

Sabotaging Entry: An Estimation of Damages in the Directory Enquiry Service Market*

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A number of European countries, among them the UK and Spain, have opened up their Directory Enquiry Services (DQs) market to competition. In Spain, both local and foreign firms challenged the incumbent as of April 2003. The latter raised its rivals' costs and forced quality downgrading by providing an inferior quality version of the (essential) input, namely the subscribers database. We illustrate how it is possible to quantify the effect of the practice in a situation where an entrant has no previous history in the market. We use the UK experience to construct the relevant counterfactual, that is, the but-for scenario. After controlling for relative prices and advertising intensity, we find that one of the foreign entrants achieved a Spanish market share substantially below what it would have obtained in the absence of abuse. While the case was taken to Court and the nature of the abuse was recognized, the amount of damages awarded was limited to evidence of invoice-based inflated input costs, while estimates derived from construction of the but-for scenario were dismissed. This initial ruling was upheld on appeal. At the time of writing, an appeal had been lodged with the Tribunal Supremo (highest Appeal Court) regarding the quantum of damages. We believe that the limited amount of damages probably reflects a mixture of an overly conservative attitude towards damage awards, coupled with a lack of understanding of the underlying economic reasoning of the case, as well as of the quantitative evidence presented by the aggrieved party.

1. INTRODUCTION

One of the last telecom services to be effectively liberalized has been Directory Enquiries (DQs) over the telephone networks. The latter service had traditionally been provided by the incumbent under a regulated monopoly regime. Calls to a single universal number would give access to an operator that would provide the phone number of a physical or legal subscriber. The same kind of services were also available, at much higher prices, for international DQs. That was made possible by a series of

international agreements that involved setting a single protocol for international DQs between members of the International Telecommunications Union.

Two large markets, the UK and Spain, were effectively opened to competition in the Spring of 2003. In both cases, the vertically integrated incumbents were faced with competition in the DQ market stemming from new entry. The UK market was considered one of the most attractive, as the total number of DQ calls was estimated to be about 600 million per year at the time of liberalization. Both UK and non-UK firms entered to compete with the incumbent, British Telecom (BT). In Spain, a similar entry pattern is observed, with two non-Spanish firms (Telegate and Conduit) challenging the incumbent Telefónica de España and its subsidiary, Telefónica Publicidad e Información (TPI) as of April 2003. Further entry by local firms followed, while the Telefónica group later launched an additional brand.

In 2005, Conduit Ltd., one of the foreign entrants, started legal proceedings against Telefónica for abuse of dominance.¹ While the latter concept has been under discussion over the last few years, its application is straightforward in the case analyzed in this paper. There is no doubt that the incumbent enjoyed a dominant position at the time when the market was opened to competition. In addition, the conduct imputed to Telefónica does not fall into “grey area actions” that may be considered pro-competitive in a different situation. Telefónica raised its rivals’ costs and made entry more difficult by deteriorating the quality of an essential input that ought to have been made available for free, namely the database containing information pertaining to fixed line (PSTN) subscribers. As will be described further on, the incumbent’s strategy was both implementable and profitable.

The objective of the paper is to quantify the damages suffered by Conduit as a consequence of Telefónica’s behaviour.² The incentives to raise rivals’ costs on the part of an incumbent has been recognized early on (Salop and Scheffman, 1983). In the case at hand, inflated costs for the entrant were accompanied by forced quality downgrading. While the incentives to pursue such strategies on the part of an incumbent are well understood (particularly when it is possible to discriminate in favor of a downstream subsidiary), quantitative evidence regarding the effect of these practices is limited. Our empirical results indicate that these exclusionary practices can contribute to entrench an incumbent’s dominant position and generate large pecuniary gains. From that perspective, regulatory and competition authorities ought to exert vigilance in a situation where raising rival’s costs and forcing quality deterioration are feasible. In the present case, the active *ex-ante* involvement

of the industry regulator did not prevent the anti-competitive behaviour from materializing. We also believe that the *ex-post* legal proceedings that found Telefónica guilty carry no deterrent effect against *future* abuses. In this sense, the case analyzed in this paper illustrates the difficulty of preventing anticompetitive behaviour on the part of a vertically integrated incumbent that controls an essential input.

There exist various methodologies to compute damages stemming from anti-competitive behaviour; Connor (2008) describes the various options that have been used (and accepted) in the US in competition law enforcement. In this case, we simultaneously apply a yardstick and econometric modelling approach. More precisely, we use Conduit's experience on the UK market to econometrically estimate its expected, abuse free, market share in Spain. In order to assess the validity of our central results, we provide a series of robustness checks. As far as we understand, obtaining alternative estimates that yield consistent results is highly valued by US antitrust enforcers and forensic economists (Connor, 2008; Fisher, 2008).

In Europe, the use of rigorous forensic economic analysis in competition cases is both new and rare (see Connor, 2008). To the best of our knowledge, only the EU Commission and a few Member States (the UK among them) have accepted (or requested) econometric analyses in competition cases. In the case of Spain, the practice has been almost nonexistent. Last, the parties involved usually prohibit the public dissemination of the results, even under strict confidentiality conditions. In the case at hand, Conduit gave us permission, subject to confidentiality clauses, to write an academic paper. In that sense, this is a novelty in the European context.

The remainder of this paper proceeds as follows: section 2 briefly summarizes the case³ and describes the technological characteristics of DQ services provision and drivers of demand. Section 3 provides a conceptual rationalization of the incumbent's behaviour, while section 4 makes explicit predictions regarding the market share of an entrant subjected to aggressive behaviour by highlighting the importance of search costs. Sections 5 and 6 respectively motivate and describe the empirical exercise. Section 7 presents damage estimates obtained with three distinct specifications. Section 8 reports a battery of robustness checks that are in line with our main findings. Finally, Section 9 reflects on this case and concludes.

2. FACTUAL BACKGROUND: THE CONDUIT CASE AND INDUSTRY CHARACTERISTICS⁴

April 2003 marked the beginning in Spain of competition in real terms in the provision of directory enquiry (DQ) services, a service whereby a user, calling from a fixed or mobile telephone, can make enquiries concerning telephone numbers and certain other data relating to subscribers of telephone services. On that date, Conduit, along with one other international player, Telegate, launched its 11850 DQ service in competition with the existing service provided by Telefónica de España (the regulated 11818 service) and the new 11888 service launched by Telefónica Publicidad e Información (TPI, a fully owned Telefónica subsidiary at the time). In the following months, further services (including an additional Telefónica number) were launched.

The launch of these new services followed the implementation of a number of regulatory measures which facilitated the effective liberalization of the directory enquiries market.⁵ Those measures included:

(i) “118” numbers: the allocation of a new and exclusive number range for the provision of information services over the telephone (118AB), which would permit a level playing field whereby all competing services would be identified by a unique number of an identical type and length, with the concomitant requirement on Telefónica to withdraw the legacy number for DQ services (1003) on 4th April 2003 and replace it with its own 118 number (11818); and

(ii) Data access: the obligation on all operators to deliver their telephone subscriber data to the telecommunications regulator (the Comisión del Mercado de las Telecomunicaciones or CMT) for use by DQ providers in their services, at no cost⁶ and in a format (and with a frequency) to be determined subsequently by the CMT.⁷ In addition to the phone number(s) pertaining to households, firms, and public administrations, the database had to include additional information such as postal address, as well as fax number(s) whenever applicable. From a commercial perspective, intelligent network numbers (90X or 80X) are particularly relevant, since they fall into the category of “Frequently Used Numbers” (FUNs), i.e. they represent a large proportion of DQ enquiries.

For an agent that does not own a network, a third necessary input is access to the network so that enquiries to a given 118AB number end up being directed to the pertinent call center. Once routed to a center, the call is put in a queue before being answered by an operator using a search engine to extract the relevant information from a database. When the enquiry is completed, the operator may offer “call termination”; the latter is an example

of value-added service provided by DQ operators (others include SMS delivery of the number).

2.1. THE COMPLAINTS BROUGHT BEFORE THE “COMISIÓN DEL MERCADO DE LAS TELECOMUNICACIONES” (CMT)

Among a number of successful complaints before the CMT concerning issues affecting access to the market (for example, access to the telephone networks on non-discriminatory and cost-oriented terms in accordance with regulatory and competition requirements), Conduit lodged a complaint in May 2003 alleging that the subscriber data furnished by Telefónica de España to the CMT did not comply with the requirements for format and content established by the regulator and, furthermore, was of a notably inferior quality and completeness to the data which the incumbent operator in fact possessed and made available for use in its own DQ service.

This complaint was first upheld by the CMT by virtue of a Resolution adopted on 26th June 2003 in which it found *prima facie* existence of the facts alleged by Conduit and, in order to alleviate the prejudice and costs caused to Conduit's service by the poor data loads, required Telefónica, on an interim basis, to permit Conduit free on-line access to the subscriber database utilized by the incumbent for its own DQ service or, in the event that this were not technically feasible, to permit free access to its so-called E.115 on-line database access service.⁸

The complaint was subsequently upheld in a final decision adopted by the CMT on 13th November 2003 in which the CMT held that the data provided by Telefónica was incomplete and deficient (in contravention of regulatory requirements) and, furthermore, constituted a discriminatory practice (given that the data used by Telefónica for its own services was distinct), amounting, as such, to an abuse of its dominant position.

On 1st March 2006, on an appeal filed by Telefónica against the CMT's Resolution of 13th November 2003, the Spanish administrative court (Audiencia Nacional) held that the CMT had acted *ultra vires* by declaring the abuse of dominance (this being a faculty invested in the Competition Authority and the courts). However, it upheld the CMT's finding on the facts: i.e. Telefónica had, indeed, provided defective data loads and discriminated in favor of its own DQ operations.⁹

Thus, throughout the process, both administrative bodies and Courts confirmed the finding that Telefónica had provided faulty data.

2.2. THE CMT'S FINDINGS AS TO THE CONSEQUENCES OF THESE INFRINGEMENTS FOR COMPETITION

In its November 2003 decision, the CMT maintained that Telefónica's behaviour referred to an essential input for the provision of competitive services and that a refusal to provide non-discriminatory access to that input had the effect of distorting competition in the newly-liberalized market for DQ services by impeding the ability of new providers like Conduit to compete effectively.¹⁰

The direct consequences of the incumbent's action, according to the CMT, were twofold. First, it inflated Conduit's costs. This was expressly recognized in the interim measure decision adopted by the CMT on 26th June and was one of the most important motivators for the CMT adopting precautionary measures.¹¹ Secondly, Telefónica's refusal to supply quality data forced a deterioration in service quality. The June interim measure decision affirmed that this made it "impossible to provide a directory enquiry service in adequate conditions" and the November decision described the data as "deficient for the carrying-on of the activity."

Clearly, this had an impact on customer satisfaction and, therefore, on demand for the service. This was, indeed, an aspect expressly recognized by the CMT's services in their report on the case in September 2003.¹²

2.3. THE RULINGS

Against the background of these successful complaints before the national regulatory authority, Conduit filed a claim against Telefónica de España before the Commercial Courts on 15 January 2005 for damages for breach of telecommunications regulations and EC competition law. Less than ten months after the filing of the claim, on 11 November 2005, the Fifth Commercial Court of Madrid adopted its judgment upholding Conduit's claim.¹³ The judge held that Conduit had proved that Telefónica had supplied deficient subscriber data and that the data was not of the same quality or completeness as the data provided by Telefónica to its own DQ services. He further held that these facts constituted a breach of applicable telecommunications regulations and an abuse of the company's dominant position (in breach of article 82 of the EC Treaty). Finally, he awarded part of the direct damages stemming from, among other things, the use of the expensive E.115 service on the part of Conduit. The sums awarded for (a part) of "direct damages" stemming from inflated input costs amounted to approximately €670,000. However, the judge dismissed the forensic evidence

obtained econometrically that formed the basis of the main part of the claim, namely that Conduit had suffered losses because of the lower quality service it provided as a consequence of the abuse. This issue is extensively discussed in section 9.

Both Telefónica and Conduit appealed the initial ruling. The Appeals Court (Audiencia Provincial de Madrid) upheld the initial ruling in its judgment of 25th May 2006¹⁴ and, in particular, the finding that the data was seriously flawed. The court also confirmed the Commercial Court's conclusion that this action on the part of Telefónica impeded the normal development of competitive services and amounted, in practice, to a refusal to supply. In addition, the Audiencia Provincial underlined the importance of Telefónica's actions in the context of the liberalization of the directory enquiries market previously monopolized by Telefónica and given the "significance for competitors of an essential service input" such as the principal subscriber database. Nevertheless, the Appeals Court also upheld the first instance rulings regarding the quantum of damages.

Following that second ruling, Conduit filed an appeal on the question of the quantum before the Spanish Supreme Court (Tribunal Supremo, the highest appeals court).

2.4. SUPPLY AND DEMAND CHARACTERISTICS

As indicated above, apart from call centers, three inputs are necessary to supply DQ services: a 118AB number, network access on reasonable terms, and data. Once the basic operation has been set up, a DQ service provider is not faced with capacity constraints, save in the very short-run. It is easy to attend a growing number of calls, either by hiring more operators or by subcontracting part of the activity to a third party (a common practice in this industry).

Prior to liberalization, DQ services did not include value-added services and were provided by the incumbent monopoly operator at a regulated price. Basic DQ services may be considered as forming part of universal service obligations that have to be maintained by incumbent operators. As a consequence, Spanish authorities decided to maintain a basic DQ service at a regulated price to be provided by the incumbent, Telefónica. In principle, the market was opened to entry for licensed operators in April 2002. For a period of one year, the old regulated number (1003) was to coexist with commercial 118AB numbers. In practice, the incumbent ensured that entry was impeded while 1003 still existed. However, during this period, the Telefónica Group launched two numbers of its own in February 2003. The first (11888) was

introduced by its fully controlled subsidiary, TPI (Telefónica Publicidad e Información). The second (11818) was launched by Telefónica as a direct substitute for 1003 as the new regulated service. In the UK, a similar path was chosen: following liberalization in December 2002, the old regulated number provided by BT (192) was maintained until the end of August 2003; thereafter both the old number and regulated services disappeared altogether. The difference between Spain and the UK is that, in the latter case, effective entry was possible during the parallel running of the old number and the new commercial ones.

