
<td>21.9</td>
<td>20.9</td>
<td>20.5</td>
<td>24.1</td>
<td>23.8</td>
<td>22.9</td>
<td>22.4</td>
<td>21.5</td>
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<td>22.3</td>
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<td>25.5</td>
<td>24.5</td>
<td>24.8</td>
<td>24.2</td>
<td>23.4</td>
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<tr>
<td>Underground fares* for 2.5 miles, pence</td>
<td>3.1</td>
<td>3.9</td>
<td>3.7</td>
<td>3.9</td>
<td>3.7</td>
<td>4.3</td>
<td>4.2</td>
<td>4.0</td>
<td>5.7</td>
<td>7.1</td>
<td>6.5</td>
<td>9.1</td>
<td>8.4</td>
<td>7.2</td>
<td>7.7</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Bus fares* for 2.5 miles pence</td>
<td>3.1</td>
<td>3.4</td>
<td>3.7</td>
<td>3.7</td>
<td>3.9</td>
<td>4.3</td>
<td>4.2</td>
<td>4.0</td>
<td>5.7</td>
<td>5.3</td>
<td>4.9</td>
<td>6.1</td>
<td>5.6</td>
<td>4.8</td>
<td>6.2</td>
<td>6.6</td>
<td></td>
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<tr>
<td>Employment, Greater London, millions</td>
<td>4.6</td>
<td>4.6</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
<td>4.6</td>
<td>4.6</td>
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<td>3.9</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
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<td></td>
</tr>
<tr>
<td>Unemployment, Greater London, per cent</td>
<td>0.7</td>
<td>0.84</td>
<td>1.25</td>
<td>1.15</td>
<td>0.75</td>
<td>0.7</td>
<td>0.95</td>
<td>1.50</td>
<td>1.45</td>
<td>1.30</td>
<td>1.35</td>
<td>1.65</td>
<td>1.55</td>
<td>1.20</td>
<td>1.30</td>
<td>2.2</td>
<td>2.4</td>
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<tr>
<td>Cost of motoring* 2.5 miles, pence</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
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<td>3.6</td>
<td>3.8</td>
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*Deflated by the retail prices index: all fares are weighted for the number of months a year the given fares ruled.

Sources:
- Cabs: As for Table 1.
- Visitors: English Tourist Office.
- Real Expenditure: Family Expenditure Surveys.
- Taxi fares: Police Commissioners’ Reports.
- Cost of motoring: Automobile Association estimates of running costs for 1500–2000cc saloon; running costs include petrol, oil, tyres, servicing, repairs and renewals.
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Drivers may well withdraw from the market permanently or temporarily, but are under no great pressure to yield up their licences if they do so. So, while entry to the set of drivers is a measured variable which responds to economic forces, there is no comparable statistic for “withdrawal” of drivers. For these reasons, number of licensed cabs is the nearest equivalent to an output measure.

However, if one accepts numbers of cabs to measure taxi growth, one has in effect to explain trends in terms of motivations of one part of the trade—owners of cabs—only. As we shall see later, cab-related costs are the smaller part of total costs making up a fare. Cabs reflect total output changes in the trade in the long term, but decisions to invest in them must be seen in terms of proprietors’ profits. In general, increases in demand are favourable, leading to greater perceived profits, and increases in costs are unfavourable, and vice versa. Changes in demand in London are a function chiefly of:

(a) tourist demand, especially from foreign visitors, alleged to be the most important source of growth;
(b) local demand, especially from those home customers typical of the greater area of London’s taxi service, the central area;
(c) the price of taxi journeys; and
(d) the price of near competitors—bus and underground fares for like journeys.

Factors favourable to profits from the cost side would be principally those affecting labour supply, and in particular conditions of taxi labour supply, as seen in more detail below:

(e) more unemployment in London at large would be favourable; and
(f) less employment overall would also be favourable to the terms on which labour could be hired.

To a more or less satisfactory degree these influences may be captured in available data. For (a) the measures selected were visitors to Great Britain staying at least one night, most of whom take in London in their stay (independent measures of London overseas visitors are not available for our time series). Measure (b) presents the greatest difficulties. What is required is some measure of income available in Central London for spending on taxis. No such index exists, partly because so much of spending on taxis relates to business activity, not to households. Even for the households, no separate data for London are available. The best compromise seemed to be to use real household expenditure for the U.K. Variables (c) and (d) were taken for the range of journeys between 2 and 2.5 miles. This covers the average taxi trip and an appropriate range of public transport fares. Employment and unemployment figures are for Greater London. The basic data are in Table 2, consisting of the relevant time series for 1960–76.

Some comment is perhaps needed on the reason for specifying taxi fares separately from competitors’ fares. Normally one would think of a favourable demand experience as one in which others’ prices had been raised relative to own price. Here, however, we have a regulated industry where prices are changed only periodically. In conditions of generally inelastic taxi demand, granting a fare increase would signal increased prospective revenues; increases in bus and underground fares would signal more customers (a shift outwards in total demand).
The preferable form of the model would be to specify a lag structure, so that, for example, this year's change in cabs is a function of last year's or other previous experience. But there is no independent evidence to lead to a preferred lag structure; and attempts to search for one by manipulating the data encountered little success. However, by pooling all the time series data, a model was estimated as follows:

\[
C = 7014 + 0.283V - 0.433RE + 0.264TF \\
(\ t = 6.93\ ) \quad (6.33) \quad (-2.70) \quad (2.11) \\
- 0.18BF + 0.094UF - 0.755EMP + 0.042UN \\
(-0.96) \quad (0.57) \quad (-3.64) \quad (1.44) \\
R^{-2} = 0.987 \ \text{D-W stat} = 1.63
\]

where \( C \) = Cabs; \( V \) = Visitors; \( RE \) = Real expenditure; \( TF \) = Taxi fares; \( UF \) = Underground fares; \( BF \) = Bus fares; \( EMP \) = Employment; \( UN \) = Unemployment.

Two of the coefficients of the independents had unexpected signs—real expenditure and bus fares, with the latter very insignificant. Possibly the expenditure figure is a poor reflection of outlays for taxis in the relatively special, probably business-orientated, London market, but it is, rather, correlated with unfavourable labour cost experience. Taxi fares behave as expected, and are significant, so confirming that taxis are indeed price inelastic. Employment and unemployment performed as expected, though unemployment is not very significant. Competitive fares explained little. Visitors, not surprisingly in view of their large and uninterrupted growth in the period, are highly significant.

The need to understand supply side changes alongside those of demand is confirmed by this limited evidence. What is perhaps somewhat surprising is the apparent lack of effect of the prices of two competitors—buses and underground. The nearest competitor—hire cars—is absent from the model, however, and is considered, necessarily quantitatively, in the next section. Moreover, the figures span a considerable period when, it may be argued, the competitors' markets moved closer together. Taxi fares between 1960–76 rose only some 5 per cent in real terms, or, if the less favourable years 1962–72 are taken, 12 per cent, whereas the public transport rivals, underground and buses, rose together by an average of 140 per cent over 1960–76, measured for the model taxi trip of 2.0 to 2.5 miles. Private motoring costs, meanwhile, changed little in real terms (see Table 2).

Measuring the importance of visitors, home demand and other influences can be approached another way by assumptions about the share of the total trade now done for visitors. It has been alleged recently that about half of taxi custom, taken all the year round, now comes from the kind of (foreign) visitors represented in Table 1. There is no solid evidence for this, for expenditure on taxis was not, unfortunately, recorded separately when the English Tourist Board sampled the visitors. But it is possible, in view of London Transport's belief that 10 per cent of their total bus and underground fares come from the same source, and that the proportion in the taxis' main market, Central London, is much higher.

If visitors now account for 50 per cent of taxi output, they may well account for 4,500 of the total gain between 1960 and 1976 of 5,400 additional cabs in service, to judge from the increases recorded in Table 1. "Home" demand, as exemplified by
employees, has fallen over the period by 18 per cent. Real incomes of Londoners probably increased by about 40 per cent in the period, however. So we might guess that the net effect here was an increase of 15 per cent, giving an increase of 700 in the period. This would leave a gain of 200 or so to be accounted for by relative price or other changes. If visitors accounted for only 40 per cent of taxi activity in 1976, the “visitor” gain would be 3,700, leaving about 1,000, rather than 200, to be accounted for by these price effects. A rather heroic estimate of this cross-price elasticity—the effect of the change in bus/underground fares on cab numbers, as measured over the whole period—would then be 0.19, using the 1,000 cabs as the quantity change. Even with this larger estimate of the effect, the indication is that there was little inter-relation between bus and underground fares and cab demand over the period as a whole.

