

# Antitrust Update: DG Competition 2007–2008

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**Abstract** This article discusses some significant developments in the enforcement activities of the Directorate General for Competition at the European Commission, during 2007–2008, focusing on two main themes: non-horizontal mergers and two-sided markets.

**Keywords** Antitrust · Mergers

## 1 Introduction

This year's report focuses on two main themes: non-horizontal mergers and two-sided markets. Last year's report described the draft non-horizontal merger guidelines published by the European Commission in February 2007. After a public consultation the Commission adopted the guidelines in November 2007.<sup>1</sup> Although the public consultation did lead to some changes, the thrust of the guidelines remains unchanged.

The Commission had the opportunity over the course of the last year to apply the guidelines in depth to three vertical merger cases (*TomTom/Tele Atlas*, *Nokia/Navteq* and *Itama Holding/Barcovision Division*) that all had led to “serious doubts”<sup>2</sup> about potential anti-competitive effects. These mergers were cleared without remedies after in-depth investigations. The *Google/DoubleClick* merger, which was also

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<sup>1</sup> Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings. The Guidelines can be found on the website of DG Competition: <http://ec.europa.eu/comm/competition/mergers/legislation/nonhorizontalguidelines.pdf>.

<sup>2</sup> “Serious doubts” is the legal standard for taking a merger case into “Phase II”, the four month in-depth investigation following the initial one month “Phase I” investigation.

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cleared, raised both vertical and conglomerate effects. We discuss these cases in turn.

The online advertising markets analysed in *Google/DoubleClick* bring together web publishers and advertisers and had a two-sided dimension, which however did not prove essential for the analysis of the anti-competitive concerns. Two sided features were central in two investigations. First, the *Travelport/Worldspan* merger concerned so-called “global distribution systems”, which are technical platforms that match travel content provided by airlines, hotel chains, and car rental services with the demand for such content conveyed by travel agents. Second, in its *MasterCard* decision, the Commission concluded that MasterCard’s (cross-border) multilateral interchange fees, essentially a payment from one side of the market to the other which is collectively determined, raised anti-competitive concerns and that MasterCard had not shown that efficiency benefits were sufficient to conclude that consumers would be better off.

## 2 Input Foreclosure in Vertical Mergers

The Commission considered three purely vertical mergers that raised similar concerns in terms of input foreclosure. Two of those mergers—*Tom Tom/Tele Atlas* and *Nokia/Navteq*—involved duopolists that were supplying close substitutes in the market for digital maps, and the Commission’s investigations involved similar quantitative techniques. The third case, *Itama Holding/Barcovision Division*, involved a more qualitative assessment. These decisions illustrate that the non-horizontal merger guidelines provide a framework for the assessment of vertical mergers that can be validated with a variety of empirical techniques.

### 2.1 Digital Maps: TomTom/Tele Atlas and Nokia/Navteq

A navigable map database is a compilation of digital data from a number of sources, including aerial photographs, satellite images, and official government sources. The features of each road in the database have to be recorded manually. This involves operating field forces using a fleet of customized vehicles that drive along each road in the database. The use of field surveys is crucial for the accuracy as well for the completeness of the databases, for example, to capture navigation attributes such as turn restrictions or speed limits. Compiling and processing the data necessary for a navigable map database is a very time-consuming process that would take several years. Besides Tele Atlas NV, only one other company, the Navteq Corp., supplies navigable digital map with a similar level of precision, attributes and geographical coverage.

*TomTom/Tele Atlas* was a case of backward integration, where a downstream manufacturer (TomTom NV) acquired one of its input providers (Tele Atlas NV). TomTom integrates navigable digital map databases that it purchases from Tele Atlas into the navigation software it produces. The integrated product (software and database) is

then included in the Portable Navigation Devices (PND) that TomTom sells to end-consumers.<sup>3</sup>

In the downstream market for PNDs, a large number of companies have entered over the last few years, but TomTom remains the largest player in Europe.<sup>4</sup> The second case involved the acquisition of Navteq by the Nokia Corp., which is active in the supply of mobile phone handsets that may include navigable maps. Nokia was a leader in the mobile handset market with a market share of around 40%, similar to that of TomTom in the PND market.

Both cases involved a concern of input foreclosure such that the merged entity would deteriorate access of navigable digital maps to competitors downstream, namely PND in the case of *TomTom/Tele Atlas* and mobile phone manufacturers in the case of *Nokia/Navteq*. We discuss the former in some detail and summarize differences between the two investigations.

(i) TomTom / TeleAtlas

The theory of harm considered both total and partial input foreclosure. Total foreclosure would consist in the integrated company's stopping supplying TomTom's downstream competitors, such that these would be faced with only Navteq as a supplier of digital navigable maps. Such a situation would naturally entail the possibility of Navteq increasing its prices. Partial foreclosure would consist in the integrated company increasing prices or degrading the quality of the map or delaying map updates to TomTom's competitors.