Under “normal” circumstances, the product offered by the main 118AB providers is by and large functionally homogeneous. In practice, operators have horizontally differentiated their products through advertising. In terms of quality, DQ providers may differ in terms of the accuracy of the information they provide (see for instance, OFTEL, 2003; OFCOM, 2004). In addition, the speed at which an enquiry is being dealt with may differ across providers, for instance because of the time spent queuing (which is charged for by the DQ provider) before being attended by an operator. In the industry’s jargon, “Average Handling Time” (AHT) is the average number of seconds that the operators attends a client; the average queuing time must be added to that figure in order to have the call’s total duration (chargeable time). Since the price charged is usually formed by a two-part tariff (a fixed fee for connection plus a per second fee), prices may differ across two operators offering the service with the same tariff structure (as AHTs and queuing times may differ). However, the UK experience indicates that quality convergence among the leading service providers (as proxied by chargeable time) is quick (OFCOM, 2004). In other words, quality differences are, under normal circumstances, transitory.

Since the new DQ numbers were unknown to the public, the opening of the market was accompanied by intense advertising campaigns to promote brand recognition. This dimension of horizontal differentiation is particularly marked in this industry. Table 1 indicates that advertising intensity (measured as the ratio of advertising effort to the total number of calls) is very large.¹⁵

This high advertising intensity reflects the fact that, in this industry, brand recognition is the key to commercial success. Even after the initial launch period, advertising remains important to maintain number awareness (i.e., aimed at ensuring that actual or potential customers remember the 118AB number being advertised).

Table 1: Advertising Intensity			
	Advertising (A) ^a	# of calls (B)	Intensity (A/B) × 100
UK			
April-December 2003	62929585	338751597	18.58
January-October 2004	36726834	278949099	13.17
Spain			
April-December 2003	15086829	93564506	16.12
January-October 2004	45873127	84842494	54.07

(a) Quantities in euro (€).

The literature distinguishes between “persuasive” and “informative” advertising. The former is aimed at altering consumer tastes and “creates spurious differentiation and brand loyalty” (Bagwell, 2007:3) while the “informative” kind performs the useful task of conveying product information to consumers.¹⁶ In practice, most markets are characterized by both types of advertising, and DQ services are no exception. When the products were initially launched, advertising informed consumers of the 118AB alternatives. However, given the degree of functional homogeneity of the products on offer, advertising became of the “persuasive” type once consumers had been familiarized with 118AB numbers. In such circumstances, “advertising can have important anti-competitive effects, as it has no “real” value to consumers, but rather induces artificial product differentiation and results in concentrated markets characterized by high prices and profits” (Bagwell, 2007:3).

Despite the fact that there is no significant difference between the technology used in the UK and Spain, that the entrants adopted similar strategies in each of these markets, and that there is no *a priori* reason to believe that there exist marked divergences in terms of consumer behaviour, the evolution of market structure has been quite different across the two countries. The description that follows pertains to the period analyzed in this paper (April 2003 to November 2004). In the UK, the market quickly evolved into an oligopoly dominated by The Number and BT. These two firms accounted for about 80% of the market, while the remainder was shared among smaller operators. Among the fringe, three operators nonetheless enjoyed a significant market share: Yell, Maureen, and Conduit. The striking characteristic of the UK market is that the largest operator was not the

incumbent: BT's market share was estimated at 35%, while The Number's stood at about 45%.¹⁷ Given Spain's less extensive market, the number of active operators with a significant market share was slightly smaller. The main difference with the UK is reflected in the dominance still enjoyed by the Telefónica group. During the period analyzed in this paper, the latter offered three products: a regulated one (11818), and two commercial ones (11822 and 11888). 11822 is provided by Telefónica de España, while 11888 was marketed by TPI (at the time, a fully controlled subsidiary). As can be seen from Table 2, the data provided by the CMT indicate these three brands accounted for more than 81% of the market at the end of 2003.¹⁸ During 2004, that dominance was maintained, with the three Telefónica brands still accounting for more than 79% of market revenue. Apart from a change in the relative position of the smaller operators over the period, it is also worth noting that while the overall market share of the Telefónica group has barely changed, there has been a migration from the regulated number (11818) towards the commercial alternatives (11888 and 18822). The rise of TPI's number has been particularly spectacular: its share of market revenue jumped from 29.5% to 49.1% in one year. It is worth pointing out that this number (11888) was also the most expensive among the main commercial ones.

3. RATIONALITY OF THE ALLEGED ABUSE

Conduit asked us to quantify the possible damages resulting from the incumbent's actions and to defend our findings in front of Madrid's Fifth Commercial Court. As indicated in sections 2.1 to 2.3, Telefónica sabotaged downstream entry by raising Conduit's costs and forcing a deterioration in service quality.

3.1. THE NATURE OF THE SABOTAGE

The central claim is that Telefónica impeded the entry of new competitors through a combination of actions. First, it erected a series of obstacles to new entrants prior to the effective opening of the market on April 4, 2003 (the "launch date"). For instance, prior to launch, it dragged its feet to provide terms and conditions for network access; when it did, the price turned out to be such that downstream activity would have been loss-making under any reasonable parameter constellation (a clear attempt at margin-squeeze leading to foreclosure). On that particular issue, the industry regulator had to intervene in order to force Telefónica to make a non-discriminatory and cost-oriented offer.¹⁹ Second, Telefónica failed to provide the database in a

timely manner and in the format stipulated by the CMT. When it did provide the data, it proved to be defective in a number of respects.²⁰ In addition, intelligent network entries (which represent the large part of FUNs numbers) were simply missing.

Table 2: Market shares in Spain, measured by revenues, minutes, and # of calls

	2003 (% of total)			2004 (% of total)		
	# of calls (million)	revenue minutes (million €)	minutes (million)	# of calls (million)	revenue (million €)	minutes (million)
I: Telefónica de España (11822 & 11818)	92.45 (72.70%)	37.16 (51.70%)	69.55 (57.80%)	48.04 (48.20%)	27.91 (30.10%)	42.42 (35.10%)
II: TPI (Telefónica subs., 11888)	18.16 (14.30%)	21.21 (29.50%)	29.33 (24.40%)	34.88 (35.00%)	45.56 (49.10%)	54.89 (45.50%)
Telefónica Group (I+II)	110.61 (87.00%)	58.37 (81.20%)	98.88 (82.20%)	72.92 (83.20%)	73.47 (79.20%)	97.51 (80.60%)
Telegate (11811)	6.79 (5.30%)	6.87 (9.50%)	9.8 (8.10%)	9.24 (9.30%)	10.62 (11.40%)	13.78 (11.40%)
Conduit (11850)	6.02 (4.70%)	3.02 (4.20%)	7.95 (6.60%)	NA	NA	NA
Infotecnia (11824)	NA	NA	NA	3.38 (3.40%)	4.42 (4.80%)	4.4 (3.60%)
Others	3.84 (3.00%)	3.69 (5.10%)	3.64 (3.00%)	4.14 (4.20%)	4.35 (4.70%)	5.26 (4.40%)
Total	127.26 (100%)	71.95 (100%)	120.26 (100%)	99.69 (100%)	92.85 (100%)	120.74 (100%)

Source: Comisión del Mercado de las Telecomunicaciones, Informe Anual (2003, 2004).

For a new entrant, this generated additional costs that would not have otherwise been incurred. Since the data was faulty, the entrant hired personnel to “fix it.” This task involved obtaining information from printed version of the telephone directory (white and yellow pages) and/or surfing the web. In addition, operators were, all else equal, slower, as the extractions would sometimes return blank fields, leading to an increase in AHTs. Since

the data was of such poor quality, the firm had to turn to the costly E.115 service (see endnote 8). As this service is offered by existing telecom operators on the basis of per consultation fee, it is not possible to download the E.115 database. In addition, E.115 consultations are slower, thus leading to increased AHTs. Given that each E.115 consultation effectively costs about 0.40€, and that Conduit's prices stood at approximately 0.30€ per enquiry, it meant that the margin was negative, even before advertising, wages, overheads, and other expenses were taken into account. Apart from generating pecuniary costs, the faulty database led to a deterioration in service quality. During the early stages, the entrant's AHTs were well above international standards, and above its performance in the UK market (cf. Data Appendix). Moreover, the accuracy of the information suffered substantially. In short, this new operator was offering lower quality at a price above the one it would have charged had AHTs been shorter.

Raising a rival's direct costs (RRDC) and forcing quality deterioration (QD) form part of a single abusive strategy; *stricto sensu*, forcing QD increases a rival's costs. However, distinguishing between increases in direct costs and QD is useful in the context of the empirical exercise. We will refer to RRDC as the effect of Telefónica's actions on the entrant's costs, while forced QD represents abuse-induced changes in the residual demand faced by that firm.

Compared to a more "traditional" case of predatory pricing, a combination of RRDC and QD provides immediate benefits, as opposed to sacrificing short term revenues for future (possibly elusive) profits once exit takes place. In addition, it does not require exit: it is sufficient to weaken the entrant in order to achieve additional profits above those that would obtain in an abuse-free situation. Nor is it necessary to have access to a "deep pocket."²¹ As will be argued below, the existence of search costs in this market renders this strategy all the more attractive, as it can have permanent effects beyond the time period during which the abuse is taking place *stricto sensu*. For all of the above, such a strategy (involving both RRDC and QD) is more credible. Within the menu of aggressive postures, RRDC combined with QD is highly attractive for the incumbent.

3.2. STATIC EFFECTS

Economides (1998) presents a model that neatly fits this situation. In his paper, there is a vertically integrated firm that enjoys a position of upstream monopoly for the provision of an essential input for downstream production. In the latter market, the monopolist controls a subsidiary that competes à la Cournot with other firms. He shows that, under very general conditions, the

vertically integrated monopolist has an incentive to raise its downstream rivals' costs. In his own words: "Therefore *any* increase of rivals' costs above zero results in increased profits for the integrated monopolist and subsidiary." In addition: "Raising rivals' costs allows the monopolist to "manage" the downstream market and force independents to exit. Thus, in the medium and long run, the consequences of non-price discrimination can be much more adverse to social welfare than the short run consequences that I have described" (1998:278). Last, Economides shows that his results also apply when cost-raising strategies are substituted by forcing quality downgrading: "inspection of the profit maximization conditions (..) shows that the results of this paper also hold for a *discriminatory degradation of the quality of the input offered to rivals* which decreases the willingness to pay for the rivals' downstream output but leaves costs unaffected. In such a setup, independent downstream firms have marginal cost $w + s$, but, since they have a lower quality product, consumers are willing to pay only $p - r$ for their product (while consumers pay p for the subsidiary's output). That is, *the independents face a demand curve that is a parallel downward shift by r of the demand faced by the subsidiary*" (1998:278-79, our emphasis). Similar results would obtain if the downstream industry were to be modelled as a horizontally differentiated market in the line of Salop (1979). Our claim is that Telefónica's strategy resulted in both directly increasing costs and downgrading quality, with the effects reinforcing one another.²²

Objections were raised to Economides' paper; in particular, the generality of his findings was questioned. In a series of contributions, Sibley and Weisman (1998a,b) presented models where a vertically integrated monopolist facing competition in the downstream market would *not* have incentives to sabotage downstream entry. The intuition is the following: if the monopolist enjoys positive margins in the upstream market and its downstream market share is very small, a countervailing effect to the incentive to RRDC emerges. Since the monopolist derives profits from selling the essential input, it benefits from larger sales to downstream firms as long as its subsidiary commands a negligible market share. Mandy (2000) provides a general overview of models where this second effect may dominate the cost-raising incentive. Mandy also identifies the real world conditions required for the cost-raising incentive to disappear. None of these conditions are present in the case at hand, that is Telefónica clearly has incentives to RRDC and to force QD. First, upstream margins are zero, or close to zero: the database had to be provided for free, and interconnection charges are cost-oriented. In both cases, this results from a regulatory decision. By contrast, downstream

price-cost margins are very high (50% or more). Last, Sibley and Weisman (1998a) simulated their model using reasonable parameter values. They showed that if the downstream subsidiary enjoys a market share greater than 26%, the cost-raising incentive dominates, even under the most “adverse” conditions for this effect to be present. Given that Telefónica’s market share is way above this threshold, RRDC would be optimal in the context of this case.²³

3.3. DYNAMIC EFFECTS IN THE PRESENCE OF SEARCH COSTS

Liberalized DQ services were new to Spanish consumers: a single regulated number (1003) was replaced by various 118AB numbers; the latter (save for the regulated one) were allowed to provide value-added services; quality levels were unknown; and finally, prices levels (and differences thereof) were also new. In short, consumers had to incur search costs in order to obtain information regarding these new offers. For an average consumer, these search costs are low in absolute value, but large compared to the potential savings that can be achieved by incurring them. As is well known, this is the trade-off facing consumers: it is not the absolute value of search costs that matters, but whether it is worth incurring them. As noted by the British National Audit Office (2005), expenditure on DQ services represents a very low proportion of income; as a consequence, the savings to be achieved by looking for the best offer are minute when compared to total income.

