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Data Commons and the EU Data Act

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Abstract:

In the digital world, data has become an essential and valuable economic resource. The Data Act (DA), adopted in November 2023 in the EU, introduces new access, use and sharing rights for users of IoT devices regarding non-personal digital data. This paper analyzes whether data commons are a suitable governance mode for unlocking more non-personal data against the background of the DA. It finds that in B2B situations, data commons might set additional incentives for business users of the same industry to share their data based on already existing industry associations. This also holds for public utilities. Regarding B2C situations, data commons might contribute to reframe consumers' individual cost-benefit calculations, which generally are against data sharing, towards more altruistic data sharing. This might, however, generate a form of 'reverse altruism' that requires data commons to strictly follow goals oriented toward the common good.

Key words: Internet of Things, data access, data commons, data governance, EU Data Act

JEL classification: K11, K24, L86, O31

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1. Introduction

Digitalization not only creates huge benefits, but poses also a number of far-reaching challenges to society due to its disruptive impact on economic structures (Kerber 2023). Data lies at the heart of digital technologies and business models. In the digital world, it has become an essential and valuable economic resource. The issue of data governance is therefore on the agenda, although it poses challenging issues. This can also be seen in that the content and scope of what data governance means changed over the last years (Abraham et al. 2019). Originally, data governance referred to data management within single organizations or firms. With the widespread collection, processing and commercial use of digital data, now the question is more generally who should have access to these data and is capable of drawing value from it as well as how the collection, processing etc. of large data sets should be organized and managed. EU data policy is currently the most ambitious and far-reaching endeavor to regulate the digital economy. The General Data Protection Regulation which is concerned with privacy issues regarding personal data was put into force in 2018 (European Parliament/Council 2016). The Data Act (DA) which was adopted in November 2023 deals with the governance of non-personal data that are generated by the growing number of IoT (internet of things) devices (European Parliament/Council 2023). It introduces new mandatory rights for users to access, use and share data generated by IoT devices as well as it wants to clarify who should be allowed to draw value from such data. This should result in achieving the objectives of the DA, which are making data available for innovation; guaranteeing and enhancing competition; and giving users a fair share of the value from data.

Eckardt & Kerber (2024) analyze whether the approach of the DA to achieve these goals could be successful by applying a 'bundles of rights' approach from property rights theory. Since the DA is rather ambiguous in its approach, they discuss the following three modes of governance for non-personal IoT data in relation to the DA: (1) an intellectual property rights (IPR)-like mode that favors manufacturers in assigning rights on data, (2) a user-centric mode that allocates access, use and sharing rights pre-dominantly to the users of the IoT devices, and (3) a co-generating approach that would allow both manufacturers and users to independently access, use and share the data. While only the third mode takes advantage of the non-rival feature of data, under the other two modes the DA favors a more individualistic approach through a more exclusive assignment of the bundles of rights, even if they contradict each other to a certain extent. Eckardt & Kerber (2024) come to the conclusion that all in all it is unlikely that the approach of the DA to governing non-personal digital data will lead to greater unlocking of data for innovation and competition.

Data commons are another governance mode that has gained particular interest over the last years (Dulong de Rosnay & Stalder 2020; Purtova & v. Maanen 2023). Since data is non rivalrous in consumption, assigning private property rights is not an optimal solution for maximizing social welfare. Thus, a number of authors looked at the work

of Elinor Ostrom and others on common-pool resources and the bundle of rights assigned for governing such resources as a promising alternative mode of data governance. Therefore, this paper discusses whether data commons could be a sensible mode of governance to achieve the objective of unlocking more non-personal data. Section 2 presents the main approaches regarding data commons as a mode for governing non-personal digital data. Section 3 analyzes whether data commons provide a governance mode that helps to overcome technical, legal and economic incentive barriers to make more non-personal data available. It takes the new rights adopted with the DA on access, use and sharing of non-personal data that are generated by IoT devices into account. Section 4 concludes.

2. Data Commons – An Overview

A quick exploratory online search in the Social Science Direct database showed 1,280 results when searching for the term ‘data commons’, with a marked and steady increase since 2017/18. However, only about 7 % of the results refer to publications from the social sciences. Most of the other findings are related to fields like (bio-) medicine, genetics, and microbiology etc. where commons are used as a governance mode to make large data sets available for scientific research to a broad community of researchers. Since we are interested in governance modes for making non-personal digital data from IoT devices available for a broad user base, not primarily for scientific research, we do not deal with these forms of data governance in the following.