Now it may be that bus and underground markets on the one hand, and the taxi market on the other, which historically were probably largely independent because of differences of income among Londoners, were still so at the end of the period. But this is difficult to believe in the face of the relative fare changes just noted. Taxi fares on the one hand, and bus and underground fares on the other, were much closer by then. Moreover, though this is not a price effect, bus service levels in particular have fallen during the period; this must have reinforced and perhaps exceeded the price effects. Whatever might have been the case in 1960, by 1976 taxis may well have become important competitors to conventional public transport, especially in the central area, which accounts for much of taxi output. The competition nowadays focuses, we may be certain, to a much greater degree than 15 years ago on the foreign visitor. In the home-based, non-visitor market, on the other hand, the more important developments may well have been in the competition between taxis and hire cars, to which we now turn.

III. TAXI AND HIRE CAR COMPETITION

One very important issue, yet to be resolved, is the development of competition between hire cars, and especially “mini cabs”, and taxis. Since the advent of two-way radio circuits, hire cars have become an important option for passenger movement. “Mini cabs” are mass production car versions of hire cars, a category which also includes limousines, wedding cars, funeral cars, etc.

In the present context, the question is: to what extent has the taxi growth been due to penetration of the hire car market? This is perhaps an unusual way to pose the question. Normally it is suggested that, historically, the hire car trade has increased its custom at the expense of taxis, and drivers’ resentments, expressed particularly in the early 1960s about mini cabs’ activities, are cited as evidence. But what evidence we have might just as plausibly be seen differently.

First, it must be recognised that the taxi has an asymmetric relationship with the hire car. The taxi can ply for hire, the hire car cannot; but the taxi can also (if it has a radio) elect to perform as a hire car. So long as developments in the plying-for-hire market and the rest of the market favour the dual function, taxis will gain, and vice versa. The competition, as Maxwell Stamp [2] emphasised in 1970, is at the
margin between rather distinct markets, as evidenced in the very different average lengths of trips by taxis and hire cars.

Second, over the recent period of taxi growth there has been little or no change in the general rules governing competition between the two types of paratransit in London. The hire trade has, as it had in the 1960s when mini cabs appeared, completely free entry, unregistered and unregulated. It may safely be assumed to conform to the requirements for competitive behaviour—prices will reflect costs, and the industry will have adjusted to the opportunities afforded by the idiosyncracies in the rules of its nearest competitor. What has not been constant over the years is the relation of taxi fares to taxi costs; and there has been a shift in the structure relating fares to distances travelled.

The first of these effects—a tendency for fare regulation to proceed by discrete steps, thus producing shifts in relative fares as inflation proceeds—has probably not been very significant over the long term. In the long run, fare regulators are driven by cost changes, and the taxi trade is no exception. Moreover, in recent years, fare changes have become more and more frequent—and the levels of fares are now indexed, in effect, to cost changes.5

More significant in the present context is the fare structure point. As Mr Sid Pearce points out [6], there has been an increasing differentiation in the effective rate per mile taxis are compelled to charge, because of the tendency to weight the fixed proportions of the hire charge more heavily when acceding to claims for fare adjustments. His very valuable Figure 8 indicates clearly how, especially in the seventies, the rate per mile has assumed a greater differentiation: (a) upwards for short distances within the six-mile compilable limit; (b) to a lesser degree, upwards for trips over six miles. This produces the characteristic graph shown in Figure 1.

The left hand of this function has been getting steeper, after allowing for changes in real fares. From the point of view of taxi versus car hire competition, this has had the (probably quite unintended) effect of raising fares in the short distance market comprising the bulk of the work of the taxi trade, where the plying exclusivity matters most, and of lowering fares in the area of greater competition—the longer distance market. This effect is shown in Table 3.

Thus, irrespective of the merits or otherwise of this marked difference in fares per mile for differences in journey lengths (and Mr Pearce makes a cogent argument for reversion to a flat rate per mile), the effect has probably been, over time, to induce a discrimination in pricing rather favourable to taxis competing at the margin for hire car work; for the following reasons.

If, at the relevant fare levels, elasticity of demand is not greater than unity (and, as we shall see later, this is a fair interpretation of the little evidence available), the effect of raising fares, ceteris paribus, is to generate greater net returns to the trade and to reduce output. Because of fare regulation, competition cannot bid down fares. There is then spare capacity. Profits can be increased further by using the spare capacity in the longer distance market, even if the price per mile is lower there. The effect is as if cabs were controlled by a discriminating monopolist serving two mar-

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4 The Local Government (Miscellaneous Provisions) Act 1976 gave permissive powers to authorities to regulate hire cars, but not with respect to quantity or fares. London was excluded from this Act.

5 In responding to requests for fare increases, the Home Office refers to an index of motoring costs.
kets, the lower-elasticity short-distance market, and the higher-elasticity long-distance market.

A symptom of this may be the history of radios fitted to cabs. One might argue that radios—which are a sine qua non of hire car operation—are a proxy for taxi penetration of the hire car market. Thus by 1976 taxis had picked up an important amount of hire car work. In the early sixties, the low proportion of cabs that were already fitted with radios was falling, as Table 1 shows. An absolute low was reached

### Table 3

*London Taxi Fares for one Person*

<table>
<thead>
<tr>
<th>Date</th>
<th>1 mile</th>
<th>2.5 miles</th>
<th>4.5 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 March '71</td>
<td>21p</td>
<td>39p</td>
<td>61p</td>
</tr>
<tr>
<td>1 April '73</td>
<td>24p</td>
<td>42p</td>
<td>64p</td>
</tr>
<tr>
<td>7 April '74</td>
<td>30p</td>
<td>55p</td>
<td>90p</td>
</tr>
<tr>
<td>31 July '75</td>
<td>40p</td>
<td>70p</td>
<td>110p</td>
</tr>
<tr>
<td>13 December '76</td>
<td>50p</td>
<td>80p</td>
<td>120p</td>
</tr>
<tr>
<td>22 December '77</td>
<td>55p</td>
<td>90p</td>
<td>130p</td>
</tr>
<tr>
<td>Increase 1971–77</td>
<td>162%</td>
<td>131%</td>
<td>113%</td>
</tr>
</tbody>
</table>

6Since hire cars are unregulated, they have little opportunity to protest as a body at these developments. This, and taxis’ success in gaining markets, might account for the relative lack of adverse taxi comment of late on the “mini cab” issue.
in 1962, when the 579 cabs fitted with radios comprised 10 per cent of the end-year fleet. Their numbers grew slowly till about 1972, when the proportion was 11 per cent. Radios then became more frequent — by 1976, 19.4 per cent of cabs had them.

This interpretation seems to be reinforced by the fact that, before the incursion of mini cabs in the early sixties, there had already been a movement towards fitting radios to cabs: that is, some proprietors found it profitable then to subscribe to a radio service. When the cheaper form of hire car arrived (the mini cab was simply a standard small production car), it merely competed away much of the hire car part of the taxi trade. This would explain the absolute reduction in the number of radio-fitted cabs at the time. Perhaps it was this, just as much as alleged "poaching" of the plying for hire trade, which provoked hostility among cab drivers.

Clearly, the terms of hire car and taxi competition are a very important factor in the interpretation of taxi trade development, precisely because taxis do represent a part of what may be a rapidly growing non-bus and non-private car passenger (or "para-transit") market. Taxis, because of their relative prominence and because they are regulated, generate attention and some data. Hire cars, and especially mini cabs, do not, a condition which is likely to continue. Arguments about the para-transit market will have to be pursued by analogy with taxis. But it can be argued that taxis are a much better indicator of this wider market sector than has been supposed hitherto, and certainly much that can be deduced about the economics of the taxi trade can be applied to the wider market.

IV. SUPPLY SIDE DEVELOPMENTS

Changes in demand for taxis may be explained, we have seen, along familiar lines, if with different interpretations about their significance. Changes on the supply side are difficult to interpret, but are probably even more important in their implications for public transport as a whole than are taxis' responses to changing demand.

