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THE ATTENTION ECONOMY AND THE EU COMPETITION POLICY – A CASE STUDY OF FACEBOOK

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Abstract

The attention economy has never been more relevant than now. The digital platforms, like Facebook, have based their businesses on the attention they get from the users but still when it comes to competition cases involving these markets, the approach and analysis they get from competition authorities is based on traditional markets where a price is payed for the service or product. The primary goal of this dissertation is to understand if the current competition analysis tools used in the European Union (EU) are effective in attention markets' mergers.

To accomplish this, it was performed a case study on the merger case between Facebook and WhatsApp and also an extensive literature review on the concepts surrounding the attention markets. This methodology allowed the uncovering of the challenges these markets present to competition authorities. The analysis was done through a case involving Facebook given that it is considered the most critical player in the attention markets but also because the acquisition of WhatsApp provides a basis for an analysis of the EU competition analysis processes and tools.

The results of the dissertation suggest that if there is a competition analysis approach that acknowledges the attention markets' characteristics, some of the assumptions made in the case analysis of Facebook and WhatsApp would need to be adjusted. The dissertation highlighted four assumptions that can be questioned – the market definition, the non-monetary price, the multi-homing and the data market.

JEL Codes: D40, L40, L82

Keywords: Digital Platforms, Attention Markets, Competition Policy Authorities, Two sided markets, Facebook

Resumo

A economia da atenção nunca foi tão relevante como atualmente. As plataformas digitais, como o Facebook, baseiam os seus negócios na atenção que recebem dos utilizadores , mas quando se trata da análise de casos de concorrência nestes mercados, a abordagem das autoridades da concorrência é baseada em mercados tradicionais onde um preço é pago pelo serviço ou produto. O principal objetivo desta dissertação é compreender se as atuais ferramentas de análise da concorrência na União Europeia são eficazes nos casos de fusões e aquisições envolvendo os mercados de atenção.

Para isso, foi realizado um caso de estudo sobre a aquisição da plataforma WhatsApp pelo Facebook. Também foi efetuada uma extensa revisão da literatura sobre os conceitos que envolvem os mercados de atenção. Esta metodologia permitiu desvendar os desafios que os mercados de atenção representam para as autoridades de concorrência. A análise foi realizada através do estudo de caso Facebook por esta plataforma ser considerada o ator mais importante nos mercados de atenção e, para além disso, por a a aquisição do WhatsApp fornecer uma base para a análise dos processos e ferramentas de análise da concorrência na União Europeia.

Os resultados da dissertação sugerem que se houver uma abordagem de análise da concorrência que reconheça as características dos mercados de atenção, algumas das suposições feitas na análise de caso do Facebook e WhatsApp seriam menos válidas. Na dissertação são destacadas quatro premissas que podem ser questionadas - a definição do mercado, o preço não monetário, o multi-homing e o mercado de dados.

Códigos JEL: D40, L40, L82

Palavras-Chave: Plataformas Digitais, Mercados de Atenção, Autoridades da Concorrência, Política das Autoridades da Concorrência, Mercados Bilaterais, Facebook

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1. Introduction

The 2018' *Cambridge Analytica* scandal was an important mark in the data protection discussion. *Cambridge Analytica*, a political consulting company, helped political candidates in different countries in their political companies, the most famous being the Donald Trump presidential campaign in the US. The company presented as being an expert in "influence operations" and "psychological warfare". In Donald Trump's campaign, in 2014, *Cambridge Analytical* had access to up to 87 million profiles, data sold by the researcher Aleksandr Kogan that created a Facebook app to apply a personality type quiz to harvest data from the user and their friends to predict the political views and tendencies. (Chang, 2018) Then, *Cambridge Analytica* used this data to personalise targeted political messages and fake news to sway voters in the United States to vote for Donald Trump. (Cadwalladr, 2020)

The misuse of personal data became a source of questioning and investigation targeting Facebook. After one and half year, in October 2019, Facebook payed a fine of £500 000 to the British data protection agency (ICO) and with that, it closed the investigation ICO had on Facebook regarding the CA issue. (BBC News, 2019) This scandal waved a red flag on privacy and data. Roundtables of academics started to discuss what can or should be changed to accommodate the digital economy and data driven companies. Authors like Wu (2017), Evans (2017) and Newman (2019) brought to the table an already existing topic but now more relevant than ever, the attention economy.

In the last decade, the competition authorities found themselves with the biggest acquisition among the called social media companies or digital platforms. Facebook is the leader in these mergers, as it was the case with the acquisition of Instagram in 2012 for one billion dollars and WhatsApp in 2014 for $21.8 billion (Deutsch, 2021). The competition authorities' tools and processes used to analyse cases are designed for positive price markets. However, attention markets such as the market that Facebook is part of, are zero-priced markets. Until now no academic consensus of what should change regarding competition policy has been reach neither in the digital market nor the attention markets. This dissertation aims to better understand attention markets in order to aid the discussion on the role of competition authorities in these cases.

The methodology employed in the present dissertation was a case study on the merger between Facebook and WhatsApp analysed by the European competition authority, the

European Commission, in 2014. This case was chosen given four reasons. First, Facebook is considered the biggest digital platform in the attention market and it has been through the years involved in numerous acquisitions. Second, this case was in the jurisdiction of the European competition authorities. The third reason is the timeframe of the case. Although it is relatively recent, the ever-changing dynamics of the digital markets created, in the last six years, fresh discussions and institutional investigations that involved the acknowledgment by some authors, like Evans (2017) and Wu (2017), of the market for attention. The final reason is the value of the acquisition, $21.8 billion. The massive price tag on this acquisition reveals the importance the digital economy and attention bases business models have in the overall economy.

The present study does not aim to present solutions or changes in the competition authority's instruments. Instead, the purpose is to use the case study to question assumptions made by the competition authority along the merger case. The overarching research motto is the following: At the present time, after knowing the characteristics and dynamics of the attention market, what could be questioned or different in the assumptions and the approach of the European Commission in regard to the merger case Facebook/WhatsApp?

This dissertation was developed with the following structure: the first chapter refers to the introduction, the second chapter is a literature review of the attention market that is divided into three sub-topics: attention as a resource of a market, two-sided markets and the attention market. The third chapter contains the discussing of the merger case between Facebook and WhatsApp. This chapter is structured to analyse four important characteristics of the case: market definition, non-monetary price, multi-homing and the data market. The final chapter presents the main conclusions of the dissertation.

2. Literature Review

In this chapter, it will be reviewed the existing literature focused on the main concepts connected to the attention markets: the concept of attention and the literature on two-sided markets. Then, after the analysis on these two essential topics, it will be presented a review on the literature regarding the attention markets.

2.1. The Concept of Attention

The Nobel prize winner in 1978, Herbert Simon, introduced the concept of attention as a resource in economic sciences in 1971. He set the foundation of the relationship between information and human attention:

> "What information consumes is rather obvious: it consumes the attention of its consumers. Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it." (Simon, 1971, p. 40 as cited in Festré & Garrouste 2015)

By focusing on one information, our attention is being consumed by it. If there is a lot of information available and there is limited attention, there is a scarcity of attention, and a need to allocate it properly among the sources that want to consume it.

Michael Polanyi and Friedrich Hayek pioneers in the economics of attention created together and alongside Simon the relationship between attention, information (Simon, 1971 as cited in Festré & Garrouste 2015), decision making and intentionality (Polanyi, 1966 as cited in Festré, A., & Garrouste, P., 2015) and knowledge (Hayek, 1952 as cited in Festré, A., & Garrouste, P., 2015). These connections created a starting point for researchers.

To understand the attention economy, there is a need to understand the concept of attention. Attention is defined as:

> "the act of listening to, looking at or thinking about something/somebody carefully" (Oxford Dictionary)

According to neuroscience, attention can take two opposite forms: *Goal-directed attention* and *Stimulus-driven attention*, (Corbetta & L. Shulman, 2002 as cited in Newman, 2019). The first is where our attention is driven by internal factors that include our knowledge, our expectations and/or our goals (Corbetta & L. Shulman, 2002 as cited in Newman, 2019). In the second,

our attention is driven by stimuli that are external to us (Corbetta & L. Shulman, 2002 as cited in Newman, 2019). The difference between these two forms is related to the decision-making process and intentionality of attention. The external stimulus influences our intention and our allocation of attention involuntarily.