The profitability of an input foreclosure strategy results from a trade-off between profits lost upstream and profits gained in the downstream market. As recognized by the guidelines, whether the merged entity would have an incentive to undertake input foreclosure is thus inherently an empirical issue. Some aspects of the market features appeared to support this theory of harm. Both Tele Atlas and TomTom had high market shares on their respective markets, and more profit was made on the sale of a PND than on the sale of a map. Capturing a relatively limited amount of business downstream might therefore be sufficient to make it profitable for the merged entity to forgo sales upstream.

In order to further assess the profitability of an input foreclosure strategy by the merged entity, the Commission estimated downstream elasticities to calculate how much sales TomTom would be able to capture downstream with such a strategy. Downstream elasticities were estimated using a nested logit demand system following [Berry \(1994\)](#). The estimated nested logit is a discrete choice demand system, where the utility  $u$  of consumer  $i$  for good  $j$  belonging to group (or nest)  $g$  is given by:

$$\begin{aligned} u_{ij} &= \delta_j + \zeta_{ig} + (1 - \sigma)\epsilon_{ij} \\ \delta_j &= x_j\beta - \alpha p_j + \xi_j \end{aligned}$$

<sup>3</sup> TomTom also sells the integrated product to other manufacturers of navigation devices for inclusion in their devices. However, the Commission's investigation focused on the PND market.

<sup>4</sup> Since Tele Atlas and TomTom are not active in the same markets, the case did not raise any horizontal concerns.

Heterogeneity among consumers is introduced in the model via the inclusion of a separable, additive, random shock,  $\epsilon_{ij}$ . If this shock is identically and independently distributed among individuals according to a Type I extreme value distribution, then the market share of a good  $j$  within the nest coincides with the probability that an individual buys that particular good, given that he is buying a good from the nest.

$\delta_j$  is the mean utility for good  $j$ . It depends on the observed product characteristics  $x_j$  and on the unobserved (by the econometrician) characteristics  $\xi_j$  while being negatively related to the price ( $p$ ) of good  $j$ .  $\zeta_{ig}$  is a common shock to group  $g$  for individual  $i$ .  $\sigma$  is a parameter between zero and one, which captures within group correlation of utility levels. The nest structure is meant to relax the assumption of independence of irrelevant alternatives (IIA) according to which consumers switch to each good in proportion to the good's market share. With the inclusion of nests, the IIA assumption only holds within each nest, which is somewhat less restrictive.

The following expression derived by [Berry \(1994\)](#) was estimated to obtain the nested logit utility parameters  $\alpha$ ,  $\beta$ , and  $\sigma$ :

$$\ln(s_j) - \ln(s_0) = x_j\beta - \alpha p_j + \sigma \ln(s_{j/g}) + \xi_j,$$

where  $s_j$  denotes the share of good  $j$ ,  $s_0$  denotes the share of the outside good, and  $s_{j/g}$  denotes the share of good  $j$  in nest  $g$ . In addition, year and manufacturer fixed effects were included in the base regression, as well as fixed effects for each month since the introduction of the product. The model was estimated with retail data covering monthly sales and volumes at the product level (that is, stock keeping unit), during the period 2005–2007. The dataset also contained a detailed description of each device's characteristics, such as the presence of an MP3 player, the presence of Bluetooth, and the size and format of the screen. The nest structure of the base regression was defined on the basis of a premium and non-premium segmentation.

In order to control for possible endogeneity of the coefficients  $\alpha$  and  $\sigma$ , the model was estimated using instrumental variables. In particular, the base specification employed the share of other products with a media player and the share of other products with Bluetooth as instruments. Both characteristics were selected for a priori relevance and simplicity. The first stage regression indicated that both instruments were significantly correlated to the price and the share of the good in its nest. The use of additional instruments, such as the size and the format of the screen, led to similar results.

As expected, the estimated price coefficient was significantly negative, and  $\sigma$  was between zero and one. Using these estimates, own price elasticities, as well as the inter- and intra-nest elasticities for each product, were recovered.<sup>5</sup> The elasticities were then used to measure the impact on TomTom's sales of a percentage price increase of all other products except that of the main downstream competitor Garmin Ltd., who had

<sup>5</sup> See [Verboven \(1996\)](#), who derives the elasticity formulas in the more general case of two nest levels. The calculated product-level own price elasticities were estimated to be  $-2.75$  on average (weighted by volume). Based on the product-level own-price elasticities and the estimated inter- and intra-nest elasticities for each product, brand-level elasticities were also estimated. The estimated brand-level elasticities, which were lower than the product level elasticities since some switching takes place within the brand, were consistent with observed margins.

