# Data in European Competition Law

Innovation, consumer welfare, and politics in European merger control

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# Abstract

*This thesis deals with the role of data in European competition law. By examining the role of data in mergers and acquisitions where the suspected rationale of the buying company is to decrease the competition it is facing, this thesis takes a speculative idea and turns it into a testable hypothesis: "is competition law equipped to handle the role of data in today's economy?" The research focuses on defining a product market for data, what constitutes market power in that market, and how a competitive assessment in a merger review may be influenced by considering to role of data in the deal at hand.*

*This thesis has shown that a market for data cannot be defined, unless one is satisfied to use a hypothetical market for data as an input. Data is nevertheless a highly relevant aspect to consider in merger reviews, as the access to, control, or ownership of sources of data are increasingly important for companies to compete, and thus a determinant of the market dynamics. This in turn has strong impact on the assessment of barriers to entry. However, given the difficulties of ascertaining any significant impediments on competition arising from concentrations of data market shares, the exercise of establishing a hypothetical market for data as an input appears largely superfluous.*

*In light of how particular data is in regards of type and content, and how dependent its value is on the capabilities of the entity controlling it, there is a paradoxical element in the Commission's approach to it in competition assessments: the more narrow and specific the Commission tries to define the data, the more elusive and enigmatic it will become as the data appears increasingly worthless the closer one looks at it. This thesis emphasises the need for a specialised and highly detailed analysis of the role of data in competition law, on case-to-case basis.*

# 1.    Introduction

## 1.1.    Background

Data is information such as facts or numbers that can be used as a help when making decisions. Rational agents, such as natural persons or companies, base their actions on information about the world they inhabit. In this sense, data has always been significant for decision making, and neither is it something new for competition law to handle. However, the role and value of data is changing due to technological development and the digitalisation of society.

The process of creating applications that are known colloquially as "artificially intelligent" is called machine learning. This process is enabled by access to data, and entails that the machine is given a task such as identifying a certain element in graphic pictures, and enough examples of learning data together with the corresponding right answer, for it to be able to deduce an algorithm for finding the right answer to new, unfamiliar examples. The amount of data required for this process depends on the intended process that the machine should learn, but even seemingly easy applications require large amounts of data.

Vast amounts of data ("big data") can also be used to create actionable information for businesses, either with or without the use of machine learning techniques to achieve the analytical capabilities. An example of a business that has patented a machine learning technique to gain insight into consumer preferences is Spotify, which uses content data to make predictions of demographic and media preferences.[1] The same information can also be used on the individual level to offer the listener recommendations on music that he or she might like, based on their previous listening history and the taste profile of similar users.[2]

Data is the raw material of information. Information can be used to navigate the world and ensure optimal outcome of one's actions. Companies that have access to data can make better business decisions, or develop powerful new technologies and applications. Therefore, data can be a source of competitive advantage.

As access to or control over data can be a factor that generates market power, and competition law prohibits abuse of market power, data can be a concern for competition law depending on the behaviour of an undertaking with access to or control over data, or due to the characteristics of the market in which the company operates.

Products and services enabled by data display strong network and feedback effects that make the already big become better, and thus bigger, and so forth. Therefore, the barriers to entry in a market based on possession of data can become considerable, and companies in possession of large amounts of data must be careful to not further exacerbate the situation for potential entrants to the market.

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[1] See the applied for patent "Systems and methods for generating a media value metric" (patent application no. US14218354) and the granted patent "Demographic and media preference prediction using media content data analysis" (patent application no. US14208363) for an example of how a company can use data to enhance its service or product.

[2] Alex Heath, How Spotify's Discover Weekly playlist knows exactly what you want to hear, *Business Insider tech news* [online], 5 September 2015, http://www.businessinsider.com/how-spotify-discover-weekly-works-2015-9?r=US&IR=T&IR=T (accessed on 27 July 2017)

Even where a company considers this and acts in non-abusive ways, company expansion through mergers and acquisitions ("**M&A**") may prove problematic from a competition perspective even if the specific transactions does not constitute an abuse in themselves.

Mergers between companies that may result in lasting damages to competition can be stopped or conditioned by the Directorate General for competition within the European Commission (henceforth referred to simply as the "**Commission**"), thanks to the authority given to it by the Merger Regulation 139/2004/EC (the "**Merger Regulation**"). The Merger Regulation currently only applies to concentrations where the individual or combined annual turnovers of the involved companies exceed certain threshold values.

Recent concentrations of companies have indicated that the traditional approach using a method based strictly on turnover fails to fully account for the market consequences of the concentration – especially if the companies controls large amounts of data. This has caused a discussion on the effectiveness of the current turnover-based thresholds, which in turn has contributed the Commission to initiate public consultations with the aim to obtain stakeholder feedback concerning the functioning of the current Merger Regulation.[3]

The role of data in competition law is not exactly clear, and part of this is due to the problems with defining a product market for it. It would be possible to use other criteria than annual turnover for determining the scope of the Merger Regulation, such as for instance market shares. With a market definition for data, this could mean that more mergers aiming at acquiring data would become subject to review in regards of their impact on the market.

Beyond the hypothetical possibility of using a market share-based threshold to determine the scope of the Merger Regulation to include such data-centric mergers, the concept of market definition is important for all fields of competition law:

> *"Market definition is a tool to identify and define the boundaries of competition between firms. It serves to establish the framework within which competition policy is applied by the Commission. The main purpose of market definition is to identify in a systematic way the competitive constraints that the undertakings involved face."[4]*

Therefore, beyond enabling a potential new dimension of merger control, the concept of a market definition for data could also be meaningful for carrying out other competition assessments where data plays an important role.

## 1.2. Purpose and research questions

The purpose of this thesis is to show how a definition of the product market for data could be achieved, and to analyse the consequences such a definition would have on a typical merger control.

This purpose builds on an implicit assumption that European competition law is in its current form not capable of capturing the recent developments brought by digitalisation, and the new economic

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[3] European Commission; 2017; Consultation on Evaluation of procedural and jurisdictional aspects of EU merger control; Information: public consultations, last update 7 October 2016; http://ec.europa.eu/competition/consultations/2016_merger_control/index_en.html (accessed 3 July 2017)

[4] Commission notice on market definition [1997] OJ 372/05, para. 2

complexities this has resulted in. By fulfilling the abovementioned purpose, the validity of this assumption will also be made clear at least in regards of the scope of this thesis.

This thesis will analyse how transactions involving data rich companies is assessed in the European merger control, and how this assessment would be impacted on by using the market for data itself as the starting point for the analysis of the merger's compatibility with the competition on the market. In particular, the effects on the market dynamics and consumer welfare will be analysed in this regard. The vehicle for doing this will be to perform a *general* competitive analysis of concentrations involving the control or ownership of data.

By making the competitive analysis general – i.e. not confined to a specific scenario – some precision and depth will be lost in the analysis, but on the other hand, the analysis can be more theoretical and consider most of the unique characteristics of data as a competitive asset. In regards to the purpose of this thesis and the lack of preceding literature, the benefits of a general approach outweigh those of a case-based approach.

The research questions are summarised as follows:

1. how can a market for data be defined;
2. how is data important in merger reviews (how does it confer market power);
3. does it make any difference if there is a definition of a market for data; and
4. is competition law currently capable of fulfilling its goals in the digital economy?

The competitive analysis will as such include a market definition, an investigation of how to assess market power, and what effects on competition a concentration might have. The thesis will be structured according to this sequential order, but with the interjection of a chapter that describes the nature of data as a competitive asset.

## 1.3. Method and material

This thesis is concerned with European competition law, which consequently determines the methods and materials used. In this section I will discuss how European competition law can be examined with an approach that examines European law in itself, competition law itself, and finally the amalgamation between the two.

Due to the main body of this thesis being centred around the fields of European competition law, the main methodological discussion will be about just that. In my discussion, I will argue that European competition law can be reduced to its constituent parts of competition law and European law, and studied in detail respectively. To describe the method I have used in this thesis, I will begin with describing the fundamental conditions of studying European law in general, before moving on to describing what methodology is warranted for studying the field of (European) competition law. Included in the scope of methods that are useful for understanding competition law are the interdisciplinary method and the comparative legal method. Lastly, in the concluding part of the thesis when addressing research question four, an analytical legal method will be used.

**Structure of this section:**
- Introduction
- European law in general
- Competition law in general
- European competition law
  - Interdisciplinary method
  - Comparative method

Before moving on, a few words on terminology could also be of use: the terms competition *law* and competition *policy* should not be used interchangeably. For the sake of this thesis, competition policy is to be understood as "the set of policies and laws which ensure that competition in the market place is not restricted in a way that is detrimental in society"[5] – i.e. policy is a broader category than law, and can also include the category of law. Competition law on the other hand denotes all rules that have legal authority or relevance, which for the sake of this thesis is limited to the jurisdiction of EU law.

### 1.3.1. Understanding European law, in general

The method used in this thesis is a traditional dogmatic legal method, where authoritative sources are consulted to determine what *the law* is. For this work, the authoritative sources are mainly decisions from the European Court of Justice (the "**ECJ**") or the Commission and *soft law*. In addition to these two types of authoritative sources, the method will also involve a number of academic articles, which I do not consider to be authoritative legal sources within the Union law. All three sources will be discussed sequentially, below.

As a Swedish lawyer, interpreting ECJ decisions is somewhat more complicated than interpreting national court decisions or legal sources. There are mainly two reasons for this: the fact that dissenting opinions are not allowed in the decision (meaning that a consensus must be reached by all the judges in a case),[6] and that there is no master version of the 28 different language version that each decision results in.[7]

For the sake of this work, as the Commission's conduct and decisions under a merger review are subject to the judicial review of the ECJ,[8] I will use the same method for interpreting decisions from both the bodies. Furthermore, the composition of the ECJ (and Commission)[9] is that of high-profile experts with academic – not necessarily legal – credentials, and the "tone" of the decisions can be rather technical and academic.[10] When interpreting the decisions, I will use a teleological approach that seeks to extract the sense of direction which the decision (or statement within) points to and isolate the principle that possibly can be found. As the decisions are products of compromise, this must

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[5] The definition is taken from Massimo Motta, *Competition policy - Theory and practice*, Cambridge University Press, New York, 2004, p. 31

[6] Julia Laffranque, Dissenting Opinion in the European Court of Justice — Estonia's Possible Contribution to the Democratisation of the European Union Judicial System, *Juridica International*, IX, 2004, p. 16 http://www.juridicainternational.eu/public/pdf/ji_2004_1_14.pdf (accessed 20 March 2017); Michael Bobek, The Court of Justice of the European Union, in *The Oxford Handbook of European Union Law*, A Arnull & D Chalmers (eds.), Oxford University Press, 2014, p. 13

[7] The multilingual problem is discussed in depth in the following doctoral dissertation, which finds that the larger languages within the Union usually weighs more heavily in a case of interpretation than what the smaller languages do, and that the multilingual interpretation in practice is about "ticking the box" of checking both the English and French version: Mattias Derlén, *A castle in the air: the complexity of the multilingual interpretation of European community law*, PhD Diss., Department of Law, Umeå University, 2007; for a summary, see http://www.mynewsdesk.com/se/umea_universitet/pressreleases/eg-raett-paa-flera-spraak-skapar-foervirring-146307 (accessed 24 March 2017)

[8] European Commission, Merger Control Procedure, last update 13 August 2013, http://ec.europa.eu/competition/mergers/procedures_en.html (accessed 20 March 2017)

[9] The current structure and staff of the Directorate General for competition can be seen here: European Commission; Directorate-General for Competition, last update 1 June 2017, http://ec.europa.eu/dgs/competition/directory/organi_en.pdf (accessed 11 July 2017)

[10] Bobek, p. 13

be accounted for in all deductions made from a decision: there can often exist a more extreme version and a less extreme version of the teleological direction that have been argued for before the consensus was reached.

As for the 28 different language versions, I will only use English material in this thesis as I will not go into the level of depth where an A/B-comparison between language versions will be necessary. Also, in regards of the merger decisions that are analysed, it is clearly stated on the cover page that only the English version is authentic and that it should take precedence over all other versions.

As a final remark regarding the ECJ – which despite its obviousness still warrants mentioning – the ECJ's decisions must be interpreted in the light of them being relevant for all 28 Member State legislations, and as such held on a more or less general and abstract level. Being as it is that I am a Swedish lawyer, it is unavoidable that I have anything but a Swedish legal perspective on the European law.[11] However, in *CILFIT*,[12] the ECJ states that national courts are obliged to interpret the Union law in relation to the context of the Union law in its entirety, with due consideration for the purposes of the Union law and at what point of development it was when the rule in question was applied. In *Björnekulla*,[13] the ECJ stated that national authoritative sources of interpreting how a directive should be applied are trumped by European authoritative sources of interpretation, if these contradict the national ones. The main area of inquiry in this thesis is the *European* competition law and not (any) national competition law – therefore the main challenge for me is not to handle the relationship between national and European legislation, but to adopt the thinking of a supranational legislator which must per definition be more theoretical and abstract than that of the national legislator.

As for soft law, the administrative authorities within the Union give rise to large volumes of policy documents, notices, guidelines, etc., which form a considerable body of so-called *soft law*. Soft law is not binding legislation, but can still have a normative effect on how Member States apply Union law. The ECJ have declared that national authorities may be obliged to consider soft law as data for the interpretation of how Union law should be applied.[14] Therefore, the various reports and policy documents from the EU that are used in this thesis should be considered to have a rather high level of legal standing if they are relevant for a case at hand.

An academic paper has no standing as an authoritative legal source as such, but the arguments put forth therein can serve as the basis for arguments made within the legal discourse. As for this thesis, which deals with matters of competition law that to a large extent chronologically lies ahead of the Union rather than behind it, the borders between competition *law* and *policy* will seem as pretty diffuse. The way I see it is that competition policy affects how the current and future competition law

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[11] When using a EU method it becomes very important to keep in mind what levels of context there are, since it is possible to think of EU law as consisting of two layers: one that is international in character, and one consisting of 28 national legislations. In a theoretical context, there is little or no clear answers as to what the EU legal system really is – is it international law or national law? Or something in between? Even if the latter was claimed in Van Gend en Loos, it begs the question what the EU legal system really is. This duality introduces the question of whether the Union law should be studied as 28 different Union laws (i.e. the relationship between the Member States' national legislation and the Union legislation should be studied individually), or whether the Union law should be attributed with enough mass so that it can be studied in its own right: Jane Reichel, EU-rättslig metod, in *Juridisk Metodlära*, Fredric Korling & Mauro Zamboni (eds.), Studentlitteratur, 2013, pp. 109-110 and 128

[12] C-283/81 *Srl CILFIT and Lanificio di Gavardo SpA v Ministry of Health*

[13] C-371/02 *Björnekulla Fruktindustrier v Procordia Food*, para. 13

[14] C-322/88 *Grimaldi v Fonds de Maladies professionelles*; for more information about soft law in the EU, see: Reichel, pp. 121 and 128

will be constructed, and that competition policy draws its input from mainly the field of academic discussion. As such, the opinions presented in the articles and academic works cited in this thesis will be held as important for mainly the competition *policy*, and therefore, indirectly important for the competition *law.*

### 1.3.2. Understanding competition law

Competition law requires that other material than only texts with legal authority be used, as the legal assessment must be based on a firm understanding of the business reality in which the undertaking in question operates.

Unlike many other fields of law, in the realm of competition law it is seldom easy to discern what acts and facts have significance for the legal assessment – only in the obvious cases of e.g. collusion about dividing the market might the handshake or contract itself constitute such an act or fact of legal importance. When it comes to abuse of market power it can be hard to discern exactly what constitutes it. Whilst a case of tying and bundling may be easy to identify, what about e.g. foreclosure of the market when it is done indirectly and by using the dynamics of the market itself to create the foreclosure, as can be the case in a merger?

To identify a competition problem or market distortion from behind one's desk, however, one must understand the dynamics of the market in question and the rationales for the companies' business decisions. As such, a wide range of relevant material should be used to attain this understanding. I attempt to do so, by having the material used in this thesis include *inter alia* papers by economic scholars, news reports, and any other publication which might contain clues to the motives of the companies in question.

### 1.3.3. Understanding European competition law

Competition law as a legal field is unique in that it is exclusively concerned with the effects on the market and the consumers. The main sources of European competition law are TFEU articles 101 and 102, respectively on prohibited horizontal and vertical agreements; and prohibited abuse of dominance; and in addition to these two articles, the Merger Regulation.

*"The fundamental objective of EU competition rules is to prevent distortion of competition. This is not, however, an end in itself. It is rather a condition for achieving a free and dynamic internal market and is one of several instruments promoting general economic welfare."*[15]

In economics, *consumer welfare* is the difference between what consumers would have been willing to pay for a good and what they actually had to pay.[16] Keeping prices to a minimum is therefore one of the main objectives with competition law, but it also considers factors such as quality of the

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[15] The European Commission, *Why is competition policy important for consumers?* [online], 16 April 2014, http://ec.europa.eu/competition/consumers/why_en.html (accessed 26 July 2017)

[16] Svend Albæk, Consumer Welfare in EU Competition Policy Svend Albæk Consumer Welfare in EU Competition Policy, in C. Heide-Jørgensen, C.Bergqvist, U. Neergaard and S.T. Poulsen (eds.), *Aims and Values in Competition Law* , DJØF Publishing, 2013, http://ec.europa.eu/dgs/competition/economist/publications.html (accessed 19 July 2017), p. 70

products, the range of choice between products, and the level of innovation that companies must display to compete for market shares.[17]

Given its concern with the effects on the market's functioning, the ECJ and Commission employs a technique that can be referred to as the "counterfactual technique" (or method). This means that a "what-if" approach is used to assess the effects of a given situation. The use of this technique has initially been confined to merger cases only (i.e. "what would happen if we allowed this merger to proceed?"), but it has later spread to all areas of European competition law – as an example, counterfactual reasoning is discussed in various guidelines to the application of TFEU art. 101 and 102.[18]

The counterfactual method can be divided into *ex ante* control (merger control) and *ex post* scenarios, which includes *inter alia* investigation under TFEU art. 101 and 102 to show anticompetitive effects, consumer harm, and calculating damages in litigation.[19]

The general field of inquiry in this thesis (the role of data in competition) can be said to belong to the realm of *ex ante* scenarios – in other words, we find ourselves in a time of change and transition where it is hard to fully understand what constitutes cause for what effect. Therefore, trying to define a competition policy must include an element of speculation. Merger decisions concerning companies reliant on data is an important part of this thesis, as they deal with *ex ante* control – i.e. "what are the effects that can be expected if we do this?".

However, the narrow field of inquiry in this thesis (market definition and market power in the data market) are most likely to be treated *ex post* by the ECJ, as the effects triggering the legal investigation must precede the legal reaction to it – in other words, a potential problem per art. 101 or 102 triggers an investigation to be initiated. One example of this would be the recent decision from the Commission to fine Google for its abuse of its dominant position in online search services.[20] As such, it is important to be aware of this tension between forward-looking and backwards-looking decisions, and one must be careful when using legal sources that are forward-looking (merger control decisions) to make arguments regarding backwards-looking scenarios (abuse of dominance), or vice versa.

As argued by Geradin and Girgenson, the ECJ has shifted from an originally "form-based" approach in its application of competition law to an "effect-based" approach that relies on a counterfactual method, which is also evident from the guidance paper from the Commission issued in 2008.[21] It has also been argued that the reform of the European merger control in 2004 moved the merger control away from a structuralist analysis towards a more effects-based analysis.[22]

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[17] The European Commission, *Why is competition policy important for consumers?*

[18] The idea of a "contrafactual method" is discussed in depth here: Damien Geradin, Ianis Girgenson, *The Counterfactual Method in EU Competition Law: The Cornerstone of the Effects-Based Approach*, 11 December 2011

[19] Geradin and Girgenson, p. 2

[20] Press release, *Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service,* http://europa.eu/rapid/press-release_IP-17-1784_en.htm (accessed 25 July 2017)

[21] Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings [2009] OJ 45/7, para. 21

[22] Carles Esteva Mosso, *The Contribution of Merger Control to the Definition of Harm to Competition,* [online] http://ec.europa.eu/competition/speeches/text/sp2016_03_en.pdf (accessed 10 July 2017), p. 2

Merger control works with counterfactuals, and the standard counterfactual is the *status quo ante* – i.e. the order of things as they were before the would-be event in question took place. This counterfactual was however recognised as not always being the most relevant, as it is sometimes necessary to take certain future events into consideration – one such example would be to consider the likelihood that a firm would go bankrupt in absence of the merger (known as the failing firm defense). This dynamic approach has subsequently been expanded to other situations than the failing firm, [23] such as probable business events (*Lufthansa/SN Airholding*; *Lufthansa/Austrian Airlines*) or probable business actions of companies such as downsizing presence in a market (*EDF/Segebel*).

The subject matter of this thesis, which is the value of data and by conjecture the changes of society as it becomes increasingly digitalised, can surely be held as a force of change that is relevant for all layers of the European Union. Additionally, as discussed above, it is evident that merger review is acceptant of considering future counterfactuals based on the current dynamics in motion. Nevertheless, the difference between using company-specific counterfactuals and societal counterfactuals is considerable, and to argue for a method which considers the latter would be to stretch the tolerance of dynamics in merger control to its extreme, in my opinion.

European merger control is open to consider counterfactuals based on current market dynamics. These dynamics have been confined to relatively specific cases. Therefore, when constructing a theory of harm – something which can be viewed as the benchmark against which a concentration's impact on the market is measured against – the level of scope of what dynamics can be considered when defining the relevant counterfactual makes it harder or easier to prove the theory of harm: if all manner of unbridled speculation is allowed, consumer harm can be proven in almost any situation.

An important methodological consideration in this thesis will then be to define an acceptable level of what dynamics are considered as influencing the counterfactual – or in other words, what level of speculation is acceptable.

### 1.3.3.1. *Interdisciplinary method*

In order to understand the context in which the legal analysis will be concluded, I will use an interdisciplinary method (mainly in chapter 3) that uses sources of information that are not traditional legal sources. This involves studying macro and micro economic considerations of data in modern businesses and economies. The sources have been found by searching on the internet for the relevant key-words and concepts (such as for instance "input for production"), and digging through sources until a trustworthy citation is found, which I subsequently look up and use as a source. The quality of a source is mainly determined by how many times it is cited and how recently it was published, but factors such as where it was published and by whom may also be considered.

### 1.3.3.2. *Comparative method*

With the purpose of providing contrast to the European competition policy, and to serve as inspiration for arguments about competition law or policy, some examples from American antitrust law will be used. Given the limited scope in which the comparative examples will be used, and that no comparison per se between Antitrust law and European competition law will be made, I will not make any claims to make the Antitrust law particular justice in regards of observing methodological rules that are

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[23] Geradin and Girgenson, p. 3

mandated within the system itself.[24] For the sake of this thesis, I am content to note that the American and European legal systems are – in addition to their differences in form – reliant on different theoretical outlooks on the free market, and to let this be the main caveat for any and all uses of comparative outlooks.

## 1.4. Some short words about theory

The purpose with competition law is fundamentally to control a capitalistic market to ensure that it helps generate the best possible society to live in. How this is done best is determined largely by what theoretical economic approach one uses to explain how the market is best regulated.