Attention is also scarce; it is "limited by time - 168 hours a week." (Wu, 2019) and limited by our cognitive capacities (Simon, 1955 as cited in Festré, A., & Garrouste, P., 2015). Because it is a scarce resource, it has an opportunity cost. The brain is only capable of processing a limited amount of information, if it receives more than its limit, it tends to disregard deliberative and intentional thinking and turns to associative or unconscious cognition. (Burgess et al., 2014 as cited in Newman, 2019)

> "Numerous experiments have shown that high levels of cognitive load affect decision making, reducing individuals' use of controlled (effortful, intentional, conscious) cognitive processes and increasing the use of automatic (effortless, unintentional, unconscious) processes." (Burgess et al., 2014 as cited in Newman, 2019)

Overload of information makes humans more susceptible to making poor decisions, as it reduces mental capacity. This is due to the fact that people after being exposed to excessive information tend to become "highly selective and ignore a large amount of information or give up and do not go beyond the first results in many cases" (Kashada et al., 2020 p.56). Also, tend to "need more time to reach a decision based on the information" (Kashada et al., 2020 p.56). Finally, tend to "make mistakes in the process" (Kashada et al., 2020 p.56) and "have difficulties in identifying the relationship between the details and the overall context." (Kashada et al., 2020 p.56).

In the economic literature, attention is what Polanyi defined as a "fictitious commodity" because it was not made to be marketable, but it became the subject of a market. Drobny (2019) summarized the four characteristics that make attention a scarce and wanted resources) it is always allocated "at something or someone" (Drobny, 2019, p.31); ii) it is limited due to the brain's physical and temporal limitations; iii) it "selects information" (Drobny, 2019, p.31), meaning that people choose not to pay attention to somethings using voluntarily and involuntarily attentional decisions (Wu, 2017; Drobny, 2019); iv) it also "influences people's decision and behaviour in the context of market exchange" (Goldhaber, 1997; Franck, 1995 as cited in Drobny, 2019, p.31).

One other characteristic of attention is that, although it is selective, it "cannot be stored or hold value to be used later in time" (Wu, 2017, p.11), and this makes it different from traditional currencies. Currency is defined as having three characteristics: being a medium of exchange; being a unit of count; and being able to store value. The way we choose to use our attention follows a similar pattern to the way we spend our currencies. It depends on our preferences, on our habits and rituals, and our technological environment (Wu, 2017). Davenport and Beck call attention as the new currency of business (Davenport & Beck, 2005).

2.2. Two-sided markets

Most researchers consider the attention market as a two-sided market with some specific characteristics (Newman, 2019; Drobny, 2019). To better analyse attention markets one should, besides having a good understanding of concept of attention, have knowledge of two-sided markets.

Although two-sided markets have been around for a long time, the modelling of a "two-sided market" was introduced by Jean-Charles Rochet and Jean Tirole in 2003. In two-sided markets, two different types of agents obtain value from the interaction between them. To allow the interaction, there is an intermediary, a platform. Each side is connected by the platform. Platforms engage with the two groups in such a way that it affects how much network externalities are experienced (Armstrong & Wright, 2007). Examples of these types of markets include the video games and the credit and debit cards. As mentioned both sides have what is called network externalities, that is the "ultimate benefit" from the interaction through a common platform" (Rochet & Tirole, 2003). The concept of network externalities is a key part of the definition proposed by Rochet and Tirole (2003), where the key feature of two-sided compared to one-sided markets are the indirect network effects. A distinction between direct and indirect is needed to fully understand these markets.

Direct network externalities or positive consumption externalities are defined as the "increasing utility that a user derives from consumption of a product as the number of other users who consume the same product increases" (McGee & Sammut-Bonnici, 2015, p.1). Direct externalities arise from the existence and provision of complementary goods. In other words, the willingness to pay for a unit of a good sold in this market increases with the total number of units sold. The more participants there are in the market the better for all. The stronger these effects are, the more willing are the current players in the market to facilitate

the entry of new players, so that there is an expansion of the market and more benefits for them.

Cross-group network effects come when the "benefit to users in at least one group (side A) depends on the number of users in the other group (side B) that join.". (Hagiu & Wright, 2017, p.5) The positive network externalities in one market extend to the participants of the other market (Rochet & Tirole, 2003). Indirect network effects exist when "there are cross-group network effects in both directions (from A to B and from B to A). In this case, the benefit to a user on side A depends on the number of participants on side B, which in turn depends on the number of participants on side A. Thus, the benefit to a user on side A depends (indirectly) on the number of users on side A" (Hagiu & Wright, 2017, p.5)

Rochet and Tirole (2003) suggest that most of the markets with network externalities are two-sided markets. These network externalities create what is called the "chicken-egg dilemma" where there is an interdependence of both sides of the market. Examples include the gaming industry and the debit/credit card industry. A player chooses a video game console if there are games for it, game creators want to choose platforms that are or will be popular with gamers (Rochet & Tirole, 2003). Cardholders only value credit or debit cards to the degree that they are recognized by the retailers they use, merchants profit from a broad circulation of cards by customers (Rochet & Tirole, 2003). "What comes first: The chicken or the egg?" is the question and challenge that the two-sided markets pose. Platforms have the role to unite these two sides and allow for the market to exist. What holds the value of platforms for consumers is the existence of affiliate sellers within the platform and the other way around for the sellers. (Hagiu & Wright, 2015; Zhu & Iansiti, 2012 as cited in Ott et al., 2018). "So, without sellers, there is nothing to buy. Without buyers, sellers are not interested." (Ott et al., 2018, p.2). Platforms include examples like Google, YouTube, Netflix, card payment firms like Visa and Mastercard, among others. The table 1 gives some examples of the two-sided markets and their structure.

Table 1. Two-sided market examples

Product category	Market 1	Intermediary	Market 2
Portable documents	Document reader*	Adobe	Document writer
Credit cards	Consumer credit*	Issuing bank	Merchant processing
Operating systems	Complementary applications	Microsoft, Apple, Sun	Systems developer toolkits*
Plug-ins	Applications software	Microsoft, Adobe	Systems developer toolkits*
Ladies' nights	Men's admission	Bars, restaurants	Women's admission*
TV format	Color UHF, VHF, HDTV*	Sony, Phillips, RCA	Broadcast equipment
Broadcast & publishing	Content*	Magazine publishers, TV, radio broadcasters	Advertisements
Computer games	Game engine/player	Ubisoft, ID, valve, electronic arts	Level editors*
Auctions	Buyers*	E-Bay, Christie's, Sotheby's	Sellers
Academic journals	Articles	*Management Science*	Author submissions*
Recruiting	Applicants*	Monster.com	Employers
Reservation systems	Travelers*	Expedia, Travelocity, Orbitz	Hotels, airlines, rental cars
Shopping malls	Shoppers*	Mall of America	Stores
Streaming audio/video	Content*	Real audio, Microsoft, Apple	Servers
Paid search	Searchers*	Google.com	Marketers
Stock exchange	Equity purchasers*	NYSE, NASDAQ	Listed companies
Home real estate	Home buyers*	Real estate agents	Home sellers

Notes. This table shows how one side of a two-sided network market receives a discounted, free, or even subsidized good (indicated with *). In general though not always, Market 1 can be interpreted as the user/consumer market and Market 2 can be interpreted as the producer/developer market. We provide a test for which side receives the free good below.

Source: Parker & Van Alstyne (2005)

The distinction between direct and indirect network effects leads to the distinction of two types of two-sided markets supported by some researchers (Filistrucchi et al., 2014): the two-sided transaction markets and the two-sided non-transaction markets. This distinction is significant in the analysis of the attention markets. What separates the two types of two-sided markets is the existence of transactions between the end-users and the type of network effects. Card payments market is a classic example of the transaction type (Niels, 2019; Rochet & Tirole, 2002), the non-transaction one is mostly associated with media markets (Niels, 2019).

A two-sided transaction market is "characterized by the presence and observability of a transaction between the two groups of platform users. As a result, the platform is not only able to charge a price for joining the platform, but also one for using it" (Filistrucchi et al., 2014, p.298). Using the example of the payment cards, the consumer and the seller of a good use the payment card to make the transaction of a good or service and the good is delivered to the consumer at the end.

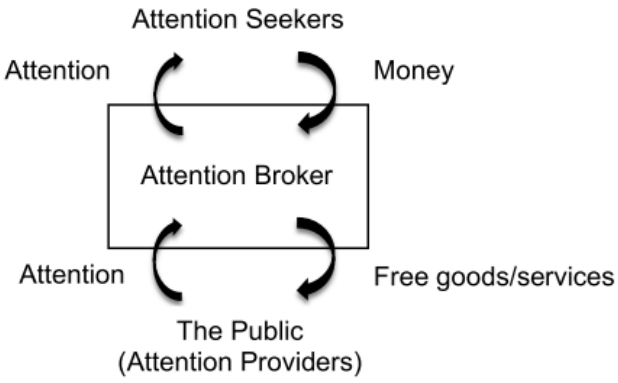
A two-sided non-transaction market is the "absence of a transaction between the two sides of the market. Even though an interaction is present, it is usually not observable" (Filistrucchi et al., 2014, p.298). Using the example of the media, the only thing that is exchanged between the consumer and the advertiser is the message of the advert, that is not considered a transaction but an interaction.

