Joint Discussion Paper Series in Economics

by the Universities of

Aachen · Gießen · Göttingen
Kassel · Marburg · Siegen

ISSN 1867-3678

No. 22-2021

Wolfgang Kerber

Specifying and Assigning "Bundles of Rights" on Data: An Economic Perspective

This paper can be downloaded from
http://www.uni-marburg.de/fb02/makro/forschung/magkspapers

Coordination: Bernd Hayo • Philipps-University Marburg
School of Business and Economics • Universitätsstraße 24, D-35032 Marburg
Tel: +49-6421-2823091, Fax: +49-6421-2823088, e-mail: hayo@wiwi.uni-marburg.de

(Version: 26.4.2021)

Specifying and Assigning "Bundles of Rights" on Data: An Economic Perspective

Wolfgang Kerber*

Abstract:
This paper shows that with respect to data the legal category of "property" (physical property or intellectual property) is not a suitable model for dealing with the complexity of data governance problems. Although data can be a valuable asset and might need incentives for its generation, the economic and technological conditions regarding data differ significantly from the problems regarding physical goods, innovation, and creative works. Through the much easier excludability and the greater importance of the non-rivalry and context-dependency of the use of data, not the incentive problem for data generation but the problems of access and sharing of data have become the most urgent policy issues. One particularly important reason can be the exclusive de facto control of firms over data, for which no formal property rights exist, but which can lead to market failures with respect to competition and innovation. The "bundle of rights" approach (based upon the economic theory of property rights) with its flexibility and wide range of options, how to specify these rights and to whom these rights can be assigned, offers a framework that allows for finding appropriate data governance solutions that fit to the specific economic and technological conditions of different industries and contexts. The paper also shows that current digital policy discussions can be interpreted as discussions about the proper specification and assignment of bundles of rights on data (as, e.g., with regard to the GDPR, data portability or the Digital Markets Act).

Key words: data rights, bundle of rights, property rights, data access, data governance

JEL: K11, K21, K24, L86, 034

1. Introduction

Data is a valuable resource, and therefore the question emerged whether it is necessary to have property rights on data, and if so, how these property rights should look like. Can and should we apply the legal category of "property" also to data? After the emergence of this question in Europe a few years ago, a broad consensus was achieved that a new property-like exclusive right on non-personal data should not be introduced. On the contrary, insufficient access to data and data-sharing has been identified as one of the main problems in the data economy, and a broad policy discussion has emerged how to make

* Professor of Economics, School of Business & Economics, University of Marburg, email: kerber@wiwi.uni-marburg.de.

more data available. However, the recent discussions about mandatory data access and data-sharing obligations is also characterized by a great reluctance to open data that are held by private parties, although the data holders only have exclusive control over these data without having been granted formal property rights on most of these data. This paper is based upon a presentation at a conference of German civil lawyers discussing the question whether the category "property", either in analogy to physical property or intellectual property, can be a helpful approach for dealing with this key resource "data" in the digital society. At the conference there was broad reluctance regarding the usefulness of the legal category "property" with respect to data. This article intends to contribute to this discussion from an economic perspective.

The main claim of this article is that we should not focus on the category "property" in the traditional sense, which suggests an exclusive assignment of the rights on a set of data to one "owner" of these data. Instead, from an economic perspective, we should use the much more open and flexible concept of "bundles of rights" on data, which is based upon the economic theory of property rights. This "bundle of rights" concept allows for a much more fine-tuned and granular approach of specifying the rights to use a set of data and assigning them not only to one but also to several or many users, which can be appropriate due to the non-rivalrous character of the use of data. From this perspective open data and traditional exclusive rights are only two extreme solutions in a broad range how bundles of rights on a set (or stream) of data can be specified and assigned - with many intermediate and sophisticated solutions between these extremes for dealing with the complex trade-off problems that can emerge regarding data in different markets and contexts. The term "governance" of data reflects this openness, flexibility, and complexity much better than the traditional concept of "property".

The article is structured as follows. Section 2 summarizes briefly economic reasonings about the role of property in a market economy, the economics of intellectual property rights, and introduces the "bundle of rights" concept as an economic approach. Section 3 analyzes the discussion in Europe from, first, proposals for new exclusive rights on non-personal data to, secondly, manifold initiatives for dealing with data access and data-sharing problems, and sketches an analytical economic framework for developing data governance solutions. Section 4 analyzes briefly some current data-related policy discussions in Europe, and shows that they can be interpreted as policy discussions about the proper specification and assignment of bundles of rights on data (as, e.g., also in the current Draft Digital Markets Act of the EU Commission). Section 5 concludes with open questions for future research.

2. The role of property and the "bundle of rights" approach from an economic perspective

In economics private property and freedom of contract have always been seen as the main institutional preconditions for a market economy, because they ensure the decentralised character of decision-making by firms and individuals. The (entrepreneurial) freedom of the economic actors to decide themselves and according to their own knowledge and innovative ideas about developing, producing, and selling products and services on the market is key for a thriving and innovative economy.[1] Private property on productive resources (in contrast to state property), which allows the owners to freely decide how to use the resources (or trade them on a free market for their optimal allocation), is therefore a precondition for enabling such a decentralised market system. Therefore it is not surprising that in the debate about "centrally planned economy" vs. "market economy" the question "state property" vs. "private property" was seen as most important from an economic perspective. Defending "private property" with respect to its role in a market economy was also one of the main motivations in the emerging economic theory of property rights in the 1960s and 1970s in the U.S..

The most important contribution of this microeconomics-based property rights theory is the new methodological approach to analyze "property" by deconstructing it into a "bundle of rights" that the owner has regarding a good or a resource.[2] According to Demsetz,

> "property rights ... are the socially acceptable uses to which the holder of such rights can put the scarce resources to which these rights refer. This requires that the exercise of rights not to be interfered with by others. Uses of resources not legitimated by the user's possession of property rights are illegal by definition or are innovative in the sense that existing property rights have not yet be defined to cover these uses. Of course, there is never complete certainty about the

---

1 See Hayek, The use of knowledge in society, American Economic Review 35, 1945, 519.

2 See for the property rights theory in economics and the "bundle of rights" approach Coase, The problem of social costs, Journal of Law and Economics 3, 1960, 1; Furubotn/Pejovich, Property rights and economic theory: A survey of recent literature, Journal of Economic Literature 10, 1972, 1137; Schüller, Property Rights und ökonomische Theorie, 1982; Demsetz, Property rights, in: Palgrave Dictionary of Law and Economics, Vol. 3, 2002, 144; Eggertson, Economic behavior and institutions, 1989; Richter/Furubotn, Neue Institutionenökonomik, 3.ed., 2003, 87-144; Schäfer/Ott, Lehrbuch der ökonomischen Analyse des Zivilrechts, 4. ed., 2005, 97-100, 549-562. For a discussion of legal literature on the "bundle of rights" concept of property (and its relation to the property rights theory) see Zech, Information als Schutzgegenstand, 2012, 100.

> scope of allowed and disallowed uses of resources, so a right-defining and conflict-solving institution, such as a court system, the legislature, or some community authority, is inevitably part of any property right system."[3]

Important elements of such a bundle of rights can be the right to use a good (including transforming it), the right to earn income from the good (e.g. by renting or licensing it), and also the right to sell the good to others, i.e. enabling the trading of resources (transferability of property rights). An important consequence is that different persons and firms can be the holders of different rights of this bundle, as well as also several persons or firms can be the joint owners of a resource.[4] This approach has enabled economic research about the optimal definition and scope of such a "bundle of rights" from an economic efficiency perspective, i.e. what specific rights for socially accepted uses owners of a good should have. One of the early concerns in the economic property rights discussion was that, e.g., regulations of the state might lead to a too far-reaching "attenuation" of the property rights (by limiting the scope of the rights that an owner has regarding a good), because this would reduce the economic value of this good.[5] However, a closer analysis has always made clear that through market failures (in particular, externalities) and other legitimate public interests such limitations of the bundle of rights of an owner can be justified and even be necessary for economically efficient solutions.