### 1.4.1. Ordoliberalism and the market

The ordoliberal theory of economics holds that the market cannot be left to its own accord, and that it needs the intervention of the state to help create a legal environment that makes the market create the results that are closest to its theoretical potential. The early competition law of the European Union was influenced by both American anti-trust law (which held greater confidence in the self-rectifying power of the free market) and ordoliberalism. The latter was subsequently subjected to much criticism due to it creating an overly formalistic competition law that was prone to protect competitors rather than competition itself.[25]

However, I personally agree with the idea that the market cannot be left to its own accord if one wishes to see it function at its fullest potential – therefore the question becomes that of how much the market should be governed vis á vis left to its own functioning. As it is possible to prove that monopolies generate both allocative and product inefficiencies, as well as being dynamically inefficient due to it having little incentive to develop new technologies, it can be concluded that the market forces alone are not guaranteed to "fix it all".[26]

Ordoliberalist theory accepts that states intervene on the market. A key concept in this thesis is deeply connected with the level of accepted paternalism by states: given the discernible dynamics in business and society, is intervention warranted? Connecting to the discussion above in the method section, I believe that ultimately the accepted level of "speculation" (i.e. how much the counterfactual can rely on dynamics and change) is determined by one's opinion of whether the state is capable of knowing better than the market what is best for society.

### 1.4.2. Competition law and politics

It is worth remembering that the European Union is inherently a purely political project. One of the notable characteristics of its competition law is the safeguarding of the integration of the internal market – this has mostly led to a focus on countering territorial restrictions that undermine the creation of a single market. However, other policy attributes have also been considered, such as

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[24] This is can be considered to be "good enough": Sandgren C., *Rättsvetenskap för uppsatsförfattare : ämne, material, metod och argumentation*, 3rd ed., Norstedts juridik, Stockholm, 2015, p. 55
[25] Carl Martin Gölstam, *Konkurrensrättens Grunder*, Iustus, Uppsala, 2013, pp. 44-45
[26] Motta presents the main considerations having to be made in regards of the market in the second chapter of his book, and convincingly argues that it cannot be left to its own accord. Motta argues that very often incumbent firms are able to maintain and reinforce their market power due to their size, pp. 39-88

environmental concerns, investment, transportation, social agenda, regional development or other industrial policies.[27]

There are indications that the European competition law is becoming increasingly politicised, as national politicians, members of the European Parliament, and Commissioners are becoming more prone to give their views on how competition law should be applied. Examples of this includes the French competition authority criticising the Commission, Angela Merkel's vouch of approval of the *Telefónica/E-Plus* merger, and the proposed commitments of Google in regards of its shopping service.[28]

Scholars of critical legal theory argue that law is not an apolitical and objective structure, and that our view of what is rational or incoherent, authoritarian or politically tilted are formed by contemporary social and philosophical thought.[29]

This thesis is not intended to argue for any certain development of competition law, but merely to explore the situation it is facing with respect of data. My understanding of the tendency towards politicisation of the competition law, together with a critical understanding of the law's constructed nature, will be supressed throughout the main body of the thesis and saved for the concluding critical discussion or research question 4: if competition law is capable of fulfilling its goals.

## 1.5. Delimitations

This thesis will study European competition law, and use examples from national legislations only as an input for discussion. Examples from American anti-trust legislation will be used, as data and antitrust has been a topic of discussion also in that legal context, but otherwise no comprehensive comparative effort between European competition law and American antitrust law is made in this thesis.

This thesis will not explore alternative dimensions of consumer harm, such as that consumer harm could arise from data protection issues and individuals' right to privacy under the Charter of Fundamental Rights, nor that environmental concerns could be a source of consumer harm.

In the domain of merger review, remedies and ancillary restraints will not be covered, as they add a level of complexity that is only relevant for specific cases but have little bearing on the theoretical main concepts that are discussed in this thesis.

Due to constraints in the format of this thesis and the supranational nature of the internet (as it looks today), the question of the relevant geographical market for data within the EU will not be discussed. I will conduct the following analysis under the assumption that the relevant geographical market for data is the entire EU, as there are no infrastructure barriers and otherwise negligible barriers to transport and trade, such as language and localised data protection rules.

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[27] Ariel Ezrachi, Sponge, *Journal of antitrust enforcement*, 1 March 2006, pp. 5-6

[28] The cited source is from 2014, but the commitment of displaying three links to competitor's stores still stands: Alfonso Lamadrid de Pablo, Of Politics and Competition Law (and on the Google cases too), *Chillington Competition* [blog], 14 July 2014, https://chillingcompetition.com/2014/07/14/of-politics-and-competition-law-and-on-the-google-cases-too/ (accessed 27 July 2017)

[29] James Boyle, The politics of reason: critical legal theory and local social thought, *University of Pennsylvania law review*, vol. 133, no. 4, April 1985, pp. 689-690

## 1.6. Literature review

Concerning the economic properties of data, it has – to the extent of my knowledge – not been the study subject of theoretical economics concerned with competition. Literature on how companies can leverage profit from (big) data is abundant, but a deeper investigation into how data functions as an economic resource is scarce. Dominique Foray's "The economics of knowledge" deals with knowledge as a resource, and the ideas presented there can in many regards be transposed to the sphere of data. On the other hand, digital platforms and multi-sided markets have been studied extensively, and much literature on the subject can be readily found. Among the prominent names in the field are Carl Shapiro and Hal Varian, authors of many articles and the book "Information Rules", that applies traditional economic theories on information based technologies. As the book was written in 1999, it is somewhat dated due to technological progress, but the core reasoning in it still holds true. The OECD report of 2015, "Data-Driven Innovation: Big Data for Growth and Well-Being",[30] provides much detailed information about the current state of the data economy and has served as a foundation for my understanding of the conditions under which companies that relies on data operates.

In Europe, data and competition *policy* has also been investigated, and this has resulted in a number of documents which has come to be very useful for this thesis, as they both provide numbers and figures that are recent and trustworthy, but also give insight into the discussion at the highest policy level. These documents will be discussed in the following relevant sections of the thesis.

As for data and competition law, it has seen lively discussion in a broad sense of the last couple of years in regards of whether data poses any new problems for competition law, and if the existing competition law framework is equipped to handle cases that involves data as an important factor. The discussion has not resulted in any academic works of considerable weight and impact, more than that of journal articles. In the American discussion, the question of whether data fits into competition law at all is not so very clear,[31] whereas in the European discussion there is more consensus that data has an important place in competition law, but it is not entirely clear exactly which place and role it has. The literature will be discussed continually within the thesis.

Two theses for masters of laws that have meritoriously explored the role of personal data and data protection principles in competition law are "*Personuppgifter som valuta i den digitala ekonomin*" (En: "*Personal data as currency in the digital economy*"), by Victoria Volny, and "*Commercial use of data and the implications to merger control in data related markets*" by Elisa Salmela.

In the European discussion of data and competition law, a postdoctoral researcher at the Centre for IT & IP Law (CiTiP) of KU Leuven stands out as an authority – her name is Inge Graef. Her academic contribution to the field of data and competition law is in my opinion not paralleled within the EU by any other singular person, and several of her articles have provided inspiration and guidance for this thesis, mostly so her award-winning paper on "*Market definition and market power in data: the case*

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[30] OECD, Data-Driven Innovation: Big Data for Growth and Well-Being, OECD Publishing, Paris, 2015

[31] Joe Kennedy, The Myth of Data Monopoly: Why Antitrust Concerns About Data Are Overblown, *Information Technology & Innovation Foundation*, March 2017, http://www2.itif.org/2017-data-competition.pdf (accessed 13 July 2017); Allen P. Grunes & Maurice E. Stucke, No Mistake About It: The Important Role of Antitrust in the Era of Big Data, *the antitrust SOURCE*, April 2015, https://www.americanbar.org/content/dam/aba/publishing/antitrust_source/apr15_grunes_4_22f.authcheckdam.pdf (accessed 13 July 2017)

*of online platforms*".[32] It is my hope that my thesis can be said to successfully develop some of the ideas initially expressed by her, and provide an expanded and elaborated approach to the market definition and market power of data.

What this thesis hopefully contributes to the academic discussion is a preliminary indication of how data in the field of competition law could be understood, and what place and role data has in competition law. More specifically, this thesis will also provide a structured discussion of the role of data in European merger control.

## 1.7. Terminology and glossary

In this thesis, **Data** is technology neutral and refers to factual information that includes both useful and irrelevant or redundant information, which can be used as it is or have to be processed to be meaningful.[33] In practice, the word will be used almost exclusively to refer to data in digital form. Data will be treated as a mass noun (like *water* and *information* are) and not as the plural of datum – hence, singular verbs will be used instead of plural.

The **European Union / Union / EU** are used interchangeably and all refer to the same transnational legal entity that came into being with the Lisbon treaty of 2009, and also includes the European Community that preceded it.

**Competition law** refers to the rules of legal authority that govern how companies may compete on the free market.

**Competition policy** is a wider term than competition law, including it as well as also policies and other documents that seek to ensure that the free market operates in an optimal way and is not detrimental to society.

**Personal data** is a legal term used in all member states of the European Union, that is defined in the Personal Data Directive 95/46/EC. It has been discussed much in legal doctrine, and the definition and case law around it has evolved in relation to the technological progress in general.[34] The definition gives that every piece of information relating to an identified or identifiable physical person is personal information, where an identifiable person is one that can be identified either directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity.[35] This means that for instance referring on an internet page to various persons and identifying them by name or other means, such as by giving their telephone number, information on their working conditions or hobbies, constitutes personal data.[36] Lately, it was also determined by the ECJ that IP addresses of individuals may constitute

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[32] *World Competition* 2015, 38(4)

[33] This definition is based on the Merriam-Webster's online dictionary's definition of "data": Merriam-Webster, *data*, 2017, https://www.merriam-webster.com/dictionary/data (accessed 4 March 2017)

[34] As an example of the plasticity of the term, see for instance: the Article 29 Data Protection Working Party, *Opinion 4/2007/ on the concept of personal data*, 20 June 2007, http://ec.europa.eu/justice/data-protection/article-29/documentation/opinion-recommendation/files/2007/wp136_en.pdf (accessed 23 March 2017)

[35] The Data Protection Directive (95/46/EC), art. 2(a)

[36] C-101/01 *Lindqvist*, Court's summary paras. 1-6

personal data, even if it is necessary to obtain data from a third party to cross reference the IP-number in order to identify the person.[37]

**Non-personal data** is data that is not considered as personal data. Personal data can be turned into non-personal data through the process of anonymization or pseudonymization.[38]

**Machine-data** is generated by machines, and is non-personal data.

**Big data** – a practice of combining vast volumes of information and analysing it to enable better informed decisions, which relies on the increasing ability of technology to support the collection, storage and ability to analyse data.

**Data Economy** – an ecosystem of different types of market players such as data holders, researchers and infrastructure providers that collaborate to ensure that data is accessible and usable. This enables the market players to extract value from this data, such as by creating applications for traffic management or for optimising harvesting.[39]

An **Input** is used in the production of goods and services in order to make an economic profit. An input is also known as a factor of production, which can be divided into several categories, of which capital is one.[40]

An **Output** is in economics the "various useful goods or services that result from the production process and are either consumed or employed in further production".[41] In this thesis, the word "output" will be used in a broader sense than the strictly economical, meaning that "output" refers to anything produced – such as both a physical output from production or the information produced by a computer.[42]

**2SP** – an acronym denoting a "two-sided marketplace", which is a platform that caters to two or more distinctive groups of customers. Often one customer group subsidies the other group's use of the service.[43]

## 1.8.   Disposition

The thesis is divided into seven chapters and two appendices. The reason for this disposition is that the appendices were originally part of the thesis, but at the stage of editing deemed to digress too much from the legal discussion. Since they are still valid and useful for understanding the subject matter, these parts were omitted from the main body of text and added as appendices instead.

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[37] C-582/14 *Patrick Breyer v Bundesrepublik Deutschland*, Court's Summary para. 1

[38] European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – "building a European data economy"*, COM(2017) 9 final, 10 January 2017, section 3.1

[39] ibid, section 1

[40] Paul A. Samuelson, William D. Nordhaus, *Economics*, 19th ed., McGraw-Hill / Irwin, New York, 2010, p. 9; see also: Investopedia, Factors of Production, 2017 http://www.investopedia.com/terms/f/factors-production.asp (accessed 4 March 2017)

[41] Samuelson and Nordhaus, *Economics*, p.9

[42] Merriam-Webster, output, 2017, https://www.merriam-webster.com/dictionary/output (accessed 4 March 2017)

[43] Jean-Charles Rochet, Jean Tirole, Platform competition in two-sided markets, *Journal of the European Economic Association*, vol. 1, n. 4, June 2003, pp. 990 - 991

Readers of this thesis should feel free to omit the appendices, as doing so will in no way hamper the understanding of the subject matter of this thesis.

The subject matter of the chapters will be as follows:

**Merger review procedure and the potential competition problem:** in this chapter the framework of merger reviews are presented, and the notion of data as a concern for competition law and policy will be introduced. A theory of harm will be constructed to be used as the benchmark for finding any competitive harm.

**Understanding (big) data and its importance for the market:** to be able to discuss market dynamics as the basis for a counterfactual scenario to be used in the *ex ante* merger review, the business logic of data must be understood. This chapter will bring present the fundamental aspects of data in a digital economy.

**Defining the relevant product market for data:** the need for, pre-conditions for, and possible method for defining a product market for data will be discussed in this chapter.

**Assessing market power in markets for data:** the assessment of market power in markets for data, or digital economies, will be studied in this chapter. This chapter will also discuss the need for defining a market for data, or if an analysis of market power is possible to perform without such a definition, and would be sufficient in its own.

**Competitive assessment:** the theory of harm will be tried here, in relation to the findings of the previous chapters, with the use of the official guidelines of how to apply the Merger Regulation.

**Conclusions:** in this chapter the results of the competitive assessment will be summarised, and the results of the thesis will be discussed in relation to the research questions posed. The "final remarks" helps put the considerations of this thesis into a context of European growth and development policy. This chapter also includes suggestions for further research.

# 2. Merger review procedure and the potential competition problem

*"Community jurisdiction is therefore founded, first and foremost, on the need to avoid the establishment of market structures which may create or strengthen a dominant position, and not on the need to control directly possible abuses of a dominant position."*[44]

A *concentration* that is within the scope of the Merger Regulation shall be appraised by the Commission.[45] A concentration is a lasting change in control as a result from *inter alia* M&A.[46] The scope of the Merger Regulation is based on thresholds of annual turnover of companies.[47] Concentrations that would significantly impede effective competition on the internal market shall be

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[44] Case T-192-96 *Gencor Ltd v Commission*, para. 106
[45] Merger Regulation (139/2004/EC) art. 2
[46] Merger Regulation (139/2004/EC) art. 3
[47] Merger Regulation (139/2004/EC) art. 1

declared incompatible with it,[48] and can be stopped from happening altogether or allowed subject to conditions and/or obligations of the companies involved.[49]

When a concentration is within the scope of the Merger Regulation the Commission shall be notified. The Commission can also be notified when the concentration does not fall within the scope of the Merger Regulation, as a sign of good faith.[50] After a notification, a phase 1 investigation is initiated where the concentration is either cleared (potentially subject to conditions/obligations) or prohibited from proceeding. If the concentration still raises competition concerns, the Commission opens a phase 2 investigation, which is an in-depth investigation on the concentrations effect on competition.[51]

## 2.1. Is possession of or control over data relevant for the functioning of the market?

In this section I will argue that data may be of value to companies in ways that are not visible with traditional economic tools, such as balance sheets. I will argue for this claim and present what legislative measures that have already been taken to describe the value of data, and examine how effective they can be expected to be.

As proposed by a joint report on competition law and data by the French and German competition authorities, the role of data in economic activities can be subdivided into three main categories:

1. data may be used to improve existing products or services;
2. data can create new business opportunities altogether, where new products and services may exist; and
3. data may enable more target-oriented business models (individualised advertising, services or products).[52]

In this thesis, the type of data that will be examined will be useful from two main perspectives: the first is data about consumers which may be used for personalised advertising; and secondly data which may be useful as an input for machine learning. Nothing stops the same data being used for both purposes.

The essence of the field of inquiry in this thesis is that the economic value of data may not be evident on a company's balance sheet, even though it may hold great commercial promise as an enabler of competitive products and services.

The prime example that illustrates the above, and the need for an overview of the Merger Regulation's threshold rules, is the acquisition of WhatsApp by Facebook. Since WhatsApp had a relatively small turnover at the time of the acquisition (mostly owing to it offering its service to consumers free of remuneration), but held a considerable share of the market for direct messaging, the concentration fell short of the transaction thresholds of the Merger Regulation. Only thanks to national rules in Spain, where market share is also a threshold parameter for notifying national competition authorities of the

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[48] Merger Regulation (139/2004/EC) art. 2.3
[49] Merger Regulation (139/2004/EC) art. 8.1 and 2
[50] Merger Regulation (139/2004/EC) art. 4.1
[51] European Commission, Merger Control Procedure, http://ec.europa.eu/competition/mergers/procedures_en.html (accessed 5 July 2017)
[52] Atorité de la concurrence, Bundeskartellamt, *Competition Law and Data*, 10 May 2016, pp. 8-11

merger, could the merger be submitted to the Commission for review by using article 4.5 in the Merger Regulation.[53] The supposed rationale for Facebook's USD 19 billion bid on WhatsApp was the potential of combining the two companies data sets to offer better targeted advertisement services.[54] This shows how a transaction which concerned a large number of consumers directly, in terms of privacy concerns, and indirectly due to the strengthening of a market dominant, was close to not have been tried at all had it not been for Spanish national rules on merger thresholds.

Other examples of transactions involving data that failed to meet the turnover thresholds and as such were not referred to the Commission includes Facebook's acquisition of Instagram and Google's acquisition of Waze.[55]

The notion that the merger rules needs to be updated so that they can address concentrations involving data as a competitive asset is also supported by the Competition Commissioner Margrethe Vestager herself:

> *"[] it's possible that in other cases, data could be an important factor in how a merger affects competition. A company might even buy up a rival just to get hold of its data, even though it hasn't yet managed to turn that data into money. We are therefore exploring whether we need to start looking at mergers with valuable data involved, even though the company that owns it doesn't have a large turnover."[56]*

The role of data in competition law has already been recognised nationally in Germany, which has recently updated its competition law to better address "big data issues". This is done by using a transaction value-based threshold model (as opposed to a turnover-based model which is used in the Merger regulation), which would mean that more concentrations would be nationally reviewed under merger rules. The update also includes a specification of what constitutes market power in the context of big data.[57] The German law deals with the Gordian knot of assessing the transaction value by using

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[53] COMP/M.7217 – *Facebook/WhatsApp*, para. 1; Eleonora Ocello, Cristina Sjödin and Anatoly Subočs, "What's Up with Merger Control in the Digital Sector? Lessons from the Facebook/WhatsApp EU merger case", *European Commission Merger Briefs*, vol. 1, 2015, p. 2; Enrique Medina, Facebook/Whatsapp: Competition analysis in the new Digital Economy, *Telefonicá: public policy blog* [online], 15 January 2015, https://www.telefonica.com/en/web/public-policy/blog/article/-/blogs/facebook-whatsapp-competition-analysis-in-the-new-digital-economy (accessed 3 July 2017); Osbourne Clark, Could small companies with Big Data be caught by EU merger control?, *insights* [online]*,* 7 October 2016, http://www.osborneclarke.com/insights/could-small-companies-with-big-data-be-caught-by-eu-merger-control/ (accessed 3 July 2017)

[54] European Commission - Press release, *Mergers: Commission fines Facebook €110 million for providing misleading information about WhatsApp takeover.* However, the Commission had already assessed this eventuality and dismissed its significance owing to the considerable overlap of the network of the two services: COMP/M.7217 – *Facebook/WhatsApp*, para. 140

[55] Ocello, Sjödin, Subočs, p. 2

[56] Competition Commissioner Margrethe Vestager in her speech Big data and competition, given at the EDPS-BEUC Conference on Big Data, Brussels, 29 September 2016, https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/big-data-and-competition_en (accessed 1 July 2017).

[57] Werner Berg, Lisa Weinert, "Transaction-value merger threshold soon to be in force in Germany – update on the 9th ARC revision", *Kluwer Competition Law Blog* [online], 7 April 2017, http://kluwercompetitionlawblog.com/2017/04/07/transaction-value-merger-threshold-soon-force-germany-update-9th-arc-revision/ (accessed 3 July 2017)

the consideration paid in return for the transaction as the indicator of transaction value,[58] which is seemingly efficient and capable of capturing the most prominent data transactions – the real impact of the update remains to be seen, however. One argument against such a transaction value threshold is that relative values differ across industries, meaning that setting an arbitrary transaction value threshold may create burdensome effects for some sectors whilst allowing others to escape from the intended scrutiny.[59] This indicates that a threshold value determined by market shares may be better suited.

As will be further described below, data may be a "hidden" parameter in a transaction where the target of the acquisition in fact could be a potential competitor to the acquiring party, even if its balance sheet does not indicate so. Furthermore, as there is currently no developed market for data,[60] it becomes close to impossible to assess the acquisition's impact on the market in terms of foreclosure of inputs (i.e. data) which is necessary for downstream products if one is required to calculate the economic value of the data involved in the transaction – something which can be very hard to objectively measure.

Yet still, even if a major overhaul of the European merger rules were to magically take place overnight and a threshold based on market shares would be instituted, how would the market shares in question even be calculated if there is no discernible market for data? The lack of alternatives to the turnover-based threshold model makes it difficult to lead a constructive discussion of improvements to the European merger legislation in regards to the economic transition into an increasingly digital world.

An attempt at defining a market for data will be made in the following chapter 4, which will be preceded by chapter 3 which describes the nature of data as an economic asset, and its role and dynamics in a digital market.

## 2.1.1. Acquiring data, or pre-emptive M&A? Or both?

A possible means of getting access to data is to acquire the company holding the data. OECD reports that in sectors related to data, the numbers of M&A deals have increased from 55 deals in 2008 to almost 164 deals in 2012, displaying a growth rate of ca 300 % over four years.

Existing companies are pressured to innovate in order to not lose market shares, as they fear that a competitor will bring forth an innovation that can disrupt the current market and make the incumbents obsolete or of little interest. An easy way to minimise the risk of a competitor doing so, while at the same time adding to one's own data-dependent innovative capabilities, is to buy innovative companies

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[58] The ninth amendment to the Act against Restraints of Competition (Gesetz gegen Wettbewerbsbeschränkungen), Section 35

[59] Gavin Bushell, EU Merger Regulation Reform: No Smiles from the Threshold, *Kluwer Competition Law Blog* [online], 24 October 2016, http://kluwercompetitionlawblog.com/2016/10/24/no-smiles-from-the-threshold-eu-merger-control-reform/ (accessed 27 July 2017)

[60] In a study of the distribution of data sharing models, made by Deloitte on the behalf of the Commission, a first classification of the main aspects of data sharing has been established. It states that in 78 % of the cases, data is generated and analysed in-house. The data is not traded with third parties, but used for vertical integration or for e.g. enhancing the efficiency of internal processes or for improving client service. Of the remaining 22 %, 2 % are accounted for by open data sharing practices (e.g. "data philanthropy"), and 20 % by more or less well-developed markets (e.g. financial data): Commission Staff Working Document – on the free flow of data and emerging issues of the European data economy (accompanying the document Communication – Building a European data economy), SWD(2017) 2 final, Brussels, 10 January 2017, pp. 14-15

with access to data when they are still small but has started to show promise of delivering an innovative product or service. Therefore, camouflaged in the increasingly growing stream of M&A concerning data might be instances of "pre-emptive" M&A with the double aims of securing the incumbent buying company's position in the market as well as getting access to the target company's data.

As Margrethe Vestager puts it: "*[o]ne of the simplest defences against innovation is to buy up rivals that create innovative products.*"[61]

Aside from eliminating the risk of being disrupted, the acquiring companies will not only enjoy benefits both from economies of scale and scope, but also from the chance of adding the acquired companies' user base to that of its own (and thereby increase the size of the network).