First is the apparently slow shift upwards in the real costs of taxi operation, as compared with those of London buses. When we seek to interpret the evidence of Table 2 on this, the vagaries of fare control on both sides cloud the picture. But overall, and over time, fares reflect costs unless subsidies are given. It can hardly be doubted that the general inference from Table 2 is that taxi fares have risen considerably less than have bus fares. Moreover, buses have enjoyed increasing direct subsidy over the years; taxis have not. (Taxis do not pay for all the costs that are incurred on their behalf, in particular the costs of most of the Public Carriage Office's services to the trade, including running the knowledge tests. But this does not affect the issue here.) Taxi in 1977, as in 1960, contained a single driver in one vehicle, and they carried about the same number of passengers per trip. If the cost of doing this rose in real terms considerably less than did the real costs of carrying passengers by bus over the same period, there is great interest in possible explanations. Some of these have to do with changes affecting buses (for example, in their productivity); here, we confine attention to the taxi side of the comparison.

Changes in the real costs per unit of output in a given trade can arise from:

changes in input prices;
changes in productivity, given the available technology; and
innovations, in the broad sense of new technology or new ways of organising
production in the trade.

The following discussion will follow this division. However, an implicit assumption
in proceeding in this way is that there is no change in the product.

Taxis have not changed their essential service much, although, if suggestions in
the last section of increasing taxi penetration into the hire car trade are correct, there
has been some tendency recently for the character of taxi output to change. (One
indication, were it available, would be the average customer trip length. One
would expect a slight increase in this average if the penetration has indeed hap-
pened.)7 On the whole, however, we must look for sources other than change in
output mix.

**Input prices and their importance**

The question how input prices to taxi services have been changing raises the need
to describe the costs involved. For this we have partly to rely on two sources—Max-
well Stamp [2] and the later PCL Study [7]. Partly we have to construct new
evidence—specifically to describe labour costs. As we have argued, drivers, whose input
of time and effort is the main single cost, are a stock which will become available
for taxi work so long as the returns from taxi driving are no less than their oppor-
tunity costs. If this is a correct view, the appropriate costs to assign to labour in taxi
operation are earnings in alternative occupations, assuming drivers are free to enter
or leave the trades in question. As we see later, this seems likely.

We have been able to investigate this, thanks to a 5 per cent sample of information
from the taxi drivers’ records provided by the Public Carriage Office (PCO), taken
in May–June 1977. This information included:

- the age of the driver;
- the date at which he applied to become licensed;
- the date the licence was received;
- his occupation on application.

This was useful in several ways; here, however, its significance was that we could
classify drivers according to their likely alternative occupations and thus, via earn-
ings survey data, estimate foregone earnings. The total sample was 800 drivers, of
whom 769 were suitable for this purpose.

This approach to estimating costs is a new one. Previous attempts focused on
costs associated with cab ownership and running, which are indeed important, but
are a minor part of costs. In these studies drivers were dealt with by speculating
about their remuneration from their taxi work. This is of course an inappropriate
measure for our purposes.

The supply of taxi drivers’ services is conditional upon each driver passing the
knowledge test. To what extent does this barrier to entry affect interpretation of
trends in drivers’ costs? We tried to discover whether, over time, there was any con-

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7 Since this was drafted the 1978 Price Commission report has estimated the London taxi average
trip as 2.7 miles, an increase over the Maxwell Stamp finding.
nection between numbers of drivers embarking on the knowledge learning process (the "first applicants") and such factors as changes in this or last year's wages in bus driving, or changes in taxi fare levels or in visitors (which all might be supposed to hold out inducements to enter the trade). We found no systematic connection with these and other factors, with one major exception, namely the unemployment rate in London at the time of entry. This plays the dominant role in our models which visitors played in explaining the expansion of the industry.\(^8\) Taxi driving thus appears to behave in a classical manner—when unemployment rises, the opportunity cost of acquiring the knowledge falls, and more would-be drivers come forward.

We discovered from the sample of PCO records that the average time taken to acquire the knowledge was 22.6 months, or just under 2 years, with a high standard deviation of 17.1 months, indicating a rather skewed distribution. We have been unable to discover any connection between time taken in this process and the variables which might be supposed to induce men to hurry or delay their training, such as upturns in visitors, etc. It seems that, once embarked on the knowledge, the variation in personal circumstances and ability to absorb the knowledge (the average number of "attendances" or examinations over the years 1960–76 is as large as 11 per man) swamps other sources of variation. The average time taken to pass the knowledge test and thus appear in the taxi labour market shows little systematic variation over the years. This probably indicates that the tests and their pace of administration have not altered much—though clearly, with entry subject to unemployment change, a large variation in candidates' numbers has implied a very variable workload for the PCO.\(^9\) From time to time complaints are made about the delays in the Office. This is to be expected, since demand on its services is essentially uncontrollable and the standard of knowledge required does not vary.\(^10\)

Since, as pointed out earlier, acquisition of the knowledge is a long-term investment (the average age in our sample at passing the test was 30), and as unemploy-

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\(^8\) We regressed applications, \textit{inter alia}, as a function of unemployment, real wages of bus drivers, and taxi fares related to taxi, bus and underground fares in various models. Unemployment was always highly significant. In some model forms real wages were significant but of wrong sign, and the fare terms were insignificant. Lagged models performed similarly. The "best" model regressed applications on experience in the previous year; the result was that first applications are a function of:

\[
\begin{align*}
&-252.4 \\ (t = -0.252)
&
\end{align*}
\]

- real taxi fares, \(t - 1\);

\[
\begin{align*}
&\text{unemployment, } t-1; \quad +1,104.5 \\ (t = 0.670)
&\text{real bus wages, } t-1; \quad +66.81 \\ (t = +1.659)
\end{align*}
\]

The "wrong" effect of bus wages is interesting. It is tempting to argue that increasing bus wages increases applications because money to finance the knowledge is more available! But this depends on the importance of bus drivers or like sources as a source of taxi labour. It turns out (see later) that this is not likely to be a very significant factor.

\(^9\) In the period 1959–76, the highest number of attendances for oral exams in a year was 27,202 in 1972, and the lowest 11,095 in 1961.

\(^10\) We had some hope of using the average length of time taken for the knowledge test as a proxy for the proportion of part-time drivers entering the workforce, on the argument that those who had part-time jobs already would keep them going, thus taking a part-time "course" as it were, and so continuing part-time operation as taxi drivers. We also tried to discover whether the numbers of drivers entering the "course" from particularly part-time types of work were changing over time. We did not succeed in establishing these points, or disproving them either. There is no substitute, it seems, for observing directly whether taxi drivers are, or are not, part-time operators.
ment largely governs applicants in the short term, the best way to regard the supply of labour is probably as a pool from which, as the attractiveness of driving waxes and wanes, labour is offered. Of course, no one goes in for the knowledge test unless he takes a reasonably optimistic view of the London taxi trade, but the decision is akin to all such decisions to embark on qualifications— one hopes for long-run gains which will offset the immediate cost of acquiring them. After qualification, whether one practises the trade depends on the terms offered, which must be superior to one’s alternative work opportunities. (A limited number of training grants has been available from time to time from charitable sources such as the British Legion, or from the Department of Employment.)

The relevant labour price change we have to consider is that of these alternatives. This is provided by classifying the sample of drivers into 18 occupation groups recognised in the New Earnings Surveys and so computing a weighted earnings figure. It is assumed that the earnings data hold for the relevant dates used for our comparisons. This seems to be reasonable, because, although the data we have relate to drivers active in 1977, there is little sign in them that confining the measure to those active at certain dates would bring much variation in the occupational weights, although work on this is still in progress.¹¹

Table 4 gives the distribution of drivers to the 18 groups, the weekly earnings in London, and the more limited information, available for Great Britain only, about hours worked in the week. The figures apply to full-time male (over 21) employees. Table 5 applies the weights to Table 4 to give the alternative occupation wage per week at the different dates from 1973 onwards. For comparison, net of income tax figures have also been calculated—a point referred to later.¹²

Two accounts of taxi costs are available, both intended to be comprehensive and both taking the cab as the unit of output, those of Maxwell Stamp [2] for 1968 and of the PCL [7] for 1975. They vary in the weights accorded to various items of costs. Table 6 sets out the items and the conclusions of the studies. PCL estimated for a range of 24–32,000 miles a year, Maxwell Stamp for 28,000. We have interpolated the PCL data for comparison.