Fillistruchi et al. (2014) is very clear on the importance of these two-sides. In a typical approach one could assume that because there is no transaction, one should ignore that side and only define the side of the market where the transaction occurs. But the non-transaction side is what make these markets extraordinary. In two-sided markets, a free product is a "profit maximising strategy" (Filistrucchi et al, 2014, p.300). A free product boosts the reach of users, so by losing money on the non-transaction side it maximizes revenue on the transaction side.

This distinction is important for the market analysis done by the competition authorities and that sparked some discussion between researchers (Niels, 2019). Filistrucchi et al. (2014) suggest that "in non-transaction markets, one must define two (interrelated) markets, while in transaction markets one should define only one market" (Filistrucchi et al, 2014, p.302). This approach creates different outcomes in the analysis of competition cases.

The knowledge on two-sided markets allows us to define the market of attention. This market starts with the public (or consumers) that supplies time and attention "in return for content that entertains or informs them" (Evans, 2017). This first side is the non-transaction side in this market. On the other side, "attention seekers" like "advertisers" or "politicians" (Wu, 2017), demand attention "so they can deliver messages that will increase their sales and profits" (Evans, 2017, p.2). To connect them, in the middle of these two, there are "attention intermediaries" (Newman, 2019) or "attention brokers" (Wu, 2017) or more commonly known as platforms. The platforms sell to the public usually free entertainment or informational content to acquire and attract time (Evans, 2017) and attention. Then, on the other side, the platform "resells it, for cash" to "attention seekers" (Wu, 2017). Attention seekers are the final consumers of attention and not the people. The bigger the number of users on the non-transaction side, the more "attention seekers" will want to be on the second side of market, given that the platform collects a higher amount of attention from the users. Figure 1 of Wu (2017) represents the attention markets.

Figure 1. Attention Market Structure



Source: Wu, 2017

2.3. Attention Markets

After establishing that attention markets are considered to be part of the two-sided markets, we will dive into the development of the attention economy.

Economics is the "study of the allocation by individuals and societies of scarce resources" (Samuelson and Nordhaus, 2010) so, by defining attention as a scarce resource, economics' researchers can use it as the basis for their studies. The term "attention economy" was first introduced by Richard Lanham in 1994 where he defended that the society is moving from a material to an information economy (Lanham, 1994). But it was in 1995, in a discussion about this issue that Georg and Dorothea Frank sparked the scientific attention (Franck & Franck, 1995). In the discussion the authors stated that

> "nothing seems to attract attention more than the accumulation of attention income, nothing seems to stimulate the media more than this kind of capital, nothing appears to charge advertising space with a stronger power of attraction than displayed wealth of earned attention.... If the attention due to me is not only credited to me personally but is also registered by others, and if the attention I pay to others is valued in proportion to the amount of attention earned by me, then an accounting system is set in motion which quotes something like the social share prices of individual attention".

Attention is considered an important element of the market, at the time the media, but currently it can also be applied to most digital markets. Attention had become valued and valuable to all sides of the market.

Later, the term "economics of attention" became relevant with Michael Goldhaber in 1997 in his academic articles in the online journal "First Monday". Here, Goldhaber defined the concept as being a part of "internet economics". But long before the internet, businesses already acknowledged its importance using advertisements to get consumers attention and "increase their sales and profits" (Evans, 2017). The first acknowledged business model based on attention was created in the 1830s, called by Wu (2016) as the "Attention Brokerage" model. Benjamin Day created *The New York Sun* and sold it at a dumping price of only a penny, at a time where the newspapers were considered a luxury item (Hendricks, 2018). Although below cost, it "turned a profit by attracting larger audiences and reselling their attention to advertisers." (Wu, 2016, p.17). Day managed to do this by making the price very low but also by promoting extraordinary sensational news like the fictitious story about "bat people inhabiting the moon" (Hendricks, 2018, p.9) in 1835 of what was called the "The Great Moon Hoax" (History.com Editors, 2009). This was followed by other newspapers and other types of media including magazines, radio and television (TV) broadcasters, but most importantly, the web industry.

The reason TV channels are always raving and competing for shares and ratings is not about selling TV programs it is about selling advertising at a higher price while people are tuned into the TV show, just like Day with his newspaper. By having a one penny newspaper his focus was not on what people paid for it but on the large number of people (and their attention) he could reach so that advertising in the newspaper would be more valuable and allow him to charge a higher price for the advertising space. The model created by Day illustrates the network externalities mentioned previously: the more people wanting to buy the newspaper, the more the advertisers wanted to be on that newspaper. It is a win-win relationship for both consumers that wanted access to the news, to the advertisers that had a popular platform to share their content and for the newspaper that had profits from this strategy. The development of the internet and web services and other assets that included "content, brand, app, app store, set-top box, Internet access, smart TV" (Drobny, 2017, p.32) among others, created a dynamic and more impactful use of advertising.

The advertisers or "attention-seeking entities" (Newman, 2019) have different ways to get the attention of the public. They can extract attention using unsolicited ads, for example, "email spam, telemarketing calls, billboard ads, subway posters". All of these are showed to public without the possibility of escaping them. Any person taking a metro ride is very likely to see an ad on the walls of the station. This type of ads creates attention costs in the targets because they are not voluntary or asked for by the viewer. The other way for advertisers to get attention is using the services and content provided by intermediaries or platforms. Advertisers can now use a process called "attention exchange" (Newman, 2019, p.12). The attention of the user is exchanged for the content or service provided by the platform. Common examples can be encountered in "advertising-supported zero-price markets" (Newman, 2019, p.12) like "broadcast radio and television, online social networks, and Internet search". Using the example of radio, the user needs to be willing to listen to the ads in order to listen to the music that is broadcasted by the radio, so it exchanges their attention for the ability to listen to the radio free of monetary charges. This way, in attention markets, the attention is being exchanged and not extracted. (Newman, 2019).

2.3.1. Pricing in the attention market

Pricing strategy is an important part of the structure of attention markets. The attention broker is set in between "a money market on the one side, and an attention market on the other" (Wu, 2017, p.18) or a transaction and non-transaction market, respectively. The broker starts with the price of the "the honey" (Drobny, 2019, p.33). The "honey" is the service or content that attracts people. The price is set at zero so that the reach is maximized. This is part of an under-pricing strategy. The "honey" is the key component of the competition between brokers because they all charge a zero price, so they need to focus on developing the quality and type of "honey" (services and content) to use it to attract more attention than their rivals. The broker "buys" attention from the public by providing the "honey" free of monetary charge. An impactful phrase that is associated to the pricing in attention markets was written by Lanchester in 2017 - "If the product is free, you are the product". (Lanchester, 2017)

With the attention it collected, the broker sets the advertising rates to sell to entities that are interested in accessing the attention suppliers (the public). It sets advertising rates that vary according to the audience characteristics. The broker "resells not just attention in bulk, but

specific, tailored tranches of attention designed to meet the needs of the buyer." (Wu, 2017, p.19).

The final step is where the broker sets the "attentional price", that can be the number of ads shown in exchange for the attention of certain people, assuming that there is "product degradation" (Wu, 2017, p.19) – the existence of a negative relationship between the number of ads and the value of the content presented to the user (Drobny, 2019). Taking that into consideration, in mediums like television or radio broadcast, the "attentional price" or load of ads is increased until the point right before where the consumers just turn off the TV or radio. (Drobny, 2019). Still, there are situations where this product degradation was minimized, like the case of the famous Super Bowl advertisements, a commercial break on TV in the recess of an important American football game. These ads don't follow the pattern of product degradation, and are considered a form of entertainment. (Wu, 2017) In 2021, advertisers payed $5 600 000 for 30-second ad during the Super Bowl commercial break. (*Super Bowl Commercials 2021: How Much Does an Ad Cost for Super Bowl 55?*, 2021)

Facebook followed a different pricing strategy. In early 2000s Facebook entered the attention market and the biggest player was Myspace. At that time, Facebook only ran the minimum ads possible just to "cover liquidity shortfalls" and it did not aim for the maximization of revenue, at least for the initial phase (Wu, 2017). Myspace at the time was filled with as many ads as it could in order to maximize revenue (Gillete, 2011). Looking at the attention market, Facebook was lower priced (attentional price) than Myspace, although both firms set the price of the "honey" at zero. Alongside with other features this made Facebook to become ahead of its rivals. Only after weakening their rivals, Facebook raised the (attentional) price and started to maximize the revenue (Wu, 2017). This pricing strategy is considered to be a very close match to what can be called monopoly price. This strategy has some similarities to predatory pricing strategy - "the setting of a low price at an initial time period, followed later by monopoly pricing." (Wu, 2017, p.22). William Greene et al in 1996, defined predatory pricing as the following.