a long-term contract with Navteq. The results indicated that if all other PNDs except Garmin were to increase their prices by 10%, TomTom's sales would increase in the range of 3–5%.<sup>6</sup>

Using these econometric estimates and other industry data, the Commission calculated that the critical price increase by Navteq that would make a foreclosure strategy profitable for the merged entity was more than 400%. Such a price increase by Navteq appeared unrealistic and might trigger entry.<sup>7</sup> The Commission also calculated that the integrated company would not raise map prices to TomTom's competitors in a way that would have a significant effect downstream (partial foreclosure), even if Navteq was assumed to match any price increase by the merged entity.

In order to estimate the overall impact of the proposed transaction, the Commission simulated pre- and post-merger equilibrium prices with a simple linear demand model. The model indicated that the vertical integration of TomTom and Tele Atlas would lead to a small decrease in average PND prices as a result of the elimination of double marginalisation. Indeed, the vertical integration of TomTom and Tele Atlas would allow the merged entity to internalise the double mark-ups resulting from both parties' setting their prices independently pre-merger, thereby allowing the merged entity profitably to expand output on the downstream market.

TomTom argued that the operation would allow the integrated company to compile "better maps faster" since the feedback TomTom receives from its users could be used to improve maps and update them more frequently at lower cost. Part of these data could possibly be exchanged between the parties through contractual means. However, the Commission concluded that the non-integrated companies were unlikely to improve the map production process with the use of TomTom's data to the same extent as the integrated company given the required investments' specificity and contract incompleteness in a rapidly evolving and uncertain environment. Although difficult to quantify precisely, these efficiencies did constitute an important pro-competitive effect of the merger.

A related issue concerned the potential access by TomTom to its competitors' confidential information. Confidentiality concerns are similar to product degradation since PND manufacturers would see Tele Atlas' map as less valuable if they feared that Tele Atlas would leak their confidential information to TomTom. The upstream/downstream profit trade-off described above actually implies that Tele Atlas would have no incentive to exploit confidential information but rather to solve these confidentiality concerns. Indeed, quality degradation is less attractive for the merged entity than a price increase since, for a given price increase by Navteq, quality degradation would not bring the higher margins on the maps that it would continue to sell.<sup>8</sup>

<sup>6</sup> Numerous robustness tests were carried out, in particular with respect to the nest structure, the choice of instruments and the total market size (that is, including the outside good). Similar results were also obtained by estimating a very simple Almost Ideal Demand System aggregated in three brand categories covering TomTom, Garmin, and all others.

<sup>7</sup> The minimum viable scale for a new entrant was found to be rather low, and the market was growing.

<sup>8</sup> In addition, the Commission studied the type of information exchanges between PND manufacturers and map makers—in particular with respect to innovation—and concluded that the information that PND manufacturers reveal to their map supplier is relatively infrequent and/or of generally limited strategic importance.

The economic analysis therefore showed that the merger was unlikely to lead to higher prices or lower quality to the detriment of consumers. On the contrary, the vertical integration of TomTom and Tele Atlas was likely to create efficiencies to the benefit of consumers because of the internalization of the double mark-ups resulting from both parties setting their prices independently pre-merger.<sup>9</sup>

(ii) Nokia/Navteq

One major difference between the two cases was that navigable digital maps are not as essential for mobile handsets as for PNDs, whose primary function is navigation. Navigation capabilities are only one factor among many others that determine the choice of a mobile handset. Consumer surveys indicate that other characteristics, such as the presence of a camera, connectivity, and music features are much more important elements. In addition, a large number of location-based services (LBS) can be provided without relying on navigation (for example maps and city guides, friend-finder, local search). No concern arose for LBS services that do not rely on navigation since non-navigable maps can be obtained from other sources (such as government agencies) and barriers to entry for the supply of non-navigable maps are low, as they do not require operating a fleet of dedicated vans to capture navigation attributes.

Hence, one could expect that, relative to the previous case, the merged entity would obtain fewer sales downstream as a result of input foreclosure. Only the segment of consumers interested in navigation would be affected, and they may have alternatives.

In order to assess the matter further, demand estimation was undertaken using an approach similar to that used as in the *TomTom/TeleAtlas* case while allowing for the specificities of the demand structure. The elasticities were estimated using a nested logit model (using handset characteristics as instruments) while defining nests according to whether the handset is GPS-enabled or not. This allowed for an estimation of the extent to which Nokia would gain both in terms of substitution to its GPS-enabled products and in terms of substitution to its non-GPS-enabled products, following an increase in the price of its competitors' GPS-enabled handsets.