Adopting a dynamic approach when search costs are present is of paramount importance as “a firm’s current customer base is an important determinant of its future profits” (Farrell and Klemperer, 2007:1996).²⁴ More precisely, a firm’s current-period value function (i.e., total discounted future profits) is the sum of its current profits and its discounted next-period value function, itself a function of the size of its current-period customer base. In other words, search costs make current market share an important determinant of a firm’s future profits.²⁵

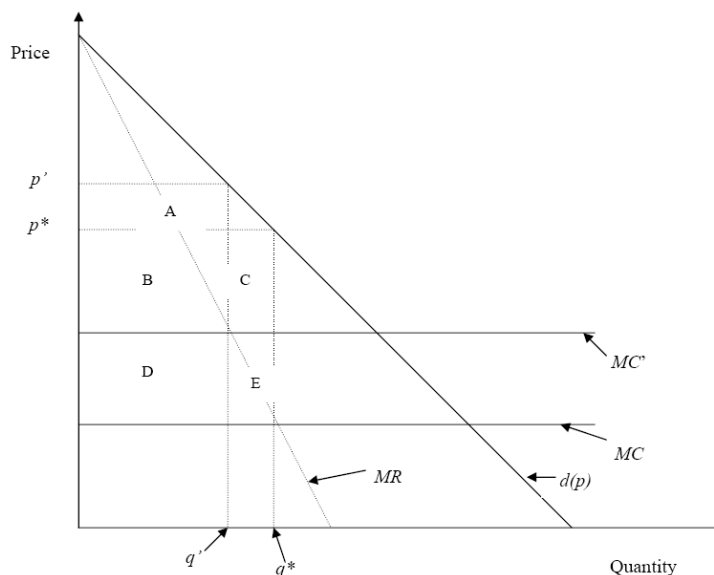
This line of reasoning appears to have permeated the thinking of UK public authorities. In a report to the UK’s Office of Fair Trading (OFT) and Department of Trade and Industry (DTI), NERA (2003) indicated that: “Competition in markets with switching costs can often be divided into a ‘phase 1’ and a ‘phase 2.’ In phase 1 firms price low to build a customer base, whilst in phase 2 they concentrate on ‘milking’ their installed customer base and price high.” Further, the report notes that the ability of firms to extract rents is inversely proportional to the competitiveness of the market during phase 1.

The evolution of the DQ market neatly fits this two-phase description: the initial launch (4 to 6 months during which firms “plough,” or “invest in,” the market) followed by a stabilization period (during which firms “harvest” or “milk” the market). During the launch phase, providers build a customer base through intense advertising, while consumers experiment with the products on offer. A bad experience during this experimentation phase is likely to induce the consumer to switch, or stop consuming the good. In addition, a negative experience during that initial phase may induce more consumers to switch (or choose another brand for the first purchase) because of hearsay. During the second phase, profit-maximizing firms set prices given the market share that they have achieved during the launch period. As a consequence, market shares and prices stabilize, while advertising becomes more sporadic and aimed at maintaining awareness of a particular 118AB number. The direct corollary is that the time to profitably build a market share is during the launch phase, when customers have not yet chosen a brand to patronize. Building a customer base at a later stage is unlikely to be profitable, since it is much more costly to induce customers to switch to a new brand as opposed to simply maintaining them.²⁶ In other words, Telefónica’s actions had an effect beyond the time period during which the entrant had to operate with a defective database.

4. IDENTIFICATION OF THE EFFECTS OF THE ABUSE

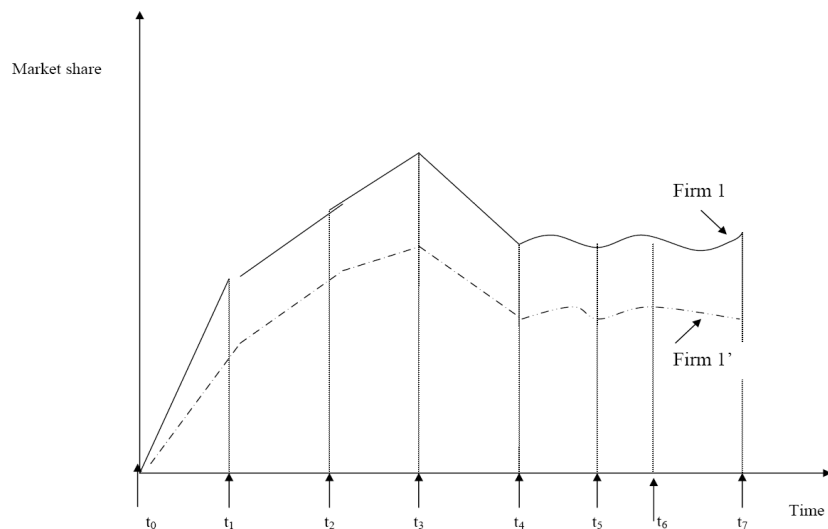
For practical purposes, we have decomposed possible abuse-related losses into direct costs and the additional loss of profits once the direct costs have been netted out. It is straightforward to show that the lost profits resulting from the abuse are always larger than the direct costs that can be imputed to the incumbent’s actions. Save for the polar cases of Bertrand competition with no capacity constraints or perfect competition, firms face a downward-sloping residual demand curve. Suppose constant marginal costs MC , and that a firm faces the residual demand depicted in Figure 1. In the absence of abuse, the firm would earn gross profits equal to $BCDE$. If its costs are increased to MC' , profits dwindle to AB . The “direct damage” is equal to the quantity produced under abuse times the increase in costs, that is D . Even if the firm manages to recover D through the courts, it still suffers a net loss, as $A < CE$.²⁷ While useful in showing that total damages are greater than direct costs, Figure 1 does not depict the effect of forced QD. In addition, it ignores the importance of search costs and the fact that the abuse occurred before and during the launch phase.

Figure 1: Effect of Cost-Raising Strategies on the Injured

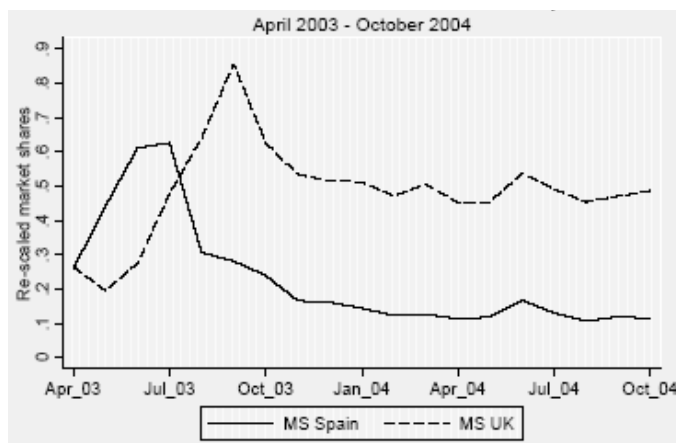


New entrants build a market share with intense advertising. The latter increases demand for the firm's product in each period and can be coupled with low, cost-oriented prices during launch. Once a sufficiently large market share is built, prices are raised in order to recoup advertising outlays and generate profits. This is the stance adopted by Conduit: in both Spain and the UK, it pursued heavy advertising with low initial prices to build its customer base, and raised its prices later. The combination of low initial prices and heavy advertising results in a steady increase in market share, followed by a drop once prices are raised (which would correspond to the beginning of the stabilization period). Figure 2 depicts the expected evolution of the market share of a firm (Firm 1) that follows this course of action. In this example, the price charged during two initial periods equals (or is close to) marginal cost; as of period 3, prices are raised, thus resulting in a drop in market share. As of period 4, which corresponds to the beginning of the stabilization period, market share fluctuates around a constant. Graph 1 depicts the evolution of Conduit's market share in Spain and the UK; the parallel with Figure 2 is immediate (for reasons of confidentiality, the scale on the vertical axis has been transformed).²⁸

Figure 2: Evolution of Entrant's Market Share Not Subject to an Abuse (continuous line) vs. Entrant Subject to Forced "Quality Deterioration" (dotted line)



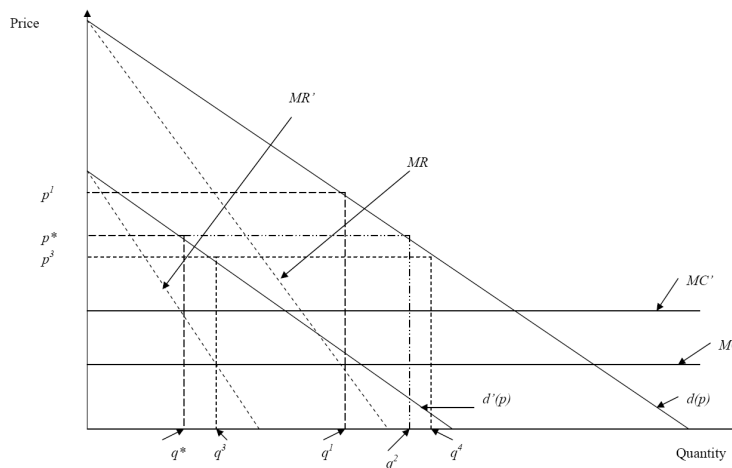
Graph 1: Conduit's Market Share in the UK and Spain



Given the entry strategy described above, the effect of an abuse which results in inflated costs and forced QD is easy to understand. *Ceteris paribus*, higher costs mean that fewer resources are available for advertising. More importantly, forced QD means that advertising is less effective at increasing demand during each period of the launch phase. Once the “stabilization period” begins, the market share fluctuates around a level which is lower than that which corresponds to an abuse-free situation. This evolution is depicted by the line labelled Firm 1' in Figure 2. Note that the gap between curves Firm 1 and Firm 1' *only* reflects the forced QD suffered by the entrant; direct costs have to be added to the profit loss stemming from this lower market share.

This statement is illustrated in Figure 3a. The discussion is framed in terms of pricing (and not pricing and advertising) behaviour for ease of exposition. Consider the first period of the stabilization phase. In line with Economides (1998), it is assumed that forced QD results in the leftward shift of the residual demand curve faced by the firm from $d(p)$ to $d'(p)$. In addition, the incumbent's RRDC strategy raises constant marginal costs upwards from MC to MC' . The firm chooses prices and quantities which correspond to the intersection between marginal revenue (MR) and marginal cost (MC). Under competitive conditions, the firm would have faced $d(p)$ and MC , set price at p^1 , sell q^1 , and obtained gross profits equal to $\Pi = (p^1 - MC)q^1$. As a consequence of the abuse, the firm faces MC' and $d'(p)$, sets price at p^* and sells q^* , obtaining $(p^* - MC')q^*$ gross profits. In this example, the “direct costs” as we have defined them are equal to $(MC' - MC)q^* = X$. Full compensation for lost profit is equal to $(p^1 - MC)q^1 - (p^* - MC')q^*$. As will be explained below, we cannot estimate this amount. However, what we can estimate is the market share that the entrant ought to have obtained in the absence of QD, *given the price it actually set* (p^* in this example). Concretely, we are able to estimate the magnitude of $\Pi^1 = (p^* - MC')(q^2 - q^*)$. Thus, the damages that we were able to quantify are the sum of X (direct costs) and Π^1 (the latter due to QD). Note that the amount that we identified is smaller than the one that corresponds to full compensation.²⁹ Figure 3a also permits us to depict the damages suffered by the entrants during later periods when data problems were supposedly solved. During the initial stage, the entrant faces MC' , and the damages we compute amount to $X + \Pi^1$. At a later stage, marginal costs fall back to MC , and our approach proxies Π^{1*} , defined as $\Pi^{1*} = (p^3 - MC)(q^4 - q^3)$.

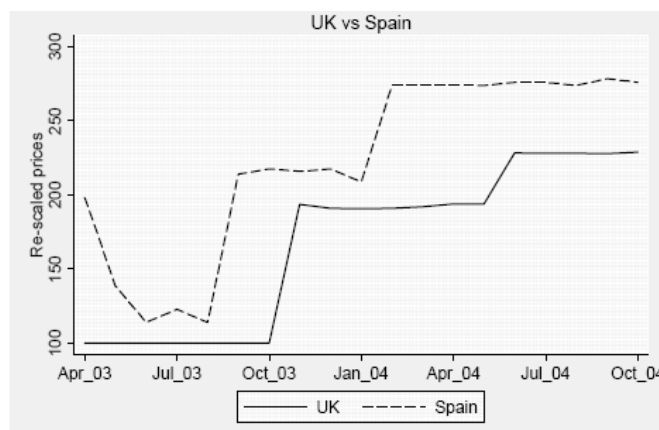
Figure 3a: Situation Faced by an Entrant Subject to Forced Quality Deterioration (QD) and Facing Inflated Costs (RRDC)



The argument developed above holds if the only effect of forced QD is to lower the quality offered by the entrant, as reflected by the inward shift of the residual demand it faces. It could, however, be the case that the incumbent's action also reduced the intensity of competition. In that case, all firms would have priced less aggressively as a consequence of forced QD. The converse is that, in the absence of abuse, firms' residual demand would have been more elastic, reflecting the higher intensity of competition. In other words, the abuse-free residual demand that the entrant would have faced is not $d(p)$ (cf. Figure 3a), but $f(p)$ depicted in Figure 3b. If this is the case, the amount of damages (above direct costs) remains positive, but is lower. To illustrate this point, imagine that RRDC is absent, and that the abuse only consists of forced QD. In the abuse-free benchmark characterized by a higher intensity of competition, the entrant would have earned profits equal to $\Pi^1 = (p^5 - MC)q^5$. As before, forced QD results in the firm facing $d(p)'$ instead of $f(p)$, earning gross profits equal $(p^3 - MC)q^3$. In these circumstances, full compensation would amount to $(p^5 - MC)q^5 - (p^3 - MC)q^3$. Again, we cannot compute this magnitude, but we can estimate the loss of profits given the firm's *observed* pricing behaviour. In this second example, this amounts to $\Pi^2 = (p^3 - p^5)(q^6 - q^3)$.

Second, the opening up of the market coincides almost perfectly in the two countries (December 2002 for the UK, April 2003 for Spain). Conduit's actual launch date is April 2003 on both markets. Third, the UK market has not been distorted by any abuse.³⁵ Fourth, the initial market structure is identical across the two markets: an incumbent facing the entry of new competitors.³⁶ Fifth, during the launch period, advertising intensity measured as total expenditure over actual market size was very similar across the two countries (cf. Table 1). Sixth, the technology used in both markets is essentially the same. Last, in both countries the yearly total number of calls has fallen since DQ services were liberalized (reflecting, among other things, use of the internet to obtain information).