> "The execution of a predatory strategy requires a sacrifice of net revenue that cannot be explained except as an attempt to eliminate competition and earn later monopoly profits." (Greene, 1996, p.3)

Newman (2019) also introduces the attention brokerage models in what is called "freemium" business models, where the business offers a zero-price and a positive-price version of the same base product. The zero-priced version usually includes third-party advertisements, and even if it does not include third-party ads, the fact that it is free it is already an internal ad for the premium version of the product. The premium could have the form of the product without ads or with some extra features that users appreciate but are not present in the freemium version.

When setting the advertising rates, the value of attention provided by certain users according to different characteristics like location, age, gender among other, become a central issue. Regarding the value of attention, Wu (2017) considers that the "attention of different people is valued differently in the marketplace" (Wu, 2017, p.13) and that "certain mental states are considered more valuable" (Wu, 2017, p.13) for some attention seekers than others. Attention seekers want to target certain people to maximize their results, so they want to be present in a platform where they can find their targets. Companies or entities that want people's attention can adapt their ads or actions accordingly by targeting specific preferences of the attention supplier that are "collected during the attention gathering process" (Drobny, 2019) using methods like the use of cookies in the websites.

2.3.2. Market definition

The constant allocation of attention and the increasing value of attention due to the technological changes means that there is an intense rivalry between the players in the market (Newman, 2020). To fight this the brokers can compete with each other in specific time slots or services by using means to lure more people into their services against their competitor. But brokers can also compete for the time that people do not spend on any commercial provider, like the time people spend with their friends, families, hobbies, walks. Simple examples come from the 1930s where *prime time* was invented to fill the time where people were at home engaged in home activities, or also the common *morning shows* and *late-night shows*. This method is called the greenfield strategy. Greenfield strategy can partly explain why Google is investing in side-businesses like self-driving cars. Self-driving cars will allow people to have more time and because of that, attention brokers will be able to capture more attention of the users. This intense market setting pushes the players to constantly innovate their offers using "new distribution channels, new products, new techniques, etc." (Drobny, 2019, p.33) to attract and retain attention.

One of the symptoms of the sharp increase of the attention market has been the dramatic increase in ads count over the years (Newman, 2020). The digital markets have increase in size and value given the increase in the access to the internet and smartphones and the increase in the number of companies that are considered digital platforms. This can be verified by the increase to approximately 1.9 million apps on the Apple App store in the last decade and approximately 2.9 million on the Google Play Store (Clement, 2020). Also, the control of different platforms and services by some firms increases their power over people's attention attracting more marketers to the market. This leads to a challenging characteristic for the competition authorities that is the "constant change of boundaries of attention markets." (Drobny, 2019, p.33).

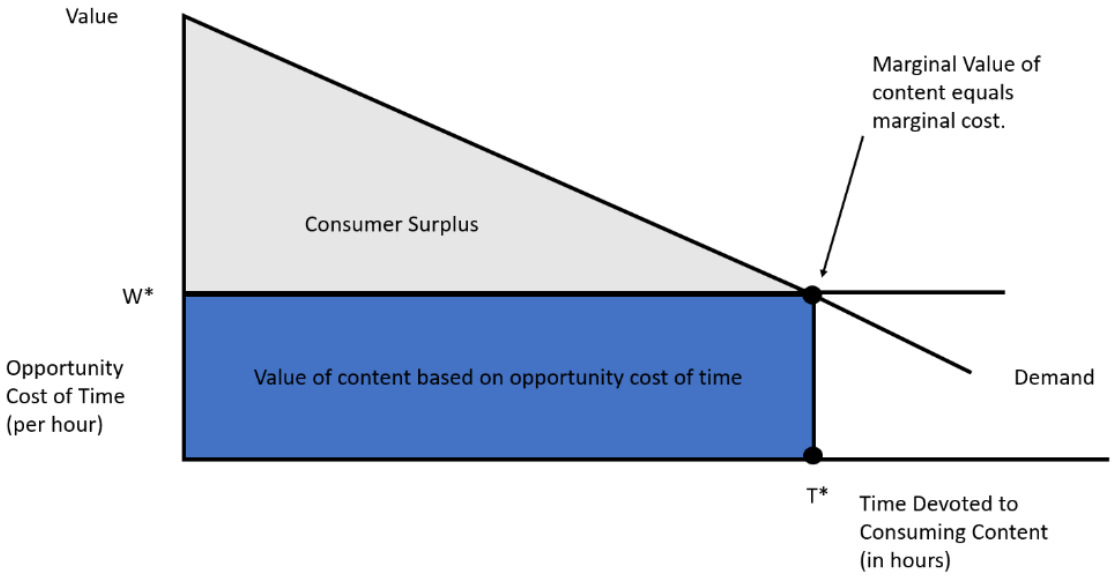
The attention markets are more complex than the typical markets due to several reasons. The atypical structure - a top-down model (Newman, 2019) - where attention seekers are the consumers of the market makes it a particular case. Also, the fact that most attention markets nowadays operate in the digital economy, allows for multiple combinations of different online assets and existing services. This digitalization creates a large number of possibilities and ever-changing new services and products (Drobny, 2019).

Evans (2017) describes attention markets in the perspective of a market for time. The author assumes that consumer attention is valued equally by advertisers, that there are "diminishing returns in producing content" and "selling ads limits the size of platforms". Evans (2017) divides the market into a buy-side and a sell-side. The first is where the "platforms acquire consumer time" and the second is where "platforms sell slices of that time to marketers." (Evans, 2017, p.12) Evans (2017) suggests that in a case where there is sufficient competition, agents from both sides could be price-takers. But the fact that the consumer demands different types of content creates a competition point among platforms. To create better content, there is some incentive to create larger platforms and take advantage of scale economies in content creation. In this case some platforms will have more consumer attention than others and therefore advertisers will be willing to pay more for ad space to these platforms. The dynamic process results from the indirect network effects.

Evans (2017) presents a possible framework to measure the size of the attention markets based on time. For a standard industry the size is measure using the price (p) and the units sold (N). The revenue is p*N making this the "minimum value" consumers place on the industry. Attention markets do not fit this model given that there is no monetary value and

the content provided to consumer is also very heterogeneous. Measuring the value directly becomes generally not possible. Evans (2017) uses time "trading" as a proxy for the attention market – "time-value method". Trading content for time (*T*) is set to "measure the output of content in the market", and the opportunity cost of time (*w*) is set to "measure the size of the attention industry (*T*w*)"

Figure 2. Consumer "Spending" and consumer surplus for attention platforms



Source: Evans (2017)

To estimate de value of the market Evans (2017) focused on consumption of ad-supported content (*T*) multiplying it for "50 percent of the before-tax hourly median household income" that is proxy for the cost opportunity of time (*w*).

Evans (2017) estimated that in the United States of America (USA) adults spend 514 billion hours consuming ad-supported content. The *w* estimate comes from the value of travel-time savings that the U.S. Department of Transportation uses. This serves as a measure of "the value of time during which people may be engaged in other leisure activities" (Evans, 2017, p.21). This value is set to be "50 percent of the before-tax hourly median household income" (Evans, 2017, p.21), that in 2016 was $13.60 per hour. According to these values, the opportunity cost of the time spent on ad-supported content (*T*w*) was of $7.0 trillion. This number is the value of that content, a value larger than the estimates for the retail industry in the USA, "$3.9 trillion in 2019" (Evans, 2017, p.21)

Drobny (2019) suggests that some points in the process of case analysis should be rethought. The first one is the approach the competition authorities have in the cases. The traditional approach is the "Structure → Conduct → Performance" model (Drobny, 2019, p.37). The structure of the market is the first step, that includes the definition of the relevant markets, of the competitors and the market power. Then, the competition authority accesses the conduct of the company and determines if it is anti-competitive or not. Van Gorp & Batura (2015) suggest that "market definition tools tend to generate a rather static perspective on the relevant market" (Van Gorp & Batura, 2015). Because the attention markets compete using the development of new business models (Drobny, 2019) there is a constant change in the market definition. So, researchers like Van Gorp & Batura (2015) question this traditional approach for one that makes the inverse path, where "the relevant market should be treated as a function of the company's activities" (Drobny, 2019, p.37)

The second item that could be a point of change are the analytical tools competition authorities use for the definition of the relevant market, for the market power and for changes in the market. The question arises in the two-sided markets with platforms where the competition authorities need to choose the markets to be analysed whether on the transaction side but also on the non-transaction side. The Small but Significant and Non-Transitory Increase in Price (SSNIP) test is used to determine market boundaries by establish the substitutability between products. It "defines the market as the smallest set of substitute products such that a substantial (usually five or ten percent) and non-transitory (often one year) price increase by a hypothetical monopolist would be profitable" (Filistrucchi, 2018, p.11.) In this test the aim is to answer the question "can a hypothetical monopolist increase price and still be profitable?". If the answer is yes, the definition of the relevant market is completed. But if the answer is no, this means that there are substitutes to the product, so the market definition should be broader. After including a broader market, the question is again analysed and again until there is a positive answer to the question. But the SSNIP test is made to be applied in monetary markets that is not the case of attention markets.