Using these econometric estimates and other industry data, the Commission found, as in *TomTom/TeleAtlas*, that downstream sales captured by the merged entity by raising its rivals' costs would not be sufficient to compensate for the lost upstream profits.<sup>10</sup>

## 2.2 Itema Holding/Barcovision Division

This case concerned the acquisition of the BarcoVision division ("BarcoVision") of Barco NV, which is active in the markets of optical detection (sensors), inspection

<sup>9</sup> Finally, the Commission also considered the possibility of coordination between the merged entity and Navteq. In this respect, vertical integration may increase the scope for coordination, to the extent that it limits the non-integrated company's incentive to deviate but may also increase the scope for coordination by reducing the scope for retaliation against the integrated firm (see [Nocke and White 2007](#)). However, in this case, the market investigation indicated that Navteq and Tele Atlas compete intensely and that market characteristics are not prone to coordination.

<sup>10</sup> Concerns about quality degradation could also be dismissed on the ground that quality degradation was less profitable than a price increase.

systems, and computerized production management (mainly for the textile industry), by IteMa Holding (“IteMa”), an Italian holding company that controls companies that manufacture textile machinery. The acquisition raised vertical concerns as BarcoVision supplies sensors that are used as an input for the winding machines (“winders”) produced by IteMa and its competitors. Winders transfer yarn from spinning bobbins to larger packages. The sensors essentially detect and excise defects in the yarn.

In the upstream market for sensors, there were two main producers of sensors for winders: BarcoVision and Uster Technologies AG, with Uster being somewhat bigger than BarcoVision. In addition, Keisokki Kogyo Co., Ltd. was a small Japanese sensor manufacturer that mainly focused on retrofit business and used an older technology. Premier Evolvics Pvt. Ltd. was a recent Indian entrant. In the downstream market for winders, there were two main manufacturers (Murata Machinery, Ltd., and Oerlikon Schlafhorst GmbH) in addition to IteMa and some smaller Chinese manufacturers.

In this case, it was not feasible to conduct a reliable econometric analysis of elasticities downstream to assess the incentive to undertake input foreclosure. Precise and robust elasticity estimates could not be obtained given the available data and a lack of appropriate instruments.

Concerns about input foreclosure could still be alleviated on the basis of the following observations: The percentage markups downstream were of an order of magnitude smaller than those upstream. Hence, even if elasticities downstream were large, it was unlikely that the loss of upstream sales and profits would be sufficiently offset by additional profits downstream. A simple calibration confirmed that given the observed markups and the share of the sensors in the total cost of winders, it would take both extreme elasticities downstream and a large price increase by Uster in order to make input foreclosure profitable.

Such an assessment, which relies on few observations and strong structural assumptions, should be considered merely as a first indication. Evidence on the prospect for vertical integration by Schlafhorst and/or Murata through in-house development of sensors in the event of a significant price increase, however, provided additional comfort. Although vertical integration by Schlafhorst or Murata might require some time to materialize, the market investigation indicated that this threat appeared credible, in particular in light of the vertical integration of Schlafhorst in spinning. Should Uster increase prices as a result of an input foreclosure strategy by the merged entity, Schlafhorst and Murata would have a strong incentive to integrate. This would lead to important revenue losses for Uster and the merged entity. In addition, Premier appeared to be a committed entrant, whose presence might further limit Uster’s incentive to raise prices to an extent that would make foreclosure profitable for the merged entity. Overall, it therefore appeared very unlikely that end-customers would be harmed as a result of input foreclosure by the merged entity.

This case illustrates that in the absence of reliable quantitative analysis concerns about input foreclosure can be investigated by qualitative information. A coherent narrative on the prospect for input foreclosure (or lack thereof) could be validated by the market investigation. The anticipation that vertical integration would be triggered by input foreclosure was particularly significant in this case. While it appeared that vertical integration might take several years to materialize, the market investigation nonetheless indicated that it did constitute a credible threat that would prevent upstream

suppliers from increasing prices significantly, hence eliminating any incentive for the merged entity to engage in foreclosure.

### 3 Vertical and Conglomerate Effects in Google/DoubleClick<sup>11</sup>

The online advertising industry involves Internet publishers, who sell advertising space, and advertisers who wish to place their ads. In some instances, they trade directly (in particular regarding the premium space of large publishers), but increasingly the matching between publishers and advertisers is undertaken by dedicated platforms. These can be thought as two-sided market goods, obtaining revenues from publishers and advertisers.

Unlike the *Travelport/Worldspan* merger discussed below, which involved some horizontal concentration at the level of the platforms, the *Google/DoubleClick* merger involves complements. Google Inc. is active as a publisher with its own search engine web page Google.com and as an intermediary with its ad network AdSense. Google sells only space for search-based text ads<sup>12</sup> on its own web pages, while it offers space for both search-based and contextual text ads<sup>13</sup> on the websites that participate in the AdSense network. DoubleClick, Inc. provides ad serving technology used to deliver ads onto websites and to produce performance metrics for these ads.

