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**Working Paper**

## Do Consumers Benefit from Concentration in the New Economy? A Review of Google's Mergers, Acquisitions, and Arrangements

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A Review of Google’s Mergers,  
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responsible for the contents which do not necessarily represent the opinion of the ZEW.

## Non-technical Summary

Google was involved in a series of deals, all of them related to the online advertising industry: two mergers with YouTube and DoubleClick and one arrangement with Yahoo!. Scholars in competition policy question the legitimacy of some of these deals (Chin (2006)). I review the basis of this purely negative view and provide arguments that possibly would have underpinned an efficiency defense. In particular, I advocate an increased incentive for the customization of services and content as a beneficial effect, even if resulting from a concentration process. A concentration may be beneficial on markets based on multi-sided platforms (Evans (2002)). However, this cannot serve as a per se ex post justification of the concentrations. In the model I consider the quality of matches between users and advertisers a beneficial effect for consumers, and the ability and incentive of a platform to control this quality, which I incorporate in the model, is crucial for a concentration's assessment.

I demonstrate that the merger between Google and YouTube can have beneficial effects for consumers because the match between consumers and advertising can be enhanced. This relies on the presumption that consumers benefit more from having specific search ads displayed on websites than having unspecific advertisement. Assuming that the degree of screening and classifying of the users is subject to Google's discretion, the merger mitigates the incentive to not use its search technology to the full extent. After the merger Google can better identify users of YouTube and match them with ads specifically designed for users of user generated content. The acquisition of DoubleClick endows Google with control over the search ad technology. Leaving aside concerns on consumer privacy, I identify positive effects from an enhanced searching and screening technology. Further, this allows to make advancements in the screening technology. This becomes particularly effective when Google is able to combine this technology with more detailed information about the users' geography, demography, and surfing habits on the internet. The withdrawn arrangement between Google and Yahoo! was double-edged. On the one hand, focusing on the advertising market, which is immediately affected by this deal, there is a negative effect. The advertisers face fewer suppliers of ad space on websites visited by users of search engines. However, this comes along with an efficient allocation of ad space. On the other hand, consumers benefit from the platform's ability to fully employ its search technology and display more accurate ads to the needs of the users.

## Zusammenfassung

Google war an wettbewerbsrechtlich relevanten Vereinbarungen in der Online-Werbebranche beteiligt: Zwei Fälle mit YouTube und DoubleClick und eine Vereinbarung mit Yahoo!. Wettbewerbsrechtler haben die Rechtmäßigkeit einiger Vereinbarungen angezweifelt (Chin (2006)). Die Überprüfung dieser negativen Bewertung liefert Argumente, die eine so genannte Efficiency Defense untermauern könnten. Insbesondere ist der Anreiz zu stärker auf die individuellen Nutzer ausgerichteten Werbeanzeigen und Dienstleistungen positiv zu bewerten, auch wenn sie aus einer verstärkten Marktkonzentration resultieren. Dennoch ist dies keine ex post Legitimation des Konzentrationsprozesses, obwohl eine vollständige Monopolisierung bei mehrseitigen Märkten (Plattformen) optimal sein kann (Evans (2002)). Das Modell untersucht den Anreiz einer Plattform, verschiedene Kundengruppen zu identifizieren. Dies ist eine Voraussetzung damit die Übereinstimmung zwischen der Zielgruppe einer Anzeige und dem Nutzer verbessert werden kann.

Diese Untersuchung zeigt, dass der Zusammenschluss von Google und YouTube positive Effekte für die Konsumenten haben kann, wenn die Werbung besser auf die Interessen der Nutzer abgestimmt wird. Dies basiert auf der Annahme, dass eine bessere Abstimmung auf die Konsumenten bevorzugt wird. Wenn der Grad der Übereinstimmung von Google bestimmt werden kann, reduziert der Zusammenschluss den Anreiz der Plattform, die technischen Möglichkeiten der Selektionstechnologie nicht voll auszunutzen. Nach dem Zusammenschluss kann Google die Nutzer von YouTube besser identifizieren und sie mit den auf sie ausgerichteten Anzeigen verbinden. Durch die Akquisition von DoubleClick erlangt Google die Kontrolle für die Selektionstechnologie. Ungeachtet der Befürchtungen um den Datenschutz, sind der effektivere Einsatz dieser Technologie und die Möglichkeiten sie fortzuentwickeln positiv. Insbesondere gilt dies, wenn Google in der Lage ist den Selektionsmechanismen mit detaillierteren geographischen und demographischen Informationen oder das Suchverhalten der Nutzer im Internet zu verbinden. Die zurück genommene Vereinbarung mit Yahoo! hat einerseits negative Effekte auf dem Werbemarkt, weil Anzeigen nunmehr über weniger Plattformen geschaltet werden können. Dennoch ist die Allokation von Anzeigen auf die Werbeflächen effizient. Andererseits profitieren Nutzer davon, wenn die Suchtechnologie in seiner vollen Bandbreite zum Einsatz kommt und somit besser auf den Nutzer abgestimmte Werbeanzeigen gezeigt werden.

