CHANGING THE NUMBERS: UK DIRECTORY ENQUIRIES DEREGULATION AND THE FAILURE OF CHOICE

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Abstract. In 2003, the UK 'liberalised' its telephone directory enquiries service with the aim of introducing competition so as to improve quality and lower costs. Unfortunately the results did not match expectations. Proliferation of numbers led to consumer confusion and high price firms with no discernible quality advantages but which employed heavy advertising came to dominate the market. Consumer and total welfare appear to have declined. This example raises important questions for regulators. In particular, with limits on information and rationality, it may sometimes be better to limit choice but increase competition to supply that choice.

Keywords: Competition, Deregulation, Advertising, Bounded Rationality

JEL Classification: L51, L43

1. Introduction

In general, competition is seen as offering a variety of benefits, particularly when introduced into industries where it was previously absent. Specifically, competition improves quality and choice, while lowering costs by ensuring that the efficient firms prosper and the inefficient exit. Thinking along these lines has, in recent times, been behind many of the efforts to deregulate and liberalize a variety of markets especially in the areas of telecommunications, physical utilities (water, electricity etc) and transportation.

However, free competition by leading to a proliferation of choice, may have deleterious effects if consumers are poorly informed, which in turn is more likely when the products are complex or otherwise non-transparent with regard to price and quality. In this paper

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we look at the experience of the directory enquiries market in the UK which was opened up to competition in the early 2000s. We are fortunate here, thanks to the efforts of the regulator, in having an excellent dataset available, giving information on the number of providers, their price, qualities and market shares. This data permits us to examine directly the impact of liberalization and, in particular to ask and answer, two related questions: a) did the 'best' firms win, that is those on the price-quality frontier? b) was consumer and/or total welfare improved by the change?

As we shall see below the answer to both questions is: no. The data clearly indicates that the directory enquiries market was rapidly dominated by providers who were among the most distant from the price-quality frontier. Moreover, these firms offered a service which was worse, on a price-quality basis, than that offered by the previous incumbent and, as such, liberalization reduced welfare. A major factor explaining this outcome is the high advertising expenditure observed. With different directory enquiry numbers hard to remember (and their associated price-quality even more so), it appears consumers ended up basing their choice on simple recall which in turn was largely determined by advertising.

Thus the directory enquiries market provides one clear example of how things can 'go wrong'. It demonstrates that, in some circumstances, more competition, and hence more choice, may not always be better. Here, competition did not lead to consumers paying less for a better quality or more appropriate service. Instead, thanks to the effect of advertising, the firms with the highest market share offered services that were worse than competitors while being almost twice as expensive.

Hence, though it is clear that liberalization can deliver large efficiency savings (see e.g. Newbery and Pollitt (1997)), we would argue, similarly to other recent work such as Cronqvist and Thaler (2004); Thaler and Sunstein (2003); Hedesstrom (2006); van Rooij et al. (2007), that careful attention must be paid to the behavioural limitations of consumers when designing market and regulatory frameworks.[1] In particular, it is important to keep in mind that one can have competition both 'in' and 'for' the market.

[1]Also relevant, though of a slightly different flavour, is work on search and switching costs. For example, Giulietti et al. (2005) look at consumer choice and switching behaviour in the UK Gas market over the deregulation period in the late 1990s. They find that many consumers stayed with the incumbent even if more expensive and that consumers explicitly state that they require substantial savings in order to switch. Based on this they argue that the incumbent still retained considerable market power despite deregulation and the associated increase in competition in the market.

In some circumstances the 'for' option, which combines a limitation of choice with the cost efficiencies of competition, may be the better one.

2. Background

Telephone directory enquiries is a phone service by which users can obtain information such as a specific telephone number or address of a residence or business. In December 2002 the UK telecommunications regulator OFTel (later renamed to OfCom), citing exactly the kind of benefits of competition previously mentioned, implemented a liberalization of the directory enquiries (DQ) market.[2] Prior to this point the service had been provided on two numbers (192 and 153) by the incumbent firm (BT) under quality and price regulation. Following liberalization, and in line with expectations, there was a large wave of entry by new firms. These new providers were allocated numbers of the form 118xxx (i.e. 118 followed by another 3 digits).[3] These new services were initially run in parallel with the legacy 192/153 numbers but after approximately 8 months, on 24 August 2003, the 192 and 153 numbers were switched off, and BT used its new 118 500 number.

