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Google, Facebook, Amazon, eBay: Is the Internet driving competition or market monopolization?

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Abstract This paper discusses the general characteristics of online markets from a competition theory perspective and the implications for competition policy. Three important Internet markets are analyzed in more detail: search engines, online auction platforms, and social networks. Given the high level of market concentration and the development of competition over time, we use our theoretical insights to examine whether (a) leading Internet platforms have non-temporary market power and, based on this analysis, (b) whether any specific market regulation beyond general competition law rules is warranted in these three online markets.

Keywords Two-sided markets · Online markets · Digital economy · Antitrust · E-commerce

JEL Classification L12 · L41 · L81 · L82 · L86

1 Introduction

Due to the ever increasing diffusion of (high-speed) Internet networks, Internet access and Internet-based services are available to more people in the world than ever (see, e.g., Mueller and Lemstra 2011). As a key consequence of this diffusion process Internet applications have revolutionized transactions, both for businesses and for final consumers. The Internet's effects on (lower) transaction costs and increased competition have been widely recognized. Innovative service providers such as *Amazon, eBay* or search engines such as *Google* and *Bing* have lowered search costs

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in many markets. And while Internet services have made entry into many markets easier, concerns have recently emerged about competition in these Internet service markets themselves. The European Commission as well as the US Federal Trade Commission have been investigating various business practices of *Google*, *eBay* and other well-known Internet firms, and consumers also appear to be increasingly skeptical about the market power of firms such as *Facebook*. As the firms' conduct is increasingly encountered with suspicion by competition authorities and consumer protection organizations alike, the obvious question has emerged whether current competition law instruments are sufficient to address the emerging competition concerns in digital platform markets.

To provide an answer to this question, the differences between online markets and conventional "brick-and-mortar" or offline markets should be first analyzed. On the one hand, it is rather obvious that many very successful Internet-based companies are nearly monopolists. *Google, Youtube, Facebook*, and *Skype* are typical examples for Internet firms who currently dominate their relevant markets and who leave only limited space for a relatively small competitive fringe. Furthermore, most of these providers do not generate content themselves, but "only" provide access to different content on the Internet. On the other hand, the crucial question from a competition policy perspective is not so much *whether* these firms have such a dominant position today, but rather *why* they have such a large market share and whether this is a temporary or non-temporary phenomenon. Do these Internet monopolies enjoy a dominant position because they are protected from competition though barriers to entry or do they just enjoy the profits of superior technology and innovation? Are we observing some sort of Schumpeterian competition where one temporary monopoly is followed by another, with innovation as the driving competitive force, or are we dealing with monopoly firms that mainly try to foreclose their markets through anticompetitive behavior? These are the key questions of this paper.

The remainder of the paper now proceeds as follows: In the next section, we discuss major features of online markets to lay the theoretical foundations to explain the high concentration levels often observed, using the by now well established theory of two-sided markets. Building on these insights, three particular online markets are analyzed, where competition and consumer protection concerns have recently been most acute, namely search engine services, online auctions, and social networks. These platforms are good examples for online markets that are characterized by dominant firms or near monopolies, and the three markets can be ideally related to the theoretical discussion. Based on our discussion of these markets, the need for enhanced market regulation will be analyzed. The last section concludes.

2 What drives competition in Internet markets?

2.1 Theoretical background

In contrast to conventional markets, the degree of competition in Internet markets is often (but not always) determined by direct and indirect network effects and switching costs (Evans and Schmalensee 2007). While network effects are typical for media and Internet markets, famous examples are credit card networks, (online)

auction platforms or other (online) trading places. A market is typically called two-sided if indirect network effects are of major importance (Peitz 2006; Vogelsang 2010). Indirect network effects can be distinguished from so-called direct network effects, which are directly related to the size of a network. Put differently, direct network effects mean that the utility that a user receives from a particular service directly increases with an increasing number of other users (Rohlfs 1974; Katz and Shapiro 1985). The classical example are telecommunications networks, as, for example, a service such as *Skype* is more attractive for users the larger the number of other *Skype* users, as the possibility to communicate is increasing in the number of users. Similarly, if a large customer base is already using a certain social network such as *Facebook*, *LinkedIn* or *XING* this attracts even more users to join, as a large customer base increases the probability to find valuable contacts.