Graph 2: Price of Conduit



Apart from the abuse, there is a clearly identified difference across the two markets. As indicated previously, the Spanish legacy number (1003) was abolished as of April 2003. In addition, the regulator imposed a so-called “carrousel.” During the period April-July 2003, calls to 1003 were answered by a recorded message that quoted the numbers of the active entrants.³⁷ Since the numbers were quoted on a rotating basis, a large number of calls were directed to the new entrants.³⁸ By contrast, in the UK, the old regulated number was maintained until the end of August 2003, and no “carrousel” was put in place after the disappearance of the 192 number.³⁹ In the econometric exercise, we control for the maintenance of the 192 number by including a time dummy.

Last, there are differentiating factors that we are unable to account for. The

latter include cultural differences affecting the use of these services (for instance, comfort with calling an anonymous operator), “national” patterns in number administration affecting the necessity for DQ services, the extent of (dis)satisfaction with the incumbent, differences in voice and internet coverage, or simply that Conduit’s operators were less smooth-voiced in one of the two countries.⁴⁰ Identifiable differences exist in the data: (i) for all DQ operators, average call duration is longer in Spain than in the UK (cf. Graph A.1 in the Appendix), and (ii) actual market size dropped faster in the UK as compared to Spain. Note that the biases (if any) introduced by these unobservables are, for the most part, of unknown sign.⁴¹

6. ECONOMETRIC SPECIFICATION

We estimate a call volume market share equation for Conduit in the UK market; we then use these UK results to predict the evolution of that operator’s market share in Spain.⁴² The choice of the quantity market share as the dependent variable is motivated by two considerations. On the one hand, it corresponds to the theoretical motivation presented in Section 4 (see, for example, Figure 2). On the other hand, while the Spanish and UK markets are comparable (see Section 5), the UK market size is larger.⁴³ Using market shares as opposed to sales (value or volume) puts the UK and Spanish information on an “equal footing.”

There are two basic approaches to estimate market share equations. The first is commonly used in the marketing literature and consists in the estimation of market response models that predict the influence of marketing variables on market share (see Kumar and Heath, 1990; or Kumar et al., 2002, among others). These models can be used to infer the cross-effects between a set of marketing variables (e.g. prices, advertising, or discounts), but it is also possible to learn about the effects of own efforts while conditioning on competitive reactions. Usually, these models are proposed in a linear, multiplicative, or in the so-called attraction form.⁴⁴ Among these specifications, the attraction form is the most adequate, as it simultaneously estimates the behaviour of all participants’ market shares and it embodies a series of restrictions (e.g. market shares sum to 1). The second approach, more common in the economics literature, is the estimation of logit demand models that are based on a model of individual brand choice (see Nevo, 2000, for a survey). In these models, consumers observe prices and product characteristics for J differentiated products and choose the product that maximizes their utility. The specification of a demand system is completed

with the introduction of an outside good, since individuals may decide not to purchase any of the brands. These models have been successfully estimated both with household level and aggregate data (see Allenby and Rossi, 1991). Although logit demand models are utility based, their specification coincides with an attraction model that embodies restrictions on the competitive process (the attraction of brand j only depends on own explanatory variables), and where attraction depends on the exponential of the marketing variables.

Our choice of model specification is driven by data availability. As we describe below, we do not have information on competitors' market shares. This precludes the estimation of a fully-fledged attraction model. Therefore, we estimate an additive and multiplicative form of the market share response models, but for Conduit only. As for the logit model, we adopt a specification that requires market share data for one firm only (Conduit).

The marketing mix variables relevant in the DQ market are prices and advertising. The three specifications that we estimate are defined as follows:

1. Additive specification. This specification implies that we assume that the market share for each brand is a linear function of the marketing mix variables. Thus, the equation to estimate is:

$$MS_{it} = \beta_{i0} + \beta_{i1}relP_{it} + \beta_{i2}relA_{it} + Q'_i\beta_{i3} + \varepsilon_{it} \quad (1)$$

where MS_{it} is brand i 's market share at time t ; $relP_{it} = \frac{P_{it}}{\frac{1}{J} \left(\sum_j P_{jt} \right)}$ is

own price relative to that of its competitors, with J equal to the number of active firms; and $relA_{it} = \frac{A_{it}}{\sum_j A_{jt}}$ is the firm's advertising

effort relative to total. Q'_i is a set of time dummies to control for possible changes in market shares due to holidays and different days of the week. It also includes a dummy taking value 1 for the period April-August 2003 (and zero thereafter) to control for the continued existence of BT's regulated-now defunct-number (192).

2. Multiplicative specification. This specification assumes that market shares are a multiplicative function of the marketing mix variables:

$$MS_{it} = \exp(\beta_{i0} + Q'_i\beta_{i3} + \varepsilon_{it})(relP_{it})^{\beta_{i1}}(relA_{it})^{\beta_{i2}}$$

where the definition of the variables is as above. Therefore the equation to estimate is given by:

$$\ln(MS_{it}) = \beta_{i0} + \beta_{i1} \ln(\text{rel}P_{it}) + \beta_{i2} \ln(\text{rel}A_{it}) + Q_i \beta_{i3} + \varepsilon_{it} \quad (2)$$

3. Logit demand. Logit demand models are derived from individual discrete choice models. In the simplest version, heterogeneity among consumers is introduced in the model via the inclusion of a separable additive random shock, ε_{it} . If we assume that this shock is identically and independently distributed among individuals according to a Type I extreme value distribution, the market share of a brand i coincides with the probability that an individual buys that particular good. It can therefore be written as:

$$MS_{it}^* = \frac{\exp(\alpha_i + \delta_1 P_{it} + \delta_2 A_{it} + \varepsilon_{it})}{1 + \sum \exp(\alpha_j + \delta_1 P_{jt} + \delta_2 A_{jt} + \varepsilon_{jt})}$$

where P_{it} and A_{it} stand for the price and advertising effort of firm i at time t , and j denotes active firms (including firm i). There also exists the possibility of not buying any brand. In the latter case, the associated probability is given by:

$$MS_{0t}^* = \frac{1}{1 + \sum \exp(\alpha_j + \delta_1 P_{jt} + \delta_2 A_{jt} + \varepsilon_{jt})}$$

where MS_{0t}^* is the market share of the outside good. Computing MS_{it}^*/MS_{0t}^* and taking logs, we obtain the following J equations:

$$\ln MS_{it}^* = \ln MS_{0t}^* + \alpha_i + \delta_1 P_{it} + \delta_2 A_{it} + Q_i \beta_{i3} + \varepsilon_{it} \quad (3)$$

Note that the market share in equation (3) is different from the ones that appear in equations (1) and (2), since we also include consumers that do not purchase any brand. In other words, firm i 's market share is defined over the potential market. Also, since eq. (3) is already written in aggregate terms, the data requirements are limited to market share, prices, and advertising for firm i , and on the proportion of individuals that do not buy the good. Thus, if we have information on the proportion of individuals that do not buy the good, we can estimate eq. (3) using firm i 's data only.⁴⁵

Three comments are in order regarding the identification of equations (1), (2), and (3). First, these equations form a system of J equations, one for each market participant. As mentioned above, Conduit is the only firm for which we have a sufficient number of observations on market share. Consequently,

we estimate (1), (2), and (3) for that firm only (i.e., $i = \text{CONDUIT}$). The parameters are then identified by the (daily) time series variation of the explanatory variables. Provided there is sufficient time variation, the parameter estimates are consistent, although not necessarily efficient. Second, the three specifications include a constant that picks-up any time invariant firm specific effect. This constant can be consistently estimated given the long time series that we use (more than 500 daily observations). Therefore, we control for any unobserved time invariant firm specific fixed effect.⁴⁶ Third, there may be a source of simultaneity in the explanatory variables if there exist daily shocks that affect both daily prices and/or advertising as well as the error term. Therefore, we estimate the three equations by applying the Generalized Method of Moments (GMM), thus allowing for the endogeneity of both variables.

With respect to the possible existence of endogeneity, the situation is different for advertising and prices. In our context, it is reasonable to think that both these variables are predetermined. The reason is that advertising is booked ahead of actual spend, and the entrant's pricing strategy is "mechanical" and established prior to actual launch (cf. Graph 2). However, as we describe in the Data Appendix, we construct the daily observations pertaining to advertising on the basis of their the monthly counterparts. More precisely, A_t (daily advertising) being predetermined means that it is uncorrelated with ε_t in equations (1), (2) and (3). But this does not preclude that *future* realizations of A being correlated with the error in period t . In the regressions, we use $\bar{A}_t = \frac{A_{t-15} + \dots + A_t + \dots + A_{t+15}}{\# \text{ of days in the month}}$ instead of A_t . Thus, $E(\varepsilon_t | \bar{A}_t)$ may be different from zero, even if A_t is predetermined. Therefore, we assume in all empirical specifications that the advertising variables are endogenous. For prices the situation is different since we have access to daily observations and therefore we do not introduce any additional correlation between this regressor and the error term. Actually, Conduit set prices equal, or close to, marginal cost during the launch phase (approximately 4-6 months) and then raises its prices in two steps. This is the pattern observed on both the UK and Spanish markets (cf. Graph 2). Still, we did not impose that this variable is predetermined and test its endogeneity in the context of the GMM procedure. In addition, the use of daily data suggest that the errors are probably autocorrelated. Given the type of instruments that we use, the presence of autocorrelated errors does not affect the consistency of the coefficient estimates but it affects the consistency of the standard errors estimates. Therefore, we compute standard errors robust to autocorrelation and heteroskedasticity.⁴⁷

Finally, our specification of the logit demand equation does not allow for heterogeneity among consumers. This is equivalent to imposing a particular form of cross-price elasticities among firms, namely that the degree of substitution among brands is the same. This is a problematic assumption for some markets (e.g. the automobile industry as in Berry, Levinsohn and Pakes (1995), that consider all vehicle classes, or the ready-to-eat cereal market analyzed in Nevo (2001), where cereals for children and adults are not close substitutes). In our context, this assumption does not appear as too restrictive: DQ services are perceived as close substitute by consumers. Allenby and Rossi (1991) provide evidence pertaining to the conditions under which a simple logit model performs well with aggregate data. They identify three requisites: that all consumers are exposed to the same marketing mix variables; that the brands are close substitutes; and that the distribution of prices is not concentrated at an extreme value. Assuming that all three conditions hold seems quite reasonable in our context.

To estimate equations (1), (2), and (3) we need time series observations pertaining to Conduit's market shares, prices and advertising effort, as well as competitors' prices and advertising. In addition, to estimate eq. (3) we also require the percentage of potential users that decide not to make any call.

Conduit provided us with their daily call volumes and AHTs and average queuing times; we were thus able to construct daily prices for that firm, which in turn allows us to estimate equations (1), (2) and (3) on a daily basis. However, with respect to the rest of the variables (such as actual and potential market size) the data is either not publicly available, or only observed with monthly frequency (e.g., advertising effort). We therefore had to construct the daily counterparts of these variables. The Data Appendix describes in detail how all regressors have been constructed as well as the underlying assumptions that we adopted. To check the robustness of our results to the interpolation procedure, in Section 8, we also report estimates obtained with monthly data.

Table 3 provides summary statistics for the relevant variables in each of the two markets, the UK and Spain.

Table 3: Sample Descriptive Statistics

Variable	# of observ.	Mean	Std Dev.	Min	Max
Market share, UK	575	0.091	0.045	0.012	0.259
MS (over potential market), UK	575	0.059	0.032	0.01	0.194
Relative price, UK	575	0.751	0.212	0.480	0.995
Relative advertising, UK	575	0.132	0.158	0.000	0.421
Price, UK	575	0.480	0.153	0.285	0.661
Advertising $\times 10^{-6}$, UK	575	0.031	0.048	0	0.185
Market share, Spain	575	0.039	0.036	0.003	0.206
MS (over potential mkt.), Spain	575	0.024	0.025	0.002	0.14
Relative price, Spain	575	0.769	0.219	0.322	0.985
Relative advertising, Spain	575	0.064	0.189	0	0.842
Price, Spain	575	0.637	0.170	0.3	0.819
Advertising $\times 10^{-6}$, Spain	575	0.007	0.019	0	0.081
Dummy Apr.-Aug. (UK only)	575	0.257	0.438	0	1
July	575	0.108	0.310	0	1
August	575	0.108	0.310	0	1
Christmas	575	0.016	0.124	0	1
Bank Holidays, UK	575	0.023	0.149	0	1
Bank Holidays, Spain	575	0.028	0.165	0	1

Table 4 reports information deemed useful for understanding the situation. It relates operators' advertising effort to their market share in Spain. Some interesting patterns emerge: for instance, in view of their advertising, it seems that new entrants systematically achieve a lower market share compared to the Telefónica numbers.⁴⁸

Table 4: Informative Statistics

	2003		2004		2003	2004
	Adv'tising	Mkt share	Adv'tising	Mkt share	Ratio MS/A	Ratio MS/A
	(A)*	(MS)**	(A)*	(MS)**	(II/I)	(IV/III)
	(I)	(II)	(III)	(IV)		
Telefónica de España (11822 & 11818)	0	51.7	10.1	30.1	NA	2.97
TPI (11888)	45.1	29.5	29	49.1	0.65	1.69
Telegate (11811)	22.9	9.5	20.1	11.4	0.41	0.57
Conduit (11850)	15.5	4.2	3.7	2.3***	0.27	0.62
Infotecnia (11824)	15.6	NA	26.6	4.8	NA	0.18

(*) As percentage of total advertising; Source: Initiative España

(**) As percentage of total revenues; Source: CMT Informe Annual (2003, 2004)

