

8th bi-annual Postal Economics Conference on
E-commerce, Digital Economy and Delivery services

Toulouse, Manufacture des Tabacs April 3-4, 2014

Google and multisided platform economics: what lessons for delivery services?

Vincenzo Visco Comandini*

*University of Rome Tor Vergata, dpt Impresa Governo Filosofia
visco.comandini@economia.uniroma2.it

1. Introduction

The advent of digital services provided by a platform simultaneously serving different groups of customers, dramatically disrupted the traditional value chain of several industries including: advertising, music, news, entertainment, IT device manufacturers.

The platform typically adopts a multisided business approach, charging different prices (some of them often free) to groups of customers that reflect indirect network externalities flowing between them (Van Alstyne, 2013). The multisided nature of a business arises only if the sides cannot directly bargain with each other over prices and quality of the service, or the cost for directly transacting is disproportionately high (e.g. the Coase Theorem does not apply).

The multisided market theory (Rochet and Tirole, 2003; Armstrong, 2006; Evans and Schmalensee, 2010), providing a comprehensive framework for this market configuration, is nowadays popular among regulators and Antitrust Authorities, willing to identify the market power of firms controlling the platform. In November 2010 the European Commission (a nearly identical case was opened and eventually settled by the FTC in the US), opened a proceeding against Google, the most successful firm adopting a full multisided business approach for its search engine, to ascertain whether some of its business practices may violate competition rules.

Search engines (SE) are a breakthrough in the advertising market. By exploiting indirect network externalities in a new fashion, they not only enhance the platform control on different sides (customers, advertisers, content owners), but also disrupt the preexisting advertising value chain. The granularity of bids provided by SE, coupled with new technologies greatly enhanced customer's profile that allows advertisers to directly evaluate the return (up to now, ROI) of their investments. This weakens the role of both traditional media companies and advertising media agencies.

As a result, intermedia competition (i.e. different media platforms competing for a firm's advertising budget) has greatly increased. Evidence of this is the composite alliance of Google's opponents in both FTC and European Commission cases, formed by competitors. These are direct (i.e. Microsoft) or indirect (e.g. vertical engines supplying specialized search results in travel, financial, real estate services, and specialized products). Competitors also include websites content owners and newspaper publishers, worried by the effectiveness of its business model.

The reshaping of the value chain is a feature characterizing several industries adopting digital innovations. Also postal and delivery services, traditionally supplied by fully vertically integrated providers, are hurt by digital technologies,

as in the letter e-substitution case. However, up to now digitalization mainly affected volumes, not the postal business model *per se*.

In part 2 this paper analyzes Google's advertising business model. Competitive issues of SE's market are discussed in part 3, while par4 4 presents a critical review of charges and claims raised by Google's opponents in the European case, where multihoming within the same market (customers and advertisers using different providers), between different platforms and media (multimedia competition) play a crucial role (Visco Comandini, 2013).

Part 5 and 6 discuss whether certain parts of SE's business model, in particular their way of exploiting network externalities that disrupt the preexisting integrated value chain, may apply to the postal delivery sector's. Automated Parcel Lockers (APL) provide an alternative location for consumers to pick-up their parcels, including ecommerce purchases, but can be used also for delivering registered postal items, reverse logistic (returns) as well as for sending parcels. Consumers register online to use the service, and are sent a personal code when their package arrives in a parcel terminal, with which they can open the locked containing the item (IPC, 2010). The click-and-collect business model, adopted in some cases by some large retailers in the UK, may reshape the value chain. Here APL or a large retailer (e.g. Amazon) may act as the platform, providing collection of items (from small-medium retailers), logistics and final delivery services to APL machines located in stores, supermarkets, railways and gas stations, or even at recipient's addresses as additional option for its customers. This latter case arises if the APL platform provides a joint supply of technology (hardware and software) and delivery services. The polish firm InPost, providing both competitive postal services in his home country and APL technology for the International market is an example

Are APL and click-and-collect only features increasing customer's choices options in delivery, or they have the potential for disrupting the tradition postal value chain? Should fully integrated postal and courier providers care about this innovation, combining new technologies with postal and logistic activities? The present market, where investments in APL and online local purchases are just beginning across Europe, does not allow firm conclusions, but nevertheless some tentative conclusions can be drawn. By supplying a cheaper, easy to use and more efficient services, APL business models may become a new distribution B2C platform, able to bypass postal and courier providers. Posts and couriers risk seeing their services commoditized.

2. Search engine's basic market structure

SE introduced new efficient tools for providing consumers the relevant information they are looking for, and for estimating, with superior precision and cost effectiveness with respect to other media, their willingness to pay for products and services advertised. By serving consumers and advertisers, SE promote tremendous changes and innovation in advertising and media industries. SE are fueled by network effects affecting other markets. Some of these are closely related, like ads on websites and vertical engines, or other traditional media willing to exploit opportunities arising from the Internet. Because of the competition faced by SE, traditional media see their business model disrupted. They fear the risk of being transformed in a pure commodity good with low or even no margins.

With respect to other media, Universal (all purposes) SE's with a large number of customers, enjoy significant economies of scale implying higher click-through-rates (up to now, CTR) and conversion rates (i.e. the percentage of users clicking on the ad and purchasing the product, CVR). An important competitive advantage of SE's advertising is that advertiser's ROI for each ad is highly predictable and easily measurable before and after the transaction has taken place.

The most striking innovation of SE is the high relevance reached in both organic results and ads. From a commercial perspective, the more relevant the organic results are, the higher the likelihood that connected ads displayed on result's page are clicked. This is a strategic innovation that has dramatically lowered transaction costs for marketers to reach their customers. It creates new benchmarks for the entire advertising industry, since ads displayed in organic result's pages tend to be seen by consumers as additional relevant information. Ads displayed on SE's result page are explicitly designed to be relevant to the search and are generated by the same algorithm used in the search.

