

Competition regulation challenges in internet-based industries

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Both the fast rising and the existing global market structures are changing radically. Multi-sided platforms induce relevant changes in many fields. At present the regulatory framework and competition authorities also appear to be puzzled by them. Regulators are still lacking new robust models, and thus they are constrained to using traditional methods in the course of their investigations, which raises the risk of reaching false conclusions. Many web-based businesses generate revenue from attracting eyeballs and selling access to advertisers. Many websites pursue advertising sales as well. In this context the current research addresses the issues behind these challenges to competition regulation in Internet-based industries. We observe that traditional competition regulation has been circumvented by these platforms. Their inherent and analyses must be redrafted.

Keywords: multi-sided market, competition regulation, platform, Internet-based industry

1. Introduction

Due to rapid growth in technological development, new types of markets are emerging which are referred to as two-sided or multi-sided markets. Multi-sided markets are those in which there are two or more, clearly distinguishable groups of users whose demands are interdependent, and therefore either or both groups produce positive externalities. Several economically important industries interact via platforms (e.g. Internet-based industries, advertising-supported media, and financial exchanges). By this interaction, positive externalities are created at one group or another, and cross-group network effects arise as well. Platforms have a crucial role in reducing transaction costs. In these markets the standard definitions are changed.

According to the literature, there are many differences between traditional markets. The examination of markets is part of the Industrial Organization (I / O) field in which different market models are investigated by market participants during the introduction of a change. This field of science is only familiar with the new types of markets from the 2000s, so the range of research and the available literature is not too extensive. Even if we go further and explore these markets in the field of competition regulation, the amount of available literature is significantly reduced. Thus, the exact formulation of concepts has been a major challenge during our research.

In the study, we do not make specific hypotheses because the literature review is incomplete. The economic change generated by digital technology had been expected to be slow, and regulatory authorities are only beginning to deal with a business when it has already abused its market power. Examination of anti-competitive behavior is a very long process, but in the meantime, the cause of digitalization is becoming uninteresting. The law and economics for analyzing the multi-sided platforms that dominate the Internet sector are considered to be not well (co-)developed. Our main question is: can we use traditional

investigation in two- or multi-sided markets? If we use traditional methods in the course of our investigation, could it raise the risk of false conclusions or not?

We present how two- or multi-sided platforms are formed, we illustrate the innovation and technological achievements. We define the two new markets and show traditional competition regulation. Last but not least, we analyze some deficiencies in the competition and regulatory policy in field of multi-sided markets, mainly in internet-based industries.

2. Innovation and technological achievements

Technological developments in market economies are primarily due to the innovative activities of companies. Many economists (Aghion et al. 2005, Halpern–Muraközy 2011, Nagy et al. 2014) deal with the idea that competition has an impact on innovation. Competition and innovation describe a reverse U case, in which innovation intensifies competition to a certain extent, but the winners that have emerged as a result of innovation competition have enormous market advantage. Their market power is enormous compared to their competitors, making it easier for them to abuse their dominant position. The intellectual roots of competition and innovation go back to Joseph Schumpeter who, in the context of dynamic efficiency, believed that the incentive to innovate is the possibility of monopoly, but this can only take place in the short term because other traders enter the market over time (Whish 2010). He considered dynamic efficiency to be more important than consumer well-being, since by gaining more profit for the producer, he could access to costly R&D investments (Tóth 2014).

2.1. Fourth Industrial Revolution

In January 2016, at the Davos World Economic Forum (WEF), Klaus Schwab (2016), founder and CEO of WEF, put the fourth industrial revolution at the heart of the summit. He explained that it is necessary to talk about the phenomenon because innovation and the new technological advances are developing new production tasks, sales, and corporate governance. He also mentions that the Fourth Industrial Revolution is different than those that came before. There are a number of new technologies that characterize the revolution, affecting science, economics, and even industry. Taking into account all these factors, humanity faces a great challenge, as it is possible to “twist” the world and thus billions of people on the Internet.

The new *acquis* may also be an opportunity to find solutions to the problems of the age and help revive the natural environment. But there are some threats as well. Schwab puts forward various concerns such as the fear that organizations will not be able to adapt, and that regulatory authorities will not be able to use existing rules to emerging new situations (Kuruczleki et al. 2016, Schwab 2016).

