The Data Sharing Economy: On the Emergence of New Intermediaries

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Abstract Data-driven markets depend on access to data as a resource for products and services. Since the quality of information that can be drawn from data increases with the available amount and quality of the data, businesses involved in the data economy have a great interest in accessing data from other market players. However, companies still appear to be reluctant to share their data. Therefore, the key question is how data sharing can be incentivized. This article focuses on data sharing platforms, which are emerging as new intermediaries and can play a vital role in the data economy, as they may increase willingness to share data. By comparing data sharing to the exchange of patents based on the FRAND principles, this article suggests a possible way for self-regulation to provide more transparency and fairness in the growing markets for data sharing.

Keywords Data-driven markets · Data sharing economy · Access to data · Platforms · Standard-essential patents · FRAND

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1 Introduction

Access to data – understood as information stored in digital datasets – plays a major role for individuals' well-being and societal development.¹ Data can serve various purposes: It can be used by companies to optimize internal processes. Companies can provide data as part of specific products or services, or they can further analyze the data and use it to derive new knowledge. Especially within the last decade, higher data storage capacities, faster means of data transmission and more powerful computing performance have significantly advanced the possibilities of data-driven innovation. In today's age of machine learning, significant innovation relies on huge amounts of training data and therefore on the availability of vast datasets. It does not come as a surprise that data regulation in general and the debate on access to and ownership of data in particular have become the most visible regulatory discussions in both recent legal scholarship and current regulatory policies.

The goal of this article is to advance the data access and ownership debate by identifying and discussing future regulatory issues regarding B2B data sharing. For that purpose, particular focus is placed on the increasing role of data sharing platforms. In line with current evidence and in the light of the early stage of market development, there is considerable discussion of such regulatory measures that are less invasive than a hard obligation for companies to share their data. In that respect, the self-regulation of standard setting in the patent context may give valuable guidance for mastering future challenges in the data sharing economy.

The analysis can be outlined as follows: Firstly, the regulatory paradigm of the free flow of data is sketched out (see Sect. 2). This permits the understanding of the crucial function of incentivizing data sharing for data-driven innovation and the current regulatory state of play. On that basis, a more specific definition of data sharing is framed and complemented by a side-look at the conventional "sharing economy" (see Sect. 3). This leads to a more nuanced discussion of different data sharing models and the corresponding market developments in the absence of specific regulation (see Sect. 4). The focus is on platforms as trusted intermediaries, which are becoming more and more visible as data market players. The next section compares the situation with FRAND, which originally refers to patent licensing in the standard-setting context (see Sect. 5). There are several similarities but also crucial differences between patents and data that need to be pointed out. In any case, the discussion of FRAND poses valuable implications for the regulation and in particular for forms of self-regulation in the data sharing context. These implications will be discussed further (Sect. 6), before a final summary of the findings (Sect. 7).

¹ See in general OECD (2015). The European Commission and Everis (2018) have estimated that the value of the European data market amounted to EUR 60 billion in 2016 (p. 23 with further references on the economic potential).

2 Background: The “Free Flow of Data” Paradigm

For two decades now, increasing accessibility and re-usability of information has been a major issue for public sector information.² In contrast, the discussion about the wide accessibility of private sector data has gathered momentum only within recent years.³ Data sharing can enable access to large, high-quality data sets. This provides opportunities for improving business processes and for creating new business models and services. Considering the vast innovation potential of various data uses, policymakers’ paradigm has gradually shifted; and the call for encouraging business-to-business (B2B) data sharing has intensified even more in the age of advanced machine learning.⁴

Policymakers, industry players and academia have extensively discussed possible regulatory options for fostering the data-driven economy in the B2B sector. Especially with regard to machine-generated data and value networks,⁵ the policy debate at EU level originally addressed the introduction of data ownership rights.⁶ To this day, data as such is not protected by intellectual property rights.⁷ Introducing such *erga omnes* rights⁸ would pose the risk of increasing market concentrations and might not solve the identified problems effectively. Since it has become apparent that access to data is of primary importance, consideration can be given to the introduction of access rights.⁹ Informed by an intensive academic debate,¹⁰ the European Commission has thoroughly explored the stakeholders’ interests.¹¹

² For the background see SWD (2018) 145 final, pp. 4 *et seq.*; Richter (2018), p. 54 *et seq.*

³ Early Zech (2012), p. 423; Dorner (2014); and Zech (2015).

⁴ SWD (2018) 125 final, p. 3.

⁵ For a more detailed description of such value networks see Kerber (2016), pp. 995 *et seq.*; Wiebe (2016); and Drexel (2017a), p. 265 *et seq.*

⁶ See already COM (2015) 192 final, pp. 15 *et seq.*; see for a comprehensive summary of discussion in the Member States, SWD (2017) 2 final, pp. 22 *et seq.*; launching a broad stakeholder consultation, COM (2017) 9 final.

⁷ See SWD (2017) 2 final, pp. 19 *et seq.*; Drexel et al. (2016), Schweitzer and Peitz (2017), p. 61 and Drexel (2017a), pp. 267 *et seq.*

⁸ See for a definition, Drexel et al. (2016), para. 4 *et seq.*; more detailed on the concepts of ownership, Kim (2017); see also Krämer and Wohlfahrt (2018), pp. 164 *et seq.*; for an EU-US comparison, Determann (2018); on the concept of a “data producer’s right”, Zech (2017); for a property approach, Ritter and Mayer (2018).

⁹ On the role of access to large data sets and the need to aggregate small data sets, see Hofheinz and Osimo (2017), p. 6; on access rights, Weber and Thouvenin (2018), p. 65 *et seq.*; Drexel (2017a), pp. 278 *et seq.*; Schweitzer and Peitz (2017), pp. 77 *et seq.* Currently, different laws on access exist, but they are context- and sector-specific, see Früh (2018), pp. 532 *et seq.*

¹⁰ For a comprehensive overview on the debate, see Drexel (2017a), pp. 258 *et seq.*; Drexel (2017b), pp. 340 *et seq.*; Fezer (2018), pp. 87 *et seq.* (footnotes 15 *et seq.*); on the protection of industrial data, Wiebe (2017); for a discussion from an economic perspective, Kerber (2016).

¹¹ European Commission and Deloitte (2017), and European Commission and Everis (2018). See for a summary of the stakeholder consultation (from 10 January to 26 April 2017), <https://ec.europa.eu/digital-single-market/en/news/summary-report-public-consultation-building-european-data-economy>.

Ultimately, the Commission did not introduce mandatory legislation on a horizontal – i.e. non-industry-specific – basis. Instead and quite reasonably, the Commission issued guidance for B2B and B2G data sharing,¹² which addresses the contracts between the parties who share the data.

Given the current stage of market and technology development and the limited empirical evidence gathered so far,¹³ the core question remains: How can there be greater incentives for companies to share their data on a larger scale and with higher quality?¹⁴ Market actors can be reluctant to share data for various reasons. Besides strategic motives for access denial, they might not engage in sharing because they fear a loss of control over their data when it is re-used by third parties.¹⁵ Furthermore, companies might simply not know (yet) that “their” data can be useful for other players without harming their own business interests.¹⁶ Hence, the challenge is to implement instruments that facilitate access to data which is normally not being made available.¹⁷

When exploring different regulatory instruments, account must be taken of the actual market developments. In fact, data sharing is becoming more and more visible. In particular, sharing via platforms is advancing significantly as technology and business models progress. At the current stage, the relevant markets still appear premature and growing. Therefore, it seems sensible not to intervene with binding regulation. At the same time, market developments should be closely followed, so that potential market failure can be identified in advance. Currently, increasingly in-depth regulatory discussions that address data can be heard in the Member States, and more sector-specific solutions in particular are being sought.¹⁸ Instead, the following analysis focuses on overarching principles when it comes to the regulation of sharing platforms. Such platforms are moving to the center of the data economy and the functioning of data-driven markets. Therefore, a closer look at them can point regulators to the path towards incentivizing data sharing.