The concept of data commons originates from the empirical and conceptual work of Elinor Ostrom and others on common pool resources which are characterized by non-excludability and rivalry or subtractability in consumption (Ostrom 2005, 2010). The research relied mainly on qualitative case studies that were undertaken to explore which non-state and non-private property mechanisms are there that prevent overusing and thus the depletion of such a resource (“tragedy of the commons”, Hardin 1968). From this field work, Schlager & Ostrom (1992) provided a ‘bundles of rights’ approach to the shared governance of common-pool resources. In such a property rights regime, bundles of rights are allocated to different actors at different levels. Governing common-pool resources by a group of people requires a differentiation between access and use rights on the one hand and rights that deal with the management of the resource in the widest sense. Following Schlager & Ostrom (1992), at the operational level there are access and withdrawal rights, while at the collective choice level, there are management, exclusion and alienation rights. On the basis of a broad range of empirical case studies, Ostrom (2005, 2010) derived insights on the relevant characteristics of these bundles of rights for the governance of common-pool resources to work well. The Institutional Analysis and Development (IAD) framework comprises the following eight principles that should help to overcome the main collective-choice problems when common property regimes are used as a governance mode for such common-pool resources: “1. Clearly defined boundaries ... 2. Proportional equivalence between benefits and costs ... 3. Collective-choice arrangements ... 4. Monitoring ... 5. Graduated sanctions ... 6. Conflict resolution mechanisms ... 7. Minimal recognition

of rights to organize ... 8. Nestled enterprises” (Ostrom 2005: 259). While the main work in this strand of literature refers to natural resources, like fishery or forests, Hess & Ostrom (2003, 2007) also started looking at knowledge as a common-pool resource (“knowledge commons”). Although Hess & Ostrom (2003, 2007: 134) acknowledged that digital information is different from physical common-pool resources, they, nevertheless, argued that the commons framework developed regarding the governance of such physical resources is also a useful concept for studying knowledge, information and data.

This view is contested by a group of scholars that, like Madison (2020: 35), argue that conceptualizing knowledge, information or data as common-pool resources is not convincing since these are excludable but non-depletable, thus having different properties than common-pool resources. However, in their Governing Knowledge Commons (GKC) framework they continue to pursue the methodological approach by Ostrom. They thus refer to the traditional notion of the term “commons” as “a resource shared by a group of people” (Hess & Ostrom 2007: 4). Accordingly, commons governance is “a form of community management or governance. It applies to a resource, and it involves a group or community of people who share access to and/or use of the resource” (Madison et al. 2016: 1) or – as Madison (2020: 37) puts it: “commons governance is collective management of a shared resource by or in a group. The role of the collective is largely to define its own governance system relative to dilemmas associated with specific resources, producing a form of institutional governance in context”. The main social dilemmas seen in knowledge commons (including data commons) are “(i) dilemmas attributable to the nature of the research and/or research problem...[in scientific research]..., (ii) dilemmas attributable to the need to coordinate knowledge sharing among multiple constituencies and stakeholders that collaborate with respect to creation and management of the resource [...], (iii) dilemmas arising from the need to manage rivalrous or depletable resources that are necessary inputs into production and use of the shared knowledge resources [...], (iv) dilemmas arising from (or mitigated by) the broader system within which a knowledge common institution is nested” (Madison et al. 2016: 14). While this approach stresses the relevance to analyze social dilemmas emerging in data commons governance, it refuses to conceptualize data as a common-pool resource that is susceptible to overuse and depletion (Madison 2020: 34). Accordingly, it also declines the “[s]tereotypical solutions [...] modeled either as exclusive property rights transacted in markets (patents, copyrights), or as public goods provisioned or underwritten by state authority (such as scientific research)” (Madison 2020: 35). But the GKC framework does not provide a prescriptive set of bundles of rights that should be implemented for governing data commons in a welfare optimizing way. For example, while Madison (2020: 41) claims to offer “a conceptual toolkit for data governance”, he, too, does not present a detailed account on how the bundles of rights should be designed for well working data commons. The main research undertaken is rather at the exploratory stage, conducting qualitative case studies from which the question “whether and how some knowledge or information resource is governed as a shared resource via some community or collective” (Madison 2020: 36, emphasis in original) should be answered. The goal is to

eventually come up with generalizable results regarding a well-functioning governance mode for data commons comparable to Ostrom's IAD framework (Madison et al. 2019; see the anthologies by Strandburg et al. 2017; Sanfilippo et al. 2021; Dekker & Kuchar 2022; Frischmann et al. 2023).