2.2. Digital Single Market Strategy

One of the key pillars of the Europe 2020 strategy is the creation of a digital single internal market. In May 2015, the European Commission issued a Communication on the Digital Single Market Strategy for Europe. Jean-Claude Juncker's says: “*we must make much*

better use of the great opportunities offered by digital technologies, which know no borders. To do so, we will need to have the courage to break down national bastions of telecoms regulation, copyright and data protection legislation, management of radio waves and application of competition law.” (EC 2015 2)

By digitizing the world economy, the Info-Communication Technologies emerged from a separate sector and became the basis of the modern economic system. By transforming the internet and digital technologies, we are transforming our lifestyle. The scale and speed of change have many innovative and growth-promoting opportunities, but there are major challenging policy issues in regulation. *“A Digital Single Market is one in which the free movement of goods, people, services and capital is ensured and where individuals and businesses can seamlessly access and exercise online activities under conditions of fair competition, and a high level of consumer and personal data protection, irrespective of their nationality or place of residence. Achieving a Digital Single Market will ensure that Europe maintains its position as a world leader in the digital economy, helping European companies to grow globally.”* (EC 2015 3.) The Digital Single Market Strategy is based on three pillars: (EC 2015)

- Making internet products and services more accessible for European consumers and entrepreneurs - breaking down the most important differences between the internet and the physical world
- Creating conditions to promote the expansion of digital networks and services - this pillar involves the creation of a regulatory environment that promotes innovation and investment, providing a level playing field
- Maximizing the growth potential of the European digital economy - increasing industrial competitiveness and the level of public services.

With regard to the subject of the study, the second pillar should be examined more closely. In order for innovative investments to take place, the market must be built on reliable, high-speed, affordable networks. The strategy highlights the fact that the telecommunications sector is responsible for developing these networks, using innovative solutions such as cloud computing and big data technology. With rapid technological development, internet platforms are emerging that are concerned with their market power.

“Online platforms (e.g. search engines, social media, e-commerce platforms, app stores, price comparison websites) are playing an ever more central role in social and economic life: they enable consumers to find online information and businesses to exploit the advantages of e-commerce. Europe has a strong potential in this area but is held back by fragmented markets which make it hard for businesses to scale-up... include a lack of transparency as to how they use the information they acquire, their strong bargaining power compared to that of their clients, which may be reflected in their terms and conditions (particularly for SMEs), promotion of their own services to the disadvantage of competitors, and non-transparent pricing policies, or restrictions on pricing and sale conditions.” (EC 2015 11.)

The strategy states that, besides the application of specific competition rules to concrete situations, further analysis is needed, but these analyses are not elaborated any further.

3. The impact of digitalization on the transformation of the market structure

As a consequence of digitalization, the structure of the market has changed, and two / multi-sided markets have emerged. The digital economy has gone through the hype of the 1990s. The digitalization of tangible books, music and toys has opened a new world for us. With the rise of the internet, the limit on physical goods has ceased and more and more people have started using the internet to buy individual products. As a result of the rapid innovation, software has also been created that allows us to store vast amounts of files on the Internet. With the rapid development of the digital economy, changes in the structure of industrial sectors have also occurred.

With the change in market structure, modern market theory (Industrial Organization) is also facing challenges, as the digital economy operates differently than traditional industries. Illing and Peitz (2006) note the following differences:

- *The emergence of two-sided markets*: where indirect network effects between different sides of the markets are typical and the two sides are mutually dependent.
- *Changes in intellectual property rights*: One of the biggest challenges in the digital economy is the regulation of patent and copyright.
- *The emergence of new marketing and sales strategies*
- *The emergence of e-commerce and the existence of a buyer power*: like in the world of the internet, through the various search channels, customers can choose from a wealth of options.

Technological pressure not only affects markets, but also has a major impact on regulators. The new situation in a rapidly evolving world can only be monitored by the regulatory authority, but it is extremely important that this tracking is timely and fast, and analyzing an individual case at the time of the investigation may be out of the question. Thus, it is highly likely that regulators will use the case-by-case approach as in the case of liberalization when a lawyer draws attention to regulatory failure, after which the authority examines certain aspects of the case, places the results of these in public consultation, then the Commission proposes a legislative proposal followed by Community legislation, in most cases following guidance (Pelle 2009).