3. Competition, Price and Quality

Liberalization resulted in a very high level of entry. In fact DQ numbers proliferated to such an extent that it is difficult to establish the exact number of providers. In 2005, it was estimated that there were over 200 numbers in operation run by around 70 companies, many of which were very small.[4]

However, despite the large number of participants, the market was rapidly dominated by two firms and their associated numbers. These two firms were 'The Number' with 118 118 and BT (the former incumbent) with 118 500. Between them, by November 2004 which was just 11 months after deregulation and 3 months after the original DQ numbers were switched off, these two firms had approximately 67% of the market with around 41% of callers used 118 118 and 26% used 118 500. Full market share data for all firms with

[2]Details of the rationale and evidence are summarised in National Audit Office (2005)

[3]These new suffixes were allocated by a form of lottery. To perform the allocation by a lottery and not an auction was another of errors made by OfTel as it resulted in entry by several bidders whose aim was simply to extract the surplus from a good number. For example, Leaf Telecom, which won what was considered to be the most desirable suffix (118), immediately sold it for £2 million to The Number.

[4]One directory enquiries provider, Gay-Lo Directories (118 453), operated from a hut behind the reception area of a kennels in Windsor.

at least 1% market share in 2005 is presented in Table 1.[5] As this shows the position in November 2004 was little changed a year later with the top two numbers still having two-thirds of the market. These two firms were also well out ahead of the rest of the pack: the next largest provider only had around 5% of the market in November 2004 and 6% a year later.[6]

Number	**Operator**	**Mar 2004**	**Nov 2004**	**Nov 2005**
118 118	The Number	39	41	42
118 500	BT	18	26	26
118 000	Orange	3	5	3
118 800	Directory Enquiries UK	1	3	4
118 247	Yell	1	3	6
118 811	The Number	1	2	2
118 888	Conduit	5	2	1
118 111	Onetel	1	2	2
118 180	Telewest	0	2	2
118 878	NTL	0	1	1
118 747	UK Directory Assistance	0	1	1
118 511	British Gas	0	1	1
118 114	Opal Telecom	0	1	1
118 321	Tesco	0	1	1
118 212	Maureen	0	1	1
118 770	Telewest	0	0	1
Other (Unaccounted)		31	8	5

TABLE 1. Percentage Market Shares of DQ Providers 2004-2005

Having established the distribution of market shares, in particular, the existence of these two dominant firms, we can now address the central issue of how usage of DQ services, as measured by market share, corresponded to their price (and quality). The basic pattern is shown in Figure 1 which plots DQ numbers in cost-accuracy space with the size of the circles indicating market share.

Two basic features are immediately obvious from this plot. First there does not appear to be any clear association between price and market share and certainly none between lower prices and higher market share. In fact, the two numbers with the largest market

[5]For details of how this and other figures were obtained see the appendix.
[6]Though it is noteworthy that the Nov 2005 third-place firm (118 247) had grown consistently – perhaps as a result of the promotional spillovers derived from being operated by the UK's main yellow-pages provider 'Yell'.