The aim of every SE is to supply the best organic results possible. This is the only way to maximize ad's CTR¹. In pursuing this goal, a SE provider has to take account of several variables, dynamically build in a rapidly changing environment that requires frequent changes in criteria for organic results ranking.

SE providers continuously face their typical and peculiar tradeoff: to show ads and organic results even if not highly relevant but well priced (therefore maximizing short run revenues), or to not show them, and to keep reputation

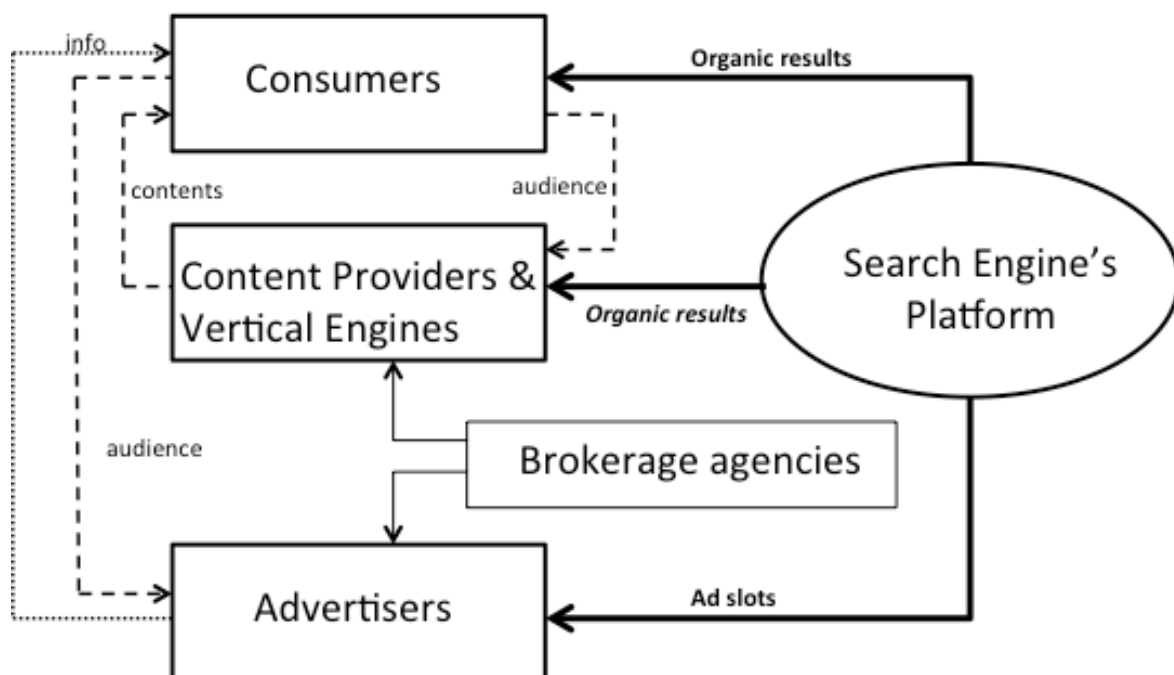
¹ A SE provider cannot directly influence CVR, since it depends on specific attractiveness of products and services shown in the advertiser website linked to the ad.

high for future higher revenues (Varian, 2007). A rational universal SE provider willing to increase its reputation has little choice: it must opt for long run revenue.

This paper will not investigate SE relevant market definition², since this would require huge sets of data and complex substitutability tests, as well as still unresolved issues concerning relevant product and market boundaries (on-line and off-line ads, information on the commercial nature of ads and search results), the transaction or non-transaction nature of the market, or if other media's advertising markets should also be included. Most of these issues are far from being clarified by both legal and economic disciplines, and a comprehensive approach still needs to be developed³.

A stylized graphic model, is presented in Figure 1 to describe all relevant externalities that arise between different sides of SE's market (or more precisely, business model⁴), and to investigate how the platform and sides may internalize such effects,

Figure 1. Search engine's market structure, outputs and externalities



² The European Commission defined SE's relevant market as multisided in two cases, Google/DoubleClick (COMP/M.4731, 2008) and Microsoft/Yahoo! (COMP/M.5727 2010).

³ Up to now, courts, Antitrust and Regulatory Authorities denied the existence of substitution effects in audience across different media advertising markets. Evidences of the EC Google case challenge this conservative approach.

⁴ Rysman (2009) and Evans and Schmalensee (2013) suggest to use the term *multisided business model* instead of multisided market, since very often, as in the SE market, it is the business strategy that makes a market multisided, not technology as such.

Notes:

- Search engine direct outputs
- - - strong externalities
- weak externality
- Ads brokerage market

The model considers the universal SE market as an asymmetric⁵ three-sided market, with the following sides: 1) consumers wanting to find the information they are looking for on the organic result's page, 2) advertisers tied to consumer's query, and 3) content providers (in particular on-line publishers) and vertical engines willing to be shown in organic result's page.

The platform generates two related outputs provided by the engine's algorithm: organic results and ad slot allocation along the side of the result's page. Organic results are an important input for both website content owners and vertical engines.

Consumers and advertisers face two different kinds of externality: a strong network effect, enjoyed by advertisers generated by the number of consumers viewing the results page, and a weak externality flowing in the opposite direction that benefits consumers. For the majority of media, an ad is to some extent a negative externality imposed on consumers. They are exposed to it if they want access to free services (TV, radio, free press, rich media and banners in on-line newspaper websites) since consumer's profiles apply to a composite sample of targeted people. In contrast, in SE (and increasingly, social networks), profile relates to the single customer experiencing the service. This extreme personalization⁶ allows turning the usual negative ad externality into a weak, but positive and direct externality, since consumers are expected (if the engine's algorithm is effective) to like it⁷.

Content providers and vertical engines – the third side of the market - benefit from the platform's output. The higher the position in the organic results page, the higher the traffic diverted to their websites. They see their ranking in organic results as the main opportunity to enhance symmetric externalities (the virtuous circle) working on their submarket.

