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Bertin Martens

The Impact of EU Data Regulations on Innovation, Competitiveness, and Growth: How Can Their Quality and Capability Be Improved?

The rapidly growing volume and economic importance of digital data motivated EU policymakers to adopt several data market regulations, including the General Data Protection Regulation (GDPR),¹ the Data Act,² the European Health Data Space (EHDS),³ and several others. All these regulations seek to open access to data that is locked up in technical silos, facilitate the emergence of data markets, and stimulate the development of innovative data-driven services. However, the sheer number of data regulations leads to regulatory fragmentation, increases compliance costs, and may result in inconsistencies between regulations. Is all the variation in data access rights and conditions in EU data regulations (Martens 2024) justified by sectoral differences in data market failures?

Draghi (2024, 26) observes that “limitations on data storing and processing create high compliance costs and hinder the creation of large, integrated data sets for training AI models. This fragmentation puts EU companies at a disadvantage relative to the US, which relies on the private sector to build vast data sets, and China, which can leverage its central institutions for data aggregation.” The view of data as a production factor that drives international competitiveness is gaining traction globally (Diebold 2023). Bradford (2023) compared the US’s laissez-faire data regime with China’s centralized regime and with the EU’s somewhere-in-the-middle regime and its mixture of private rights and some data-sharing obligations. Regime choices are inspired by political and ideological choices in their home countries, but they do have economic implications. The European Commission is increasingly aware of this. New digital Commissioner-designate Henna Virkkunen has been given the task to improve EU data market policies and “present a European Data Union Strategy drawing on existing data rules to ensure a simplified and coherent framework to share data seamlessly.”⁴

Well-defined private property rights are important to make markets for physical goods work

¹ <https://eur-lex.europa.eu/eli/reg/2016/679/oj>.

² <https://eur-lex.europa.eu/eli/reg/2023/2854>.

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex-%3A52022PC0197>. Final version of the regulation not published yet.

⁴ Virkkunen Mission Letter; see https://commission.europa.eu/document/3b537594-9264-4249-a912-5b102b7b49a3_en.

KEY MESSAGES

- **Current EU data market regulation is fragmented and fails to realize the full social value of data**
- **Economies of scope in the reuse and aggregation of non-rival data, together with transaction costs, are the main sources of market failures**
- **The European Health Data Space offers an almost perfect data governance template. The General Data Protection Regulation and the Data Act fall short of this standard**
- **Where feasible, the tension between private and social value of data can be bridged by private incentives to share. If not, mandatory sharing conditions will be applicable**

efficiently. Physical goods are rival: they can only be used by one party for one purpose at the same time. Non-exclusive rights would create conflict about their use. Data is non-rival, however. It can be used by many parties for many purposes at the same time. Exclusive control, de jure or de facto, would ensure that the data collector earns a return on his investment costs. However, with marginal cost of data collection close to zero, reuse by others would not be a disincentive for the original data collection. Moreover, data is usually co-produced between at least two parties, the data subject and the data collector. Both may claim to access the data. In the EU, this is reflected for example in the GDPR, which grants rights to data collectors as well as to natural persons whose behavior is observed. Exclusive private rights are not a good option in that case. Other EU data regulations, however, are swaying back and forth between more and less exclusive rights.

The cost effectiveness of EU regulation is often considered from a narrow private compliance cost



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perspective. Following the EU's own "Better Regulation Guidelines" (EC 2023), we take a wider social welfare perspective. We examine the cost of forgone opportunities to achieve more efficient data markets and thus more efficient data-driven product and services markets. In the following section, we introduce two economic criteria to assess the potential economic efficiency gains from non-rival data: economies of scope in the reuse of data and economies of scope in data aggregation. Transaction costs can block these efficiency gains. These gains may create a gap between the private and social value of data. That constitutes a market failure that justifies regulatory intervention in data markets.