The rise in the general retail price index between these dates was about 10 per cent. The difference in the totals recorded in Table 6 is 20 per cent. Obviously very different views about costs were being taken. Both depended on reported data from a very few taxi owners. Some of the items could be checked from independent sources and thus are clearly reliable. This is true of fuel and oil, and items 2 through 5. Other differences seem to be straightforward omissions, e.g. 6 and 7 for PCL and 10

¹¹ A chi-squared test on a partition of the sample for earlier and later years indicated differences in the occupational structure only at the 0.20 + significance level.

¹² It is also possible to estimate a labour supply elasticity from the distribution of alternative occupations and earnings. Since at any one point in time, say 1977, the stock of drivers is an accumulation over many years, in response to varying experiences of demand for taxi work, and contains a variety of full, part and non-participating drivers, one can regard the distribution as representing the varying amounts necessary to induce labour to be supplied. As Table 4 shows, about 90 per cent of the total labour lies in the range of earnings between £70 and £80 a week. Over this range, the average proportional increase in earnings related to this corresponding proportional increase in numbers available indicates an elasticity of 14.5. Unsurprisingly, the elasticity of supply turns out, on this evidence, to be high over a big range of outputs.
TABLE 4  
Distribution of, and earnings in, previous occupations of London Taxi Drivers

<table>
<thead>
<tr>
<th>Occupational Group</th>
<th>Distribution of Drivers</th>
<th>Weekly Earnings in London 1977</th>
<th>Hours worked in week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>£</td>
<td>GB</td>
</tr>
<tr>
<td>1. Managerial (a)</td>
<td>0.13</td>
<td>158.5</td>
<td>—</td>
</tr>
<tr>
<td>2. Professional (a)</td>
<td>0.78</td>
<td>117.6</td>
<td>—</td>
</tr>
<tr>
<td>3. Professional (b)</td>
<td>0.65</td>
<td>106.8</td>
<td>—</td>
</tr>
<tr>
<td>4. Literary etc.</td>
<td>1.69</td>
<td>100.2</td>
<td>—</td>
</tr>
<tr>
<td>5. Professional (c)</td>
<td>1.04</td>
<td>106.7</td>
<td>—</td>
</tr>
<tr>
<td>6. Managerial (b)</td>
<td>1.95</td>
<td>99.7</td>
<td>—</td>
</tr>
<tr>
<td>7. Clerical and related</td>
<td>8.45</td>
<td>74.1</td>
<td>40.1</td>
</tr>
<tr>
<td>8. Selling</td>
<td>11.83</td>
<td>78.8</td>
<td>40.4</td>
</tr>
<tr>
<td>9. Security etc.</td>
<td>2.86</td>
<td>91.4</td>
<td>45.8</td>
</tr>
<tr>
<td>10. Catering etc.</td>
<td>4.16</td>
<td>65.0</td>
<td>45.7</td>
</tr>
<tr>
<td>11. Farming etc.</td>
<td>0.00</td>
<td>63.1</td>
<td>45.5</td>
</tr>
<tr>
<td>12. Materials processing</td>
<td>1.69</td>
<td>73.8</td>
<td>45.8</td>
</tr>
<tr>
<td>13. Making and repairing</td>
<td>7.93</td>
<td>79.0</td>
<td>44.2</td>
</tr>
<tr>
<td>14. Processing</td>
<td>10.01</td>
<td>79.8</td>
<td>45.3</td>
</tr>
<tr>
<td>15. Painting etc.</td>
<td>1.69</td>
<td>70.8</td>
<td>44.3</td>
</tr>
<tr>
<td>16. Construction etc.</td>
<td>1.56</td>
<td>76.6</td>
<td>44.9</td>
</tr>
<tr>
<td>17. Transport operating</td>
<td>37.58</td>
<td>76.5</td>
<td>47.7</td>
</tr>
<tr>
<td>18. Miscellaneous</td>
<td>5.98</td>
<td>72.3</td>
<td>45.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>99.98</td>
<td></td>
</tr>
</tbody>
</table>

1. Managerial (a) = Managerial (general management).
2. Professional (a) = Professional and related supporting management and administration.
3. Professional (b) = Professional and related in education, welfare and health.
4. Professional (c) = Professional and related in science, engineering, technology and similar fields.
5. Managerial (b) = Managerial (excluding general management).

---

TABLE 5  

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings</td>
<td>£41.5</td>
<td>£47.4</td>
<td>£61.6</td>
<td>£71.9</td>
<td>£78.4</td>
</tr>
<tr>
<td>Index: 1973 = 100</td>
<td>100</td>
<td>114</td>
<td>148</td>
<td>173</td>
<td>189</td>
</tr>
<tr>
<td>Earnings less tax*</td>
<td>£36.15</td>
<td>£40.6</td>
<td>£50.1</td>
<td>£58.2</td>
<td>£65.7</td>
</tr>
<tr>
<td>Index: 1973 = 100</td>
<td>100</td>
<td>112</td>
<td>139</td>
<td>161</td>
<td>182</td>
</tr>
</tbody>
</table>

*The net-of-income-tax calculations assume: allowances, single or married according to the percentage of each in the population; child allowances for 1½ children, half over and half under 16, and an allowance for a mortgage of £4,800.

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### Table 6

*Taxi Costs, 1968 and 1975*

*One year, 28,000 miles; current prices*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1968</td>
<td>1973</td>
</tr>
<tr>
<td>Standing Charges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Depreciation</td>
<td>285</td>
<td>456</td>
</tr>
<tr>
<td>2. Insurances</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>3. Meter rents</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>4. Licence</td>
<td>205</td>
<td>20</td>
</tr>
<tr>
<td>5. National insurance</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Holiday pay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Garaging</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>7. General overheads</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Running Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Fuel and oil</td>
<td>290</td>
<td>620</td>
</tr>
<tr>
<td>9. Maintenance, repairs</td>
<td>460</td>
<td>130</td>
</tr>
<tr>
<td>10. Tyres</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Knowledge</td>
<td></td>
<td>193</td>
</tr>
<tr>
<td>Total, per year</td>
<td>£1,430</td>
<td>£1,723</td>
</tr>
</tbody>
</table>

for Maxwell Stamp. These are quite legitimate expenses for our purposes, so the estimates must be corrected for them.

Depreciation, maintenance and repairs and the knowledge are debatable items. For the first two, the wide difference of views is underlined by the fact that Maxwell Stamp records £285 + 460 = £745 for them in 1968 prices and PCL records £456 + 130 = £586 in 1975 prices! PCL devoted much attention to these items. Its depreciation figure is derived from estimates of changes in prices for cabs of different ages plus the amount needed for the yearly overhaul to keep the cab on the road (i.e. to pass the annual test inspection). The authors consider the trade-off between rising overhaul costs and purchase of new vehicles and work out, for example, that at seven years old cabs are “best” replaced by new vehicles. Maxwell Stamp includes “return on capital” in its item (1). The figure given is a seven-year annuity whose present value after allowance for resale value is equivalent to the cost of a new taxi cab. The interest rate for the annuity is unstated. Presumably, the annual overhaul charge is included in “maintenance” in the Maxwell Stamp figures.

There is no “correct” figure for depreciation, or indeed for maintenance, independent of what happens on the demand side. For example, if demand falls sharply,
so do the prices of second-hand taxis, and vice versa, particularly as taxis have limited alternative uses. The general trend for taxi activity over the period under review was quite strongly upward. Presumably this produced an upward tendency for second-hand prices, which would be reflected in the PCL approach. For our purposes, however, the relevant concept is the consumption of taxi services in a steady state at the level of activity at the times selected, 1968 and 1975. Thus all we need to know is what would be the taxi capital input in this steady state, plus, similarly, the maintenance, overhauls and servicing.

So far as taxi capital is concerned, we have figures for both the new taxis added to the fleet, and, by deduction, the withdrawals year by year (see Table 1). At a time of rising demand, as here, there must be a bias upward in the additions relative to constant demand, and a bias downward in the withdrawals (if the steady state were achieved these would balance). If therefore we compare the two sets of data we should be able to make some judgement about what the steady state equivalent would be. See Table 7.