# Do Consumers Benefit from Concentration in the New Economy? – A Review of Google’s Mergers, Acquisitions, and Arrangements

Patrick F.E. Beschorner\*

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this draft: December 2, 2008

## Abstract

Within the last three years, Google has acquired YouTube and DoubleClick and has attempted to control part of Yahoo!’s search advertising business. Two of the deals have not raised antitrust concerns by competition authorities. I review these deals with a focus on consumer welfare. Consumers are affected by being on one side of a multisided platform. Provided that better matches of search ads are beneficial, I demonstrate that the mergers may have positive effects for consumers through better matches between users and search ads. However, this does not substitute an in-depth antitrust assessment of the deals.

Keywords: merger control, multisided platforms, screening mechanism

JEL: L41, L42, K21, M37

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# 1 Introduction

In the present analysis I review three recent deals by Google: mergers or other arrangements. Google is active in several fields of internet services. The most prominent ones, where Google holds a significant market share, are internet advertising, internet search services, and e-mail services. Google generates its revenues mainly from internet advertising. Thereby they employ search-based advertising, also known as search ads or behavioral advertising, which consist of matching ad displays with particularly selected users, which have proven likely to be interested in the advertised service or product. The relevant information for the selection process stems from the users' past behavior that is recorded when navigating the internet. In recent times, Google's activities in generating and providing content became manifest. Oddly enough, antitrust authorities are reluctant in expressing potential concerns about the concentrations in which Google is involved. For example, the FTC does not even have a press release on the \$1.65 billion acquisition of YouTube on its website. Possibly, this reservation stems from the recent defeat of DOJ in its attempted blocking of Oracle's acquisition of PeopleSoft.<sup>1</sup>

Scholars in antitrust law cast doubts about the legitimacy of Google's M&A strategy. Andrew Chins's and Jay Kesan's blog at [www.voiceless.com](http://www.voiceless.com): "[...]I can't think of any procompetitive efficiencies that could be attributed to the merger."<sup>2</sup> reflects their presumption that in a thorough assessment of the merger an efficiency defence would not hold. I further review Google's acquisition of DoubleClick, which is a provider of search advertising technology, and the arrangement between Google and Yahoo! in which Google is providing the search ads which are displayed on Yahoo!'s website. The welfare standard in U.S. antitrust policy is consumer welfare. Therefore, a concentration can be beneficial if it augments monopolization as long as consumers benefit. This is possibly the case in markets involving platforms.<sup>3</sup> In

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<sup>1</sup>See Sidak and Singer (2008).

<sup>2</sup><http://voiceless.com/index.php?p=96&more=1&c=1&tb=1&pb=1#more96> (October 31, 2008).

<sup>3</sup>See Evans (2008).

the following I focus of the effects on consumers surplus when assessing the three cases.

I demonstrate that the mergers may have generated efficiency gains that benefit consumers. These consist of ads and services that better fit the users' interests and preferences. However, this finding does not substitute an in-depth assessment of the deals, in particular when "the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly"<sup>4</sup> such that an investigation would be advisable. This holds even more as "Section 7 does not require proof that a merger or other acquisition [will] cause higher prices in the affected market. All that is necessary is that the merger create an appreciable danger of such consequences in the future."<sup>5</sup> In particular, the present results cannot be considered as an ex post efficiency defense or as a but for rationalization, had one of the mergers been challenged by the FTC. Moreover, in its 2007 report the Antitrust Modernization Commission has stressed that there shall be no exemption for mergers involving new technologies where it is difficult to identify the relevant market because there may be no historic demand substitution.<sup>6</sup>

With respect to the three deals, I show that the merger with YouTube directs the advertisers' incentives to providing more suitable ads. By the acquisition of DoubleClick Google gains control over the core technology that is employed in search advertising. Here, the main concern of the merger's opponents focuses on the users' privacy rather than antitrust issues. Notwithstanding, this allows to produce better matches between users and advertisers. Finally, the arrangement with Yahoo! would have allowed Google to fully exploit its search technology. This deal has been ended by Google before becoming effective because in negotiations and discussions Google was unable to waive government regulator's and advertisers' concerns. In order to avoid a legal dispute Google ended the agreement.<sup>7</sup>

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<sup>4</sup>Clayton Act §7, 15 U.S.C. §18.

<sup>5</sup>Sidak and Singer (2008) quoting Judge Posner in *Hospital Corp of America v. FTC*, 807 F.2d 1381, 1389 [7th Cir. 1986].

<sup>6</sup>See Antitrust Modernization Commission (2007).

<sup>7</sup>See Schonfeld (2008).



The structure of the paper is as follows: I give a brief review of the literature on multisided platforms, the related advertising business and the cases in section 2 before I present the model in section 3. Sections 4 through 6 analyze the mergers with YouTube, DoubleClick and the arrangement with Yahoo!, respectively. In section 7, I give a summary of the results and a conclusion.