Whereas this "bundle of rights" approach has been initially applied to physical and scarce resources, it is no problem to apply it also to intangible goods, as, e.g., also to the question of an optimal specification and assignment of a "bundle of rights" on technological innovations or creative works like music, novels, or scientific articles. In that respect, this article intends to apply this approach to data. However, in the enxt step, we will briefly summarize the most important economic rationales for property on (1) physical goods and (2) on innovation and creative works (intellectual property).

Physical property implies that the owner can freely decide on the use of his or her physical good, and can exclude others from using it. Since it can be assumed that the use of physical goods is rivalrous, i.e. the use by one person impedes the use by another, the right to exclude others is important for the full usability of the physical good by the owner.[6]

---

3 Demsetz, Property rights, in: Palgrave Dictionary of Law and Economics, Vol. 3, 2002, 144.

4 See Eggertson, Economic behavior and institutions, 1989, 34.

5 See Eggertson, Economic behavior and institutions, 1989, 38.

6 The need for excludability due to rivalry in use of a resource can also be interpreted as the need for internalizing the negative effects by the use through others.

In addition, exclusivity might also be important, because an investment might have been necessary for producing (and maintaining) the good, and others should not free-ride on this investment for not endangering the incentives for producing this physical good. A different but closely linked rationale is the old insight in economics that exclusive property is not needed in the case of so-called "free goods", i.e. goods that are abundantly available (as e.g. air for breathing) and for which usually no exclusive property rights exist and the price is zero. Only if goods are "scarce", i.e. the demand is larger than the supply, exclusive property (and a positive market price) emerges as a solution for dealing with the rivalry (and the conflicts) who can use the scarce resource and who not. In his positive theory of property rights Demsetz argued that property rights emerge, if a beforehand freely available resource is getting scarce, e.g. through an increasing demand.[7] From an economic perspective, the exclusionary character of property on physical goods is therefore a consequence of the rivalrous character regarding the use of these resources.[8]

The economic rationale for intellectual property rights is different.[9] Most important is that this intangible good, which is protected by an exclusive property right (as a patent or a copyright), is non-rivalrous in use but that very often serious problems of excludability exist, e.g. by copying and imitation. This leads to the problem that innovators (and creators) might have too low incentives for investing in R&D, because they cannot appropriate sufficiently the benefits of their innovation. This market failure can lead to an under-investment in R&D and therefore a too low level of innovation.[10] Here the exclusive bundle of rights that IP laws grant to innovators has the task of solving this innovation incentive problem.[11] The exclusive rights on the innovation offer the chance for the innovator that she can make enough profits from the commercialisation of her innovation (or creative work) for covering the costs and risks of her innovation project, e.g. through monopoly prices. Since at the same time the use of the innovation is non-rivalrous, which implies that the marginal costs of an additional use is zero (or very low), the high (monopoly)

---

7 See Demsetz, Towards a theory of property rights, American Economic Review 57, 1967, 347.

8 See, from a legal perspective, also recently Zech, Die "Befugnisse des Eigentümers" nach § 903 Satz 1 BGB - Rivalität als Kriterium für die Begrenzung der Eigentumswirkungen, Archiv für die civilistische Praxis 219, 2020, 488.

9 See for the Law and Economics of IP rights Besen/Raskind, An Introduction to the Law and Economics of Intellectual Property, Journal of Economic Perspectives 5, 1991, 3; Menell, in: Encyclopedia of Law & Economics, Vol. II, 1999, 129; Lévêque/Ménière, The economics of patents and copyright, 2004.

10 See for this under-investment thesis Arrow, in: The rate and direction of inventive activity: Economic and social fctors, 1962, 609.

11 IP rights can also help for the emergence of a market, on which technological innovations and creative works can be traded.

prices that are necessary for solving the incentive problem lead to high losses of welfare ("dead weight loss") through an under-use of the innovation during the protection by IP rights. It is this trade-off between the benefits and costs of patents and copyrights that leads, from an economic perspective, to the important conclusion that IP rights should have a limited duration, after which the innovation should be freely available to be used by anybody (public domain).[12]

Despite the broad acceptance of patents and copyrights as exclusive rights, there has always been much controversial discussion about the appropriate strength of this protection, i.e. the optimal design of the bundle of rights that is granted to the owner of a patent or copyright (and to what extent also other firms and users might have rights):[13]
(1) Economic analysis has clarified that IP rights cannot only be too weak for solving the incentive problem but can also be too strong, which can lead to too high welfare losses and can even have negative effects on future innovations.
(2) Granting an exclusive bundle of rights to an innovator is only justified from an economic perspective, if such a market failure of too low innovation incentives exists. If, e.g., firms can also appropriate enough benefits from their innovation through first-mover advantages or by keeping the innovation secret, then such IP rights are unnecessary and might be an unjustified intervention into the market.[14]
(3) An other question refers to the "subject matter" that should be protected, e.g. by patents. With respect to our topic "data", it is very important that pure information is not (and should not be) protected by patent or copyright law.[15] Information can be a trade secret, but trade secret law does not grant an exclusive bundle of rights on this information.
(4) It is also very relevant for our discussion that, e.g., in copyright law, not all rights regarding a creative work are exclusively assigned to the creator, because there are also rules about limitations and exceptions (e.g., "fair use") that allow (under certain

12 See, e.g., the early contribution by Nordhaus, Invention, growth, and welfare. A theoretical treatment of technological change, 1969.

13 See, in more detail, Kerber, Zur Komplexität des ökonomischen Anreizparadigmas bei geistigen Eigentumsrechten. Ein wirtschaftspolitischer Analyserahmen, ZGE/Intellectual Property Journal 5, 245.

14 Empirical research (e.g., Cohen/Nelson/Walsh, Protecting their intellectual assets: Appropriability conditions and why U.S. manufacturing firms patent (or not), NBER Working Paper No 7552, 2000), has shown that the extent of this innovation incentive market failure varies widely between different industries. This would suggest from an economic perspective that patents as an exclusive bundle of rights for an innovator should be differentiated more (e.g. regarding duration) between different industries.

15 See Zech, Information als Schutzgegenstand, 2012, 424-427.

conditions) also others to use, e.g., a scientific or educational text or snippets from newspaper articles for certain purposes without the permission of the copyright owner.

3. Discussion on data rights in Europe: From exclusive rights to more data-sharing and data access rights

3.1 Introduction

The emergence of data as a new valuable resource in the digital economy has triggered manifold policy discussions about rights on data. Due to the strong position of data protection law in the EU (privacy as a fundamental value) the discussion in Europe about data rights has been very much split between a discussion of the application of the EU data protection law (GDPR) on personal data and the discussion how to deal legally with "non-personal" data, as, e.g. machine-generated sensor data or anonymised data sets. In section 4.1 we will see that the granting of a set of rights to individual persons regarding their personal data can also be interpreted as a "bundle of rights" that are assigned to these data subjects, and that the conflicts about how to apply EU data protection law can be interpreted as conflicts about the exact specification and assignment of these rights on personal data. However, the main discussion in the last years about data rights in Europe has focused on non-personal data, for which a legal analysis showed that most of them are not protected by exclusive absolute property rights (e.g., physical property or IP law). In the following, we will analyze the development of this discussion from the question of introducing an IP-like exclusive right on non-personal data to the still ongoing discussion about how to achieve more data access, data-sharing, and data portability.