In contrast, indirect network effects arise only *indirectly* if the number of users on one side of the market attracts more users on the other market side. Hence, users on one side of the market *indirectly* benefit from an increase in the number of users on their market side, as this increase attracts more potential transaction partners on the other market side. While there is no direct benefit of an increase in users on the same market side, the network effect unfolds indirectly through the opposite market side. Taking *eBay* as an illustration, more potential buyers attract more sellers to offer goods on *eBay* as (a) the likelihood to sell their goods increases with the number of potential buyers and (b) competition among buyers for the good will be more intense and, therefore, auction revenues are likely to be higher (Rochet and Tirole 2003, 2006; Evans and Schmalensee 2007). A higher number of sellers and an increased variety of goods offered, in turn, make the trading platform more attractive for more potential buyers. These indirect network effects are the key characteristic of two-sided-markets and different from most conventional markets. With positive network effects, the more participants are on the one side of the market, the higher the participants' utility on the other market side and vice versa.

From a competition policy point of view it is important to note that network effects often make large platform sizes indispensable in order to achieve an efficient utilization of the platform. Hence, high market concentration levels cannot simply be interpreted in the same manner as in conventional markets without network effects (see, e.g., Wright 2004). From a business perspective, two-sided markets are also interesting as it is not sufficient for the platform operator to convince only users of one market side to join the platform, as there is an interrelationship between the user groups on both market sides. Neither the buyer side nor the seller side of the market can be attracted to join the platform if the other side of the market is not sufficiently large. This is a realization of the well known "Chicken-and-Egg-Problem", where both sides of the market affect each other and no side can emerge without the other (Caillaud and Jullien 2003).

High concentration levels that result from indirect network effects are not an entirely new phenomenon that has only emerged in Internet markets. The concentration of trade on one single marketplace is very well known from various exchanges and centralized market places. The existence of one large market place is often efficient from an economic perspective, as it helps to reduce search costs for potential trading partners, which would be impossible when a large number of small marketplaces would exist. Note that even businesses such as car dealerships and antique dealers have traditionally often been located in the same neighborhood in order to decrease customers' search cost and also transport costs.

Another notable point is that usually one side of the market is "subsidized" by the other (Wright 2004; Parker and van Alstyne 2005). Products such as the *Acrobat Reader*, *Microsoft's MediaPlayer* or the *RealPlayer* are available free of charge for consumers. They are subsidized by the market side that is more price sensitive than the other. As a result, platform operators generate most of their profits on the market side with the smaller price elasticity of demand.

2.2 Concentration levels in two-sided-markets and its determinants

As a consequence of these indirect network effects platform markets may be more concentrated than other industries. However, this does not imply that every digital platform market is automatically highly concentrated. Counter-examples are online real estate brokers, travel agents, and many online dating sites, where several competing platforms co-exist. Hence, the presence of indirect network effects is by no means sufficient for a monopoly or even high levels of market concentration to emerge. In addition, it is not even clear from a theoretical point of view whether competition between several platforms is necessarily welfare enhancing when compared to monopolistic market structures. While, generally speaking, competition between several firms is almost always beneficial in "traditional" markets (as long as the particular market under consideration is not characterized by natural monopoly conditions), this general wisdom does not always hold for two-sided markets. Even if multiple platforms are not associated with a duplication of fixed costs, the existence of multiple platforms may not be efficient due to the presence of indirect network effects. As Caillaud and Jullien (2003) and Jullien (2005) have shown, a monopoly platform can be efficient because network effects are maximized when all agents manage to coordinate over a single platform. Hence, strong network effects can easily lead to highly concentrated market structures, but strong network effects also tend to make these highly concentrated market structures efficient. In contrast, capacity constraints (and the associated risk of platform overload), heterogeneous preferences (and the resulting potential for platform differentiation) and users' so-called multi-homing possibilities (i.e., the possibility to participate in several platforms at the same time) tend to drive competition into digital markets. Therefore, it is not only unclear how market concentration and consumer welfare are related in these platform markets, but also whether the market is quasi naturally converging towards a monopoly structure. As Evans and Schmalensee (2008, pp. 679 ff. have outlined, there are five driving forces which determine the concentration process and level in two-sided-markets, as specified in Table 1.