3.1. Two-sided and multi-sided markets

Generally most of the network's externalities are generated by markets, two or multi-sided markets that create a medium where two or more sites interact with each other. This medium is called a platform. Rochet and Tirole (2003) emphasize that platforms have only an intermediary role as a link between the two sides of the market. Hagel (2015, p. 80) defines the concept of platform as “*platforms help to make resources and participants more accessible to each other on an as-needed basis*”. Some aspects of well-functioning platforms:

- It is necessary to create a management structure that defines a wide collection of protocols: who can participate and under what conditions and also providing for dispute settlement
- Creating additional protocols and standards that facilitate collaboration.

Hagel (2015) distinguishes between three different platform types:

- *Aggregation Platforms*: Help resources and their users find each other, such as broker-based platforms such as eBay or App Stores.
- *Social / community platforms*: they are similar to aggregation platforms because their goal is to connect individuals. Perhaps the most well-known platforms are Facebook and Twitter. The difference to aggregation platforms is that community platforms take up a longer period of time, while in aggregation platforms only one transaction is pursued by the operators.
- *Mobilization platforms*: these types of platforms not only connect individuals but also drive them to act together to achieve shared goals.

Many diverse industries are populated by businesses that operate *two-sided platforms*, such as: advertising-supported media, software platform, financial exchanges, e.g. Jean-Charles Rochet and Jean Tirole (2004, p. 26) gave us a definition about two-sided markets: “*A market is two-sided if the platform can affect the volume of transactions by charging more to one side of the market and reducing the price paid by the other side by an equal amount.*”

So the conditions of two sided markets result from the following shared features: (1) there are two distinct groups of users who need each other in some way; (2) the platform is to provide a common meeting place and to allow interactions between members; (3) the platform plays an important role by minimizing transaction costs between users who can benefit from getting together; (4) and pricing and other strategies are strongly affected by the indirect network effects between the two sides of the platform. For example, a video game console is a platform (Play Station) and the two distinct users are game developers and video game users, or the software market is a platform (Windows) and the two distinct users are application developers and the software users.

According to Filistrucchi et al. (2013) the demand from one group of users depends on a demand from other group of users, so demand is linked by indirect network effects. If users' tendency to pay for a product depends on the number of other users of the same product, it will be direct network effect, but if it depends on the number of other users of another product, it will be indirect network effect. When a firm acts as a platform, the market will be two-sided (Evans 2003).

As a matter of theory, profit-maximizing prices may entail below-cost pricing to one group of users, and as a matter of fact, many two-sided platforms charge one sided prices that are below marginal cost. For example, print media is often provided to readers at something close to or below the marginal cost of printing and distribution. Evans and Schmalensee (2013) and Wright (2004) deal with these and other aspects of the effects two-sided platforms, which are connected to antitrust analyses – from market definition, to the analyses of cartels, single firm conduct and efficiencies.

Evans and Schmalensee (2013) gave further thought to the definition of two-sided markets, which they named as *multi-sided markets*. In terms of the literature, we see the term of two-sided markets in most places, however we use the term multi-sided markets here as it is a larger category.

There are two or more distinct groups of users who may be different only for the purpose of the transaction. For example, eBay users are sometimes buyers, but sometimes they are sellers. There are externalities associated with users and the externalities created by one group for the other group. Internet based commerce, credit cards, operating

systems, shopping centers and mass media are all governed by the economics of multi-sided platforms.

Most two-sided or multi-sided markets set traditional prices, which are below marginal costs, so it is very important to select a good pricing strategy in these markets. With regard to two-sided markets, Rochet and Tirole distinguished four different types of platforms (Evans–Schmalensee 2013):

- *Exchanges*: includes all platforms that are engaged in brokerage (e.g. rent, travel agency, ticket office, auction houses, stock exchange ...)
- *Media market*: indirect network effect appears on this market as the number of advertisers depends on the number of viewers (e.g. newspapers, television, websites ...)
- *Transaction system*: all payment methods that only work if the seller or buyer uses it (e.g. credit card, credit card)
- *Software platform*: this platform provides application developers, but users can run applications only if they use the same platform (e.g. Apple, Microsoft, Xbox, PlayStation ...)

Generally, in multi-sided markets small companies appear but they can grow multinational within a relatively short period of time. Due to the growing internet-based trade, these platforms will become more important in the economy.