3.2 New IP-like exclusive right on data?

Due to the intangible character of data it was not surprising that the question of the need for a new exclusive right on non-personal data was discussed from the perspective of the (above-described) rationale for IP rights, leading to proposals for a new IP-like exclusive right on data.[16] However, significant differences between the incentive problems

16 See Zech, Daten als Wirtschaftsgut - Überlegungen zu einem "Recht des Datenerzeugers", CR 2015, 737; Zech, A Legal Framework for a Data Economy in the European Digital Single Market: Rights to Use Data', JIPLP 1, 2016, 460, 468.

regarding innovation and data became apparent immediately.[17] The fast and exponential increase in the generation of data in the last decade did not support the thesis that a systematic problem of under-production of data exists due to a severe problem of lacking incentives. The most important reason is that so far no general copying problem of data emerged, because usually data-holders can keep their data secret, e.g. also due to technical protection.[18] This enables the data-holders to have a position of de-facto exclusive control over these data, which - as we will see in the following - plays a key role in the data economy and leads both to advantages and problems. The first important implication is that de-facto exclusive control over data ensures excludability, i.e. others cannot use the data without the permission of the data-holder. Since it has similar economic effects as an exclusive right on data, it can be seen as a substitute for a legal instrument for excluding others.[19] Therefore it is not surprising that these data do not suffer from the same incentive problem as innovation and creative works (with their copying/imitation problem). An additional economic reason is that the costs of generating data can often also be very low (even zero, e.g. if data is collected as a by-product of other economic activities); however, for the production of other data also significant costs might occur. Due to this lack of a general incentive problem, the discussion came rather fast to the conclusion that such new exclusive rights on non-personal data are not necessary (and that trade secret protection might be sufficient).[20]

In addition to the lack of a need for a new exclusive right on data, there were also large concerns about the difficult problems, which would emerge regarding the specification and assignment of such an exclusive right on non-personal data. One difficult problem relates to the relationship between data and information. The proposals focused only on the protection of data as codified information at the syntactic level (i.e. sequences of 0

17 See, for the following, Kerber, A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis, GRURInt, 2016, 989.

18 See for the role of exclusion technologies in the property rights theory Eggertson, Economic behavior and institutions, 1990, 253.

19 In that respect this de facto exclusivity of data is comparable with the well-known strategy of firms to keep an innovation secret instead of applying for a patent (with its duty to disclose the innovation).

20 See, e.g., also Drexl, Designing Competitive Markets for Industrial Data – Between Propertization and Access, JIPITEC 8, 2017, 257; Schweitzer/Peitz, Ein neuer Ordnungsrahmen für Datenmärkte? Neue Juristische Wochenschrift, 2018, 275, 278. Important is also that the lack of exclusive property rights does not seem to be the main reason for the problems of not well-functioning data markets. However the lack of a need for an exclusive right for data does not mean that the protection of the integrity of data, e.g., against destruction or misappropriation (e.g., through hacking) might not be necessary. Therefore protection of data through trade secret law or civil or criminal liability might be appropriate.

and 1), but it was unclear whether its implementation would also lead to exclusive rights on information at the semantic level,[21] which would lead to a problematic monopolisation of information. Other difficult problems were how the scope of such an exclusive bundle of rights should be defined, and to whom these rights should be assigned? This led to a broad and inconclusive discussion about the question who the "data producer" is, because often different persons or firms participate in the generation of data (co-generated data). In its (later abandoned) proposal of a "data producer right" for non-personal or anonymized machine-generated data that are produced in smart devices, the EU Commission in its Communication "Building a European data economy" would have assigned the exclusive rights to use and authorize the use of these non-personal data to the owners or long-term users of these devices, which would have been mainly the consumers.[22] Important is that in this discussion the EU Commission already viewed the "data producer right" also as an instrument for facilitating the sharing of data. In this context, it also became clear that assigning these rights exclusively to one "owner" might not always be the best solution, i.e. that also other stakeholders (as the manufacturers of the devices) should perhaps have access rights to these data. This led to the general insight that in complex situations as in "Internet of Things" applications with several or many stakeholders (multi-stakeholder situations) an exclusive assignment of the entire bundle of rights on these data to one person or one firm might not be an optimal solution for the governance of data, and that thus more sophisticated data governance solutions might be necessary.[23]

3.3 Discussion about more access to and sharing of data

The Communication "Building a European data economy" was also pivotal for triggering the second phase of the discussion about data rights by emphasizing the need for more access, more sharing, and more reuse of data. Based upon the economic argument of the non-rivalry in using data, and the insight of the key role of data as input for innovation ("data-driven innovation"), the Communication identified the problem that firms hold vast amounts of data, but that these data are not used enough, and, in particular, not made

21 See for this distinction (based upon semiotics) Zech, Information als Schutzgegenstand, 2012, 35-44.

22 See European Commission, "Building a European data economy" COM(2017) 9 final, 13.

23 See European Commission, Staff Working Document to the Communication "Building a European data economy" SWD(2017) 2 final, 35; Kerber, Rights on data: The EU Communication "Building a European data economy" from an economic perspective, In: Trading data in the digital economy: Legal concepts and tools, 2017, 109, 128.

available enough to other firms for innovation.[24] From an economic perspective, it is very important that the problem does not lie in an under-production of data but in the fact that the fast-increasing amounts of generated data are not used enough. This problem (often described as "data silos") is seen as a main impediment for exploiting the manifold opportunities that data-driven innovation can offer in the data economy, and has led to manifold policy initiatives for solving this problem.[25]

Facilitating the voluntary sharing and trading of data is one strategy for mitigating this problem. The European strategy for data (with its idea of "data spaces") and also the current proposal of the Data Governance Act with its approach of creating trustworthy data intermediaries for facilitating the sharing and joint use of data are such policy initiatives.[26] The basic idea is that firms should voluntarily share more of the data, over which they have exclusive de-facto control, or make them available for joint use, e.g. by data-pooling. The other strand of policies refers to efforts of more directly opening existing data sets. One part of this policy is to open the vast amount of data collected within the public sector (public sector information) for making them available to firms as input for their innovation activities. However also mandatory solutions for opening privately held data can be a policy option for supporting data-driven innovation. One discussion refers to mandatory solutions of opening private sets of anonymized data for training of algorithms and AI applications. Another well-known and already implemented example is the opening of bank account data for facilitating new innovative payment and financial services (PSD2).[27]

Whereas these initiatives for making more data available are primarily based upon an innovation policy rationale, another and to a large extent separate discussion about data access and data sharing has developed in competition policy.[28] This is directly linked to

---

24 See European Commission, "Building a European data economy" COM(2017) 9 final, 11

25 See as an overview also OECD, Enhancing access to and sharing of data: Reconciling risks and benefits for data re-use across societies, 2019; from an U.S. perspective see Swire, The portability and other required transfers impact assessment (PORT-IA): Assessing competition, privacy, cybersecurity, and other considerations, 2020, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3689171.

26 See European Commission, "A European data strategy" COM(2020) 66 final, 26; Proposal for a regulation of the European Parliament and of the Council on European data governance (Data Governance Act) COM(2020) 767 final (Chapter III: Requirements applicable to data sharing services).