In this submarket, both consumers and content providers enjoy very strong non-transaction, symmetric and reciprocal network externalities, the very reason for

⁵ A multisided market is asymmetric when cross network effects between sides are not symmetric in strength or nature. While in symmetric multisided markets externalities between sides show a typical endogenous causal relation (e.g. the chicken-and-the-egg problem), in asymmetric multisided markets causal relations are often one way only.

⁶ Varian (2004) defines this case as the typical "market for one".

⁷ Social Networks use as default feature the "I Like" device to reach in a different way the same goal.

the Internet booming in the last two decades. The higher the number of good quality interesting websites, the higher the attraction for consumers willing to visit them, and *vice versa*.

The positive feedback cycle makes content providers attractive for advertising brokers – a related but separate, single sided market – intermediating advertisers and website content providers. Advertising brokerage is a single sided market with no network externalities between the parties since they can directly transact with each other, while the broker only facilitates, but not necessarily coordinates, the transaction. Advertising brokers can be either SE providers (e.g. Google's AdSense or Microsoft's BingAd), or an on-line division of a media advertising broker.

For vertical engines (VE) and content owners, facing the same situation, the benefits of being shown on organic results pages depend on their installed base (products sold in the past, existing users of services, audience for news websites). Benefits are lower for large installed base websites, since their experienced customers, by labeling their link as preferred on their browser, do not need an access through SE's results. In contrast, for VE with a low installed base a high rank in organic results really matters. For them, organic results are an essential input.

The most innovative feature of SE is the bid mechanism for ad allocation along the organic result's page. In a bid for a specific or generic keyword, each advertiser considers the incremental cost per click (how much should he pay for getting a higher rank in the page, or ICC). If ICC is lower than the value estimated by him for purchasing the ad's slot he has to increase his bid. Conversely, if ICC is higher than his value, he has to decrease his bid. In equilibrium his slot preferred position, corresponding to a Nash equilibrium, will be the one where ICC is higher than the value, but the incremental saving for lowering one position is lower than the value (Varian, 2007).

For advertisers, the value of each ad depends not only on CTR, but also on CVR. The combined effect of these variables coped with the cost-per-click (up to now, CPC) is synthesized by the cost per Acquisition index, or CPA where $CPA = CPC/CVR$. CPA is different for every advertiser and for every product or service advertised. Advertisers often don't know the CVR of each product advertised. Before the bid, the SE usually provides the advertiser with relevant statistical data on its expected CTR⁸, CPC and, in case of highly standardized product or services, also CVR. The advertiser can now calculate the CPA of the ad he is willing to show and rationally participate to the bid.

⁸ CTR is not susceptible to strategic distortions since payments are based on the effective number of clicks received.

The weak reverse externality works in a more subtle way. It is a weak simple externality, since consumers don't care about the absolute number of ads or advertisers, deliberately limited in their number and size on each result page. However, consumers looking for information on a specific product or service often do not consider sponsored ads and organic results as separate sources of information. They only care on the relevance of both ads and organic results. This generates a simple but positive benefit for consumers, enhanced by some minimum crowding effect (the number of investors making a bid for each query should be large enough to generate relevant ads for consumers).

SE take account of this externality in the quality parameter ε , used together with price offered for allocating slots, kept secret as commercially sensitive. Among other variables used for generating ε , the SE's consider the number of high quality well reputed links connected to the website advertised. Thus, ε works as a premium feature (better position being price constant), defined by the SE for rewarding high quality ads.

For SE, the weak positive externality is the very reason for choosing long run revenue strategies. If displayed ads are not sufficiently relevant, their CTR will degrade, and the market for the connected keyword will lower its value and price. More over, it will spoil the engine's reputation, which is crucial in this industry.

The Google's Panda case is evidence for this. In 2011 Google made an important upgrade to its search engine (renamed Panda) with changes in search result criteria based on assigning more weight to the site's verified relevance. The adoption of Panda negatively affected several commercial websites including vertical search engines, whose ranking in organic results dramatically dropped with respect to pre Panda period (Crum, 2013). As a consequence, Google lost important short run revenues⁹, but reputation and quality results significantly increased, enhancing after a time lag the virtuous circle higher CTRs - higher revenues (McGee, 2013).

Reputation is a good deeply scrutinized by economists. It may generate extra profits for the incumbent holding it (e.g. to cheat on quality and save costs in the short run, assuming customers unaware of the degradation) only if switching cost are substantial. This is not the case for SE, facing repeated and constant controls from both consumers and investors. In the SE industry, reputation depends on investments in quality, nearly instantly perceived by consumers and advertisers.

⁹ By demoting AdSense partners, Google itself took a financial hit. Given that 12% of all queries were impacted by Panda, this hit is believed to be significant, certainly several millions of dollars (if not hundreds of millions).

3. Competition in the SE market

Unlike other network industries, the strong indirect network effect enjoyed by SE does not seem to push this market toward tipping conditions, because in SE market competition is disciplined by three factors: congestion, multihoming, and CPC pricing.

Congestion attenuates network effects since, for any given query, advertisers should compete with each other to show ads. Some of them may prefer to be the only or the preeminent advertiser in a given organic results page. These customers are very sensitive to both direct rival platforms and to other digital portals, like social networks, vertical engines, on-line newspapers, or popular blogs.

For SE, multihoming competition arises in four different but increasingly related cases, when customers multiple use and advertisers allocate their ads: a) across different SE, b) across different web platforms (SE, VE, social media, portals, popular blogs, news and free content websites like YouTube), c) across different devices (PC, tablet, mobile), and d) across different media (Internet, newspaper, TV, radio....).

Cases b), c) and d) seems to be increasingly important in the development of this market, since dominance of a SE on desktop does not imply dominance on mobile or social media, considering that mobile users often prefer VE or specific manufacturer software to attain the quick and ready information they are looking for.