It is relatively straightforward and immediately plausible that indirect network effects and economies of scale lead to increasing concentration. The strength of these indirect network

Table 1 Determinants of concentration on two-sided markets

Driving force	Effect on concentration
Strength of indirect network effects	+
Degree of economies of scale	+
Capacity constraints	−
Scope of platform differentiation	−
Multi-homing opportunities	−

Source: Evans and Schmalensee (2008)

effects will differ from platform to platform. In general, it can be observed that many two-sided markets are characterized by a cost structure with a relatively high proportion of fixed costs and relatively low variable costs (see, e.g., Jullien 2006). For example, for *eBay, expedia, booking.com* etc. most of the costs arise from managing the respective databases, while additional transactions within the capacity of the databases usually cause hardly any additional cost. Increasing returns to scale are, therefore, not at all unusual, but rather typical for two-sided markets. While network effects and economies of scale both have a positive effect on market concentration levels, there are also three countervailing forces that facilitate market competition (also see Haucap and Wenzel 2011).

One important countervailing force are capacity constraints. While in physical two-sided markets such as shopping centers, trade fairs, and nightclubs space is physically limited,[1] this does not necessarily hold for digital two-sided markets. However, advertising space is often restricted since too much advertising is often perceived as a nuisance by users (see, e.g., Becker and Murphy 1993; Bagwell 2007) and, therefore, decreasing the platform's value in the recipients' eyes. In electronic two-sided markets, such as online auction platforms or dating sites, capacity limits can also emerge as a result of negative externalities caused by additional users. If additional users make the group more heterogeneous, users' search costs may increase. In contrast, the more homogeneous the users are, the higher a given platform's value for the demand side. If, for example, only certain people visit a particular platform (as some platforms are, for example, mainly visited by women, golf players, academics or so), targeted advertising is much easier for advertisers. Also note that many dating sites advertise that they only represent a certain group of clients (for example, only academics). This reduces the search costs for all visitors involved. Additional users would make the user group more heterogeneous and not necessarily add value, as increased heterogeneity also increases the search cost for other users.

Directly related to the platforms' heterogeneity is the degree of product differentiation between platforms. For dating sites, magazines and newspapers it is almost always evident that consumer preferences are heterogeneous so that some product differentiation emerges. Such differentiation can be vertical (e.g., for the advertising industry high-income users may be more interesting than a low-income audience) and horizontally (e.g., people interested in sailing versus people interested in golf).

The higher the degree of heterogeneity among potential users and the easier it is for platforms to differentiate, the more diverse platforms will emerge and the lower will be the level of concentration. The finding that increasing returns to scale foster market concentration while product differentiation and heterogeneity of user preferences work into the other direction is not new, but rather well known from the economics literature (see, e.g., Dixit and Stiglitz 1977; Krugman 1980). On two-sided markets increasing concentration will be driven by indirect network effects, but capacity limits, product differentiation and the potential for multi-homing (i.e., the parallel usage of different platforms) will decrease concentration levels. How easy it is for consumers to multi-home depends, among other things, on (a) switching costs (if they exist) between platforms and (b) whether usage-based tariffs or positive flat rates are charged on the platform.

[1] The capacity on one side of the market may be more limited than on the other. For example, the number of stands may be more limited on a trade show than the space for potential visitors.

To illustrate this thought consider online travel agencies such as *Expedia*. Switching from one online travel agency to another is usually associated with relatively low switching costs. Multi-homing is also easy, as travelers can easily search for flights, hotels, etc. over more than one platform before actually booking, and airlines, hotels, etc. can easily be listed on more than one platform. With respect to search engines users can also easily, without major costs, switch away from *Google* to another general search engine such as *Bing* or even to specialized searches over *Amazon, TripAdvisor*, social networks (for people), library catalogues, travel sites, restaurant guides and so on if a switch appears to be attractive. In contrast, switching costs between social networks such as *Facebook* are generally much higher because of strong direct network effects and the effort needed to coordinate user groups. While for *Google* no significant *direct* network effects exist, i.e., it does not *directly* matter how many other people use *Google*, this is not true for social networks such as *Facebook* where the number of users is a very important factor for users' utility. Still entry into the search engine business is not easy due to the *indirect* network effects above described and the economies of scale that are (a) at least partly based on learning effects, which depend on the cumulative number of searches made over the network in the past (see, e.g., Manne and Wright 2011, p. 212), and (b) on decreasing average costs, which are caused by substantial fixed costs of the technical infrastructure.