¹² SWD (2018) 125 final “Guidance on sharing private sector data in the European data economy” as background of the Communication COM (2018) 232 final “Towards a common European data space”.

¹³ The quantitative evidence lacks representativeness: See European Commission and Deloitte (2017), which is based on 152 respondents for the “general survey” and 58 respondents for the “specific survey”, predominantly from the automotive industry. Furthermore, European Commission and Everis (2018). Out of 1071 companies addressed, 129 responded. See on the methodological problem of evidence-based policy making regarding the regulation of the data economy, Richter and Hilty (2018), pp. 249 *et seq.*

¹⁴ See European Commission and Deloitte (2017), p. 403. The interest in accessing data is greater than the interest in sharing the data.

¹⁵ For a break-down of reasons not to share, see European Commission and Everis (2018), p. 44. Another concern is the high risk of being exposed to liability (if data are not anonymized correctly).

¹⁶ European Commission and Everis (2018), p. 54, shows the unsuitability of data for the use needed.

¹⁷ See Graef and Husovec (2017), p. 7.

¹⁸ See for Germany, Specht and Kerber (2017); see in particular for the automotive industries, Bundesministerium für Verkehr und digitale Infrastruktur (2017); Hornung and Goebble (2015); and Kerber and Frank (2017); generally about the perspectives of sector-specific regulation, Früh (2018).

3 Delineating the Data Sharing Economy

3.1 The Sharing Economy

The observation of particular models of data sharing and their regulatory implications needs a more precise framing of the meaning of “data sharing”. However, there is no generally settled definition. Intuitively, “sharing” has a benign connotation.¹⁹ It points to the notion of the “sharing economy” – a multifaceted buzzword that is nowadays used in common language just as it is still contested in the academic debate.²⁰ The economic core of the conventional sharing economy (e.g. Uber, Airbnb etc.) lies in the more efficient use of resources (mostly products and services) as a consequence of a technically enabled reduction of transaction costs.²¹ Therefore, it does not come as a surprise that the sharing nomenclature has been extended to the exchange and use of data as such, despite the existing conceptual differences between data sharing²² on the one hand and the sharing of conventional tangibles or services on the other hand.²³ Nevertheless, the notion of a “data sharing economy” has been chosen deliberately, since it points to regulatory issues²⁴ that are evolving from the emergence of sharing platforms as “new intermediaries”. To a certain extent, a side-glance at the “conventional” sharing economy may inform the analysis of data sharing platforms.

3.2 Data Sharing

For the purpose of analysis, there is a need to further delineate what can be understood as data sharing in the context of the data sharing economy. The Commission uses the term “data sharing” “in order to describe all possible forms and models underpinning B2B data access or transfer.”²⁵ According to this

¹⁹ Seminal for the framing of sharable goods and sharing as a modality of economic production Benkler (2004).

²⁰ See for the general discussion about the definition and subject of the sharing economy Davidson et al. (2018), pp. 1 *et seq.*; for a narrow definition of the sharing economy, Frenken and Schor (2017), pp. 4 *et seq.* “Consumers granting each other temporary access to under-utilized physical assets, possible for money”. More suitable in our data context is the broader definition by Zale (2016), p. 976, according to which the sharing economy is characterized by: (1) monetization of previously unmonetized assets, (2) access to those assets rather than ownership, (3) technologically driven disaggregation of the assets, and (4) peer-to-peer transactions facilitated by third-party platforms. For a comprehensive overview on definitions and taxonomies of the sharing economy see Codagnone and Martens (2016), pp. 6 *et seq.*

²¹ In particular search costs (pre-deal), bargaining and decision costs (deal making), policing and enforcement costs (post-deal), see Lobel (2018), p. 68. On the innovativeness of the sharing economy and its implications for regulation, see Ranchordás (2015).

²² Another strand of discussion is the shareability of IP rights, in particular copyrights, see Johnson (2014); also regarding patents, especially on patent pools, see Hovenkamp and Hovenkamp (2017) with further references. However, data as such do not enjoy IP protection.

²³ See for a taxonomy, Frenken and Schor (2017), pp. 4 *et seq.*

²⁴ See Codagnone and Martens (2016), pp. 20 *et seq.*

²⁵ SWD (2018) 125 final, p. 5.

understanding, virtually all sorts of data flows between companies, with customers and even within companies might be understood as data sharing. The explanatory value of the Commission's extremely broad definition of data sharing is that it points to the variety of means of data exchange and the range of potential actors involved. In the data sharing economy context, however, the focus must be narrowed down as follows:

First, the analysis addresses direct sharing between businesses and does not consider data exchange between businesses and other stakeholders, such as governments²⁶ or consumers. Especially when it comes to sharing consumer data, personal data are usually involved, and data protection laws apply as a consequence.²⁷ One way to foster sharing in this area is to mandate portability rights, which empower a third party to ultimately decide whether data is to be shared. Such a right has been introduced with respect to personal data (Art. 20 GDPR), and good reasons might be put forward to extend such regulatory mechanisms to non-personal data.²⁸ However, as this analysis focuses on direct forms of market exchange, these constellations lie beyond its scope.

Secondly, the main interest concerns cross-industry sharing of the data. As yet, most data sharing is within the same industry, meaning between businesses, customers and suppliers,²⁹ e.g. for the purpose of improving the efficiency of supply chain management.³⁰ However, from a perspective of business model and product innovation, it appears more insightful to ask what the conditions would be for data flow from one sector to the other.³¹ In general, considerable differences between sectors can be identified, in terms of how data is accessed and in terms of the data that is (re-)used.³² However, there remains a methodological challenge of circularity: In the wake of digitization and datafication, the value proposition of companies shifts across the sectors. Industries as such lose their conventional boundaries, they transform or converge. Nowadays, it appears anything but clear what exactly e.g. "the automotive industry" comprises.³³

Thirdly, and for this reason, the focus is put on sharing platforms. They can be understood as (third-party) enablers for sharing data. A platform is more than a mere

²⁶ Especially with regards to data sharing between private entities and the government, particular legal and economic differences occur; see for distinct principles on B2G data sharing, SWD (2018) 125 final, pp. 12 *et seq.*; in detail on B2G data sharing, Früh (2018), pp. 10 *et seq.*

²⁷ This can also apply in the B2B context, see for a nuanced differentiation between personal and non-personal data regarding the regulation of the data economy, Specht and Kerber (2017) and Schweitzer and Peitz (2017).

²⁸ Drexel (2017a), p. 286 and Graef et al. (2017); see on portability in general, Janal (2017).

²⁹ For details of a survey see Pauer et al. (2018), pp. 18 *et seq.*

³⁰ See Pauer et al. (2018), p. 17.

³¹ In any case, cross-industry data exchange is considered at a strategic level at 40% of companies, see Pauer et al. (2018), p. 11.

³² European Commission (2017b), p. 4.