## 2 Google's Acquisitions, Agreements, and Related Work

The consideration of multisided platforms as particular form or market place has become prominent through seminal papers by Rochet and Tirole (2003) and Evans (2002). Platforms coordinate transactions between two or more distinct group of customers which need each other in some way and which would not interact absent the platform because of transaction costs.<sup>8</sup> Thereby, the profit maximizing price for one side may be below marginal cost for supplying this side or it may even be negative. Examples are newspapers with advertisers and readers (Dewenter and Kaiser (2006)), shopping centers with shops and buyers (Nocke, Peitz and Stahl (2007)), television with advertisers and viewers, credit cards with shops and buyers (Gabszewicz and Wauthy (2004)), or booking systems for hotels or flight connections (Ordober (2007)).

Google serves as a platform that brings together advertisers and users (eyeballs). Advertisers benefit from the possibility of reaching many users and the users receive advertising on products they may be interested in. In newspapers the advertisers will target all readers uniformly and all readers will receive the same advertisements. The advertising technology employed by Google and other websites is much more sophisticated by offering search ads. Evans (2008) provides a detailed description of the history of advertising and of the online advertising industry. Users of the search engine unveil their interest for particular products when they search for them on Google.

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<sup>8</sup>See Evans (2002), Evans and Noel (2008), Rochet and Tirole (2003, 2006)

Typically, users conduct searches on only one search site, mostly Google. Similarly, small and medium firms tend to place their advertisements only on Google.<sup>9</sup>

Further, browser technology allows to trace what other websites the user has visited before and the IP address provides geographic information. On the other hand, advertisers indicate keywords which fit to the content of their ad. Search ad technology, which is offered by DoubleClick, allows to match users and ad displays such the the ads are displayed to users who are more likely to click on the ad. Like in Evans (2008) I presume that search ads, which meet the users interest, are more beneficial than anonymous advertising. Organizing a platform in a way that allows the advertisers to place more targeted ads thus benefits consumers. Presuming that Google does not manipulate its original search results or starts charging a price to its users, it is sensible to assume that users unambiguously benefit from search advertising. This is an externality from the advertising side of the platform on the user side, for which there is no compensation. This is considered as a positive non-internalized externality (Evans and Schmalensee (2008)).

The allocation of the advertisers and the ad space on the website is done through auctions. The mechanism is a generalized second-price auction. I will give an abbreviated and stylized description. For a through presentation of the mechanism I refer to Edelman et al. (2007). An advertiser bids for having his ad displayed to a user who sends a query for a particular keyword. Ad space is limited and there may be several advertisers targeting for a particular keyword. The ad with the highest bid is then displayed. The mechanism is becoming more complicated as advertisers limit the amount they want to spend or the number of times an ad shall be displayed. Further, there are more or less prominent positions of an ad on a website, there are overlapping sets of keywords for which advertisers are bidding, and bids can be placed at any time.

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<sup>9</sup>See Evans 2008).

## 2.1 YouTube

In the Google/YouTube merger the FTC was mute. YouTube is a platform that brings together users who watch or produce and display video clips. YouTube's service consists of hosting the videos on their web servers. The users put on display videos on any topic they are interested in or they believe that others may be interested in. Thereby, they reveal information about their own hobbies, interests, and preferences. The viewers of the videos reveal similar information by the selection of videos that they watch. This information can be used in order to place search advertising on the webpage where the video is displayed.<sup>10</sup>

To a large extent, the users of YouTube are certainly a subset of Google's users. People who are active on YouTube may use Google in order to search for other or related information on the internet. Consequently, Google would address the same users if it could identify them. It is not yet established how to consider the effects of mulisided platforms in the definition of a relevant market. Instruments like demand elasticities and critical loss analysis are biased and only recent literature has addressed the question on how to consider and eliminate this bias.<sup>11</sup> By the searches that a user processes on Google's website they can infer who of them might be interested in User Generated Content (UGC). By the acquisition of YouTube Google gains direct access to these users and can perfectly identify them. The merger eliminated competition for the advertisers who were targeting users of UGC. Having incorporated YouTube this opened scope for a more thorough selection process in applying search ads to specific groups of users. This effect will be reflected in the model.

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<sup>10</sup>In a research report from DoubleClick Bruner (2005) provides an overview on the history and technology of search-based advertising.

<sup>11</sup>See Rochet and Tirole (2003), Evans and Noel (2008).

## 2.2 DoubleClick

DoubleClick sells ad serving, management and reporting technology to website publishers, advertisers, and advertising agencies.<sup>12</sup> This technology comprises ad serving tools that ensure that after ad space has been sold to an advertiser the correct ad actually is shown on the website when it is displayed to the user. DoubleClick holds patents on this technology. Google is an advertising platform and a typical customer of DoubleClick. For advertisers, ad serving tools enable the advertisers to plan the campaign, deliver the ads, analyze the results, and optimize the campaign.<sup>13</sup>

In the Google/DoubleClick merger the FTC refuted all doubts about antitrust concerns.<sup>14</sup> Moreover, in their analysis they found no concerns by advertisers or publishers. Further they found out that Google and DoubleClick were not direct competitors and that the ad serving market remains competitive. First, there are several other providers of functionally similar software, Second, DoubleClick's technology would still be available to suppliers of ad space because of the first argument, namely that Google had not sufficient market power to tie DoubleClick's ad service technology with its advertising service. The FTC's conclusion "it is unlikely that the elimination of Google as a potential competitor in the third party ad serving markets would have a significant impact on competition." is imprecise about the relevant market in which competition is not impacted.<sup>15</sup>

There is concern about privacy issues because both Google and DoubleClick use user-related information in their business technology. Merging both processes would allow to gain more precise and even personalized profiles on users. Consumer privacy protection was no obstacle for clearing the merger and given the antitrust focus of the present analysis I do not further investigate on this issue.