It is possible that the difficulties with licensing data is a contributing factor towards this: there is no coherent legal framework for working with data as a business asset like other conventional business assets, and the transaction costs for completing a data "license" deal are considerable. Also, to a larger extent than with IPR-licenses, data "licenses" face a larger risk that the source of data may dry up or become unusable for some other reason (such as e.g. regulatory change or due to the actions of the data collector). Therefore, buying the data collector altogether becomes an alternative to "licensing" data that is often more favourable to data-dependent companies. For more information about the legal tools for making business with data, please see Appendix 2.

## 2.2. The competition analysis

After the Commission has been notified of a concentration the Commission starts its review. The appraisal aims at finding if the concentration is compatible with the common market, considering the need to maintain and develop effective competition in the market, taking into account the structure of it and the potential competition from new entrants. Furthermore, not only is economic and financial power considered, but also – *inter alia* – access to suppliers, users and other barriers to entry that defines the market. Concentrations which would significantly impede the functioning of the market shall be not approved, and in particular when the concentration would strengthen an already dominant position.[62]

The undesirable consequences on the market is further described in two guidelines on the assessment of mergers, depending on whether they can be said to be horizontal or non-horizontal.

Horizontal mergers include companies that are actual or potential competitors on the same market,[63] whereas non-horizontal mergers include the two categories of "vertical" and "conglomerate" mergers. Vertical mergers involve companies operating at different levels of the supply chain, and conglomerate mergers are between companies that are in a relationship which is neither horizontal (as competitors

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[61] Competition Commissioner Margrethe Vestager, *Competition: the mother of invention*, European Competition and Consumer Day, 18 April 2016, https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/competition-mother-invention_en (accessed 27 July 2017)
[62] Merger Regulation (139/2004/EC) art. 2
[63] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 5

in the same relevant market) nor vertical (as suppliers or customers), which for instance includes producers of complementary products in the same product range.[64]

The assessment of the impact on the market of horizontal mergers focuses particularly on mergers which may result in elimination of competitive restraints (non-coordinated effects) or an increased likelihood that companies may coordinate their behaviour (coordinated effects).[65]

The assessment of the impact on the market of non-horizontal mergers generally focuses on foreclosure of input which would lead to an increase in price on downstream markets, which significantly would impede potential competition.[66]

The first step of the Commission's appraisal is often to define the product market and geographical market that is relevant for the concentration. After this, the competitive effects of the concentration are analysed.[67] This latter step of the appraisal is known as a SIEC test (significant impediments to effective competition), which can be said to be an effects based, equilibrium based approach that takes the relevant market characteristics into considerations.[68] In other words: it assumes that normally the forces exerted by companies and consumers have settled the market into a state of equilibrium, and that changes within this system upsets the equilibrium – if the change is big enough to change the equilibrium to a state where consumers are harmed, the change is deemed to have a significantly impeding competitive effect, and can as such not be cleared under the Merger Regulation.

## 2.2.1. Constructing a theory of harm

When performing the SIEC test, the Commission needs to find evidence that the concentration is not compatible with the market. This is a forward-looking analysis that considers *ex ante* scenarios, thus dealing with the counterfactual.[69] The Commission does not need to find evidence that the anti-competitive effects *will* happen, as it is sufficient that it is likely that they will happen. This is problematic, as proving that future events will happen is nigh impossible, but showing that they are likely to happen invites speculation, which means that it is hard to find a realistic middle way.

Over the last decade, a change in the Commission's methodology have become evident: it has put a greater emphasis on the need for a "theory of harm" to guide the appraisal of the merger. This has by some been seen as a significant improvement in the enforcement of competition law, as the presence of a theory of harm imposes a logically consistent approach to the assessment of anticompetitive behaviour. By making the theory of harm explicit, the Commission has less opportunity to engage in

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[64] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), paras. 3-5
[65] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03) para. 22
[66] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 47
[67] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03) para. 10
[68] Lars-Hendrik Röller Miguel de la Mano, *The Impact of the New Substantive Test in European Merger Control*, The European Commission, 22 January 2006, available here: http://ec.europa.eu/dgs/competition/economist/new_substantive_test.pdf (accessed 5 July 2017), p. 18
[69] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 9

inconsistent or speculative competition concerns, as the articulated theory of harm would serve as a backdrop upon which poor arguments would be exposed.[70]

A theory of harm should have the following characteristics, according to dr. Hans Zenger and dr. Mike Walker:

- it should articulate how competition and, ultimately, consumers will be harmed relative to an appropriately defined counterfactual;
- it should be internally logically consistent;
- it should be consistent with the incentives that the various parties face; and
- it should be consistent with (or at least not inconsistent with) the available empirical evidence.[71]

The starting point of formulating a theory of harm should then be to define the event that would lead to the counterfactual. For the sake of this thesis, the somewhat general and diffuse event is that a company which is dominant on the market (either for data, or other products or services) acquires a company that is small but holds a large amount of data. The theory of harm will be further developed below, following a discussion of what harm such an event could lead to.

### 2.2.1.1.    Consumer harm

When it comes to consumer harm, the axiom in competition law is that consumers enjoy low prices and are suffering harm if they face higher prices (than what is necessary). In addition to prices, choice between alternatives is also a factor, as is high quality products and access to innovation.[72] However, to properly assess consumer harm according to the diffuse counterfactual mentioned in the previous section, one must know which one of the companies is facing the consumer and what products and/or services are being offered. Furthermore, as is often the case with data-generating products or services, they are usually offered to consumers free of monetary payment– therefore, the risk that consumer harm would occur due to increases in price is very low as it would be incompatible with the business models of the companies involved to start charging money for their products or services. High market shares are not *eo ipso* incompatible with the functioning of the market, and there is typically a trade-off to be made between overall economic efficiency and consumer benefit when dealing with companies that have a big market shares.[73]

In terms of data protection, the Commission has effectively separated competition law from privacy law in its decision in *Facebook/WhatsApp.*[74] For the sake of this thesis, I will not explore other avenues

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[70] Hans Zenger and Mike Walker, Theories of Harm in European Competition Law: A Progress Report (February 22, 2012), in *Ten Years of Effects-Based Approach in EU Competition Law*, Jacques Bourgeois & Denis Waelbroeck (eds.), pp. 185-209, Bruylant, 2012, p. 2

[71] ibid, p.1

[72] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 8

[73] Peter Davis, Elina Garcés, *Quantitative techniques for competition and antitrust analysis*, Princeton University Press, 2010, pp. 29 and 123-124

[74] COMP/M.7217 – *Facebook/WhatsApp*, para. 164. An interesting sidenote here is that one could also consider environmental interests in this question, which the ECJ have already done. Whilst it is not a current explicit purpose of competition policy, it is possible to imagine that it in the future becomes one, even though it might arguably be better to use other areas of policy to achieve these goals. See Motta p. 27-28 for more information.

of possible consumer harm than those mentioned above: choice between alternatives, quality, innovation, etc.

The consumer harm that is most likely to occur would be related to the products and services: that they are of low quality, that there is no wide selection of them, and that there is no innovation. If data can be used to improve existing products and services or enable completely new ones, as indicated above, is it put to best use in the hands of the few rather than the many? The main concern for the consumers in regards of data mergers seems to be their access to innovation.

### 2.2.1.2.    Innovation as competition concern

The framework for merger control in regards of innovation is built upon three principles: contestability, appropriability, and synergies.[75]

Contestability means that the markets need to allow for competition within them. Appropriability means the extent to which a company can capture value created by its innovation and protect the competitive advantage with it (i.e. the use of IP-strategies and so forth). Synergies means that combinations of complementary assets for engaging in R&D will enhance the ability to innovate (in our case, the access to data would be such a complementary asset).[76]

### 2.2.1.3.    The theory of harm for this thesis

My proposal for a theory of harm to guide this thesis is that consumer harm could arise due to a lack of innovation, caused by concentration of data into the possession of a few dominant actors. The harm to the innovation would be caused by markets becoming incontestable and that potential entrants become deprived of resources that would generate synergies that would allow them to compete on the market. This would lead to lack of alternatives for consumers, less qualitative products due to lack of competition, and a lack of innovative products and services built on data.

The incentives of the dominant companies would be that they want to secure their own position and avoid being disrupted by new actors, as well as add the capabilities and resources of the acquired company to that of its own. The incentives of the (founders of the) acquired companies would be more varied, but should consist of motifs such as a) being acquired is a sign of personal and/or professional success; b) being acquired usually enables more resources to develop the company's idea; c) the alternative to accepting an acquisition offer could be undesirable and not viable as an option as the company would not realistically be able to compete with the dominant incumbents, and in the worst case suffer less-than-friendly behaviour from them.[77]

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[75] DG Comp discussion paper, EU merger control and innovation, *Competition policy brief* [online], April 2016, available here http://ec.europa.eu/competition/publications/cpb/2016/2016_001_en.pdf (accessed 6 July)p. 2

[76] Ibid: these three principles are proposed by Carl Shapiro as a way of uniting the two opposing theories of innovation and competition argued by Joseph Schumpeter ("creative destruction") and Kenneth Arrow ("competition by innovation")

[77] For examples of such bullying behaviour, see the case of the price comparison service "Foundem", and its legal battle against Google which started as early as 2010: Charles Arthur, Foundem accuses Google of using its power to favour own links, *The Guardian* [online], 30 November 2010, https://www.theguardian.com/technology/2010/nov/30/google-foundem-ec-competition-rules (accessed 1 July 2017) – this legal battle led to the recent decision issuing Google a €2.42 billion fine (http://europa.eu/rapid/press-release_IP-17-1784_en.htm accessed 6 July 2017). Another example is the story of Facebook allegedly "bullying" a startup founder's project: Adrienne Jeffries, Developer has no regrets after angry letter to Zuckerberg goes viral, *The Verge* [online], 3 August 2012,

As for consistency with the empirical evidence, the conditions for obtaining such evidence will be explored in the following chapters and discussed in Chapter 6 (Competitive assessment).

# 3. Understanding (big) data and its importance for the market

In this chapter I will describe the characteristics of data to provide a better understanding of the subject and bring readers unfamiliar with the characteristics of data up to speed (i.e. readers that already are familiar with the big data industry should feel free to skip this chapter, similar to the appendices). After this, the market definition for data will be analysed in its own chapter, followed by a discussion of how to assess market dominance in data-centric industries. Finally, the competitive effects that are possible from concentrations of data-rich companies will be discussed.

## 3.1. Data as an economic resource

In this section, I will try to explain how data can be made useful as an economic resource, and briefly outline how data is discussed in the contemporary academic and business discussion. This includes discussing the contemporary buzz-word "big data". In my own opinion, the addition of the adjective *big* to data is unnecessary and warranted only by hype-makers wishing to underline that data now (suddenly) has commercial properties that it did not previously have, but since the idea of *big* data has become de facto adopted in both the academic and business discourse, it will be used also in this thesis.

Big data is not necessarily a technology, but rather the result enabled by advancements in many different technology fields, such as computer storage and processing capabilities, and the power to transmit larger sets of information at ever increasing speeds. The European Data Protection Supervisor have described big data as not a thing in itself, but as a *practice* of combining vast volumes of information and analysing it to enable better informed decisions. This practice relies on the increasing ability of technology to support the collection, storage and ability to analyse data.[78]

The term big data says nothing about the content of the information which constitutes the big data. Some of the sources of it are the following: it can be auto-generated log files from machines,[79] often called "raw machine-generated" data; it can be created by various kinds of users themselves when they enter usernames and passwords along with other details, in order to access web services; it can

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https://www.theverge.com/2012/8/3/3216313/dalton-caldwell-facebook-developer-letter-mark-zuckerberg-app-net (accessed 1 July 2017).

[78] European Data Protection Supervisor, Opinion 7/2015, *Meeting the challenges of big data - A call for transparency, user control, data protection by design and accountability* [online], 19 November 2015, https://secure.edps.europa.eu/EDPSWEB/webdav/site/mySite/shared/Documents/Consultation/Opinions/2015/15-11-19_Big_Data_EN.pdf (accessed 20 February 2017), p. 7

[79] As an indication of the magnitude of data generated, on a flight from New York to Los Angeles with a two engine Boeing 737, 240 terabytes of data are generated from the engines alone: Stacey Higginbotham, Sensor Networks Top Social Networks for Big Data, *Gigaom*, 13 September 2010, https://gigaom.com/2010/09/13/sensor-networks-top-social-networks-for-big-data-2/ [accessed 2 March 2017]

be created by logging said users' actions on said web services; and it can be created by combining or analysing different existing sets of data so that new sets are created.[80]

A common way of describing big data is by alluding to three dimensions of information: volume, velocity and variety ("the three V:s"). It has been suggested that this definition be improved upon by adding the caveat that big data also requires technology and analytical methods for its transformation into value.[81]

Just as the term big data is neutral in regards of what kind of information it is composed of, the term is also neutral in regards of how it is used. One way of structuring the value "cycle" of big data is by dividing it in three phases: 1) data collection; that leads to 2) data analysis; which in turn enables 3) decision making (to be further discussed in 3.2, The big data value chain).[82] At large, data can be help to improve a company's product or service, or enable the company to explore new business opportunities.[83]

An alternative to step 3) is that data is a requisite for machine learning. The amount of data required for developing a narrow artificial intelligence using machine learning varies, but generally a considerable amount is needed.

Many different metaphors have been used to describe big data in ways to make it understandable for policy makers and legislators, such as for instance by referring to big data as a "new currency", or as the "oil of the internet".[84] Another interpretation of big data is offered by the OECD, who alongside with others argues that it should be viewed as an infrastructure.[85]

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[80] For more information about the sources of big data, this article offers a good meta-study of studies concerned with big data: Andrea De Mauro, Marco Greco and Michele Grimaldi, "A formal definition of Big Data based on its essential features", *Library Review*, Vol. 65 Issue 3, pp. 122 – 135. For numbers on sources of big data, they can be found here Big Data & Analytics Hub, Where does big data come from?, *IBM*, http://www.ibmbigdatahub.com/infographic/where-does-big-data-come (accessed 2 March 2017)

[81] A thorough discussion about the definition of big data can be found here: Andrea De Mauro, Marco Greco and Michele Grimaldi, "A formal definition of Big Data based on its essential features", *Library Review*, Vol. 65 Issue 3 pp. 122 – 135

[82] OECD (2015), p. 71

[83] A more detailed discussion of how products and services are improved and economic efficiency is raised by the use of data can be found here: Atorité de la concurrence and Bundeskartellamt, pp. 9-10

[84] A striking example of a combination of these metaphors is made here: European Consumer Commissioner Meglena Kuneva, *"personal data is the new oil of the internet and the new currency of the digital world"* (key-note speech at Roundtable on Online Data Collection, Targeting and Profiling), Brussels, 31 March 2009, http://europa.eu/rapid/press-release_SPEECH-09-156_en.htm (accessed on 20 February 2017). For an in-depth discussion of metaphors regarding big data, see OECD (2015) p. 178. For more examples of this metaphor in use, see also Michael Haupt, "Data is the New Oil" — A Ludicrous Proposition, *Medium*, 2 May 2016, https://medium.com/twenty-one-hundred/data-is-the-new-oil-a-ludicrous-proposition-1d91bba4f294#.fzm81nhar (accessed 24 March 2017)

[85] Sources discussing data as an infrastructure includes the OECD (2015) pp. 179-183. Another proponent of data as infrastructure is the British NGO, the Open Data Institute – see here: Open Data Institute, *What is data infrastructure?* [online] https://theodi.org/what-is-data-infrastructure (accessed 20 February 2017)

## 3.2. The big data value chain

The nature of big data is not like that of a physical good, which can be stored in a warehouse and processed in a workshop, to be distributed and sold in physical stores – describing much of a linear journey from its collection from its natural state to it reaching the end customer as a refined product.

Big data displays a much different behaviour altogether, owing to its intangible nature: it is non-rival and benefits from economics of scale.[86] Big data is exchanged and stored by many different actors, where value is extracted in a complex ecosystem made of many markets that are intertwined with each other. The Commission has acknowledged this "eco-system" logic as a tool for understanding the business realities of companies in a competition analyse.[87]

A suggested value chain of big data, which seems to hold some consensus among scholars in the field, is the following:

1. *data [is] <u>collected</u> directly from users and from machines in many different ways or can be bought from data brokers;*
2. *data [is] <u>stored</u> on internal servers or on external cloud computing services;*
3. *data [is] <u>analysed</u> with software analytics and the valuable information can be used to improve and personalise products' characteristics and prices as well as their marketing, to improve process and organisation or for many other purposes such as controlling epidemics or managing emergencies.[88]*

As can be gleamed from this elaborated value chain, the interdependencies and relations between actors around the globe quickly forms a dense network that can be hard to decode without having a firm knowledge in the field of internet and telecom technology.
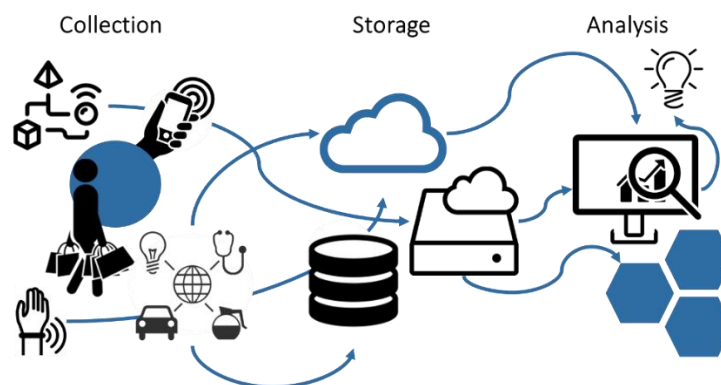


*Figure 1 – illustrative overview of the big data value chain (source: personal collection)*

Since the data is a non-rival resource, the use of it does not consume it, meaning that there is rather a circularity than a linearity in the ecosystems of data that make up the big data value chain, since the amount of data available to potentially make use of is ever increasing.

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[86] These terms will be outlined in the end of this chapter, and discussed in detail in <u>Appendix 1</u>.

[87] COMP/M.6314 – *Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV*, para. 540

[88] As suggested, verbatim from the project report from Centre on regulation in Europe (CERRE): Marc Bourreau, Alexandre de Streel, Inge Graef, *Big Data and competition policy – market power, personalised pricing and advertising*, 16 February 2017. The report itself cites OECD (2015) ch. 2 and "V. Mayer-Schoenberger and K. Cukier (2013) *Big data – a revolution that will change how we live, work and think*, Eamon Dolan/Mariner books."

### 3.2.1. Big data as input or output

Inputs are necessary for the production of goods and services (outputs). Above, the value chain of data can be thought of as the necessary steps for obtaining data as an input, i.e. it needs to be both collected, stored and analysed to be made useful in the production of goods and services.

Today, companies can use data as an input for different purposes, but two broad categories can be defined: cost-saving purposes, and revenue-generating purposes. The company's skill and experience of using data determines its capabilities of using the data, where revenue-generation and disruptive innovation using data requires a higher degree of technological maturity within the company.[89] The overall trend can be assumed to be that companies allocate resources to enhancing their digital maturity so as to not get obsolete and lose market shares. The companies that uses innovative business models based on the deployment of applications that use data generated through the web and/or other sensors, can be said to build their offerings on top of existing data, which means that the data is used as an input to provide their offering.[90]

#### 3.2.1.1.    *Content and quality of data*

Defining the value of data is somewhat similar to defining the value of *wind*: it can be used for many things, but to say that it has an absolute value becomes absurd. The value of data is mainly dependent on how well it fits with the aims and goals of the organisation that will use it in their business operation – like sailors cannot command the wind, but only adjust their sails. One could summarise this as the value of the data being dependent on the capabilities of the entity in control of it. Regardless of this open nature, some dimensions of the instrumental value of data can be discerned: time and volume.

The **time** aspect of the value of data is not to be confused with one of the three V:s that describes the nature of big data, *velocity*.[91] The economic value of data can have a temporal aspect to it, in that some types of personal data has a steady value over time, for instance the name and date of birth of a customer, whereas other types need to be relatively updated to be of any value – for instance the customer's current address.[92]

The **volume** aspect of data is more complex. Generally, one can assume that having more data is preferable to having less data. In practice, one could say that there are thresholds of data volume that must be overcome to enable some functions or actions. For web searches, in the *Microsoft/Yahoo! search business* merger decision, Microsoft argued that it becomes increasingly easy to run tests and improve the search algorithm the more data the organisation has access to.[93] The Commission noted

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[89] OECD 2015 p. 88

[90] ibid

[91] *Velocity* originally denoted an organisation's capacity to handle a high velocity of data input, i.e. many different data points collected with short intervals of time – see Doug Laney, 3D data management: controlling data volume, velocity and variety, *META group research note*, 6 Februari 2001, https://blogs.gartner.com/doug-laney/files/2012/01/ad949-3D-Data-Management-Controlling-Data-Volume-Velocity-and-Variety.pdf (accessed 12 March 2017), p. 2

[92] UK competition & markets authority, *The commercial use of consumer data. Report on the CMA's call for information* [online], June 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/435817/The_commercial_use_of_consumer_data.pdf (accessed 14 March 2017), pp. 75-76

[93] COMP/M.5727 - *Microsoft/ Yahoo! search business*, para. 162. For a more illustrative example of how smaller search engines are less intuitive than Google's, see Rebecca Sentence, 'Going over to the duck side: a week using

this, but stated that there is a diminishing return of benefit with increasing volumes of data.[94] This is an important distinction to make here, whether the thresholds should be viewed as not barring any capabilities or activities but only denote the point after which more data confer no additional competitive advantage, or whether the thresholds should be regarded as toll gates after which new phenomena can emerge from the data. The Commission's opinion in the mentioned merger points to the former alternative. This is an important question in regards of the economical nature of data, and depending on who you ask you will get different answers, as it can affect many parameters in a competition analysis.[95]

## 3.3.   The characteristics of data

Data displays unique economic characteristics and dynamics. The main concepts will be outlined here to provide a basic understanding of the notions discussed in subsequent chapters. More information is available in Appendix 1.

Data is a **non-rival** good, meaning that the use of data does not deplete it and that data can be used simultaneously by more than one individual. For instance, you and I both can read this thesis at the same time (assuming we have access to separate copies of it), and us doing so would not prevent readers after us from being able to read the thesis.

**Economies of scale** is a term that describes how a process can become more efficient as it is performed at a larger scale. Where the effects of economies of scale are present, the big can be expected to become bigger if all other factors remain unchanged. In competition law, the benefits of economies of scale can offset consumer harm stemming from concentration in the relevant market.

Similar to economies of scale, but not identical, are **feedback effects**. This can occur if an output of a system is routed in part or full into the input of the same system, thus creating self-enforcing effects. Feedback effects are very common in digital economies, owing to the circular nature of data eco-systems.

**Network effects** are also similar to economies of scale and feedback effects, but should not be confused with the two. Network effects arise when the value of a good becomes higher as more users adopt it – the most commonly used example to describe this is the telephone: it becomes more useful the more people and places you can phone.

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DuckDuckGo', *Search Engine Watch*, 1 March 2016, https://searchenginewatch.com/2016/03/01/going-over-to-the-duck-side-a-week-with-duckduckgo/ [accessed 14 March 2017].

[94] COMP/M.5727 - *Microsoft/ Yahoo! search business*, para. 171

[95] For more information, see Inge Graef, 'Market definition and market power in data', *World competition*, 38, no. 4, 2015, pp. 486-487

# 4. Defining the relevant product market for data

Market shares are a useful indicator of market structure and the competitive importance of the actors on the market.[96] The market is defined according with case law and a Commission notice,[97] which provides that the relevant product market and the relevant geographical market should be assessed. The main factor for defining the relevant product market is the level of substitutability of the product with the competitors' offerings.