27 See Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, 2015 OJ L 337/35 (PSD2 Directive).

28 See, e.g., Schweitzer/Welker, A legal framework for access to data - A competition policy perspective, In: Data access, consumer interests and public welfare, 2021, 103;

the discussion whether the control over huge amounts of data (in particular, personal data) can lead to market power, raise entry barriers, and therefore also leads to entrenched and uncontestable market positions of large incumbent online platform firms (as, e.g. Google and Facebook).[29] However the exclusive control over data sets through firms with market power can allow the leveraging of this market power to other markets and the foreclosure of competitors also outside of the platform economy (e.g., in IoT contexts as connected cars; see below section 4.4).[30] In addition, many complaints can be found about access problems to data in B2B-relationships with unequal bargaining power situations.[31] The current policy discussion about the proposal of the Digital Markets Act (ex-ante regulation of "gatekeepers") with its data-related obligations and the various new provisions about data access and data portability in the recent amendment of German competition law are a result of this discussion about data access in competition policy (see below section 4.3).

From an economic perspective the crucial question is whether new legal and/or regulatory solutions for dealing with these data access and data-sharing problems are necessary or whether the market itself is capable of finding optimal solutions for using the data, also in respect to innovation. We already have seen that for the production of data, the introduction of a new exclusive right on data is not necessary, because the exclusive de facto control over the data is usually sufficient for solving the incentive problem. Is it therefore necessary to introduce new rights for data access or obligations for sharing data that are under the exclusive de facto control of private firms?

However these data policy discussions have shown that this "solution" of exclusive de facto control of data can itself lead to serious market failures. We can interpret this de facto control position of a data holder as a "de facto assignment" of a bundle of rights[32] to the data holder, and contractual arrangements of this data holder with other firms about the use of these data as "licensing agreements" between both firms. Through transmitting the data or giving technical access to these data by the data holder the "licensee" can de facto use the data in certain ways, i.e. contracts about the use of these

29 See, e.g., Crémer/de Montjoye/Schweitzer, Competition policy for the digital era, 2019, 98.

30 See, e.g., Kerber, Data-sharing in IoT Ecosystems and Competition Law: The Example of Connected Cars, Journal of Competition Law & Economics 15, 2019, 381.

31 See European Commission, "Building a European data economy", COM(2017) 9 final, 11.

32 Strictly speaking, the exclusive control over data gives the data holder not a bundle of "rights" but a bundle of "de facto options to use" the data, but these are not rights in the legal sense. For simplification we will continue to call it in this paper a "de facto bundle of rights". We will pick up this problem again in our final paragraph of section 5 at the end of the article.

data are possible, even if no formal legal rights exist on these data.[33] Although markets for these data can emerge, it cannot be assumed that this will lead to an optimal allocation of the options to use these data in the data economy, because these markets suffer from serious market failure problems.[34] Particularly important is that the data holders often have distorted incentives for making these data available to others. One important example are the options to use the control over these data for getting or defending positions of market or gatekeeper power, leading to the above-mentioned competition problems. Another problem is that, e.g., data-holding platforms can use the ensuing information asymmetry vis-a-vis consumers for informational manipulation, e.g. with respect to search rankings.[35]

One radical data governance solution is "open data", which can be linked to the idea of "data as an infrastructure", and has an economic rationale in the non-rivalrous character of data.[36] From a bundle of rights perspective this would imply that everybody has the right to use these data, and nobody has the right to exclude others. With regard to scientific knowledge, it is generally accepted that it should be accessible to everybody, both for using it for future research but also for educational purposes. Also the limited duration of IP rights for innovation and creative works is based upon the argument that the exclusive control can only be justified as far as it is necessary for incentivizing innovation. After the expiry of IP rights the innovation should be in the public domain and can be used by anybody. This is also the rationale for making public sector data open for its use of data-driven innovation. Putting data in the public domain implies that everybody has the right to use these data freely for his or her own purposes. This is perfectly compatible with the decentralized character of a market economy, in which all persons and firms can then decide according to their own knowledge and ideas how to use these data, e.g., for innovation. However, it is also clear that requiring generally that privately held data sets

33 See for contracts about data licensing Schur, Die Lizenzierung von Daten. Der Datenhandel auf Grundlage von vertraglichen Zugangs- und Nutzungsrechten als rechtspolitische Perspektive, GRUR, 2020, 1142.

34 See for the problems of data markets and voluntary data-sharing, e.g., Kerber, Rights on data: The EU Communication "Building a European data economy" from an economic perspective, In: Trading data in the digital economy: Legal concepts and tools, 2017, 109, 120; Martens et al, Business-to-Business data sharing: An economic and legal analysis, JRC Digital Economy Working Paper 2020-05; Reimsbach-Kounatze, Enhancing access to and sharing of data: Striking the balance between openness and control over data, In: Data access, consumer interests and public welfare, 2021, 27, 39-49.

35 See, e.g., Schweitzer/Haucap/Kerber/Welker, Modernisierung der Missbrauchsaufsicht für marktmächtige Unternehmen, 2018, 99.

36 See OECD, Maximizing the economic value of data: Understanding the benefits and challengesd of enhanced data access, DSTI/CDEP(2016)4 (with further references).

should be opened, can lead to serious problems for incentivizing the generation of data sets, also due to the costs of ensuring a minimum quality of data, storing them in a safe way etc.. Therefore these considerations lead us back to the conclusion that a balancing is needed between the advantages of opening data sets and the incentives for producing them.[37]

It is not possible here to analyze the question how a property right system should generally deal with exclusive de facto control positions over data. However, it seems to be clear that the de facto assignment of all uses of privately held data to the data holder will often not be the optimal solution, and therefore also with regard to those de facto exclusive bundle of rights additional justifications and limitations might be necessary. Therefore the introduction of new rights for data access, data portability or data sharing obligations also for privately held data might be appropriate and necessary in a world with market failures, as well as due to other normative policy objectives like fairness or privacy. As a consequence, also in cases of de facto exclusive control of data, not all rights should be seen as de facto assigned to the data-holder; rather such a position might have to be complemented by certain additional rights for data access or data portability that are assigned, e.g., to other firms or consumers.[38] Those additional rights for using these data can therfore be seen as the equivalent of exceptions and limitations of exclusive IP rights for a better balancing of the interests of the innovator and other firms and users.[39] It can even be asked in an additional step, whether the de facto data holder should have these data in the first place, or whether a different data governance solution might be appropriate, which assigns the rights on these data to other persons or firms (see the data in the connected car example below in section 4.4).

For the analysis what the appropriate specification and assignment of the bundle of rights on a set of data is, and how therefore an effective data governance solution should look like, an economic analysis is necessary. It is not possible here to explain in detail the analytical framework that can be applied from a (market failure-based) economic policy

---

37 See also Furman et al, Unlocking digital competition. Report of the Digital Competition Expert Panel, 2019, 75.

38 See Schweitzer/Welker, A legal framework for access to data - A competition policy perspective, In: Data access, consumer interests and public welfare, 2021, 107-115, for a general discussion of such a "private control approach" and its limits, especially with respect to competition problems and the competition law perspective.

39 It is important in that respect that the above-discussed proposals for introducing new exclusive rights on non-personal data also were temporarily limikted and included far-reaching limitations. See, e.g., Zech, A Legal Framework for a Data Economy in the European Digital Single Market: Rights to Use Data', JIPLP 1, 2016, 460, 469.

perspective to the manifold problems of the governance of data, and the complexity of the data governance solutions that might be necessary under certain circumstances. Here, only the most important aspects can be summarized:[40]

(1) A deeper analysis shows that a number of different market failures might be relevant in relation to data. This encompasses competition problems (including lock-in problems and unequal bargaining power situations), information and behavioral problems of consumers (e.g., intransparency about collection and use of personal data), information asymmetries about the quality of data, data-related externalities (e.g. through data breaches), too low levels of interoperability and standardisation, and innovation problems (due to insufficient availability of data, e.g., for data analytics, AI, and training of algorithms). In addition, also other (non-welfare-based) policy objectives[41] might have to be taken into account, as, e.g. privacy as a fundamental value in the EU, or distributional aspects about a fair participation of individuals or firms regarding the value of "their" data.