The third section applies these criteria to three existing EU data regulations: the GDPR, the Data Act, and the EHDS. It explores what can be done to improve their efficiency. For the GDPR, which entered into force in 2018, there is considerable empirical evidence about its opportunity costs. Other regulations are not in force yet and therefore cannot generate empirical evidence. We examine these from a more theoretical perspective and find that there are good reasons to suspect continued data market failures. We propose ways to improve them. The final section attempts to generalize from these case studies. It focuses on the growing tension between exclusive private rights and the social value of data and suggests ways to overcome this.

THE EFFICIENT USE OF DATA AS A PRODUCTION FACTOR

Data non-rivalry generates two potential sources of economic benefits:

- *Economies of scope in the reuse of data* (Panzar and Willig 1980; Teece 1980): once collected, data can be reused for many purposes at the same time. For example, the data that Google collects from search queries, data embedded in a bank account, or collected by a car can be reused for other services and/or other service providers, to offer complementary and competing services: advertising, payment services, car maintenance services.
- *Economies of scope in data aggregation* (Bajari et al. 2019; Calzolari et al. 2021; Carballa et al. 2023): data from many different sources can be pooled and aggregated. The data collected by search engines, navigation apps, and medical service providers becomes more valuable when aggregated across more users. Pooled data can reveal patterns and deliver service insights that cannot be extracted from fragmented datasets or individual data. For example, target advertising, social media newsfeed, or search engine recommendations would not be feasible with fragmented personal data.

Teece (1980 and 1982) pointed out that the existence of unrealized alternative services indicates a market failure for complementary service production inputs. For example, the holder of car navigation data may not have access to complementary data about hotels and restaurants and is therefore not in a position to offer a driver additional travel services. In the absence of vertical integration, he may try to join forces with a firm that has this data but strategic behavior makes contracting difficult (Schulze et al. 2006). He may also fear that the data will be used against his interests. As a result, data market failures persist and may require regulatory intervention. In some cases, markets can overcome obstacles to data reuse and aggregation. For example, Google Maps and Waze apps combine road and navigation data with complementary data about businesses and services locations and are able to privately monetize at least part of the consumer surplus value of economies of scope in reuse, and economies of scope in aggregation of this data across many users, through advertising.

These two sources of data efficiency gains imply that the social value of data for society as a whole is often higher than the private value for the original data co-producers. An efficient data regime should bridge that gap as much as possible and overcome the tension between private claims to data and the collective value for society. Unless private data holders can be incentivized by a business model that enables them to monetize economies of scope in the market, regulators may have to impose mandatory data sharing.

Transaction costs often stand in the way of realizing economies of scope. First, finding partners to share the data with, or arrange complementary inputs to generate value, may be difficult. Data cannot be exposed in a showroom. Because data is non-rival, it is hard to determine the value that data contributes to a data-driven service. Negotiated outcomes often depend on the market power of the partners. Second, data transfers often require intermediary institutions that define data formats and transfer protocols, and set the conditions for access and reuse. This can be simple for bilateral data sharing but may be complex for data aggregation or pooling between many parties.

POTENTIAL DATA MARKET EFFICIENCY GAINS IN EU DATA REGULATIONS

The General Data Protection Regulation (GDPR)

The GDPR (2019) is an important "foundational" data regulation that regulates markets for personal data collected from natural persons, not from legal entities. It imposes restrictions on the collection of personal data. Firms should ask for the consent of natural persons and should adhere to strict rules for the handling of this data. Personal data cannot be used for other

purposes than the ones for which it was collected. The GDPR grants natural persons the right to reuse their personal data for other purposes or let other service providers who compete with the original data collector reuse the data. That increases competition in data-driven services markets where the original data collector no longer has a monopoly over the data. There are no explicit provisions for data aggregation in the GDPR. However, data holders collect data from many persons and are therefore de facto data aggregators. Data holders can combine and pool different personal data sources provided that doing so is included in the consent notice.

The practical use of these rights often runs into high transaction costs. GDPR consent notices are too costly and vague for data subjects to be meaningful (Barocas and Nissenbaum 2009; Cate and Mayer-Schonberger 2013; Utz et al. 2019). Data subjects do not read the many consent notices that pop up during daily web surfing because they take too much time and are not intelligible. Requests for data access and transfers should be delivered free of charge by the data collector, in a common machine-readable format, but only within three months of the request. That delay greatly diminishes the service market value of the data. All this results in the so-called privacy paradox (Acquisti et al. 2016): natural persons consider privacy as important but in practice they do not use privacy protection tools because the costs of doing so are higher than the expected benefits.