It seems reasonable, from this evidence, to set the steady state input at the average of the additions and withdrawals shown in Table 7, or some 12.0 per cent, implying an average “life” of 8.4 years. This is supported by the age of the cab fleet. From Table 1, we see that the average number of cabs more than four years old from 1962 onwards has ranged from 44 per cent (in 1976) to 64.5 per cent (in 1968), with an average of 55 per cent. These figures too are affected by the expansion of demand. (Cabs are increasingly likely to be withdrawn with age.) Translated into the inputs at 1968 and 1975, by applying the prices of a new Austin Diesel FX4 cab, the most popular version, we get £131 and £258 respectively.

Turning to maintenance, servicing and annual overhaul costs, we find that PCL allows for the first two £130 at 1975. One is rather sceptical about this figure. The Police Commissioners’ reports show that consistently, over the years, about a quarter of all licensed taxis have stop notices served on them each year because of defects revealed in the frequent spot checks carried out (see Table 1). (Taxi licence plates are coded to months to make it easy to spot when a cab has passed its annual test and, by inference, when it may be more liable to show defects.) Putting the defects right quickly is essential to continuing service, and there are many advertisements by garages to provide this, presumably at some premium over scheduled maintenance.

PCL’s total costs of overhaul for the “most economic” policy is about £220. This, plus the £130 cited on the table for maintenance, equals £350 a year (at 1975 prices) or much less than Maxwell Stamp’s 1968 figure at £460, which covers all three items. Pending further enquiry, we will average these two estimates, assuming that relevant input prices changed between 1968 and 1975 at motor vehicle fitter/mechanic earnings, namely at 141 per cent.13

Thus, given the following alternative accounts:

Maxwell Stamp 1968 £460 + 141 per cent = 1975 £1,109
PCL 1975 £350 ÷ 241 = 1968 £145

COMPETITION AND SUPPLY IN LONDON TAXIS

M. E. Beesley

TABLE 7
New Additions to and Deductions from Cab Stock

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<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>5.0%</td>
<td>7.0</td>
<td>9.0</td>
<td>11.0</td>
<td>13.0</td>
<td>15.0</td>
<td>17.0</td>
<td>19.0</td>
<td>19.0</td>
</tr>
<tr>
<td>Additions$ +% of existing stock. Observations for 1959, 1964–76</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawals$ +% of existing stock. Observations for 1959, 1964–76</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Table 1.
$Cabs registered for the first time. Additions are current year’s registrations over stock at beginning of the period, year 0.
$Net withdrawals. Withdrawals are the difference between year 1 and year 0 as percentage of year 0’s stock. There is necessarily one less observation for withdrawals.

the averaging process gives us:

<table>
<thead>
<tr>
<th>1968</th>
<th>1975</th>
</tr>
</thead>
<tbody>
<tr>
<td>£303</td>
<td>£730</td>
</tr>
</tbody>
</table>

This is a drastic way of solving a problem of incompatible evidence. There is obviously great need to generate more reliable data on maintenance, servicing and overhaul costs, and, since availability of cabs is affected by the time needed for these processes, more evidence about the effects of the very high standard of reliability required by the public control processes.

The “knowledge” is certainly a cost which has to be incurred in the conditions imposed on the London trade. Whether it is relevant for a particular issue concerning costs depends on what that issue is. In the short run, as we have seen, the number of entrants incurring the costs is a function principally of unemployment, and once they have acquired this knowledge, its costs are bygones and do not affect decisions to work more than the bare minimum necessary to protect the right to maintain a licence. For present purposes, however, the correct concept seems to be the costs which would be incurred to maintain, in the long run, the level of services which happened to be offered and sold in the years in question. This would include “renewal” of drivers and thus knowledge inputs. Such costs which fall on the trade itself are the opportunity losses (wages foregone) during training.14

The rate of renewal of the driver “stock” on a steady state level depends on its

14Where alternative employment is not available, these losses are nil, and the cost falls on the community in the shape of unemployment pay. We noted earlier the importance of the rate of unemployment in inducing entrants to the trade.
aging. We know the average age on entering is about 30, and, to judge from our
sample, few care to carry on beyond 65. So perhaps most are active for about 30
years. The question is then, since many are part-timers nearly all their time, and
probably most are part-timers at some stage in their careers, what is the number of
years of service to apply? This cannot be known without sampling individual drivers.
Maxwell Stamp reported that 20 per cent of drivers worked less than four shifts a
week in 1968. We have no recent data.

We might estimate 20 years, which is plausible in the light of additions to the stock
of drivers in the period for which we have figures, 1959–77. Since this was a period
of expansion, additions to the stock must have been greater than would be needed
simply to keep it in steady state. The yearly additions (the successful applicants for
the test) have ranged from 3.6 per cent to 8.0 per cent, with an average of 6.1 per
cent. See Table 8.

The “required” knowledge input is then $\frac{3}{10}$ of the drivers’ knowledge cost. That
cost depends on the earnings foregone while acquiring it. This again is not known
directly. The average of 22 months conceals wide variations, though, as Table 9
shows, there is probably not much systematic variation with age at entry.

The problem is how far these months represent full-time work. The very speedy
successes probably represent those having exceptional knowledge at the beginning.
(There are a very few cases in our data of as little as one week being taken. These
will include the occasional lapsed driver who is required to take his knowledge test
again, and the very rare case such as an examiner turned examinee.) Equally, those
who take four years to get through are most unlikely to have been working at the
knowledge full time. Probably most find that full-time application to the training is
the most efficient learning method. A reasonable guess from the data might be $1\frac{1}{4}$
years’ full-time equivalent work. Translating this via several further calculations,
we get a knowledge cost per year of: 1968 £133, and 1975 £285.15

We can now itemise the revised cost structures for 1968 and 1975 in Table 10.
The costs have been grouped in a manner which reflects the main relationships in
the trade. As Mr. Pearce points out, two thirds of the trade is essentially nowadays
separated into two parts, what he calls the “wholesaler”—the cab owner—and the
“retailer”, or cab driver. The driver hires freely from a large number of sellers; the
owner equally has many alternative driver/customers. The remaining one third of
the trade combines both activities—the owner-drivers, a term indicating the fact
that the cab owner and driver sets overlap.16 Contracts between proprietor and driver
can assume many forms, with responsibility for particular costs falling on either

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15 For 1968, we take the estimated weekly earnings of drivers’ previous occupations (£24.8) for GB.
We uplift this by 1.157, the estimated Greater London differential. We assume 62 weeks’ acquisition
time, giving £1,777 per man. The 1968 ratio of drivers to cabs was 1.50, giving a per cab basis of £2,666
(PCL seem to have overlooked this point); dividing by 20 gives us £133. The equivalent 1975 calculation
is:

$$\frac{£64.7 \times 1.146 \times 62 \times 1.42}{20} = £285.$$ 

16 From the available data (of Table 1) we cannot tell whether the owners of one cab are owner-
drivers. About half of all cabs are owned singly. Some of these will be owned by non-drivers.
party. Table 10 thus first lists costs which proprietors normally always shoulder, then costs that drivers must bear, and then other costs which may be the concern of either. Owner-drivers combine all these responsibilities—to the extent that their cabs are hired for the assumed yearly output.

It will be seen that these costs are assessed very differently from those of Table 6. The general effect is to lower the Maxwell Stamp estimate (on costs recognised there, the Table 10 estimate is £1,080 compared with £1,430), and to raise the
Table 10
Cost Structures 1968 and 1975 based on a Taxi running 28,000 Miles in the year
(current prices)

<table>
<thead>
<tr>
<th></th>
<th>1968</th>
<th>1975</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>£</td>
<td>%</td>
</tr>
<tr>
<td>Proprietor-related</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cab purchase</td>
<td>151</td>
<td></td>
</tr>
<tr>
<td>Insurance*</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Meter rents*</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Licence*</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Garaging*</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>General overheads*</td>
<td>120</td>
<td>13.9</td>
</tr>
<tr>
<td></td>
<td>412</td>
<td></td>
</tr>
<tr>
<td>Maintenance, service &amp; overhaul</td>
<td>303</td>
<td>10.2</td>
</tr>
<tr>
<td>Tyres</td>
<td>25</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driver-related</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driver opportunity costs** “DOC”</td>
<td>1,751</td>
<td></td>
</tr>
<tr>
<td>“Knowledge”</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,884</td>
<td>63.6</td>
</tr>
<tr>
<td>Other Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National insurance, holiday pay***</td>
<td>50</td>
<td>1.8</td>
</tr>
<tr>
<td>Fuel and oil</td>
<td>290</td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>2,964</td>
<td></td>
</tr>
</tbody>
</table>

*Assumed to change with retail price index.
**Average weekly earnings of other occupations × Greater London uplift × 50 × multipliers: 1.22 for 1968, and 1.27 for 1975. The multipliers reflect changes in average hours worked, and are based on an assumed speed of 12 mph for 28,000 miles of travel. 28,000 at 12 mph, the assumed average speed of Central London traffic = 2,333 hours. In 1968, the alternative occupations worked some 40 hours a week for 48 weeks = 1,920 hours and in 1975 40 hours × 48 weeks = 1,860 hours. So 2,333 and 1,840 respectively = 1.22 and 1.27.
***Allows for increase in holiday entitlements between 1968 and 1975, which was substantial.