There is another quite popular strand of literature that also originates from the concepts developed by Ostrom et al., but pursues a prescriptive approach instead of an empirically oriented exploratory methodology. It often applies a normative approach and egalitarian rhetoric where data commons are seen as a third way between market-based private property and IRP regimes on the one hand and state-regulated approaches on the other hand (see de Angelis 2017; Prainsack 2019; Dulong de Rosnay & Stalder 2020; Calzati & v. Loenen 2023 with additional literature). It thus presents data commons as an alternative governance mode for voluntary self-management of commonly shared resources. Therefore, data commons should not only serve their members, but society as a whole or as Calzati & v. Loenen (2023: 10) put it “[t]oday, data commons [...] characterizes a regime in which actors join forces in the collection, pooling, and use of data (and digital infrastructures) subservient to the delivery of services for the whole community”. Therefore, the underlying governance design “[s]hould have the capacity to reshape and change the power balance in data-driven economy and society” (Zygmuntowski 2023: 10). Nevertheless, it acknowledges that there are different stakeholder interests involved when using digital data, namely protecting fundamental rights, especially privacy, generating economic value and serving the public interest, that have to be met (Zygmuntowski 2023). Regarding the governance design, Tarkowski & Zygmuntowski (2022: 22, emphasis by the authors), for example, suggest it to rest on three pillars: “Stewarding Access: achieved by setting rules for managing who gets access, and under what conditions, while preserving rights; Collective Governance: ensured through participation and democratic oversight of a trusted community; Public Value: generated through a clear purpose, capacity-building and sharing”. In more detail, they acknowledge that legal provisions are necessary to make data available for a particular data commons in the first place if private companies do not so voluntarily. In addition, they argue that data commons should not be open access, but that some form of exclusion regarding access and withdrawal rights are necessary for a functioning data commons management and for “preventing harm and levying sanctions if data commons have been abused” (Tarkowski & Zygmuntowski 2022: 23). For preserving privacy rights, adequate technological and other safeguards have to be put into place. In addition, “maintenance of the data and related infrastructure [...] to collect, store and maintain quality of data” (Tarkowski & Zygmuntowski 2022: 23) is necessary. To ensure democratic control of data commons, they enumerate a number of mechanisms like “supervisory councils, citizen panels and assemblies, sortation and quadratic voting” (Tarkowski & Zygmuntowski 2022: 24). In addition, the normative “mission-oriented” view of data commons becomes clear in the requirement that it should be “guided by the values upheld by the community and oriented towards social goals” (Tarkowski & Zygmuntowski 2022: 25) like for example “supporting projects of redistributive justice and reducing inequalities” (Tarkowski &

Zygmuntowski 2022: 25). All in all, they also see a positive role for public policy to implement and operate data commons.

In contrast to this strand of literature that demands data commons to pursue additional political goals besides providing a governance mechanism for digital data, Potts et al. (2023) provide a data commons concept that is explicitly tailored to promote innovation by making digital data available. They define data commons as “pools of data, information and/or knowledge that are (1) digitally stored and transferable and (2) can be accessed by anyone for any purpose without payment and without limit” (Potts et al. 2023: 2). Stakeholders involved in the data commons are “contributors to the commons, curators and managers of the commons, and information seekers” (Potts et al. 2023: 3). These may be persons or organizations, private or public entities. Access to the data commons is granted to everyone, withdrawal is unrestricted and free of charge by definition. Like Tarkwoski & Zygmuntowski (2022: 14), who see data as “general purpose inputs”, Potts et al. (2023) also refer to digital data as an infrastructure resource. Since data commons can be thus seen as part of public infrastructure (Frischmann 2013), they suggest that “governments support both, research related to developing well-designed commons, and invest in creating and operating such commons” (Potts et al. 2023: 12). Such government spending can be justified by the social welfare benefits resulting from open access data commons which reduces “the innovation-specific private or open investment required from innovators” (Potts et al. 2023: 4). In addition, free access of “many searchers, each equipped with different resources, tools, and interests, can discover more economic opportunities within a data set than a more restricted set of searchers” (Potts et al. 2023: 4) – a claim based on Hayek’s idea of the positive impact of decentralized use of knowledge (Hayek 1945). In addition, the authors see three main motivations for private companies or consumers to voluntarily share their data via data commons which they summarize under the following keywords: “open source design for proprietary inputs”, data contributions by “bottleneck-owning’ firms” and “free citizen innovation” (Potts et al. 2023: 6). Furthermore, however, they are against forced contributions of digital data to data commons from manufacturers or data holders, at least currently (Potts et al. 2023: 13f).