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<sup>12</sup>See Commission Decision of 11/03/2008 on Case No COMP/M.4731 – Google/DoubleClick.

<sup>13</sup>Baye et al (2008).

<sup>14</sup>See Baye et al. (2008).

<sup>15</sup>See Statement of the FTC concerning Google/DoubleClick FTC File No. 071-0170.

The acquisition of DoubleClick provided to Google access to the necessary technology in order to combine information gathered by the DoubleClick technology and Google services in order to set up a more sophisticated and fine-tuned allocation of ads to viewers. A superior ability than competitors in targeting users will result in higher profits because this raises the advertisers's valuation for placing an ad. This effect is known as cream skimming in the insurance literature.<sup>16</sup> Clark and Riis (1998) present an analogous mechanism where players have to decide on how to divide their effort when competing for different prizes and the player's valuations are heterogeneous. It turns out that the player with the highest valuation ends up with the highest expected payoff. With respect to the present case, I conjecture that this merger with DoubleClick turned out to be more valuable after Google's acquisition of YouTube than before.

### 2.3 Yahoo!

Yahoo!'s portfolio of services is similar to Google's portfolio. Internet search and e-mail communication and social networks are the most prominent business activities of Yahoo!.

Yahoo! is a major competitor in the market for internet advertising aiming at users of search services. Search engines by Google and Yahoo are to some extent substitutive services and a user may switch between the two services, e.g. when he is not satisfied with the search results obtained from one of the providers. Therefore, Yahoo and Google can offer the same eyeballs to the advertisers and the advertisers can enforce price competition.

A merger between Google and Yahoo would have been blocked with a high probability by the FTC or the European Commission. Because of the deterrence effect of merger control, Google and Yahoo agreed upon transferring the control over a share of Yahoo!'s advertising business rather than taking over the entire business. Still implementing this agreement would have constituted an antitrust violation because it would have eliminated competi-

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<sup>16</sup>See Newhouse (1984).

tion among firms on the same product market. Modifications to the original agreement could not the regulator's concerns. Overall the two firms would jointly control 90 percent and 95 percent in the search advertising and the search engine business, respectively. Google has an even more dominant position in Canada.<sup>17</sup> Finally, Google and Yahoo! abandoned their advertising agreement.<sup>18</sup> Although this deal would have eliminated price competition among Yahoo and Google to some extent, I conjecture that it shifts bargaining power on the pricing of ads from advertisers and publishers to Google. I demonstrate that the acquisition of YouTube by Google made the subsequent deal with DoubleClick more profitable and that the agreement with Yahoo would have allowed Google to fully benefit from the DoubleClick technology. Moreover, consumers benefit from being offered services and products that better match their needs and preferences. Although advertisers tended to pay more for placing ads, the allocation would have been efficient and raises no antitrust concerns.

DOJ hat announce to file antitrust actions against Google if they had brought the agreement into effect. However, it is not clear whether a challenge of the agreement would have been upheld. Although the market share of the two firms exceeds 90 percent and the deal has an immediate potential to lessen competition, the agreement does not constitute price fixing or establishing a price floor. Further the agreement and the dominant position may be of temporary nature. With a geographic market which is broader than the U.S. and Canada, the existence of other search engines, and limited barriers to entry, it is not clear which would be the relevant market, and, thus, what would be the outcome of a legal dispute.

### 3 The Model

I consider a platform that brings together consumers and firms.

Consumers are of type  $i = A, B$  denoting the product they may be inter-

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<sup>17</sup>See CBC (2008).

<sup>18</sup>See DOJ (2008).

ested in. I normalize the number of consumers to one and  $s$  denotes the share of  $A$  and  $1 - s$  the share of  $B$ . Throughout the paper I assume  $1/2 \leq s \leq 1$ . This avoids distinction of cases, which would not provide additional insights.  $s$  is common knowledge. Each consumer is hit by an ad exactly once.

Firms place advertisements on the platform and they are displayed to consumers. Saving notation by denoting the two types of advertisers also as  $A$  and  $B$  will not confuse. I assume that a firm  $i$  values an ad which hits a user of type  $i$  with one and zero otherwise.

The platform cannot distinguish per se type  $A$  from type  $B$  users. It can apply a sorting mechanism with cost  $C(a) = c/2 \cdot a^2$  where  $a \in [0, 1]$  can be interpreted as the accuracy of the mechanism. The platform separates the users into two groups  $g = L, R$  of size  $s$  and  $1 - s$ , respectively. If accuracy is zero, all users are mixed randomly over the two groups such that each group is composed of a share  $s$  of  $A$  users and a share  $1 - s$  of  $B$  users. With perfect accuracy  $L$  contains only  $A$  and  $R$  only  $B$  types. For intermediate values of  $a$  table 1 indicates the number of users in each group by types.