Intermedia competition is quite complex, since media compete on both sides of their market: on ads revenues and on consumer's attention and time spent on their consumption. In both audience dimensions media are partly substitute and partly complement with each other, following peculiar paths that have not yet been deeply investigated by economists and regulators.

In advertiser's budget competition, marginal investments (say, low cost ads put in when TV or radio audiences are small) are highly contestable since advertisers may easily switch small investments from one media to another according to their ROI measured on each media. Here media are substitutes, while in large ad's investments they are generally not, because high cost campaigns are partly sunk¹⁰. For some large advertisers, investments on different media are sometimes complements.

¹⁰ Investments of some large campaign are partially sunk, since ROI are differently measured across media. In popular media like TV advertisers often consider brand awareness, hardly measurable, more important than the ROI estimated for the specific product advertised.

However, Inter-media competition in Europe is at present severely constrained by different Member State's regulations applied to each media. A regulation allowing large media companies to adopt bundling strategies, by promoting discounts for prime time TV ads if the customer also buys ads to be shown during low audience hours, negatively affects Inter-media competition, preventing rival media to effectively compete for firm's ads budget market.

Social Networks are expected to increasingly compete with SE in advertising, even if CTR of their ads are at present lower than those of SE. The reason for this gap, according to a recent Global survey (quoted in Smith, 2013)¹¹, may depend on different numbers of customers reached. While social ads reach much larger audiences, therefore lowering CTR because of the abundance of impressions, search ads are at present far more finely targeted, with users already interested in the product or brand being pitched. However, thanks to social graph technology, social ads are expected to significantly increase both their CTR and CVR¹², and their ad's revenues are expected to grow faster than SE in the next few years. Today, search advertising on desktop still accounts for 86% of total revenues raised in on-line advertising industry, but according to forecasts it will decrease in 2015 to 62% for Google Display, 56% for Google search, 48% for Facebook and only 38% for Twitter¹³.

Also CPC pricing attenuates network effects. Customers uninterested in being the only advertiser in displayed organic result page participate in slot's allocation bid. The final slot allocation depends on the bid mechanism which is driven by the number of advertisers¹⁴, the value each participant assigns to the ad slot, and, crucially, the expected CTR.

Switching costs for consumers are negligible, since they can easily switch between different providers. Evidence shows that a high share of customers already use simultaneously different SE. 72% of high users make searches on 3 different search engines (Nielsen/Net rating survey, quoted by Cheng, 2009). In the US, the percentage of consumers using more than one SE increased from 49% to 55% between 2008 and 2009 (Forrester study, quoted by VanBoskirk, 2009). 89% of consumers are unsatisfied with results at their first attempt; they modify the terms of their query at second attempt, but 79% switch to another SE (Performics, 2010).

For advertisers, switching costs relate to both possible contractual exclusivity agreements and misuses of standardized interfaces (API), preventing

11

¹² Social commerce is also a very promising marketing strategy for Social Networks.

¹³ source: Kenshoo Global Advertising Trends.

¹⁴ Varian (2007) shows how the algorithm set ad prices according to the number of bidders.

advertisers from making multiple investments on different SE or other websites selling ads. In the US market, advertiser's multihoming strategies are common. Table 1 shows data of a recent Adgooroo report (2013) based on a sample of 39,000 U.S. advertisers in six economic sectors during the third quarter of 2012.

Table 1. % of Advertisers using Google AdWords and BingAd by economic sector, US Market, Q3 2012*

	<i>Google only</i>	<i>Google & BingAd</i>	<i>BingAd only</i>
Shopping and Classified	24,3%	69,9%	5,8%
Financial Services	43,6%	45,0%	11,4%
Travel	50,4%	45,0%	4,6%
Education	49,8%	46,5%	3,7%
Computer and Internet	54,0%	38,5%	7,5%
Business	60,0%	36,1%	3,9%
All sectors	42,0%	51,9%	6,1%

Only 42% of advertisers are loyal to Google, while 52% make investments on both SE.

Today, Google dominates the U.S. domestic market by search volumes, handling almost two-thirds of all queries¹⁵, while Yahoo! Bing network since its inception raised its market share of search queries in the US from 28% up to 31% (source: Comscore). However in this market dominance does not seem to negatively affect competition, although some scholars maintain that Google's availability of the largest data sets on customer's behavior generated by searches gives it an unmatched advantage (Etro, 2013). If this technology driven hypothesis were true, Yahoo! (the former incumbent up to 2002-3) could not have been displaced by Google in 2004, nor would we observe today specific subsectors where competitors overtake the incumbent.

Table 1 shows advertiser participation and performance metrics on the Yahoo! Bing network through Bing Ads compared to Google AdWords.

Table 1. Google and Yahoo! Bing Ad Impressions and paid search Ad Spend by economic sector, Q3 2012

<i>Economic Sector</i>	<i>Total impressions (million)</i>		<i>Paid search Ad Spend (million US \$)</i>	
	<i>AdWords</i>	<i>Yahoo! Bing</i>	<i>AdWords</i>	<i>Yahoo! Bing</i>
Shopping and Classified	18.66	11.35	497.74	56.05
Financial Services	4.11	5.31	418.82	81.01
Travel	5.79	3.43	199.42	27.89
Education	2.23	1.93	201.39	17.50
Computer and Internet	8.68	8.01	305.97	42.95
Business	3.57	3.32	220.42	18.31

source: Adgooroo

¹⁵ In Europe, Google's market share is even higher, ranging from 70% up to 90%

Although Google holds the largest share of impressions (on average, 56%) and revenues (more than 10 times higher than Yahoo!Bing), surprisingly Yahoo! Bing overtakes AdWords on impressions in Financial services.

According to the study, competition between the two largest SE is intense, with CTR being the relevant variable affecting both quantity of clicks and revenues. Google dominates also in CTR, showing its superior ability to display more effective ads than its competitor (Table 2).