To summarize, there are some common elements in the different strands of literature on data commons as exemplified by the approaches just presented. The constitutive features of data commons are that they represent a mode of voluntary collaborative management of a shared resource system. Self-governance and member participation are important elements. Above that, data commons can be designed quite flexible in regards to membership, the objectives pursued by its members, as well as the rules that determine who gets access and can use data commons for what purposes and under which conditions. However, there are also a number of elements on which views differ and which may be in conflict with this characterization, although such contradictions are often not explicitly discussed (Purtova & v. Maanen 2023).

3. Data Commons against the Background of the EU Data Act

In light of the newly adopted EU Data Act, this section discusses whether data commons are a governance mode that can help make more non-personal data available than it is currently the case. There are a number of requirements for setting up and operating data commons on a regular basis, like adequate technical equipment for storing, processing and curating the data as well as monitoring potential misuse or abuse of the data. As all these activities incur costs, securing the necessary financial resources for the operation of a data commons is also an essential task. However, the main prerequisite for establishing and operating data commons are actors that are willing to contribute data to data commons. There are technical, legal and economic (incentive) barriers to data being contributed to data commons which we will discuss in the following against the background of the DA.

The status quo before the adoption of the DA is characterized by the fact that data is often a by-product of the use of digital devices, which then accrue with the manufactures of these devices, not with the users. Accordingly, manufacturers have de facto control over these data. This is based on their technological decisions about how the devices and the data thus generated are constructed. In this way, manufacturers can use the data generated as they wish and/or to exclude others, even if they have no rights based on IPRs or trade secrets that expressly give them the right to do so. While Eckardt & Kerber (2024) show that this de facto control of manufacturers over data does not constitute a normative right of manufacturers to such data vis-à-vis users or others, given this starting point, the contribution of data to data commons depends entirely on the willingness of manufacturers to voluntarily do so. In particular, it is completely independent of whether the users want to share the data generated by the use of one of their IoT devices to a data commons or not.

With the adoption of the DA, there are now regulations in place that change this situation to some degree as they restrict the manufacturers' scope for action. According to Art. 4 (13) DA, a contractual agreement with the user is now required for the manufacturer to use the non-personal data generated by the user of an IoT device. Manufacturers now need the consent of users to use the data, whereas they were previously free to decide how to use the data. This would also apply if they wish to pass on such data to third parties, like data commons (Art. 4 (14) DA). As Potts et al. (2023) discuss, private firms may have incentives to voluntarily share data with data commons to encourage innovation. With the adoption of the DA, manufacturers must now obtain user consent, where at least some users may refuse to do so. However, since the DA does not prohibit making the sale of IoT devices dependent on such contractual consent, this will not lead to major restrictions on data use by manufacturers, as Eckardt & Kerber (2024) argue. Accordingly, it should not lead to a greater restriction in data provision to data commons if the manufacturers so wish.

In addition, for the first time, the DA grants users the right not only to access and use their data (Art. 4 (1) DA), but also to share it with third parties (Art. 5 DA). However,

there are a number of restrictions in place, e.g., in relation to trade secrets, which seem primarily designed to shield data holders (Eckardt & Kerber 2024). The resulting legal uncertainty could drastically reduce the incentives for users to actually apply their new user rights in order to make more non-personal data available. It also might discourage data intermediaries to actively engage in convincing users to make their data available. However, compared to the situation before the adoption of the DA, potential technological barriers erected by manufacturers/data holders are now removed at least to some degree. This is an important legal prerequisite for a broader implementation of data commons as demanded by their proponents (Tarkowski & Zygmuntowski 2022). In addition, the DA also makes some requirements regarding which data (and metadata) has to be made available to users or third parties in what format (Artt. 3, 4 (1) DA). This also reduces costs for accessing and using such data.

While the DA removed some technical obstacles to contribute data to data commons, the question is whether data commons provide additional incentives for users to actually make more data available for innovation and competition. Because the answer to this differs regarding whether we are in a B2B or B2C situation, we discuss these two cases separately. The main challenge for establishing a data commons as a voluntary governance mode for resource management characterized also by participation of its members, is to get access to actors who are willing to contribute their non-personal data on a regular basis. Single users can – in principle – use their data themselves or sell it. However, the price will be rather low as it is not single data, but the aggregation of data from many users for drawing inferences from them that makes data a valuable resource. For the positive externalities involved in contributing data, single users will not receive a compensation, implying market failure. In addition, providing data involves uncertainty for single users whether giving their data away could pose some risks and thus costs for them in the future. In addition, users have to incur time to decide whether and how to use their data. Overall, the incentives for users to make their non-personal data available are therefore generally low (Olk et al. 2019; Grafenstein 2022).