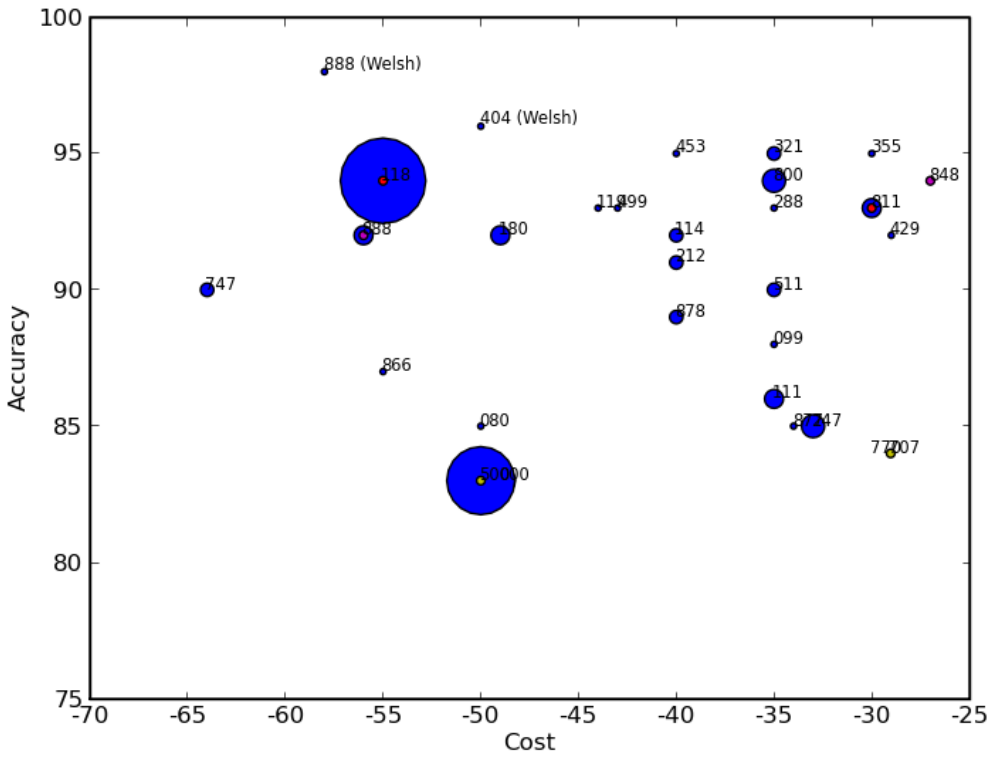

FIGURE 1. DQ Numbers Costs and Accuracies. Market share is indicated by the size of the circle (the very smallest circles correspond to providers whose market share is unknown – but below 1%). To increase readability only the last 3 digits of the DQ number are shown.

share are amongst the most expensive. Furthermore, the differences in price are substantial: the most expensive numbers (which includes the largest) are almost twice as costly as the cheapest numbers.

Second, there is no clear relationship between price and accuracy (this is confirmed by a basic regression). Thus, it does not appear that higher prices can be explained on the grounds of higher quality in the form of better accuracy. It is also important to to emphasize that a) accuracy varies within a fairly narrow band with the worst performing firm (118 500) having an accuracy of 82% and a maximum of around 95% (with the maximum possible obviously being 100%) b) this small variation in *mean* accuracy must be considered in the context of relatively large *variances* (due to limited sample sizes – see appendix for more details).[7] Taken together these mean one cannot reject the null

[7]Not only is this variation due to the sample within years but there is some degree of variation across the 3 sample periods for which data are available. For example, 118 500 (BT) though having a rather low score

hypothesis that the firms actually have the same accuracy level. This reinforces the point that that one can attribute the large variations in price to variations in quality.

We also possess data on another aspect of quality: the time taken to answer calls. This data is illustrated by Figure 2 found in the appendix. This also shows, if anything, a positive relationship between price and length of call (cheaper numbers provide information faster and vice-versa). This is partly to be expected since price partly depends on the length of the call since tariffs generally have some variable component (though 12 of the DQ providers at this point in time, including many of the cheapest, did operate a flat-fee service). Thus, again, taking into account quality does not materially alter the basic ranking of firms on the simple basis of price.

Lastly, we have one rather nice piece of evidence which strongly supports the contention that price differences are not driven by differences in quality of service. Three providers, including the operators of the two most popular numbers, operated more than one number. These providers were: The Number (118 118 and 118 811), BT (118 500 and 118 707), and Conduit (118 888 and 118 848). These number 'pairs' are highlighted on Figure 1 and 2 using coloured dots.