2.3.3. Competition effects of Attention Markets

Attention markets create negative spillover effects (Newman, 2019). The advertisers want the attention so that the consumer interacts with them in a second transaction in a different market. Advertisers want to consume the user's attention so that the user buys or engages with the advertiser's products or services. But the intense activity in this market can "degrade

the stock of attention" (Newman, 2019 p.15) of the people. This leads to the reduction of the ability to act rationally, creating "sub-optimal decision making" in the next transaction with the advertisers. The user is left will marginally less cognitive capacity for the following decisions (Newman, 2019). This process is called the "attention-depletion effect" and it can create negative spillover effects regarding the general society (Newman, 2019) due to the fact that decisions made in subsequent markets are affected by the lower cognitive capacity created in the previous transaction. Gifford (2005) suggested that in a state of limited attention,

> "there are opportunity costs of acquiring new information due to the alternative of ignoring other sources of information. One implication of these costs is that, from the observer's point of view, the agent does not appear to adopt substantively rational solutions for any state. However, from the agent's perspective, these behaviours are both substantively rational and procedurally rational." (Gifford, 2005, p.25)

The major attention brokers, like Facebook, Twitter and others have specialized departments within the companies that try to optimize their services using neuroscience, for example using conditioning tactics (Day & Stemler, 2019) that include push notifications, spinning wheel, the colour used, "streaks" among many others (Hartmans, 2018). In this way, they can shape the user's behaviour to keep them engaged longer in their services, fostering an addictive behaviour in the users (Newman, 2019). Currently, some researchers consider that consumer addiction to social media can expand the negative effects of attention markets. (Brailovskaia et al., 2019).

Most authors agree that in markets of attention there are indirect network effects. Evans (2017) suggests that it is not a conclusion that can be assumed as certain. The author believes that there is no negative externality in equilibrium because consumers receive "full compensation" (Evans, 2017, p.11) for the advertising they are exposed to, with the content provided by the platform.

Attention markets can also affect the consumers in positive ways. Evans (2017) defends that the attention markets solve a transaction-cost problem generated by the fact that if advertisers did not have an intermediary platform, they would show their ads to consumers that would not be interested in their message and it would be costly for advertisers to search for the interested consumers. According to Evans (2017), showing consumers relevant ads

can result in an increase in welfare, because it can lead to savings for their purchases and saving for others after the ad message is shared. Also, Evans (2017) suggests that attention markets are good if what the platforms "pay" to consumers for their time spent on the platform – the content and relevant ads – is higher than the loss they would feel for seeing unwanted ads – attentional cost. The quality of content becomes the centre of competition between platforms

3. Case of Facebook/WhatsApp

Facebook announced in February 2014 the intention to acquire WhatsApp for a price of 16B$ but later it increased the price to 19B$. Due to the difference in share value between the announcement in February and the acquisition in October the deal was valued, when all was set and done, at 21.8B$. (Olson, 2014) This deal become one of the biggest acquisitions in history, and by far the biggest for Facebook, that in 2012 bought Instagram for 1B$.

Why attention is important to digital platforms that use advertising-based business models, like Facebook? The more time users spend on Facebook's platform and on other websites where Facebook collects data using cookies, the more proprietary data they supply to Facebook (including search history and communications), data that it is used to define the users' preferences. This information is used to increase the value of the advertising space inside Facebook, giving advertisers the possibility to use targeted advertising, were the ads are adapted to a certain user profile. Given the fact that advertising in the fourth quarter of 2020 represented almost 97% of the overall revenue of Facebook (Facebook, 2020), there is a clear incentive to maintain and increase the value of Facebook's ads to advertisers in other to keep this stream of revenue alive. If it fails to do that, given the dependency of Facebook's revenue in this particular item, their financial wealth can be jeopardized.

3.1. Market Definition

In the Facebook/WhatsApp case (European Commission, 2014), the European Commission (EC) sets from the start that Facebook and WhatsApp are not considered to be close competitors. In the case, Facebook is described "as a provider of websites and applications for mobile devices ("apps") offering social networking, consumer communications and photo/video sharing functionalities." (European Commission, 2014, paragraph 2) whereas WhatsApp is considered to be "a provider of consumer communications services via the mobile app" (European Commission, 2014, paragraph 3). Also, the Commission clearly

separates the different businesses owned by the two firms, Facebook, Facebook Messenger and Instagram, as being in different markets. Facebook is a "social networking platform", Facebook Messenger is a "consumer communications app" and Instagram is a "photo and video-sharing platform". Given the activities of each party, the EC separated the analysis into three markets: consumer communications services, social networking services and online advertising services.

In the definition of the relevant product markets, the consumer communication services were defined as "communication solutions that allow people to reach out to their friends, family members and other contacts in real time" (European Commission, 2014, paragraph 13). After analysis of the product market definition the EC defined as the narrowest relevant market the "consumer communication app for smartphones" (European Commission, 2014, paragraph 34) given the fact that WhatsApp was only based on smartphones and at the time it did not have any intentions to expand to other platforms. It is important to mention that currently, in2021, WhatsApp offers a web based service.

The second market, the social networking services, was defined as "services which enable users to connect, share, communicate and express themselves online or through an app" (European Commission, 2014, paragraph 46). The EC left open the question of whether Facebook Messenger and WhatsApp were a part of this market. Then, the "exact boundaries" (European Commission, 2014, paragraph 62) were not defined. Although consumer communication services are usually a part of social networks, when comparing them (Facebook Messenger and WhatsApp vs. Facebook) the EC consider that the latter offered a "richer social experience" (paragraph 54). The EC also considered that the usage of the two services differs, given that the consumer communication services facilitate "instant real-time communication" (paragraph 55) unlike social networks. Finally, the EC considers that social networks are meant to engage with a wider audience than the consumer communication services. (paragraph 56). Given these reasons, the EC left open the definition of the market for social networking services.

The third market analysed by the EC was the advertising services. The definition of this market was narrowed to online advertising services (European Commission, 2014, paragraph 79). Although neither Facebook Messenger nor WhatsApp were active player in this market, Facebook was active in it. At the time, Messenger did not displayed ads on their platform (currently this is not the case) and WhatsApp also did not use advertising on their app. In

order to determine the relevant market, there was the analysis of whether there was the need to define a further sub-segments of online advertising services, the search and non-search ads and the advertising on social media, but both were dismissed. (European Commission, 2014)

Given the recent research on attention markets one might question if this definition of the relevant markets made by the EC was too narrow. When the EC defined the different relevant markets according to each activity present in the services owned by Facebook unintentionally divert the focus of the analysis away from attentional interactions. These interactions occur among the three markets – consumer communications services, social networking services and online advertising services – creating an overarching attention market.

The overarching market present here starts with the business model of Facebook. The advertising-based business model in social media, implies the presence of a two-sided attention market. Facebook uses the apparently free access to content in its different platforms and services to attract the attention and time of the users. This allows Facebook to slide in a bundle of targeted advertising fitted to the user preferences. This technic is enhanced by the fact that the user's behaviour and engagement in the different services allows for the extraction of data, including preferences, age and gender, location, among other information. The advertisers are the "attention seekers". The advertisers pay a monetary value to the platform, Facebook, in order to have access to the targeted advertising space.