³³ See for a detailed analysis of stakeholders in the automotive industries, Kerber and Frank (2017), who also include insurance companies.

unilateral mechanism for technically enabling data access, such as an API.³⁴ Rather, platforms enable a systematic exchange of data sets and streams on a large scale between many actors. Furthermore, platforms remind us of the conventional sharing economy in terms of their particular functions and economic features. This will be outlined and discussed in the following.

4 Data Sharing Platforms: Models and Developments

4.1 Definition and Relevance

Currently, many different sorts of platforms that relate to B2B data sharing are emerging as new intermediaries.³⁵ From a technical point of view, such platforms can be understood as an “architecture allowing programmability and reuse of content and data, typically through API, and organizing modularity between a stable core and variable components”.³⁶ Therefore, data sharing platforms provide the technical infrastructure for the exchange of data between multiple parties. From an economic perspective, their key function is to facilitate data sharing by lowering transaction costs through combining different data sources³⁷ and matching users and suppliers.

However, rather important for understanding relevant market developments is the question of what value propositions drive the emergence of data sharing platforms. While the term “platform” might sound neutral at first glance,³⁸ they are set up and owned by particular businesses with different incentives and strategic development perspectives in mind. The following analysis therefore focuses on particular forms of data sharing that can be defined and categorized according to different parameters (Sect. 4.2). After the core functions of such platforms have been identified (Sect. 4.3), possible scenarios for market development will be outlined (Sect. 4.4).

4.2 Sharing Platform Parameters

In particular, different platform models exist. For a taxonomy, several parameters can be identified for the categorization of data sharing platforms. In the following, the most relevant parameters in practical terms are discussed.

Firstly, a broad distinction can be made between platforms set up by the same companies that share the data, as opposed to data sharing platforms provided by third parties. This question of platform ownership matters when it comes to regulatory implications. Larger companies in particular run their own data platforms

³⁴ SWD (2018) 125 final, p. 8; the Commission encourages companies to consider using open, standardised and well-documented APIs more broadly, *see* COM (2017) 9 final; *see also* Recital 28 of the Commission’s draft on the recast of the Public Sector Information Directive COM (2018) 234 final.

³⁵ *See* Plantin et al. (2018), p. 4.

³⁶ *See* Plantin et al. (2018), p. 2.

³⁷ *See* Fraunhofer (2016), p. 13.

³⁸ *See* Plantin et al. (2018), p. 6.

in order to manage regular data interactions with third parties. Usually, this relates to data that affect the performance of the companies' core activities. At the same time, company-owned platforms can also serve as a distribution channel that simply permits the monetization of the companies' own data to generate additional revenue.³⁹ In both cases, industry develops different technical solutions for data sharing. Such solutions tend to be standardized on a larger scale. Most notably, the International Data Space (IDS)⁴⁰ is an example of an integrated reference model, which is meant to enable data to be linked within and among business data ecosystems.⁴¹ As a peer-to-peer-network,⁴² IDS implements a decentralized data sharing structure.⁴³ In contrast, third-party platforms are owned by an independent operator. Companies tend to make use of such platforms for data sharing either if they cannot afford to build their own or if the neutrality of the platform where data can be shared brings additional benefits.⁴⁴ Such platforms can target a wider circle of customers and offer the chance to create "additional" revenue by monetizing the data. The platforms themselves are business models which follow various value propositions. From a data sharing economy point of view, those platforms are of particular interest which benefit from the amount of data sharing transactions, but which do not generate or buy the data themselves. Rather, they function as a mere sharing facilitator. A well-recognized example is the French company DAWEX, which was founded in 2015 and describes itself as a "global data marketplace". It focuses its business on assisting in data transactions and providing related services such as data anonymization.⁴⁵ Therefore, the main role of DAWEX as data sharing platform lies in the matching, licensing, and transfer of data sets.⁴⁶

The second crucial parameter is the degree of openness of the platform to new participants. Due to their two-sided nature, platforms connect buyers and sellers. However, platforms can be closed in a sense that they are limited to certain cooperating partners. Such closed or selective systems allow for a higher degree of control on the usage made of the shared data.⁴⁷ It is also common to speak of *data pooling*, when firms share their data "in reference to a given service or generally in an industry, or within an e-ecosystem".⁴⁸ Closed platforms can be set up by core

³⁹ E.g. "BMW CarData": <https://www.bmwblog.com/2017/05/30/bmw-group-launches-bmw-cardata/>.

⁴⁰ Formerly known as Industrial Data Space, which was developed by Fraunhofer and others, see <https://www.internationaldataspaces.org/>.

⁴¹ See Ritter and Mayer (2018), p. 231.

⁴² See Pauer et al. (2018), p. 25.

⁴³ See Fraunhofer (2016), p. 13 and Pauer et al. (2018), p. 25, describing the platform as a club, meaning that joint rules exist for members who want to join the club, especially when it comes to liability; this system is also used by the Data Intelligence Hub of Deutsche Telekom, a trusted platform for data sharing, see <https://dih.telekom.net/>.

⁴⁴ European Commission (2017b), p. 11.

⁴⁵ European Commission (2017a), p. 2.

⁴⁶ European Commission (2017a), p. 9.

⁴⁷ SWD (2018) 125 final, p. 5.

⁴⁸ Lundqvist (2018), p. 146; see for the economic background of data pooling, referring to the "big data anticommons", Mattioli (2017), pp. 189 *et seq.*

players in a data sharing environment as well as by independent intermediaries.⁴⁹ If, in contrast, platforms are in principle open and therefore target a wide and unknown range of participants, they become “data marketplaces”, just as Ebay is a marketplace for tangible goods. Somewhere in between entirely “open” and “closed” platforms are those which enable sharing between specific players, while at the same time the “data sharing club” is open to new entrants if they fulfill certain requirements.⁵⁰

Another parameter for the differentiation of platform models is the degree of integration, i.e. whether the platform can be seen as an intra- or inter-industry intermediary – notwithstanding the above-mentioned general problem of the delineation of sectors. Data sharing on a larger scale has become visible with respect to specific communities or industries. Most data sharing via platforms takes place within existing value chains or value networks,⁵¹ such as in particular in the automotive⁵² or the agricultural⁵³ sector. In this case, the participants follow a common or complementary value proposition. A prominent platform in the logistics sector is “iShare”, on which industry players can exchange and monetize their data.⁵⁴ Other platforms relate to research data: “Figshare”, which is owned by Springer, is a commercial platform that first targeted individual researchers and then expanded to (academic) institutions.⁵⁵ The research platform “Vivil” has been founded to facilitate the sharing and reuse of clinical research data in particular.⁵⁶

Furthermore, data sharing platform providers can also offer additional functionalities and services. This could include the provision of model contract clauses or anonymization services.⁵⁷ Ultimately, the platform may become much more than a mere enabler for data sharing, should it offer services that are based on data analysis⁵⁸ and adjust the data to certain business needs or questions of the companies.⁵⁹

⁴⁹ SWD (2018) 125 final, p. 5; Lundqvist (2018), p. 149, speaks of “third party specific infrastructure pool provider”.

⁵⁰ E.g. iShare in the Netherlands, which “enables everyone in the logistics sector to share information with all participants”, see <https://hollandfintech.com/2018/03/innopay-data-sharing-platform-ishare-goes-live-in-the-netherlands>.

⁵¹ For examples see Fraunhofer (2016), pp. 27 *et seq.*

⁵² See Bundesministerium für Verkehr und digitale Infrastruktur (2017) and European Commission and Deloitte (2017), pp. 292 *et seq.*

⁵³ See European Commission and Deloitte (2017), pp. 210 *et seq.*; European Commission (2017b), p. 3, according to which “super partes entities” are “established to enable the trust creation along the value chain and allow players to pool data together and have access to it”.