PCL estimate (£2,144 compared with £1,723). It is difficult to check the estimates against revenues—indeed, without new data, impossible. For 1975 we have Mr. Pearce’s evidence of the distribution of cab rides ([6], p. 23), which, together with his Figure 6 setting out fares per mile for August 1975, yields a rate per mile of about 28p, compared with 24.1p of Table 9 (£6,746 ÷ 28,000 miles).

Both figures need adjustments—for extra revenues (e.g. tips, extras on the clock and parcels carriage, etc.) on the one hand, and for the ratio of engaged to unengaged miles on the other. (Maxwell Stamp reported that the engaged was 60–65 per cent of the total mileage—as represented in the 28,000 miles ([2], p. 38). We can conclude that the costs are not improbable and, certainly, a more plausible account than the partial estimates which they build on.
The effects of changes in input can now be seen. Overall, costs for a standard output rose 128 per cent between 1968 and 1975, compared with a rise of 107 per cent in the retail price index, or a rise in real terms of 19.6 per cent. Taxi fares rose 11 per cent in real terms in the same period. Driver-related costs rose by 24.5 per cent and proprietor-related by 11 per cent in real terms because of labour-intensive elements such as maintenance and overhaul.

The contrast between the 11 per cent rise in fares and the 24.5 per cent for driver-related costs, in particular, suggests that there must have been important factors offsetting input price increases over this period, assuming of course that the fares were not more than usually affected by fare controls at the specific dates concerned. Actually, there was an upward adjustment in fares in 1968, which lowers the observed price change in current terms, and thus will exaggerate the contrast between prices and costs then. Nevertheless, 1968–75 was probably not too untypical of the longer term changes; it seems highly likely that prices of taxis have not matched input price changes. One possible explanation is that labour productivity has increased. We discuss this in the next section. It would have been interesting to trace drivers' and other wages over the whole of the period covered by Table 10, which showed a long-term rise in taxi fares almost certainly much lower than in these wages. Unfortunately, the relevant earnings data do not permit this.

Our comparison also shows that rising wages were altering the cost structure. The changes noted are probably part of a longer term trend, reflected in the slow change towards drivers in the negotiated division of commissions or "on the clock" arrangements. In the post-war period to 1950 the division was 33\(\frac{1}{3}\) per cent driver, 66\(\frac{2}{3}\) per cent proprietor. After 1950, it was 37\(\frac{1}{2}\) to 62\(\frac{1}{2}\) per cent [4]; by 1968 it was 40/60. In 1974 a night and day differential was introduced, yielding a night division of 50/50 and a day division of 45/55.

In the commission arrangements the proprietor would usually pay all but "driver-related" costs of the table. As seen in Table 10, in the late sixties and early seventies the costs divided differently from the division in the commission arrangements. More than 60 per cent were driver-related, and the proportion was growing. So it is possible that the very notable decline of the commission arrangement was at least partly due to its failure to adapt fast enough to reflect the changing cost structure.

(Maxwell Stamp [2] thought that two-thirds of work was done under this arrangement in 1968, yet Mr. Pearce [6] doubts whether it was as much as 10 per cent in 1975.) Certainly, the number of variations on the commission arrangements—invoking national insurance, fuel and oil exceptions, etc.—has been growing also. The commission arrangements are, of course, the remaining influence of traditional trade union negotiations in the taxi trade, so a further inference may be that trade union membership has been declining, partly because of a failure to keep up with wage movements elsewhere.

One further point on the trends of input prices should be made. Undoubtedly, the period under review was remarkable for the rise in the liability of wage earners in general to income tax. Taxi driving is an occupation offering an opportunity of tax minimisation, and has always had that status. This, it may be argued, has had far more significance recently, as wage earners in other sectors have come under tax pressure. Also, the material underlying our "DOC" estimates shows that drivers' alternative occupations are rather below average in earnings, again indicating a
later, rather than earlier, inducement to modify a tax position. The suggestion is, therefore, that part of the explanation of taxi trade performance may well be due to lower real personal costs than appear on the surface, acting via other, alternative occupations.

**Productivity changes**

Taxis may have adjusted to rises in the real costs of inputs by increasing productivity. Table 10 indicates that this must mainly arise, if it does, from gains in labour productivity: such is the dominance of labour costs. These are of two kinds. By far the bigger is the drivers' own time, so the most important question is whether more output has been sold per labour hour. Quite important also, however, is maintenance, service and overhaul inputs, again heavily labour-intensive, which, as we see from Table 10, have (on the rather arbitrary calculation involved) increased in importance since 1968. We know nothing of productivity trends in this sector of costs, but we comment in the next section on how changes in organisation may have affected the issue.

The taxi is a standard vehicle, and demand presents itself in small groups, so far as we know fairly stable over the years. (No potentially great savings in labour costs such as buses' OMO are available) M. F. Talbot [8] has suggested that, between 1962 and 1972, there could have been an increase in productivity. Comparing Greater London Traffic Survey data for 1972 with that for 1962, he notes that taxi journeys have increased by 134 per cent, whereas cabs and drivers had increased, as we also saw earlier, by much less (40 per cent and 49 per cent respectively). He is unfortunately also very sceptical of the trip figures, noting that these could have been under-reported generally in 1962, and that by 1974, when the comparisons were made, it was doubtful whether a whole class of trips—those in a zonal area—had been included in the 1962 data. Nevertheless, to explain the seemingly higher trip making per driver and cab, he believes that there could have been more multiple shift working and improved servicing, enabling greater proportions of taxis to operate each day.

It is difficult to see how increased multiple shift working could help much, and even more efficient servicing would also not take us far to explain the difference. In any case, his explanation runs in terms of productivity per cab, whereas the real question is whether labour was actually producing more, as it would surely have had to do to produce the noted results. It seems that the difficulty Mr. Talbot faces in adopting this latter kind of explanation was that, on his figures, engaged trips as a ratio fell (he noted that the increase in engaged trips was 15 per cent less than total trips in his data).

Certainly, one might expect the ratio of engaged miles to increase if drivers were more successful in attracting custom. In fact, Mr. Talbot's study did not go directly to taxis for 1972 data, but instead (reasonably for the purpose at hand) concentrated on up-dating the quantities given by the Maxwell Stamp [2] origin and destination data. The only reliable data on the ratio of unengaged to engaged mileage is direct reporting about what taxis are doing, because, while engaged trips are reported in other surveys (e.g., from household interviews), unengaged mileage, which includes dead heading, cruising, etc., cannot be. So Mr. Talbot's comparative data, which
are based on trips reported in households, is not conclusive. Indeed, an "un-engaged trip" is a very odd concept for a taxi plying for hire. So we cannot rule out the possibility that engaged mileage might have increased as a proportion of total mileage, more especially perhaps after the period concerning Mr. Talbot.

There have been changes, historically, in the ratio of engaged to unengaged mileage. Runciman [4] in 1953 reported 58 per cent engaged as an average, and Maxwell Stamp [2], as we have seen, reported 60–65 per cent for 1968. Could this "trend", if it be such, have continued? Also, there might have been a favourable change so that drivers could perform more of all types of mileage per unit time.

Greater engaged mileage as a percentage of all mileage surely would chiefly come about through a favourable change in the places or times at which the demand appears. To do more engaged mileage the driver's probability of getting a fare has to rise. It will do so if, for example, the denser but less peaky traffic increases. It has also to rise in conditions which will not increase the time spent in serving customers. Perhaps, although this is again speculative, the net effect of the upsurge in "visitors" traffic over the years has been, on balance, of this character. In this way also, the extra engaged mileage may have arisen in such a way as not to have an adverse effect, net, on cab availability (as might happen, ceteris paribus, as markets distant from the centre become more active). We need much more knowledge of how the various market sectors affect cab operation to get beyond speculation here.