Table 2. Google and Yahoo! Bing Average click-through rates and Average cost per click by economic sector, Q3 2012

<i>Economic Sector</i>	<i>Average click-through-rate</i>		<i>Average cost per click (US \$)</i>	
	<i>AdWords</i>	<i>Yahoo! Bing</i>	<i>AdWords</i>	<i>Yahoo! Bing</i>
Shopping and Classified	3.70%	1.13%	0.72	0.44
Financial Services	3.53%	0.81%	2.88	1.98
Travel	4.14%	1.27%	0.83	0.64
Education	2.57%	0.44%	3.51	3.07
Computer and Internet	3.25%	1.35%	1.80	0.40
Business	3.12%	0.60%	1.98	0.91

This advantage implies higher prices charged by Google. We can observe that differences (in percentage) between the two players in CPC are smaller than differences in CTR (table 3).

Table 3. Differences % between Google and Yahoo!Bing in click-through-rates and prices by economic sector, Q3 2012

<i>Economic Sector</i>	<i>Price premium</i>	<i>click-through-rate</i>
Shopping and Classified	64%	227%
Financial Services	45%	336%
Travel	30%	226%
Education	14%	484%
Computer and Internet	350%	141%
Business	118%	420%

Across all sectors considered in the study, only in Computer and Internet (where Yahoo!Bing prices are the lowest among all sectors) prices charged by Google are higher with respect to its advantage in CTR. This is evidence that the premium paid by customers to Google does not depend on the classical market dominance (where the incumbent can simply raise prices) but rather on a superior quality in organic search results, reflected in higher CTRs¹⁶. Despite this

¹⁶ "Being the search engine who decides which ads to display on each SE page, and since so many of the advertisers are present on both engines, it is reasonable to conclude that at present AdWords is making smarter choices and displaying a more compelling set of PPC ads on average in response to specific search queries" (AdGooroo Report).

striking difference, the report estimates that in a few years the vast majority of advertisers will run their campaigns on both engines, and the existing gap will very likely be reduced, since more low budget advertisers will join the industry.

In this market the competition forces all SE providers to a continuous innovation to both attract customers of the two sides of the market and to increase CTRs¹⁷. Investments in R&D focused on improving the search algorithm are remarkable. In the fiscal year 2011, Google invested 5.2 billion \$, Yahoo! Bing network around 3 billion \$. While the largest part of SE investments are aimed at increasing competitiveness, those related to future developments on the use of natural language are allocated on joint initiative. In June 2011 Google, Yahoo! Bing network and Yandex found Schema.org, a common institution where “microdata”, a collection of terms that webmasters can use to markup their pages to improve the display of search results, are shared between the participants for building unified semantic meaning codes¹⁸.

4. The Google European case

The two main concerns and allegations about Google raised by its competitors are driven by the fear of displacement. Both VE and content owners, as well as the direct competitor Microsoft, complain that Google deliberately distorts organic search results, penalizing their sites in ranking at the benefit of its own services and products (no.1). The second allegation has been raised by newspaper publishers considering Google as saprophyte free-rider, keeping valuable information from their websites shown on their organic results pages or Google News, therefore diverting traffic (including ad clicks) from them (no. 2).

The European Commission opened an investigation¹⁹ to ascertain whether these two crucial allegations, coupled with 3) exclusivity clauses in contracts and 4) behavior aimed at preventing API (software containing data history of each customer) transferability across different SE and platforms, may violate art. 102 of the European Treaty. Google submitted specific commitments on these four allegations to the European Commission in April 2013. While commitments concerning allegation of exclusivity clauses and preventing portability of search advertising campaigns across Google's and other rival advertising services were immediately accepted by the Commission, the first two were initially rejected,

¹⁷ According to the Kenshoo Global Search Advertising Trends (2013), average CTRs in search increased from 1.04% in Q1 2012 up to 1.68% in Q1 2013.

¹⁸ Available at: <http://Schema.rdf.org>, page visited June 18, 2013

¹⁹ European Commission, preliminary assessment within the meaning of Article 9(1) of Regulation (EC) No 1/2003 addressed to Google Inc., 13 March 2013.

asking Google to revise it. Two revised versions of the commitments were brought in later months, followed by a market test, and although the case has not been yet officially cleared, on 4 February 2014 the Commission in a press release declared that the new version of commitments can be considered satisfactory.

It is worth to carefully analyze Google's commitments no. 1 and 2, including their expected refusal by the opponents.

The allegation of abusive behavior in organic search results, deliberately distorted according to opponents, cannot be considered as abuse, because changes in ranking are only a logical and strict consequence of the adopted business model, the same for every universal SE.

Google's opponents questioned the very existence of the present SE's business model, asking for measures reflecting the implementation of the so-called search neutrality principle. They draw a hypothetical "neutral" SE whose organic results are generated by objective, transparent and easy to control (i.e. easy to replicate) ranking criteria, to be identically applied to every query and website. This is a meaningless proposition, since SE's queries apply to natural languages, where user's questions are often inconsistent, vague, misleading, or polysemous. From the semiotic standpoint, SE carry out a double action: to show relevant source ranked by the algorithm, and to provide, by using the *knowledge graph* technology, an effective interpretation to the user. The more sophisticated the interpretation function, the larger the difference in quality between SE. To hypothesize a unique search procedure for SE implies, therefore, to fix constraints on their semantic effectiveness, e.g. a strong disincentive to innovate (Manne and Wright, 2011).

Conversely, SE need to continuously adapt their algorithm to new languages, idioms, facts, concepts, products, services, and past consumer's behaviors. This is the basic reason why, for a given keyword, organic results may vary across time. SE providers very often update their engine (change data sets of variables used) or, less frequently, upgrade it (changes in ranking criteria), with the aim to maximize ad's CTRs.

In order to resolve the case, Google proposed in clearly displayed in horizontal search results to distinguish separate generic organic results from specialized service results. The latter would be separately labeled in a specific organic results page showing both Google's own services and competing platforms. A third party, the monitoring trustee, would be charged for monitoring this process and informing the Commission on its effective implementation.