Once ad space has been sold by a publisher to an advertiser, either directly or through an intermediary, both parties need to ensure that the right ad appears on the publisher website at the right place at the right time. This is undertaken by ad serving tools, which also measure the performance of the ad placement by tracking the behaviour of users. DoubleClick's technology is mainly used for graphical display ads, using sophisticated reporting metrics that are generally not offered in the context of text ad serving.

Google and DoubleClick are thus not direct competitors and sell complements. The merger could involve vertical and/or conglomerate effects. Leaving aside search-based ads, the merger would involve conglomerate effects because Google and DoubleClick offer two products (intermediation and ad serving) that are both used for online advertising; the merger would also involve vertical effects, because ad networks competing with AdSense use ad serving technology to serve the ads on their platforms.

The question of whether the consequences of the mergers on competition should be analysed in terms of conglomerate or vertical effects depends on the identity of the buyer; if final users buy a matching technology separately from the ad serving technology, the effect of the merger is best considered in terms of the sale of complements by the merged entity. By contrast, if sellers of matching technology integrate ad serving into the product that they sell to final users, the merger is best thought as involving vertical issues.

<sup>11</sup> See also the discussion in Baye et al. (2008).

<sup>12</sup> Search ads appear next to the result of search queries entered by Internet users into Internet search engines.

<sup>13</sup> Contextual ads are selected according to the content of the page on which they appear.

The market investigation suggested that the dominant business model was changing towards integration of ad serving and matching technology. This was indeed one of the rationales for the merger. In fact, Google claimed that the acquisition of DoubleClick would enable it to accelerate the offering of display ads on AdSense. The second rationale was to gain access to DoubleClick's publisher base and exploit DoubleClick's knowledge of publishers in order to improve the attractiveness of AdSense for them. As a result, the investigation considered the effect of the merger mostly in terms of input foreclosure, with the hypothesis that DoubleClick's strong position in ad serving could be used to strengthen its position in intermediation.

With respect to search ads, the matter is different, to the extent that DoubleClick's products are not used in the context of search ad intermediation. Potential harm can then arise as the result of contingent sales (bundling or tying) of products that are unrelated in demand, in the presence of a strong position for one product (search ads). We consider both hypotheses of harm in turn.

### 3.1 Leveraging DoubleClick's Position to Acquire Market Power in Intermediation

One theory of harm was that Google post-merger would be able to leverage DoubleClick's leading position in ad serving to become the dominant intermediation platform for online advertising. This would happen through the implementation of exclusionary price and non-price strategies, including (i) increasing the price of DoubleClick tools when used by publishers or advertisers with competing ad networks; (ii) degrading DoubleClick tools' quality when used with competing networks; (iii) bundling DoubleClick tools with Google's intermediation services (either through pure or mixed bundling); and finally (iv) redesigning the ad arbitration mechanism within the DoubleClick software so that it would favour AdSense. Such exclusionary strategies arising from the "vertical" dimension of the merger involve some input foreclosure in the sale of ad serving tools to networks that compete with AdSense. This would attract more publishers and advertisers up to the point where the market would "tip" in favour of AdSense, enabling it in the long run to raise the price of its offering.

These theories of harm rely on a number of assumptions about market characteristics such as the degree of DoubleClick's market power; the existence of high switching costs for ad serving tools; the existence of strong direct and indirect network externalities; and the impact of price changes for ad serving on the choice of ad network by publishers and advertisers.

The Commission found that DoubleClick was not able to exercise significant market power. Although DoubleClick was the leading supplier of publisher and advertiser ad serving tools both in Europe and worldwide, it faced strong competition. This led to price reductions for both existing and new customers as well as switching by both large and small customers.

With regard to switching costs the Commission found that a large number of ad serving contracts had relatively short durations (below 2 years) and renegotiations of contract terms were frequent. Switching data provided by the parties indicated

that actual switching was also frequent. A *direct network effect* could arise if a wide publisher customer base would allow the merged entity to improve the quality of its services, in particular targeting of advertisements, because of the ability to use information about users across different publishers. However, publishers contractually prohibit DoubleClick from using their data to improve targeting. Moreover, it appeared that the type of behavioural targeting that was at the core of these direct network effects is an emerging technology that neither DoubleClick nor Google have developed, in contrast to the achievements of a number of competing firms. *Indirect network effects* could arise if AdSense would become more attractive to advertisers as the number of publishers increased (and vice versa).