(2) It is important that a clear analysis of market failures (or the effects on additional policy objectives) is necessary for drawing conclusions whether the market is capable of solving the problems, or whether a policy solution is necessary, and if this is the case, how an effective policy solution should look like. The specification and assignment of rights for data access, data sharing, or other data-related solutions as data portability or data trustees can then be one of these policies. Without a clear analysis wrong and ineffective policy solutions might be chosen.

(3) So far the broad discussion about rights regarding data access, data-sharing (and also data portability) has shown that their benefits and costs might be very different, and depend very much on the specific economic and technological conditions in different markets and industries but also on the type of data (e.g. raw data, aggregated data, or inferred data). Therefore general conclusions about the advisability of such rights are difficult, and a careful balancing of positive and negative effects might be necessary. However some consensus about relevant criteria has emerged: From an economic perspective it is not surprising that both the benefits of more data access (e.g., more

40 See, for the following, e.g., Kerber, From (horizontal and sectoral) data access solutions towards data governance systems, in: Data access, consumer interests and public welfare, 2021, 441, 461-466. See for a broad overview about the economics of data and data-related market failures also Martens, Data access, consumer interests and social welfare - An economic perspective on data, In: Data access, consumer interests and public welfare, 2021, 69.

41 It should be noted that the economic market failure theory is based upon economic welfare as normative objective, and therefore other relevant normative objectives have to be taken into account additionally.

competition and innovation) and the possibility of negative effects on incentives for the generation of data (including the option of data access fees) are important. However, it can also be relevant whether the data access-claiming firm has participated in the generation of the data (problem of cogenerated data). Also the protection of business secrets and personal data has to be considered.

(4) The discussion has also shown that rights on data access, data-sharing and data portability might not be enough for effective solutions, i.e. that also additional regulatory solutions might be necessary regarding interoperability / standardisation, and safety, cybersecurity and privacy risks. This can lead to the need of an entire (e.g., sector-specific) package of regulations, in which the data governance solution is (only) one of the building-blocks.[42]

4. Specification and assignment of bundles of rights on data in recent data policy discussions

After this analysis of the discussion in Europe about introducing new rights on non-personal data (exclusive data rights, data access rights, etc.) and a brief overview about a market failure-based analytical framework for assessing the need and appropriate solutions for the specification and assignment of bundles of rights on data, this section 4 has the task of analyzing specific data policy discussions in Europe, and why they can be interpreted as discussions about the proper specification and assignment of bundles of rights on data.

4.1 Personal data and the GDPR

Since it is increasingly understood that the legal rules and regulatory regimes regarding personal and non-personal data deeply intertwined,[43] it is very important that also the rights that individual persons are granted about their personal data through EU data protection law (GDPR) can be integrated in such a "bundle of rights" concept regarding data.

---

42 See Kerber, From (horizontal and sectoral) data access solutions towards data governance systems, in: Data access, consumer interests and public welfare, 2021, 441, 461, 471. This can lead to the development of entire data governance systems. The PSD2 is an example for such a sectoral regulatory regime (see, ibid., 452).

43 See Graef/Gellert/Husovec, Towards a holistic regulatory approach for the European data economy: Why the illusive notion of non-personal data is counterproductive to data innovation, TILEC Discussion Paper No. 2018-029, 2018, availabale at: https//papers.ssrn.com/sol3/papers.cfm?abstract_ide=3256189.

It is no problem from a normative perspective that this concept can also encompass rights based upon "human rights" and "fundamental values" (as privacy).[44] With its definition of personal data, the long list of rights of data subjects (e.g., right to be informed, right to access, right to rectification, data portability right), and the provisions under what conditions others are allowed to process these personal data (including the key role of consent by the data subject), the GDPR can be interpreted as a legal regime that offers a complex specification and assignment of the bundle of rights on personal data.[45] It also provides for a regulatory framework for contractual relationships between the data subjects and the users of these personal data. Although, at least theoretically, the individual persons have strong rights regarding their personal data, including the possibility to exclude others from using them by denying consent, the GDPR does not grant to them an exclusive bundle of rights on their personal data that resembles "property" in analogy to physical property or IP rights. Due to the existence of also other fundamental values and policy objectives, the rights of the data subjects are limited through the need for a balancing of the fundamental values and interests regarding the use of personal data. The provision about processing personal data based upon "legitimate interests" (Art. 6(1)f GDPR) is a result of such a balancing within the GDPR.[46]

From this perspective policy discussions about personal data, either regarding the legal interpretation of the existing GDPR or the enactment of new legislation like the still pending ePrivacy Regulation,[47] can be interpreted as discussions about the specification and assignment of the bundle of rights on personal data. If, for example, Art. 6(1)f GDPR about the balancing of interests between the "legitimate interests" of firms to use certain personal data and the "privacy interests" of the data subjects[48] is interpreted in a more data economy-friendly way, then firms can use more personal data without needing consent from the data subject. Such a shifting of the boundary between the areas, where

---

44 See, e.g., Schäfer/Ott, Lehrbuch der ökonomischen Analyse des Zivilrechts, 4. ed., 2005, 98. This also fits to the fact that many rights granted by the GDPR are inalienable rights, i.e. they cannot be sold or waived.

45 See Regulation (EU) 2016/479 of the European Parliament and of the Council of April 27, 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, 2016 OJ (L119) 1.

46 See Zech, A legal framework for a Data Economy in the European Digital Single Market: Rights to Use Data', JIPLP 1, 2016, 460, 464.

47 See for the discussion about the proposed ePrivacy Regulation Voss, First the GDPR, nwt the proposed ePrivacy Regulation, Journal of Internet Law, July 2017, 3.

48 See for Art. 6(1)f GDPR and its interpretation Art. 29 Data Protection Working Party, Opinion 06/2014 on the notion of legitimate interests of the data controller under Article 7 of Directive 95/46/EC, WP 217, 2014; Wiebe/Helmschrot, Untersuchung der Umsetzung der Datenschutz-Grundverordnung (DSGVO) durch Online-Dienste, 2019, 39-47.

consent is necessary and where not, would imply that the bundle of rights on personal data shrinks for the data subject but increases, e.g. for firms, who base their processing on "legitimate interests". The "balancing of interests" in Art. 6(1)f GDPR therefore decides on the assignment of rights for using personal data, at least to some extent. Also the provisions about anonymizing personal data are important for the specification and assignment of rights on data. If holders of personal data anonymize them, then these data sets are not subject any more to the rules of the GDPR, and have the same legal status as other non-personal data, i.e. the data holders are free to use, sell or "license" these anonymized data sets, and can therefore monetize them without permission of the data subjects (and without the need to share the value of these data sets with the data subjects). Since anonymization can be difficult and expensive, the important (and so far unsolved) policy question is what standard of anonymization is deemed as sufficient. It can be expected that the higher the standard, the higher are the costs of anonymization but also the lower the privacy risks through reidentification. [49] Therefore decisions on the necessary level of the standard of anonymization also influence the extent to which personal data are transformed into anonymized data sets that can be made available as non-personal data to the data economy but perhaps also lead to more privacy risks for data subjects. For all these policy discussions it can be asked how the bundle of rights on personal data should be specified and assigned for dealing with the difficult trade-off problems between protecting privacy and informational self-determination of data subjects, and the potential manifold benefits of making personal data available for the economy and also public policy.