Type / Group	$L$	$R$
$A$	$V_L^A = s + (1 - s)a$	$V_R^A = s - sa$
$B$	$V_L^B = 1 - s - (1 - s)a$	$V_R^B = 1 - s + sa$

Table 1: Types by Group

Modeling  $a$  as a purification mechanism of the two groups shifting type  $A$  from group  $R$  to group  $L$  and vice versa ensures the nice property that the overall value of the market remains constant. Imagine  $\bar{a} \leq 1$  being an upper bound for the platform's choice of accuracy such that  $a > \bar{a}$  may not be technologically feasible, yet. The sorting technology may be subject to further improvement which would raise  $\bar{a}$ . Since each consumer can be hit only once, the maximum revenue for the platform is one if each firm  $i = A, B$  pays its full valuation for advertising to type  $i$  users and each type  $i$  is hit by firm  $i$ 's ad.

The platform yields revenue from selling advertising space. The platform

offers two packages:  $L$  and  $R$ , which can independently be bought by the two firms. Let  $V_i^g$  denote firm  $i$ 's valuation for group  $g$ . The platform's payoff is a function of the firm's valuation and its own bargaining ability  $\eta$ . In an analogous way to a second-price auction, the firm with the highest valuation will buy the advertising space for the group. The actual price will depend on the platform's bargaining abilities. The price will be at least as high as the lower valuation and not exceed the higher valuation.  $\eta$  denotes the share of the additional rent that the platform can extract from the winner, i.e. the share of the difference between the first and the second valuation. I will assume that the initial market structure, where the platform faces competitors with similar services, e.g. internet search services by Yahoo, the bargaining strength is weak ( $\eta < 1/2$ ) and I allow it to become strong when competition is eliminated ( $\eta > 1/2$ ).

I further consider competition among platforms in a very stylized manner. In the present model, platforms can only differ by their ability to identify types of users. When the platform faces competition, I assume that the firms' valuation and, consequently, the platform's payoff depend on the platform's sorting accuracy. This reflects that consumers prefer ceteris paribus advertising that better matches their interests and if they have the choice they will choose the platform with better accuracy. For computational ease, I assume that the payoff is proportional to  $a$ . If there is no competing platform I assume that consumers do not react upon the accuracy level.

Absent competition the payoff is

$$(1) \quad \Pi = \underbrace{\min[V_L^A, V_L^B] + \eta\Delta_L}_{=P_L} + \underbrace{\min[V_R^A, V_R^B] + \eta\Delta_R}_{=P_R} - \frac{c}{2}a^2$$

where

$$\begin{aligned} \Delta_L &= \left| [s + (1-s)a] - [1-s - (1-s)a] \right| \\ \Delta_R &= \left| [s - sa] - [1-s + sa] \right|. \end{aligned}$$



Inserting  $V_i^g$  yields

$$(2) \quad P_L = 1 - s - (1 - s)a + \eta(2s - 1 + 2(1 - s)a)$$

$$(3) \quad P_R = \begin{cases} 1 - s + sa + \eta(2s - 1 - 2sa) & \text{for } a < \frac{2s-1}{2s} \\ s - sa + \eta(2s - 1 + s(1 - s)a) & \text{for } a \geq \frac{2s-1}{2s} \end{cases}$$

for the platform's profit  $\Pi = P_L + P_R$  minus sorting costs.

When the platform faces competition the payoff is

$$(4) \quad \Pi^{LR} = P_L \cdot a + P_R \cdot a - \frac{c}{2}a^2.$$

This reflects the fact that a higher sorting accuracy allows to earn higher profits, where  $a = 1$  results in the payoff without competition because  $G$  fully controls the sorting technology. Let the capital superscripts denote the groups for which there is competition. Note that the platform may face competition only for one group  $L$  or  $R$  if the competing platform is specialized in a particular content.