However, incentives to provide data for data commons might be much higher when it comes to B2B situations. Business users of IoT devices have additional economic incentives that the data generated by their IoT devices are used for process and service innovations in their field of activity. If the members of such a sector-specific data commons directly benefit from it, they will also be prepared to bear its set-up and running costs. In addition, the group of business users in a certain industry is rather limited, at least when compared to consumer markets. Usually there are already industry or trade associations established in which companies of a certain industry are organized. Such an already existing organization can be used for setting up a sector or trade specific data commons. Together with the rather homogenous interests that business users from a certain industry share, this further reduces the costs of establishing a sector specific data commons. Since the relevant business users of specific IoT devices are known to such an organization, it can economize on approaching them. Above all, it also can provide a standardized contract to be concluded between each business user

and the sector-specific data commons which is a prerequisite that the manufacturers/data holders make data available to a third party (Artt. 4 and 5 DA). In addition, due to the rather homogenous interests of the members of such a sectoral data commons, deciding on the purpose for which the data should be used etc. will be simplified. Moreover, in such a B2B situation where the business users combine their interests, power imbalances vis-à-vis the IoT manufacturers/data holders are mitigated. It might also give them an advantage when negotiating prices for data transfer between data holders and the data commons as a third party (Artt. 8 and 9 DA).

Above that, there are other features of data commons that might make setting up a sector-specific data commons attractive as a governance mode for business users from a specific sector. As has been shown in section 2, data commons are characterized by some form of participatory self-governance of its members with decisions made collectively by some form of voting mechanisms. Since business users from the same industry are also competitors, such collective decision-making might suit them precisely for this reason. In addition, the design of data commons is very flexible regarding not only membership, but also who should have access to the data managed by a commons and for what purposes etc. Thus, sectoral data commons can be designed in a way to match the preferences of the business users constituting it. Such a sector-specific data commons organized by the demand side of their business might even assist in overcoming potential obstacles posed by manufacturers of IoT devices in making data available to such a data commons since the business users are the customers of the IoT device manufacturers. In particular when it comes to customer-specific IoT devices, close cooperation between manufacturers and their customers pays off regarding innovation. This could possibly even lead to the incentives being aligned on both sides of the market for the use of jointly generated data. Such a sector-specific data commons would most likely not provide open access as Potts et al. (2023) envision, but would set restrictions on access and use of the data. Nevertheless, this could be a mode of governance to make more data available for innovation than would otherwise be the case. However, such sector-specific data commons provide a way for potential anticompetitive behavior of its members. But solutions that comply with competition law can be found to prevent this.

Sector-specific data commons as outlined above will most likely not be set up to pursue the common good or social redistributive objectives, as they should according to the proponents of data commons as a third way between private and state regulation (Tarkowski & Zygmuntowski 2022 and section 2 above). However, there are a multitude of enterprises along the public-private divide, like municipal facilities in the areas of public transportation, energy supply, wastewater, waste disposal and the like. These are often independent companies, sometimes in private or public legal form, whose owners are public bodies, like municipalities. Regarding the DA, these enterprises should also count as business users. For them, such sector specific data commons should also be of interest to share with one another the data generated by sector-specific IoT devices for generating innovative solutions. Since such enterprises are again limited in number and usually well-organized at different jurisdictional levels, the

same arguments apply as just discussed. Usually, these companies are regional monopolies that do not compete with one another, which, again, reduces the costs of aligning their interests when sharing data. In addition, such public enterprises are often not profit-oriented and their owners are jurisdictions. Therefore, they might follow broader objectives regarding the common good when setting up data commons. Thus, such commons would be more in line with the normative view often expressed in the literature (Tarkowski & Zygmuntowski 2021). Against this background it is not astonishing that there are already a number of cities experimenting with such innovative forms of data commons, with Barcelona being the most prominent example (see Fernandez-Monge et al. 2023 with additional literature).