In this case, WhatsApp represents a threat for Facebook, because it diverts the attention and time of users (and their data) away from Facebook Messenger, the app owned by Facebook that is used for online communication services. Internal documents from Facebook reveal that WhatsApp was considered a significant threat given that in the countries they were most relevant the reach of the service was of almost 100%. (US House of Representatives, 2020) Metrics that Facebook tracked with their Onavo app that allowed for data tracking. In the 10-K report of Facebook in 2015 (Facebook, 2015), in the section "Risks Related to Our Business", Facebook suggests the presence of an attention market: "Any number of factors could potentially negatively affect user retention, growth, and engagement, including if users increasingly engage with other products or services" (Facebook, 2015, p.8). Also, Facebook states that the size of their user base and its levels of engagement are critical to their success

(Facebook, 2015, p.8). This comes from the fact that the advertising accounted for more than 90% of the total revenue as represented in Table 2. Therefore, a decrease in user engagement, including the decrease of time spent on their products could also adversely affect advertising revenue and so the total revenue (Facebook, 2015, p.8).

Table 2 - Facebook's Revenue Statement

	Three Months Ended							
	Dec 31, 2015	Sep 30, 2015	Jun 30, 2015	Mar 31, 2015	Dec 31, 2014	Sep 30, 2014	Jun 30, 2014	Mar 31, 2014
	(as a percentage of total revenue)							
Consolidated Statements of Income Data:								
Revenue:								
Advertising	97%	96%	95%	94%	93%	92%	92%	91%
Payments and other fees	3	4	5	6	7	8	8	9
Total revenue	100%	100%	100%	100%	100%	100%	100%	100%

Source: Facebook, 2015, p.48

Facebook establishes that the existence of other products or services that emerge and draw the consumer's attention away from Facebook's products (at the time of the report included Facebook, Instagram, Facebook Messenger and WhatsApp) are a threat to the financial life of the company. According to Facebook, this decreases the amount of time users are engaged in the Facebook ecosystem, so it affects negatively the advertising revenue that relies on users being active in the platforms. Since the company monetization depends almost completely on ads, this affects the company as a whole.

Previously to the merger, WhatsApp was collecting a big user base especially among developing countries, where Messenger was not that popular. In April 2016, WhatsApp was the most popular messaging app in 106 countries (55.6% of the world) and Facebook Messenger collected 49 countries (SimilarWeb, 2020). With the merger, Facebook did not have to worry about a decreasing user attention because of this emerging and popular app, WhatsApp.

By seeing the relevant market in a micro level these attention-related interactions can be overlooked in the analysis. Defining the market for attention is a hard task to ask and is still up for debate. Some authors, like David Evans (2013) suggest a broad definition. Evans (2013) suggests that everything that competes for the time/attention of the user should be considered in the market definition making less relevant the use that each service has for the consumer. For example, Facebook, YouTube and Google would be a part of the same market if Evans' approach were used. Spence (2020) suggests this approach would be too

broad given that Facebook, YouTube and Google are not likely to be seen as substitutes in the eyes of the consumer. Spence (2020) also suggests that although the definition of Evans (2013) is possibly too abroad he acknowledges that the EC's approach can be seen as too narrow. Spence (2020) suggests that the "preferable approach" (Spence, 2020, p.698) was the one made by Germany's Federal Cartel Office, where Facebook was considered to be part of the market for social networking. (Bundeskartellamt, 2019) But still Spence (2020) suggests that even this approach can be difficult given that market boundaries in attention markets are becoming blurry. So by analysing the literature, it is easy to agree with Spence (2020) and argue that the definition used in the EC case was narrow and conservative. With a slightly broader market definition, WhatsApp would be considered a fierce competitor to Facebook Messenger (Facebook), especially in some regions of the globe.

3.2. Non-monetary price

The lack of a monetary price is the key element in the attention markets, but it is also what makes the market analysis so hard to do compared to other markets. As a standard, the tools that competition authorities use for market definition and for competition analysis are shaped to work with positive monetary values. For example, as mentioned previously, in the SSNIP test the only thing that is essential for this test is having an above zero price, a monetary value. But this is not the case with the attention market.

Following the common language, there is a continuous presence of the word "free" throughout the report of the EC in the case of Facebook/WhatsApp. The assumption of the businesses being free of charge for the consumer is clearly present - "consumer communications apps are mainly offered free of charge" (European Commission, 2014, paragraph 31) and "The vast majority of social networking services are provided free of monetary charges." (European Commission, 2014, paragraph 47). Without the acknowledgment of the attention market present in this case, this assumption is made correctly.

Following the literature, attention markets rely on the exchange of attention, time and data of users for access to quality content, provided in a platform. There is no access to the content if the users do not provide to the platform the three elements previously referred. Given that, we can consider attention, time and data the real goal of platforms. Attention, as already mentioned, is limited in quantity, and it is linked to the fact that humans have a limited ability to focus on different things simultaneously. Having similar products available,

the user selects the one that provides the best features or type of service, that is, the user chooses based on quality of the content. Therefore, quality is the key element that the platforms compete for (Filistrucchi, 2018). As stated previously, quality of the product is the "honey" used to attract the user in order to extract attention, time and data.

The importance of product quality and innovation as not been disregarded by the literature. For instance, Hartman et al. (1993) defended the necessity to use a small but significant non-transitory decrease in product quality (SSNDQ) test for market definition and market power assessment. (OECD, 2013, p.14). But still this test as not been well received by authorities. The principle is similar to the SSNIP test. The question asked is "can a hypothetical monopolist decrease quality and still be profitable?" if the answer is yes, the relevant market is complete. This means that the customers do not find any close substitutes so they have stick with the hypothetical monopolist. If the answer is no, this means that the customers switch to other substitutable competitors, the process continues with a broader market definition. The question is made until there is a positive answer, just like a SSNIP. Questions arise with this approach regarding the definition of the relevant dimension of quality. Filistrucchi (2018) proposes a different way to use the SSNDQ test. The author first proposes an extension of the SSNIP test on two-sided markets, where it is taken into account the effect on the overall profitability and the feedback effects among the two sides. The application of the SSNIP test by using an increase of 5% in price on a non-transaction side, where the price is zero, is meaningless. Fillistrucchi (2018) then considers this same logic in the SSNDQ test. The author considers that one relevant dimension of quality on two-sided markets is the network effect. Hence, one should adapt this to the specific market according to the type of externality there is between the two-sides. In a case where there is a negative externality, like in TV channels, the question for the hypothetical monopolist would be an increase in the number of ads, to decrease the "quality". This is the case in attention markets where the positive network effects are present. (Filistrucchi, 2018)

In the EC case analysis of Facebook and WhatsApp, there is a paragraph that mentions one of the non-monetary cost for users, that the literature on attention markets also suggests as being the price that consumers pay to use the service. - the cost of having too many ads displayed to them. This cost was pointed out by respondents of the EC questionnaire regarding this case, it included advertisers and competitors.

> "However, as regards the incentive of the merged entity to introduce advertising on WhatsApp, many respondents pointed out that, by doing so, WhatsApp would deviate from the "no ads" product strategy that it has followed so far, which may prompt certain users who feel that the ads disrupt their experience to switch to competing apps free of ads (for example, Viber)" (European Commission, 2014, paragraph 174)

3.3. Multi-homing

The concept of multi-homing is present in two markets assessed by the EC in the case WhatsApp/Facebook: the social networking services and the consumer communication services for smartphones.

Regarding the competition assessment in the social networking services, the EC did not consider WhatsApp and Facebook to be close competitors for two main reasons. The first is the presence of multi-homing, meaning that a user can have in their smartphones different social media apps and be active in multiple ones. The second is if the consumer communication apps were included in this potential market there would be a "significant number of alternative service providers, which are used by consumers interchangeably" (European Commission, 2014, p. 152), so it would be unlikely to create any competition concerns. (European Commission, 2014)

Regarding the competition analysis of consumer communication services for smartphones, the EC did not consider Facebook Messenger and WhatsApp to be close competitors. This comes from the fact that the EC considers that the two apps have several differences including the identifiers in each app, the source of contacts, the user experience, the privacy policy and the intensity of use. Also, the EC considers that the features of both apps can be found in other market players and that there is a "significant degree of multi-homing" (European Commission, 2014, paragraph 105), when "users have installed, and use, on the same handset several consumer communications apps at the same time" (European Commission, 2014, paragraph 105), leading to the conclusion that there is some complementary rather than a direct competition between the two. (European Commission, 2014, paragraph 105).

Multi-homing is defined by the EC in the Facebook/WhatsApp merger as the case where "users have installed, and use, on the same handset several consumer communications apps

at the same time" (European Commission, 2014, paragraph 105). In the European Economic Area (EEA) market most consumers are active users of both WhatsApp and Facebook Messenger (European Commission, 2014, paragraph 3). The EC suggested that because of this, "the two consumer communications apps are to some extent complementary, rather than being in direct competition with each other." (European Commission, 2014, paragraph 105).