The Commission found evidence that there had been significant entry and competition in online ad intermediation, evidence that publishers used more than one intermediation platform (“multi-homing”) and evidence that ad networks were able to compete even with a relatively small number of partners on the publisher side. The prevalence of multi-homing suggested that the participation by a publisher with an ad network was not exclusive. It therefore did not seem likely that AdSense would become the dominant intermediation platform at the expense of rivals as a result of the merger.

With respect to the cost of ad serving, the Commission found that ad serving represents a small fraction of online advertising costs and revenues of, respectively, advertisers and publishers. The price of ad serving on competing ad networks would therefore have to increase significantly in order to induce sufficient switching towards AdSense for the tipping effect to occur. This was deemed highly unlikely given the competitive constraints exercised on DoubleClick, including the presence of a number of vertically integrated rivals.

### 3.2 Concerns Arising from Google’s Position in Search Advertising and Intermediation

Google’s market power in search advertising and (search) ad intermediation was also a cause for concern. Google might attempt to foreclose rivals by bundling<sup>14</sup> search advertising and ad intermediation with DoubleClick’s ad serving technology.

The Commission found that Google and DoubleClick had few common customers and that gross margins in search and intermediation were significantly higher than margins in ad serving. Google would not risk losing its lucrative margins on search ads to gain a few additional ad serving customers at the expense of its ad serving rivals. The Commission therefore concluded that the new entity would not have the ability or the incentive to engage in contingent sales that may be anti-competitive.<sup>15</sup>

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<sup>14</sup> Possibly using mixed bundling.

<sup>15</sup> The Commission also discarded concerns about the combination of Google and DoubleClick’s data. See De Coninck and Papandropoulos (2008).

#### 4 Competitive Bottleneck in Travelport/Worldspan<sup>16</sup>

Travelport LLC and Worldspan Technologies Inc. operated so-called “global distribution systems” (GDSs) by the name of Galileo (Travelport) and Worldspan. These are technical platforms that match travel content provided by airlines<sup>17</sup> with the demand for such content by travel agents. GDSs can be seen as two-sided market platforms, with indirect network externalities on both sides of the market. That is, travel agents benefit from a large network of travel providers across which they can make efficient search and bookings while travel providers benefit from a large network of buyers.

There were basically only four GDS providers in the European market before the merger. Amadeus IT Group SA was by far the largest GDS provider and would remain so after the merger. Galileo/Worldspan would become the second larger operator, and Sabre Holdings Corp. would be a distant third. The relevant geographic market was deemed to be national on the travel agent side, and in some national markets the merged entity would have quite high market shares as a result of the merger.

In order to assess the potential anti-competitive effects of the merger, the Commission closely analysed the competitive dynamics of the industry, which turned out to be indeed driven by the two-sided nature of the market.

The market exhibits a number of features that are characteristic of a so-called “competitive bottleneck”, as described in the economics literature.<sup>18</sup> It appeared that airlines typically multi-home (provide content to most if not all platforms), while travel agents single-home (subscribe to only one platform). In such a configuration, the indirect network externalities are asymmetric: If a sufficient number of airlines use multi-homing and all of them provide their full inventory, each GDS ends up providing a broadly similar content. This reduces the indirect network externalities generated on the airline side and the related added value for agents of subscribing to an additional GDS and explains why single-homing is the prevalent configuration observed on the agent side. The larger the number of agents reachable via a given GDS, the higher the positive network externalities that are generated by that GDS and, correspondingly, the higher is the price that airlines will be willing to pay to distribute content via that GDS. In this environment, GDSs compete fiercely to attract travel agents. And, indeed, the investigation confirmed that GDSs extract high rents from airlines and charge low prices (or even provide inducements) to travel agents.

It was also found that there is little product differentiation among different GDSs and that airlines, at least until recently, had limited ability to bypass the GDS providers or to distribute content directly to final users. These circumstances are, according to economic theory, favourable to the development of a configuration of a competitive bottleneck.

This competitive situation is, however, changing. First, airlines have started to introduce some differentiation between GDSs. This can, for example be done by not making the lowest fares available on all platforms, thereby perhaps inducing travel agents to

<sup>16</sup> For more details on this merger, see [Rosati \(2008\)](#) and [Vannini \(2008\)](#).

<sup>17</sup> There are other customers on the content side, such as hotel chains, car rental companies, etc. However, for simplicity we refer to all content providers as “airlines”.

<sup>18</sup> See, for example, [Armstrong \(2006\)](#).

switch platform or even opt for multi-homing. Second, alternative distribution channels are developing that allow airlines to bypass GDSs and directly access agents or even customers. This evolution in the GDS market changes the relative bargaining power of airlines, GDS providers, and agents.