Dominance of an undertaking is associated with competition problems. This means that if the Commission finds that at least one party is dominant in the market, or that the merged entity will become dominant as a result of the concentration, the concentration will often be deemed to be not compatible with the market.[98] On the other hand, if the market shares of the post-merger entity is less than 25-30 % and the Herfindahl-Hirschman Index is less than 2000, a merger can be presumed to not be incompatible with the market.[99]

To establish if dominance is at hand, market shares is one important piece of information, but a mixture of qualitative and quantitative methods is also used. Quantitative methods mean that the undertakings annual turnover or volume of sales are compared to the total number of that of the market of competing products. Qualitative methods mean that the structure of the market in question is analysed, and how the possibly dominant undertaking have power in the market. As a rule of thumb, if an undertaking can do as it pleases without suffering negative consequences from competitors or consumers, it can be assumed to be in a dominant position.[100] This logic is enshrined in the so-called SSNIP test (small but significant non-transitory increase in price), implying that if the dominant could increase the price without losing customers or making new competitors enter the market, it is probably dominant.

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[96] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 14; Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 24

[97] Commission notice on market definition [1997] OJ 372/05

[98] "The creation or the strengthening of a dominant position is a primary form of such competitive harm": Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 2. Also, in regards of conglomerate mergers, the Commission has never found anti-competitive effects in the absence of a dominant position: Damien J. Neven, The analysis of conglomerate effects in EU merger control, Forthcoming in "Advances in the Economics of Competition Law", MIT Press, December 2005, available here: http://ec.europa.eu/dgs/competition/economist/conglomerate.pdf (accessed 5 July 2017), p. 35

[99] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 25; Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 18. In regards of the HHI, the Horizontal Guidelines (para. 16) states that *"[t]he HHI is calculated by summing the squares of the individual market shares of all the firms in the market. The HHI gives proportionately greater weight to the market shares of the larger firms. Although it is best to include all firms in the calculation, lack of information about very small firms may not be important because such firms do not affect the HHI significantly. While the absolute level of the HHI can give an initial indication of the competitive pressure in the market post-merger, the change in the HHI (known as the "delta") is a useful proxy for the change in concentration directly brought about by the merger."*

[100] Case 85/76 *Hoffmann-La Roche & Co. AG v Commission of the European Communities*, paragraph 38

The European Commission has not yet defined the relevant product market for data,[101] despite it having handled several merger cases where the companies in question have been highly dependent on data for their business models. The market definition in those cases has been centred on the function of the service (output), rather than input factors that enable the service.

The main reason for this is that the basic principles of defining markets, as laid out in the Commissions notice on market definition, presupposes the existence of a supply and demand for the product or service in question, as the substitutability of the product or service on both the supplier side and demand side is fundamental for the competitive analysis.[102] Since it is common that big companies state that they do not *sell* the data which they collect from users to third parties,[103] a market for data cannot be defined in the traditional sense. Nevertheless, the companies' privacy policies often inform or reserve the rights that data can be shared with partners or "trusted parties", which leaves the companies the possibility to communicate the data – but without a direct monetary remuneration for it. Large companies (such as the "GAFA" companies Google, Apple, Facebook, Amazon, for instance) that do sell or license data in transactions are few. Twitter is the only big social network that sells data from its service. The small number of companies selling their data constitutes the exception from the main rule, that data is not commonly traded as a commodity in the world of large digital platforms.

In its merger decision concerning Facebook and WhatsApp, the Commission made clear that the "non-selling" practice of the companies made it superfluous to pursue a market definition with respect to the provision of data or data analytics services, as long as the data dependent operations are performed within the confines of the business operation.[104] Instead, the Commission opted to investigate the market definition in regards of advertising, as opposed to data or data analytics services. Similarly, in one of the earliest "data merger" decisions (*Google/Doubleclick*), the Commission defined the product market as (*inter alia*) "online advertising" without exploring the data dependent aspects of the companies' business models.[105]

In my opinion, for products and services that fall in the category of "enhanced" products,[106] there are good reasons for using a product definition that focuses on the functionality or value proposition offered by the product or service, rather than focusing on the supply chain that enables the offering in the first place, as the latter would be impractical and yield no useful results. However, this approach will become problematic when the offering in question is not an existing product that is enhanced by data, but a totally new product that is enabled or composed by data – then the eco-system described above must be considered in the competitive analysis.

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[101] From Competition Commissioner Joaquín Almunia in a speech at Privacy Platform event: Competition and Privacy in Markets of Data (Brussels), 26 November 2012, http://europa.eu/rapid/press-release_SPEECH-12-860_en.htm (accessed 7 March 2017). Also: Graef, Market definition and market power in data, p. 489

[102] Commission notice on market definition [1997] OJ 372/05, paras. 13-23

[103] As is stated in the privacy policies of Google, Facebook, Spotify, and several other companies (accessed 7 March 2017). Flows of data from Facebook have included: third-party applications collecting data from friends of the user, even if the friend had restricted sharing of their data, and Facebook sharing users' personal information* with advertisers in conflict with promising not to: Pasquale, pp. 144-145
* "Personal information" is the American legal term that corresponds to "personal data", but their meaning is not identical.
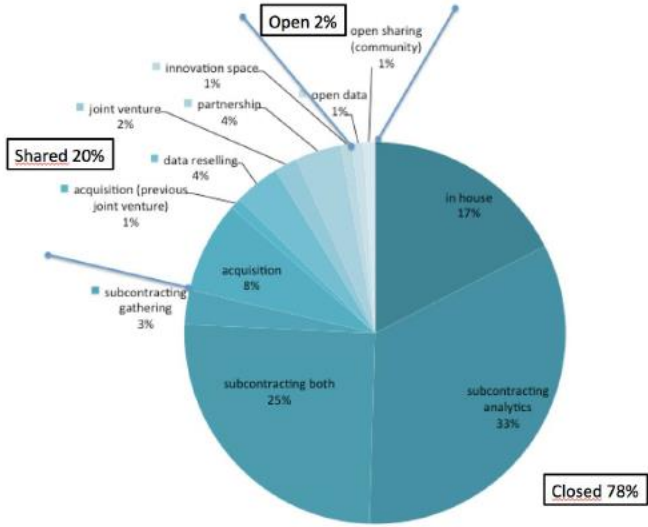
[104] COMP/M.7217 - *Facebook/ Whatsapp*, paras. 70-72.

[105] COMP/M.4731 – *Google/ DoubleClick*, para. 73 (44-73)

[106] i.e. products that have existed for a long time but have been "enhanced" by the use of data, as discussed in 2.1 (Is possession of or control over data relevant for the functioning of the market?)

Outside of the world of large digital platforms, a study of the distribution of data sharing models, done by Deloitte on the behalf of the Commission, a first classification of the main aspects of data sharing has been established. It states that in 78 % of the cases, data is generated and analysed in-house. The data is not traded with third parties, but used for vertical integration or for e.g. enhancing the efficiency of internal processes or for improving client service. Of the remaining 22 %, 2 % are accounted for by open data sharing practices (e.g. "data philanthropy"), and 20 % by more or less well-developed markets (e.g. financial data).[107] However, the number of



Distribution of data sharing models
[Source: Deloitte, Impact assessment support study on emerging issues of data ownership, interoperability, (re)usability and access to data and liability. First interim report (forthcoming)]

organisations and companies seeking to sell their data or purchase new data sets from others to provide new business models and additional revenue streams is expected to increase exponentially.[108] Also, companies are opening up some of the data that they hold through Application Programming Interfaces ("**API**s") for access by third party applications. This practice can be said to follow the open innovation logic of spinning out assets that per se are valuable, but not necessarily for the organisation that owns it due to strategic misalignment or lack of resources.[109]

## 4.1. Input markets for data

An input market is where buyers and sellers of the input can conduct business, so that the buyers can satisfy their need of the input as a factor of production, and the seller can provide productive services (labouring or selling capital) in return for a remuneration. An example of this would be the early morning food market that a chef visits to pick out the produce that will be used in the menu of the day.

The discussion about defining a separate input market for data traces back to 2007, when the Federal Trade Commission ("**FTC**") approved the merger of Google and DoubleClick. In its 4-1 decision, a dissenting statement was issued by Pamela Jones Harbour arguing that the competitive analysis would be incomplete without assessing the impact on the input market for data, as the analysis that the FTC performed was too narrow and static in its scope where it should have been more dynamic and forward-looking.[110]

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[107] Commission Staff Working Document pp. 14-15
[108] Commission Staff Working Document p. 13
[109] ibid
[110] In regards of future merger decisions: *"it might have been possible to define a putative relevant product market comprising data that may be useful to advertisers and publishers who wish to engage in behavioral targeting."* - Dissenting Statement Of Commissioner Pamela Jones Harbour In the matter of Google/DoubleClick F.T.C. File No. 071-0170

This dissenting statement was later expanded upon and published as an article, co-authored with Harbour's attorney advisor, Tara Isa Koslov. In the article, the role of network effects in 2SP:s as a factor for maintaining a competitive advantage was discussed more in detail, with the use of Google as a thematic backdrop for the discussion (with a due reservation that Google was not asserted as being a dominant company, but merely used as an example of a highly innovative and successful company with a large market share).[111] By using a data market component in the competitive analysis, that is separate from the data *services* market, it would highlight the distinction between data collection at one point in time and the use of it at a later point in time when possible new opportunities for monetisation of the data might have appeared that were not previously there – something which Harbour and Koslov argues better reflects the business reality of the firms.[112] This scenario later became reality, as illustrated in the *Facebook/WhatsApp* merger and its aftermath.

In the European setting, the opportunistic gathering of personal data is somewhat restricted in the current Data Protection Directive 95/46 (art. 6.1) as it limits data collection to data that is adequate, relevant and not excessive in relation to the specifically specified purposes for which they are collected and/or further processed. This principle is upheld in the coming GDPR Directive 2016/679 art. 5.1.d (the "data minimisation" principle) and it is further integrated in other data protection aspects such as "data protection by design and default" (art. 25), which will make serendipitous use of data less viable than before.

Harbour and Koslov's argument was made in 2010 and in an American context, meaning that it was made several years prior to today's technological landscape and in a legal context that does not have as strict data protection rules as the European Union. Consequently, the main arguments for the use of a separate data-as-input market suggested by Harbour and Koslov are not as valid in the contemporary European discussion – but nevertheless, the main idea behind the argument, that an input market for data allows for a better and more accurate competitive analysis, still holds true.[113]

A market definition is an important tool for assessing the competitive constraints that companies face.[114] Considering the lack of alternative tools for assessing this, and the importance of data as a competitive asset, it stands to argue that a market definition for data is necessary so that the competitive constraints of companies can be properly identified.

Below, the possibilities of creating a hypothetical input market for data will be explored, something which could serve as a substitute to a classical market definition and function as the tool that is needed for assessing the competitive constraints in terms of data which companies face.

### 4.1.1. The legal setting for input markets as factors in competitive analysis

Is there a possibility for hypothetical markets in European competition law?

European competition law is open to consider that the relevant market in question may be that of the raw material used to manufacture the end-product.[115] Non-trade of the goods on that market does

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[111] Pamela Jones Harbour, Tara Isa Koslov, Section 2 in a web 2.0 – an expanded vision of relevant product markets, *Antitrust Law Journal*, vol. 76, pp. 783-787
[112] ibid, p. 773
[113] Graef, Market definition and market power in data, pp. 493 and 504-505
[114] Commission notice on market definition [1997] OJ 372/05, para. 2
[115] Joined cases 6 and 7-73, *Istituto Chemioterapico Italiano S.p.A. and Commercial Solvents Corporation v Commission of the European Communities*, para. 22

not prevent the market from existing.[116] It is even sufficient that the market is potential or hypothetical.[117] In *Microsoft*, it was confirmed that the relevant product market could be composed of an asset of a company which it refused to deal.[118]

Whilst all three statements above are supported by European case law, they all pertain to abuse of dominance and non-delivery (it is also worth noting that in the three latter cases, the non-delivery is in the form of refusal to grant an intellectual property license). The point I want to make with this caveat is that the hypothetical market has so far only been used in *ex post* cases concerning abuse of dominance, where the competitive harm can be shown, thus justifying the artificial nature of the market definition. Whether *ex ante* decisions warrant a higher degree of tangibility of the market is a question that we will only know the answer to if/when the Commission makes a decision concerning this, but in my view it is plausible that *ex ante* decisions imposes a stricter requirement of tangible proof that the market is not entirely hypothetical, as the grounds for the decision would otherwise be founded on too much speculation.

Since data is mainly *not* traded as a commodity today, traditional supply and demand cannot be said to exist. Hence, the relevant market for data as an input can only be hypothetical. An analysis involving the hypothetical market would in turn have to be built on assumptions on how such a market would be structured, and traditional competition law concepts such as the substitutability of the product could then be used within this hypothetical frame.[119]

In the Commission's notice on the definition of relevant markets, companies are said to face three primary competitive restraints: demand substitutability, supply substitutability, and potential competition (where the latter is not taken into account when defining markets, but once the position of the companies involved in the relevant market has been ascertained and their position gives raise for concerns from a competition point of view).[120]

While no competition case has led to an analysis of the market definition for data itself,[121] several of the Commission's merger decisions have touched upon how data plays a role in determining the competitive landscape prior to and after a merger. By analysing these cases and the already established terminology that the Commission is using in regards of data, the necessary elements and preconditions for a hypothetical market for data as input can be learned.

### 4.1.1.1.     Google/Doubleclick (2008)

The Commission defined the relevant product markets as "online advertising space", "intermediation in online advertising", and "provision of online ad serving technology".[122]

The Commission found that in regards of data collected by other online operators, the type of data collected by DoubleClick is relatively narrow in scope and not of *unique* and *non-replicable* qualities. Other companies active in online advertising have the ability to collect large amounts of more or less

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[116] Joined cases C-241/91 P and C-242/91 P, *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) v Commission of the European Communities*, paras. 7-10 and 24

[117] Case C-418/01 *IMS Health GmbH & Co. OHG v NDC Health GmbH & Co. KG.*, para. 44

[118] Case T-201/04 *Microsoft Corp. v Commission of the European Communities*, paras. 335-336, and 708

[119] This idea was, to the extent of my knowledge, originally proposed here: Graef, Market definition and market power in data, p. 495

[120] Commission notice on market definition [1997] OJ 372/05, paras. 13 and 24

[121] Almunia; Graef, Market definition and market power in data, p. 489

[122] COMP/M.4731 – *Google/ DoubleClick*, paras. 44-56, 57-73, and 74-81, respectively

similar information that is potentially useful for advertisement targeting, such as major web publishers by collecting registration and browsing data from the users of their sites. Also, internet service providers ("**ISP**s") can track all online behaviour of their customers, following them to every website they visit, which constitutes data that is much broader and richer than the data collected by DoubleClick. The commission concludes that the competition based on the quality of collected data is not only decided by the size of the data sets, but what different types of data the competitors have access to and which type will eventually prove to be the most useful for internet advertising purposes.[123]

From this I gather that a product market for data as an input would be very narrowly defined (which is in line with the Commission's general practice),[124] as the Commission acknowledges that different types of data are of varying utility for internet advertising purposes. Similarly, different types of data must then be of varying utility also for other purposes than advertising.

### 4.1.1.2.     TomTom/Tele Atlas (2008)

One of the product markets identified in this decision was that of navigable digital map databases.[125] Such a database can be described as a product of highly refined sets of big data, as they contain many elements, such as geographical data that has been aggregated with data about traffic rules, points of interest, and other relevant information for the map.[126]

The degree of demand side substitutability between digital map databases for navigation purposes and non-navigation purposes are held as limited, and the degree of substitutability on the supply side is held as one-sided, meaning that producers of high quality maps can easily make low quality maps but not vice versa.[127]

The providers of navigation software describes navigable digital map databases as a key input for navigation software. Subsequently, this makes navigable digital map databases also an input for device makers (who often partner with navigation software providers to create products).[128] Concerns were also voiced by downstream actors about the merged entity raising prices of for navigable digital map databases, providing databases of lower quality or delaying the availability of new features and updates.[129]

What makes this case special is that the data in it is a highly refined product, which consequently is also treated as a product much like any else (with the exception for its non-rivalrous qualities). This might give an important clue as to how to decide between using the data-enabled product's use as the determinant factor when defining the product market, or to use its data quality: the more refined and specific the data is, the more sense it makes to use the utility it serves as the determinant for the product market definition.

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[123] COMP/M.4731 – *Google/ DoubleClick*, paras. 269-273

[124] Ulf Bernitz, *Svensk och europeisk marknadsrätt. 1, Konkurrensrätten och marknadsekonomins rättsliga grundvalar,* Norstedts juridik, Stockholm, 2015, p. 142

[125] COMP/M.4853 – *TomTom/ Tele Atlas*, para. 38

[126] COMP/M.4853 – *TomTom/ Tele Atlas*, para. 18

[127] COMP/M.4853 – *TomTom/ Tele Atlas*, paras. 22-23

[128] COMP/M.4853 – *TomTom/ Tele Atlas*, paras. 164-165

[129] COMP/M.4853 – *TomTom/ Tele Atlas*, para. 190 – an example of "versioning" and "delaying" data to counteract pricing problems, discussed in: Carl Shapiro and Hal Varian, *Information Rules*, Harvard Business School press, Boston, Massachusetts, 1999, pp. 39 and 56

While this makes sense on the one hand, it would prove a problematic method in the long run as products can be expected to become increasingly complex, drawing upon an increasing number of suppliers for their parts. If data is treated like a mechanical part like any other in for instance a physical product, it becomes crucial to assess the level of refinement of the data so as to make the best possible product definition of it. It becomes paradoxical that the more refined the data is, the more likely it is to become treated like an input, whereas in practice it is rather the contrary: low-grade data is most often used as an input and high quality data is used or offered as an end product.

### 4.1.1.3. Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV (2012)

In this decision, the Commission assesses whether there are two separate product markets for providing data analytics for mobile contra static advertising, and the respondents – both suppliers and buyers of the product – think that there is no substitutability between the two, but the Commission leaves the question open as it has no significant impact on the analysis.[130]

One of the companies in the merger, JV Co, is of particular interest as it operates in a broad range of data analytics services. The Commission assessed whether the combining of personal information, location data, response data, social behaviour data and browsing data into a single database would become an *essential input* for providers of mobile data analytics services that would be hard to replicate.[131] However, the information available to JV Co is also to a large extent available to both existing and new market players, which consequently led the Commission to judge the geo-location aspect of the information to be of most interest as it was the hardest, although not impossible, for other actors to obtain or collect.[132]

From this, I deduce that the Commission holds that the data types of personal information, location data, response data, social behaviour data and browsing data is to be considered as substitutable on an input market for data (in the sense that other companies could theoretically collect the various types, not that the types are interchangeable with each other), meaning that a competitor is considered able to make do with data of the same type but collected from a different group of individuals.

### 4.1.1.4. Facebook/WhatsApp (2014)

The Commission's starting point refers back its decisions in *Google/DoubleClick* and *Microsoft/Yahoo! Search Business*, and concludes that online advertising constitutes a relevant market separate from offline advertising.[133] In the decision, the Commission analyses (among other things) the potential data concentration in regards of how likely it is to strengthen Facebook's position in the online advertising market and its sub-segments (concerns related to privacy are to be dealt with EU data protection rules, not competition law rules).[134] One of the two main theories of harm examined in regards of strengthening Facebook's position in the online advertising market is that WhatsApp could be used as a potential source of user data for the purpose of improving the targeting of Facebook's advertising activities outside of WhatsApp.[135]

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[130] Case No COMP/M.6314 – *Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV* paras. 199-203
[131] COMP/M.6314 – *Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV paras*. 539-541
[132] COMP/M.6314 – *Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV paras*. 543-545
[133] COMP/M.7217 – *Facebook / WhatsApp*, para. 79
[134] COMP/M.7217 – *Facebook / WhatsApp*, para. 164
[135] COMP/M.7217 – *Facebook / WhatsApp*, paras. 167 and 180

As mentioned previously, in order for Facebook to enact the theory of harm it would have to change WhatsApp's privacy policy and perform a technical integration of the profiles on WhatsApp and Facebook. The feasibility of whether the latter was achievable or not was contested amongst respondents and the Notifying Party.[136]

When it comes to the Commission's analysis of the substitutability of the advertising platform itself, the market investigation indicated that Facebook is an important advertising avenue (due to its large and highly engaged user base), but that there are also a sufficient number of alternative providers of advertising services that compete with Facebook (such as Google and its various offerings, Yahoo!, MSN and local providers.[137] Furthermore, the Commission also noted that there are a significant number of market participants that also collect user data alongside Facebook, and provided a graph to overview an estimate share of data collection across the web (see the figure to the right).[138]
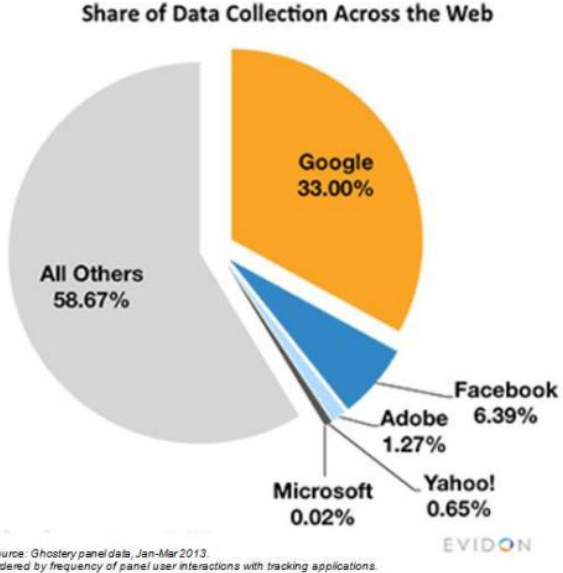
I am not contesting the numbers presented in the graph, and it should be noted that it is presented by the Commission purely for illustrative purposes, but I still find it possible to argue that there is a problematic element in the Commission's broad strokes in regards of data. As I have discussed in relation to the cases above, different types of data are of varying utility for internet advertising purposes, and similarly, different types of data must then be of varying utility also for other purposes than advertising – a sentiment discussed by the Commission in the *Google/DoubleClick* merger decision.[139] In the decision at hand, the Commission mentions a number of companies (Google, Apple, Amazon, eBay, Microsoft, AOL, Yahoo!, Twitter, IAC, LinkedIn, Adobe and Yelp, among others), that collects data on the web,[140] but what is necessary to do – albeit laborious – is to analyse what types of data the companies are best posed to collect, and what niches of customer segments will be interested in that data.[141]

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[136] COMP/M.7217 – *Facebook / WhatsApp*, para. 185

[137] COMP/M.7217 – *Facebook / WhatsApp*, para. 177 (I personally find it curious that Yahoo! and MSN are mentioned as feasible alternatives in Europe, 2014)

[138] COMP/M.7217 – *Facebook / WhatsApp*, para. 188. The following footnote accompanies the graph (107), here cited in its entirety: *"The data in this graph originate from an external market intelligence company and have been produced for purposes unrelated to the assessment of the Transaction. Those data are presented here for purely illustrative purposes and are without prejudice to any possible market definition as regards the provision of data, which, as explained above paragraph (72) is not covered by the Commission's assessment in the present decision."*

[139] COMP/M.4731 – *Google / DoubleClick*, paras. 269-273

[140] COMP/M.7217 – *Facebook / WhatsApp*, para. 188

[141] The professional network LinkedIn, for instance, would currently not be a good place to find the next pop idol, but perhaps rather a talented young individual. Similarly, I assume that AOL and Yahoo! mostly caters to an audience of users that used the net prior to the advent of Google, and hence displays certain demographic characteristics such as middle age and above and a large share of male users. These are my own assumptions.