What immediately jumps out of this comparison is that for any 'pair' of numbers operated by the same firm *quality (accuracy and time taken) were almost identical but the prices charged were very different – and always higher for the more popular number.*[8] For example, The Number's 118 118, the most popular service with 41% market share, had identical quality to same firm's 118 811 service (2% market share) but was almost twice as expensive: 55p versus 30p!

This is the very inverse of what we would expect, at least in a world of informed consumers: the best (i.e. cheapest on a quality-adjusted basis) firms should get most (or all) users. DQ services are, in essence, perfect substitutes – in the case of 'pairs' we have two services that we can be almost certain perfectly matched in all aspects except price. Yet we find that it is *more* expensive services that have by far the majority of the market!

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of 83 in November 2004 (as shown in the diagram) scored 93 in March 2004 and 89 in November 2005 (the corresponding values for 118 118 were 90, 94, 93).

[8]It is likely that infrastructure (call-centres etc) providing the service underlying a given number would be common across providers in which case similarity in quality across 'pairs' is exactly what we would expect (unless the provider intentionally chose to manipulate it, for example for price discrimination reasons).

3.1. **Advertising, Information and Consumer Choice.** In the previous section we established that the DQ market is unusual in that 'worse' (i.e. more expensive) firms have larger market shares. In this section we explore briefly why this might be.

The obvious answer is that this outcome occurs because consumers are not informed about a) the different DQ services available b) the attributes of these different services. This intuition is borne out by the data collected by the regulators in their reviews of the DQ market.

For example, OfCom and ICSTIS (2005) p.7 onwards summarizes the results of surveys of consumer awareness and usage of 118 numbers. These surveys clearly show that unprompted (and even prompted) awareness of DQ numbers is very low, with only two services having awareness levels above 1 or 2% (these two being, as one might expect, 118 118 at 41% and 118 500 at 17%).[9] With such low levels of awareness of the services on offer it is not surprising that competition does not have the desired effect.

Moreover, the close correlation of awareness and market share suggests that usage may be driven by consumer's simply using the number they know rather than any process of informed choice. Of course the direction of causation could run the other way: from usage to awareness. However, phone numbers, especially ones used rarely are difficult to remember. As such it is likely that, for any individual consumer, it would not be worth the effort of researching and then remembering several (or even one) DQ number. If this is so consumers, when they do make use of a DQ service, will fall back on what they happen to remember at that moment and this in turn will largely be determined by factors such as how easy-to-remember a number was and the level of advertising for the service.

This fits with the evidence available. Advertising expenditure post-liberalization appears to have been significant and correlated with market share. For example, in the year of launch (2003) The Number spent around £15 million with BT spending £10 million, and The Number's high level of expenditure continued into following years with expenditures of at least £10m in both 2004 and 2005.[10] We also have direct information on the

[9]Usage of DQ numbers generally has dropped since liberalization (OfCom and ICSTIS, 2005)[Figure 2, p. 9]. This could, of course, be for several reasons, especially the increasing availability of online alternatives. Nevertheless, it is interesting to note that when consumers were asked as to why their usage of DQ services had diminished the top two reasons were cost (cited by 51%) and difficulty of remembering the new numbers (cited by 16%).

[10]Exact advertising budgets are hard to come by. ThinkBox, who developed the initial advertising campaign for The Number, state that their budget alone was £11.5m (see `http://www.thinkbox.tv/server/show/ConCaseStudy.3`). The IPA effectiveness awards in 2004 went to the agency who produced the 118 118

reasons for consumer's choices from the aforementioned surveys. There consumers were asked why they had selected a particular DQ service (OfCom and ICSTIS, 2005)[p.9]. Amongst all options the most cited reasons were 'advertising recall' (25%) followed by 'ease of remembering the number' (17%). For comparison, many fewer users cited quality reasons such as the service being 'cheap' (3%) or 'accurate' (2%).[11]

These last statistics also suggest that, even where consumers know of a number's existence, they were unlikely to know its price and accuracy. In fact, there is good evidence that consumers were highly confused. Many users simply did not know the cost of calls and even in 2005 less than half (46%) of those surveyed were aware that costs varied across providers.[12] At least part of this confusion was due to the pricing structure of 118 services. As the regulators themselves acknowledge (OfCom and ICSTIS, 2006)[p.32]: "Calculation of the prices of DQ calls is complex and the information is not always readily available. Costs vary by DQ provider and by the network from which calls are made (both fixed-line and mobile networks). DQ providers have a range of call pricing structures which add further complexity to understanding and calculating the cost of calls."