The Commission found that in such circumstances the merged entity would not be in a position to extract additional rents from airlines as a result of the merger, even when they account for a significant share of (single homing) travel agents in particular countries. The position of the airlines, which has recently improved, should enable them to balance the (potentially marginal) increase in bargaining power that the merging parties could gain as a result of the merger.

With respect to travel agents, it was found that single homing was likely to persist as a dominant configuration as travel agents would continue to obtain one-stop-shop access to most of the travel related content (occasionally complemented by resorting to alternative channels). A sufficient number of GDS platforms would remain available to agents, with moderate switching costs, and GDS providers' need to create and maintain a sufficiently broad network of agents in order to generate demand on the airline side would leave agents in a favourable bargaining position vis-à-vis GDS providers even after the elimination of one of them.

## 5 Interchange Fees in MasterCard

The merger in the GDS markets just discussed essentially focused on the dynamics of competition between different platforms in a two-sided market. By contrast, the *MasterCard* decision focused on the dynamics of competition within a particular platform. The Commission concluded that MasterCard's cross-border multilateral interchange fees (MIFs) infringed Article 81 of the EC Treaty.<sup>19</sup>

Historically, for each card transaction an interchange fee is paid from the one side of the market—the merchant's bank (the "acquirer")—to the other side—the cardholder's bank (the "issuer"). MIFs therefore raise the marginal cost of acquirers and lower the marginal cost of issuers. The Commission found that by raising acquirers' costs, the MIF restricts competition in the acquiring market in the sense of Article 81(1). This is because the MIF inflates the basis on which acquiring banks set their charges to merchants. Hence, competition between acquirers cannot bring down merchant fees to the cost level of acquiring banks.

Payment card markets are two-sided with significant network externalities. For instance, wider card acceptance by merchants yields positive externalities for cardholders, who can subsequently use their cards at a larger number of outlets. Therefore, changes in the cost structure across issuing and acquiring markets affect both sides of the industry in complex ways.

For this reason it is not surprising that the economic analysis in *MasterCard* largely centered on the question of whether the restriction on competition among acquiring

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<sup>19</sup> Article 81(1) prohibits agreements between undertakings that restrict or distort competition; according to Article 81(3), Article 81(1) is not applicable to an agreement that "contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit..."

banks qualified for an exemption under Article 81(3). In theory, the MIF could bring about efficiencies that offset the harm of increased merchant fees. In particular, it could be possible that the negative effect of higher prices on the acquiring side is offset by lower cardholder fees on the issuing side. A MIF could be set to balance issuing and acquiring demands, so as to “get both sides on board” (Rochet and Tirole 2003).

MasterCard argued along the lines of an early paper on payment card markets (Baxter 1983) that card associations have an interest in collectively setting an interchange fee that maximizes the number of card transactions. In the model, the MIF allows banks to decide whether merchants or cardholders should pay for the payment service. By altering the fee structure, the MIF is set to achieve a balance of demand that internalizes network externalities. This output maximizing level also maximizes total welfare and consumer welfare in the Baxter framework.

The Commission rejected this line of defense on the grounds that it is based on an unrealistic framework. The Baxter model makes a number of strong assumptions that biases its conclusion in a significant way. Notably, it assumes that both issuing and acquiring banks are perfectly competitive, implying that a change in the MIF level does not affect banks’ profit margins. Moreover, it does not model the merchant market, implicitly assuming that merchants do not face competition. Both assumptions have a strong impact on the welfare conclusions of the model.

Rochet and Tirole (2002) were the first to relax these assumptions. They show that competition generates a prisoner’s dilemma among retailers. It turns out that merchants are willing to accept cards even at merchant fees that exceed their transactional benefits of card payments (which could, for instance, arise from lower costs of holding cash). The reason for this is that rejecting cards will make their outlets less attractive with respect to competing retailers who accept cards. This business-stealing effect drives up merchants’ willingness to pay. As a result, all merchants are worse off from accepting cards at high interchange fees, but individual merchants continue accepting cards nonetheless.

In Rochet and Tirole (2002) the payment card association always sets interchange fees such that merchants are worse off from card payments relative to cash payments. The increased marginal costs are then passed on to consumers downstream. As a consequence, each card user exerts a negative externality on the whole group of consumers (including cash users). But as this cost is borne by consumers in total and not the individual card user, cardholders use cards without taking into account the negative impact they generate on other consumers. Note that output maximization is not necessarily optimal for either consumer welfare or total welfare if the merchant prisoner’s dilemma is taken into account—even if all banks are perfectly competitive. High interchange fees give incentives for the use of payment cards on the issuing side. On the acquiring side, merchants continue accepting cards for reasons of business stealing. The result is that high interchanges fees generate negative externalities that, as usual, distort the decisions of market participants. The merchant prisoner’s dilemma therefore creates a situation where consumers are not faced with the true costs that their actions generate.<sup>20</sup>

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<sup>20</sup> This cost can be significant as the MIF often makes up more than 50% of the fees that merchants pay to the acquiring bank.