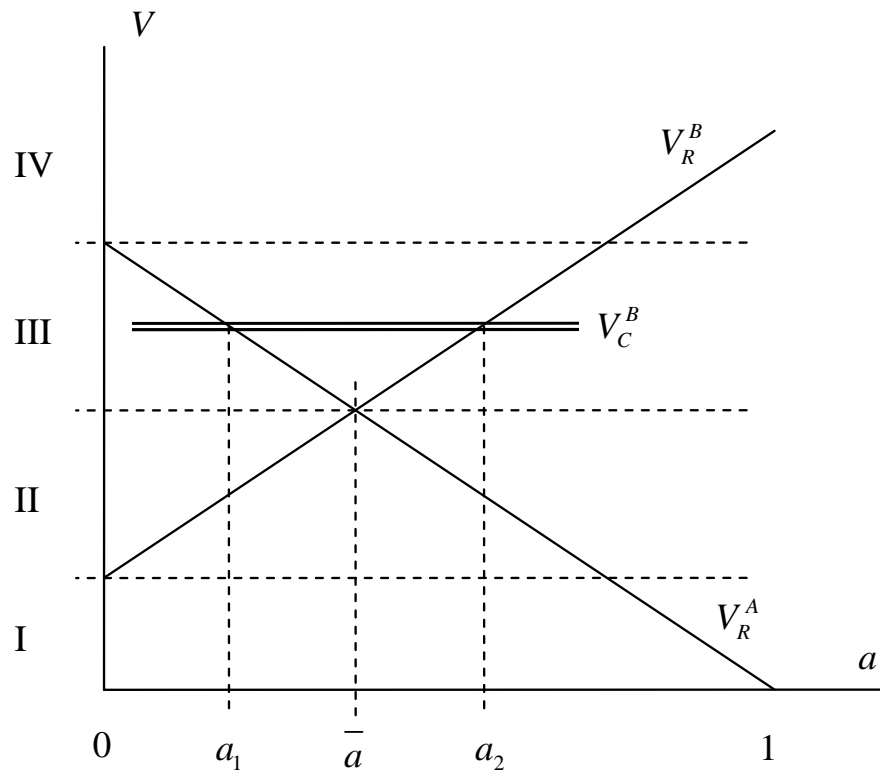


Figure 1: R-market

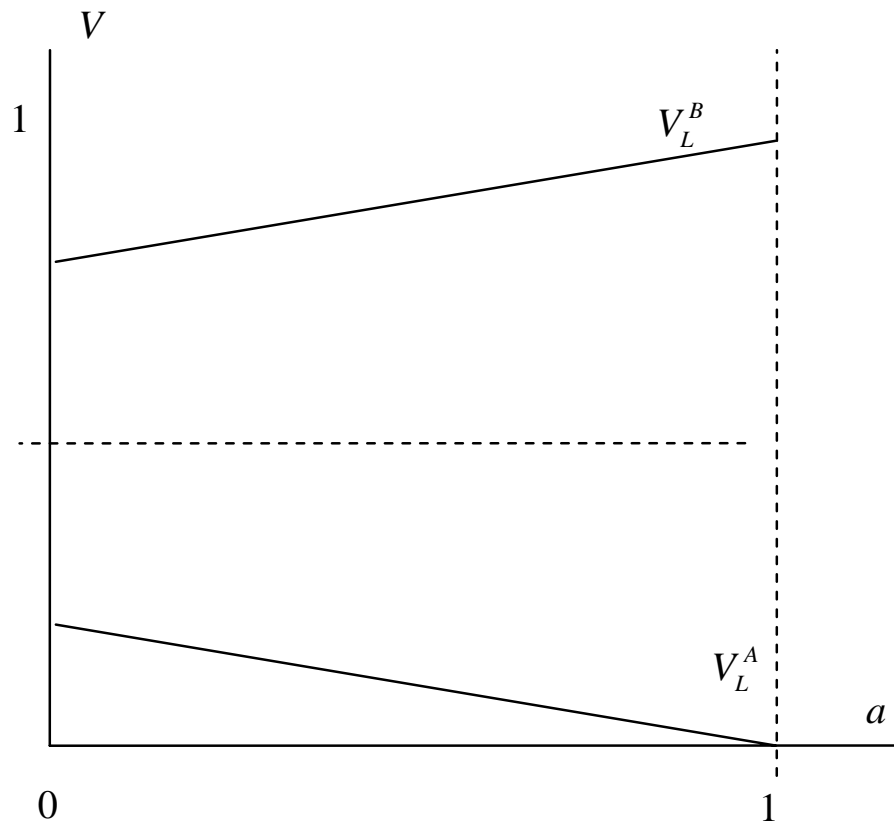


Figure 2: L-market

In the following sections I demonstrate how the presence of a competing platform can affect consumer welfare. Further, I show that the acquisition of the competing platform may be harmful and that obtaining control over the sorting mechanism may be beneficial for consumers. Finally, raising the bargaining power of the unique platform may be welfare increasing, too.

## 4 Acquiring a Competing Platform

Let  $C$  be a competing platform which attracts the same group of users  $R$ , i.e. group  $R$  is visiting  $G$  and  $C$ , and  $B$  wants to hit each user only once. YouTube brings together persons which are interested in UGC. I assume that these consumers may be interested in advertising by firm  $B$ . This case covers several alternative constellations, which comprise all cases that could arise if these users were interested in firm  $A$ 's advertising as in Figure 2. Figure 1 shows the valuation functions  $V_i^g$  as indicated in Table 1 which is equivalent to the payoff  $P_R$  in (3) for  $\eta = 0$  or  $\eta = 1$ .

Let  $V_C^B$  denote firm  $B$ 's valuation for the platform  $C$ 's users. Depending on the number of  $B$ -users in this group  $V_C^B$  can lie in the segments  $I$  through  $IV$ .

**Result 1** *If  $V_C^B$  lies in segment III an acquisition of  $C$  by the (dominant) platform  $G$  will increase  $a$  when  $\eta < 0$ ,  $s > 1/2$ , and  $c$  sufficiently small.*

*Proof:* 0. Note that  $\eta < 1/2$ . 1. In order to sell,  $G$  must increase  $A$ 's or  $B$ 's valuation above  $V_C^B$ . 2.  $G$  sets either  $a_1$  or  $a_2$ . 3. If sorting is costly  $G$  chooses  $a_1$ . 4. Group  $L$  earns higher revenue for smaller  $a$ . 5. After acquisition,  $G$  is a monopolist and sets  $\bar{a}$ .  $\square$

The intuition is that  $G$  must offer a set of eyeballs that is more valuable than the set offered by  $C$ . In segment  $III$   $G$  has the choice of offering this set to  $A$  or to  $B$ . Sorting  $a_1$  crowds out only few  $A$  eyeballs and this is preferable than taking the more costly effort  $a_2$  and offering to  $B$ .