This 'opacity' of the market, added to the basic difficulty of knowing and recalling a DQ number, had the effect in this industry of largely undermining the standard benefits of free competition. Increased choice equated not to cheaper services or services better adapted to consumer needs, but to confusion and uncertainty. Consumers fell back to default behaviours: using numbers that were easy to recall or familiar, and this was exploited by firms willing to spend large amounts on advertising in the knowledge that the market opacity would shield them price and quality competition.

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campaign and cited an original £13.5m spend generating £45.5m in revenue (`http://www.brandrepublic.com/Campaign/News/227139/IPA-Effectiveness-Awards-2004-Gold-Award---Number-118-118/`). A Guardian news story from March 2005 quotes a total advertising expenditure to that point of around £50m. A Marketing Week story from December 2006 quotes The Number's communications director citing marketing expenditures of 10m, 12m and 15m (planned) in 2005, 2006 and 2007 `http://www.marketingweek.co.uk/cgi-bin/item.cgi?id=54368`. In 2005, Conduit, operators of the 118888 number, announced a £10m advertising campaign `http://www.brandrepublic.com/Marketing/News/468525/`.

[11]94% of the consumers surveyed use only one DQ number and, of these, only one in ten say they have used at least one other service (OfCom and ICSTIS (2005), p. 11). This provides further support for the view that consumers were not making particularly 'informed' choices.

[12]OfCom and ICSTIS (2006), p.31.

4. Welfare

In previous sections we discussed the observed market outcome post liberalization and the reasons for this. Here, we attempt to estimate the impact on welfare of the change. Welfare (consumer or overall) is the main outcome of concern for society and regulators. As such it provides the ultimate measure of success for any policy change including the market liberalization studied here.

We begin with consumer welfare as it was the putative benefits to consumers that was the primary justification for liberalization.[13] The aim is to calculate the welfare impact of deregulation by comparing outcomes pre-liberalization (192 service) to the situation in November 2004.

The price of the original 192 service was a fixed fee of 40p. Post-liberalization average price (taking account of market shares) was 50p in November 2004.[14] In line with the analysis above it would be useful to have quality as well as price information. OfTel, however, did not collect any data on the accuracy of the original 192 service. Nevertheless, it seems unlikely that it was worse than the majority of services considered here.[15] If this is so, then consumer welfare changes come down to a simple comparison of price and the only remaining piece of data we need is information on the volume of enquiries. Data from 118tracker.com places the average number of calls per day in 2004 at approximately 1.123m which equates to 410m calls annually. Assuming, for the moment, that volume was unchanged between 2002 (when 192 operated) **liberalization resulted in a consumer welfare loss, due to increased in payments by consumers, of £41m a year, equal to 20% of the total DQ industry revenues of £205m**.[16]

But what about volume changes?[17] If volume had increased then the previous figure might overstate welfare losses as new users of the service are generating welfare gains.

[13]Consumer welfare is also frequently given primacy over total welfare in setting regulatory policy.
[14]OfCom and ICSTIS (2005), p.39.
[15]There are several reasons for thinking this. First, the regulators do not mention any changes in quality – something one might expect them to have done if there had been an improvement. Second, the data from consumers surveyed in OfCom and ICSTIS (2005, 2006) indicate that consumers perceived no significant benefits in terms of quality from liberalization. Third, BT, who had operated the original 192 service, offered DQ services post-liberalization which provided fairly average levels of quality (accuracy scores of 93%, 83% and 89% respectively in the three periods sampled).
[16]This figure does not allow for inflation. The UK Consumer Price Index rose by approximately 2.1% Q4 2002 to Q3 2004. Including this in price calculations would reduce the loss to £37.6m.
[17]Even if volume was constant there could be concerns that the type of user had changed over time thereby altering the average value of a DQ call. However, we will ignore this issue here.