The Commission concludes that regardless of what the merged entity will do with the WhatsApp user data to improve targeted advertising on Facebook's social network, there will continue to be a large amount of internet user data that are valuable for advertising purposes that is not within Facebook's exclusive control.[142] In addition to the concerns I raise about the colour-blindness in regards of what data is valuable, the notion of exclusive control also warrants comment: exclusive control of data that is present on the web is hard to have, both before and after it has been collected, and the dimension of non-rivalry needs to be more nuanced in a competitive analysis.

If the reasoning used by the Commission in this decision would be used to define a relevant market for data, that market would in effect become the one-and-only market for all data there is, not taking into consideration the notions different types of data which are not substitutable with each other that has been used in previous decisions. The reason for this divergence in reasoning is not clear to me.

### 4.1.1.5.  Microsoft/LinkedIn (2016)

In this merger decision, data does not play a pivotal role in the analysis, but is nevertheless analysed in regards of sales intelligence solutions (a form of customer retention system ("**CRM**") that provides sales professionals with background and contact information about individuals (such as name, address, phone number, place of employment, title and position, etc.) or companies (such as financial information and metrics, organisational hierarchy and leadership structure, company's products and services, industry background, etc.).[143] Also, data becomes relevant in regards to search/non-search advertising, which is also a component of the analysis.[144]

In the horizontal perspective, the post-merger combination of data from LinkedIn is restricted by national data protection rules and relatively soon also even more restricted due the GDPR.[145] However, this finding can be construed as somewhat naïve and forgetful of past experiences, as Facebook proceeded to do just that (change the privacy policy of WhatsApp) subsequent to the acquisition (the data sharing with its new parent company led WhatsApp to being fined by the Italian competition authorities).[146]

The Commission entertains a hypothetical argument in which the combination of data is allowed, and discusses two ways in which a merger may raise horizontal issues because of the combination of data, one of which is of particular interest for the investigation in this chapter:

> *"the combination of two datasets post-merger may increase the merged entity's market power in a <u>hypothetical market for the supply of this data</u> or increase barriers to entry/expansion in the market for actual or potential competitors, which may need this data to operate on this market. Competitors may indeed be required to collect a larger*

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[142] COMP/M.7217 – *Facebook / WhatsApp*, para. 188

[143] COMP/M.8124 – *Microsoft / LinkedIn*, para. 57

[144] COMP/M.8124 – *Microsoft / LinkedIn*, para. 161

[145] COMP/M.8124 – *Microsoft / LinkedIn*, paras. 176-178

[146] Nic Fildes and James Politi, "WhatsApp fined €3m over Facebook data sharing in Italy", *The Financial Times* [online], 12 May 2017, https://www.ft.com/content/2fdb5f34-3728-11e7-bce4-9023f8c0fd2e?mhq5j=e1 (accessed 4 July 2017)

*dataset in order to compete effectively with the merged entity than absent the merger."[147]*
(My underline)

Compared with the reasoning in the *Facebook/WhatsApp* decision, the Commission can be said to make a more careful analysis here which successfully captures a complex and dynamic reality. Unfortunately, as this data aspect is not crucial for the Commission's analysis nor particularly realistic due to privacy rules, the statement is left without elaboration upon – but nevertheless, it shows that the Commission is open to consider a hypothetical market for the supply of data. The market is in this case indeed hypothetical, as neither party in the merger makes their respective data available to third parties for advertising purposes (save for limited exceptions),[148] thus making the traditional supply- and demand logic inapplicable.[149]

In regards of machine learning in CRM software solutions, the Commission notes that there are many other possible sources of data available,[150] and that even if LinkedIn data were to be used for such applications, it would only constitute one of many types of data needed for that purpose.[151]

As such, this case is very interesting as it confirms that the Commission has knowledge and understanding of the particularities of a data economy, both in terms of what data is used and required, but also how it can serve as an input for companies in its "raw" form (as opposed to its "refined" form, discussed in *TomTom/Tele Atlas*).

## 4.1.2. Summary of case evidence and support for a data-as-input market

The Commission's merger decisions focus mostly on the end-product made with the data, analysing this more carefully than the implications that the merger has on the data ecosystem in which it resides. While not necessarily being a conventional part of the analysis, assessing ecosystem implications might become increasingly crucial in the digital economy as innovation is one of the strongest means of competition in it.[152]

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[147] COMP/M.8124 – *Microsoft / LinkedIn*, para. 179 – the sentiment that the data could constitute an important input in the near-future was also voiced by actors participating in the market investigation, but then in a vertical capacity (para. 246)

[148] COMP/M.8124 – *Microsoft / LinkedIn*, para. 180. A similar hypothetical licensing argument is made in para. 251

[149] A curious aspect here is that the Commission does not take into consideration is that while LinkedIn have not licensed out data, it has been scraped of it by unknown third parties that have registered fake profiles on the website. The scraping was performed by creating bots that made connections with regular users and scanned their profiles for information. This could be taken as a sign that the hypothetical input market for certain types of data might not be so hypothetical after all, considering the effort someone put into obtaining the data illicitly: Nicole Greenberg, 'The LinkedIn lawsuit: you can run, but you can't hide', *Recruiting Daily*, 10 January 2014, http://recruitingdaily.com/linkedin-lawsuit-truth-nothing-truth/ [accessed 10 March 2017]. The lawsuit itself can be accessed from here: https://docs.google.com/file/d/0B3nkpzjcqB1nTUk0VC1YZ25hdXM/edit.

[150] COMP/M.8124 – *Microsoft / LinkedIn*, para. 262

[151] COMP/M.8124 – *Microsoft / LinkedIn*, para. 259

[152] "[T]he *Commission notes that the consumer communications sector is a recent and fast-growing sector which is characterised by frequent market entry and short innovation cycles in which large market shares may turn out to be ephemeral."*: COMP/M.7217 – *Facebook / WhatsApp*, para. 99. However, the idea that competition authorities can be more lax with data and tech companies due to the abundance of disruptive innovation in the field is disputed, for instance in *The Black Box Society*, where the author emphatically states that "[i]n [the members of the congressional committee's] imaginations, Google's own rags-to-riches story foreshadowed its eventual displacement": Frank Pasquale, *The Black Box Society – The secret algorithms that control money and*

Also, as shown in the *Google/DoubleClick* decision, the Commission is inclined to make narrow definitions of the product in question to create narrow market definitions. In light of how particular data is in regards of type and content, and how dependent its value is on the capabilities of the entity controlling it, there is a paradoxical element in the Commission's approach: the more narrow and specific the commission tries to define the data, the more elusive and enigmatic it will become as the data appears increasingly worthless the closer one looks at it.

In the table below, I have summarised how the Commission has treated data in the merger decisions discussed above. As can be seen, there are several indications that taking a more nuanced approach to data in a merger or competition analysis would neither conflict with nor be disconnected from the Commission's earlier methodology.

| Table: summary of merger decisions | Data can be viewed as a product | Not all data is the same: different types of data can be discerned | Data can serve as an input for other endeavours | It is possible to consider a hypothetical market for data as input |
|---|---|---|---|---|
| *Telefónica UK/Vodafone UK/Everything Everywhere/JV* | | X | X | |
| *Google/Doubleclick* | | X | | |
| *TomTom/Tele Atlas* | X | X | X | |
| *Facebook/WhatsApp* | | | X | |
| *Microsoft/LinkedIn* | | X | X | X |

Furthermore, in the *Microsoft/LinkedIn* merger decision, the Commission explicitly mentions a hypothetical input market for data as a tool for assessing a measure's compatibility with the internal market, which is a strong indication that such a method might in fact be used in future decisions.

In the section below, I will try to explore how such a hypothetical market could be constructed and understood, so that it could be a useful tool in a competitive analysis which would be helped by having a relevant market for data as a component of the analysis.

## 4.2.  Constructing a hypothetical market for data as an input

When defining the relevant market, existing case law is used when so can be done, and otherwise the Commission's notice on market definition provides guidelines as to how the market is defined. The main purpose of defining the relevant market is to systematically ascertain what competitive restraints the concerned companies are subjected to, and the purpose of defining both a product market and a geographical market is to identify the actual competitors of the undertaking in question that have the ability to constrain their behaviour and hinder them from acting independent of an effective competitive pressure.[153]

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*information*, Harvard University Press, First Harvard University Press paperback edition, second printing, Cambridge, Massachusetts, 2016, p. 81
[153] Commission notice on market definition [1997] OJ 372/05, para. 2

A relevant product market is defined as comprising "*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.*"[154]

A relevant geographical market is defined as comprising "*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 neighbouring areas because the conditions of competition are appreciably different in those area.*"[155] Due to constraints in the format of this thesis and the supranational nature of the internet (as it is today), the question of the relevant geographical market for data within the EU will not be pursued any further. I will conduct the following analysis under the assumption that the relevant geographical market for data is the entire EU, as there are no infrastructure barriers and otherwise negligible barriers to transport and trade, such as language and localised data protection rules.

The basic principle of defining the relevant market is based on the idea that companies face three types of competitive restraints: 1) demand substitutability; 2) supply substitutability; and 3) potential competition. Demand substitutability is considered the strongest factor as an undertaking cannot be said to have significant impact on the prevailing conditions of sale if its customers are in a position to easily switch between available substitute products. The effects on the supply side substitutability is less immediate, and thus considered at a later stage of the competition analysis.[156]

Picking up on the definition of the relevant product market, data will now be analysed in regards of its price and intended use, while its characteristics will only be briefly touched upon in this chapter, to be explored more in depth in regards of how it can lend market power to the undertaking controlling it. After this, the demand and supply side substitutability will be discussed.

## 4.2.1. Determinants of price of data – what is the price that companies pay to get data?

The assessment of demand substitution entails a determination of the range of products which are viewed as substitutes by the consumer (in this case, the companies using the data as an input). One way of doing this is by using quantitative tests or speculative experiments, postulating a small but lasting change in the prices of the product and evaluating the expected reactions of the customers.[157]

As already discussed, most often data comes without a fixed price. Consequently, the question of the price of data boils down to one of transactions: can only transactions where goods are exchanged in trade for money be used in competition law? Is it possible to use other transactions? In the business reality of today, there are several indications that there is a market for data despite the lack of a traditional market and price tag for it. Below, a few principal methods for reaching a hypothetical price tag of data are discussed.

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[154] Commission notice on market definition [1997] OJ 372/05, para. 7
[155] Commission notice on market definition [1997] OJ 372/05, para. 8
[156] Commission notice on market definition [1997] OJ 372/05, paras. 13-14
[157] Commission notice on market definition [1997] OJ 372/05, para. 15

### 4.2.1.1.    Users' consent as payment

*"If you are not paying for it, you're not the customer; you're the product being sold."[158]*

As the quote indicates, it is possible to regard "free" as not actually being free. Google and Facebook are prominent examples of companies marketing some of their services as "free" whilst the use of the services makes possible the collection of personal information about the users, either directly collected from them with consent, or indirectly by observing and inferring data from their behaviour.[159]

Empirical research has revealed that personal data have an economic value to individuals and that such data can be 'monetised' by businesses providing digital content and digital services.[160] The discussion is not so much centred around the question of whether or not user data can be seen as a remuneration for a service, but rather how to gauge this in an objective way.

A clear indication of the significance of personal data in transactions can be found in *The proposal for a directive on certain aspects concerning contracts for the supply of digital content*. In the proposal it is suggested that within the scope of the directive should be contracts where the supplier supplies digital content in exchange for an economic price, or other (active) counter-performance by the consumer in the form of personal data or any other data.[161] The correlation between user data and service is further consolidated in regards of termination of the contract: if the consumer opts to terminate the contract due to non-conformity of the delivered digital content, the supplier shall *"take all measures which could be expected in order to refrain from the use of the counter-performance other than money which the consumer has provided in exchange for the digital content and any other data collected by the supplier in relation to the supply of the digital content including any content provided by the consumer"*.[162] While this is (yet another) strong indication that user data can be regarded as a commodity,[163] notions of a "propertisation" of user data[164] must in the current situation – according

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[158] Posted by posted by blue_beetle at 1:41 PM on August 26, 2010, MetaFilter [online] http://www.metafilter.com/95152/Userdriven-discontent#32560467 (accessed 11 July 2017)

[159] Atorité de la concurrence and Bundeskartellamt, pp. 1-7

[160] European Parliamentary Research Service (EPRS), author: Rafał Mańko, *Contracts for supply of digital content A legal analysis of the Commission's proposal for a new directive*, May 2016. The Commission quotes a study saying that 81% of EU consumers think that their data have a value: Impact Assessment Accompanying the document Proposals for Directives of the European Parliament and of the Council (1) on certain aspects concerning contracts for the supply of digital content, Brussels, Brussels, 17 December 2015, SWD(2015) 274 final/2, supply of digital content 1(b) (page 123 of the .pdf-version)

[161] Proposal for a Directive of The European Parliament and of The Council on certain aspects concerning contracts for the supply of digital content, Brussels, 9 December 2015, COM/2015/0634 final - 2015/0287 COD, art. 3.1. Excluded from the scope is when the counter-performance is only given to the extent of what is strictly necessary for the performance of the contract (art. 3.4). As a caveat, this discussion is focused on consumer protection and not competition – however, the discussion has some relevance for questions about competition as well: *"Covering only digital content paid for with money would discriminate between different business models – it would provide an unjustified incentive for businesses to move towards offering digital content against data."*: page 123 of the .pdf-version of the Impact Assessment.

[162] Proposal for a Directive on certain aspects concerning contracts for the supply of digital content, art. 13.2.b.

[163] As already mentioned above in COMP/M.6314 – *Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV*, para. 543

[164] Such as this dissertation on the propertisation of personal data: Nadezhda N. Purtova, *Property rights in personal data: A European perspective,* PhD diss., Tilburg University, 2011 [online] https://pure.uvt.nl/ws/files/1312691/Purtova_property16-02-2011.pdf (accessed 12 March 2017).

to me - be held as somewhat futuristic and fanciful due to both the practical and legal complications surrounding the matter.[165]

Fitting the would-be transaction between the user and provider of a service into a familiar legal or economic concept is hard, as the scope of the transaction from the side of the user is very unclear. Despite the user being familiar with the concept that they give access to their personal information when they use the services, they have little or no control over the amount and type of information that they use to gain access to the service, as the web services are offered on a take-it-or-leave-it basis (where A: the typical user cannot be expected to critically read the entire end users' agreement and privacy policy, and B: even if the user would do so, they are also pressured by network effects and consequences of missing out of not joining for instance the social network).[166] As such, for the actual user of a service the concept of data disclosure vis á vis privacy becomes more of a gut feeling rather than an economical decision, and has therefore thus far in the legal setting been treated as more of a question of quality, rather than quantity.[167]

Correlating a price on personal data or the consent for it to be collected with its perceived value on the other side of the transaction becomes problematic from an economical perspective, as the instrumental value of data depends on the context, and factors such as the size and scope of the data.

To summarise, the question still stands as to the value of personal data. Until we see parallel payment solutions offered where the user can decide to pay with either money or personal data, we will probably never learn the exact value of personal data by using this approach. As put by Competition Commissioner Margrethe Vestager: "*the exchange rate between data and services isn't reported on the news.*"[168]

### 4.2.1.2.    Damages

In regards of quantitative measurements of the value of data, court decisions awarding the parties damages for infringements upon their IPRs protecting databases, or for theft of corporate secrets, could be an indication of the value of personal data. This is on the other hand problematic as data does not commonly fall under protection due to it being a database or business secret. Unfortunately for this investigation, no such court decision that concerns unwanted dispersion of personal data has come to my knowledge. Black market prices for collections of stolen data (such as account names and corresponding passwords) is most likely not a relevant indication of a price on the white market.

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[165] The propertisation of rights so as to make them usable as capital has been argued as an important aspect of western capitalism (Hernando de Soto, *The mystery of capital : why capitalism triumphs in the West and fails everywhere else*, Bantam, London, 2000), and there are signs within the field of copyright that the technology of distributed ledgers can be used to "watermark" copyrighted images so as to keep track of their use online (see for instance the service offered by the company "Binded" https://binded.com/ (accessed 13 July 2017)). Therefore I would say that it is possible to envision the same principle extended to personal data, and also not entirely improbable, as companies will have to accommodate for interoperability and transferability of personal data so as to avoid consumer lock-in effects, due to the GDPR. However, these considerations are purely speculative.

[166] This concept is originally discussed by Graef, Market definition and market power in data, p. 490

[167] The Commission acknowledges this in para. 87 of COMP/M.7217 – *Facebook/ WhatsApp*. For more information on data protection as a quality factor, see: Victoria Volny, *Personuppgifter som valuta i den digitala ekonomin*, degree project for a Degree in Master of Laws, Department of Law, Lund University, 2016

[168] Margrethe Vestager, *Competition in a big data world*, speech at DLD 16, Munich, 17 January 2016, available here https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/competition-big-data-world_en (accessed 4 July 2017)

### 4.2.1.3.    Mergers and acquisitions

The deal value can give valuable information on how the data held by a company is valued by a company on the market, when for instance the annual turnover of the target company is very low (as was the case in the *Facebook/WhatsApp* acquisition). As mentioned before, this method will be implemented in national German merger reviews.[169]

The root of the problem when it comes to fixing a monetary value on data is that it depends on whose hands the data is in, and what other sets of data that it can readily be used in combination with. Therefore, the price that Facebook is willing to pay for WhatsApp is much higher than that of what for instance a Swedish mining equipment manufacturer would be willing to pay, as Facebook can identify and profit from more synergies and possible uses for the WhatsApp technology and user base, than what the mining company can be reasonably be expected to.

In merger decisions, this question becomes seemingly simple as the price tag for the deal is disclosed during the Commission review, but some problems are easy to predict: if the acquired company has several assets, a specific asset pricing list is necessary to learn the value of the data, and if no such list the possibilities of valuing the data high or low becomes extensive. In situations involving possible abuse of dominance or illegal horizontal agreements however, the question becomes more complex, but can possibly be solved by looking at previous historical transactions and comparing how many of the data synergies and capabilities where then identified, and now applicable to the situation at hand.

The consequences of this would be that two companies that offers digital services to the customer side which both has a low market shares, could in fact be large actors on the data-as-input side of the market.[170] If guidance is used from past acquisitions, the hidden value of these companies may become more apparent. Furthermore, transaction pricing thresholds would only apply when one company has the financial means of making an offer for acquisition that exceeds the threshold, but not be applicable for deals actors with little financial strength but with considerable data assets.

### 4.2.1.4.    Generated revenue

Similar to the method of looking retrospectively at conducted M&A deals, insight to the value of data can be learned from how well it can be turned into profit. Inge Graef discusses this as a method of discovering the competitive strength of actors that are active in the market for data,[171] but I believe that the method can be equally as useful for constructing the price of data that enables the definition of the relevant market for data.

By looking at the annual turnover from a product or service enabled by data, traditional valuation methods can be used to reach a reasonable price for the company in the case of an acquisition (for instance, using a multiple of the revenue or a discounted cash flow technique). This can be adjusted in relation to what additional investments are required to enable the generation of revenue, such as hardware and expertise.

This technique becomes effective when used to assess the price tag of mature companies with steady operations, but less so in the case of companies not yet generating revenue – as was the case with WhatsApp prior to the Facebook acquisition. It becomes even more problematic when the product or

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[169] Berg and Weinert, *Transaction-value merger threshold soon to be in force in Germany – update on the 9th ARC revision*

[170] This possibility is mentioned in: Vestager, *Big data and competition*

[171] Graef, Market definition and market power in data, p. 502

service is offered for free, and the founders of the company are intent on being acquired due to their user base or data asset.

## 4.2.2. Demand substitutability of data

The troubles with discerning a golden method for determining the price of data is caused by the same thing that makes assessments of demand substitutability regarding the price of data so difficult, namely that the instrumental value of data is dependent on the capabilities of the company controlling it. Therefore, the substitutability in terms of price becomes problematic, as the field of *use* of data is highly varying.

Product characteristics and intended use are insufficient to show whether two products are demand substitutes, and other criteria of substitutability must be considered.[172] One such criteria is the barriers and costs associated with switching demand to potential substitutes, which on the one hand is highly relevant in the case of companies using data as an input, but on the other hand barren when it comes to finding relevant case law. For instance, the reasoning of the Commission in *Tetrapak* as to the switching costs is hard to transpose into a digital context: when faced with shifting from the production of non-aseptic to aseptic milk cartons, the need for complex technology to manufacture the necessary machinery demonstrated a sufficient lack of interchangeability.[173]

The Commission's notice on the definition of relevant market does clearly state that it is not possible to provide an exhaustive list of barriers to substitution and of switching costs, but gives as an example costs in learning and human capital investments.[174]

If for instance a business is combining two different sets of data to enable its commercial offering, the qualities of the respective data sets dictate the level of substitutability of the other: a German post order company that cross-references street addresses with weather forecasts would for instance not be able to substitute its collected personal data with personal data from people in the same demography, but different geography (such as for instance, Argentinian e-shoppers).

### 4.2.2.1.  Price sensitivity

As it comes to price, the company reliant on a specific stream or supply of data is subject to being in a weak bargaining position due to the lack of viable alternatives. Often, a company is founded on the basis of a singular business idea, which in the case for data entrepreneurs is an identified opportunity in regards of a source of data (such as in the case of Bumbee Labs, being able to collect information about visitors to physical venues using wifi).[175] The elasticity of demand, in other words what the company is willing to pay for the data, becomes very high as there are presumable none or few viable alternatives to the data upon which the company is dependent, once the company is up and running.

As it is common for startups to operate with losses in their initial phase, and to be dependent on continual investments from parties that believe that the startup shows promise of future prosperity,

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[172] Commission notice on market definition [1997] OJ 372/05, para. 36

[173] C-333/94 - *Tetra Pak International SA v Commission*, para. 19

[174] Commission notice on market definition [1997] OJ 372/05, para. 42

[175] Swedish readers can get an introduction to the company here: Jonas de Lange, Bumbee Labs kartlägger hur du rör dig – nu investeras miljonbelopp i deras tjänst, *Breakit*, 10 March 2017, [online] http://www.breakit.se/artikel/6824/bumbee-labs-vaxlar-upp-med-12-5-miljoner-i-kassan (accessed 24 March 2017)

one can expect that a critical aspect of the investor's vetting of the startup is the stability of the data source upon which it relies. If the startup subsequently faces an increase in supply price of its necessary data, the decision to "pull the plug" will ultimately be made by the investor and not the founders of the startup, meaning that it is of no significance if the company itself could be willing to pay virtually any price to keep its supply of data secure. Therefore, it becomes very hard to use the price sensitivity as an indication for substitutability of data for a company.

### 4.2.2.2.       *Use*

Broad categories of use, as subsets to the market of data, can be identified from European merger decisions and from a basic typology of existing companies that utilise big data. It has been suggested that the functionality enabled by the different kinds of data are correlated to the business solutions in which they are utilised: search data, social network data, and e-commerce data.[176] This would mean that distinct putative input markets could be modelled upon this categorisation.

I believe that it is a good start, and that is certainly has confirmation in both case law and practice, but that it must be recognised as only a start and not as a final solution. Future competitive analysis must be flexible to adapt to the situations at hand, and be conscious that innovation and unexpected cross-breeding of information is what will shape the market in the future. It is difficult to predict how the use of data will evolve in the future, and as brought up to attention in the *Microsoft/LinkedIn* merger decision "there is not one dataset with the highest value [as input for machine learning], but that it is about having numerous types of data."[177] Therefore, stereotypical contemporary ideas of data should not be allowed to dictate future competitive assessments in terms of market definition.

## 4.2.3. Supply substitutability in terms of the use of the data

As for supply side substitutability, it may be taken into account in situations where its effects are equivalent to those of demand substitution in terms of effectiveness and immediacy, meaning in practice that suppliers can switch to produce the relevant products and market them in short time so as to compete with the undertaking in question.[178] Most typically, these situations arise when companies market a range of qualities and grades of one product.[179]

For the sake of defining the relevant market for data, the idea that if there is only one actor producing the data in question and that there consequently is no market for it, can be countered by the proving the existence of another actor that can readily and easily switch to producing the data in question. For data, the supply side substitutability can be described as one-sided.