The GDPR also imposes compliance costs on data service providers. Empirical evidence shows that the GDPR has reduced the supply of digital services in the EU, compared to other regions and to the pre-GDP period (Johnson 2024). However, much of that evidence focuses on the supply side. It says little about the impact on consumer welfare on the demand side. Many of these missing services on the supply side might have reduced consumer welfare because they use personal data against the interests of the data subject. Others would have increased consumer welfare. How to distinguish between these two? Economists have so far been unable to come up with estimates of the economic value of privacy.

While the GDPR has created the potential for personal data market efficiency gains through economies of scope in data reuse and aggregation, policymakers still have some way to go to reduce transaction costs that impede the realization of these benefits. First, onerous transaction costs for consent notices could be substantially reduced by mandatory standardization and machine-readable consent notices. That could generate a more transparent market for consent services and enable natural persons to delegate that task to specialized service providers to handle it in function of users' stated preferences. It would also reveal preferences for different types of services and consent conditions. An ordinal ranking of preferences would be a step towards an economic assessment of

welfare-augmenting and welfare-reducing personal data services. It would also put pressure on service providers to demonstrate data-sharing benefits for consumers, as a way to move up the ranking. Second, making personal data available in real time through APIs would greatly reduce transfer transaction costs and make transfers to competing service providers more meaningful in an online digital market setting.

The European Health Data Space (EHDS)

In fact, European data regulators have already gone far beyond the GDPR in terms of generating economies of scope in data reuse and aggregation, and in reducing transaction costs, for one of the most sensitive types of personal data: health data.

The EHDS is the first EU data regulation that distinguishes between market failures with regard to data reuse and data aggregation. Provisions regarding "primary" data transfers reduce transaction costs for one-to-one data reuse. It makes personal health data more accessible by defining the health data that should be made available for free "primary" reuse by other health service providers. It establishes intermediary health databases at the member state and EU levels that mandatorily store health data in a common format and sets protocols for data transfers.

It also includes provisions for "secondary" data pooling that go a step further and combine fragmented datasets from multiple parties in a single pool. It mandates free access to these health data pools for "secondary" scientific and policy research. Users only pay the marginal cost of access and processing of the data. This maximizes incentives for innovative research. In line with the Data Governance Act,⁵ the intermediary aggregator remains neutral and does not monetize value-added from data aggregation. In some cases, private intermediaries may be in a position to offer incentives for data pooling when they can monetize at least part of the benefits of economies of scope in data aggregation and redistribute part of that value to data contributors. For example, online platforms in search, navigation, e-commerce, and social media have succeeded in doing so. In other cases, however, incentivizing private data contributors may be difficult because it is difficult to capture and privately monetize economies of scope. That requires regulatory intervention and mandatory data pooling to overcome these market failures. Some cases may also exhibit hybrid characteristics, with partial monetization and partial dissipation of benefits.

As such, the EHDS creates an almost perfect template for data regulations in other sectors that seek to realize the efficiency gains from economies of scope in data reuse and aggregation (Martens 2024). Of course, data requirements, formats, and protocols will have to be adapted to specific settings in other sectors.

⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex-%3A32022R0868>.

But the data market failures in terms of economies of scope and transaction costs that the EHDS addresses are very similar across sectors. Its governance regime could therefore easily be transposed to other sectors.

Still, the Commission decided not to apply the EHDS template in other “industrial” data pooling initiatives launched under the “European Strategy for Data” (European Commission 2020). For example, the draft policy proposals for a Common European Agricultural Data Space (CEADS) go in the opposite direction.⁶ Designed by farmers organizations, it grants farm(er)s exclusive control rights over farm data co-producing parties. It essentially confirms prevailing agricultural data market conditions (Atik and Martens 2021) and thereby maintains the gap between the private and social value of agricultural data. This is all the more surprising since, under the EU’s Common Agricultural Policy (CAP), a massive volume of farm data is already collected and pooled in databases. Rather than complementing these data pools with farm data that currently falls outside CAP requirements, it keeps the CEADS and CAP data segmented. Ironically, the CEADS design includes proposals for standard data formatting and transmission protocols for agricultural data, to reduce data transaction costs. But it offers no incentives to effectively use these standard protocols.