Another form of switching cost can be found on auction platforms such as *eBay* where, apart from indirect network effects, a user's reputation is also highly relevant (see, e.g., Melnik and Alm 2002). As a user's reputation is a function of the number of transactions already conducted over the platform, the reputation is typically platform specific (e.g., for *eBay*), so that changing platforms involves high switching costs, as it is difficult, if not impossible, to transfer one's reputation from one platform to another.

Having discussed the determinants of market concentration in two-sided market, let us now analyze the concentration processes for some typical online markets such as search engines, online auction platforms, and social networks.

3 Competition in some typical online markets

3.1 Search engines

Back in the early 1990s search engines were hardly used on a large scale, while today search engines as *Google* or *Bing* are multi-billion dollar businesses. Internet search advertising revenues reached a value of $16.9 billion in 2012 only in the US (PWC 2013, p. 12). At the same time, the market for online search is highly concentrated, as can be seen from Table 2.

As Table 2 clearly reveals, *Google* is the clear market leader in Western countries, while *Baidu* in China, *Yandex* in Russia and to a lesser degree *Yahoo* in Japan have dominant positions in these countries. In all of these markets, we see a highly concentrated structure with a monopoly or at best a duopoly emerging. The reasons for these high concentration levels are economies of scale as well as network effects that characterize search engines. While it appears to be relatively easy to understand that large customer bases may be more attractive for advertising companies, this becomes less clear at second sight. As online advertising is charged on a pay-per-click basis, one online site that induces 10.000 clicks may be as attractive as ten

Table 2 Market shares for online search in selected countries in Q4/2010

Search engine	USA	Germany	UK	France	Japan	China	Russia	Australia
Google	71.0%	97.0%	93.0%	96.0%	38.0%	24.6%	34.5%	92.8%
Yahoo	14.5%	1.0%	2.1%	1.3%	51.0%	–	–	2.3%
Bing	9.8%	1.2%	3.5%	2.1%	–	–	–	3.2%
Baidu	–	–	–	–	–	73.0%	–	–
Yandex						–	62.0%	–
Other	4.7%	0.9%	1.5%	0.6%	11.0%	3.4%	3.5%	1.7%

Source: http://www.greenlightdigital.com/assets/images/market-share-large.png

smaller sites that induce 1.000 clicks each (see Manne and Wright 2011). However, large search engines may still be more attractive than smaller ones, as (a) there can be a fixed cost per webpage associated with monitoring advertising campaigns and (b) larger search engines may be better able to place targeted advertising, as they have access to a larger base of historical search data and past "clicking behavior". These two features can make larger search engines more attractive than smaller ones. In addition, *Google* has traditionally created (by means of contract) some artificial incompatibility between advertising campaigns on *Google* and other search engines, but this incompatibility issues has been largely resolved in negotiations with the Federal Trade Commission in January 2013 (see Federal Trade Commission 2013).

It is even less clear how important a search engine's size is for search engine users. While it is plausible that access to a large set of (historical) search data and consumer clicking behavior, there is some debate how much data is needed before the marginal benefit of additional data exceeds the additional cost of processing in order to further refine the search mechanism (see Manne and Wright 2011). Moreover, switching costs between search engines are very modest for consumers, as the past has shown. When *Google* entered the market in 1998, *Altavista* was the leading search engine with *Yahoo!* closely following on the second place in the Western world. Still *Google* managed not only to enter the market, but also to offer superior quality so that *Google* even leapfrogged its competitors. Similarly, *Rambler* has been the leading Russian search engine in the late 1990s before it was surpassed by *Yandex*. Many commentators agree the *Google*'s success was also a result of its superior quality (see, e.g., Argenton and Prüfer 2012).