In the cases *I* and *II* the presence of *C* has no effect on *G*'s choice of  $a = \bar{a}$ .  $V_C^B$  may lie in *IV*, such that *G* must set  $a_3$  in order to render *R* more attractive to *B*:  $V_R^B > V_C^V$ . Then either *G* sells at price  $V_R^A$  because *G* and *C* compete in prices (à la Bertrand), or *G* sets  $a = 0$  because sorting costs are too high and revenue from *L* is higher for  $a = 0$ . Thus, the effect of a competing platform of which the users are of high value for *B* is ambiguous.

## 5 Controlling the Sorting Technology

**Result 2** *When G owns the sorting technology, it is (i) unable or (ii) not willing to sell it.*

*Proof:* (i) Selling  $a < \bar{a}$  is not possible because *C* anticipates that *G* chooses  $\bar{a}$  itself. Thus *C*'s profit would drop to zero. (ii) When selling  $a \geq \bar{a}$  *G* would jeopardize its own revenue  $V_R^B(\bar{a})$  or reduce it below this level. A selling price above  $V_R^B(\bar{a})$  would not be accepted by another platform.  $\square$

The platform *G* seeks control over the sorting mechanism in order to prevent that another platform can offer a more valuable set of users. Moreover, it will employ its sorting mechanism up to the maximally feasible accuracy itself. The competing platform *C* would not benefit from purchasing and applying this sorting mechanism because by assumption it has only a limited number of *B*-users. Thus, it cannot offer a more attractive set of eyeballs. The acquisition of DoubleClick helps Google in deterring other platforms to sort their users up to an accuracy that makes advertising on other platforms more attractive than on Google (and other platforms served by Google).

Under a non-horizontal merger assessment this acquisition would have raised antitrust concerns because it aims at foreclosing access to a technology. However, the efficiency defense would apply if the foreclosure of the technology prevents competition of type *III* in the previous subsection. The basis for this efficiency defense originates from the multi-sided property of a platform. The platforms can enforce higher payments by the advertisers by intensifying competition among the latter. This is done by offering groups of

more similar value. The platform which has the higher accuracy can offer the more valuable set but price competition drives the revenue down to the value of the competitor's set. Therefore, in this constellation  $G$  may not be willing to offer full accuracy. This externality harms consumers who face more misplaced ads and it cannot be internalized by the users. Therefore, a merger that can prevent a constellation like type *III* is beneficial to consumers.

## 6 Bargaining Strength

**Result 3** *For  $\eta > 1/2$  and  $c$  sufficiently small the platform chooses  $a = 1$ .*

*Proof:* If  $G$  can extract the full valuation, it will set  $a$  such that the valuation is maximized. This is profitable for  $c = 0$  and  $c$  below some threshold.  $\square$

The agreement with Yahoo endows Google with increased bargaining strength by the simple effect that advertisers have fewer options if they want to hit users of search engines or any other sub-group which can be identified by the behavioral sorting technology.<sup>19</sup> In this case the consumers benefit from the high accuracy of the sorting mechanism.

The agreement between Google and Yahoo! was under review by the U.S. Department of Justice.<sup>20</sup> Google and Yahoo were cooperating with DOJ and explicitly provided time to investigate before making the arrangement effective.<sup>21</sup> Although the deal is no merger case, possibly the failing firm defense may apply, but we will leave this aspect aside within this discussion.<sup>22</sup>

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<sup>19</sup>See DOJ (2008).

<sup>20</sup>Note that Google withdrew from the agreement in order to prevent an antitrust lawsuit from DOJ to prevent the deal. [Such a lawsuit] would have ended up also alleging that Google had a monopoly [...]. See Schonfeld (2008a).

<sup>21</sup>See [http://www.google.com/intl/en/press/pressrel/20080612\\_yahoo.html](http://www.google.com/intl/en/press/pressrel/20080612_yahoo.html) (October 31, 2008).

<sup>22</sup>A merger that is to be blocked under the merger guidelines may still be cleared if bankruptcy of the target firm would be the alternative to the merger. Persson (2005) and Fedele and Tognoni (2006) find that the failing firm defence is a beneficial instrument for consumer welfare. In the present case it seems that Yahoo! is not a viable competitor in the market anymore. Subsequent to the failure of this prevented deal with Google, which

During the assessment by DOJ Google was providing arguments to waive any antitrust concerns.<sup>23</sup> Google claims that the deal "Does not remove a competitor from the playing field" and "Does not let Google set prices for advertisers" because "An advertiser only bids what they think an ad is worth to them"; Indeed "Google does not manually set ad prices".<sup>24</sup> Still, the DOJ considered the deal as a horizontal agreement between competitors and would have filed enforcement actions, had Google not withdrawn the agreement.<sup>25</sup> In this section I illuminate the fact that antitrust concerns go beyond a simple allegation of price-fixing.