The *TomTom/Tele Atlas* merger raised interesting questions about the substitutability of data when it has been packaged in the form of a product (as a navigable digital map database), as the Commission found that on the demand side, higher quality data can be substituted for lower quality data, but not vice versa. Similarly, on the supply side, a producer of high quality data can easily switch to producing low quality data, but not vice versa.[180] This is what I call a one-sided substitutability.

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[176] Graef, Market definition and market power in data, p. 497
[177] COMP/M.8124 – *Microsoft / LinkedIn*, para. 261
[178] Commission notice on market definition [1997] OJ 372/05, para. 20
[179] Commission notice on market definition [1997] OJ 372/05, para. 21
[180] COMP/M.4853 – *TomTom/ Tele Atlas*, paras. 22-23

In order to effectively collect large amounts of personal data, there have to be an incentive for the consumer that outweighs any reluctance of sharing the data (as mentioned in 4.2.1.1 (Users' consent as payment). This could for instance be a useful service, a unique and high quality product, or a platform in the position of enjoying a strong network effect. One could safely assume that if any of these would be possible to achieve easily without significant costs of capital and time, someone would already have done it and alternatives would exist. The market can be assumed to be saturated, creating difficult obstacles for new entrants to overcome.

## 4.3. Conclusions

A hypothetical market for data as an input could surely be defined in cases involving an abuse of a dominant position, and probably also as a component in merger reviews. In the former case, demand for the product on the hypothetical market would be certain and that would be enough to justify the use of a hypothetical market, whereas in the latter case the market dynamics are of greater importance – thus requiring the model of the hypothetical market to be more detailed.

Constructing the details of the hypothetical market for data as an input is encumbered by difficulties, such as ascertaining the price of data. Doing so forces one to look at its other characteristics, including "intended" use. As there is no "intended" use for data this becomes very hard. The only characteristic of data that can be said to vary is what information it carriers.

The question of substitutability for the user of the data as input (the demand substitutability) becomes very hard to approach, as businesses can be assumed to be built upon an identified opportunity to be exploited, rather than based on a given activity that the business owners wishes to pursue. Furthermore, the business might be dependent on two or more sets of data that is combined or otherwise modified to provide the output of the business – this can lead to one input of data dictating the specifications of the other input of data. Due to this opportunity-dependency, the possibilities to change the supply of data becomes unrealistic as the scope of useful replacement data becomes very narrow.

Even if only one actor supplies a certain type of data at a given point in time, it is possible that other actors could enter the supply market if the economic incentives for doing so presented themselves. For this to be realistic, they must presently hold data of an equally or higher level of quality than what is demanded by the potential customers, so that they can offer existing or downgraded data without investing in means to establish a means of collecting the data in question. Given the level of concentration in markets characterised by the presence of digital platforms, there are few actors already present on the market with operations capable of serving these needs.

The purpose of defining a hypothetical market for data as an input would be to have a tool for assessing the market structure and competitive forces on the market.[181] The primary conclusion that can be drawn from the analysis in this chapter is that the market structure and competitive forces shaped by data are very different from those of "traditional" (physical) markets.

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[181] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 14; Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 24

Despite this, data cannot be completely de-coupled from the products or services it enables, as this could lead to results that are deceptive of the state of competition on the market: for instance, the merger thresholds become ineffective, or the HHI becomes skewed.

# 5.    Assessing market power in markets for data

To establish the division of market power in a market, that market must be defined. The primary way of establishing the market shares for each supplier is to calculate it on the basis of their "sales" (of data, in this case). Both the volume and value of sales are used. Additional methods depend on the specific industry or products in question, such as e.g. units of fleet (aerospace industry) or reserves held (mining products).[182]

Given the difficulties with A) defining a market for data, and B) finding quantitative information in it, the preconditions for a classical assessment of market power in the hypothetical market for data as an input are not at hand.

Inge Graef discusses the problems with using a quantitative approach to the problem: an alternative but still objective method would be to use the revenue of the undertaking in question as an indication of its ability to monetise the data, in consequence using the companies' annual turnover as the key for attaining the relative market shares of them. This approach, however, presupposes that the undertaking is not offering its products or services for free or otherwise has multisided nature where the subsidy of one side's access to the products or services are made up for by the revenues generated from the other side. This was the case with WhatsApp, Inge Graef explains, and points to the fact that the "real" product market (consumer communication services) was used by the Commission in the merger decision. Graef's approach does however not, to the extent of my understanding, describe what numbers the company's turnover would be compared with. The relevant market could be composed of either other providers of substitutable data through licensing, other deliverers of targeted advertising services, or other products or services having data as its input. [183] In my opinion, this approach does not expose the market dynamics generated by data.

Two scenarios can be drawn up where data is the centre of a competitive assessment: A) is where the data in question can be deemed as adequately substitutable between actors, such as for instance personal data pertaining to e-consumers; and B) where the data is held by only one undertaking and not traded with or having any viable alternatives on the "market". A quantitative value/volume approach as suggested by Graef is possible to use in the former case, but not the latter.

Therefore, in the cases of B), other indicators of market power must be used. This entails a detailed assessment of what data the undertaking controls in terms of type and quality, which must be considered in relation to the nature of the undertaking's business model. As can be seen in Appendix 1, the characteristics of the big data eco-system is complex and involves many businesses at different levels, interacting with each other on often multisided markets.

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[182] Commission notice on market definition [1997] OJ 372/05, paras. 53-55
[183] Graef, Market definition and market power in data, p. 502

## 5.1. An approach based on the big data value chain

The think-tank CERRE (Centre on Regulation in Europe) suggests that competition authorities *"should keep a broad view taking into account the main characteristics of the eco-system and the relationship between markets"*, where the main characteristics includes: the presence of direct and indirect network effects; that the relationship between the different markets that are often multi-sided in nature; and the rate of innovation, which is often unpredictable and disruptive.[184] Furthermore, multi-homing and the "experience curve" of self-learning algorithms are suggested as characteristics that should be considered, but I am personally sceptical towards these factors: the latter is a technically specific aspect of the economies of scale (thresholds), and the former is discussed below in <u>Appendix 1</u> and by me deemed to not have a significant impact to be given so much consideration in a competition assessment.

The essence of CERRE's approach is to look at the first and last "steps" of the big data value chain (collection and analysis, respectively) and assess how they affect each other.

### 5.1.1. Data collection

Data as a non-rival goods[185] is modified by a number of factors, which CERRE concludes are either technical, legal, or contractual in nature. These factors affect the *availability* of data. The question then comes to whether the data is *replicable* and thus not constituting a restriction on competition, which the Commission has found in a number of cases concerning data-rich undertakings.[186] This is contrasted with examples of (national) competition cases where the data was deemed non-replicable, as the result of it having been gathered during a legal monopoly.[187]

What is missing in this – otherwise useful – structuring of methodology, is the fact that an additional restraint upon the availability of data is constituted by practical constraints on the side of the end-user: a person can only participate in so many social networks at the time, and shop so many shoes or ties per month – in consequence the "supply" of demand is constant and to a large degree rival, thus constituting a practical restriction on data collection. An example of an ambitious attempt at displacing Facebook as dominant social media platform is Google's own platform Google+, which failed to amount a critical mass of users to be held as a general success – one of the reasons for which was that people were already participating in one big social network and had little need for another one. Data that can be considered replicable, such as data collected from Facebook, may in effect not be replicable due to the strong user loyalty towards Facebook and disinclination to share the same information on other places.

### 5.1.2. Data analysis

The analysis of data is dependent on the quality of the data at hand, and the capability to analyse it. The quality of the data can be said to be affected by the economies of scale and scope.[188]

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[184] CERRE, p. 29 – for an elaboration on this point, see <u>Appendix 1</u>.
[185] see <u>0 Data is a non-rival goods</u>.
[186] COMP/M.4731 – *Google/ DoubleClick*, paras. 364-366; COMP/M.7217 – *Facebook / WhatsApp*, paras. 167-189; COMP/M.8124 – *Microsoft / LinkedIn*
[187] Atorité de la concurrence, Bundeskartellamt, pp. 31-32
[188] See <u>Appendix 1</u> for elaboration.

Economies of scale has been analysed in depth in regards of search engines in the merger decision of *Microsoft / Yahoo! Business Search*. The question was of the relative impact additional search queries have on the quality of the search engine overall, where infrequent and unique search strings (so-called "tail queries") can be argued to play a significant part in this.[189] Economies of scope was discussed in the *Google / DoubleClick* merger decision, where the Commission noted that not only the size of the volume of data matters, but also by the different types of it.[190] Furthermore, as my analysis in 4.1.2 (Summary of case evidence and support for a data-as-input market) shows, the importance of the type of data has clearly been identified by the Commission on a number of occasions.

I agree with CERRE in their conclusion that the extent of the economies of scale and scope are empirical questions which should be tested in each case on the basis of the type of data and application at hand.[191]

## 5.1.3. The relationship between collection and analysis of data

CERRE concludes that there are several parts of the big data value chain that are interrelated and that there may be feedback loops between the collection and analysis of data, which increases the efficiency in the former.

Two particular feedback loops are suggested: 1) the user feedback loop; and 2) the monetisation feedback loop. In the former, an increase in the number of users is supposed to enable an increase in the quality of the service, thus attracting more users. In the latter, a 2SP is presupposed where the increase in user data enables better advertisement services, yielding more revenue from this which can be invested in the service which attracts the users.
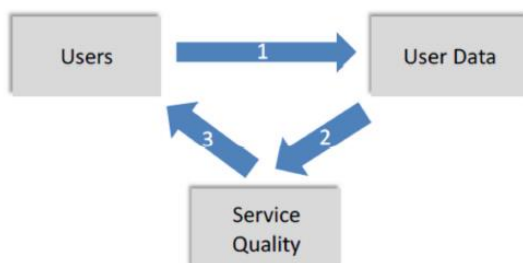


*Figure 2 - feedback loop 1 (source: CERRE, p. 35)*

Again, CERRE concludes that the existence and intensity of feedback loops needs to be tested on a case-by-case basis.[192]

One must note that the models proposed by CERRE are made with online advertising services specifically in mind, but despite this I think that the frameworks suggested are clear and concise and captures the



*Figure 3 - feedback loop 2 (source: CERRE, p. 36)*

essence of the problems that the competition authorities and courts need to consider when assessing

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[189] COMP/M.5727 – *Microsoft/ Yahoo! search business*, paras. 162 and 223
[190] COMP/M.4731 – *Google/ DoubleClick*, para. 273
[191] CERRE, pp. 33-34
[192] CERRE, pp. 35-37

qualitative market power in the data economy: what feedback loops exists, and what happens if they are left un-checked?

In its recent decision on abuse of dominance by Google, the Commission used (2) the monetisation feedback loop in tandem with (1) the user feedback loop (for data) as support that there are high barriers to entry into the market of online search.[193]

## 5.2.    An approach based on potential competition

An alternative approach to assessing market power is by studying the effects on potential competition on incumbent undertakings. Inge Graef (who also co-authored the CERRE report) argues that competition authorities and courts should look to this as a proxy for dominance, in absence of quantitative means of assessing the market power.[194]

With examples from the merger decisions in *Microsoft/Skype*, *Cisco*, and *Facebook/WhatsApp*, Graef points to the fact that the Commission is increasingly taking potential competition into consideration when assessing dominance in dynamic markets, as seen in the below exempt from the *Facebook/WhatsApp* decision:[195]

> *"[the] Commission notes that the consumer communications sector is a recent and fast-growing sector which is characterised by frequent market entry and short innovation cycles in which large market shares may turn out to be ephemeral. In such a dynamic context, the Commission takes the view that in this market high market shares are not necessarily indicative of market power and, therefore, of lasting damage to competition."[196]*

Following Graef's article, which was published in 2015, her opinions were affirmed by the Commission in the *Microsoft/LinkedIn* merger decision of late 2016:

> *"the combination of two datasets post-merger may increase the merged entity's market power in a hypothetical market for the supply of this data or increase barriers to entry/expansion in the market for actual or potential competitors, which may need this data to operate on this market. Competitors may indeed be required to collect a larger dataset in order to compete effectively with the merged entity than absent the merger"[197]*

Graef suggests four aspects which may indicate that a power advantage due to control over data is in play: 1) data is a significant input; 2) the incumbents rely on IP protection of their data; 3) there are no reasonable substitutes to the data available; 4) it is not viable for a competitor to collect the data themselves.[198]

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[193] *"[T]he more consumers use a search engine, the more attractive it becomes to advertisers. The profits generated can then be used to attract even more consumers. Similarly, the data a search engine gathers about consumers can in turn be used to improve results."*: Press release, *Antitrust: Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service*

[194] Graef, Market definition and market power in data, p. 502

[195] Graef, Market definition and market power in data, p. 503

[196] COMP/M.7217 – *Facebook / WhatsApp*, para. 99, citing Case T-79/12 *Cisco Systems Inc v Commission* [2013], paragraph 69

[197] Case No COMP/M.8124 – Microsoft / LinkedIn, para. 179

[198] Inge Graef, 'Market definition and market power in data', *World competition*, 38, no. 4, 2015, p. 504

Aspects 3 and 4, of substitutability and replicability, are non-problematic and similar to the what CERRE discusses in in the collection phase of their market power assessment method. Aspect 1 is at first sight uncomplicated as it seems like a reasonable first criteria, but it begs the question what "significant" in this situation means. The second aspect may indeed serve as empirical evidence that data collection is made difficult for the competitors, and should as such be applied when possible and considered a supplement to factors 3 and 4, but it is important that the absence of IP protection should not be taken as a sign of lack of market power (regarding the difficulties with protecting data, see <u>Appendix 2</u>).

In my opinion, there are significant overlap between the four aspects, and it can be argued that the fourth aspects in itself include the other three, and is therefore the crucial one: if competitors cannot realistically collect the data themselves they cannot enter the market and compete with the incumbents, which is a strong indication that the incumbents are dominant on the market. In principle, a high market share in a market of data would then imply dominance per default.

## 5.3.   Conclusion

The theoretical validity of both approaches discussed above have been confirmed by the Commission, but in different contexts. The logic of CERRE's approach was used by the Commission in a case of abuse of dominance in the online search market, just like the scenario that CERRE discussed, whereas Graef's logic of potential competition was mentioned in the *Microsoft/LinkedIn* merger. What both approaches have in common is that the core of their arguments is that barriers to entry can be a source of market power.

However, discerning what is an intentional barrier to entry and what is a well-functioning company is difficult. Attributing market power to a company due to the barriers to entry to compete with it could also be described as protecting the competitors rather than the competition itself.

Another possible avenue of critique of using the barriers of entry to divine market power is that it jumbles the sequential order of the competitive assessment. A merger review or investigation of abuse of dominance is initiated due to concerns that an entity has enough market power to be considered dominant, findings of barriers to entry would be easy, and they would reinforce the notion of dominance – the competitive assessment would thus become something of a self-fulfilling prophecy (and even more so if the barriers of entry is a component of the theory of harm). One of the clues to the existence of market power would also be used as evidence for it, which would jeopardize the quality of the competitive assessment.

Another common factor with both approaches is that they make away with the need for a (hypothetical) market for data as an input (which was very hard to establish a definition of, as discussed in the previous chapter). However, where CERRE's approach is good for certain situations it lacks the general applicability which Graef's approach has. Both of them stresses the importance of evaluating each case on its own merits. This can certainly be said to be underlined by the different fields of application for the approaches.

To make any conclusive last statement as to the assessment of market power thus becomes very hard, other than that it seems implausible to devise an approach which would be accurate and relevant for any situation at hand. Instead, perhaps the lesson to be learned is that the adherence to certain approaches or methods in fact could obscure the competitive assessment rather than help it.

# 6.    Competitive assessment

The Merger Regulation states that deals that would significantly impede effective competition are not compatible with the common market.[199] Therefore, the analysis that is in the centre of a merger review is whether or not the deal in question would significantly impede effective competition, something which has come to be known as the SIEC test.

The theory of harm guiding the SIEC test dictates that harm to the market must be supported by empirical evidence. As the counterfactual scenario used in this thesis is general and does not pertain to a particular merger or even a specification of one, empirical evidence is not possible to obtain and the discussion will instead be theoretical and based on the possibilities of obtaining such evidence, as discussed above.

The SIEC test is explained in the guidelines on horizontal and non-horizontal mergers, in regards of specific scenarios such as the merger leading to foreclosure of inputs for competitors or the increased concentrations of market shares. These guidelines summarise the Commission's approach to certain types of problems, and references previous decisions that illustrates how the conclusions have been reached.

Overall, the guidelines (and the historical merger decisions from which the guidelines are derived) deal with markets where several actors operate and there is a measure of equilibrium between them that can be upset by the merger due to the rearrangement of sources of power, such as inputs for production or channels to the consumers. The primary concern is that consumers should not be harmed through increased prices or lack of technical development. However, the guidelines should not be construed as mere checklists to control if a merger is harmful to competition or not, but as collections of past decisions to support the making of new decisions. When assessing what future impact on competition has using historic material, it is important that the circumstances in the historic material is also relevant for the future scenario that is assessed. Since data and the digital economy is largely a recent development that changes the dynamics of the market, the connection with the old circumstances is becoming gradually weaker with the technical and economic development of society/the market.

In this chapter I will discuss the theory of harm defined in chapter 2 *in fine*, and use the findings of chapters 3-5 as circumstances that will indicate if acquisitions of data-rich companies are compatible with the market (on a general level). The assessment will be performed in accordance with the guidelines on horizontal and non-horizontal mergers.

## 6.1.    Possible anti-competitive effects

As discussed in 2.1.1 (Acquiring data, or pre-emptive M&A?), when incumbent undertakings acquire smaller firms they can be argued to reduce the potential for future competition. Acquisitions can be justified for many business strategic reasons, such as synergies between products or services having been identified, talent acquisition ("acquihires") or other such interests. What is not openly disclosed is when the main reason for the acquisition, or part of it, is that the incumbent company wants to "nip the problem in the bud". Since these reasons are not openly stated as rationales for acquisitions, it

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[199] Merger Regulation (139/2004/EC) art. 2.2

becomes hard to assess the impact of this strategy on potential competition as it uncertain what the incumbent's motives really are and consequently to define what behaviour to examine.

On the other hand, one might argue, the prospect of being able to get a substantial investment and possibly "making an exit" might incentivise and spur innovation. As stated in a discussion paper on exclusionary abuses of market dominance, not being able to exit a market is considered as deterring actors to enter into the market in the first place, thus reducing the overall competition. As such, when incumbents offer a "way out", they can also be argued to accommodate for potential competition.

In *Microsoft/LinkedIn*, the Commission considers the positive effects of acquisitions in situations where the assets held by the acquired party will be put to a more effective use of the merged entity, as it can allow for new products or improvements to existing products in the market, thus benefitting the consumers.

A third facet of this situation, making it a trilemma, is that the legal framework for making effective licensing deals with data can be said to be wanting, leaving actors to complicated and convoluted contractual solutions. As data cannot readily be transmitted using "pipes", it becomes a more viable option to "package it in a box" and send the box – i.e. to acquire the company rather than enter data sharing deals with it (see Appendix 2).

### 6.1.1. Problems with defining if the merger is horizontal or vertical

Horizontal mergers take place between actual or potential competitors on the same market. Therefore, the applicability of the horizontal guidelines becomes contingent on how the market for data is defined. If a definition that treats data as an input is used, any acquisition of a company that generates data that is substitutable with that "produced" of the acquiring company could potentially be seen as a horizontal merger. In regards of personal data, this means that the scope of horizontal mergers becomes very wide as services with different functionalities could still be competitors if they generate data that deemed interchangeable by a downstream third party, or in other words enable the same functionalities (such as for instance increase the efficiency of targeted advertising).

Therefore, horizontal mergers concerning the collection of data becomes achingly close to vertical conglomerate mergers, which are defined as mergers between companies whose relationship is neither horizontal nor vertical, but whose products are placed in closely related markets.[200]

Classical vertical mergers are easier to identify, as they are characterised by supply line integration. An example of this was the case when TomTom acquired TeleAtlas with the purpose to backwards integrate its supply chain. When data is sold as a commodity or product in specialised sectors such as navigation or finance, it is possible to treat it like an input using "traditional" methods described in the guidelines.

### 6.1.2. Non-coordinated horizontal effects

#### 6.1.2.1.    The elimination of an important competitive force

The competitive force exerted by a company can be greater than what its market shares suggest. If the concentration involves two companies that are both innovators, the concentration could eliminate an

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[200] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 5

important competitive force on and thus lead to a significant impediment on effective competition. This is particularly true in markets that are already concentrated.[201] Not all concentrations are detrimental to competition, however, as the acquisition could increase the ability and incentive to innovate. In cases where the merging companies both have products that are targeting the same part of the market, and one company acquires the other, it would be detrimental to competition as it is generally seen that two competing products on a market is better than one without competition.[202]

For a merger to raise serious competition concerns it is necessary to show that the potential competitor acts a *significant* competitive restraint or that would grow to become one if it would not be acquired. The higher the concentration in the market, the more likely that the company would grow to become one. In addition, it must be established that there are not enough actual or potential competitors to maintain the necessary competitive pressure after the merger. This is dependent on *inter alia* the existence of barriers to entry that are high enough to exclude other potential competitors.[203]

Consumer harm from impediments to innovation is hard to find convincing evidence for, as no difference in quality of innovations created "in-house" in large companies can be discerned from "independent" innovation created in small startups. The difference between the two is best described as the dichotomy between a Schumpeterian model of innovation that states that concentrated markets foster innovation the best, and a Arrowian model claiming that contested markets are best suited for fostering competition. The Union's utilisation of Shapiro's unified theory has most prominently been used in the pharmaceutical sector where the results of innovation are inherently connected to the health of consumers[204] (the use of this model is logical, since pharma companies are reliant on their next product to reap enough benefits to pay the costs of its development: for them it is a matter of innovate or perish). In a data-dependent setting (*TomTom/TeleAtlas*) the extent of consumer benefit from increased capabilities for innovation was not explored fully as the transaction lacked strong enough anti-competitive effects to warrant such an inquiry,[205] and there are no other indications of the Commission's attitude towards consumer benefit from data-dependent innovation.

In *Facebook/WhatsApp*, the Commission assumed that companies innovate to procure a large user base,[206] and that the consumer communications market is sensitive to disruption caused by innovation,[207] thus hinting of an inclination towards a Schumpeterian model of competition (creative destruction).

Personally, I believe that the Arrowian model better describes innovation in the data-context, as big companies such as Google and Facebook are not reliant on periodical big product launches which must be successful (such as hardware manufacturers as Apple and Samsung are, similar to pharma-companies). Rather, as described in chapter 5 regarding the feedback loops, Google and Facebook continually improve their existing products or services using data and do not launch entirely new

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[201] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 37

[202] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 38

[203] EU merger control and innovation, p. 3

[204] COMP/M.7275 - *Novartis/Glaxosmithkline Oncology Business*; COMP/M.7559 - *Pfizer/Hospira*;

[205] COMP/M.4854 - *TomTom/Tele Atlas*, paras. 248 and 250

[206] COMP/M.7217 – *Facebook / WhatsApp*, para. 87

[207] COMP/M.7217 – *Facebook / WhatsApp*, para. 116

products periodically. When looking at Google, it is not clear if the company's prominent position in the market stems from its superior knowledge in data science or if rather it is fortunate timing that led to it.[208] Considering this reasonable doubt of whether the incumbents' positions are explainable by virtue of their superior ability to innovate, and that their incentive to innovate would only be to stay relevant enough to not be disrupted, the Schumpeterian model would wrongly attribute them an innovative power which they do not have. As such, innovation would rather benefit from a market with more actors and market power less concentrated, thus confirming the Arrowian model.