⁵⁴ See <https://www.ishareworks.org/en/ishare>.

⁵⁵ See Plantin et al. (2018), p. 7.

⁵⁶ See <https://www.healthcare-informatics.com/news-item/analytics/vivli-launches-clinical-research-data-sharing-platform>; see for cancer research data in particular, <https://projectdatasphere.org/projectdatasphere/html/home>; see also Mattioli (2017), pp. 205 *et seq.*

⁵⁷ SWD (2018) 125 final, p. 10.

⁵⁸ SWD (2018) 125 final, p. 9; see e.g. Zeotap as a data market place that refines data, provides quality-audit and merges data across sources, <https://www.zeotap.com/>.

⁵⁹ SWD (2018) 125 final, p. 11.

Finally, a crucial question is whether the data is shared in return for remuneration. Various models exist according to which business data is shared for free. Companies tend to follow such open data approaches if they have a strong interest in data re-use, e.g. if they benefit from third party services built on these data.⁶⁰ Another reason to provide business data on a larger scale for free is to serve the public interest on a voluntary basis.⁶¹ However, such cases of “data philanthropy” remain the exception.⁶² A more significant amount of data with higher quality can be expected to be shared for some sort of remuneration, mostly by monetization through a platform.⁶³ Pricing models can vary significantly (e.g. per transaction, flat rate, differential licensing etc.). Auction models have also been implemented.⁶⁴

4.3 Core Functions of Data Sharing Platforms

For gaining a deeper understanding of how markets for data sharing might progress, a closer look at the core functions of data sharing platforms appears helpful. Such functions point to the platform business models and reveal development scenarios that might hint at possible regulatory issues. The functions of sharing platforms become clear when we consider the incentives of the involved parties regarding the transaction and the specific qualities of the goods in question, which is data.

As with conventional platforms, the primary function of data sharing platforms is to match supply and demand between data suppliers and users.⁶⁵ To attract users, the platform must attract a critical mass of participants who are eager to share their data, and vice versa. In this respect, network effects foster efficiency.⁶⁶ A major challenge for matching, however, is the obscure quality of the traded goods, i.e. data itself. Users need to understand the quality if they are to assess the usefulness of the data. For them, it is valuable to get as much “information about the information” as possible beforehand. This enables users to assess whether they would benefit from acquiring the data, and it is a decisive factor for ultimately joining the platform and engaging in sharing.⁶⁷ Therefore, a main function of data sharing platforms is to level out this information asymmetry without curtailing the incentives for the suppliers to share.⁶⁸

⁶⁰ SWD (2018) 125 final, p. 5.

⁶¹ See for examples, Früh (2018), p. 529.

⁶² See for examples of data donorship, SWD (2018) 125 final, p. 12; from a global perspective, however, this data philanthropy only concerns a fraction of all data sharing, see SWD(2017) 2 final, pp. 14 *et seq.*

⁶³ As opposed to data monetization on the basis of bilateral contracts against remuneration, see SWD(2018) 125 final, p. 5.

⁶⁴ See DAWEX, <https://www.dawex.com/en/pricing/>.

⁶⁵ See Fraunhofer (2016), p. 17 and SWD (2018) 125 final, p. 10.

⁶⁶ See Shapiro and Varian (1999), pp. 13 *et seq.*; on the definition of two-sided markets, Rochet and Tirole (2006); for a comprehensive discussion in the platform economy context, OECD (2018); see also Bundeskartellamt (2016), pp. 99 *et seq.*

⁶⁷ This resembles the “Arrow information paradox”, named after the economist Kenneth Arrow.

⁶⁸ E.g. by providing a registry, see Fraunhofer (2016), p. 17.

Trust is seen as *the* major precondition for data sharing.⁶⁹ Therefore, the creation and maintenance of trust is a key function of data sharing platforms. This does not come as a surprise when we look at the incentives of the suppliers to provide their data for sharing on a larger scale, which in particular includes many parties with whom they have no business relations. There is no doubt that a lack of trust would lead to less sharing regarding both quantity and quality of data.⁷⁰ The significance of trust is well-known from the conventional sharing economy.⁷¹ Especially when it comes to contracting with unknown peers, review systems are a key ingredient for making the sharing economy happen on a larger scale.⁷² However, large scale *data* sharing poses additional trust-related problems. Besides the companies' general strategic interest in knowing who is re-using their data,⁷³ their major concern relates to the actual (illicit) use of the data they are providing. More than in the conventional sharing economy, a breach of trust might result in a permanent loss of control over data.⁷⁴ To put it in other words: A blatantly rude taxi driver or an overly noisy weekend apartment are rather marginal risks as compared to long-term damage to the data suppliers' position through the illicit use of large datasets. As a consequence, the platforms' mechanisms to maintain trust must be more elaborate and consist of a bundle of different measures: Platforms can perform screening when selecting partners that join the platform beforehand.⁷⁵ They may also supervise and protocol the individual transactions,⁷⁶ as well as enforce usage constraints⁷⁷ or at least assist in doing so. In contrast to the conventional sharing economy debate, however, we do not (yet) see a discussion about the liability of data sharing platforms themselves, which might mitigate the risks of illicit data use. In any case, contractual agreements between the sharing parties set a legal basis for the data use, liability and respect for the parties' interests, and the platform can provide corresponding model terms.⁷⁸ What seems even more important than the legal frame are the actual technical measures that can be implemented for

⁶⁹ SWD (2018) 125 final, p. 1; European Commission and Everis (2018), pp. 82 *et seq.*; *see also* IDC and Lisbon Council (2017), p. 25; furthermore Hofheinz and Osimo (2017), p. 14, pointing to a general cultural notion beyond the technical issues of data security: People need to feel comfortable about their data being shared, otherwise they won't share it.

⁷⁰ The more sensitive the data (and especially its re-use for unauthorised purposes) is, the less likely sharing becomes, should trust not be maintained.

⁷¹ *See* Richardson (2015), p. 126; Zale (2016), p. 977 refers to "resource maximization" and "risk minimization"; *see also* Frenken and Schor (2017), p. 6, about lowering the risk when "sharing" with strangers.

⁷² For the early days on eBay, *see* Rietjens (2006); in particular on Airbnb and the relevance of photos as compared to reviews for the creation of trust, *see* Ert et al. (2016).

⁷³ *See also* IDC and Lisbon Council (2017), p. 25 and Pauer et al. (2018), p. 23: If you upload data on conventional platforms, you simply do not know who is going to read it.

⁷⁴ According to Pauer et al. (2018), pp. 12 and 23, 29% of companies are afraid of security risks and worried about losing control over data, and the biggest fear is that "core data" and business secrets can be exposed.

⁷⁵ European Commission (2017a), p. 5.

⁷⁶ *See* Fraunhofer (2016), p. 17.

⁷⁷ *See* Industrial Data Space Association (2017), p. 8.