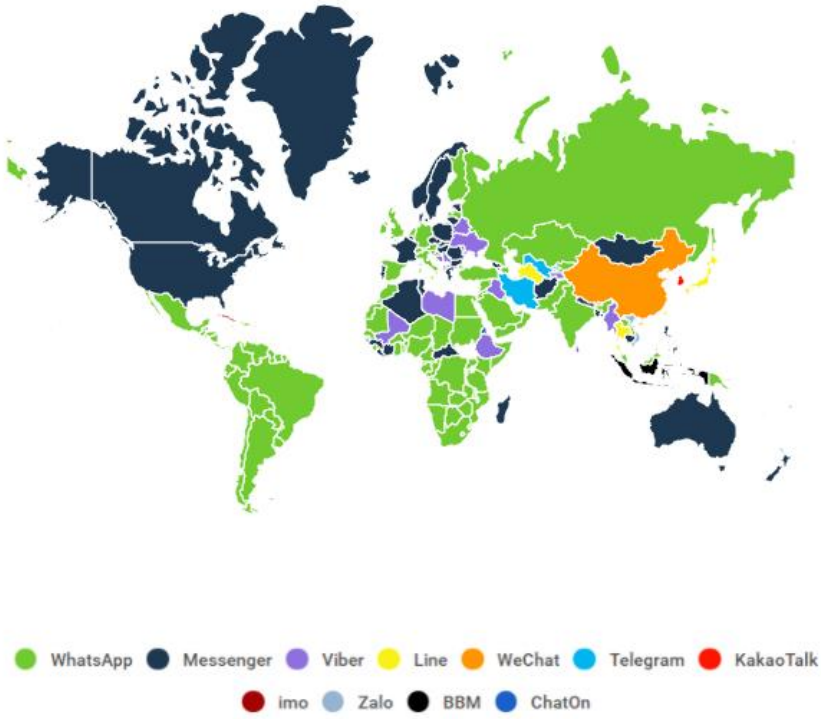
Attention is scarce and limited to our cognitive capacities to process information. Then, although users are in both platforms, they only spend their focus on one app at a time, meaning that one platform is cut from the attention of someone in favour of the other app. If the analysis of the markets considered the existence of an attention market, one could question the assumption that multi-homing means some degree of complementary. Considering this it would be less relevant the fact that the users have installed both apps, but more relevant the fact that a user can only focus on one app at a time.

According to the literature, this question goes back to the difficulty in defining attention markets. In a standard approach, when defining the boundaries according to the services, it is really hard to acknowledge and analyse the overarching market of attention. It becomes hard to define the market given that usually platforms are constantly producing new services or features in order to create more appealing content to get the users' attention. So, the demand for attention goes unnoticed if we focus purely on the services provided. Multi-homing is possible because consumer communication apps are widely available for different operating systems and are mostly free of monetary charges. According to the recent investigation of competition in digital markets accomplished by the Subcommittee on antitrust, commercial and administrative law (from the USA House of Representatives) thereafter named by Subcommittee while "mobile phone users tend to use five different social maps in a month they only use 1.5 messaging apps and 1 social app, out of 10 total apps per day." (US House of Representatives, 2020, p.143). Hence, the fact that multi-homing is possible makes competition even fierce and incentivises the companies to compete on quality, on the services and features to attract users' time.

If to multi-homing, we add the importance that network effects have in the digital markets, it becomes an even greater incentive to create distinctive features and services to stand from competition. These are services that rely on network effects for their growth, the more a consumer's group of friends use that app the more likely the consumer uses it too. In April

2016, WhatsApp was the most popular messaging app in 106 countries (55.6% of the world) and Facebook Messenger collected the podium in 49 countries (SimilarWeb, 2020). This means that at the time Facebook's products were the standard in messaging in 158 countries around the world. Followed by 9 other apps that have a slimmer popularity.

Figure 3 - Most popular messaging app in every country based on android app data in April 2016



Source: (SimilarWeb, 2018)

Without the acquisition of WhatsApp it would be very hard for Facebook to acquire the popularity WhatsApp had in most countries. By having WhatsApp in Facebook's portfolio, the risk mentioned in their 10-K report regarding the importance of maintaining user engagement (Facebook, 2015, p.8) is minimized.

In the investigation of competition in digital markets in the USA, above mentioned, network effects were considered particularly important in messaging apps. With it also came the importance of what is called the tipping point. By definition of McGee & Sammut-Bonnici "the "tipping point" is when the installed base (i.e., the size of the network) tips expectations sharply toward one player (or one network) and away from its rival." (McGee & Sammut-Bonnici, 2015, p.1) A tipping point here is a when a social media app finds itself in a position

of or everyone uses the app, or no-one uses it (US House of Representatives, 2020). The investigation states that "Facebook has tipped the market in its favour" (US House of Representatives, 2020, p.140). The investigation, after the analysis of internal documents of Facebook, concluded that Facebook has reached the point where it no longer competes with other firms in the market but competes within itself, among their "own family of products" (US House of Representatives, 2020, p.140). This was a point of discussion in what is called the "Cunningham Memo", where Thomas Cunningham, a former senior data scientist of Facebook, analysed the "user trends among Facebook's products and other competitors" using the Onavo data (data from a mobile data analytics company called Onavo bought by Facebook). At the time of this internal memo, Facebook was struggling with internal competitive pressure. Instagram was about to hit a tipping point, but Mark Zuckerberg, CEO of Facebook, did not want that to happen because it would leave Facebook as a loser. Cunningham suggested that there was an internal collusion to control this situation.

WhatsApp found themselves in a regional tipping point, where a country as an "all-or-nothing reach at above 90% or below 10%" (US House of Representatives, 2020, p.142) – for example "in many Latin American countries WhatsApp has nearly 90% daily reach and users spend 60 minutes/day" (US House of Representatives, 2020, p.142). Although the user may multi-home or have installed different apps, for example Messenger and Facebook, there are clear "tradeoffs in time-spent between Messenger and WhatsApp" (US House of Representatives, 2020, p.142), that illustrates the tipping point of the business. This dynamic can result in severe reverse network effects once an app has "tipped the market" in its favour and gained the big majority of users, leading the other business to lose value. By acquiring WhatsApp, Facebook got ahead of this dynamics and managed to control WhatsApp by making them apart of the "family of apps".

As mention, the EC assumes the position that multi-homing in the online communication markets, is an indicator of some degree of complementary so they concluded that the parties were "not close competitors and that consumers would continue to have a wide choice of alternative consumer communications apps after the transaction". According to the EC "approximately [80-90]% of EEA users of consumer communications apps use more than one service per month, and approximately [50-60]% use more than one such service on a daily basis" (European Commission, 2014, paragraph 110). The existence of multi-homing and overlapping of user base in both WhatsApp and Facebook also create an incentive for

Facebook to acquire WhatsApp, because it is credible to assume that by matching users Facebook would have access to even more data about their users, meaning that they would be in a much better position to create even more accurate targeted advertising spaces increasing the value of them for advertisers. This fact brings us to the next topic – The data market.

3.4. Data Market

Regarding the online advertising services, the commission limits the analysis to the situation where a potential data concentration would likely strength Facebook's position in this market. This limit is due to the fact that WhatsApp was not an active player in the online ad market. The EC considered relevant only the online advertising but left open the relevance of possible sub-segments, like search and non-search online ad services and, mobile and static online ads. But this competition assessment did not raise any concerns to the EC because they considered that the data collected by WhatsApp was not "valuable for advertising purposes".