(***) January-October; Source: company accounts

7. ECONOMETRIC RESULTS AND DAMAGE QUANTIFICATION

As mentioned above, we are unable to compute the abuse-free profits that the entrant's would have obtained by choosing prices and advertising optimally (which correspond to Π and Π' as defined on the basis of Figures 3a & 3b). In the case of Figure 3a, it is assumed that forced QD only results in an inward shift of the residual demand faced by the entrant. Given the abuse, we approximate lost profits by estimating eq. (1), (2), and (3) for the UK, and then use parameter estimates and *observed prices and advertising in Spain* to predict the entrant's markets share had forced QD been absent. In Figure 3b, the abuse free residual demand is more elastic as compared to the previous case, reflecting the fact that the intensity of competition would have been higher. Under this scenario, we approximated lost profits from below in the following manner: we assumed that Conduit's behaviour in terms of pricing and advertising effort would have been identical on both the UK and Spanish markets (while that of its Spanish competitors remains unchanged). We thus use parameter estimates and *observed prices and advertising in the UK* to predict the entrant's markets share had forced QD been absent.⁴⁹

Clearly, there may exist seasonal influences. For instance, Bank Holidays, Summer months (July and August), the Christmas season or even the day of the week may influence consumption patterns. Since there is no a priori reason to believe that seasonality patterns are the same in Spain and the UK, we decomposed the predicted market share for Spain (\widehat{MS}) in two pieces: a non-seasonal part (\widehat{MS}_{NS}) and a seasonal part (\widehat{MS}_S):

$$\widehat{MS} = \widehat{MS}_{NS} + \widehat{MS}_S$$

The non-seasonal component is estimated using the non-seasonal parameter estimates from the UK equations, while the seasonal component is re-estimated with Spanish data. More precisely, we used a three-stage procedure to recover these two elements. First, we estimated the three equations for the UK with the full set of seasonal dummies (daily and monthly). We then predicted Conduit's non-seasonal market share in Spain (\widehat{MS}_{NS}) using the parameters estimates obtained for the UK, save for the seasonal dummies, that is, using only prices and advertising (relative or absolute, depending on the equation). We then computed the difference between observed market share and the non-seasonal prediction for Spain ($MS - \widehat{MS}_{NS}$), thus obtaining a set of residuals. As these residuals contain all the seasonal effects, they can be used to predict the seasonal part of the Spanish market share.⁵⁰ Thus, we regressed them on all the Spanish seasonal dummies, obtaining estimates of the seasonal parameters for Spain that are used to predict the seasonal component of Conduit's market share (\widehat{MS}_S). Last, we constructed the predicted market share as the sum of the seasonal and non-seasonal components.

As mentioned above, the way we have constructed daily advertising may turn this variable into an endogenous one. To deal with this (per construction) endogeneity, we need to identify suitable instruments that are correlated with Conduit's advertising, but uncorrelated with all unobservable attributes (e.g. quality) that can affect the firm's future advertising. We have therefore used as instruments the sum of the competitors' advertising, current and lagged up to two periods (that is, dated at time t , $t - 1$, and $t - 2$).⁵¹ These variables are correlated with Conduit's advertising,⁵² but there is no reason to think that they are correlated with the quality of the service provided by Conduit.

For prices, we experimented with their lagged values as instruments (see Villas-Boas and Winer, 1999, for a similar approach). The logic of this choice is

that prices might be correlated over time, but that they are only contemporaneously correlated with the attributes that are unobservable to the econometrician (e.g. quality), which makes them an adequate instrument.

The bottom part of Tables 5 and 6 report the values of an incremental Sargan tests and their p -values for a test of the exogeneity of prices. These tables also provide Hansen J statistics and their p -values to test the adequacy of the instruments used for advertising by testing the two implied overidentification restrictions. As can be seen, we cannot reject the exogeneity of prices in any of the three models. While the exogeneity of prices may be surprising at first sight, Graph A.2 of the Data Appendix is consistent with the idea that prices are set “mechanically” and do not respond at all to price changes of other firms. In addition, the Hansen J statistics for the instruments used for advertising suggest that we cannot reject the implied overidentifying restrictions, thus validating our choice of instruments. Therefore, our specifications consider prices as exogenous while advertising is instrumented with competitors’ advertising.

Table 5 presents our central GMM results for the additive and multiplicative models (eqs. (1) and (2)), while Table 6 presents the results for the logit demand model (eq. (3)). Recall that these estimations are obtained for the UK market; we do not estimate the evolution of the entrant’s market share with Spanish data. In both Tables 5 and 6, the goodness of fit is high: the adjusted R^2 ranges from a minimum of 0.61 (model [I]), to 0.90 (specification [III]). The variables of interest (relative prices and advertising) have the expected sign and are significantly different from zero.

Table 5: Results: Multiplicative and Additive Models

Variables	Additive[I]		Multiplicative[II]	
	(A)	(B)	(A)	(B)
$relP_t$	-0.0992**	0.0477	-0.5233**	0.2406
$relA_t$	0.2516*	0.0762	0.0206***	0.0114
Constant	0.1830*	0.0423	-2.0361*	0.2041
Time dummies				
Apr.-Aug. 03	-0.1457*	0.0217	-1.2855*	0.3305
Bank Holid.	-0.0403*	0.0068	-0.6969*	0.1160
July	0.0141***	0.0083	0.1368	0.1837
August	0.0374*	0.0135	0.2851	0.2769
Christmas	-0.0195	0.0121	-0.2505***	0.1338
Year 03	0.0117	0.0159	0.2291	0.1496
Tuesday	-0.0027	0.0020	0.0092	0.0220
Wednesday	-0.0044**	0.0019	-0.0043	0.0234
Thursday	-0.0040***	0.0022	0.0058	0.0342
Friday	-0.0072*	0.0020	-0.0416***	0.0245
Saturday	-0.0580*	0.0037	-0.7144*	0.0324
Sunday	-0.0825*	0.0048	-1.2733*	0.0423
# observ.	573		573	
R-squared	0.607		0.731	
TESTS				
Exogeneity of prices	0.2780		0.0590	
$\chi^2(1)$: <i>p</i> -value	0.5978		0.8080	
Hansen <i>J</i> statistic of overid.	0.2830		2.0110	
$\chi^2(2)$: <i>p</i> -value	0.8679		0.3659	

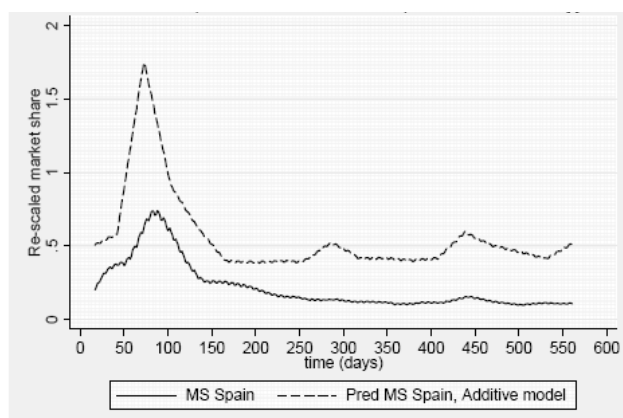
Notes: (A) coefficient estimates; (B) standard errors robust to autocorrelation and heteroscedasticity; Endogenous regressors: Relative advertising; Instruments: (Total advertising-Conduit's Advertising) dated in t , $t-1$ and $t-2$. (*) Significant at 1% level; (**) Significant at 5%; (***) Significant at 10%.

Table 6: Results: Logit Demand Model		
Variables	Logit [III]	
	(A)	(B)
P_t	-2.0382*	0.5526
A_t	4.9356*	0.5468
Constant	-0.7884**	0.3310
Time dummies		
Apr.-Aug. 2003	-0.7978*	0.1219
Bank Holidays	-0.6660*	0.1334
July	0.0814	0.0994
August	-0.0767	0.0754
Christmas	-0.3363*	0.1121
Year 03	0.4714*	0.1512
Tuesday	0.0085	0.0248
Wednesday	-0.0135	0.0227
Thursday	-0.0034	0.0352
Friday	-0.0510**	0.0233
Saturday	-0.7175*	0.0288
Sunday	-1.2887*	0.0378
# observ.	573	
R-squared	0.901	
TESTS		
Exogeneity of prices	2.4980	
$\chi^2(1)$: p -value	0.2868	
Hansen J statistic of overid.	0.0320	
$\chi^2(2)$: p -value	0.8581	

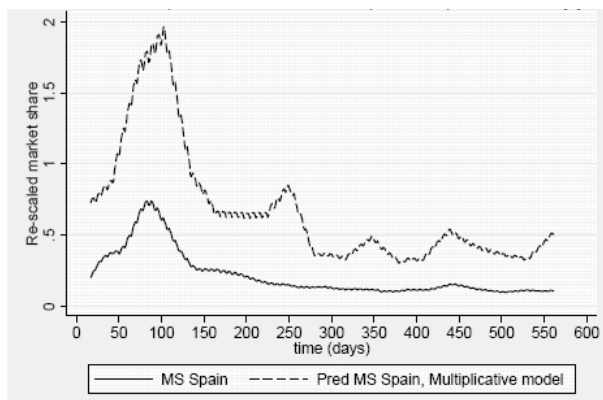
Notes: (A) coefficient estimates; (B) standard errors robust to autocorrelation and heteroscedasticity; Endogenous regressors: Advertising; Instruments: (Total advertising-Conduit's Advertising) dated in t , $t-1$ and $t-2$. (*) Significant at 1% level; (**) Significant at 5%; (***) Significant at 10%.

These estimates are used to predict Conduit's market share in Spain had forced QD not occurred, *given the prices and advertising chosen by that firm*.⁵³ Graphs 3, 4 and 5 present the observed market shares as well as the predicted ones for the specifications for the whole period (for reasons of confidentiality, market shares have been multiplied by an arbitrary number). The predicted market share in Graph 3 is constructed with the point estimates obtained from model [I], in Graph 4 we have used model [II] and finally in Graph 5 we have used model [III]. In the three cases, we observe that the prediction stands above what the entrant achieved in Spain. This visual evidence also indicates that our econometric model does a good job of picking-up the turning points in the evolution of the entrant's market share.

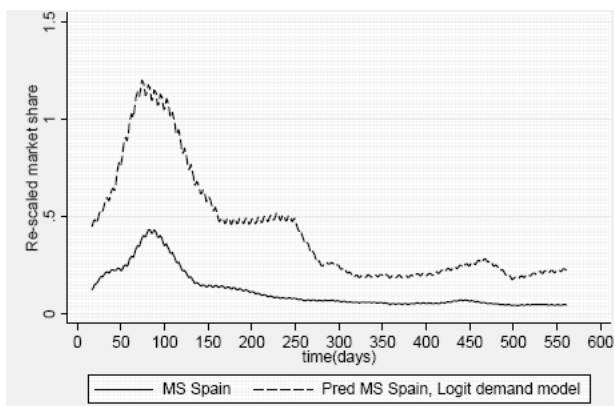
Graph 3: Actual and Predicted Market Shares. Spain, Additive Model [I]



Graph 4: Actual and Predicted Market Shares. Spain, Multiplicative Model [II]



Graph 5: Actual and Predicted Market Shares. Spain, Logit Demand Model [III]



Based on the difference between the two plots presented in Graphs 3-5, we estimate the damages (lost profits) as well as the number of lost calls for the three specifications. The results are shown in Panel A of Table 7, where the monetary amounts and lost calls have been scaled to 100 with respect to model [III]. As can be readily seen, the range of damage estimates is pretty narrow: the largest difference is between specifications [I] and [II] and amounts to 13.7%. In general it can be seen that the multiplicative model [II] tends to predict higher damages and lost calls, while the logit model [III] predicts lower amounts.

Table 7: Damage estimates and number of lost calls (Model [III] = 100)

	Model	#of calls	Lost profits
PANEL A			
Using observed data (prices and advertising)			
Additive	I	86.13	101.33
Multiplicative	II	119.49	113.69
Logit Demand	III	100.00	100.00
PANEL B			
Using UK data (prices and advertising)			
Additive	I	99.58	49.82
Multiplicative	II	139.51	36.34
Logit Demand	III	165.86	43.32

Computed over 19 months (April 2003 – October 2004).

Panel B of table 7 shows the damages as well as the number of lost calls under a different scenario: one in which Conduit would have acted in Spain exactly as it did in the UK in terms of prices and advertising (while maintaining observed prices and advertising for Conduit’s Spanish competitors). As argued in section 4, this proxies lost profits in Spain *had Conduit perceived that competition was as tough as in the UK*. Recall that this represents the “lower bound” of the “lower bound” in terms of actual damages suffered. The lower panel of Table 7 indicates that Conduit would have enjoyed a larger market share. The estimation of losses is lower, reflecting the fact that prices are consistently higher (around 0.15€ per call) in Spain as compared to the UK.

8. ROBUSTNESS CHECKS

We interpret the small variation in the estimation of damages across specifications as evidence that our results are robust. In this section, we provide simple additional robustness checks.

8.1. MONTHLY DATA

Since we either estimated daily fixed effects for Spain in an indirect manner and transformed monthly variables into daily ones, we re-estimated eq. (1) and (2) with monthly data for the period April 2003-October 2004 by simple OLS.⁵⁴ The results are presented in Table 8.

Variables	Additive model		Multiplicative model	
	(A)	(B)	(A)	(B)
$relP_t$	-0.0957*	0.0291	-0.6404***	0.3067
$relA_t$	0.0848**	0.036	0.0046	0.0063
Apr.-Aug. 03	-0.0852*	0.0168	-0.8354*	0.2408
Constant	0.1722*	0.0251	-2.4053*	0.1181
# of observations	19		19	
Adjusted R^2	0.56		0.39	

Notes: (A): coefficient estimates; (B) standard error.

(*) Significant at 1%; (**) Significant at 5%; (***) Significant at 10%.