4.2 Data portability rights

The data portability right of Art. 20 GDPR allows data subjects to have their personal data transmitted from one data controller to another. In the current discussion there are great expectations both by academic scholars and by policy-makers that this right can be an important instrument for limiting the data power of large digital firms and for making more data available for innovation, because it might help to reduce lock-in problems of users of platforms, and therefore support competition between platforms and reduce entry barriers.[50] However due to a number of problems (e.g., legal uncertainty about the scope of portable data, lacking technical feasibility, high transaction costs) this data portability right has so far not been effective for leading to more competition and innovation.

---

49 See for the rules and problems of anonymization of personal data Crémer/de Montjoye/Schweitzer, Competition policy for the digital era, 2019, 85-87 (with many references).

50 See, e.g., Crémer/de Montjoye/Schweitzer, Competition policy for the digital era, 2019, 81-85.

Therefore a policy discussion exists about how to make this data portability right more effective. In that respect the EU Commission suggested to introduce measures, which might also require, under certain conditions, real-time portability of data and mandatory APIs for facilitating data interoperability.[51] Such measures might help the enforceability of the data portability right of data subjects, and therefore have an influence on the de facto bundle of rights of data-holders, because they might lose more easily their exclusive control over the data. This example shows that assigning a right on data, such as a data portability right, is not enough, also the dimension of enforcement is very important from an economic perspective.

Although such measures might help to some extent, it is very unclear whether the data portability right of Art. 20 GDPR (with its focus on "informational self-determination") can be implemented flexibly enough for solving competition and innovation problems. The problem is that for achieving this objective the appropriate scope of such a data portability right (and the specific conditions of its use) have to be tailored to the competition and innovation problems that have to be solved, which, e.g. might also require non-personal data. A general "human rights" based data portability right (as Art. 20 GDPR) might have inherent limits for adapting it sufficiently to different technological and economic conditions for making it an effective instrument for solving competition and innovation problems caused by a lack of data access and data-sharing.[52]

It might therefore be very interesting to think more about data portability rights outside of EU data protection law (or, more generally, privacy laws). One important new approach is the consumer data rights approach in Australia, which also encompasses a data portability right but is part of consumer policy and independent from privacy law.[53] In contrast to specifying and assigning a bundle of rights on personal data to data subjects, the Australian approach specifies and assigns a bundle of rights on consumer-related data to consumers. Since the definition of consumer data is independent from the definition of personal data (as defined in privacy laws), the data portability right of consumers can

---

51 See, e.g., Krämer, Personal data portability in the platform economy: Economic implications and policy recommendations, Journal of Competition Law & Economics, 2020, doi: 10-1093/joclec/nhaa030; EU Commission, Communication "Data protection as a pillar of citizens' empowerment and the EU's approach to the digital transition - Two years of application of the General Data Protection Regulation", COM(2020) 264 final, 9.

52 See Gill/Kerber, Data portability rights: Limits, opportunities, and the need for going beyond the portability of personal data, CPI Antitrust Chronicle, November 2020 2(2), 54, 57.

53 See OECD, Consumer data rights and competition - Background note. DAF/COMP(2020)1, 11-14. Specht-Riemenschneider, Data accees rights. A comparative approach, In: Data access, consumer interests and public welfare, 2021, 401, 430-436.

also encompass non-personal data, and due to its uncoupling from (human rights-based) privacy laws, it is much easier to tailor the portability right of consumers regarding their consumer data to the specific economic and technological conditions of different markets and industries. Although the consumer data right approach of Australia is basically a general approach for the entire economy, it is implemented in a step-by-step sectoral approach that allows to specify the bundle of rights of consumers differently in different industries and complement them also with industry-specific further regulations about data interoperability and technical standards. It also should be emphasized that the other innovative aspect of the consumer data rights approach is that such a bundle of rights on data can also be defined in consumer law (with the objective of "consumer empowerment").

4.3 Data-related competition law solutions

In the meantime, competition policy has understood the key role of data for competition in the digital economy, (1) with regard to its contribution to the market power of firms, entry barriers, and relevance for abusive behaviour (e.g. through foreclosing competitors), as well as (2) as an instrument for remedies, e.g. by granting data access, mandating data-sharing or data portability, requiring the separation of data sets in a firm (e.g. after a merger), or prohibition of the use of data for certain purposes.[54] In the following, a brief overview will be presented about recently enacted or currently discussed competition law solutions that can be interpreted as changing the specification and assignment of the bundle of rights on data.

Already early in the discussion the "essential facility" doctrine was seen as an option for granting data access rights (e.g. in Art. 102 TFEU), if a non-replicable and non-substitutable data set that is controlled by a dominant firm is a necessary input for providing services on another market (e.g., aftermarkets). In the recently enacted 10th amendment of German competition law, the rephrased § 19(2) No.4 ARC has emphasized and clarified that data can be an essential facility. A much more important step is that, according to the changes in § 20(1) ARC and the new § 20(1a) ARC, also the refusal of a non-dominant firm to give access to the data it controls, can be an abusive behaviour, if the data access claiming firm is bilaterally dependent on the data-holding firm ("relative market power"), e.g., due to its need for access to data for their own activities. This is explicitly also applicable to business users which are dependent on platforms as

54 See, e.g., OECD, Consumer data rights and competition - Background note. DAF/COMP(2020)1, 24-40.

intermediaries.[55] It is however important that such an assignment of data access rights of dependent firms vis-a-vis firms that control these data depends on a complex balancing of the interests between both firms, for which the list of criteria that have been briefly discussed in section 3.3 might be particularly relevant. If however the data-holding firms have no formal legal rights but only de facto control over these data and the incentive problems for generating them might be small, then an economic analysis would suggest that the benefits of the access to these data by another firm that needs them for their own services might be larger than the disadvantages for the data-holding firm, i.e. that a claim for data access might be much more easily justified.

Much more attention, however, are getting new specific provisions that aim directly on the large digital platform firms like the new § 19a ARC in Germany and the proposed Digital Markets Act of the EU Commission. Both legislative acts encompass a number of provisions that change the specification and assignment of the bundle of rights on specific kinds of data in order to protect competition and/or the free choice of business users and consumers vis-a-vis these powerful digital firms.[56] One important example are data about the transactions on platform market places, as, e.g. Amazon, where the provider of these platform services can collect all data about the transactions between businesses and consumers. The platform can use these data also for its own strategies in competition with these businesses, whereas, vice versa, the business users on these platforms do not get full access to these data. This is the subject of investigations of competition authorities against Amazon.[57] In the Draft Digital Markets Act two obligations that all gatekeepers are supposed to comply with, deal with this data governance problem. The first obligation in Art. 6(1)a Draft DMA prohibits that the providers of such platform

55 See for the discussion on these data access solutions Schweitzer/Haucap/Kerber/Welker, Modernisierung der Missbrauchsaufsicht für marktmächtige Unternehmen, 2018, 158-191; Kerber, Datenzugangsansprüche im Referentenentwurf zur 10. GWB-Novelle aus ökonomischer Perspektive, WuW, 249-256. The extension of the German competition law rules regarding data access also in situations of bilateral dependencies ("unequal bargaining power") is part of a broader development in the international competition policy discussion for controlling more the problematic unfair effects of "unequal bargaining power situations". See for an overview (also on other national rules within the EU) Mantzari, Power imbalances in online marketplases: At the crossroads of competition law and regulation, CLES Research Paper Series 4/2021, available at: https://www.ucl.ac.uk/cles/research-papers.