⁷⁸ SWD (2018) 125 final, p. 3.

strengthening trust.⁷⁹ Amongst other things, platforms can include certification mechanisms,⁸⁰ provide for different security levels,⁸¹ implement blockchain technologies⁸² and use digital watermarking.⁸³

Another core function of data sharing platforms is the processing of the transaction, which affects not only the data transfer itself, but can also include the exchange of corresponding remuneration. Platforms can provide legal and technical assistance for that purpose. Should data sharing platforms decide to integrate payment services, they would simply follow the business model development of conventional sharing platforms.⁸⁴ However, data sharing platforms – as compared to other sharing platforms – might benefit from their late market entry, as they may be able to implement state-of-the-art payment technologies (especially crypto-currencies) upfront. It remains to be seen in the future whether such holistic business models succeed.⁸⁵

In conclusion, the core functions of platforms point to their value propositions, and platform providers can gain competitive advantages by improving these functions. But as the discussion of different parameters of sharing platforms has already revealed, competitive advantages also stem from the extent of the integration of additional functions and services which are directly related to the semantic dimension of data that is traded on the platforms. While it appears too early to foresee how business sharing platform models, ecosystems and corresponding markets will develop and probably consolidate in the medium term, one can at least think about possible development scenarios that account for the economies of scale and scope that apply to data sharing platforms.

4.4 Development Scenarios

The analysis shows that current data sharing models vary significantly regarding the type of data in question and the strategic business interest.⁸⁶ But when discussing regulatory options, account should be taken of the immaturity and highly dynamic nature of data sharing platforms and markets. To this end, we need to understand the

⁷⁹ See Industrial Data Space Association (2017), p. 8.

⁸⁰ See Fraunhofer (2016), p. 17.

⁸¹ See Industrial Data Space Association (2017), p. 9.

⁸² See e.g. RepuX, <https://bitcoinmagazine.com/articles/repux-and-future-blockchain-based-data-sharing/>.

⁸³ SWD (2018) 125 final, p. 11.

⁸⁴ Conventional sharing economy platforms have increasingly integrated third-party payment systems, see e.g. Uber offering “Google Pay” or Airbnb, offering a variety of new payment services, see <https://www.airbnb.de/help/article/126/what-methods-of-payment-does-airbnb-accept>. In the EU, Directive (EU) 2015/2366 of 25 November 2015 on payment services in the internal market (“PSD-2”) intends to stimulate the development of such services.

⁸⁵ An example for such a data market place is RepuX (<https://repux.io/>), which combines blockchain-based data sharing and payment. However, in general, crypto-currency driven platform models appear to be at a rather early stage in the EU, not least because they face regulatory obstacles and considerable legal uncertainty.

⁸⁶ SWD (2018) 125 final, p. 5.

intentions of the specific platforms, which can be derived from the conditions they offer to market participants. However, a major methodological problem is that in the B2B context, the terms and conditions for participation in the platform are not necessarily published.⁸⁷ Not much is known about exclusivity⁸⁸ or rights reserved to the platform owner to be able to harvest knowledge from data that is shared on the platform. Should that be the case, the platform would not remain merely a “neutral” intermediary. Therefore, at this stage, it is only possible to sketch probable development scenarios where we might apply the insights from conventional platform development to a certain extent, while accounting for their core functions and the specific characteristics of data.

As regards the matching function, platforms benefit from network effects as a form of economy of scale – as long as they can maintain trust.⁸⁹ The industry seems optimistic that good platforms can achieve the critical mass.⁹⁰ But what does critical mass mean in the world of network effects? If a sharing platform is not targeted at a specific purpose, but at an inter-sector data marketplace, it can therefore be expected to grow. This takes place either naturally by attracting more and more users and suppliers or by acquiring other competing or complementary platforms. It can therefore be expected that sooner or later the data sharing economy will consolidate, should market players be able to build and maintain the trust necessary for large scale data sharing. Consolidation therefore tends to reward those players that know best how to scale trust, which ultimately appears to be a question of technology.

At the same time, the provision of value-added, data-related services on top of the core functions of the platform seems to be a key success factor.⁹¹ The crucial question is how such synergies of scope drive the markets and enable a higher degree of integration of data-related services – be it vertical or conglomerate. As a consequence, we can expect greater market concentration: Taking into account the fact that the data is exchanged on platforms, the platform owner – once the parties are locked into this platform – might have enough power to oblige the sharing parties to his own benefit.⁹² As long as this does not affect the positions of the parties, market participants will most likely not leave or switch platforms. However, from a macro-perspective, such agreements can hamper the competitive process. The crucial question therefore is whether players will remain neutral facilitators of data sharing or if platform neutrality is abandoned subject to incentives that stem from the integration of third-party data. This development affects both platforms of companies that also share their own data within a network or offer other services

⁸⁷ See for general methodological issues in this field Richter and Hilty (2018).

⁸⁸ Especially the discussion of Most-Favored-Nation clauses on distribution platforms, see Caffarra and Kühn (2018).

⁸⁹ See Fraunhofer (2016), p. 13.

⁹⁰ See Pauer et al. (2018), p. 23.

⁹¹ See Fraunhofer (2016), p. 17: The value proposition for many platforms is to offer value added services (as e.g. data analysis).

⁹² On lock-in in the IoT context, see Schweitzer et al. (2018), pp. 139 *et seq.* Recently, the Commission has launched investigations on Amazon’s data practices. In particular, concerns had been raised over how Amazon was using data from third-party sellers, see <https://www.businessinsider.de/amazon-investigated-by-eu-commissioner-margrethe-vestager-2018-9?r=US&IR=T>.

than only a data marketplace, and neutral platforms that start as “mere” data marketplaces.⁹³ Quite interestingly, there is a third kind of relevant player, companies in the “conventional sharing economy” that started as platforms for matching “analogue” services but are now proceeding into the domain of providing data services, based on the massive amount of data exchanged on their platforms.⁹⁴ In addition, synergies of scope might foster the consolidation of the industry after a while, leading to less fragmentation.

Finally, the discussion revealed the high relevance of technology as an enabler for all three core functions: matching, trust and managing the data exchange. The future development of markets and dependencies between companies depends significantly on technical interoperability standards that enable such large-scale data sharing. This affects e.g. APIs⁹⁵ just as much as “new intermediaries” such as blockchain technology. Therefore, de facto standards can evolve and the crucial question for market development is how proprietary the standard is and how it is set: Platform competition can lead to different standards, while at the same time a platform that has become dominant can set the standard on a de facto basis.

5 Data Sharing and FRAND

5.1 Relevance of Self-Regulation for Data Sharing

Based on the available although sketchy empirical evidence, the interests of companies appear quite diverse: While some studies imply an ability of companies to access data when necessary,⁹⁶ other studies indicate insufficient openness and reluctance to share data.⁹⁷ In any case, the data sharing economy is evolving rapidly and new business models and uses of data are developing all the time. Therefore, there seems no urgent need for binding regulation related to data sharing. At the same time, the development should be carefully monitored. To this end, it seems helpful to apply a broader understanding of regulation, according to which

⁹³ Such as DAWEX; also in the case of the Data Intelligence Hub, Deutsche Telekom states that it remains a neutral trustee, but also provides tools for analyzing the data, see <https://www.telekom.com/en/media/media-information/archive/t-systems-creates-a-safe-marketplace-for-data-sharing-522200>.

⁹⁴ Miller (2018), p. 196 *et seq.*, notes that conventional sharing platforms become both generators of data (Uber Movement, which has transformed into a data-driven company “using the wealth of information they know about me and you to deliver new services and generate revenue by selling this data to others”) and platforms for the processing of data (Airbnb Airflow as an open source data management software as platform for cities on which to place data). He (p. 200) predicts that the future will depend on the “scope of how the platforms on which those sharing economy companies can transform themselves into integrated platforms that deliver daily solutions to consumers, many of which will integrate data-driven and AI-enhanced products.” See also Lobel (2018), p. 76.