3.2. Internet-based platforms

Web-based businesses are one of the most important and interesting part of multi sided platforms. There are four different types of web-based businesses:

1. *E-commerce* includes auction sites such as eBay, Aliexpress, and some massive shopping malls like eBay, Amazon and Baidu. It also includes retailers such as walmart.com.
2. *Online publishing* includes everything from portals such as Yahoo and, MSN. We could mention print publishers like Nytimes.com, CNN.com, hvg.hu etc. It also includes video publishers like YouTube, Vimeo and some kinds of blogs.
3. *Social networking* is a new dimension of web. Almost every person has a Facebook account, and if you want to find an international profession you are on LinkedIn.
4. *Online advertising* is a huge part of the internet. Many web-based businesses make money from attracting eyeballs and selling access to advertisers. Many websites run advertising sales as well. There are some firms which dominate this platform, such as Google, iPhone and also Facebook.

There are four key features of the web-based businesses:

1. These platforms have to face a *critical mass* problem. When these kinds of firms want to enter into the platform, they try to get enough users on board. Instagram is an example of tackling the critical mass problem. It had to figure out how to get enough people to upload pictures and how to get enough people to view those pictures.

2. Many of the web-based businesses are *free* for one group of users. For example Facebook is free for users, but if you want to advertise your firm you have to pay for it. Microsoft provide most of its services for free to the software developers. But these users (developers) get a lot of value from Microsoft.
3. In this kind of market there is an *invisible engine*, the software. If you want to start a new business, first of all you have to write software code. Some of these firms open up their code to the developers to encourage them to create new applications or software. In fact, Farmville and Google Maps were born by this way.
4. We can see a lot of *mashups* on the web, when the firm creates new services by combining things. For example, the founders of Twitter create a new software application that works with the iPhone. But this conduct is really important to analyze market definition and market power.

4. Network externalities

Starting from the definition of Tirole – Rochet and Evans (2003), two-sided and multi-sided markets are characterized by network externalities, which describe the network's externality as a product will be more valuable for the buyers if used or consumed by other individuals. The more individual consumers there are using the product, the more attractive it will be on the market. The more users the network has, the more valuable it is.

Kiss and his co-authors (2011) examine the effects of network externalities. They have a hypothesis (Kiss et al. 2011, p. 7): “*Suppose the price of the product is low. What conclusions can we draw from this? In "traditional", network-free markets, the low price (among other things) would indicate that relatively many people are looking for the product, so the last buyer who is still willing to buy is no longer appreciated too much - so sellers can not raise the price higher. However, if the market is characterized by network externalities, the price is low because few people are looking for the product - therefore, because of the network externalities it is appreciated lower by everyone, so the sellers will not try to raise the price.*” Externalities can come from membership or use (Rysman 2009).

We can distinguish two types of externalities (Kiss 2009):

- *Positive externalities* are generated when individuals gain the benefit of a network effect for which they do not pay.
- *Negative externality* arises when individuals suffer damage for which they are not compensated. For example, spam.

Evans (2011) points out that one of the key factors in multi-sided markets is the indirect network effect. Katz and Shapiro (1994) investigate indirect and direct network effects. Clements (2004) adds indirect and direct network effects to a model. It introduces two complementary products for hardware and software. As part of a large network consumers are to manifest a value by using an example, a consumer will choose the technology that many other consumers are using. This is called a *direct network effect*. This means that by increasing the number of consumers, the usefulness of former consumers increases directly (Bodoky–Urbán 2011).

Consumers use hardware technologies if there is a lot of software available. If more consumers are using this hardware, more hardware companies will associate with more software companies. This phenomenon is called an *indirect network effect*

(Clements 2004). Thus, if the usefulness of innovation is due to business success we can talk about indirect networking. More people use a page, more people are starting to develop apps (Bodoky–Urbán 2011), think Android.

The indirect impact on multi-sided markets means consumers realize which platforms they will make them more benefit from most if more consumers are present on the other side. Consumers will use search engines where they find the most appropriate ads for them, while companies will use search engines that more and more consumers will use (Evans 2011). The biggest search engine is Google. While there are other search engines, if they can not attract as many consumers as possible to attract company advertising, they will be excluded from the market by larger search engine platforms such as Google.

5. Competition regulation in traditional markets

According to European Union law, the competition authorities start their investigation with market definition, it being used to calculate market shares in the relevant market, then they analyze market power including the existence of barriers to entry.