In contrast, the incentives to set up and operate a data commons are completely different in a B2C situation. In contrast to business users, consumers usually have no direct economic incentives for using the data of their IoT devices to generate additional process or service innovation. In addition, consumers are generally not yet represented in an organization comparable to the industry associations of business users, which could take on the task of establishing a data commons with recourse to the members of such an organization. Thus, establishing data commons would require additional support to cover its set-up costs. Following the view that digital data are a form of general purpose infrastructure (Frischmann 2013), public support for this would be justified (Tarkowski & Zygmuntowski 2021; Potts et al. 2023). However, even then it is questionable if enough consumers can be convinced to contribute their data to such a data commons. As discussed above, the decision of whether or not to provide data from their IoT devices with third parties is fraught with uncertainties and positive externalities for individual consumers, which increases the costs of contributing data. It can therefore be assumed that consumers will generally decide against sharing their data based on an individual cost-benefit calculation even if they received a fee or a share of potential profits from the use of their data by third parties. Data commons could offer a way to overcome such a narrow individualistic approach, precisely by focusing on the common good as a goal. In this way, perhaps, consumers could be attracted to frame contributing their data to a data commons as an altruistic act which promotes the common good. However, if consumers follow a rather reverse altruistic mode of behavior, this might also presuppose that the objectives pursued by such a data commons are also primarily aimed at promoting the common good and do not serve individual profit-seeking interests. For this to be credible, the purposes for which a data commons makes its data available to third parties would have to be restricted in such a way that they serve the common good. But even then, compared to B2B situations, the incentives for consumers to participate in data commons are much weaker, making their proliferation rather unlikely without massive public support.

4. Conclusions

Despite the ever-increasing amount of non-personal digital data generated by IoT devices, there is widespread concern that too less of this data is made available for in-

novation. The Data Act adopted in November 2023 by the EU introduces new mandatory rights for users to access, use and share their non-personal data generated by using their IoT devices also with third parties. But the DA follows a rather individualistic approach for making data available. Therefore, this paper discussed whether data commons are a suitable governance mode to exploit the non-rivalrous characteristic inherent to digital data. Data commons are characterized by voluntary collaborative management of a shared resource system, where self-governance and member participation are important elements. In addition, it is quite flexible regarding the objectives followed and the rules adopted that regulate access, withdrawal, management and decision-making rights, for example. Therefore, data commons might be attractive for a broad range of different types of actors.

Before enactment of the DA, manufacturers/data holders had de-facto control of the data generated by IoT devices through their technical decisions on the design of such devices. Given that they constructed the IoT devices in a way that the non-personal data generated by them accrued only with the manufacturers, the users of the devices could only access and use this data or share it with data commons with the consent of the manufacturers. The DA now grants users of IoT devices rights to access, use and share non-personal data generated by their IoT devices. In this way, the DA has legally removed technical obstacles to share non-personal data via data commons, for example.

However, the DA introduces also new legal restrictions for using non-personal data. Now manufacturers/data holders can no longer do as they wish with the data they can capture due to the technological design of the IoT devices without having the consent of the users of the devices. However, given that tying such consent to selling IoT devices is not prohibited, this should not lead to a notable reduction of data unlocking. In addition, the DA does not give users unrestricted rights to use and share the data with third parties like data commons. Manufacturers/data holders can oppose sharing data by arguing that trade secrets are involved. To what extent this will affect unlocking of data is an empirical question.

Whether the new user rights for sharing data via data commons will indeed be used depends on the economic incentives set. These differ between B2B and B2C situations. In B2B situations data commons might be an attractive mode of governance for business users. Business organizations, in which business users of a certain industry are often already organized, can help to reduce set-up costs of data commons for this industry, increase negotiation power against manufacturers/data holders and perhaps even convince the latter to voluntarily share data to reap benefits from open or collaborative innovation. Exactly the self-governing mechanisms of data commons might be of additional advantage for overcoming objections by business users from the same industry to share their data. In such a data commons, each member has a say via the given decision-making and control mechanisms in place to modify the rules regarding access and withdrawal rights etc. so as to best serve their respective interests. For public utilities that provide services like wastewater, energy supply and the like, the

possibility to include the public good in the objectives of a data commons, make them of additional interest.

In B2C situations individual cost-benefit calculation of sharing data dominate, which generally might show a negative result. Therefore, additional unlocking of data is not to be expected, notwithstanding that now consumers have the legal right to share their data if they wish. However, data commons might help to overcome such an individualistic perspective by framing data sharing as an altruistic act. On the reverse, this then would perhaps also require to restrict the objectives pursued by data commons to follow the public good, rather than to allow for individual profit-seeking motives.

To summarize, our analysis implies that data commons might indeed be a useful mode of governance for unlocking additional data in B2B situations. They might even help to overcome resistance in B2C situations. Nevertheless, additional research on whether such data sharing in B2C situations can be conceptualized as underlying some form of 'reverse altruism' is necessary. In addition, it is not yet clear to what extent the restrictions regarding data sharing with third parties on behalf of manufacturers as stipulated in the DA will limit the scope for data commons.