Therefore, the acquisition of potential competitors does not necessarily increase or maintain the overall level of innovative output on the market, it could effectively drain the market from innovators.

### 6.1.2.2.    Entry of new competitors as a competitive restraint

If entering the market is sufficiently easy, the merger is unlikely to pose any significant risk to the functioning of the market. For entry of new competitors to be considered a sufficient competitive constraint on the merging parties, it must be shown to be likely, timely and sufficient to deter or defeat any potential anti-competitive effects of the merger.[209]

In the context of my theory of harm, it must be admitted that the barriers to entry are most likely to arise from access to data, which is largely governed by network effects and feedback loops. This was confirmed in the Commission's decision on Google's abuse of dominance, as mentioned earlier.[210] The discussion about substitutability of data is mainly useful for determining if the potential barriers to entry at hand are relevant and applicable for the potential competitors. Depending on how narrowly the market for data is defined, the "height" of the barriers to entry varies, as narrow definitions of the market for data means that potential competitors are assumed to have less viable alternatives for obtaining their data, thus making the barriers to entry higher.

To ensure merger decisions of the highest quality, the definition of the market for data thus becomes crucial. If this market should be defined teleologically from the specifications of technologies with varying technology readiness levels using the counterfactual method suggested by the guidelines on horizontal technology transfer,[211] or if the market should be defined accordingly to how data is used and shared at the present day, becomes a crucial question.

In the end, the likelihood of the entry of new rivals must be said to be overall low. Additionally, it is not likely that a new entrant would be a sufficient enough restraint on the incumbents, as market entry would most likely be small-scale and in a niche market as a first step to scale up from.[212] If a new entry

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[208] The chief scientist of Google at the time suggests that "[w]e don't have better algorithms than anyone else. We just have more data.": Matt Asay, Tim O'Reilly: 'Whole Web' is the OS of the future, Cnet [online] 18 March 2010, https://www.cnet.com/news/tim-oreilly-whole-web-is-the-os-of-the-future/ (accessed 11 July 2017); about the fortuitous timing of Silicon Valley companies, see: Pasquale, pp. 87-88

[209] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 68

[210] Unfortunately, at the time of writing the full decision has not yet been published and the Commission's reasoning cannot be analysed in depth.

[211] When it comes to defining the relevant market for R&D agreements, careful attention must be paid not only to the existing product and technology markets affected by the R&D collaboration, but also to the possible situations that might arise – i.e. new products that create entirely new product markets: Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (2011/C 11/01), para. 112

[212] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 75

on the other hand would be sufficient in scale to actually be a constraint on competition, it is unfortunately likely that it would be swift enough to be a realistic response to the merger or post-merger entity's actions – the guidelines state that entry within two years is timely, but in my opinion it is uncertain if such a timespan is realistic to use in the digital sector.[213]

### 6.1.2.3. *Customers have limited possibilities of switching supplier*

If customers of the merging parties have difficulties switching to other suppliers because there are few alternatives or the switching costs are prohibitive, the consumers are particularly vulnerable to price increases.[214]

As can be seen in Facebook's acquisitions of Instagram, WhatsApp and Snapchat, the few viable alternative social media platforms in terms of user base that customers have had was absorbed into Facebook. This has left customers vulnerable to price increases from Facebook, be it economical price increases such as for instance increasing the importance of sponsoring posts to reach out to audiences, or be it terms of use and privacy policies that are less respectful of the user's privacy. Due to the network effect of users, enabled or empowered by feedback effects enabled by market dominance, it is unlikely that customers would switch to other suppliers.

However, consumer harm in this regard is based on increases in price, where effective competition is conjectured with low prices.[215] In markets where the end consumer is offered a product or service free of charge in return for a subscription, the (economic) price is zero, which means that unless consumers are faced with a price increase no consumer harm can be established (one example of this would be having to pay to be seen by using sponsored posts on Facebook – but even then, when does consumer have the "right" to be seen on Facebook?). Suggestions that the quality of the free products can be of importance, such as for instance in regards of the level of privacy the consumers enjoy,[216] have been effectively rejected by the Commission in it is remark in the *Facebook/WhatsApp* decision that privacy is not a competition concern.[217] Typically, sufficient lack of quality of the product is something that would make consumers switch to other alternatives, but due to the power of network effects in social media consumers have demonstrated high tolerance in regards of changes of the product they use.[218]

To make this question even more complex, the forthcoming GDPR gives data subjects the right to data portability, which means that data controllers are obliged to provide data subjects the data they have provided the controller in a structured, commonly used, machine-readable and interoperable format, and to transmit this to another controller if the data subject so requests.[219] Regardless of the intended Chinese wall between competition law and data protection, it is highly likely that the right to data

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[213] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 74

[214] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 31

[215] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 8

[216] Volny; also: Aleksandra Gebicka, Andreas Heinemann, Social media & competition law, *World competition law and economics review*, 37(2):149-172, pp. 156-159

[217] COMP/M.7217 – *Facebook / WhatsApp*, para. 164

[218] Facebook's strategy of leveraging network effects to secure its position is an openly admitted strategy: Matt Buchannan, "Network effects and global domination: the Facebook strategy", *Wired* [online], 17 May 2012, https://www.wired.com/2012/05/network-effects-and-global-domination-the-facebook-strategy/ (accessed on 5 July 2017)

[219] General Data Protection Regulation (2016/679/EU), art. 20 and recital 70

portability could decrease the barriers to entry into data markets dependent on personal data. Therefore, conclusive statements about consumer switching should not be made until the impact of the GDPR can be assessed.

Nevertheless, it is probable that the lock-in of consumers into social media platforms effectively seizes part of the market and leaves competitors competing over the "left-overs". This means that the data market for social media users is largely not contestable, and that companies in it will have problems with accessing the data they need to develop their products and services, to the detriment of innovation in the field.

### 6.1.3. Vertical non-coordinated effects: foreclosure

When acquisitions result in hampering or elimination of potential competitors' access to supplies or markets and therefore reduces their ability and/or incentive to compete, it is said to result in foreclosure. Foreclosure is anti-competitive when competitors are disadvantaged from it and the merging companies are able to profitably increase the price charged to consumers.[220] Input foreclosure is only relevant if it concerns an important input for a downstream product.[221]

When the new entity is capable of restricting access to products or services, post-merger, that would have otherwise been available to competitors, input foreclosure is at hand. The important question then becomes "had the data been available to competitors, prior to the transaction?".

The answer to this question would most likely be no, since there is no effective market for data. On the one hand, the data was – prior to the merger – available to competitors, but probably not by means of a data sharing deal, but by ways of acquiring the whole company. On the other hand, such a transaction to acquire the data would require considerable time and resources which the potential non-dominant buyer most likely does not have. Therefore, the answer to the question can be answered affirmingly, the data was available to everyone, but only a few actors had the means of buying it. Since it never was realistic for competitors to access the data, the situation cannot be described as a conventional input foreclosure.

Unless the acquired company's business is to sell data, such as in *TomTom/TeleAtlas*, the discussion of input foreclosure becomes disengaged from the legal doctrine of the Union and instead becomes speculative in regards of the potential of data as an input. The doctrine of essential inputs have been put forward as a possible way of mitigating data-access issues, as compulsory licenses could help to open up the market and to foster innovation, but it is impossible to construct a single doctrine that can be applied uniformly to all sectors of the digital industry.[222] Such an approach, however, requires that the refusal to deal (i.e. input foreclosure) is the consequence of a company's abuse of its dominant position and thus falls outside of the scope of this thesis.

In regards of barriers to entry, the acquisition of a data company that is upstream from a potential entrant could force the entrant to also be forced to enter the upstream market to effectively compete on the market – i.e. the potential entrant must find its own source of data. This raises barriers to entry

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[220] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 29
[221] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 34
[222] Inge Graef, *Tailoring the essential facilities doctrine to the IT sector: compulsory licensing of intellectual property right safter* Microsoft, Cambridge Student Law review, vol.7, no. 1, 2011, p. 20

which could potentially impede the impact of potential competition,[223] but again, considering the unlikeliness of smaller actors establishing access to data that can compete with the dominant actors in the market, this concern becomes largely theoretical.

In the *Facebook/WhatsApp* merger decision, the Commission focuses the analysis of the merged entity's ability to foreclose on access to the final user on the mobile device, stating that neither party has control over the points of entry (mobile operating system, identifiers to connect users, and address books) meaning that the transaction as such is unlikely to affect competition.[224] In my view, this approach is somewhat short-sighted as it fails to account for aggregation of users into an eco-system of offerings that compels other users to also participate in that particular network, effectively constituting a barrier to entry for competitors. Building a communications app was deemed by the Commission to be "fairly easy",[225] but if you build it – will they come?

If there are enough credible downstream competitors that are themselves vertically integrated (in this case, having their own access to the data), the competition they exert on the merged entity may be a sufficient constraint to prevent output prices from rising.

## 6.2. The ability and incentives of the dominant firm to harm competition

Regarding the would-be input foreclosure of post-merger entities, the distinction between ability to foreclose and incentive to foreclose becomes largely academic as "foreclosure" is the default of the market, which is upheld by the company automatically unless it decides to actively share its data. Therefore, the question of input foreclosure as competitive harm should be assessed in the context of TFEU art. 102 as an exclusionary conduct, rather than be dealt with using the Merger Regulation.

As for the elimination of potential competitors, the ability of the dominant firms to remove potential competitors from the market is evident, as can be seen from the track records of acquisitions made by Facebook and Google for instance. The incentive to do so is also easy to articulate: the fear of being disrupted and losing market shares could very well be a contributing reason to various acquisitions made by incumbents – but on the other hand these acquisitions can also be expected to be justifiable from a business perspective. It is however sufficient that the incentive is plausible, as proving its existence would be close to impossible.

## 6.3. Defences

The solution to the abovementioned problem of finding the true incentive of the company can be solved by assessing what claims of increased efficiency of the market that the company brings forward. If the claim is substantiated, the Commission must assess it.[226]

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[223] Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07), para. 49

[224] COMP/M.7217 – *Facebook / WhatsApp*, para. 121

[225] COMP/M.7217 – *Facebook / WhatsApp*, para. 119

[226] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 77

If the consumers will be no worse off as a result from the merger, it should not be held as incompatible with the market.[227] If consumers benefits from new or improved products or services as a result of R&D and innovation, it is also viewed as an efficiency gain.[228] This defence has not been tried in a data-heavy merger review by the Commission, but it should be reasonably easy for a company to show how its past history of acquisitions have enabled the state of its product or service as of today.[229] In *Google/ DoubleClick*, the Commission acknowledges that the market (for provision of online advertising and intermediation of online advertising) has evolved into a state where "bundle competition" is the new ordinary:[230] i.e. that several services are bundled together into a single offering, something which suggests a high level of acceptance of the Commission towards concentration of assets. The question essentially becomes if the dominant company's R&D and innovation output is greater than the combined whole of a competitive market, which is not feasible for this thesis to answer, but this much can be concluded: that if a competitive market is not considered to be a better source of innovation than a natural monopoly, we will most likely continue to see Facebook and Google as the dominant actors for a long time to come.

Another way for a company to justify a merger is by using the "failing firm defense", which means that the market will not be harmed from the merger because the acquired firm would be forced out of the market in the near future due to financial difficulties, if it is not taken over by another company.[231] Seeing as many startups are operating at a loss during in their initial stages and are dependent on external funding, this defence could likely be invoked by the merging entities. Such claims could however be rebutted by pointing to the fact that seeking investments is a part of a startup's business and should not qualify it as a "failing firm" – only if it can be shown that investment opportunities in the startup has been passed over by the majority of investors available, can the merger be said to "save" the failing firm and thus be assumed to have no negative impact on the competition on the market.

## 6.4. Conclusion of the SIEC test

As have been shown, the competition on the market for data can be impeded by acquisitions that concentrates the market and further raises the barriers to entry to it, but the connection between the concentration and consumer harm is not obvious and hard to find economic evidence for.

Whilst it might be argued that concentration of data market shares raise the barriers to entry, it is also in this regard hard to find compelling evidence that it would lead to consumer harm in the form of increased prices or lack of innovation. Therefore, my theory of harm cannot be said to supported by

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[227] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 79
[228] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), para. 81
[229] The functions of Facebook, for instance, is the result of several acquisitions: Octazen was used for the FriendFinder; Divvyshot for Facebook photos; ShareGrove for Facebook Groups; Hot Potato for the check-in functionality: see *List of mergers and acquisitions by Facebook*, https://en.wikipedia.org/wiki/List_of_mergers_and_acquisitions_by_Facebook [online] (accessed 7 July 2017)
[230] COMP/M.4731 – *Google/ DoubleClick*, para. 327
[231] Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03), paras. 89-90

the SIEC test, and my conclusion is consequently that concentrations of data market shares cannot be said to generally constitute a competition problem.

# 7. Conclusions

## 7.1. Discussion of results

Given the difficulties of ascertaining any significant impediments on competition arising from concentrations of data market shares, the exercise of establishing a hypothetical market for data as an input appears largely superfluous.

In cases of straight-forward vertical mergers, the use of having defined a market for data will then be mostly that it allows for the identification of deals that can affect the supply chains of data, as the analysis of the inputs of supply can be made with the methods already available which has also been tried and tested by the ECJ.

If a different threshold model is used for determining the scope of the Merger Regulation that would include more "small" companies into the auspices of merger control, such as using transaction size or (data) market shares, the SIEC test would most likely not indicate that the concentration would be incompatible with the market. In its current form, the definition of a market for data has no particular effect on the scope of the merger review as annual turnover and possession of data does not have to be correlated – therefore, the definition of the market for data can only be of use for establishing market shares once the merger review is triggered by a notification (which could possibly include good faith notifications).

If a merger assessment is initiated, having a defined market for data could prove useful for bringing to attention aspects that might otherwise have been lost if a "traditional" product-centric definition had been used. Such a market definition could very well be used in tandem with a conventional market definition. Given how few such cases would occur, it would be possible to make a detailed definition that is precisely tailored for the case at hand.

Having a large amount of data in one's possession or control does not pose a competition problem per se, neither by virtue of its power to distort the competition on the market (as controlled by the Merger Regulation) nor by its mere existence, unless its owner engages in conduct that is forbidden by TFEU art. 101 or 102.

In the end, it is the volume of consumers and customers that indicate market power, which will always be evident from traditional economic and competition analysis. Therefore, a definition of the data market can at best be a compliment to competition analysis, but not a necessary tool that enables it completely or certain new aspects of it.

## 7.2.  Discussion of research questions

In this sub-section, the results of the thesis will be discussed in relation to the research questions (right) that have prompted it.

1. *How can a market for data be defined;*
2. *how is data important in merger reviews;*
3. *does it make any difference if there is a definition of a market for data; and*
4. *is competition law currently capable of handling the digital economy?*

1. This thesis has shown that a market for data cannot be defined, unless one is satisfied to use a hypothetical market for data as an input. This solution would make the flows of data and dependencies between companies more apparent in a competition assessment, but would be encumbered by the problem with affixing an objective value to data. Since the value of data is highly context-dependent, finding an absolute value of it might be impossible. Whilst it is possible to define a market for data, doing so would at best lead to a market definition that inescapably would be contrived and of little practical use.

2. Data is nevertheless a highly relevant aspect to consider in merger reviews, as the access to, control, and/or ownership of sources of data are increasingly important for companies to compete, and thus a determinant of the market dynamics. This in turn has high impact on the assessment of barriers to entry.

3. It can be held that merger reviews must now at least consider the dimension of data in every assessment that is made, but that it can be attributed importance as is relevant for the case at hand. By having a defined a market for data, it becomes possible to ascertain market dynamics and which company in it that has what power, which are integral parts for the merger review. If the definition of the market for data is done from scratch in every case that is assessed, it is possible to attain more accurate and relevant results, but this could also lead to a higher degree of variation and unpredictability of the merger decisions. Nevertheless, in line with the increasingly dynamic and effects-based, less structuralist approach of the Commission towards competition assessments, the utility of having a pre-defined market ready on "stand-by" seems unrealistic and not desirable.

4. As for the question of whether European competition law is capable of handling the digital economy, the answer cannot be reduced to a binary yes or no. While there is room for improvement in many regards, the problems are in my opinion not rooted in a systematic incompatibility between competition law and data. Neither does data constitute a new, never-before-seen phenomenon which competition law does not have the means to handle. The current state of competition law provides the ability for the Commission to draft decisions that are well-argued for and accurate for whatever case it is confronted with – the limiting factor is rather how knowledgeable the people involved with making the decision are. This should not be understood as a remark about the state of competence of anyone involved with the making of previous merger decisions, rather it should be interpreted as follows: data as a factor in competition assessments has only recently been brought into the spotlight as something important, and it is only natural that a period of learning is required before an expertise in handling data-related competition cases materialises and becomes evident in the published decisions. My conclusion is that we are currently finding ourselves in the later stage of this "digital infancy" of competition law, and that with the increased discussion and knowledge about data the quality of competition assessments concerning data will only become higher and higher. Therefore, I advocate trust in the dynamic and flexible application of competition law, and that cries for any

(radical) change of the field of competition law are alarmistic and not compatible with the current legal framework for handling competition problems.

As a point of learning, I believe that one of the main results with this thesis is that it shows that "we" (lawyers, judges, competition authority professionals, etc.) cannot in the case of data look to competition law and ask of it to tell us what to do, rather it is up to "us" to decide what we want to do in regards of data and competition and then explore if this is compatible with competition law. If not, it is a question of competition policy to induce changes in competition law that would enable the realisation of what "we" decided in regards of competition and data.

## 7.3. Final remarks

### 7.3.1. The Commission's digital strategy and the European Data Economy

In May 2015, the Digital Single Market Strategy was adopted and a vision to create a digital single market ("**DSM**") was presented to the public.[232] This market would be the digital counterpart of the existing (physical) single market, and it was prioritised to be one of the Union's top ten political priorities.[233] An important part of the DSM Strategy is to build a European "Data Economy".[234]

> *"The **data economy** is characterised by an ecosystem of different types of market players – such as data holders, researchers and infrastructure providers – collaborating to ensure that data is accessible and usable. This enables the market players to extract value from this data, such as by creating applications for traffic management or for optimising harvesting."[235]*

The reason for building a data economy is that digital data is recognised as an essential resource for economic growth, competitiveness, innovation, job creation and societal progress in general. This means that in order to enable the DSM, the flow of this resource (data) must be able to flow freely across national borders and industrial sectors. Data should be made reusable to the stakeholders.[236]

In January 2017, the Commission adopted a communication on "Building a European Data Economy" alongside with a staff working document, where it discusses some preliminary key issues regarding access to and transfer of data. Predominantly, the communication and the staff working document discusses that some of the main concerns for the Data Economy is the access to and interoperability of the data, as well as issues of ownership and transferability in relation to the data generated by machines and processes. These concerns are of central to the emergence of a data economy, and the aspect of competition law issues is not discussed.[237]

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[232] Ian Traynor, EU unveils plans to set up digital single market for online firms, *The Guardian*, 6 May 2015, https://www.theguardian.com/technology/2015/may/06/eu-unveils-plans-digital-single-market-online-firms (accessed 28 February 2017)

[233] European Commission, *Digital Single Market*, published 25 March, 2015, last updated 11 July 2017, https://ec.europa.eu/digital-single-market/en/digital-single-market (accessed 13 July 2017)

[234] ibid

[235] Quoted in full from ibid

[236] ibid

[237] See section 1 and 3 in *"building a European data economy"*; also, neither does the accompanying Staff Working Document discuss this.

In light of the findings of this thesis, it seems that the tendency of data to aggregate into large but few collections rather than to fragment into several but few collections, is a tendency that the Union's competition law cannot affect in its current guise. The fact that this tendency is found to not be a competition problem per se, by me, could indicate that the enabling of the European Data Economy does not require any intervention in regards of the merger review system. It does however still seem counterintuitive that the envisioned Data Economy is compatible with natural monopolies of data, as the core idea of the Data Economy is the free flow of data between actors and not its coalescence into the hands of the few.

## 7.3.2. Competition law and politics, revisited

Where traditional industries are comprised of value chains of several actors, the digital industry is instead characterised by the interactions between a single supplier/content provider and the end-consumers. As consumers are attracted to the best consumer experience, which in turn could be one of the most important uses of data – to improve the user experience – feedback loops where big gets bigger are a logical consequence.[238]

As shown in the thesis, there is little discernible difference in the innovative output of a concentrated market vis á vis a fragmented. Therefore, the question arises if the natural oligopoly we can expect to remain should be broken up by the use of competition law. The current competition policy of the European Union does not allow for such enforcement, but for the sake of argument, some alternative avenues of consumer harm could be considered. Below I present what I find to be ideas worth considering:

Firstly, one of the more frightening developments during the last years have been the phenomenon of "filter bubbles" and notion of "fake news" or "alternative facts". A filter bubble means that people live inside their own bubbles of information fed to them by their respective Facebook feeds and personalised Google search result pages. An example of this would be two persons that live next door to each but gets differing news and information about what is going on in their shared society.[239] Filter bubbles are often mentioned in discussions concerning politics and elections (and the existence of "fake news"),[240] and could pose a serious threat to the democratic societies of Europe as we know them. The safeguarding of democracy could very well be a policy attribute worth considering in a politicised competition law.

Secondly, one should consider for how long time the ingenuity of innovation that put a company in a leading position can serve as an argument for it remaining there. Is it the lifetime of the founders? Is it for as long as the company is a relevant innovator in its field? The logic behind the question is similar to that of the ship of Theseus: what part of the company contains the component which shields it from critical competitive assessment?

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[238] For more information of the notion of "aggregation theory", see here: Ben Thompson, *Aggregation Theory*, Stratechery [blog], 21 July 2015, https://stratechery.com/2015/aggregation-theory/ (accessed 7 July 2017)

[239] Filter bubbles have been described in inter alia: Frank Pasquale, *The Black Box Society – The secret algorithms that control money and information*, Harvard University Press, First Harvard University Press paper back edition, second printing, Cambridge, Massachusetts, 2016, p. 79

[240] See for instance here: Jasper Jackson, *Eli Pariser: activist whose filter bubble warnings presaged Trump and Brexit*, The Guardian [online], 8 January 2017, https://www.theguardian.com/media/2017/jan/08/eli-pariser-activist-whose-filter-bubble-warnings-presaged-trump-and-brexit (accessed on 1 July 2017)

Thirdly, which might probably be the most provocative consideration, is how much Europe should safeguard its own regional economic interests against foreign companies that does not pay taxes within Europe that correspond with the profit they generate there. This might be cause to consider a political agenda less concerned with enabling the integrated internal market, and more concerned with asking what the benefits for the member states of the Union are.

As we can see, competition law and policy is rife with questions concerning legal-technical issues, innovation, economics, society, and even philosophy and ethics. It is my hope that this thesis has helped outline the nature of the questions facing competition policy, and maybe even suggested some plausible answers to them.

## 7.4.   Suggestion for future research

The most interesting question encountered in this thesis, which due to limitations in time and scope was not possible to pursue, was the question of how the doctrine of hypothetical markets developed in *Magill*, *IMS Health*, and *Microsoft* could be transposed into the sphere of market definitions warranted by a merger review – or is this approach restricted to the sphere of abuse of dominance. This question could be connected with the role of indirect constraints in relation to data: if indirect constraints should be considered exclusively in the assessment of market power, or if they can also be considered when defining the relevant market?[241] This thesis has largely dealt with indirect constraints in both parts of the analysis, and the results could therefore easily be "disrupted" if the feasibility of a hypothetical market for data as input where to be refuted.