A second crucial assumption of the Baxter model is perfect competition among banks. In this case, the MIF does not influence the total price level of the payment service (which is given by the sum of merchant and cardholder fees), because banks pass through MIF revenue and MIF costs in the same proportion. However, whenever the cost pass-through of issuing and acquiring banks differs, MIFs affect not only the volume of transactions but also banks' aggregate profit margins.

Empirical evidence on pass-through in payment card markets is scarce. Early results from the Australian interchange fee regulation suggest that issuers pass through costs at a significantly lower rate than do acquirers.<sup>21</sup> If this is the case, increasing the interchange fee above the volume maximizing level is profitable for banks (Wright 2004). Intuitively, acquiring banks can then pass on most of their interchange costs to merchants, while issuing banks retain a significant part of interchange revenue as profits. Overall, an appropriately set MIF allows banks to collectively increase the price of payment services to its end users: cardholders and merchants.

The Commission therefore concluded that it could not be presumed that MasterCard had an incentive to set interchange fees that created efficiencies and passed on a fair share of those efficiencies to consumers. Indeed, it may well be that the welfare maximizing interchange fee is negative (to encourage merchant participation in the network), while the profit-maximizing interchange fee is positive (to shift MIF revenue to the side where pass-through is low).

MasterCard was not able to provide any evidence that it attempted to generate the alleged efficiencies through the way it determines its interchange fees. Perhaps not surprisingly, the methodology it uses ignores most of the effects described by the Baxter model, but aims at making MasterCard more attractive to issuers than its largest competitor, VISA Inc. (which in practice means offering attractive interchange fees).

Moreover, evidence from Member States suggested that MasterCard did not generate larger volumes of card transactions through the MIF (the efficiency defense it had brought forward). It turned out that precisely in those Member States where national card schemes operated without an interchange fee (Finland, Denmark, the Netherlands, and Luxembourg), card transaction volumes were particularly high.<sup>22</sup> This also addressed MasterCard's argument that card payment schemes cannot operate without a MIF and that a breakdown of the system would be a likely consequence of removing interchange fees.

Although the Commission rejected MasterCard's efficiency defense on the basis of the submissions put forward, the *MasterCard* decision did not prohibit MIFs as a matter of principle. Indeed, the Commission recognized that interchange fees may potentially generate efficiencies that benefit both consumers and society as a whole. However, given that it is not clear that the optimal interchange fee level is positive, MasterCard and other four-party schemes will have to engage in a concrete demonstration of the economic effects of the MIF. A MIF is more likely to generate efficiencies if without it, payment card usage exerts a *positive* externality on merchants and on

<sup>21</sup> Chang et al. (2005) report that acquirers passed-through cost changes almost fully, while issuers only did so at a rate between 30 and 40 per cent.

<sup>22</sup> In all of these Member States, per capita card transactions by far exceeded the European Union average.

society, thereby making it worthwhile to promote issuing. The Commission is therefore engaging in ongoing conversations with both MasterCard and VISA, in an attempt to assess whether there is scope for positive interchange fees that generate efficiencies and grant benefits to consumers.

## 6 Conclusion

Over the course of the last year, DG Competition and the Chief Economist Team (CET) in particular have been confronted with a broad range of challenging economic issues beyond those discussed in this paper. For instance, work has continued on the formulation of priorities for the enforcement of Article 82 regarding exclusionary abuses by dominant firms as well as on a number of investigations in this area (including allegations of exclusionary rebates for the Intel Corp., patent ambush for Rambus Inc., and tying for Alcoa Inc.).

Following the conclusion of the inquiry into the energy sector, a number of investigations have been initiated involving concerns about refusal to supply, buyer coordination, and collusion. Some of the investigations amply illustrate the difficulty of ensuring competition downstream when some firms are vertically integrated and accordingly the benefit from the unbundling policy that has been recommended by the Commission.

In the spring, a new sector inquiry was launched in the pharmaceutical sector; the investigation focuses on the conditions of entry of generics and concerns that it may in some instances be impeded by agreements or strategic entry barriers including pre-emptive patenting.

In the area of state aids, progress has been made on the development of guidance for the economic evaluation of state aid projects, and further experience has been accumulated in this respect for the support to research and development.

On the organizational front, the CET has now been expanded to include more than 20 economists. This should hopefully allow us to enlarge the scope of issues that the team is involved in and deepen the analysis. From this perspective, competencies in quantitative empirical work have been strengthened, and sophisticated forms of quantitative analysis (examples of which were discussed in this article) have become routine in significant merger cases.

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