As we know today, attention markets are deeply connected to advertising and therefore, they are rooted in the data provided by users. Users spend their attention/time on platforms and services providing a basis for collection of data. "In seeking attention as a data source, economic entities create markets because it allows them, through setting rules for their functioning, to control both the demand and supply sides" (Drobny, 2019). In the investigation of competition in digital markets by the Subcommittee, Facebook is considered to have a "significant data advantage" (US House of Representatives, 2020, p.147) compared to their competitors in the social networking market due to two main reasons. The first, given the large user base, Facebook has "access to and collects more user data than its competitors" (US House of Representatives, 2020, p.147). Second, Facebook creates a targeted experience with the collected data, so that users spend more time on the platform, creating a "feedback loop" of data, reinforcing this dynamic every loop. (US House of Representatives, 2020)

In the acquisition of WhatsApp, the EC was quick to dismiss the data market as a relevant one given the fact that Facebook does not provide the data collected to third-parties as a stand-alone product. It is not known the amount of data that Facebook has but the fact that they do not provide the data to others, is also a way to keep the competition away from Facebook. The data collected aims to improve the processes and products provided by the

company, but also allows for targeted advertising. Advertisers seek this kind of ads since it is more likely to convert the user into taking action with the ad. Facebook's collected data creates a "monetization feedback loop" (US House of Representatives, 2020, p.148)

The EU discarded the analysis of a data market due to the fact that neither Facebook or WhatsApp sold data to third parties. The EC acknowledge the existence of two possible future scenarios or theories of harm: the introduction of ads in WhatsApp and the possibility of WhatsApp becoming a potential source of data that would allow the improvement of ad targeting by Facebook. (European Commission, 2014, paragraph 167) These two theories of harm did not raise concerns given two main assumptions. The first was that Facebook did not have the incentive to introduce targeted ads on WhatsApp given that by doing it Facebook would have to abandon the end-to-end encryption - the main feature of WhatsApp and one of the big reasons for its popularity among users. The second is that Facebook informed that there were major technical obstacles in the process of integration and user matching between Facebook and WhatsApp users, a process that would allow the collection of relevant data. (European Commission, 2014, paragraph 185) The second reason was proven wrong by Facebook themselves when they changed the user terms and conditions that allowed the information to be shared to Facebook, a user matching feature. The European Commission fined Facebook in 2016, when they considered that Facebook provided "misleading evidence" on the possibility to match the users of both services at the time of the acquisition.

One can question this argument if we understand the attention market. The two main reasons that platforms seek the attention of the users are, first, the need to have user engagement with ads and, second and the most important, extract data to improve the accuracy of adverts shown to the user. This is important given that advertisers pay for the advertising space according to the engagement the ads have. These include different models like the Cost-per-click (CPC), cost-per-thousand-impressions, cost-per-like, cost-per-download. All of these imply getting the user's attention. In the CPC model, Facebook gets a commission every time a user "converts", that is, every time the user clicks on the ad. (Birk, 2020) This commission is also variable according to the type of user, the country, the month, and so on. (Birk, 2020) This is a sign of the different valuation each user's attention gets. This sequence leads to one conclusion: the wider the user base and the more points of collection of data it exists, the

more valuable the advertising space will become for advertisers. It would be counter-productive for Facebook to sell their data, killing one of their competitive advantage.

To understand the impact of Facebook's data and user base, we can go back to 2010 when what is called "Facebook Connect", nowadays "Facebook login", was introduced. Users of Facebook could now use the service or product of another company using their Facebook credentials to log-in. One major example was the introduction of this feature on Spotify, an online music streaming service. According to internal documents of Facebook, the introduction of the login instrument drove to Spotify more that 7 million people in the following month of the introduction of this feature. The interconnection between Facebook and other products also gave it access to insights about these other companies, allowing monitoring of growth – "daily and monthly active users for companies interconnecting with Facebook, referral traffic, and daily clicks, among other metrics" US House of Representatives, 2020, p.148) – essentially, Facebook was monitoring other competitive threats. Because although most of the tracked companies were not direct competitors, they could be progressively becoming more relevant and start to deviate the user attention. As a context, Facebook Connect in March 2012 had 8.3 million different sites active. (US House of Representatives, 2020, p.149)

Facebook has always very keen on keeping and fostering their data set. This concern was clear when in 2013 Facebook acquired Onavo, at the time, a mobile data analytics company. The price was not fully disclosed at first but the price was "$115 million and other consideration" (US House of Representatives, 2020, p.161). Later, the Facebook created a VPN app, a virtual private network app that allows for private online navigation, the Onavo app. This followed with claims that it was being used to track the popularity of other apps and signal early the threat to the Facebook businesses (Constantine, 2019). Internal email revelled by the Investigation on digital markets reveal that the purpose of the acquisition of Onavo was to "enhance our analytics related to cross-app user engagement data, as well as user behaviour and market trends, and also to improve advertising effectiveness through demand data and audience targeting in the long term." (US House of Representatives, 2020, p.161) Later, in August 2018, Apple, one of the operating systems that the app was on, deleted the app from their app store accusing them of violation of their rules related to data collection. Apple follow the same logic in the successor of the Onavo App, the Facebook Research App in 2019.

More recently, in March 2020, Facebook acquired Giphy, an "online database and search engine that allows users to share GIFs and stickers" (Competition and Markets Authority, 2021) in a deal where the price was "$400 million" (US House of Representatives, 2020, p.162). This acquisition becomes a really important source of data given that Giphy is integrated via API (Application Programming Interface) in multiple apps like Twitter, Snapchat, TikTok among others. In March 2021 the CMA (competition market authority in the United Kingdom) raised some competition concerns in regards to the market of digital advertising, so the process is now on a Phase 2 investigation. The CMA refers to the concern of the possibility of Giphy worsen the terms with the platforms they are currently active, most of them are Facebook's rivals – "for example, requiring rivals to provide more user data to the merged entity to access Giphy GIFs" (Competition and Markets Authority, 2021).

These expensive acquisitions provide a basis to understand how much time the users spent on other competitive apps and services. By observing the values associated with these acquisitions one can question why the values are so high. Data is what Facebook was seeking and the only way of obtaining it is by attracting attention, and if Facebook cannot do it using their current features the firm buys or copy the services that are deviating attention from the Facebook family of apps. This behaviour suggests that Facebook extract more value in the information provided by their data set rather than what they would get if they sold it to third parties. Taking this into account, the data market could have been further analysed by competition authorities even tough Facebook did not sell their data to third parties and their argument of technical difficulties.

4. Conclusion

The main goal of this dissertation was to understand if the current competition analysis tools in the European Union are effective in attention markets' merger cases. To achieve it this dissertation was divided into two parts. First, a literature review on the concepts surrounding the attention markets and, second, a case study on the acquisition of WhatsApp by Facebook.

The literature review focused on three important concepts: the concept of attention, the concept of two-sided markets, and the concept of attention markets. Attention markets are a specific type of two-sided markets where attention is the product being traded.

According to the literature, attention as a resource is always allocated, is limited, is selective and valued. It follows a behaviour similar to traditional currencies used daily. The two-sided markets link two different groups of agents where the value is created by joining them through an intermediary or platform. Both sides need each other to create value. This relationship creates network effects both direct and indirect. Direct network effects exist when the more users are present on one side, the more utility each user gets from being there. Also, there is an indirect benefit when the utility on one side of the market depends on the number of users on the other side, and vice versa. Attention markets have become a big part of the digital economy so it is imperative a detailed analysis.

Attention markets are two-sided markets with a non-transaction side with strong direct and indirect network effects where the product being traded is attention. The intermediary is an attention broker that links the attention seekers and attention providers. The interaction between the attention providers (the public) is the non-transaction side, where the public provides attention in return for "free" services. The side where there is a transaction is between the attention seekers and the broker.

The second part of the dissertation is a case study on the acquisition of WhatsApp by Facebook. This case was chosen given that Facebook is considered the biggest company currently active in the attention market and also because it has been in the centre of the main mergers involving social media companies. The case study isolated four challenging characteristics of attention markets – the atypical market structure, non-monetary price, a strong presence of multi-homing and the underlying data market. These features are some of the aspects that need to be considered for a better understanding of attention markets.

As a "free" service, Facebook has an advertising-based business model, similarly to almost all the social apps and services. These platforms obtain the majority of the revenue from ads they show on their different associated products. The business relies on the number of "eyes" that see and click the different ads available. Then, the more attention the products get, the better for the business revenue. Attention is the ultimate "good" being traded. The current tools of market definition tend to define the markets by the product or service provided. This logic is deceiving when talking about the definition of attention markets given that the companies use multiple services or products with different features as tools to achieve the real "good" being traded: Attention. In this market, the user is not on the demand side of the market, it is the supplier of attention. This is an atypical market definition, given that the consumer is usually associated with the demand side. One other characteristic of attention markets is the fact that the services or products are offered free of monetary charges. the goods are traded for the user attention and personal data. These markets are also connected to the phenomenon of multi-homing. This dissertation argues that instead of being a sign of complementarity multi-homing should be seen as strong factor of competition for the attention of the user. Finally, the cases surrounding the attention marker are deeply connected to the data market. This should an important item of the analysis of these markets that should not be ignored.

To conclude, after the deep analysis of attention markets, this dissertation suggests that if there is a competition analysis approach that acknowledges attention markets some of the assumptions made in the case regarding Facebook and WhatsApp would need to be adapted. The attention market is a relatively new issue in the academic community, and it is currently under intense discussion. This dissertation does not discuss practical changes in the instruments used by the competition authority. Therefore, further research is needed to reach recommendations regarding any alteration of the instruments and processes currently used to analyse competition cases.

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