The generalized second-price auction allocates the prize to the bidder with the highest valuation.<sup>26</sup> This is a mechanism that implements price discrimination which results in an efficient allocation. Under first degree price discrimination<sup>27</sup> the consumer rent is fully extracted by the seller.<sup>28</sup> A simple example demonstrates that the pricing rule of an auction ensures an efficient allocation but that the consumer rent is completely accrues to the seller. The consumers welfare standard which is underlying the U.S. and European Competition Policy do not support arrangements which aim at this result.

The bidding mechanism employed by Google does not necessarily result in an outcome which is critical from an antitrust perspective. This can be demonstrated in a simple example:  $n$  bidders, which purchase one unit at most, with equal valuation  $v$  face a seller with  $m$  products. For  $m > n$  each buyer bids a minimal amount  $\varepsilon < v$  and an efficient outcome is reached. Now, let the seller destroy some items such that  $m = n - 1$ . Consequently,

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would have ensured a steady source of revenues, Yahoo! is losing important executive staff to its competitors.

See <http://www.microsoft.com/Presspass/press/2008/dec08/12-04CorpDec4PR.mspx> (December 8, 2008).

<sup>23</sup>See <http://www.google.com/yahoogooglegfacts> (October 31, 2008).

<sup>24</sup>See <http://www.google.com/yahoogooglegfacts> (October 31, 2008).

<sup>25</sup>See DOJ (2008).

<sup>26</sup>See Edelman et al. (2008).

<sup>27</sup>Each buyer pays an amount equal to his valuation.

<sup>28</sup>Note that in the present case 'consumer rent' refers to the rent of the advertisers, which are the buyers.

each buyer raises his bid up to  $v$ . Under the generalized second-price auction  $n - 1$  buyers obtain one item each, and one bidder goes away empty-handed. Besides the elimination of some items, the allocation of the remaining item is efficient. This example shows that the seller can set the market environment such that he fully extracts the consumer rent - even though he employs an efficient pricing rule where he is not actively setting the prices.

In the model only the sorting accuracy has an effect on final consumers. The actual sorting mechanism has two crucial effects: Firstly, it divides up all the users in different, possibly distinct, groups. This goes beyond the two-tier classification of the model in section 3. This has not yet been questioned in a process of identification of relevant markets, but this mechanism constitutes a differentiation of markets such that the advertising market is separated into targets with different groups of users. Secondly, the sorting mechanism determines how sellers are allocated to each of the markets. This makes up the relative magnitude of  $m$  and  $n$ . The ability of controlling these two parameters guarantees that Google can extract a large fraction of the advertisers' rent. This does not per se harm consumers.

This pricing policy aims at Google's customers which are advertisers and publishers. The advocacy of the consumer welfare standard in competition policy aims at private consumers, who are not immediately affected by this arrangement. Any critique on the distributional effects of the agreement are not a basis for antitrust concerns. Moreover, the auction mechanism ensures an efficient allocation of advertising space.

## 7 Conclusion

Google was involved in a series of deals, all of them in the online advertising industry: two mergers with YouTube and DoubleClick and one attempted arrangement with Yahoo!. Only the latter has been opposed by DOJ. The present discussion uncovers arguments in favor of all of the three deals. However, balancing these benefits with the anticompetitive effects would be beyond the scope of the present analysis. Thus, they cannot serve as an ex post



justification of the concentrations. Note also, that maximal concentration may not be a harmful outcome on markets based on multi-sided platforms.<sup>29</sup>

I demonstrate that the merger Google/YouTube can have beneficial effects for consumers because the match between consumers and advertising will be enhanced. This argument relies on the presumption that consumers benefit more from having specific search ads displayed on their websites than having unspecific advertisement. Since this merger has not been challenged by antitrust authorities no relevant market has been identified, neither with respect to the group of users, nor with respect to the advertising market. Assuming that the degree of screening and classifying of the users is subject to Google's discretion, the merger eliminates one sort of incentives to not use their search technology to the full extent. After the merger, Google can better identify users of YouTube and match them with ads specifically designed for users of UGC.

The merger with DoubleClick endows Google with control over the search ad technology. Leaving aside concerns on consumer privacy, I identify positive effects from an enhanced searching and screening technology. Further, this allows to make advancements in the screening technology. This becomes particularly effective when Google is able to combine this technology with more detailed information about the users' geography, demography and surfing habits on the internet. This concentration was subject to scrutiny by the FTC and the European Commission.

The arrangement between Google and Yahoo! is double-edged. On the one hand, focusing on the advertising market, which is immediately affected by this deal, there is a negative effect. The advertisers face fewer suppliers of ad space on websites visited by users of search engines. Again, it is not clear whether this market definition is too narrow. However, we note that although the rent is to a large extent transferred from the advertisers to the platform, this comes along with an efficient allocation of ad space. On the other hand, consumers benefit from the platform's ability to fully employ its search technology. After all the prevented harm from DOJ's blocking of the

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<sup>29</sup>See Evans (2002).

deal may be jeopardized by Yahoo!'s possible cessation of business.

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