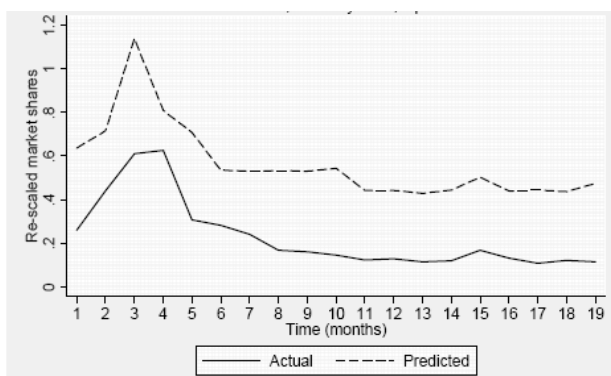
The goodness of fit is slightly lower when compared to the estimates appearing in Tables 5 and 6, but it remains reasonably high. In the same vein, the point estimates for relative prices and advertising are less precise but they remain of the expected sign and their magnitude is similar to that obtained in the first estimation. Despite the fact that the sample is much smaller, our estimation of injury remains practically identical. Table 9 provides estimates of damages as well as lost calls. The figures are expressed as a fraction of the estimates obtained with daily data and model [I].

	# of calls lost	Lost profits
Additive model	96.0	106.4
Multiplicative model	96.5	108.9

* Each cell expressed as a proportion of estimates obtained with model [I] and daily data.

Graph 6 compares Conduit's actual market share in Spain and the one it could have hoped to achieve given its relative price and advertising effort. Again, the pattern is very similar to what is obtained with daily data.

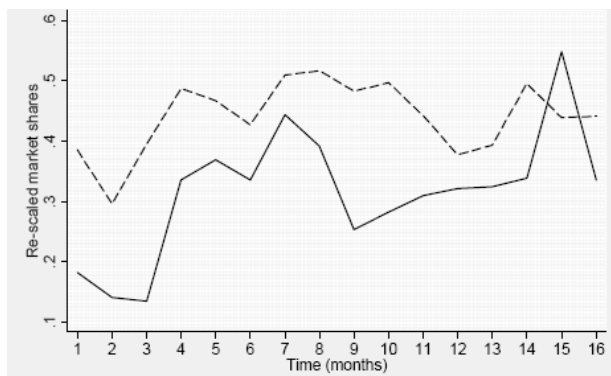
Graph 6: Spain, Actual and Predicted Market Shares
Additive Model, Monthly Data Apr 03-Oct.04



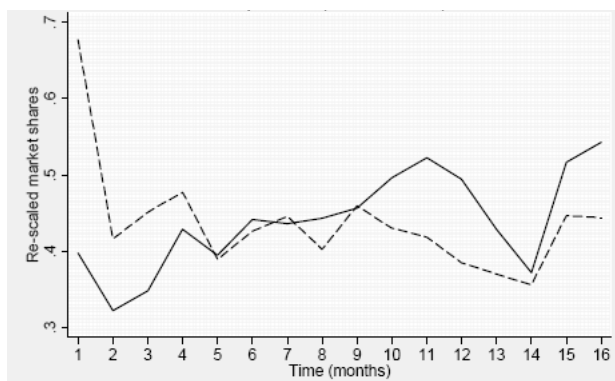
8.2. COMPETITORS

At one point, we obtained some additional data pertaining to Conduit's main competitors in Spain, and in particular, the evolution of their monthly market share over the period July 2003-October 2004. We are therefore able to assess whether our econometric estimates can predict the evolution of the entrant's competitors. In other words, we want to see whether our approach allows us to predict the "ups" and "downs" in the market share of other operators. Graphs 7 and 8 present the actual market share and the ones that our econometrics would predict for two operators. As before, the vertical axis has been re-scaled. In addition, we do not specify which curve pertains to the predicted and actual market shares. Apart from confidentiality, this omission is due to the fact that we cannot estimate a firm specific effect (the constant) for each of these agents. This means that our predictions are up to a scale parameter.

Graph 7: Actual and Predicted Market Shares - Operator 1 (Additive Model)



Graph 8: Actual and Predicted Market Shares - Operator 2 (Additive Model)



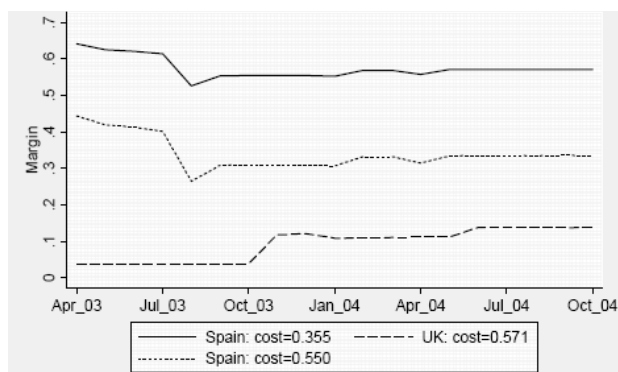
This visual evidence suggests that the econometric model does a good job of approximating the evolution in the market shares of Conduit's competitors.

8.3. PROFITABILITY

It is also possible to check that some market-wide variables have behaved in a manner consistent with the existence of an abuse on the Spanish market. We therefore computed average price-cost margins as a proxy for the intensity of competition.⁵⁵ On the cost side, the pre-liberalization regulated price was chosen as an estimation of marginal cost for all firms in the market. For prices, we took the simple, unweighted, average price of the operators that

were used in the econometric exercise.⁵⁶ In the case of Spain, we also computed the average margin with a higher estimate of marginal cost, since Telefónica had systematically complained that the regulated rate did not cover variable costs. More precisely, we computed the margin with a marginal cost of 0.55€ instead of 0.355€.⁵⁷ The larger figure is very similar to the cost of a call to British Telecom's now defunct 192 (40 p., i.e. 0.571€). Graph 9 plots the evolution of average price-cost margins. The initial drop in margins observed in Spain is due to the reaction of Telefónica to entry (TPI halved its prices) and the fact that Conduit's effective prices were high due to sabotage induced abnormal AHTs. Despite this initial drop, margins are much higher in Spain than in the UK, even when the higher estimate for marginal cost is used.⁵⁸ This is perfectly compatible with an exclusion strategy based on forced QD and RRDC instead of predatory prices.

Graph 9: Average Price-Cost Margin - Unweighted, Apr 2003-Oct 2004



9. CONCLUSIONS AND DISCUSSION

In this paper, we argue that Telefónica sabotaged downstream entry in the Spanish DQ market, and that this was a perfectly rational strategy. The essence of the abuse consisted of forcing a deterioration in the quality of the products offered by its competitors. This forced “vertical” differentiation would have been absent had abuse not taken place. Apart from resulting in an inward shift of the residual demand faced by Conduit, it generated additional pecuniary costs. These facts were first established by the Comisión del Mercado de Telecomunicaciones, were then accepted by Madrid 5th Commercial Court, and were finally upheld in appeal by the Audiencia Provincial de Madrid. Thus, the factual evidence is not under discussion in

this particular case.

Despite this, the Courts decided to award a tiny amount of damages, and this decision was upheld in appeal. Concretely, the amount awarded (€ 0.671 million) represents a fraction of “direct costs” and about 11.2% of the € 6.01 million of our central damage estimate (recall that this figure represents a lower bound). In other words, all the forensic economic evidence obtained through the construction of the “but for scenario” was *de facto* ignored. The actual award was entirely based on invoices stemming from Conduit’s inflated costs (E.115, extra personnel to clean the data, and a fraction of the legal fees related to the case). Before turning to a discussion, we briefly summarize the main findings and reasoning of both judgements that led to the dismissal of the economic evidence.

As mentioned above, the first instance ruling accepted the CMT’s finding that Telefónica’s behaviour had resulted in forced quality deterioration.⁵⁹ In addition, the validity of the yardstick approach using Conduit’s UK experience was accepted.⁶⁰ Quoting our report, the judge recognized the importance of search costs.⁶¹ Last, the Court appointed an independent economic expert to value the forensic evidence provided by both parties. The independent expert remained silent on the economic report provided by Telefónica,⁶² but ratified the validity of our approach, albeit suggesting a lower total amount of damages.⁶³ The question therefore naturally arises as to why our findings were dismissed. The first instance judge motivated his decision based on the following considerations:⁶⁴

(i) Other factors had not been properly taken into account (pp. 68-69). More precisely, as a possible explanation for Conduit’s poor performance on the Spanish market, the judge accepted Telefónica’s experts argument, namely that Conduit had outsourced to a call center and that it had hired poorly trained personnel that lacked experience on the Spanish market,⁶⁵ while in the UK, it was not the case as it had provided outsourcing services prior to launch.

(ii) Advertising spending had not been properly accounted for (pp. 69-70). The judge accepted Telefónica’s experts argument that the low market share achieved by Conduit was the result of the latter’s limited advertising effort.⁶⁶

(iii) The reduction in actual market size had not been properly estimated and therefore our estimate of lost calls was flawed (p. 71). It should be noted that when we submitted our report, no public figures on total market size were available for the year 2004 (while they were when the ruling was drafted). Our initial estimates of the drop in total market size were not too far off the mark.⁶⁷

(iv) Conduit had access to E115. While this generated additional pecuniary costs, this allowed Conduit to remedy the problems derived from flawed data. In addition, Conduit got compensation for the abuse induced use of E-115 as part of the direct costs being awarded.

(v) The damage estimate was too large and our findings were not robust.⁶⁸

While the appeal's court largely upheld these findings, it provided additional "clarifications" that, in our view, further complicate the task of estimating damages in an abuse case.

Before turning to (i)-(v), we discuss one economic inconsistency that is not touched upon in the specific conclusions (i-v) reached by the judge. Conceptually, the recognition that Conduit incurred direct costs inexorably leads to the conclusion that total damages are larger than these direct costs (and not a fraction of them, cf. Figure 1).

The assertion made in (i) is rather surprising given Conduit's experience in the business: together with Telegate it was the leading independent provider of DQ services in the EU at the time. Conduit had successfully entered non-English speaking countries such as Italy and Austria, and was present in Switzerland (a multi-language country).⁶⁹ However, even if some credence is given to this claim (Conduit hired poorly trained personnel), this would not invalidate our main findings. At most, it could serve to attribute part (and only part) of Conduit's poorer performance on the Spanish market to a factor other than forced QD.

Both rulings recognize the existence of quality degradation, but de facto consider it to be economically irrelevant, as the damage award was limited to direct costs. While this may reflect caution on the part of both judges, it may also reflect a lack of understanding of the underlying economics. Indeed, considering that quality deterioration did not result in a pecuniary loss for Conduit is equivalent to stating that Spanish consumers are insensitive to quality differences, a claim that is difficult to uphold.

The conclusion reached in (ii) either reflects the difficulty of transmitting basic concepts and/or the inability (reluctance?) on the part of the recipient to grasp them. Both decisions argued that Conduit's poor performance in Spain was due to its limited advertising efforts. In other words, the decisions looked at simple correlations (larger advertisers achieve a larger market shares), and not conditional correlations (given an advertising effort, what market share ought to have been achieved). The fact that the damage estimations are obtained *conditional on Conduit's pricing and advertising behaviour* appears to completely have escaped the Courts. Regarding advertising spending, the Appeals Court went further in misusing and misinterpreting the

evidence. More precisely, it made the additional error of relying on Spanish data to further its claim that the evolution of Conduit's market share in Spain was solely driven by advertising (cf. endnote 66). As mentioned above, if an abuse has been committed (a fact recognized by both Courts), the Spanish data is vitiated by the abuse itself. Under these circumstances, the data cannot be used to make any causal inference. Last, the Appeals Court accepted Telefónica's experts contention that market shares are solely driven by advertising.^{70,71} This is equivalent to saying that the largest advertiser would achieve the largest market share even if it dramatically raised its prices and offered a low quality service.⁷² Clearly, this would set apart Spanish consumers from the rest of the world and would indicate that 118AB advertising campaigns literally hypnotized them.

Regarding (iii), it was materially impossible to obtain an "exact" figure for total market size when we prepared our assessment. The judge could perfectly have asked us to update our findings,⁷³ which would not have changed by much.⁷⁴ The judge also seems to have been under the impression that underestimating the drop in market size had a dramatic effect on the estimated number of lost calls, which is not the case.

Conclusion (iv) contains both a contradiction with the rest of the judgment and a misinterpretation of the evidence presented in our report. Regarding the former, the judge explicitly recognized the CMT's finding that E-115 was an imperfect substitute to the data that Telefónica was supposed to provide.⁷⁵ Recognizing that E-115 was an imperfect substitute leads to the second point. Resorting to E-115 not only led to inflated costs, but it also deteriorated the quality of Conduit's services. In other words, it affected both costs *and* the residual demand faced by Conduit. Invoice-based pecuniary compensation (partially) deals with inflated costs (cf. Figure 1), but it does not address the issue of service quality.

Last, point (v) does not lend itself to an appraisal as it is an unsubstantiated appreciation. Recall that DQ services consists in providing accurate information on fixed line subscribers; data quality is therefore central. To us, a +/- 45% abuse induced drop in market share in neither "large" or "small;" it is simply the range yielded by our econometric estimates. As for robustness, we referred to it from an econometric perspective; apparently, the judge equated it with "exactness."

Related to this last point ("exactness"), our reading of the judgements is that, in Spain, cases such as this one set the legal standard for claiming abuse-related damages too high, and we anticipate, beyond the reach of a reasonable analysis. Both decisions allude to the fact that the direct causal

link between the abuse and the loss of market share had not been established beyond reasonable doubt.⁷⁶ Given the existence of an abuse, the underlying economic reasoning that a causal link *must* exist did not seem sufficient. As for quantification, we applied standard “but for” techniques that, by definition, cannot provide “exact” magnitudes, as the “but for” scenario corresponds to a *situation that has never existed*. As such, a “but for” approach can only yield an *estimate*. Summing-up, both Courts’ rulings introduce a very strong non-linearity: damages are only awarded if the proof is material and undisputable (e.g., consists of invoices for inflated inputs), while if they have been estimated, they are driven to zero. At the time of writing, an appeal had been lodged to the Spanish Supreme Court. One of the appeal’s principal motivation regards the interpretation of the economic evidence presented by Conduit.