⁹⁵ To date, it is not clear to what extent and in which cases APIs qualify for copyright protection; see recently Federal Circuit, March 27, 2018, Case No. 2017-1118 – *Oracle Am., Inc. v. Google LLC*, where the Federal Circuit confirmed copyright protection and concluded that Google’s use of the Java APIs was not protected by the fair use doctrine.

⁹⁶ European Commission and Deloitte (2017), p. 31.

⁹⁷ European Commission and Everis (2018), p. 44.

regulation does not necessarily mean hard regulation in the form of statutes, regulations or other forms of legislative or binding executive measures.

Instead, the focus of the regulatory debate shifts to the governance of the market actors themselves and therefore to forms of self-regulation. Companies and particularly data sharing platforms as intermediaries may (and probably should) develop best practices and codes of conduct for data sharing. This can incentivize sharing by lowering transaction costs and building trust. While codes of conduct already exist in specific sectors, such as agriculture,⁹⁸ the convergence and overlap of technologies and markets calls for a broader and more general approach. Such codes can create the necessary transparency in the market, especially for new market participants. This can also lower the bar for market entry for new SMEs. Codes of conduct can be designed as mere suggestions, but they can also include sanctions in the event of misconduct.⁹⁹ In the end, the crucial question is how much freedom for self-regulation market actors require and at what point they will not follow guidelines at all, due to their non-binding character.

The most eminent example of self-regulation that relates to innovation and competition is the governance of standard essential patents and their licensing via FRAND commitments in the standard setting context. A closer look appears desirable, for a discussion of whether and to what extent self-regulation principles can be a regulatory paradigm for data sharing.

5.2 The Concept of FRAND

The term FRAND has been particularly established in the context of standard essential patents (SEPs).¹⁰⁰ FRAND obliges patent holders to grant licenses to interested parties on fair, reasonable and non-discriminatory terms.¹⁰¹ Originally, the requirement to grant FRAND-compliant licenses was based purely on competition law and the abuse of market power. However, there is also a contractual basis for a FRAND license, since today most standard-setting organizations (SSOs) require patent holders to grant licenses on FRAND terms in order for a patented technology to be included in a standard.¹⁰² Should a patented technology be considered for becoming part of a standard, the SSO will request a declaration from the patent holder stating that he is willing to license the patent on FRAND terms. If the patent holder refuses to submit such a declaration, the patented technology will usually not be included in the standard. In some cases, this may even result in the standardization process being cancelled altogether.

⁹⁸ See https://copa-ogeca.eu/img/user/files/EU%20CODE/EU_Code_2018_web_version.pdf.

⁹⁹ SWD (2018) 125 final, p. 11.

¹⁰⁰ In the context of the sharing economy, it is important to clarify that the acronym “SEP” is also being used for “sharing economy platforms”, see Stanoevska-Slabeva et al. (2017), p. 2.

¹⁰¹ For a historical analysis see the discussion by Justice Birss in [2018] EWCA Civ 2344 – *Unwired Planet v. Huawei* at paras. 89 *et seq.* See also COM (92) 445 final, at 4.3.3, and for a historical overview Contreras (2015).

¹⁰² [2018] EWCA Civ 2344 – *Unwired Planet v. Huawei*.

From a contractual perspective, the SSO will include the patent in the standard if it receives in return a FRAND commitment for the benefit of potential implementers of the patent. However, the legal nature of FRAND commitments is debatable: Some courts see the FRAND declaration as purely declaratory, as they base FRAND obligations solely on competition law requirements.¹⁰³ In contrast, other courts as well as part of the legal literature share the view that they constitute an independent legal basis for a license.¹⁰⁴ Good arguments support that view, considering that such commitments are made in exchange for the inclusion of the patented technology in the standard; this exchange, however, is independent of the question whether or not the patent holder acquires a dominant market position.

5.3 FRAND in the Data Sharing Context

5.3.1 Current Discussion

The European Commission¹⁰⁵ and some authors¹⁰⁶ have started to discuss the concept of FRAND¹⁰⁷ in the context of the data sharing economy. Their analysis is based on the premise that companies that hold large amounts of data may acquire a dominant market position.¹⁰⁸ This position might be abused either by not granting access to this data or by granting access only selectively or under conditions that can only be enforced due to the dominance.¹⁰⁹ In the light of the notion of data as essential facilities, this appears particularly possible if companies cannot obtain such data from other sources and if the data are necessarily required to enter a particular market.¹¹⁰ From that perspective, a FRAND licensing obligation is then a legal consequence derived from well-established principles under competition law.

So far, the debate has remained on the general base line that data may be an essential facility and therefore rules based on the FRAND principles may apply. A deeper inquiry into the contractual nature and the principle of self-regulation embedded in FRAND, however, can shed light on regulatory approaches which go beyond mere competition concerns. For that purpose, a further distinction can be

¹⁰³ See for example the Karlsruhe Court of Appeal, InstGE 12, 220 – *MP3 Standard*; Düsseldorf District Court, decision of 14 April 2012, case No. 4b O 273/10; Düsseldorf District Court, Mitt. 2012, 238 – *MPEG-2-Standard XXIII*; Mannheim District Court, InstGE 13, 65 – *UMTS-fähiges Telefon*.

¹⁰⁴ [2018] EWCA Civ 2344 – *Unwired Planet v. Huawei*; Düsseldorf District Court, GRUR Int. 2013, 547 at 561 – *LTE*, stating that the FRAND commitment may be an additional basis for a license; Hilty and Slowinski (2015) with further references.

¹⁰⁵ SWD (2018) 2 final, p. 39; COM(2017) 2 final, p. 13.

¹⁰⁶ Louven (2018a, b); Telle (2017), pp. 433, 435; Früh (2018), p. 537; and Drexel (2017a).

¹⁰⁷ Drexel (2017a), p. 289, also considers a parallel to the REACH Regulation, which applies in the chemical industry and also includes rules on the sharing of specific data (i.e. test results). Due to the specific nature and goals of the REACH Regulation, we do not include it in our analysis.

¹⁰⁸ See for a comprehensive analysis, Graef (2016), pp. 123 *et seq.*

¹⁰⁹ Telle (2017), pp. 426 *et seq.*

¹¹⁰ Telle (2017), pp. 426 *et seq.*, distinguishes between different types of anti-competitive behavior that can give rise to a compulsory license, such as misuse of a dominant market position, the essential facilities doctrine, exclusionary abuse and discrimination abuse.

made between the different ways and contexts of data sharing, which were discussed above. But before the implications of the self-regulatory nature of FRAND can be applied to the data sharing economy, the main differences and parallels between SEPs and data will be considered.

5.3.2 *Legal Protection as the Main Difference*

The main difference between SEPs and data is the nature of their respective legal protection. SEPs, just as other patents, are exclusive rights which create legal monopolies.¹¹¹ However, the mere ownership of a patent and the fact that it can be used to exclude competitors from a certain technology does not give right to a license on FRAND terms.¹¹² In fact, it does not give right to any license at all. Instead, under normal circumstances, the holder of a patent has the individual freedom to decide how to make use of the patent: The patent can be used to protect products or processes from freeriding by competitors, it can be licensed to and exploited by third parties, but it can also be used in a purely defensive way by preventing others from using the technology without it actually being put into practice.¹¹³

What is special about an SEP is that because the patented technology has been included in a standard, it can become essential not only for direct competitors but also for market actors that want to provide products or services on other markets. An illustrative example is the 4G/LTE-telecommunications standard, which includes more than 800 patents.¹¹⁴ Should just one of the patent holders refuse to license, any mobile communications device using 4G/LTE could not be provided without infringing the patent. But once the technology (4G) has become the standard, it is difficult or even impossible to work around the standard. New markets and innovation therefore de facto rely on such SEPs. This significantly enhances the patent holder's market position beyond what the exclusive rights of the patent as such would grant him. Due to their inclusion in a standard, SEPs provide almost a guarantee of use and therefore revenue for the patent holder. This is also what makes SEPs so valuable as compared to other patents.