What determines the quality of search engines though? Based on expert surveys the following attributes appear to be most important for users when choosing between search engines (Argenton and Prüfer 2012):

1. Overall accuracy of search results,
2. page load speed and
3. real time relevance

In all three categories *Google* is reported to lead the field in expert surveys. Overall, the quality of search engines can be approximated by "expected time a user needs to obtain a satisfactory result". The time needed to find a satisfactory result depends on several factors (Argenton and Prüfer 2012), including:

1. Search algorithm quality,
2. hardware quality,
3. data quality,

where data quality refers to both data freely available on the Internet and search engine specific data that has been collected during previous search processes. In principle, the availability of hardware and Internet data should not differ between competitors, especially given the substantial financial resources are available to firms such as *Microsoft*, *Google* and also *Facebook* for whom the access to sufficient financial resources should be taken as given. The main competition problem for those firms is argued to be rather the limited availability of high-quality search data, which is firm specific (Levy 2009; Argenton and Prüfer 2012). Due to its significant market share *Google* also has the best access to (also historical) search data and consumer clicking behavior. This is an important aspect for success in search engine markets, as search data is needed to refine the engines' search algorithms. The more search data an operator has, the better are the refinements of its search algorithm. This process results, in principle, in superior search engine quality and provides a competitive advantage for the market leader, i.e., *Google*. It is unclear, however, at which point or data quantity the marginal benefit or utilizing additional data exceeds the marginal cost of additional processing capacity. As some authors such as Manne and Wright (2011) argue, this point where the marginal cost exceeds the marginal benefit has not only been passed by *Google*, but also by other large search engines such as *Yahoo!* and *Bing*. In fact, it appears that most search engines only use subsets of their search data to further improve the search algorithm and not all their data available.

Even if size is an advantage though, is this potential advantage sufficient reason for competition authorities or other agencies to step in and regulate, or is it just a result of better management and innovation which should not be discouraged?

While the existence of a superior search engine is, of course, not a policy concern for competition authorities in itself, there have also been numerous complaints that *Google* is abusing its dominant position, especially to favor its own subsidiaries (such as *Google Map* or *Google Travel*) over competing platforms. While the Federal Trade Commission (2013) has decided not to initiate proceedings, the European Commission also investigates these claims and has announced that its view differs from the one of the Federal Trade Commission. Proceedings are also underway at the US state level as well as in India, Argentina and South Korea. Without deeper knowledge of the facts it remains speculative at this point though whether these claims are well found or not.

If *Google* should be found guilty of anticompetitive search discrimination, an interesting question concerns potential remedies. One suggestion has been to require *Google* to reveal its search algorithm, but such a measure would appear disproportionate, as has been argued elsewhere in the literature, as it concerns the heart of *Google*'s business and the main element of competitive rivalry (see, e.g., Bork and Sidak 2012; Argenton and Prüfer 2012). Instead Argenton and Prüfer (2012) have recently suggested that *Google* should be required to share its specific search engine data to foster competition in search engine markets. This suggestion is based on the assumption that for competing search engines catching up or even overtaking *Google* is very difficult due to missing online search data to develop better search engine

algorithms. Hence, access to (historical) search data may help enabling *Google*'s competitors in developing better search algorithms, thereby increasing competitive pressures in the market for search engines.

A third option, which is more light-handed, would be to mandate that *Google* colors the background of links to its own subsidiaries in a similar manner as sponsored links (see, e.g., Haucap 2012). Once consumers realize that some search results point towards *Google* websites, they can better evaluate the quality of the results and, in case they are not satisfied, switch to some other search engine. Increased transparency should resolve most of the problems associated with any potential discriminatory bias in vertical search.[2]

3.2 Online trading platforms

While *Google*'s behavior and position may currently receive most of the public attention, the behavior of dominant trading platforms such as *eBay* has also been subject to antitrust scrutiny. During the last 15 years online trading platforms have become increasingly popular. Depending on the precise market definition concentration levels in the online trading market are often rather high. Among online auction platforms, for example, *eBay* has enjoyed very high market shares almost from the early beginnings of electronic commerce.[3] In 1998, *eBay*'s share in the market for online auctions in the US was 80 % (Lucking-Reiley 1999), culminating in a market share of almost 99 % in 2008 (Haucap and Wenzel 2009). The picture is very much the same in most other industrialized countries. A notable exception is Japan, were *Yahoo!* is not only the market leader for Internet search (as can be seen from Table 1), but also for online auctions. This dominance in the online auction business is not only a result of competitive forces though. Instead the lack of competition is also partly dues to a contract between *eBay* and *Yahoo!*, dating back to 2002, when *eBay* agreed to exit the Japanese market while *Yahoo!* shut down its online auction sites in Germany, the UK, France, Italy, Spain and Ireland. In exchange, *eBay* also agreed to significant side payments in forms of advertisement placed on the *Yahoo!* web page. While this contract is almost certainly violating competition law, Ellison and Ellison (2005) also argue that indirect networks effects are the main reason why *eBay* is able to hold its leading position over a very long time period in most countries, while *Yahoo!* manages to do the same in Japan. Hence, an important question from a competition policy perspective is whether *eBay* has significant, not only temporary market power in the market for online auctions.