In the practice of European competition law, the definition of the relevant market plays a decisive role. Competition regulation is a tool that identifies substitute products or services. Market definition can be derived theoretically, but in practice it is a much more problematic area. (Lipczynski et al. 2009)

5.1. Relevant market

According to the European Commission notice (European Commission 1997) the relevant market combines the product market and the geographic market, defined as follows:

- “A *relevant product market* comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use” (7)
- “The *relevant geographic market* comprises the area in which the undertakings concerned are involved in the supply and demand of products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighboring areas because the conditions of competition are appreciably different in those area.” (8)

Demand substitutability, supply substitutability and potential competition are the three basic principles for market definition. From an economic front of view, *demand substitutability* is the most significant.

- “One way of making this determination can be viewed as a speculative experiment, postulating a hypothetical small, lasting change in relative prices and evaluating the likely reactions of customers to that increase. (15)
- The question to be answered is whether the parties' customers would switch to readily available substitutes or to suppliers located elsewhere in response to a hypothetical small (in the range 5 % to 10 %) but permanent relative price increase in the products and areas being considered. If substitution were enough to make the price increase unprofitable because of the resulting loss of sales, additional substitutes and areas are included in the relevant market.” (17)

- The test calls SSNIP test (small significant non-transitory increase in price), also known as “hypothetical monopolist test” (HM test)

5.2. Market share

According to the DG Comp discussion paper (DG COMP 2005), an indicator of market power is very important when examining market share, as this analysis gives us an insight into market structures and the level of competitiveness of companies in the market. If an undertaking has a large market share on the relevant market, it is likely to be in a dominant position compared to its competitors. If the undertaking has a huge market share it looks like it has a dominant position and it is able to limit the competition in the relevant market. Due to the dynamically changing technological evolution, there are new players on the market who belong to the category of “winner-takes-all”. Hence, the huge innovation chase encourages rivals to launch a new achievement as quickly as they can, and then they are overwhelmingly successful. If that happens, the undertaking will have a huge market share in the relevant market, but this is constantly being threatened by parallel developments by competitors who are able to restructure the market in a short time. (Boytha–Tóth 2010)

Therefore, it is important for regulatory authorities to be up-to-date, to shorten their response time, because the rapidly changing technological advances render conventional investigations after a market situation emerges too time-consuming. Overall, it is important to examine the market share of an enterprise, but it is always necessary to examine other market conditions such as market entry barriers and consumer power.

6. Regulation challenges in two- multi-sided markets

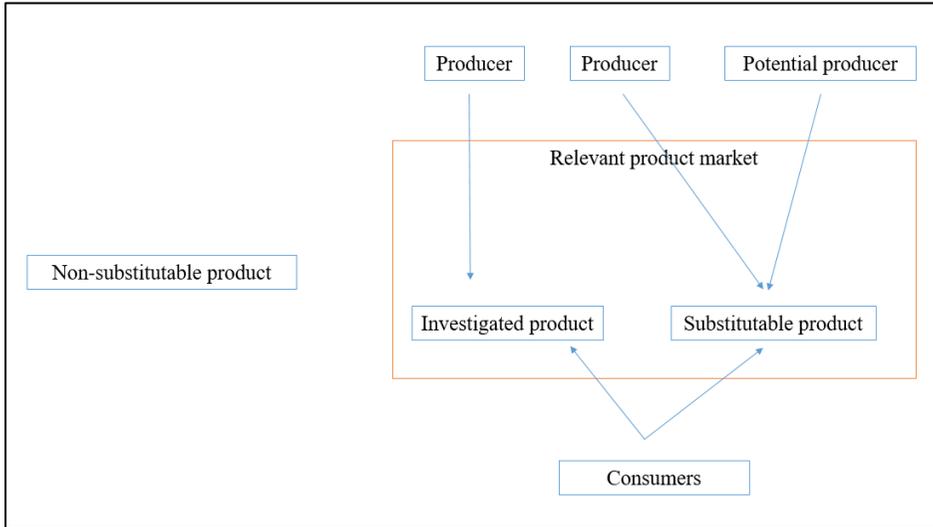
According to Evans (2011) the most complicated dilemma of platforms is to define the relevant market. The traditional investigation does not produce results; it is rather about relying on qualitative research, which refers to the nature of competition in the corporate ecosystem. The main aim of the platforms is to involve the critical mass, which can also lead to conduct that is anti-competitive. Most companies try to enforce the ecosystem as a whole, for example, Google has developed the Android application for mobile phones. Binding and predatory pricing are typical forms of behavior on these platforms. There is a huge competition in the market, but there are very few people who can stay there. Generally speaking, the market share of the remaining companies is high, and they tend to behave unlawfully in order to maintain their monopolistic position.