Another possibility is that there has been more mileage of both kinds, engaged and unengaged, per driver hour. It is true that, on average, traffic speed in central London has somewhat improved over the years in question, though how this specifically affects the condition of taxi output remains uncertain. We have also noted the possibility that taxis were taking on more hire car type work, and this would be at higher average speed.

Effective driver time can also be increased by better positioning of cabs vis-a-vis the labour supply, on the analogy of optimal siting of bus depots to recruit labour supplies more easily. There was, it seems, such a shift, of a rather fortuitous kind. Before about 1968, it was thought that cabs had to be garaged at proprietors' premises overnight. This was certainly a great inconvenience to inspectors of cabs bent on spot checks, and the notion was normally encouraged by their practices. However, it was then realised that nothing in the law prevented a driver from taking a proprietor's cab overnight and parking, perhaps, outside his own home. This resulted in a proliferation of appropriate deals between proprietors and drivers. In effect, such deals increase capital (the cab) to labour ratio. One could perhaps class them as a labour productivity gain, but they may well more properly be put under the label "innovation", to which we now turn.

Innovations and productivity

All the significant innovations of the last fifteen years in London taxis have been organisational, and most of them have not been truly original, but merely more widespread. The cabs themselves have hardly changed in appearance or function, and production methods on the job have not changed either. Yet, cumulatively, organisational changes have wrought considerable modifications in the trade, and these may provide better explanations from the cab side of the apparent contrasts with trends in conventional bus costs than any of the factors so far explored. They
have arisen not by incursion of large firms (as we have seen, concentration in cab proprietorship has been falling), but simply from the fact that, while the regulatory framework has been basically unchanged, its characteristic of free entry over specific barriers such as the cab and knowledge requirements has ensured that competitive adjustments are quickly and easily made to demand and to the state of factor supplies. There has been virtually nothing to impede the emergence of new ways of doing business, and the somewhat converging development of the larger hire car trade, itself completely unregulated, has provided a spur. This has two aspects. The nature of the labour supply may have changed, so that there may simply have emerged more drivers who wished to work longer hours and earn more. Nothing inhibited such a development. As we saw earlier, however, there is little evidence of systematic change in those labour characteristics we can measure. Second, and probably more important, is the contrast with the conditions governing labour contracts in public transport, which have not displayed so much flexibility.

Most remarkable is the way the cab trade has adjusted to changes in the real price of labour. One aspect of this is that technical changes in the cab itself have focussed on the driver—e.g. the closing of the driver’s compartment, a movement of the partition to give drivers more room, adjustable seats for drivers, heaters operated by the drivers, and automatic gear shifts. The bus driver has shared comparable improvements. But by contrast, in the taxi case, there has been a proliferation of ways of forming labour contracts suitable for widely varying individual drivers’ preferences. Writing in 1960, Ralph Turvey [9] sought to explain why the almost universal system of sharing revenues (the commission system) had arisen. In 1973 I argued that his reasons for the disappearance of alternative systems were not sufficient [10]. My argument went as follows:

"His explanation was that wage payments gave no incentives to drivers to earn fares and so were discarded (or never used). ‘Flat’ systems put the risk on to the driver, and lost ground against commission systems which ‘shared risk and made the proprietor’s receipts vary with engaged mileage’, and which had the advantage that running costs, influenced by drivers, were also reflected in the deal. Also, with commission, there was an incentive to a driver to work hard.

"These explanations are not sufficient to demonstrate why only commission systems survived to that date. First, a wage system would in any case implicitly contain, in free competition, some bargain on the output expected from the driver. Drivers and proprietors would, by the working of the market, obtain satisfactory deals on this on each side. A more likely explanation of its rarity is that it was simply unnecessary: it was more convenient to pay a man from the takings at the end of each shift. There was no need to accumulate credits for a periodic payment.

"More seriously, however, the dominance of one form of labour contract could only have come about, in free competition, if workers were homogeneous in their desires and expectations of employment, and employers were also appropriately motivated. Specifically, there is no reason at all to suppose that, with competition on both sides of the market, a ‘sharing’ of risks and ‘some’ incentive to drivers would emerge as the dominant form. One would expect, instead, a variety of arrangements to persist and to change over time in relative importance, depending on the changing distribution of attitudes to risk on each side. So an alternative explanation for the triumph of the commission system in the fifties must be sought, an explanation which must
involves breaches in the conditions for competition. A more likely account starts from the point that union organisers had a crucial interest in the commission form. Essential to union organisation is of course control over the wage-payment system. This would occur only with the commission type system, for 'flat' systems at once discourage the growth of uniform attitudes and at the same time make the monitoring of wage bargains extremely difficult. Commission percentage could be argued about concretely with the 'average' man in mind. But this merely provided, it may be argued, the technical basis for organisation. Motive and economic opportunity must also have been present. These were most probably provided initially by chronic excess capacity in the 1930s and perhaps earlier (remarked on by post-war reports) and then by the renewed decline of the industry in the immediate post-war years. Unionism enjoyed growing support in these conditions, and with it grew the commission system. Employers organised for bargaining purposes correspondingly.

"This became very relevant in the subsequent period of London's taxi expansion. Without control over supply on either side of the market, no union and employers' organisations could control the wage structure. And so it happened, contrary perhaps to expectation and certainly in complete reversal of history to that point, that after about 1960 or so the supposedly extinct 'flat' systems re-emerged—partly in more extreme form than before. In 1969–70 ([2], p. 38) as much as one-third of all hirings to journeymen were 'on the flat'."

Subsequent enquiries seem to confirm these interpretations. As seen earlier, commission arrangements now apparently account for as little as 10 per cent of the whole. Trade journals reveal an increasing variety of advertisements for contracts. There are full flat arrangements weekly or daily, half flat, "night", "long day" and "day" contracts, in which differing times for cab hire can be purchased. Considerable variation in hiring prices for cabs of different ages has emerged. A variety of "extras"—e.g. drive home service, take home, VAT and holiday pay arrangements, all extra services for the independent driver—can be purchased, according to the state of the market. Varieties of commission arrangements, to modify the basic division between proprietor and driver, have also emerged, and these, together with the mileage basis for hiring, have been coupled with particular "extras" from time to time.

How does this proliferation of options represent a chance to discriminate between prospects? Are there possibilities for both proprietor and driver to choose among prospects offering different trade-offs between return and risk? To show this we must demonstrate how the different contracts vary with respect to expected return to each party and the risks involved. Mr. Pearce [6] points out that there are four basic options—to be an owner driver, to rent on a flat contract, to hire on mileage, and to offer or accept a commission ('on the clock') arrangement. There can be many sub-variants. In particular, the owner driver can enter the hiring market, and fuel purchase may fall, in hiring contracts, on either side, though it is usual for fuel to be paid for by the driver with "flat" contracts.

Considering the main variants in which an owner deals with a driver, however, we can indeed discern different prospective returns and risks to the owner (or "proprietor"). He can choose short period hires, at higher prices but with greater risks of failing to sell available capacity. Drivers, too, present opportunities for the trade-off. A reliable safe driver will get some extra inducement for loyalty.
For the driver, the options also vary both in committed outlays and in risks. "Flat" arrangements involve less outlays than mileage arrangements, and so hold out a prospect of greater margins for given revenue. Table 10 demonstrates the relevant cost categories which proprietors must aim to cover in the long run when establishing contracts. These "proprietor-related" costs in 1975 were estimated at £1,607, or 36.1 per cent of all costs.17

Fixed-rate-per-mile contracts involve a further 9 per cent of Table 10 costs if fuel costs are borne by the proprietor, but in any case will consist mainly of proprietor-related costs. On the clock (commission) arrangements involve the driver in sharing all relevant costs other than his own time. As seen earlier, the division between driver and proprietor typically gives the proprietor a greater share of total costs than are accounted for by proprietor-related costs, even if fuel is included. Therefore, in terms of the prices represented by the contracts, it is likely that most will be paid by "on the clock" drivers; less will on average be paid by mileage drivers, and least by "flat" drivers. For given chances of getting fares, the prospective profit to the driver differs accordingly.