It is clearly too early to say, but this apparent lack of understanding of basic economics and econometrics suggests that the application of Article 82 in private litigation may not yield the expected results, at least in Spain. Gavil’s (2008) thoughtful comments on the challenges facing national jurisdictions with respect to private enforcement are well illustrated in this case. The Spanish experience suggests that private enforcement will not be effective if systemic elements, such as the proper treatment of forensic evidence, are missing.

In addition, the small amount of damages awarded despite the clarity of the abusive behaviour raises the issue of deterrence. It is not unreasonable to think that award damages of this kind will have little, if any, deterrent effect.

Last, this case illustrates how vertically (and dominant) integrated incumbents bent on impeding entry can profitably achieve their ends. As mentioned in the Introduction, the *ex-ante* intervention of the regulator did not prevent the abuse, and the Courts’ *ex-post* award of a small amount of damages is unlikely to diminish the attractiveness of these highly effective anticompetitive practices. A closely related case also involving Telefónica regards broadband access via the fixed line network (ADSL). The EU Commission found Telefónica guilty of practicing a margin squeeze leading to losses for its competitors. Again, the intervention by the industry’s regulator (CMT) did not prevent the practice; in fact, Telefónica was applying interconnection charges that had been approved by the CMT. The difference with the Conduit case is that the EU Commission imposed a fine of €150 million, putting Telefónica among the rather exclusive club of firms being fined more than €100 million for anticompetitive behaviour.

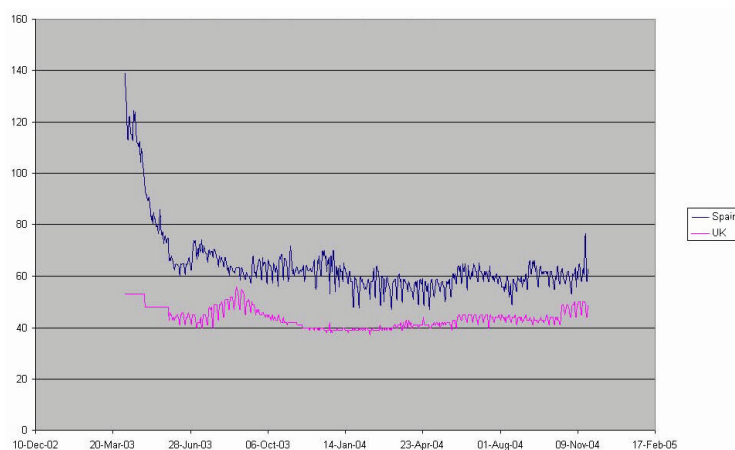
DATA APPENDIX

As indicated in Section 6, some of the variables either are not available, or not observed with daily frequency. In this appendix, we describe in detail how our regressors have been constructed.

PRICES

The price that we used in our analysis is the average price per call. Most companies have adopted a two-part tariff structure for their DQ services. The fixed component consists in a set-up call charge that is independent of call duration, while the variable part is typically a charge on the total number of seconds that the call lasts. A call's total duration is the sum of the Average Handling Time (AHT), plus the time spent queuing for an operator to answer the call. During launch, a number of operators (including Conduit) charged the per second rate only after the second minute, meaning that a call lasting less than 60 seconds (including queuing) would only cost the set-up (fixed) charge.

Graph A.1. Average Call Duration of Conduit, by Country



Conduit provided us with their daily AHTs and queuing times, as well as the structure of their two-part tariff (cf. Table A.1). We were thus able to compute daily average prices effectively paid by consumers. The average (total) call duration for Spain and the UK is shown in Graph A.1. As can be

seen, the evolution is quite similar across the two countries, except for the first three months where call duration in Spain is much higher than in the UK.⁷⁷

According to the CMT, average call duration in 2004 stood at 72.7 seconds. By September 2003, Conduit's monthly average call duration had fallen to less than 65 seconds, and remained below that level thereafter. Average call duration is one of the quality indicators used in the industry (the lower the better). Thus, on the Spanish market, Conduit was performing better than its peers along this dimension by end of 2003/beginning of 2004.

As can be seen in Table A.1., Conduit's price setting behaviour in the UK and Spain is quite similar:

	Set up call charge	2nd part tariff
UK	Until Nov. 2003: 0.285€	0.285€
	(first minute free)	61st second (billed by second)
	Nov. 2003-June 2004: 0.357€	0.285€
		1st second (billed by second)
Spain	From June 2004: 0.557€	0.128€
		1st second (billed by second)
	Until Sept. 2003: 0.300€	0.300€
	(first minute free)	61st second (billed by second)
	Sept. 2003-Feb. 2004: 0.300€	0.300€
		1st second (billed by second)
	From Feb. 2004: 0.390€	0.390€
		0.390€
		the 61st second (billed by second)

To compute the relative prices that appear in eqs. (2) and (3), it is necessary to identify Conduit's competitors and obtain their prices. For the UK, four numbers (BT, The Number, Yell and Maureen) are the competitors that we included in the empirical exercise.⁷⁸ For Spain, six numbers were deemed to be Conduit's competitors. The latter are TPI's 11888 (at the time TPI was a fully-controlled Telefónica subsidiary), Telefónica's two numbers (11818, and

11822; the latter started operating in July 2003), Telegate's 11811, Infotecnia (11824, that starts operations in June 2003) and Antena 3's number, 11843, that was launched in May 2004.⁷⁹

For Conduit's competitors, information on daily average call duration is not available. We approximated this variable by using data on yearly average call duration obtained from the CMT report for Spain (in Spain, the annual total number of minutes as well as the total number of calls is provided separately for each operator) and OFCOM report (which directly reports call duration by operator). Daily averages prices are then constructed using this measure of call duration and the publicly available tariffs. Thus, for these operators, variation in averages prices coincides with changes in their respective tariff structures (as call durations are fairly stable over time).

The prices charged in the UK by the principal operators are depicted in Graph A.2 (for reasons of confidentiality, they have been re-scaled). This visual evidence is consistent with the results of the test for the endogeneity of prices: the latter are set "mechanically" and are pretty constant over time.

Graph A.2. Re-Scaled Prices of the Main Operators, UK Market



ADVERTISING

The variable that measures advertising effort for each firm is its monthly gross expenditure in advertising (i.e. prior to discounts) in all outlets: TV, newspapers, radio, movie theaters, and street advertising. Data for the UK comes from Initiative UK, a market intelligence firm; the original data comes from the Nielsen Media Research Multimedia System. For Spain it comes from Initiative España; the original data comes from INFOADDEX, a specialist

provider of advertising data in Spain. We compute daily expenditures as monthly expenditures divided by the number of days in the month.

MARKET SHARES

We measure (quantity) market shares on the basis of number of calls. Estimation of equations (1) and (2) require data on “traditional” market shares, that is the percentage of the total number of directory enquiries made that went to Conduit. Estimation of equation (3) requires a different measure for market share. There, market share is defined as the percentage of calls going to Conduit but taking into account that not purchasing the service at all is also an option. For this equation, we also require an estimation of the total potential market (that also includes non-buyers that could potentially buy the product).

To compute “traditional” market share, we need both the number of calls going to Conduit as well as the total number of calls (observed market size). Conduit provided us with daily number of calls answered for both the UK and Spain. Unfortunately, we do not have this information for the other operators. Thus, we infer the daily total in a two-stage process: first, we estimate monthly total, and second, we compute the daily total number of calls as the monthly number divided by the number of days in the month.

The monthly number of calls in the UK is computed as follows. We use the fact that in October 2004, industry sources estimated that market size had fallen by 45% since the liberalization of the market. The number of calls in October 2004 was estimated to be 26.25 million. We assumed that the monthly reduction was proportional and constructed total market size in previous months accordingly.⁸⁰ We were able to cross-check our estimates with the figures provided by an independent consultancy. Performance House/118 tracker provides an estimate for monthly market size during the period December 2003-November 2004. Their estimate of total market volume over that time period stands at 378 million calls, while our estimate yields 370 million for the same time period. In addition, the correlation between the two monthly series is 0.9. We are therefore confident that we have used a fairly accurate measure of UK market size and its evolution. That market volume figure includes outsourcing services, that is calls attended on behalf of another company. We consider outsourcing as forming a distinct market, as it is not directed at final consumers. The market size we used for the UK nets out outsourcing calls from total call volumes. We divided monthly volume by the number of days of each month in order to get daily market size.

For Spain, we use information provided by the CMT to compute monthly total number of calls. For 2003, the CMT annual report indicates that call volumes stood at 127.26 million at year end. One year later, the same source reported that volumes had fallen to 99.7 million calls in 2004. We have assumed that this drop occurred month by month in a proportional manner. Since no company provides outsourcing services in Spain, no adjustment was made to total market size. Again, the daily volume of calls is computed by dividing monthly volumes over the number of days in the month.

To compute the market share found in eq. (3), we also need to define the potential market to account for those individuals that do not make any enquiry (that do not make any call), but that potentially could. We use the size of the market previous to the liberalization as a measure of the potential market in both the UK and Spain. The logic of this choice is the following: this figure represents the maximum possible demand at prices that are close (equal) to marginal cost (in both countries, the rate was regulated and adjusted to costs). For the UK (according to BT), the market volume stood at about 600 million calls a year at the time when the 192 number was abolished (August 2003). For Spain (according to the CMT), the total number of calls stood at 192 million in 2002. The size of the potential market (that is constant through time) minus the number of actual daily purchases yields the total number of non-buyers of the good.

Endnotes

- * Both of the authors acted as economic experts on the plaintiff's behalf. An earlier version of this paper was circulated under the title: "Computing Abuse Related Damages in the Case of New Entry: An Illustration for the Directory Enquiry Services Market." We would like to thank the Editor and an anonymous referee, as well as N. Fabra, P. Gagnepain, M. Hviid, J. Jaumandreu, D. Neven, and seminar participants at Universite de Lausanne, ECARES, Universidad del Pais Vasco, Universidad de Vigo, Universidad de Oviedo, the CEPR workshop on The Effectiveness of Competition Policy: Issues and Methods (Paris, 2005), the ACLE workshop on Forensic Economics in Competition Law Enforcement (University of Amsterdam, 2006), the EALE meeting (Madrid, 2006), and ACE workshop (Madrid, 2006) for useful comments and suggestions. Siotis gratefully acknowledges support from Ministerio de Educacion y Ciencia (SEJ2004-00670). Martinez-Granado gratefully acknowledges support from Ministerio de Ciencia e Innovacion (ECO2009-09120). We are also very grateful to Conduit's managers who guided us through the intricacies of this market. We would also like to give a special thanks to Paul Hitchings, partner in the law firm Cuatrecasas, who advised Conduit, the plaintiffs in the case which is commented on in this article, for providing support in collating materials related to the factual and legal background of the case. Corresponding author: Georges

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1. Since the entry into force of EU Regulation 1/2003, Spanish Commercial Courts can now award damages for violations of Article 82 (prior to that, firms suffering from anticompetitive practices could claim damages, but the process was slow and tortuous, as it required a firm decision, i.e. the appeals process had to have been exhausted).
2. The “Conduit case” has drawn the attention of the EU Commission. It is one (of only four) national cases that appear in the Commission’s web page under the heading “action for damages -> key documents” (see <http://ec.europa.eu/comm/competition/antitrust/actionsdamages/documents.html>). Last visited on 20 September 2008.
3. The material that we used to describe the legal and factual background to the case was provided by the law firm Cuatrecasas who represented the plaintiff.
4. All the translations of Spanish texts are our own.
5. Pursuant to Ministerial Order 711/2002 of 26 March 2002.
6. The requirement that basic subscriber data collected by telephone companies be provided at no cost (other than the cost of delivering that information to the recipient service provider) is a requirement pursuant to the Universal Services Directive (previously article 6.3 of Directive 1998/10/EC, now article 25.2 of the new Directive 2002/22EC) as interpreted by the European Court of Justice in its judgment of 25 November 2004 in the KPN case (Case C-109-03, *KPN Telecom BV vs. OPTA*).
7. The transitional terms were established pursuant to a Resolution dated 28 June 2002 and later confirmed, employing a new automated, on-line delivery and download system, by Circular 2/2003 of September 26.
8. E.115 is an internationally recognized protocol used by telephone companies primarily to permit on-line searches of their subscriber databases by foreign telephone companies in order to facilitate the provision by those foreign operators of international directory services in their own country. It is not normally used for the provision of competitive national directory enquiry service since it is costly and less efficient than obtaining downloads of data onto the service provider’s own systems.
9. This judgment is under appeal by the State Lawyer acting for the administration, i.e. defending the CMT’s prerogative to declare an abuse.
10. So, for example, at page 30 of the decision, the CMT states: “This high market share in terms both of numbers of public fixed telephony lines in service and of clients, gives TELEFÓNICA a privileged position to access the data of almost all the public telephony subscribers in Spain, data which is essential for the provision of directory enquiry services (the object of the current analysis) and the access to and handling of which represent one of the principle barriers to entry for its competitors.”
11. “...as explained, the data provided by TELEFÓNICA via the CMT differs greatly in quality and content to that which TELEFÓNICA offers through its 11818 service. Indeed, as we

have been able to confirm, CONDUIT does not provide in its service information which is made available in the 11818 service, a situation which obliges it to seek recourse to alternative sources of information (E.115 database), with the consequent economic cost, as will be detailed below...,” interim measure decision adopted by the CMT, June 26.