References

- Abraham, R.; Schneider, J. & v. Brocke, J. (2019), Data Governance: A Conceptual Framework, Structured Review, and Research Agenda, in: *International Journal of Information Management*, Vol. 49, 424-438.
- Bühler, M. M.; Nübel, K.; Jelinek, T.; Riechert, D.; Bauer, T.; Schmid, T. & Schneider, M. (2023a), Data Cooperatives as Catalysts for Collaboration, Data Sharing and the Transformation of the Digital Commons, in: *Buildings*, Vol. 13 (2), 442.
- Bühler, M. M.; Calzada, I.; Cane, I.; Jelinek, T.; Kapoor, A.; Mannan, M.; Mehta, S.; Mookerje, V.; Nübel, K.; Pentland, A.; Schulz, T.; Siddarth, D.; Tait, J.; Vaitla, B. & Zhu, J. (2023b), Unlocking the Power of Digital Commons: Data Cooperatives as a Pathway for Data Sovereign, Innovative and Equitable Digital Communities, in: *Digital*, Vol. 3 (3), 146-171.
- Calzati, S. & v. Loenen, B. (2023), Towards a Citizen- and Citizenry-Centric Digitalization of the Urban Environment: Urban Digital Twinning as Commoning, in: *Digital Society*, Vol. 2, Art. No. 38.
- de Angelis, M. (2017), *Omnia Sunt Communia: On the Commons and the Transformation to Postcapitalism*, London: Zed Books.
- Dekker, E. & Kuchar, P. (eds.) (2022), *Governing Markets as Knowledge Commons*, Cambridge: Cambridge University Press.
- Dulong de Rosnay, M. & Stalder, F. (2020), Digital Commons, in: *Internet Policy Review*, Vol. 9 (4), DOI: 10.14763/2020.4.1530.

- Eckardt, M. & Kerber, W. (2024), Property Rights Theory, Bundle of Rights on IoT Data, and the EU Data Act, in: *European Journal of Law and Economics*, Vol. 57 (1-2), 113-143, DOI: 10.1007/s10657-023-09791-8.
- European Parliament/Council (2016), Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation), *Official Journal of the European Union*, L 119, 1-88, 4.5.2016.
- European Parliament/Council (2023), Regulation (EU) 2023/2854 of the European Parliament and of the Council of 13 December 2023 on Harmonised Rules on Fair Access to and Use of Data and Amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (Data Act), *Official Journal of the European Union*, L 22.12.2023
- Fernandez-Monge, F.; Barns, S.; Kattel, R. & Bria, F. (2023), Reclaiming Data for Improved City Governance: Barcelona's New Data Deal, in: *Urban Studies*, Vol. 0 (0), ahead of Print, DOI: 10.1177/00420980231204835.
- Fia, T. (2021), An Alternative to Data Ownership: Managing Access to Non-Personal Data through the Commons, in: *Global Jurist*, Vol. 21 (1), 181-210.
- Frischmann, B. M. (2013), *Infrastructure: The Social Value of Shared Resources*, Oxford: Oxford University Press.
- Frischmann, B. M.; Madison, M. J. & Sanfilippo, M. (eds.) (2023), *Governing Smart Cities as Knowledge Commons*, Cambridge: Cambridge University Press.
- Grafenstein, M. (2022), Reconciling Conflicting Interests in Data through Data Governance. An Analytical Framework (and a Brief Discussion of the Data Governance Act Draft, the Data Act Draft, the AI Regulation Draft, as well as the GDPR), *HIIG Discussion Papers Series No. 2022-02*.
- Hardin, G. (1968), The Tragedy of the Commons, in: *Science*, Vol. 162 (3859), 1243-1248.
- Hayek, F. A. (1945), The Use of Knowledge in Society, in: *American Economic Review*, Vol. 35 (4), 519-530.
- Hess, C. & Ostrom, E. (2003), Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource, in: *Law and Contemporary Problems*, Vol. 66 (1), 111-146.
- Hess, C. & Ostrom, E. (2007), Introduction: An Overview of the Knowledge Commons, in: Hess, C. & Ostrom, E. (eds.): *Understanding Knowledge as a Commons: From Theory to Practice*, Cambridge: The MIT Press, 3-26.
- Kerber, W. (2023), Digital Revolution, Institutional Coevolution, and Legal Innovations, in: *European Business Law Review*, Vol. 34 (6), 993-1016.
- Kolm, S.-C. & Ythier, J. M. (eds.) (2006a), *Handbook of the Economics of Giving, Altruism and Reciprocity*, Foundations, Vol. 1, Amsterdam: North Holland.
- Kolm, S.-C. & Ythier, J. M. (eds.) (2006b), *Handbook of the Economics of Giving, Altruism and Reciprocity*, Applications, Vol. 2, Amsterdam: North Holland.
- Madison, M. J. (2020), Tools for Data Governance, in: *Technology and Regulation*, Vol.2, 29-43, Special issue: Governing Data as a Resource.
- Madison, M. J., Frischmann, B. M. & Strandburg, K. J. (2019), Knowledge Commons, in: Hudson, B.; Rosenbloom, J & Cole, D. (eds.): *Routledge Handbook of the Study of the Commons*, Abingdon: Routledge, Chapter 7.