One important aspect for this analysis is the question how easy it is for sellers and buyers to engage in multi-homing, i.e., the parallel use of competing online trading platforms. For many sellers it is not as attractive to engage in multi-homing as it first seems for a number of reasons. First of all, multi-homing is difficult for small sellers because they often sell unique items and heavily benefit from a large group of customers to find buyers for their products. Additionally, it is difficult to build up reputation on several platforms, as reputation depends on the number of transactions a seller has already honestly completed on a given network. In fact, a good reputation on *eBay* translates into higher prices for sellers, as has been repeatedly documented (see, e.g., Melnik and Alm 2002; Bajari and Hortaçsu 2004; Dellarocas 2006;

[2] A much more detailed analysis of a potential antitrust case against *Google* and the costs and benefits of various remedies can be found in Pollock (2010), Manne and Wright (2011) and Bork and Sidak (2012).
[3] A detailed discussion of the market definition for online auctions and other electronic trading platforms can be found in Haucap and Wenzel (2009).

Resnick et al. 2006). Transferring reputation from one platform to another is rather difficult or often even impossible. Hence, investment into one's reputation is typically platform specific so that switching costs result. Furthermore, selling on smaller platforms bears the risk of selling the product at prices below its market value, as the price mechanism works best with a sufficiently large number of market participants on both sides of the market, i.e., with sufficient market liquidity or "thickness". Hence, multi-homing is reasonably difficult for sellers. The reputation mechanism also works for buyers to some degree even though it is less important than for sellers. The lock-in effect is, therefore, typically lower for consumers. However, as long as sellers do not switch to other trading platforms, there is only a very limited benefit for consumers in starting to visit and to search through other trading platforms.

In addition, the design of online trading platforms, their market rules, the handling of the platforms etc. usually differ from platform to platform and, as a result, buyers also face some switching costs if they decide to use another platform than, say *eBay*, as they have to get used to the terms of transactions, the handling etc. on the new platform. In addition, *eBay* also tries to create endogenous switching costs in order to bind customers. For example, the so-called *eBay* university offers courses how to use *eBay* more efficiently. Overall, *eBay* clearly has significant market power on online auction platforms. Due to individuals' specific reputation, indirect network effects, and switching costs, *eBay*'s market shares are not likely to erode within any foreseeable time horizon. While the discussion in this section is based on *eBay*, many insights also apply to other dominant online trading platforms such as *Amazon*.

3.3 Social networks

The third example that we want to discuss are social networks, which have become and are still becoming increasingly popular for billions of people all over the world in order to stay in contact with friends or to find potential business partners.[4] Social network such as *Facebook* share many characteristics with other online platforms. In order to assess the potential for competition and potential barriers to entry, it is important to understand whether (a) switching costs play a major role or not and (b) how easy it is for consumers to engage in multi-homing. In principle, multi-homing is easily possible, as it only takes some time to set up a profile. In this context, it is also interesting to note that well known social networks such as the family of VZ networks in Germany (*meinvz, studivz*, and *schülervz*) or *myspace* in the US lost many active members over a very short time period, mostly due to the competition from *Facebook*. The market structure for social networks in Germany is given in Table 3.

From worldwide perspective, *Facebook* is also by far the market leader, even though the leadership is not as dominant as *Google*'s position in the search engine market in many countries or *eBay*'s position in the online auction market. Table 4 gives the worldwide market shares of different social networks from August 2011 to August 2012.

As can be easily seen, the market concentration level is lower than in the market for online search and online auctions. One reason may be that social networks are in an earlier stage of their diffusion curve compared to other online markets. In fact, social network platforms still show strong fluctuations in their market shares and (unique) visitor numbers.