12. In September 2003, the CMT services stated that ‘Telefónica’s conduct: “...has prejudicial effects on the market for directory enquiry services, and this is so because the availability and exactitude of data constitute critical factors for competition in the provision of these services to the public, especially with regard to the image that the customer can have of the service, as well as in relation to the consequent loss of revenues which it equally suffers owing to the reduction in enquiries.”
13. Sentencia No. 85 de 11/11/2005, Juzgado de lo Mercantil No 5, Madrid.
14. Audiencia Provincial de Madrid, Sección N.28, Sentencia 00073/2006 de 25/05/2006.
15. Given that the unit price is slightly below 1€.
16. There is a third view on advertising, namely that it is a complement to the good being purchased (e.g. the utility derived from consuming a luxury good increases because it is socially perceived as such because of advertising). This third category is not applicable to the 118AB market.
17. Industry regulator OFCOM does not provide information on market shares. The UK figures appearing in the text have been obtained from the press (BBC online) and specialized information providers (e.g. 118tracker).
18. This holds irrespective of whether market size is approximated by number of calls, total minutes, revenue, or total number of enquiries (the latter may differ from total calls as a single call may result in two or more enquiries).
19. CMT Resolution of March 6 2003, later upheld by CMT Resolution of September 26.
20. Many compulsory fields were left empty or were inaccurate (e.g. a fax instead of a phone number would appear in the extraction process, or when more than one number was associated with a commercial or administrative entity, it did not stipulate which was the main one).
21. It should be noted that the Telefónica Group is highly unlikely to face such a constraint in any case.
22. Conceptually, RRDC and QD may be considered indistinguishable, as a single action produces one outcome. In practical terms, the distinction between RRDC and QD is useful, as we have directly observed some of the direct costs associated with Telefónica’s actions aimed at RRDC, while the “indirect effect” (QD) is econometrically estimated.
23. This claim holds irrespective of whether Telefónica’s market share is computed on the basis of number of calls, minutes, or revenue.
24. Throughout their paper, Farrell and Klemperer frame the discussion in terms of switching costs. However, they indicate (2007:1977) that the same conclusions hold in the presence of search/learning costs.
25. The correspondence between current market share and future discounted profits is strongest when agents share the same technology, i.e. face similar costs.

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26. In general terms, the marketing literature (see, for instance, Kotler, 1997) indicates that in order to attract a new customer, it is necessary to spend five times more on advertising as compared to maintaining a client who already buys the product. This order of magnitude is consistent with the experience of Infotecnia, a late entrant on the Spanish DQ market (launched June 2003). Despite heavy advertising in 2003-04 (26.6% of total spent in 2004) and about-average prices, its market share stood at 4.8% at the end of 2004 (cf. Table 4).
27. This always holds, since profit maximization in the absence of abuse implies that $BCDE > ABD$.
28. The construction of these market shares is described in the Data Appendix.
29. Again, this obtains immediately: in the absence of abuse, p^1 and q^1 maximize profits; therefore p^* and q^2 yield lower gains.
30. We are aware of the intrinsic limitations of building an acceptable counterfactual. We are grateful to an anonymous referee for reminding us of Preston McAfee's (1983) seminal contribution in that respect, and can only hope that our "but for" scenario is credible.
31. However, the existence of the abuse does not preclude using Spanish data to identify seasonal effects affecting demand (e.g. Bank Holidays).
32. The fundamental reason is that we need to capture the idiosyncrasies of a market characterized by first time entry and a launch period dedicated to building a customer base. Calibrating a model carrying out comparative statics exercises would not permit a proper treatment of this (crucial) initial phase.
33. Conduit's experience in markets other than the UK (e.g. Switzerland or Austria) presents some serious drawbacks to be used to construct the "but for" scenario. Apart from the fact that the time periods do not coincide, the main limitation is that in these other countries, liberalization has been incomplete. However, it is important to note that Conduit already had extensive experience in terms of entering foreign markets in which it had to operate in a different language than that of its country of origin.
34. At the beginning of the period, the high effective prices charged by Conduit on the Spanish market are due to inflated call durations derived from the abuse (cf. Data Appendix).
35. There has been a complaint against BT filed by the new entrants. The core of the case was whether BT had abused its dominant position by advertising its new number in the paper edition of the phonebook. A detailed enquiry, which included the use of econometric techniques, was carried out. The case was closed without penalties, as it was established that BT's conduct had no material effect on competition (Decision of the Director General of Telecommunications, case CW/604/03/03).
36. As can be deduced from the industry description provided in Section 2, providing DQ services is a relatively "simple" activity. *A priori*, there is no reason to think that, for DQ services, Conduit's competitors in Spain (and in particular, Telefónica) were intrinsically superior to Conduit's rivals in the UK. If anything, competition was tougher in the UK, as evidenced by the dramatic growth experienced by The Number.
37. In April, four new numbers were active; in July 2003, six numbers were quoted.

38. The imposition of a “carrousel” by the CMT was motivated by the desire to facilitate entry in view of the impediments that new operators had faced as a consequence of the incumbent’s behaviour prior to the launch date.
39. Note that not controlling for the “carrousel” biases downwards our estimate of Conduit’s abuse-free market share in Spain.
40. We are grateful to an anonymous referee for pointing this out.
41. Higher internet penetration in the UK suggests that the market is probably more competitive as compared to Spain. All else equal, this would make entry into the Spanish market easier.
42. The results that we present in the paper are not identical to those presented to the Fifth Commercial Court. The main difference is that some additional information became available ex-post which allowed us to replace estimates with actual values. Also, the issue of endogeneity is more extensively dealt with. These modifications did not lead to any substantive change with respect to the quantum of damages. Also, as made clear in section 9, the rulings were not hedging on fine issues pertaining to the econometric specification.
43. The experience of other countries that have liberalized their DQ services indicate that there is clearly room for more than one large operator in Spain. In Norway (a much smaller market, with less than 60 million calls in 2002), two firms have successfully challenged the incumbent (see Norwegian Post and Telecom Authority, 2003).
44. In attraction models, the market share of a brand is determined by its attraction, A_{jt} , with respect to the sum of all attractions, $MS_{it} = \frac{A_{it}}{\sum_{j=1}^J A_{jt}}$. The attraction of a brand depends on the mix of its own and competitors’ marketing variables.
45. Apart from specifications (1)-(3), we estimated our market share equations with an alternative set of regressors (e.g., by using a time trend and its square instead of a yearly dummy, or with alternative values for potential market size in the logit specification). This additional set of results yielded very similar estimates.
46. It could of course be the case that UK and Spanish operations were managed differently. In practice, the same team managed operations in both countries.
47. The robust standard errors use a kernel (Newey-West) based heteroskedasticity and autocorrelation consistent (HAC) estimation procedure.
48. Clearly, this information is incomplete, as it does not take into account prices. However, given that Telefónica’s prices (and in particular, TPI’s) are among the highest, the inference that can be drawn from Table 4 would not vary had prices been properly taken into account.
49. Note that this second exercise provides a “lower bound” to the “lower bound” of lost profits derived from the abuse. As argued above, all estimates are obtained from “below;” in addition, competition was probably tougher in the UK. Thus, this second exercise underestimates by a large margin the profits that Conduit would have obtained on the Spanish market.

50. The procedure produces consistent estimates of the seasonal effects, since there is no reason to think that the abuse followed any seasonal pattern.
51. In the multiplicative model (eq. (2)), the explanatory variable is the log of advertising and the instrument is the log of competitors' advertising.
52. A simple regression of Conduit's advertising on these instruments yields a R^2 of 0.68.
53. Note that we therefore control for the fact that Conduit's advertising effort has been lower than Telefónica's TPI.
54. We choose OLS over GMM because of the reduced sample size with monthly data (19 observations).
55. The use of profitability measures in antitrust cases has been heavily criticized (see Fisher, 2008). However, note that we do not use indicators of individual firm profitability, but the average for a market where efficiency differences between firms are small or (economically) irrelevant. More importantly, we only use average margins as corroborating evidence compatible with the existence of an abuse.
56. In the case of Spain, this underestimates average prices, since the larger operators (TPI and Telegate) charge higher prices.
57. The price of the regulated number (11818) was maintained at 0.355€ from Apr. 2003 to July 2005, when the price of 11818 was liberalized, and Telefónica raised it to 0.55€.
58. This industry-wide information is corroborated by Conduit's own EBIDTAs.
59. "There is no doubt that the bad quality of the data supplied by the defendant initially affected the quality of the information service offered by the plaintiff via its 11850 number and that it could have affected its market share, to the extent to which a client unsatisfied with the information would with difficulty turn to that number again should they wish to use such service again" (page 67, Judgement 85, 11/11/2005, Madrid Fifth Commercial Court).
60. "Despite the fact that taking the UK market as a reference to compute lost market share can be accepted, the conclusion of the experts' report has to be dismissed for various reasons" (page 68, First Instance Judgement). It is further recognized (p. 68) that differences in absolute market size are not a valid reason to reject the yardstick approach, as the estimates are obtained using relative values (market shares).
61. "It is a notorious fact known by any consumer that the market for directory enquiries, as affirmed in the plaintiff's expert report, is characterized by the existence of 'search costs' or, put in a way that can be understood, that no consumer will employ time and much less money to search for the best offer between competitors when he has to locate a directory enquiry number, given the reduced price of the service and the tiny percentage it represents of his income, much less so given the price changes," (pages 69-70, First Instance Judgment) and "since their directory enquiries represent a minimal yearly expenditure, [consumers] do not have significant incentives to search for the lowest price" (page 11 of the Appeals Judgement).
62. To our great dismay, we cannot comment on the specifics of the economic report provided by Telefónica's experts because of confidentiality issues.

63. The difference between the independent expert's estimate and ours is that we included estimated monthly losses from the launch date till the first instance ruling. The independent expert argued that the effects of the abuse were bound to have disappeared a few months after launch.
64. The judge's valuation of the forensic evidence is limited to pages 67-72 of the ruling.
65. It should be noted that the poor training of Conduit's personnel was pure conjecture not backed-up by any hard fact. The only evidence provided consisted in a newspaper extract.
66. These arguments were accepted at face value by both Courts, and used our report (sic) to make this claim. On p. 70, the First Instance ruling reads: "The report [Conduit's] includes a table with the advertising expenditures of the different operators and shows that expenditures of the actor during the period (Jan. 2003 to Nov. 2004) are not only substantially inferior to the expenditures of the numbers 11811, 11822, 18824, 18888 (...)" while the Appeals' Court states (p. 11): "The report [Telefónica's], apart from analysing prices, reproduces the relation between advertising expenditures and market share via a series of graphs corresponding to each competitor, in which it can clearly be seen an absolute relationship, such that when spending on advertising increases, there is an increase in market share, also, as is obvious, in the case of Conduit." And further (p. 12): "What the defendant's [Telefónica's] report explains is the precise relationship between advertising and market share in the Spanish market, and it does so as we have seen with absolute clarity." Both rulings then go on explaining that the evolution of Conduit's market is explained by its lower level of advertising expenditures.
67. According to the CMT, at year end 2003 market size stood at 127.26 million calls per year and had dropped to 99.69 million calls at year end 2004. Our estimates yielded 114.5 million calls for 2004.
68. "The [Conduit] report claims that because of the poor quality of the data, the plaintiff lost no less than 45% of the calls that it would have received had the accused provided the data according to the legal requirements" (page 71, First Instance Judgement).
69. The claim of the lack of experience in the Spanish market was based on the fact that the Spanish service was a new service and that the teleoperators did not have prior experience in providing DQ services in Spain. It should be noted that the use and rotation of staff in call center operations is a fact of life for these kinds of service and is not a factor which is identified as a competitive barrier in the DQ market (see for instance, Analysys Consulting, 2002, produced as evidence in the case).
70. At the cost of being repetitive, the Appeals ruling states: "What the defendant's report explains is *the precise relationship* between advertising and market share in the Spanish market, and *it does so as we have seen with absolute clarity*" (p. 12, emphasis added).
71. Telefónica's economic experts presented empirical results where advertising was reported to have a statistically significant effect on market share, but price did not.
72. As a side point, the information provided in Table 4 clearly indicates that advertising effort cannot be the only determinant of market share.
73. It only required changing the market size figure in a Stata routine.

74. The damage estimates reported in this paper use the “correct” figure published by the CMT during the course of 2005. This second set of damage estimates that we obtained with the updated figure are almost identical to the ones that were presented to the First Instance Court.
75. Page 51 of the ruling states that “it is evident that it could not provide the telephone subscriber information service if it did not have access to the numbers and identity of the subscribers in the terms established in the sector regulation.” Indeed, regulation imposed a requirement for data downloads to be provided to DQ providers precisely because using on-line searches limits the ability of a DQ provider to order, search and exploit the data using its own technology and know-how and, therefore, limits its ability to compete (cf. Ministerial Order 711/2002, as well as prior CMT decisions that confirmed this approach, e.g. CMT Resolution of 12 February 1998).
76. For instance, the Appeals’ ruling (p.12) states that: “it is not possible to attribute the alleged damage to non-compliance [on the part of Telefónica] because there exist diverse factors, some of which are essential, that prevent establishing *a certain connection, devoid of doubts and insecurities*, between the illicit practice and unrealised gains” (emphasis added).
77. The longer duration of calls in Spain, beyond the initial three months, is a general phenomenon that is not specific to Conduit: on average, calls are 10 seconds longer in Spain as compared to the UK.
78. According to OFCOM’s (2004) study of service quality, there were at least 30 active providers. The report “118 Tracker” prepared by independent market intelligence firm Performance House, estimated that four numbers (BT, The Number, Conduit, and Yell) represented more than 93% of total volume.
79. The CMT reported that, at the end of 2003, 95% of calls were concentrated in four numbers: TPI, Telefónica’s two numbers, Telegate, and Conduit. The other two numbers gained market share in 2004.
80. More precisely, we assumed that volumes in October 2004 were equal to 26250000 monthly calls, and that they stood at 50416666 in March 2003. We applied a proportional monthly reduction between these two dates.

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