- Madison, M. J.; Strandburg, K. J. & Frischmann, B. M. (2016), Knowledge Commons, in: Menell, P. & Schwartz, D. (eds.): *Research Handbook on the Economics of Intellectual Property Law* Vol. 2 – Analytical Methods, Cheltenham: Edward Elgar.
- Olk, C.; v. Grafenstein, M. & Wernick, A. (2019), Data Governance: Enhancing Innovation and Protecting Against its Risks, in: *Intereconomics*, Vol. 54 (4), 228-232.
- Ostrom, E. (2005), *Understanding Institutional Diversity*, Princeton: Princeton University Press.
- Ostrom, E. (2010), Beyond Markets and States: Polycentric Governments and Complex Economic Systems, in: *American Economic Review*, Vol. 100 (3), 641-672.
- Øverby, H. & Audestad, J. A. (2021), *Introduction to Digital Economics: Foundations, Business Models and Case Studies*, 2nd ed., Cham: Springer.
- Potts, J.; Torrance, A.; Harhoff, D. & v. Hippel, E. (2023), Profiting from Data Commons: Theory, Evidence, and Strategy Implications, in: *Strategy Science*, 1-17, Articles in Advance, DOI: 10.1287/stsc.2021.0080.
- Prainsack, B. (2019), Logged Out: Ownership, Exclusion and Public Value in the Digital Data and Information Commons, in: *Big Data & Society*, Vol. 6 (1).
- Purtova, N. & v. Maanen, G. (2023), Data as an Economic Good, Data as a Commons, and Data Governance, in: *Law, Innovation and Technology* (01 Nov 2023), DOI: 10.1080/17579961.2023.2265270.
- Sanfilippo, M. R.; Frischmann, B. M. & Strandburg, K. J. (eds.) (2021), *Governing Privacy in Knowledge Commons*, Cambridge: Cambridge University Press.
- Schlager, E. & Ostrom, E. (1992), Property-Rights Regimes and Natural Resources: A Conceptual Analysis, in: *Land Economics*, Vol. 68 (3), 249-262.
- Strandburg, K. J.; Frischmann, B. M. & Madison, M. J. (eds.) (2017), *Governing Medical Knowledge Commons*, Cambridge: Cambridge University Press.
- Tarkowski, A. & Vogezang, F. (2022), Public Data Commons. A Public Interest Framework for Business-to-Government Data Sharing in the Data Act, *Open Future Public Brief #3*, URL: <https://openfuture.eu/wp-content/uploads/2022/05/Public-data-commons-A-public-interest-framework-for-B2G-data-sharing-in-the-Data-Act.1.pdf> (last access: 27 November 2023).
- Tarkowski, A. & Zygmuntowski, J. J. (2022), *Data Commons Primer - Democratizing the Information Society*, URL: <https://openfuture.eu/wp-content/uploads/2022/07/220723data-commons-primer.pdf> (last access: 04 November 2023).
- Wong, J.; Henderson, T. & Ball, K. (2022), Data Protection for the Common Good: Developing a Framework for a Data Protection-focused Data Commons, in: *Data & Policy*, Vol. 4: e3.
- Zygmuntowski, J. J.; Zoboli, L. & Nemitz, P. (2021), Embedding European Values in Data Governance: A Case for Public Data Commons, in: *Internet Policy Review*, Vol. 10 (3).
- Zygmuntowski, J. O. (2023), Data Governance in a Trilemma: A Qualitative Analysis of Rights, Values, and Goals in Building Data Commons, in: *Digital Society*, Vol. 2, Art. No. 30. ALI-ELI (2021): Principles for a Data Economy: Data Transactions and Data Rights, ELI Final Council Draft, <https://www.europeanlawinstitute.eu/projects-publications/completed-projects-old/data-economy> (last access: 26/02/2023).

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