Google's opponents disagreed with the proposal over compensation. A Competing website's links are shown for free if Google's ads are absent on the page. However, their links are charged, through a special reserved bid, if Google's ad slots are shown in the page. Opponents maintain that this service should be free as well. Google does not accept the free provision principle, which has never been ordered by courts or Antitrust Authorities even if considered (which is not the case) as a remedy for an essential facility (Lao, 2013). This proposal is a quality enhancing measure. It provides consumer additional information and rival platforms greater visibility along the result's page.

Regarding allegation no. 2, the Google proposed to allow third parties websites to opt-out from being displayed in the organic results. The Commission took the view that even if freely accessible, website's contents are subject to some copyright restrictions, in particular to the right of their owners to deny its publication on third parties sites (e.g. Google News). Ranked websites and publishers should now face a decision reflecting the classic make-or-buy alternative, to be solved by estimating the size of the installed base of their audience, traffic and ad revenues arising from the two alternatives²⁰. Thus, this commitment will enhance the allocative efficiency of the industry.

The European case shows that in SE's industry, network externality's exploitation along the value chain is crucial. The winning party is the one that internalizes the relevant part of benefits arising from different sides of the market. The majority of on-line publishers and VE are unable to autonomously trigger externality's virtuous circle. These publishers cannot profitably exclude themselves from being exposed to SE ranking. In SE's market, full externality exploitation gives its beneficiary a bargaining power that he may use for bypassing preexisting constraints no longer valid thus reshaping the ad's traditional value chain. Media centers and ad's brokers risk losing in few years their market power, bypassed by the SE's business model greatly facilitating transactions for large and retail advertisers.

5. Externalities in postal and delivery services

Postal services are also theoretically characterized by network externalities, based on the ubiquitous delivery network, provided because of market forces (express courier) or universal service (traditional postal providers). Senders

²⁰ Website owner are now asked to decide whether or not to opt out . They should evaluate pros and cons by matching benefits arising from traffic received from Google's organic results against their exclusion. The latest version of commitment no.2 allows a finer granularity in choices: the website's owner can either deny the publication of single contents, or only part of it, like title or specific sentences. However, to calculate the marginal contribution to ad's revenues of a specific content or part of it is a very difficult task, that publishers may be unable to perform.

greatly benefit from the opportunity (or right) to reach all known addressees, since the distribution network, (excluding many underdeveloped countries) is de facto ubiquitous. Disconnections, if existent, are only local transitory exceptions. In the beginning of the industry, these symmetric network externalities were enhanced by the adoption of the sender-pays-all principle, that greatly lowered transaction costs between sides of this peculiar multisided market, which allowed the exploitation of economies of scale (Lintell et al, 2009). However, since long time these network externalities are exhausted (the % of people connected to the postal network is close to 100%) and internalized by postal providers, generally adopting a full vertically integrated business model to protect them.

In the last decade the booming Internet increased the speed of e-substitution in letters and fostered the growth of e-commerce, particularly in B2C which became crucial for postal providers looking for alternative revenue sources because of the decline of letters. Royal Mail's privatization is an example. Royal Mail's shares attract investors only because it holds nearly 60% market share in domestic parcel and has an important customer's installed base in the International parcel market. For investors, the declining letter market is considered more a constraint than an opportunity.

The question is whether network externalities that are still working, will be captured by some winner in e-commerce that is able to trigger the virtuous circle observed in SE's market.

6. E-commerce and Automated Parcel Lockers as alternative delivery

Today competition in B2C parcels is intense, in both international and local markets. Key competition drivers are price, quality (speed and reliability) and, increasingly, convenience for consumers to receive on line purchases. However, consumers are often absent during normal delivery hours. Automated Parcel Locker (APL), conveniently located in public areas, has been introduced to overcome this problem, as well to lower the cost of delivery.

However, it would be naïve to consider APL as an alternative delivery option only, because it may give other sides of the market opportunities to disrupt postal vertically integrated value chain for B2C e-commerce and eventually to take its control. The basic reason is that in the present production organization, delivery is with few exceptions the main focal value added activity of the postal industry: traditionally, players performing delivery always hold the control of upstream components of the value chain.

By simplifying delivery and allowing customers to pick up their items, APLs tend to commoditize delivery, therefore stimulating the entrance of new players.

A second level, low cost opportunity now popular in the UK is the click-and-collect business model of using restaurants, café, supermarkets, store or gas stations for delivery, exacerbates this tendency. Anybody with minimum volumes in certain densely populated areas may be in the business.

The advent of APL may be fatal to the existing postal vertical integration in e-commerce service, and reshape its value chain in some new and unknown fashion. At least in some B2C markets, Posts may loose their role of coordinating and controlling platform. Postal providers may also loose economies of scale gained in the joint supply of B2B and B2C services.

Today APL can be run following three basic business models, their choice depending on local market conditions:

- a) APL providers sell or rent the machine a to postal firm, thus increasing alternative delivery options for somebody else's customer;
- b) APLs directly provide end-to-end services to final customers, partly or fully bypassing traditional posts, acting as side's coordinating platform. The business model entails either agreements with local logistic or carrier operators or a direct joint supply of logistic and delivery services at APL or local stores, coped with contracts directly signed with large e-commerce senders;
- c) APL providers sell or rent the lockers to a large on-line retailer (or group of on-line retailers) that organizes the whole business through contracts with local carriers and APLs, eventually becoming the platform.

In supplying end-to-end services in a vertically integrated fashion, postal providers face logistic and delivery costs arising from a production function subject to economies of density. Excellence in express courier industry depends on firm's ability to optimize their delivery routes daily. Conversely, APL models face lower delivery costs, since the transactional part of delivery is close to zero, and transportation costs for the last mile are shifted to final consumers. More over, APL face lower logistic costs, since distribution routes are greatly simplified, being nearly fixed (from sender's warehouses to APL location).