¹¹¹ See for example Secs. 9, 139 of the German Patent Act granting the patent holder the exclusive right to practice the invention and supporting this right with an injunction as a remedy.

¹¹² While this is not laid down explicitly in statute law, it follows implicitly from the patent holder's exclusive right to the patented technology that goes beyond the mere exclusion of third parties as well as from the fact that statutory or compulsory licenses are included in the international treaties and national or regional patent laws as an exception with relatively high thresholds that need to be met. See for example Secs. 9, 24 of the German Patent Act.

¹¹³ This is not the case for all intellectual property rights. Trade marks, for example, lose their protection if they are not commercially exploited. See Art. 16 Dir (EU) 2015/2436 and Art. 18 Reg (EU) 2017/1001. However, with respect to data it is difficult to imagine constellations in which data will not be used at all by the data holder.

¹¹⁴ In fact, according to the Fraunhofer Institute for Communication System et al. (2011) more than 800 patents have been claimed as essential for the ETSI-LTE standard. However, the same study shows that an additional approximately 2,800 patents were claimed as essential for ETSI-UMTS and roughly 1,300 for ETSI-GSM. Both telecommunication standards are an integral part of any LTE-enabled device. The study also mentions numerous additional standards and SEPs that are implemented in LTE-enabled devices. For a more recent analysis see IPlitics (2016).

The situation of legal protection is different with respect to data. As of today, there are no ownership rights in data.¹¹⁵ Also, as explained above, studies have shown that such exclusive rights may be rather detrimental to the overall development of the data-driven economy. Instead, data can be considered exclusive if they are under the sole de facto control of a company, due to technological protection or simply access limitation. In other words, the person or company having actual access to the data stored in a hardware, “owns” the data.¹¹⁶

5.3.3 Essentiality – Same but Different

However, there is also a strong similarity between SEPs and data. Both can be essential for activities in certain markets. They may therefore function as gatekeepers. While this appears quite obvious for SEPs, it is also true for certain kinds of data. Non-personal, i.e. industrial, data often remain single-source data. In most cases it will not be possible to replace industrial data from a specific sensor with data from another sensor. Therefore, the entity or person who has actual control over the sensor and its data can de facto exclude others from its use. Any service or product requiring this data is dependent on the goodwill of the data holder, who ultimately becomes the gatekeeper for downstream markets. For example, the manufacturer of a product (e.g. a coffee machine or a car) who has factual control over the data can prevent additional supplementary products or services such as maintenance being accessible as far as these products or services depend on this non-replaceable data.¹¹⁷

But a seminal difference between such “essential data” and SEPs remains. The standard in which the SEP is included is based on an agreement between several market actors (i.e. the members of the SSO). Effectively, this agreement makes alternative standards in the market less likely. This adds an interesting notion to our functional understanding of data: Mere de facto controlled single-source data can better be compared to an ordinary patent. In contrast, a situation similar to SEPs occurs if a market actor were to rely on single-source data that is accessible only as a consequence of coordination between such market actors that hold the data. This analogy can inform our view on the different modes of sharing and raise corresponding regulatory implications.

¹¹⁵ Leaving aside the debatable role of database protection according to Dir 96/9/EC; see Drexl et al. (2016), paras. 9 *et seq.*

¹¹⁶ The type of storage can take different forms and can range from a sensor with memory capacity, a local memory drive or a (cloud-enabled) server. The actual access can also be limited based on encryption, possibly resulting in a situation where the legal owner of a device (i.e. the car owner) does not necessarily own the data stored and/or collected by the car. Instead, the data holder may be the manufacturer of the sensor, the car manufacturer or another third party.

¹¹⁷ See for example the study by the European Commission and Deloitte (2017), analyzing different sectors and the market players. The role of a gatekeeper and data is particularly discussed on p. 286.

5.4 Application to Different Modes of Data Sharing

5.4.1 Direct Data Exchange

In the case of direct data exchange between two companies, there seems to be little or no space for FRAND-based concepts. However, a right to access data may still be based on competition law and the concept of refusal to deal. But this general competition law principle needs to be separated from the more specific concept of FRAND which plays a particular role beyond two-party-constellations and in the standard setting context.¹¹⁸ Just as in the case of a patent that is not included in a standard, it is part of the data holder's individual freedom to decide whether to share data and under what circumstances.

However, it may be possible to envision scenarios in which data access for private companies is crucial for reasons of public interest. Here, a parallel can be drawn to (regular) compulsory patent licenses, which can be granted under special circumstances.¹¹⁹ As an exception to the general individual freedom of the patent holder, the law allows the exploitation of the patent by a third party in exchange for a reasonable remuneration. Particularly in the health sector, such a situation can also be imagined for data. However, as with patents and compulsory licenses, the hurdles will probably be high. Furthermore, while international laws and national legislations explicitly regulate the case of compulsory licenses for patents, such a regulation is still lacking for data.

5.4.2 Data Pooling

Cases of data pooling provide the closest similarity to the SEP/FRAND constellations.¹²⁰ As explained earlier, data pooling can be characterized as companies that share data “in reference to a given service or generally in an industry, or within an e-ecosystem”.¹²¹ So in both scenarios – SEP/FRAND and data pooling – companies share a commodity (patented technology or data) to their common economic benefit. Likewise, the exclusion of third parties or the unequal treatment of such third parties can result in an enhanced market position. Due to this additional market power stemming from the shared data, companies may be forced to share the data with parties outside of the pool.

One must, however, carefully consider the particular circumstances under which such an obligation appears reasonable. A deciding factor may be the openness of the data pool. If the data pool is generally open for third parties to join, the rules of the pool should provide for equal non-discriminatory treatment of all participants or

¹¹⁸ For an analysis of the competition law possibilities *see inter alia* Telle (2017).

¹¹⁹ According to the different national patent laws and foreseen in international treaties such as TRIPS in cases of urgent public need: Art. 31 TRIPS and Sec. 24 German Patent Act.

¹²⁰ For an in-depth analysis of data pools from the perspective of competition law, *see* Lundqvist (2018), p. 146.

¹²¹ *See supra* at 4.2 with reference to Lundqvist (2018), p. 146.

users. This FRAND notion can increase transparency and trust among the participants and therefore incentivize market participants to engage in sharing.

If, in contrast, the pool is closed and if we compare this to general patent pools, it is *a priori* difficult to justify why non-participants should have a right to access the data shared within the pool. However, a rare but existent constellation from the SEP world can explain the situations in which one might also mandate access for third-parties to such closed pool data: The majority of standards are developed under the umbrella of SSOs, which are generally open to a broad range of participants. However, in particular industries standards are still set in a more informal way between companies. Naturally, such cases are not governed by SSO rules of conduct; but they are still governed by competition law, as has been set out by courts.¹²² Drawing from the example of patent pools, one could at least propose a competition-law-based right to access the data where the data pool has gained a dominant market position and the members of the pool abuse this position to the detriment of general competition.