But the risks faced by drivers are also different. Most risk is associated with flat contracts, because the money has all to be paid in advance or contracted for. None has to be so paid by the "on the clock" ("commission") driver; that is probably why so far as it exists nowadays this is the most popular contract, it is said, with the occasional part-timer, who does not wish to feel obliged to "get back" a commitment by putting more time in than he had allowed for. Mileage risks fall in between; one has to lay out something, but can hedge as one gains knowledge of conditions in the hiring period.

Thus it is that these contracts, and their variants, can suit a great variety of hirers' and drivers' demands and attitudes. The old, near-universal commission arrangement now suits relatively few. Sid Pearce [6] personifies the "flat" hirer as a youthful driver, eager for work and "keeping on the go"; the mileage man is more "passive", working from ranks; and the owner-driver is perhaps the "most balanced". Obviously, he is right in supposing that the conditions of contract will result in differing incentives to pursue particular business, and there may well be correlated personal attributes. But we probably should not go too far in such personification. The outstanding point about the system is that drivers can—and presumably do—move quite freely from one contract form to another as circumstances and their own needs for income, family obligations, etc., as well as short term objectives, change.

The existence of this variety of contract forms has also probably had an indirect effect on the growth of owner-drivers as a proportion of the total, for which the numbers of owners of one cab only is usually taken as a proxy. In 1960, they owned

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17That these were in the right ball-park at least is perhaps confirmed by examples of advertisements for flat hiring arrangements in 1975. For weekly hire for days, prices advertised ranged from £18–£32, depending on the age of the cab. Other advertisements indicate that half flat arrangements range from 62–88 per cent of weekly contracts. Presumably shorter day contracts were higher for an equivalent number of hours. What mix of hirings a proprietor accepts will determine his actual receipts. To cover the costs, we calculate he would have to get 50 week hirings of about £32 or their equivalent. As one would expect, where there are opportunities for night lettings rates are lower, in order to encourage off-peak use. Using these and other opportunities, the average proprietor might well have reached our "target".
COMPETITION AND SUPPLY IN LONDON TAXIS

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42 per cent of cabs; in 1976, 55.4 per cent. The relatively open opportunities represented by the taxi trade may well have attracted a more than average proportion of workers with entrepreneurial attitudes and ambitions, and it has always been held that the progression is typically from driver to owner-driver to multi-cab owner. (Whether this picture of the build-up of cab firms is still appropriate, however, needs investigation, for one also hears of much buying in and selling out of cab firms. It is alleged, for example, that some one-cab owners are publicans, and the entrants and exits of "amateur" owners of cabs are often deplored.)

The extreme importance of these varieties of opportunity is underlined when we consider the characteristics of our sample of 800 drivers. As Table 9 shows, there is immense variety in the ages at which drivers decide to enter the trade. They take an equally great variety of times to undergo their knowledge training. Indeed, of all the non-zero cells in Table 9, the largest single cell holds only 8 per cent of observations. Requiring full-time attendances, or offering only one form of labour contract, would obviously have a greatly constraining effect on labour supply—and these are precisely the conditions under which much other public transport operates.

Equally remarkable is the variety of occupations from which taxi drivers emerge. Analysis of these indicates that 38 per cent of drivers come from the category of occupations "Transport operating, Materials Driving and Storing and related" which includes professional drivers such as bus, other public service vehicle, and lorry drivers. This category includes other callings too, of course, and the proportion of those which can be identified as drivers is about 28 per cent. The rest cover a wide variety of (mainly manual and clerical) occupations. There can be little doubt of the importance of this variety in explaining another phenomenon—the growth of part-time drivers, often remarked (but still badly documented: the only solid evidence is quoted in Maxwell Stamp for 1952 and 1968[18]).

The dimension on which there is, so far, hardly any dispersion is sex, for it seems that only 3 of over 16,000 drivers are women. This scarcity is still a mystery, though it may have something to do with attitudes communicated particularly at the time of applying for or undertaking the knowledge test—the culture emphasises such things as alleged danger to ladies which compellability entails (the vision is of the cab driver being instructed to drive to a remote spot and suffering, at minimum, the loss of the day's takings).

Nevertheless all these points about variety and opportunity are epitomised in an interview which a ladies' magazine recently conducted with "one of the trio, a delectable 28-year-old from Walthamstow". She said: "I find it (cruising the city streets) much more interesting than working in an office or shop. Also I can work the hours I like." She also noted that husband Rusty is in the trade, and they use their new white cab ("It's white because we do a lot of weddings") in shifts—Joan works in the day, Rusty in the evenings. "That way we have the afternoons together" [11]. The five white cabs in the London trade have also formed themselves into a consortium for wedding parties. In such ways, the traditional distinctions between hire cars and taxis are declining in significance; competition in the trades is leading to product differentiation.

[18] In 1952 6½ per cent of drivers worked less than 4 shifts a week, in 1968 20 per cent ([2], p. 35).
CONCLUSIONS

We have explored several hypotheses about reasons for the trends in total supply in the London taxi trade, reaching the broad conclusion that much of the apparent ability to keep real costs down in the face of rising real input prices has to do with adjustment in labour supply, itself a function of free entry, competition with the hire car trade, and, implicitly, the constraints which labour, wishing to improve its ability to reach a compromise between return and risk, meets elsewhere in the labour market. We are not concerned in these conclusions to draw the policy morals for public transport, but rather to focus on what the needs for further investigatory efforts seem to be. The justification for such effort indeed is, of course, that, should such work turn out to support the oft-quoted evidence adduced here, the implications for public transport policy may be important.

By far the biggest gap is direct evidence on demand. As remarked earlier, for example, we are still stuck with R. G. D. Allen’s estimate for the Runciman Committee of price elasticities of 1951–2, which on close inspection does not even strongly support the oft-quoted “near unity” attribution. 19

Until we have the necessary data, in a form which involves sampling firms’ receipts, etc., as Professor Allen did, we cannot attack questions like the importance of availability or fare in demand elasticity, the cross elasticities with the hire trade in overlapping markets, and comparisons with other public transport demand and service elasticities. Undoubtedly, the best strategy will involve a combination of time series observations from firms and cross-sectional customer studies.

Second, at several points in this paper the importance of the supplies of drivers has been remarked. Nothing quantitatively is known in any precise way about what they do, how much, when, and under what conditions of contract. The taxi market is characterised by competitive cab proprietors and a heterogeneous labour supply, qualified for life by the knowledge, which moves relatively easily into proprietorship. Discussions have signally failed to recognise the implications of this structure, and in particular have ignored drivers’ responses to changing demand and alternative opportunities. These defects can be made good by direct sampling of drivers.

At a number of crucial points, explanations advanced here have also made use of

19Professor Allen had to measure over quarters in 1951 and 1952 for 5 large cab companies. He noted a decrease of 6 per cent in jobs and engaged mileage, and his table indicates (not his text, which is silent on this) an increase in receipts per job of 20 per cent, measured against the lower price. From this, he remarks “It is tempting to conclude that demand is slightly (sic) priceelastic”, and then goes on to give reasons why the “conclusion is not warranted”, namely that the fare actually increased for part of the before period, and that “the sampled firms may have increased their shares at the expense of other companies”. These are not compelling reasons, and, as he remarks, the oft quoted conclusion “needs to be supported by more evidence than is presently available” ([4], p. 32). Moreover, there was a quality shift, because engaged miles fell, from 62 to 58 per cent. The improvement in availability was in effect a shift in demand to the right. This indeed may have made the apparent elasticity less than the true figure, but Professor Allen does not rely on this explanation. In all, however, the base crude observation of an elasticity of −0.35, namely,

\[
\frac{Q_0 - Q_1}{\frac{1}{2}(Q_0 + Q_1)} = \frac{P_0 - P_1}{\frac{1}{2}(P_0 + P_1)}
\]

or 6.553

\[
\frac{1}{18.36}
\]

which was Professor Allen’s actual observation, needs a great deal more explanation to raise it to −1.00.
the idea of the taxi trade as a near competitor, on relatively advantageous terms, of the presumptively larger hire car trade. It makes less sense than ever it did to investigate taxis in isolation from this other manifestation of the "para-transit" trades. Any further effort to improve data must recognise that with hire cars one starts with abysmal levels of knowledge, and far more potential difficulty with sampling frames, than one does with taxis. Nevertheless, the return to more information should be high.

REFERENCES