[4] See Benkler (2006) for an in depth analysis why people join networks and in which ways they benefit from networks.

Table 3 Visitors of Social networks in Germany in 2011

Social network	Number of unique visitors	Market shares[a]
Facebook	130,000,000	67.1 %
Wer kennt wen	15,000,000	7.7 %
Stayfriends	11,000,000	5.7 %
Jappy	6,900,000	3.6 %
Xing	6,800,000	3.5 %
Schüler VZ	5,700,000	2.9 %
Mein VZ	5,600,000	2.9 %
Ordnoklasniki	5,100,000	2.6 %
LinkedIn	3,100,000	1.6 %
Studi VZ	2,900,000	1.5 %
Others		0.9 %

Source: http://www.muenchnermedien.de/die-20-beliebtesten-sozialen-netzwerke-deutschlands-2011

[a] Note that market shares are calculated without Twitter, Tumblr and Google+, as the first two are not considered social networks, while for Google+ not data was available

Hence, no equilibrium may have been reached so far. However, there are at least two deeper reasons why the market for social networks shows lower concentration levels than other Internet markets. Firstly, user preferences are more heterogeneous, and, secondly, it is not very costly for users to be present on two social networks, i.e., to engage in multi-homing. For example, one network (such as *Facebook*) may be used for social contacts while a second network (e.g., *LinkedIn* or *Xing*) may be used for business-related contacts and exchange. Given this market segmentation, the degree of competition between various business-related networks and various social networks may possibly decline to some extent though, as direct network effects are rather strong for social networks. The main value of the network lies in the number of members subscribed to the network. However, as the dramatic decline of the VZ networks in Germany illustrates, new networks can still emerge, as multi-homing is rather easy and switching costs are not too substantial. An interesting development has been the market entry of *Google+* in 2011, which has

Table 4 Market shares of social networks worldwide from August 2011 to August 2012

Social network	Market share in %
Facebook	64.27
StumbleUpon	16.07
YouTube	7.39
Twitter	5.07
reddit	3.00
Pinterest	2.67
VKontakte	0.32
Linkedln	0.31
Digg	0.20
NowPublic	0.16

Source: Statista (Note that *Youtube* and *Twitter* are often defined as social media platforms, but typically not as social networks. http://de.statista.com/statistik/daten/studie/241601/umfrage/marktanteile-fuehrender-social-media-seiten-weltweit)

attracted a significant number of unique visitors. The further development of *Google+* remains to be seen though.

4 Conclusion

Competition between platforms is characterized by direct and indirect network effects, switching costs, reputation effects, and economies of scale. While the strength of these effects differs heavily between markets and platforms, the effects are typically more important than in standard "physical" markets. It is not possible to generalize with respect to the degree of competition in online markets. While some markets tend to lean towards high concentration ratios, the strong market position of *Google* and *Facebook* do not necessarily need to be long-lasting. While in *Google*'s case, switching costs for consumers are low so that *Google* has to defend its position against continuous innovation and entry, the wealth of its historic search data may still give *Google* an advantage for further improving its search algorithm, holding on to its competitive advantages, even though this is disputed in the academic literature, as the marginal benefit of analyzing additional search data is decreasing while the marginal cost of further analysis is not.

In the case of *Facebook*, multi-homing is not costless, but it is not very costly either so that there is scope for further competition. The entry of *Google+* in 2011 is an interesting development for competition, but the further development remains to be seen.

In contrast, *eBay* has managed to hold on to its dominant position in the market for private online auctions which is difficult to contest, as sellers' reputations are not transferable across platforms.

Form a competition policy perspective it is important to recognize the role of direct and indirect network effects. If direct and indirect network effects play an important role in a particular online market, it is not clear ex ante whether a monopoly or a dominant market position is actually good or bad from an efficiency perspective. While some authors such as von Blanckenburg and Michaelis (2008a, b) argue for a stronger market regulation of *eBay*, there are also good and valid counter-arguments, based on innovation incentives. In fact, many online markets have been characterized by a large degree of Schumpeterian competition where one dominant player follows the other. A notable exception has only been *eBay* which has managed to hold on to its dominant position for more than a decade now. Still, a more interventionist approach beyond the application of general competition law rules appears not to be warranted so far.

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