56 See for the Digital Markets Act Proposal of the Commission of 15 December 2020 for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), COM(2020) 842. See, e.g. de Streel/Liebhaberg/Fletcher, The European proposal for a Digital Markets Act, CERRE, January 2021.

57 See Mantzari, Power imbalances in online marketplases: At the crossroads of competition law and regulation, CLES Research Paper Series 4/2021, 6, available at: https://www.ucl.ac.uk/cles/research-papers.

services use data that are generated through the activities of business users on their platform, e.g. with consumers, for their own competition with these businesses (dual role of platforms).[58] The second obligation in Art. 6(1)i Draft DMA stipulates that these business users should get "free of charge effective, high-quality, continuous and real-time access and use of aggregated or non-aggregated data that is generated in the context of the use of the platform services by the business users".[59]

Without being able to analyze these two provisions here in detail, it can be suggested that these provisions imply that not the platform (as the de facto data holder) but the business users should be the main "owners" of the rights on these data. The platform is still allowed to hold and use the data but not for the purpose of their own competition with the business users (due to its distorting effects on competition). In that respect both the platform and the business users have rights on these data. The obligation that the business users should have free of charge effective, high-quality, continuous, and real-time access and use of the data shows that the business users should not only get access to the data somehow, but should get real-time access to all aggregated and non-aggregated data without any limitations on how they are using it, i.e. they get a full bundle of rights on the data and are free how to use them.[60] Although these obligations can be seen as necessary for protecting competition, they also can be interpreted as a decision that the de facto holder of data (here the provider of platform services) is not the "rightful owner" of these data, because it is the business users that have generated these data with their activities. This change in the assignment of the bundle of rights of these data from the platform to the business users could therefore also be justified as a matter of fairness (as the second main objective of the DMA), especially also due to the "unequal bargaining power" situation between the gatekeeper and the business users.

To some extent linked to the obligation of Art. 6(1)i is also the introduction of new and far-reaching data portability rights of business users and end users in Art. 6(1)h Draft DMA. The gatekeepers should "provide effective portability of data generated through the activity of a business user or end user." This data portability right goes far beyond the provisions of Art. 20 GDPR, because (1) also business users (and not only end users)

---

58 "refrain from using, in competition with business users, any data not publicly available, which is generated through activities by those business users, including by the end users of these business users, ..." (Art. 6(1)a); see also recital 43 Draft DMA.

59 Art. 6(1)i Draft DMA; see also recital 55 Draft DMA. the same problem is also addressed (but in a less precise form) in German competition law (§ 19 a (2) No. 6 ARC).

60 However they do not seem to have the right to decide that the platform has to erase the data or is not allowed to use the data for other purposes.

get such a data portability right, (2) it is not limited to personal data and encompasses data on different levels of aggregation, and (3) the gatekeeper has also to provide tools for allowing continuous and real-time access, which ensures easier enforceability of these rights. This obligation therefore offers the chance for an effective data portability solution. Whereas these obligations about data rights could also be justified from the perspective of who has mainly contributed to the generation of these data, another obligation in the DMA proposal (Art. 6(1)j) that requires the sharing of certain search engine data to other providers of search engine services (horizontal data-sharing) can only be justified by the objective of enabling more competition (contestability) on the market for search engine services. The obligation to share highly competition-relevant data with direct competitors constitutes a far-reaching redefinition of the bundle of rights on these search engine data.[61]

4.4 Sector-specific solutions: Data of connected cars

The rights that are granted by EU data protection law (including the data portability right of Art. 20 GDPR) and also data rights that can be claimed according to competition law are generally applicable rules about the specification and assignment of data rights. The complexity of the trade-offs of costs and benefits with respect to defining and assigning data rights and the necessity of additional regulatory solutions for dealing with risks and making data access effective have led to the approach of focusing also on sector-specific regulatory solutions that allow for better tailored governance solutions. One well-known example are regulatory solutions for opening bank account data. Also the Second Payment Services Directive (PSD2) can be interpreted as profoundly changing the specification and assignment of rights on bank account data, which were traditionally under the exclusive control of the banks.[62] Through the PSD2 this de facto exclusive control has been replaced by a new complex bundle of (1) rights on these data but also (2) rights to execute financial payments on these bank accounts, both of which were also assigned to independent financial service providers that now have access to these bank accounts (with the consent of the bank account holders), and can provide their services without needing the permission of the bank. Similar sector-specific solutions are also in the discussion in respect to IoT applications, as, e.g., in smart agriculture (with data-generating

61 Also the new German provisions in § 19a (2) No.4 and 6 ARC can be interpreted as changing the specification and assignment of the bundle of rights on certain sets of data. Important is that in German competition law a decision of the German competition authority is necessary in contrast to the approach of ex-ante obligations of the DMA for gatekeepers.

62 See for the discussion about the PSD2 Vezzoso, Fintech, access to data, and the role of competition policy, In: Competition and innovation (Scortecci), 2018, 30.

farm machinery) or in the automotive industry through (smart) connected cars. In both cases the problem has emerged that the manufacturers design their devices in a way that gives them exclusive de facto control over the data that are generated during the use of these devices, e.g. by farmers or car users. In the following, we will look briefly on the policy discussion about data in connected cars from our bundle of rights perspective.[63]

The car manufacturers in Europe apply the so-called "extended vehicle" concept, which implies (1) that all data generated in the car are directly transmitted to a proprietary server of the manufacturer, and (2) that the car is technically designed as a closed system. Therefore the manufacturers do not only have exclusive control over the car data but also exclusive control over the technical access to the car. A broad coalition of independent providers of repair and maintenance services and manifold innovative new services for the users of connected cars are very concerned that the car manufacturers can use their new gatekeeper position for distorting competition on the secondary markets in the ecosystem of connected cars and foreclose these independent service providers. An economic analysis of the extended vehicle concept shows that it can lead to negative effects on competition on the markets for aftermarket and complementary services, less innovation, and harm consumers through higher prices and less consumer choice.[64] The EU Commission has acknowledged this problem for fair and undistorted competition, and announced plans for its solution, but did not solve this problem so far. In the following, some solutions are discussed regarding their implications on the specification and assignment of the bundles of rights on these data.

The gatekeeper position of the manufacturers is caused by their technological decision for the above-described extended vehicle concept, which gives them the de facto exclusive control over the data of the connected car.[65] An alternative technological solution,

---

63 See for the discussion on "access to data and resources" of connected cars C-ITS platform, Final report, 2016, <https://ec.europa.eu/transport/sites/transport/files/themes/its/doc/c-its-platform-final-report-january-2016.pdf>; TRL, Access to In-Vehicle Data and Resources – Final Report, 2017, <https://ec.europa.eu/transport/sites/transport/files/2017-05-access-to-in-vehicle-data-and-resources.pdf>; See for the following analysis Kerber, Data Governance in connected cars: The Problem of access to in-vehicle data, JIPITEC 9, 2018, 310; see also Martens/ Mueller-Langer, Access to digital car data and competition in aftermarket maintenance market, Journal of Competition Law and Economics 16, 116.

64 See for the results of a broad analysis of market failures Kerber, Data Governance in connected cars: The Problem of access to in-vehicle data, JIPITEC 9, 2018, 310, 316-325.