Conversely the figure might understate welfare losses if volume had dropped as a result of liberalization – whether because of increased prices, greater confusion, etc. The evidence here is limited but the results of the consumer surveys conducted by OfCom/ICSTIS are highly suggestive.[18] These strongly indicate that usage had fallen. Consistently across all of the reports, consumers report declining usage, often citing price or uncertainty as factors in their decision. For example, the very earliest survey, Oftel and ICSTIS (2003), reports (p. 7): "Two-thirds of DQ users continue to call these services using the new numbers, while 1 in 5 customers claim to use DQ less – largely deterred by cost". The November 2004 survey (our benchmark dataset) found that, of those surveyed, 35% reported less usage while 47% reported unchanged usage and only 1% reported their usage had increased, and this pattern carries over almost unchanged to the survey a year later in November 2005.[19] Again perceptions of cost are cited as the major reason for less usage. In 2004, of those reporting less usage, 51% cited 'cost' and 38% specifically said 118 operators were too expensive (though it should be kept in mind that 19% thought, incorrectly, that the 192 service had been free). Interestingly, difficulty remembering the new numbers was the next most cited reason for reduced usage (mentioned by 16%), which suggests that behavioural issues related to confusion and memory might have played a significant reason in reducing demand for these services.

Thus it seems likely that there was at least some decline in usage and at least part of this decline can be attributed to liberalization. This would imply increasing our estimates of welfare loss. However, we should bear in mind that we only have survey data. Furthermore there were other changes, such as increased uptake and availability of online services, that might also have accounted for a decline in usage.[20] We will therefore err on the side of caution and assume simply that no additional welfare impacts, positive or negative, associated to changes in utilization resulting from liberalization.

The last step is to extend estimates of consumer welfare to total welfare by incorporating producer surplus (i.e. profits of DQ providers). Here we are hampered by data availability

[18]One would have preferred direct evidence from call volume data. OfCom and ICSTIS (2005), p.9 footnote 7, states that OfCom/ICSTIS themselves planned to obtain such information but no mention of it is made in the 2006 report a year later. Information from 118tracker.com suggested that calls had fallen from 750m a year pre-liberalization to around 400m a year post-liberalization and have then stayed fairly flat or risen slightly to 420-430m a year buoyed by demand from e.g. increasing mobile uptake.
[19]OfCom and ICSTIS (2005) pp. 9-10, OfCom and ICSTIS (2006) p. 10.
[20]20% of those reporting infrequent use of DQ services cited the Internet as an alternative (7% referred to 'specialist' internet directories).

as we have little direct evidence on firms' costs and profits.[21] What data we do possess suggests that profits have *not* been substantial. For example, in 2003, The Number made a £17.5 m loss. In 2004 this climbed to a profit of 'between £5m and £10m' but by 2006 they had fallen back to a £900k loss.[22] Other providers are unlikely to have fared much better and combined with their small scale make it very unlikely that profits at other firms – where positive – were much above the hundred of thousands.

There are other reasons to think that producer surplus was low or negative. First, it seems very likely that the costs of providing DQ services *increased* post-liberalization. DQ service provision is likely to display economies of scale and involve sunk cost. Liberalization resulted in a proliferation of providers and large-scale entry. Many of these providers were likely operating well below any minimum efficient scale and at least some costs of entry would have been sunk.

Second, there were large expenditures on advertising. Here these can be counted unambiguously as a welfare loss because a) advertising was associated with worse products (from a price/quality perspective), and b) advertising would have been unnecessary in the absence of liberalization. The figures discussed above suggest advertising costs at the industry level in the region of £5-15m a year (on average) – at least for the 3 years post-liberalization. Such large sums being added to providers costs would substantially reduce any possible producer surplus.

Taken together these points strongly suggest that liberalization's impact on producer surplus is close to zero, or even negative – in any case almost certainly small relative to the impact on consumer welfare. Thus, overall, the decline in total welfare is likely to have been similar, or even slightly greater than, the decline in consumer welfare. The decline in consumer welfare was approximately £40m a year, almost 20% of industry revenues.