Figure 2. Vertically integrated Postal provider supplying APL as delivery option (model a)

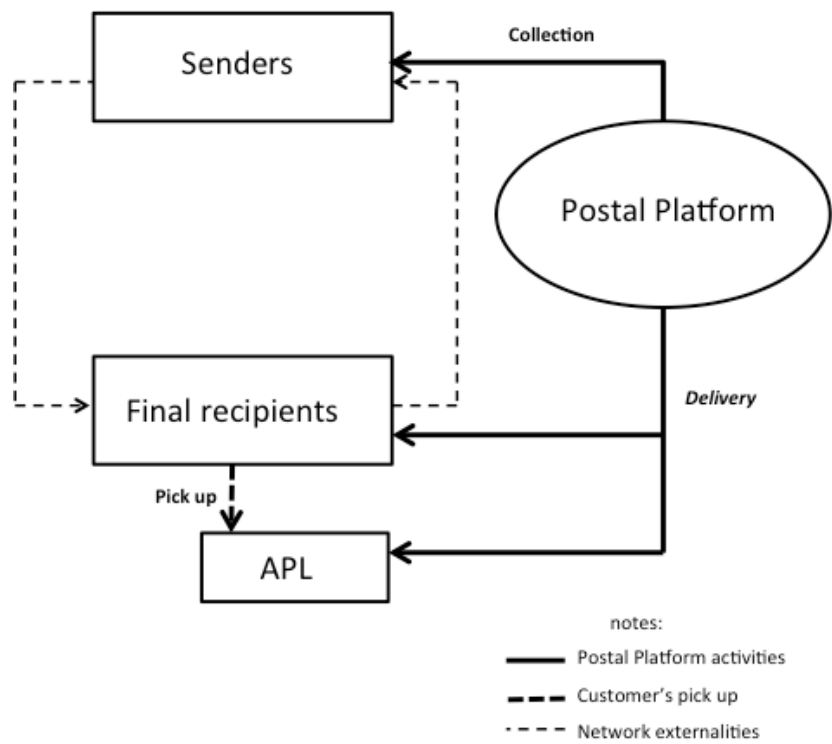
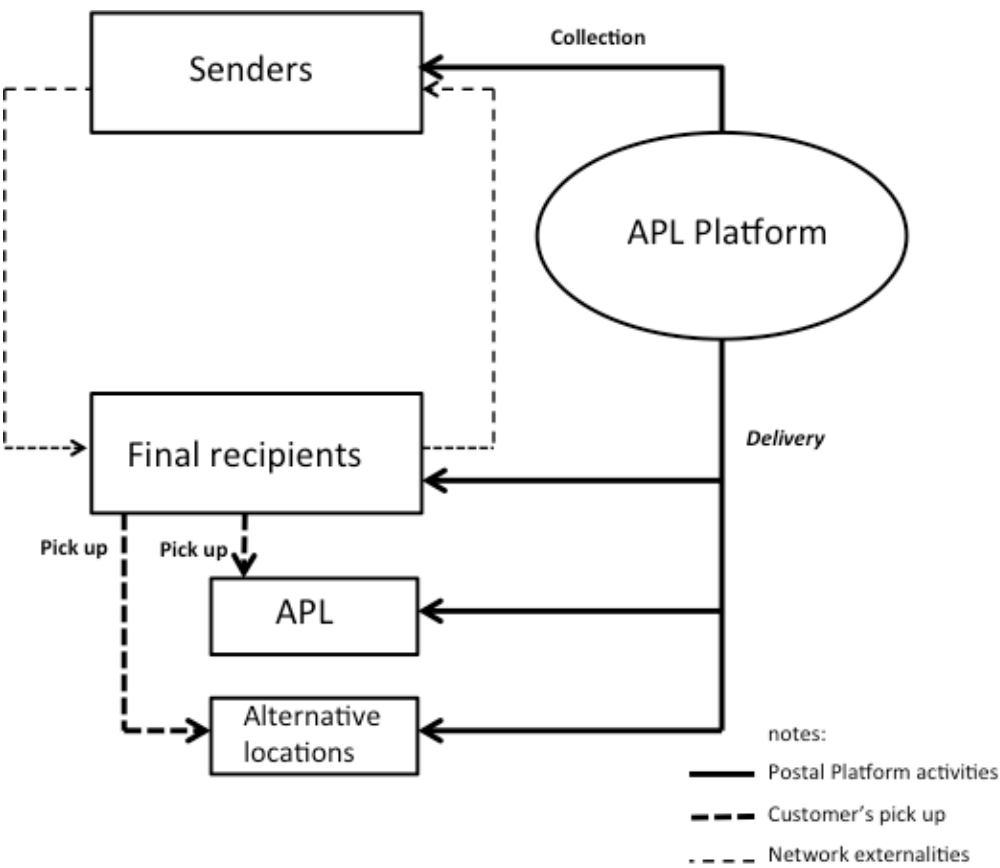


Figure 3. APL acting as Platform (model b)



While model a) does not trouble postal providers, models b) and c) do. Model b) is still in its infancy, because it requires that APL providers have deep expertise in logistic and delivery, so that they can compete with postal providers in price. In b) two different sub-models are considered. The first presumes a full self-financing of APL costs, where the owner fully assumes the risks. In the second, the APL's costs are paid by retailers and are eventually partially shifted to consumers. This is rather a joint venture between APL and large retailers, where risks and rewards are equally spread among the parties.

Model b) is particularly suitable for local e-commerce B2C markets, where retailers, routes, warehouses and carriers are mainly local. However, in specific areas large retailers may also be attracted by this new opportunity and tries to switch model b) into c), as Amazon does in several countries.

By adopting model c) retailers have to carefully choose APL locations. Amazon recently made trials in the US by setting up APL's for their exclusive use in Staples and RadioShack stores. The trial has failed since many products sold in stores and items picked up by Amazon customers are basically the same: the presence of Amazon's pick up does not boost sales in stores.