65 The safety and security argument of the car manufacturers for defending this exclusive control position cannot justify their "de facto appropriation" of these data. See Kerber, Data Governance in connected cars: The Problem of access to in-vehicle data, JIPITEC 9, 2018, 310, 319.

based upon an interoperable open telematics platform, would store the data directly in the car, and would give the exclusive control over the data to the car owners. An independent study that was commissioned by the EU Commission came to the conclusion that such a technological solution would also be feasible (also with regard to safety and security concerns) and would mitigate the competition problems, because the car manufacturers would lose their exclusive control over the data.[66] An important conclusion from this example is that the question who is in the position of de facto controlling the data (and therefore has the "bundle of de facto rights" on data) can depend on technological decisions, here by the manufacturers. Therefore one option for solving the problem would be a regulatory approach that helps to implement open and interoperable telematic platforms, e.g. through technological standardisation policy. Such a solution would eliminate the gatekeeper position of the car manufacturers and lead to a de facto reassignment of the bundle of rights on car data to the car owners.[67] However, even in the case of the current technology with its transmission of the car data to an external server, other solutions are possible. Theoretically, the problem might also be solved through the above-discussed new data access solutions in competition law, e.g. by arguing that independent service providers are dependent on the data controlled by the car manufacturers. However, such solutions face manifold problems that make them practically ineffective for solving the data access problems in this complex ecosystem of connected cars.[68]

A much more interesting option would be a data trustee solution.[69] This would imply that the external server with the car data is put under the governance of a neutral entity, which has the task to grant all stakeholders in the ecosystem of connected cars access to these data according to a set of principles (e.g., FRAND conditions).[70] This would require a

---

66 See TRL, Access to In-Vehicle Data and Resources – Final Report, 2017, 160, https://ec.europa.eu/transport/sites/transport/files/2017-05-access-to-in-vehicle-data-and-resources.pdf.

67 This would correspond to the proposal of the "data producer right" in 2017, which the EU Commission wanted to assign to the owner or long-term users of a smart device (as here the connected car).

68 See Kerber, Data-sharing in IoT Ecosystems and Competition Law: The Example of Connected Cars, Journal of Competition Law & Economics 15, 2019, 381, 406, 411.

69 See for an overview about data trustee solutions Blankertz, Designing Data Trusts. Why We Need to Test Consumer Data Trusts Now, 2020 <www.stiftung-nv.de/sites/default/files/designing_data_trusts_e.pdf>.

70 In the discussions about access solutions for car data, this would correspond to the "shared server" solution, which can be interpreted from today's perspective as a data trustee solution. It was also assessed as superior to the "extended vehicle concept" by the TRL study (TRL, Access to In-Vehicle Data and Resources – Final Report, 2017, 160, https://ec.europa.eu/transport/sites/transport/files/2017-05-access-to-in-vehicle-data-and-resources.pdf).

mandatory regulatory solution that stipulates that these car data are put under the exclusive control of a data trustee and establishes clear principles for this data trustee for deciding who should get access to what kinds of car data under which conditions and for what purposes. This could lead to a complex but sophisticated governance solution for these data, which also can take into account specific legitimate interests of certain stakeholders, e.g. regarding technical data for car manufacturers or component suppliers. Therefore such a data trustee solution for the bundle of rights on car data could allow for a data governance solution with a fair balancing of interests of all stakeholders (including car owners and public interests) that ensures competition, data-driven innovation, and consumer choice. Such a data trustee solution could also be a key instrument within a broader sector-specific regulatory approach for dealing with the governance of the entire ecosystem of connected driving and the generated car and mobility data. It could entail also necessary additional regulatory solutions for standardisation and interoperability and protecting safety, security, and privacy with respect to these data and the technical access to the connected cars. One policy option would be a further reform of the existing type approval regulation for motor vehicles, which had implemented already for a long time a successful mandatory FRAND-like access regime for essential repair and maintenance service information but which still needs an urgent update to the new economic and technological conditions of connected cars.[71]

5. Conclusions and perspectives

The objective of this paper was to show that the legal category of "property", either as physical property or intellectual property, might not be a suitable model for dealing with the complexity of data governance problems. Although data can be a valuable asset and might, under certain circumstances, need incentives for its generation, the economic and technological conditions regarding data differ significantly from the problems regarding physical goods, innovation, and creative works. Through the much easier excludability and the greater importance of the non-rivalry and context-dependency of the use of data, not the incentive problem for data generation but the problem of access and sharing of the fast increasing amounts of data have become the most urgent policy issues. Therefore the traditional concepts of property with their focus on excludability do not fit to the

71 See Kerber/Gill, Access to data in connected cars and the recent reform of the Motor Vehicle Type Approval Regulation, JIPITEC 8, 2019, 39, for a critique of this reform in 2018. The EU Commission has announced another reform (Communication "Building a European data economy" COM(2017) 9 final, 28).

current problems of the data economy. However, a general policy to open data that ignores incentives for generating (high-quality) data can also not be the right solution. The experience so far has shown that in different industries and contexts different data governance solutions might be appropriate, which often have to be tailored to the specific economic and technological conditions of these settings. The "bundle of rights" approach with its flexibility and wide range of options, how to specify these rights and to whom these rights can be assigned, offers - in combination with analyses of the effects of these rights - a framework that allows for a multitude of different data governance solutions for a better finding of appropriate answers to the manifold problems regarding data.

The examples in section 4 have shown that many current policy discussions about data can also be interpreted as discussions about the specification and assignment of bundles of rights on data. However, this refers not only to the obvious cases about a new exclusive right on non-personal data or new data access rights, but also policies about opening public sector data or privately held sets of anonymised data for training AI and algorithms, as well as different solutions for the governance of the data generated in connected cars. can be analyzed from this perspective. The examples in section 4 have also shown that the specification and assignment of bundles of rights on data can be determined not only by direct laws on data, as, e.g., the GDPR in the EU, EU database protection law, the Australian consumer data right legislation, or a future EU Data Act, but also through legal rules in many other fields of the law. Trade secret law, IP laws, traditional competition law (and a future Digital Markets Act), but also civil law, fair trading laws, or consumer law can entail provisions that influence the specification and assignment of rights on certain sets of data. Therefore it is necessary that also in the application of these laws the specific economic analytical framework with its analyses of market failures and effects of different specifications and assignments of a bundle of rights on data has to be taken into account for contributing to appropriate and effective data governance solutions. In that respect a broad number of laws might have to adapt to these new challenges of the data economy.

One of the puzzling theoretical and policy problems regarding data, which needs much more explicit analysis and deliberation from both law and economics, is the huge importance of positions of exclusive de facto control over data by firms or other institutions, for which no formal legal rights exist. Although this de facto control over data can help to avoid incentive problems, it also can lead to many problems. How should societies in the digital age deal with these positions? First and foremost, such positions of de facto control over data only reflect a position of "power" that gives the data holders "real options"

for de facto using the data. According to the quotation of Demsetz (cited in section 2), it also could be argued that - due to the absence of property rights - the legislator has so far not decided on the "socially acceptable" uses of these data, and that therefore the legal status of these data is still open. From that perspective it is a task of courts and legislators for a clarification of the bundles of rights, and we can view the current discussions about data access rights and data-sharing obligations and other data governance solutions as debates about filling these gaps. The quotation of Demsetz however makes clear that we should be cautious not to succumb to the fallacy that limiting the "power" of de facto holders of data, e.g. by data access or data portability rights, is always a problematic intervention into the "property" of these data holders. Rather it is part of necessary decisions of the society about the definition (and therefore the appropriate specification and assignment) of the bundles of rights on these data. This discussion shows that the question how to deal with exclusive de facto control positions on data, for which no legal rights exist, raises fundamental and unsolved research questions.