[21]For example, The Number is wholly owned subsidiary of a privately held US company InfoNXX and provides very limited accounting information while BT in its available accounts does not provide a breakdown to a level sufficient to give information about its DQ operations.

[22]See `http://www.independent.co.uk/news/business/news/the-number-rings-up-the-wrong-figures-483005.html` (accessed 2008-11-28) and `http://business.timesonline.co.uk/tol/business/industry_sectors/telecoms/article2859387.ece` (accessed 2008-11-28). Some of this loss in 2006 could be attributed to The Number's investments in new European markets.

5. Conclusion

This paper has examined the liberalization of the directory enquiries market in the UK. It has shown that, contrary to expectations, more competition and choice did not deliver better quality at lower prices. Instead, the market was dominated by two services which offered no quality advantages but charged prices which were almost twice that of other available providers and significantly (20%) above the price of the service prior to liberalization. Total welfare losses amounted to £40m a year, a substantial figure considering that industry turnover was only around £200m.

The reasons for this outcome can largely be traced to behavioural issues. In particular, DQ services are rarely used by consumers, have relatively small costs per use, are hard to remember and their attributes (price, accuracy etc) are difficult to discover and recall. As a result consumers were not able to make 'informed' choices. Instead it appears likely that they fell back to a default option of using the first number they recalled. This, in turn, was largely determined by the 'memorability' of a number and advertising.

In this industry advertising was employed heavily, especially by the dominant firms, with expenditure somewhere between 5 and 10% of total industry turnover. Despite being largely 'informative' here advertising was clearly 'inefficient' in the sense of being associated with consumer usage of 'worse' services (in the price/quality sense). Thus, separate from any other points, this paper provides a clear example of 'inefficient' or 'harmful' advertising whose impact on welfare was negative.

In this industry it seems clear, at least ex post, that liberalization per se was unlikely to deliver its promised benefits. In particular, while liberalization may have permitted entry by more efficient firms – and it is noticeable that there were several firms which did offer cheaper services cheaper than the original 192 service – there was no guarantee that they would be used by consumers.

Under these circumstances competition *for* the market rather than *in* the market might well have made been the better approach (if change were needed at all). A single DQ number could have been retained but with competition to provide the DQ service at that

number – one could even have retained multiple providers with calls automatically routed to one of them to enable some version of yardstick competition.[23]

The experience of the liberalization of the DQ market offers a variety of important lessons. Most significantly it highlights the importance of considering behavioural limitations when designing regulatory interventions. Choice is not the same as *informed* choice. As such, more choice is not always better and the benefits of competition may only be realized if appropriate attention is given to how users will avail themselves of the choice it provides.

Appendix A. Notes on Data

The majority of our data on DQ providers comes from post-implementation assessments performed jointly by OfCom (the successor to OfTel) and ICSTIS. Four assessments were performed, Oftel and ICSTIS (2003) conducted in October 2003 (published November 2003), OfCom and ICSTIS (2004) in March 2004 (published in June 2004), OfCom and ICSTIS (2005) in November 2004 (published in March 2005) and OfCom and ICSTIS (2006) in November 2005 (published in March 2006). In general, the data presented in the main section of the paper derives from the middle one of these assessments whose data was collected in Nov 2004. The reason for this choice was a) at that point the transition to the new numbers had been completed for over a year and therefore the market had had time to stabilise (and consumers to adapt) b) the associated report provides the most detailed level of information. However, we would emphasize that using, for example, the later data from November 2005 makes no material difference to any of our findings: the market share of the dominant providers actually increased from 2004 to 2005 while the other metrics were little changed.[24]

A.0.1. *Computation of Variables.* Market shares were computed by OfCom/ICSTIS from call volume information provided by market participants and surveys of consumers.[25] We have validated the figures for the largest DQ providers from information provided by the leading independent market analyst (118tracker.com). The same analyst has also

[23]If bespoke or customized services were felt to be important these could either have been given a new number space or incorporated within the existing premium-rate framework.
[24]One the reasons that detailed response times are omitted from the March 2006 report is that, according to the authors, the data is little changed since the previous one.
[25]See OfCom and ICSTIS (2004), Chapter 3, footnote 4.

confirmed that the market shares found in the later OfCom/ICSTIS reports have largely continued up to the present. In particular, The Number and BT have both remained the largest providers (by some way).