These ecosystems have created challenges for the regulators to develop policies that protect the public interest and keep up with innovation. However, changes resulting from innovations are coming quickly, resulting in the shortening of a regulation’s assigned life cycle. Thus, it is necessary to support self-regulation and the role of real-time feedback. New business models emerge at the expense of existing regulation, which is why the regulatory system needs to be overhauled (Chew et al. 2015).

6.1. Relevant market and market share in two-sided platforms

In defining the relevant market, we are examining the market situation in which competitors are present and taking into account the products that those companies could produce which are not yet on the market (Szilágyi 2012). In Figure 1 we will see a traditional market in which we can clearly identify demand and supply substitutability.

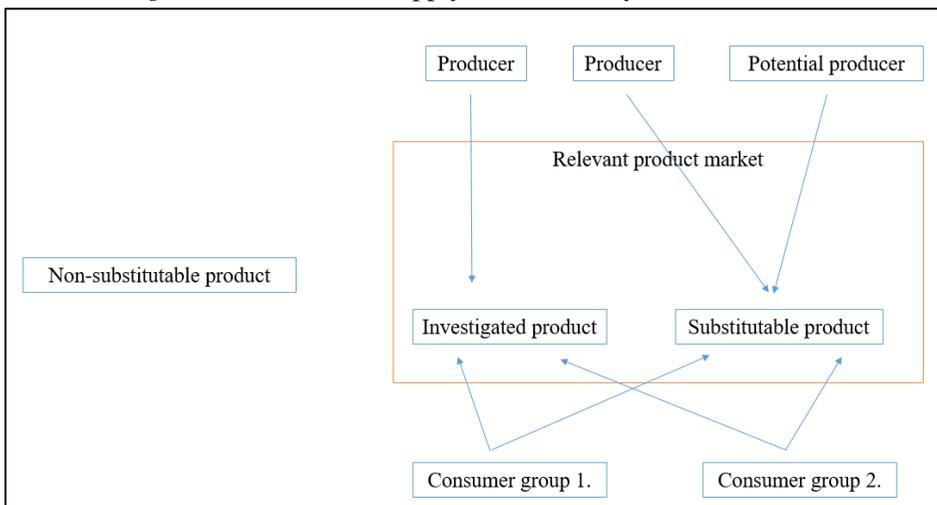
Figure 1 Demand and supply substitutability in traditional market



Source: own construction based on Szilágyi (2012)

Figure 2 shows the demand and supply substitutability in two sided markets. As the two-sided markets consist of two distinct groups of users, both groups show demand for the investigated product, as in the figure. The usefulness will depend on the use of the product.

Figure 2 Demand and supply substitutability in two-sided market



Source: own construction based on Szilágyi (2012)

We showed how we could define relevant market with SSNIP test. Could we use this test for two- or multi-sided markets, too? Fillistrucchi (2008) analyzed the test for two sided markets. He argues that in two or multisided markets the traditional SSNIP test cannot be applied. In two or multisided platforms the firms offer two or more products and services for two or more distinct groups of users. Demand for one consumer group depends on the demand of the other consumer group and vice versa. But consumers on both sides of the market do not realize these indirect network effects. Since there is a link between the two-side demand, it is questionable which price the hypothetical monopolist should be thought of as raising. In the two-sided markets, hypothetical monopolistic profits are determined by the price level (in this case, the sum of the prices paid by both sides) and the price structure (roughly the ratio of the prices paid by both sides).

One of the typical features of two-sided markets is that one group of consumers has free access to the product or service. Here, however the hypothetical monopoly test becomes meaningless. Because of the network effect, the value of the products does not mean price but the number of consumers in the market. Thus we can conclude that in terms of substitutability we cannot clearly decide which other products are considered as substitutable products by a consumer group, the non-price effects in the two-sided markets being much more significant than in traditional markets. However, if there is a price effect it is useful to look at the benefits of the other consumer group (Szilágyi 2012).