5.4.3 Data Sharing Platforms

So far, data sharing platforms have only been considered under the broader umbrella of patent pools.¹²³ But this simplification falls short, since the regulatory implications depend on how the platform is structured in detail. If the platform merely provides a neutral market place for participants to directly exchange data in a peer-to-peer model, this scenario appears similar to that of two companies sharing or exchanging data directly. In such cases, it seems reasonable to apply the same rules as in the first scenario.

If, however, the platform provides a gateway to data commonly shared or exchanged between numerous companies, it resembles a data pool. As a consequence, regulation should depend on the degree of openness. In fact, the comparison with the SEP/FRAND situation is even more striking in such cases: The platform seems to be assuming the role of the SSO, while those companies who share data through and by means of the platform are similar to the members of an SSO and/or holders of SEPs.

6 Towards a (Self-)Regulation of Data Sharing

6.1 Existence and Limits of Binding Regulation

It has already been argued that under given market circumstances, there appears to be no strong case for binding regulation for data sharing, at least from an inter-

¹²² German Federal Supreme Court, GRUR 2004, 966 – *Standard-Spundfass*; German Federal Supreme Court, GRUR 2009, 694 – *Orange-Book-Standard*.

¹²³ See Lundqvist (2018), p. 149; Louven (2018a), p. 231, on the other hand, discusses platforms in general as data generators and not as intermediaries in data sharing. See also with a similar focus, Telle (2017), p. 424.

industry perspective. Strict statutory rules risk hampering the development of new business models in such a dynamic environment.

Having said that, competition law remains the only applicable general statutory law that can correct for distortion of competition and provide data access on an inter-industry base. The lessons learned from the platform and the conventional sharing economy also point to an increased significance of competition law when it comes to data sharing. Network effects and economies of scope point to problems that are familiar to the current competition policy debate. Also, the SEP/FRAND debate has delivered good reasons for relying, in cases of closed data pools that become dominant with regards to particular data, on there being grounds for competition law-based intervention. At the same time, competition law sets the outer limits for self-regulation.¹²⁴ However, as learned in the FRAND context¹²⁵ and also discussed in the data sharing context, it remains questionable whether competition law is sufficiently flexible to provide solutions for all problems.

But beyond the outer limits of competition law and its disputable reach when it comes to access rights based on competition law, the analysis followed an evolutionary approach by observing the possible developments of data sharing. A particular focus was put on the role of data sharing platforms as intermediaries, as they can provide cardinal functions that incentivize data sharing. In this context, the sharing economy debate has illuminated potential problems, which stem from the fact that particular data might become a bottleneck for innovation. If we do not want to rely solely on competition law enforcement, regulation must focus on a previous step: the co-operation and incentives of various players for data sharing.

6.2 Self-Regulation

Certainly, when it comes to possible regulation (understood in a broad, non-binding sense) of data sharing platforms, there is no single best approach and a wider range of possible avenues seems to be possible. The comparison of data sharing with SEP/FRAND helps to sketch some corner stones that may be useful in preparing a regulatory framework. The main goal is to incentivize sharing, to keep data related markets open for competition and to foster innovation. Therefore, it would seem that a structure of relatively flexible rules aiming more at equal treatment of all involved stakeholders rather than mandatory access rules seems appropriate.

The institution of FRAND has shed particular light on the market significance of such co-operations and the role of self-regulation in the standard-setting context. If we accept as a base line that data sharing platforms act as intermediaries handling an essential commodity for data-driven markets, we might have good reasons to prefer this handling to take place based on transparent, fair and non-discriminatory rules (i.e. FRAND). It is interesting to see that even courts also increasingly rely, at least complementary to competition law, on contractual elements derived from the

¹²⁴ These limits stem primarily from Art. 101 TFEU, which prohibits agreements between undertakings which prevent, restrict or distort competition.

¹²⁵ Hilty and Slowinski (2015), p. 786.

statutes of the SSOs and the FRAND commitments submitted by the patent holders.¹²⁶

In any case, soft-law instruments can shape the landscape of contractual agreements used by data sharing platforms and may leave sufficient space for development of the rules as well as the industry. Ultimately, it will depend on the given sharing model whether FRAND should be the guiding regulatory paradigm. Still, such a form of self-regulation would reach beyond general model contract terms that can lower the costs of drawing up data usage agreements, as it must be seen in the global context of innovation and competitiveness. In general, rules or guidelines from authorities such as the European Commission may be helpful to establish best practices and avoid behavior by the stakeholders that may be detrimental to the development of the industry and new business models. This applies intra- and inter-industry-wide. A higher degree of differentiation seems desirable in the future.

6.3 Regulated Self-Regulation as a Way Forward?

We should not forget that the statutes and regulations of the SSOs are to a large extent voluntary rules, which may be changed in line with the goals of the members of the SSO. Therefore, commitments and codes do not provide a real safeguard for FRAND-compliant behavior for the future. It has therefore been suggested to implement binding rules for SSOs regarding the scope and application of the FRAND commitments. So far, no legislator has followed this approach although the European Commission and the US administration have both recognized the issues which follow from the misuse of SEPs.¹²⁷

Still, in the data sharing context, one might think about traveling this path of regulated self-regulation, which lies between the two extremes of self-regulation and detailed binding statutory obligations. It is worth noticing that the lack of sanctions and the enforcement of FRAND rules have resulted in seemingly unlimited global litigation based on SEPs. It was only after competition authorities and – later on – courts stepped in that the FRAND commitment became effectively enforceable.¹²⁸ It remains to be seen whether participants and owners of data sharing platforms choose to be more forward-looking.

¹²⁶ While the CJEU in *Huawei v. ZTE* based its decision on competition law, the main argument was that the FRAND declaration given to the SSO created a certain expectation in the market which bound the patent holder. Justice Birss in *Unwired Planet v. Huawei* stated that the license seeker could rely on the FRAND commitment as a basis for a FRAND license, and even the Düsseldorf District Court, which submitted the *Huawei v. ZTE* case to the CJEU, suggested that the FRAND commitment may be a basis for a FRAND license in addition to competition law.

¹²⁷ COM (2017) 712 final; European Commission, Case AT.39985 – *Motorola – Enforcement of GPRS Standard Essential Patents*; AT.39939 – *Samsung – Enforcement of UMTS Standard Essential Patents*; COMP/M.6381 – *Google/Motorola Mobility*. Amicus brief of the US Federal Trade Commission in the case *Apple Inc. and Next Software, Inc. v. Motorola, Inc. and Motorola Mobility, Inc.*

¹²⁸ COM (2017) 712 final.

7 Conclusion

Data is the basis for a wide variety of business models and a driver for innovation. Therefore, access to data as a resource for the improvement of old and the creation of new products and services is paramount. However, as of today, there is still some degree of uncertainty regarding technical and legal access to data as well as regarding trust when it comes to the use of data by third parties. Data sharing platforms as trusted intermediaries may be able to facilitate the exchange of data between different market players and can therefore lower the entry barriers in data-driven markets. However, even with data sharing platforms as intermediaries, fears of insufficient transparency and aggregated market power may stand in the way of an efficient development of a platform-based data sharing culture.

A common framework of principles for data sharing can reduce these uncertainties. As we have shown, there are differences but also parallels between the licensing of patents and data sharing. Particularly, data pools and data sharing platforms may benefit from incentives to a behavior that resembles the FRAND principles known from the field of SEPs. While such incentives may be provided in a compulsory manner based on statutory instruments, we explain that the current innovative development of data-driven markets requires close observation but also considerable flexibility. Given the pre-mature development of markets, such flexibility can be achieved through a (regulated) self-regulation based on guidelines for sharing platforms rather than through binding statutory provisions.

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