The Data Act

The Data Act will not become applicable until September 2025. There is no empirical evidence yet on its impact. Rather than filling the regulatory gap left by the GDPR for non-personal data, it created a new category, “product” data, i.e., data generated by the use of tangible devices that can communicate data wirelessly. This is a fuzzy category since all data requires a tangible carrier for interaction with users, whether held by users or located remotely. The Data Act facilitates economies of scope in data reuse by making it mandatory for manufacturers of devices to (a) inform the user about the raw data that is generated during use of a product; (b) make this data accessible to the user, free of charge and in real time; and (c) allow the user to transfer the data to a third-party service provider of his choice.

The Data Act also introduces a number of obstacles to data reuse.⁷ First, the data holder can charge third-party data recipients a monopolistic price, though somewhat limited by Fair Reasonable and Non-Discriminatory (FRAND) conditions. The interpretation of FRAND in data pricing remains to be defined. The third-party service provider may (partially) recuperate this price from the product user. In that case, the user pays a second time for the same data. These pricing provisions illustrate the EU’s wa-

vering between exclusive ownership rights for one party and a fair distribution of rights between data co-generators.⁸ The right for manufacturers to charge a license price for third-party access amounts to a quasi-ownership right.

Second, the Data Act puts anti-competitive restrictions on the reuse of product data. Data should not be used to design new products that compete with the product manufacturer. Data should not be transferred to the platform services of companies that have been designated as “gatekeepers” under the EU Digital Markets Act. This prevents a user from transferring data from, for example, smart home appliances to a Google Android or Apple iOS smartphone, or to a Windows computer. It prevents welfare-enhancing network effects in data reuse and aggregation in digital ecosystems.

The Data Act is the only EU data regulation that allows monopolistic pricing of third-party data transfers and puts anti-competitive restrictions on these transfers.

POLICY CONCLUSIONS: A BETTER DATA REGULATION AGENDA FOR THE NEXT COLLEGE

The Commission President has tasked the incoming College with improving existing EU data regulations. This paper proposes economic criteria to overcome market failures in economies of scope in the reuse and aggregation of non-rival data. It briefly examined the GDPR, the EHDS, and the Data Act with respect to these criteria and suggests improvements for a more competitive and innovation-oriented data market regulation.

The overall objective of data market regulation should be to narrow the gap between the private and social value of data, driven by reuse and aggregation, and minimize transaction costs. The three regulations achieve this by reducing the exclusive rights of data holders and granting access, reuse, and aggregation rights to data co-generators and intermediaries. The EHDS is “almost” perfect because it introduces protection of trade secrets and intellectual property held by these legal and commercial entities (Aplin 2024). They may constitute obstacles to economic efficiency gains from data reuse. The Data Act stands at the other end of the spectrum with a return to exclusive private data licensing and pricing rights for data holders.

This is where political data regime choices come in again. Policymakers decide on the trade-offs between individual and social welfare. The US tends towards the individual side, China towards the collective side, and the EU somewhere in between. However, the two sides are not necessarily juxtaposed. Pursuing social welfare does not necessarily imply weakening private rights to data. Technologies exist that can combine the two objectives, at least to some

⁶ See <https://digital-strategy.ec.europa.eu/en/library/blue-print-proposal-common-european-agricultural-data-space>.

⁷ For a more detailed discussion of the Data Act, see Sattler and Zech (2024).

⁸ The EU Database Directive (1996) first introduced exclusive ownership rights on databases.

extent. For example, privacy-preserving technologies may still enable making personal or trade secrets data available for socially useful purposes. Realizing the full social value of data does not necessarily imply creating an Orwellian superstate that spies on citizens and companies. Governments should also be subject to data governance rules.

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