Another relevant issue is the use of APLs as a PO box. Some APLs are the exclusive terminal of specific retailers (like Amazon), while others are multicarrier. Should regulators care about this, as they did for letters (letter PO boxes in Germany were considered an essential facility), thus fostering infrastructure competition?

At present the vast majority of APL providers supply their services around the world following model a): KEBA (Austrian firm) supplies La Poste, Post Denmark, DHL and other posts, T2 (Australia) recently signed an agreement with Poste Italiane for trials in Milan, LL Optic (Lithuania) and Cleveron (Estonia).

The only, interesting, exception is the Polish firm InPost, selectively adopting a) or b) models. InPost, being the main competitor of Polish Post in letters, has its own organizational logistic and delivery network already in place, allowing the adoption of a full b) model.

It is premature to make conclusions about which of the models will be the winner: they may coexist across different countries. However, some implications can be drawn. Boosted by alternatives to delivery as APL terminals or location in specific dropping points, competition between express couriers and competitive postal providers in B2C markets for items weighting less than 2 kg. is expected to increase in the next few years.

This may end in market specialization. Integrated express courier firms are increasingly specialized in supplying B2B services²¹ (and do not use APLs), traditional postal operators (both incumbent and competitors) may successfully operate B2C markets by efficiently using APLs.

References

AdGooroo (2013) Yahoo! Bing PPC Performance Metrics. What Search Marketers Need to Know About “The Other Search Engine”, Special Report, available at <http://searchengineland.com/new-ppc-report-bing-ads-vs-adwords-in-6-us-verticals-152229>, page visited June 7, 2013

Armstrong, M. (2006) Competition in Two-Sided Markets, *Rand Journal of Economics*, 37 (3)

Cheng, J. (2009), Nielsen: Fickle search engine users could benefit Bing, *ars technica*, 2 June, available at: <http://arstechnica.com/information-technology/2009/06/nielsen-fickle-search-engine-users-could-benefit-bing/>, page visited June 10, 2013.

Crum, C. (2013) “Google Insists Panda, Penguin Not Designed To Increase Its Revenue”, WebProNews, June 4, available at: <http://www.webpronews.com/cutts-insists-panda-penguin-not-designed-to-increase-googles-revenue-2013-06>, page visited June 9, 2013.

Etro, F. (2013), Advertising and search engines. A model of leadership in search advertising, *Research in Economics*, 67, 25–38

Evans, D., Schmalensee, R.. (2010) “Failure to Launch: Critical Mass in Platform Businesses.” Review of Network Economics, 9.4

Evans, D., Schmalensee, R. (2013) The Antitrust Analysis of Multi-sided Platform Businesses, NBER Working Paper No. 18783, February

IPC (2010), Secure Electronic Parcel Lockers

Kenshoo Global Search Advertising Trends (2013), Worldwide Search Advertising, available at: <http://www.kenshoo.com>

²¹ In Italy 75% of revenues of large express courier firms are B2B, but also B2C mainly relate to document exchange rather than e-commerce.

/digitalmarketingtechnology/wp-content/uploads/2013/04/kenshoo-global-search-advertising-trends-q1-2013.pdf, page visited June, 17, 2013

Lao, M. (2013) Search, Essential Facilities, and the Antitrust Duty to Deal, *Northwestern Journal of Technology and Intellectual Property*, 11, 275, <http://scholarlycommons.law.northwestern.edu/njtip/vol11/iss5/2>, page visited June 14, 2013

Lintell, M., Gori, S., Pierleoni, MR, Tisdahl, B, Visco Comandini, V. (2009) "Postal Price Elasticities and Intermedia Competition – A Multisided Market Approach", in M. Crew and P. Kleindorfer (eds.) *Progress in the Competitive Agenda in the Postal and Delivery Sector*, Edward Elgar publ., Cheltenham & Northampton, 163-183

Manne, G., Wright, J. (2011) *If Search Neutrality is the Answer, What's the Question?*, Lewis & Clark Law School, Legal Research Paper Series, Paper No. 2011- 14

McGee, M. (2013), Google Panda Two Years Later: Losers Still Losing & One Real Recovery, 24 Feb, available at: <http://searchengineland.com/google-panda-two-years-later-losers-still-losing-one-real-recovery-149491>, page visited June 7, 2013

Performics (2010) Search engine usage study: How do your customers interact with search engines?, Performics Official Blog, 30 September 2010 <http://blog.performics.com/search/2010/09/search-engine-usage-study-how-do-your-customers-interact-with-search-engines.html>, page visited June 10, 2013

Rysman, M. (2009) The Economics of Two-Sided Markets, *Journal of Economic Perspectives*, Vol. 23, No. 3, pp. 125-143

Rochet, J.C. e Tirole, J. (2006), Two-Sided Markets: A Progress Report, *RAND Journal of Economics*, 37

Smith, C. (2013) *Facebook ads still lag paid search in click-through-rates* quoting Salesforce-Social.com ads benchmarking report, march 2013 available at: <http://www.businessinsider.com/facebook-ads-still-lag-paid-search-ctr-2013-6>, page visited June 17, 2013

Van Alstyne, M. (2013) "Rise of the Platformc & What It Means for Business", presentation

VanBoskirk, S. (2009) Search loyalty is still hard to find, *Forrester Research*, 3 February,
http://www.forrester.com/rb/Research/search_loyalty_is_still_hard_to_find/q/id/48309/t/2, page visited June 10, 2013

Varian, H. (2004) "Competition and Market Power" in H. Varian, J. Farrell, C. Shapiro, *The Economics of Information Technology. An introduction*, Cambridge University press.

Varian, H. (2007) "The Economics of Internet Search", *Rivista di Politica Economica*, n. 3, Novembre-Dicembre, 177-191

Varian, H. (2010), Computer mediated transactions, *The American Economic Review*, vol. 100, No. 2

Visco Comandini, V. (2013) "Assessment of commitments submitted by Google", Statement on the Antitrust case AT.39.740 presented to DGComp, European Commission, 26 June 2013