6.2. Regulation challenges in internet-based industries

It is imperative to control the world's leading internet-based companies. These checks are mostly carried out by the European Union's competition law, thanks largely to the Commission's own powers of scrutiny and to complaints from competitors. Internet-based platforms cover a large segment of the markets. From the European Union's guidelines, we could see that businesses that do not reach 40% market share are unlikely to hold a dominant position. In the internet-based markets, mainly one or just a few companies have a market share of nearly 80%. These leading companies are more likely to commit restrictive practices in order to gain more profits and go to great lengths to dispel their competitors from the market. Thus, the authorities, such as the Commission and the Court, have a difficult task in distinguishing the competitive and anti-competitive conduct of such firms (Evans 2011).

With the increasingly dynamic development of the internet-based economy, in the coming years a growing emphasis will be placed on rethinking competition and regulatory issues. At present the regulatory framework and even competition authorities appear to be puzzled by them. Regulators are still lacking new robust models, so they are constrained into using traditional methods in the course of their investigations, which raises the risk of false conclusions. There is a growing consensus among economists (Evans 2003, 2011, Evans–Schmaleness 2013, Fillistrucchi 2008, Haucap–Stühmeier 2015, Thépot 2012) that the current tools for market definition show several deficiencies. The main question is to identify market definition and define market power. One of the most problematic types is the internet-based business (Evans 2011). The following issues are:

- (1) These platforms create *impregnable monopolies* like Google or Facebook. In many cases the firm has near-monopoly position in certain segments. Based on the European Union competition policy the conduct is essentially prohibited per se if the firm is dominant; the market share is higher than forty percent.

Figure 3 Search Engine Market Share in Europe March 2018

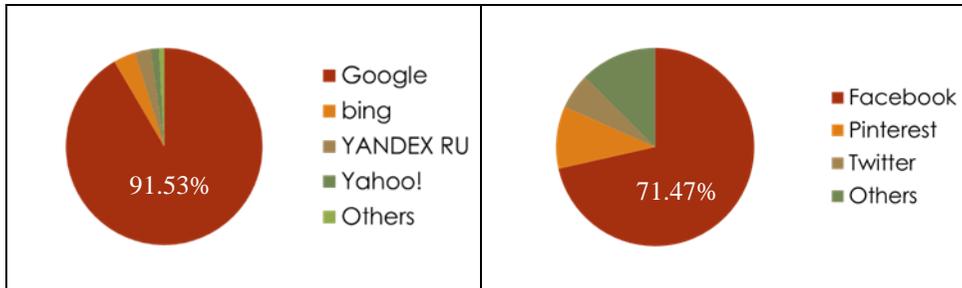
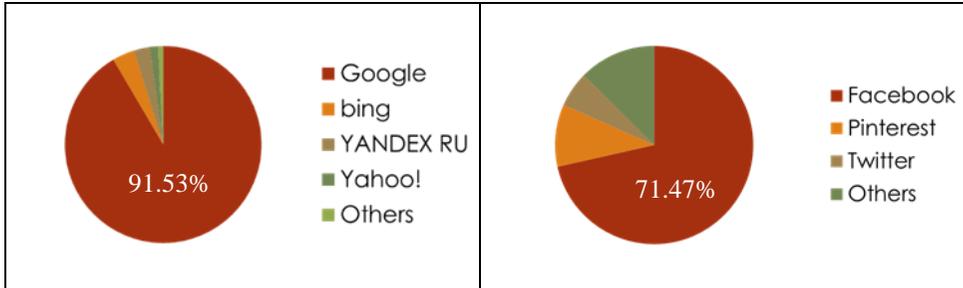


Figure 4 Social Media Market Share in Europe March 2018



Source: own construction based on www.statcounter.com

- (2) *Leveraging into adjacent markets.* Most web-based businesses have a dominant position and are based on software platforms. They are in an easy position to move into related markets for complementary products or services. For example Google developed its Google Checkout payment service in competition with PayPal.
- (3) *Access to facilities, the opportunity to interoperate.* For example, the *Microsoft Windows Media Player Case* (COMP/C-3/37.792). In 2000 the European Commission investigated Microsoft's anticompetitive conduct under two main issues:
- lack of interoperability information and
 - incorporation of Windows Media Player

In 2004 the Commission ended its investigation by way of a formal decision. It found that Microsoft had abused its dominant position in PC operation systems by refusing to provide interoperability information necessary for competitors to be able to effectively compete in the work group server operating system market; and tying its Windows Media Player with Windows. (Banasevic et al. p.1.) So, the dominant firm, Microsoft had a possibility to establish monopolies across other segments.