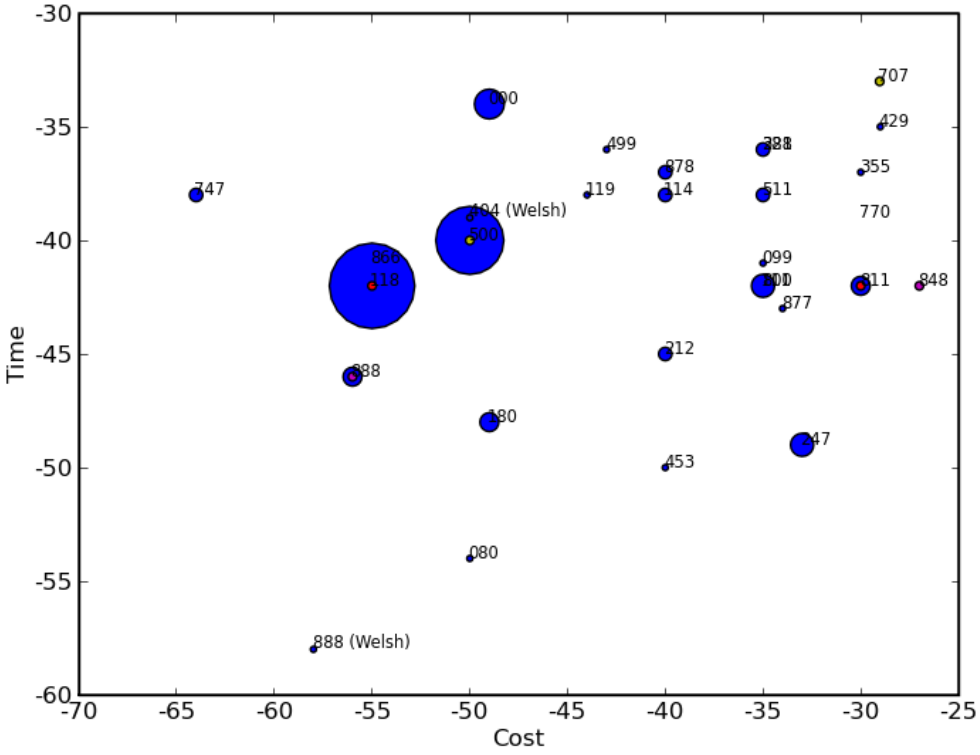

FIGURE 2. Costs versus Time Taken to Supply DQ Information (from start of call). Market share is indicated by the size of the circle (the very smallest circles correspond to providers whose market share is unknown – but below 1%). To increase readability only the last 3 digits of the DQ number are shown.

Prices both in level and form vary across DQ providers. Some charge a single fixed fee, others a tariff based on connection time and others a combination of both. The costs used in this paper are those computed by OfCom/ICSTIS based on the published price schedules of providers and average call length for that provider (where that was relevant).

Accuracy was computed by OfCom/ICSTIS via sampling of DQ providers. That is a call was made with a request for specific information (phone number or address) with the result subsequently compared to the correct values. The two later reports provide two distinct measures of accuracy: 'specific' and 'general'. Specific accuracy was defined to mean "a request results in the correct number and in the case of business requests

the number reaches the requested department."[26] General accuracy, is a little more permissive, and requires only that "a request results in the correct number and in the case of business requests the number reaches the requested business but not necessarily the requested department".[27] In this paper, unless otherwise stated, accuracy will refer to specific accuracy.

Total market usage is based on figures obtained from 118tracker.com. These give total call volumes for the whole market and main providers in 2004. Using the figures for individual providers we were able to cross-check the implied market shares against the figures available in the reports and found a very good match.

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[26] OfCom and ICSTIS (2005), p.18
[27] Ibid.