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[241] For an introduction to the problem, see here: CRA International, report for Ofcom: *Indirect Constraints and Captive Sales*, 3 May 2006, online, available here http://ecp.crai.com/publications/Indirect_constraints_and_captive_sales.pdf (accessed 12 July 2017), pp. 4-8

# Appendix 1 - The economical properties of data and the markets for it

As mentioned in 3.3 (The characteristics of data), the key concepts necessary for understanding data as an economic resource will be discussed in further depth, here. Since data as a resource displays several economic properties that are dissimilar from traditional physical objects, on which trade has historically relied, the competition analysis concerning data must be based on a reasonable understanding of the dynamics at play in the interaction between data, organisation, and end-user.

## Data is a non-rival goods

"Factors of production" is an economic term that describes the inputs that are used in the production of goods or services in order to make an economic profit.[242] Data as an input for production is in theory different from other capital factors of production such as raw material and machinery, as data can be used as an input factor (and also outputted) over and over again without depleting it or destroying its source, and it can be used for different purposed simultaneously. This property is known as **non-rivalry**.[243] An industrial machine on the other hand can only be used to output one product at a time, and over time it will need maintenance and repairs – thus depreciating.

This means that more than one actor can collect the same data without affecting the other actors, who have already collected the same data – for instance the home address of a customer. Therefore, metaphors such as data being the "oil" of the digital economy becomes ill suited, as oil contrary to data is a highly rival economic input.[244]

In practice, the value of data is dependent on the context and capabilities of the agent controlling it. As an example, a list of customers whose electricity supply agreements are near the point in time in which they are either prolonged or re-negotiated is more valuable in the hands of someone who can offer the customers alternative electricity plans, than in the hands of for instance a hair dresser.

There are acquisition costs of data which modulates the value of the non-rivalry of the data: if the acquisition cost is low, the non-rivalry aspect of the data becomes less valuable, but if the investment made in obtaining the data is significant, the capability to use the data in non-rivalrous ways become more important.[245] As a simplistic example: observing the weather at one's immediate location and informing the people in the vicinity of the current meteorological conditions is not very useful, as they have immediate access to the same information and can retrieve it without cost or effort; however, if instead one has observational stations spread across a large geographical area, and the aggregated weather data is sold to e.g. an airport, the ability to sell it to other interested parties in addition to the airport is of greater value than in the first case. The fact that the information can be used several times simultaneously is of no use when everyone can just as well access the information themselves.

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[242] Investopedia, Factors of Production, 2017 http://www.investopedia.com/terms/f/factors-production.asp (accessed 4 March 2017)

[243] The initial proposal of viewing knowledge as a non-rival goods come from Dominique Foray, as discussed in ch. 5 of his book: Dominique Foray, *Economics of Knowledge,* Cambridge Massachusetts, MIT Press, 2004

[244] For a discussion about metaphors for data, see Kuneva; Haupt; OECD: supra 84

[245] This idea is originally formulated in in regards of knowledge, not data: Foray, pp. 98-99

This leads to a pricing difficulty of data: there has been considerable expenses made to overcome the initial cost of obtaining the information, and to the extent that these cannot be covered by the price of the initial version the data, the costs of obtaining it becomes sunk costs which cannot be recovered by the sale of subsequent copies it the data. Therefore, the it becomes crucial for the organisation owning the data to have control over allowing access to the data. This fact makes it impossible for markets for data to look like textbook perfect competitive markets in which there are many suppliers offering similar products.[246]

As for data collected from customers, such as for instance their name and address, the data is non-rival and the same data can be collected by many different actors at the same time. One could think that this fact makes it harder for an undertaking to gain a dominant position,[247] as the data as a source of competitive advantage cannot be protected by the company. As we will see in the following sections, the situation is more complex than that.

## Economies of scale

**Economies of scale** (or returns to scale) is a cost advantage that arises with increased output of a product. Generally, as more units of a product is outputted, the cost of building them are spread out on a larger number. Similarly, the operational efficiency can be increased as the scale of the operation is enlarged. A simple example is comparison of effort and man-hours it takes a hobbyist to build a car from scratch in the garage, opposed to the time it takes a modern manufacturing plant – the former has no positive effects from economies of scale, whereas the latter is engineered to benefit as most as possible from it.

There are many potential sources of economies of scale, e.g. the input can only be acquired in large discrete quantities (and a big company makes use of it all), or as the size of an operation increases there may be scope for a more efficient allocation of resources within the firm resulting in cost savings.[248]

If thought of as a graph, the costs of production go down with an increase of volume, but at some point this curve inflects and the cost of production starts increasing as the volume of production increases (a hair dressing salon with a very large number of hair dressers would find itself in need of a HR-specialist, amongst other things). This U-shaped graph determines the optimal size of the company. If the point of inflection is very far away it means that the optimal size of the firm is that of very large operations, which leads to the generation of natural monopolies.[249]

When there are economies of scale effects present, the minimum efficient size of a firm may be big relative to the size of the market, meaning that there will be few active firms in that market. If the size needed to achieve efficiency is so large that a company becomes the only undertaking operating on the market, a natural monopoly is at hand. In practical terms, undertakings can make benefit from the

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[246] Shapiro and Varian, pp. 22-23
[247] In the American BAR Association's journal for antitrust issues the authors argues that it is implausible for a company to have market power in respect to big data. One must remember that their arguments belong in an American antitrust context, but they do provide a sound critique of competition concerns regarding data: Darren S. Tucker and Hill B. Wellford, 'Big Mistakes Regarding Big Data', *The Antitrust Source*, December 2014, vol. 14, no. 2, p. 12
[248] Davis and Garcés, p. 29
[249] Davis and Garcés, pp. 123-124

barriers to entry caused by the economies of scale at play by using market prices far above the cost of production, to the end-consumers' detriment, but the companies can also simply be highly efficient producers. To break up such a monopoly would have negative effects on the productive efficiency, but on the other hand remove any unjustified pricing power of the undertaking.[250] Therefore, this implies that a trade-off between overall economic efficiency and consumer benefit must be made.[251]

In the world of digital platforms, the marginal cost of production and distribution of content (data) is as good as zero, whereas the platform itself requires a significant investment to establish as it requires complex software development, and also a means of reaching out to one or more of the intended customer groups (i.e. marketing and branding). Therefore, the economies of scale in digital platforms leads to an increase in size and concentration of existing companies competing in the same market.[252]

When there is a connection between software and hardware – as in the case of computers, where software is dedicated for use on either Windows and Apple computers – positive feedback loops emerge from the connection between a user-base for the hardware, and availability of software for it. Due to factors such as learning-by-doing, the software for the given hardware will enjoy economies of scale.[253]

The positive feedback loop created by the software/hardware interaction is a highly interesting phenomenon, as it translates into many aspects of the digital economy. One such example is the division between apps that can operate on Apple products versus apps that operate on the Android operating system. As the need for able software developers in the future will increase exponentially, both companies are trying to influence as many budding developers as possible to choose their respective coding languages for the developers to build their careers on. This proficiency in one language will not only help increase the range of interoperable products within the given ecosystem and thus attract more developers due to the economic incentives of being in the larger market, but also creates lock-in effects for the developers as they become increasingly proficient in their chosen language. If the Apple/Android markets are viewed as 2SPs (developers/customers), the positive feedback effects on one side (the developers) will reinforce the feedback effects on the other side (see 0 Network effects and multi-sided markets, and more).

## Economies of scope

Efficiencies of scope are similar to economies of scale, with the difference that it is variety and not volume that generates the positive effect. It has been the underpinning idea that has motivated companies to diversify themselves which led to the large international conglomerates seen in the 70's and 80's.[254]

Companies which expand their data collection and analytics into adjacent areas (as discussed above) can reap benefits from being able to perform joint analysis of the existing and additional data, which

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[250] Davis and Garcés, pp. 29 and 124

[251] Again, the question of what to weigh into this trade-off becomes interesting: supra 74.

[252] David S. Evans, Richard Schmalensee, 'The industrial organisation of markets with two-sided platforms', *National bureau of economic research working paper series*, 2005, p. 15

[253] Michael L. Katz and Carl Shapiro, 'Systems Competition and Network Effects', *The Journal of Economic Perspectives,* Vol. 8, No. 2 (Spring, 1994), p. 94

[254] Economies of scale and scope, *The Economist* [online], 20 October 2008, http://www.economist.com/node/12446567 (accessed 6 March 2017)

other actors have that have to separately analyse data in a particular area.[255] This would thus prove an example of economies of scope.

Just like with economies of scale, the overall economic efficiency increases when data is processed centrally, but also when new sets of data are synthesised from two or more existing sets. For consumers, this might mean a broader range of products available and a source of new innovation.

## Network effects and multi-sided markets, and more

A **network effect** is the effect that a user of a product or service has on the value of product or service for other people. A common example of how network effects work is that of the telephone: investing in a telephone connection has little value if there are only a few other users connected to the network – if on the other hand more people have telephones, the chances that you can reach your intended recipient is greater, as is the pressure on the remaining people not yet having invested in a telephone to do so, as they are missing out on the positive effects of being part of the network.[256]

Network effects are not an inherent characteristic in data itself, as non-rivalry is, but given the fact that network effects are often based on the communication of information or data and that they are such an important aspect of the competition in data markets, it will be discussed at some length here.

The theory of network effects is relevant both to the organisations that deal with data, and how data as a competitive advantage works. For a company that offers a product or service, such as a communications network or a dating venue, the value of their product or service for the customer increases with the number of already existing customers. For data used as a competitive advantage, the more data you add to the set you already have or complement it with, the more inductions and deductions you can make – in consequence making the existing data more valuable as more data is added to it.

*Figure 4 – Network effect (source: Derrick Coetzee, http://en.wikipedia.org/wiki/Image:network_effect.png)*

A **multi-sided market** is where an undertaking is active towards more than one group of customers at the same time. This is not an uncommon strategy for companies to employ when offering services over the internet, as the use of a service can be offered for "free" to one customer group whereas it is in fact subsidised by the services bought by another customer group.[257] Two such examples of this are 1) Google, who offers a free to use search service (alongside with many other free functions), where advertisers can buy "sponsored" search results – the quality of a bought search result is thus connected to the number of people using the search service;[258] and 2) Facebook, who offers a free online
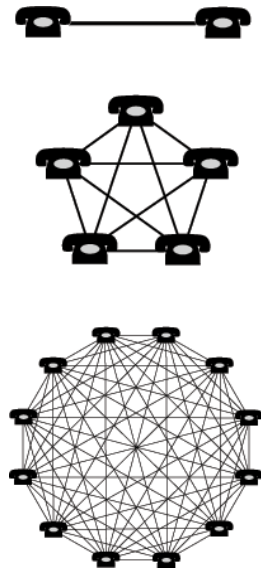
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[255] As discussed under the notion of "concentric diversification" in: Bertin Martins, An Economic Policy Perspective on Online Platforms, *Institute for prospective technological studies digital economy working paper 2016/05*, pp. 36-37.

[256] Katz and Shapiro, pp. 93-115

[257] This article proposes a model for explaining two-sided network externalities, building upon the findings presented by Katz and Shapiro: Geoffrey G. Parker and Marshall W. Van Alstyne, 'Two-Sided Network Effects: A Theory of Information Product Design', *Management Science*, Vol. 51, No. 10 (Oct., 2005), pp. 1494-1504

[258] "Google Adwords" is Google's biggest revenue generator. For more knowledge on the financial peculiarities of the company, this article provides a good picture of how strong a money maker the Adwords product is: Max

networking community, where companies can also pay for their advertising to be seen – the data gathered from the users' profiles and behaviour is used to tailor what advertising they see, thus enabling the advertiser to more accurately reach its intended audience.

## Digital platforms

A platform can be many things, such as a business platform (a multisided market), a software platform (a cloud-based subscription service), or an engagement platform (a user-generated community).[259] A platform can also combine several functions.

A **two-sided platform** ("**2SP**") caters to two or more distinctive groups of customers, and many diverse things can be described with this economic theory (first proposed in 1983) such as dating services and cash. In a seminal paper from 2003, Jean-Charles Rochet and Jean Tirole showed how a number of modern businesses could be considered 2SPs, and that they often found it profitable to offer services to one customer group at a price possibly lower than the margin cost for it – i.e. one customer group subsidises the other group's use of the service.[260]

A digital platform can be defined as a technological basis for delivering multiple products or services, and which mediates between the end-users and the providers of the products and services.[261] One example of a kind of platform is for instance Google' "Play Store" and Apple's "App store", which both connects device users with creators of apps to be used on the devices. One of the apps procured using an app store could then itself be a platform, connecting for instance male and female users with each other for dating purposes. All platforms have in common that they are influenced by network effects.

A digital platform can operate on many venues (for instance an operating system such as Android in both a smartphone and in a television), and also be stacked on top of each other (for instance an Android phone hosting both Google's "Play Store" and Samsung's "Galaxy Apps". When such stacking of the platforms and their value chains occur, it can be said to result in "value webs", which are multiple interlinked value chains that have converged into a web of services and assets.[262] These value webs are not to be confused with the ecosystem described in 3.2 (The big data value chain) – if stacked vertically where the bottom represents the physical infrastructure for the internet, these services are very close to the "top".

When looking at the interactions of digital platforms, they are strongly characterised by the influence of network effects, while at the same time new competing entrants have plenty of potential entry points to compete with the offerings of the incumbents. This puts a considerable pressure on the

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Chafkin, Mark Bergen, 'Google Makes So Much Money, It Never Had to Worry About Financial Discipline—Until Now', *Bloomberg Businessweek*, 8 December 2016. Available here https://www.bloomberg.com/news/features/2016-12-08/google-makes-so-much-money-it-never-had-to-worry-about-financial-discipline [accessed 5 March 2017].

[259] Mark Bonchek, Barry Libert, You Don't Need to Be a Silicon Valley Startup to Have a Network-Based Strategy, *Harvard Business Review* [online], 14 July 2017, https://hbr.org/2017/07/you-dont-need-to-be-a-silicon-valley-startup-to-have-a-network-based-strategy?utm_campaign=hbr&utm_source=linkedin&utm_medium=social (accessed 15 July 2017)

[260] For a crisp background of the term, see: Evans and Schmalensee p. 2; which references: Rochet and Tirole, pp. 990-991

[261] Policy department A (economic and scientific policy), *Challenges for competition policy in a digitalised economy*, Committee on economic and monetary affairs (ECON), July 2015, pp. 20-21.

[262] ibid

incumbents to keep innovating themselves to secure their leading position, but leading firms also have much to gain from innovating, as it offers them the opportunity to enter into new markets whilst still enjoying benefits from network effects caused by synergies between the original and new offering. Consequently, this can prove to be a gap that is not possible to bridge, much like one can never grow chronologically older than one's older siblings due to their head start.

A consequence of the pressure to innovate is that the boundaries of the market are constantly being re-defined, in terms of consumer offering, while the important input and output of the market – data – remains more or less the same. Regardless if one uses Uber's services to transport oneself or to order food, or to learn more about the local traffic conditions, one discloses personal data in relation to one's capacity as a moving object.

### Multi-homing[263]

Multi-homing is a term that has become used in the recent discussion about data and competition policy, and denotes when consumers use several providers to get the same service.[264] An example of this would a consumer that has simultaneous subscriptions to for instance both Netflix' and HBO Nordic's services.

The impact of multi-homing on competition among digital platforms is hard to fully understand, as many factors are included in the analysis. On the on hand, "perfect" multi-homing will be rather rare due to switching costs such as loss of network effects and learning new systems, but on the other hand, when products and services are offered for free to customers the competition for the multi-homing customers becomes contingent on the quality of the offering and thus more likely to switch as they see fit. Furthermore, the level of multi-homing may vary among different groups of customers that all use the same multisided platform.

As a practical consideration in regards of the constraints of multi-homing, one have to look at how often the product or service in question is needed by the consumer. Entertainment in the form of digital content is consumed in large quantities, whereas the regular consumer can only be expected to buy so many shoes per year. Therefore, the conditions for multi-homing when shopping for online entertainment are better than those for shoes, as the latter consumer choice is not made as often as the former.

In all, for multi-homing to make a difference in a competitive analysis, the consumers must multi-home to a rather high degree – something which is not entirely plausible to expect on the market.[265] These doubts about the impact of multi-homing have been affirmed by the Commission in the *Microsoft/LinkedIn* merger decision.[266]

## Snowballing: positive feedback loops

With data, one of its uses is that it can be used to improve existing offerings. For instance, the service of web searches can be improved by analysing all searches conducted to see what results seems the most relevant for certain search strings, and then promoting those results for subsequent searches

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[263] *Multi-homing* originally denotes the practice of connecting a host or a computer to more than one network at the same time, which can increase the reliability of the connection.
[264] Atorité de la concurrence and Bundeskartellamt, p. 28
[265] Atorité de la concurrence and Bundeskartellamt, pp. 28-29
[266] COMP/M.8124 – *Microsoft / LinkedIn*, para. 344

made. The more searches are being made, the better the search engine becomes – which can be expected to attract more people to use it. This can lead to self-reinforcing effects which fixes market structures in place: big actors become bigger, and small actors have difficulties with reaching the critical mass necessary to grow in such a way that they can compete with larger incumbents. The gaps and differences between companies only grow larger with time.

The higher revenues earned by larger undertakings could in turn provide them the necessary resources to enter into adjacent markets, which could very well share synergies with the already existing network effects enjoyed, thus leading towards a convergence into monopolisation of data-related markets.

It has been argued[267] that when equilibrium is reached in markets influenced by network effects, the point of equilibrium will diverge from the social optimum due to two reasons: 1) due to economies of scale and product differentiation, these markets are often characterized by oligopoly or monopolistic competition, which is less desirable than perfect competition; and 2) the markets become volatile, due to the importance of R&D and innovation – one monopoly could quickly be replaced by another.[268]

As a perspective, it is possible to argue that the allocation of property rights to *knowledge* (which in this regard can be viewed as being interchangeable with data) can retard rather than stimulate innovations when the value of knowledge/data is cumulative and/or the field is characterised by strong network externalities.[269] Whilst the granting of IPR-styled protection of data as an asset is not on the table, it underlines the notion that concentration and "siloing" of data is undesirable – a sentiment also expressed by the Commission.[270]

# Appendix 2 – Data in a practical business law setting

In line with the somewhat nebulous quality of data in the world of academia, there is no clear legal definition of data nor big data either, but that does not mean that data cannot at all be managed using legal tools. Before describing how data can be managed, I will first describe in what sense big data has been left the "legal orphan" in the world of law. The importance of controlling data and its impact on competition in regards of innovation would sort under the notion of appropriability. The purpose with this appendix is to show why acquisitions can be a more viable option for a company to gain access to data, than "licensing" it would be, and how effects on competition may arise from the design of the rules in a seemingly unrelated field of law.

When the Database Directive (96/9/EC) was implemented it created a *sui generis* type of protection for databases, built upon the model of copyright. It states (art. 7.1) that Member States shall provide protection for the maker of a database, if there has been a qualitatively or quantitatively *substantial investment* in either obtaining, verifying or presenting the contents (my emphasis). In subsequent case law, a substantial investment has come to mean the resources spent in finding existing data and adding them to the database, and not the resources spent in creating the contents of a database.[271] This

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[267] Katz and Shapiro, pp. 93-115
[268] As for instance Facebook replaced Myspace as the dominant online social network.
[269] Foray, pp. 148-149
[270] See for instance the Communication on the data economy, and the accompanying Staff Working Document.
[271] C-338/02 *Fixtures Marketing v. Svenska Spel*; C-46/02 *Fixtures Marketing v. Oy Veikkaus Ab*. For a more in-depth discussion of the Database Directive, Swedish readers are recommended: Marianne Levin, *Lärobok i immaterialrätt*, 10th ed., Norstedts Juridik, Stockholm, 2011, pp. 112-115.

means that what is colloquially referred to as big data as of today fails to qualify as a legally protected database under the Database Directive, as it is most likely that a substantial investment has been made to generate the data inside the frame of the business operation, rather than finding and structuring existing data. Of course, examples of the latter do exist but rather serves as exceptions that underline the main rule: for example, the multinational company Bisnode's commercial offering consists of aggregated information from public documents;[272] and the legal database Karnov's commercial offering consists of searchable legal documents that have been obtained from all of the courts in Sweden.[273] A more conventional way of collecting data is by using automated "crawlers" on the web, which are computer programs that are used to index the content of the web with differing foci, such as for instance the content of one particular site, or the content of all daily news sites. Constructing and maintaining such a crawler does not constitute a substantial investment according to the Database Directive, but the amount of data that is gathered with it can be enormous.[274]

After having just stated that web-crawling is reasonably easy to get started with, and not deemed as a substantial investment for creating a database, it cannot go without mentioning that Google's search engine operates precisely on this principle: Google indexes the entire internet, constantly, using their crawlers.[275] How Google have kept this information – and the algorithm to search it with - to themselves is not by using any formal legal protection per se, but from the use of strict routines regarding trade secrets which can be sanctioned with contract stipulations and trade secrets law.[276]

In Europe, trade secrets are defined as information which meets three cumulative requirements: 1) the information is secret and not generally known or readily accessible; 2) the information has a commercial value because it is a secret; and 3) it has been subject to reasonable steps to be kept secret.[277] This kind of definition serves companies well, who generate and collect information to be used and kept within the confines of the business operation, but is limited to a very small scale of trade and disclosure (in the form of partnerships, joint ventures and the similar) as a trade secret cannot be readily sold in a marketplace or similar solution due to this being in conflict with the requirements of the Trade Secrets Directive.

Picking up on the discussion of how to view data, mentioned earlier, data can also from a pragmatic legal perspective be seen as a commodity. In the *Telefonica UK/Vodafone UK/Everything Everywhere* joint venture decision, the Commission mentioned that "customers generally tend to give their personal data to many market players, which gather and market it. Therefore, this type of data is

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[272] Bisnode discloses the sources of their information, and how often they request new information, here: Bisnode, *Våra källor* [online], https://www.bisnode.se/om-bisnode/vad-vi-gor/var-data-och-sakerhet/vara-kallor/ [accessed 2 March 2017]

[273] Karnov has not disclosed this, but I learned this information by asking the Swedish Court Authority.

[274] Since crawlers in essence are simple programs (in their basic form they only issue http requests), they can be programmed with relative ease. A quick web-search with Google ("make your own crawler") yields several step-by-step tutorial results.

[275] Google discloses their methods here, in a not overly technical way: Google, *How search works* [online], https://www.google.com/insidesearch/howsearchworks/thestory/ (accessed 14 July 2017).

[276] Note that Google is an American company that uses American law when applicable, and that American laws on trade secrets rules differ from European. Also, there is an inherent problem with "stealing" the information held by Google, as it is maintained on a very large number of unwieldy physical servers – such theft would either require considerable logistical capabilities, or the access to another server hall that is comparable in size with Google's (plus the connection to transmit the data).

[277] Trade Secrets Directive (2016/943/EU) art. 2.1

generally understood to be a commodity".[278] One should be mindful that this assessment was made within the frame of a competition law analysis, which looks only at the *effects* of the conduct in question, and carries no formal weight as an argument regarding the status of data in other legal fields. Nevertheless, the statement indicates that data serves an important function in the contemporary economy.

The commonly used method when data is being transacted is to draft elaborate contracts that are modelled on a IP-license chassis, but with the necessary changes made to accommodate the lack of supporting regulation in case of conflict or lack of clarity. This means that questions such as data ownership, allowed use of data, ownership of generated data and suchlike must be stipulated for every contract. A consequence of this is that specialised legal expertise is required in order to draft the necessary contracts, thus creating a substantial transaction cost that might deter actors from entering into data trade agreements with each other. The Commission argues that this might lead to unevenly balanced standard contracts being used, creating undesired lock-in effects of data.[279]

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[278] COMP/M.6314 – *Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV*, para. 543
[279] *"Building a European data economy"*, section 3.4

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