- (4) *Envelopment and predation.* Multi-sided businesses may crush competitors internationally like Firefox wanted to depress Internet Explorer.

In the Microsoft case described above, we can see that the Commission reached a decision over four years. After the Commission' decision, Microsoft appealed to the European Court to annul the decision. And only in 2007 did the Court confirm the legality of the decision. After that, in 2008, the Commission fined Microsoft for non-compliance with the 2004 decision, upon which Microsoft also

appealed this judgment, and in 2012 the Court upheld the fine and closed the case. Obviously, the most critical point of this case was the time involved.

6.3. *Investigating the two- or multi-sided markets as traditional markets*

Wright (2004) deals with what happens when we investigate two- or multi-sided markets as a traditional, one-sided market. It mentions various misconceptions that explain the example of heterosexual nightclubs. Nightclubs are typically two-sided markets, which have already been formulated by Rochet and Tirole (2004). The Night Club is a platform to help you get in touch with women and men. Naturally, the indirect network effect is also fulfilled, as the utility of both consumer groups depends on the demand of the other consumer group. Nightclubs usually have a differing entry fees, typically women are free to enter, while men have to pay for the service. This is the reason why the clubs can involve many more female guests, so more people from the other consumer group and the group of men are searching the platform. Wright (2004) sets up eight deficiencies, we just mention a few:

1. *Effective price structure reflects relative costs*: because of the competitive position of nightclubs, men's demand is higher than cost, while women are realized under costs. Hence the effective price structure is not necessarily based on the marginal cost.
2. *Bargaining below the marginal cost causes predatory pricing*: as in most cases women do not have to pay an entry fee, so pricing is clearly below the marginal cost. Nevertheless, such a pricing structure is clearly aimed at increasing the market share of an enterprise.
3. *In developed markets, costs do not justify costs that are no longer justified*: to remedy the “chicken and egg” problem. The subject is discussed in detail by Caillaud and Bruno (2003). The very first problem of a newly formed company is how to get enough consumers to make the most of the consumer group on the other side interested in using the product or service.

As previously mentioned, these multi-sided platforms are evolving rapidly from time to time, and fast decision-making is essential to making a right and timely decision. Currently the law and economics are not sufficiently (co-)developed for analyzing the multi-sided platforms that dominate the internet sector. We have to allow for alternative regulations.

7. Conclusion

This paper wanted to show the regulation challenges in two-sided and multi-sided markets. Currently there are many important businesses that operate two-sided and multi-sided platforms. There are also old markets such as advertising supported media or transaction payments, but there are also some new platforms like internet-based businesses.

We live in an era of technological development, new achievements are generated, which fundamentally change the structure of the economy. Such an extraordinary change is the emergence of new markets, the emergence of two-sided and multi-sided markets. Digitalization has been present since the 1990s, but is now

developing with immeasurable speed. The emergence of new markets poses many challenges to regulatory authorities.

The correct economic analyses of multi-sided platforms are more complicated than analyses of one-sided markets. We could commit serious errors if we ignore this complexity. In particular, traditional approximations of demand tend to underestimate the size of the relevant market and thus overestimate market distorting effects.

This kind of business is evolving rapidly and in ways that are sure to leave competition and regulatory policy in its wake. Consequently, it is necessary to find some alternative solution. The European Union is drawing attention to it, but the competition authorities have not been expanded.

We could say that there are a lot of challenges before the regulatory authorities, if they intend to investigate these markets properly. First of all, they use traditional methods in the course of their investigations, which raises the risk of false conclusions. We observe that traditional competition regulation has been circumvented by these platforms. Furthermore, the definitions and analyses must be redrafted. What is more, the examination of anti-competitive behavior involves a very long process for the authorities. In general, we can doubtless say that the law and economics for analyzing the multi-sided platforms that dominate the internet sector are not well (co-)developed. For the future we would like to look at several further cases to test our hypothesis.

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