Property Rights on Data: An Economic Analysis

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Münster Colloquia on EU Law and the Digital Economy

Trading Data in the Digital Economy: Legal Concepts and Tools

Münster, 4 - 5 May 2017

1. Introduction

- Current discussions on „property" on data:

  + proposals of a new IPR on non-personal data

  + data producer right / access rights in new Communication

- Economic policy perspective:

  + economic characteristics of data?

  + What market failures / problems in regard to data in digital economy?

  + What are the most suitable specific policy solutions?

  + Are property rights on data (part of) a good solution?

- My thesis: searching for „data governance regimes" with specific sets of legal rules and rights on data instead of focussing on „property" with its emphasis on exclusive rights inter omnes

2. Non-rivalry in use of data

Non-rivalry in regard to the use of data

- Use of data by one person does not impede the use by another person

- Not surprising, because data is information (codified information)

- Direct similarity to innovation and many creative works

Economic consequences:

- Social welfare of data is maximized, if as many people as possible can use the data with a price of zero

- positive: access to and reuse of data, data-sharing, trade of data

- entirely in line with Communication

- therefore no analogy to physical property (rivalrous goods)

3. Incentive problem for producing / analyzing data ? (1)

Crucial question: Do we have an incentive problem for producing data?

- Rationale for traditional IPRs: copy / imitation problem endangers investing in innovation (appropriability problem)

- Do we have a copy / imitation problem? => empirical question!

- So far: Privately produced and held data are excludable, because they can be kept secret (e.g., technical restrictions, trade secret protection)

- There are no claims of a serious problem of copying (and free-riding)
    + (only non-excludability if data leak into internet / hacking problem)
    + „de-facto excludability" for most of the data

- No similarity with innovations protected by patents/copyrights, where we have non-rivalry and non-excludability (=> no public good problem)

- Empirically: exponential increase in produced and analyzed data!

  => no general incentive problem for producing data (and nobody has made such claims)!

3. Incentive problem for producing / analyzing data ? (2)

But: Necessary to analyze much more deeply the incentive problem

- Data are produced/analyzed, if private benefits > private costs

- Costs of data production and analysis can be high or low
  + economies of scale/scope, often very easy / low costs (by-product)
  + but also costs of „curating" data (investing in quality/interop of data)

- Optimal amount of produced / analysed data in the digital economy?
  + theoretically and empirically unclear, because private and social value of data might differ, e.g. due to externalities
  + for certain kinds of data incentives can be too large or too small
  + therefore there might be incentive problems for certain kinds of data => more studies about different kinds of data necessary!

=> But so far no evidence for a general incentive problem !

4. Problems regarding trade and use of data (1)

- Current situation (also according to new Communication):

  + many data are produced and exist but not well-developed markets for trading data, not enough sharing of data, and reuse of data

  + problems for data access and transfer: limited access to data!

- Economic perspective: optimal allocation and use of data

  + firms who produce data might not be best suited for using / commercialising the data   => data markets would improve allocation

  + non-rivalrous character: data should be used as much as possible!

- Economic policy question: Do we have a market failure for the trade and use of data?

  + (trad. IPR also seen as helping to create markets for innovations)

4. Problems regarding trade and use of data (2)

Leads back to market failure problems of markets for information:

- Main problem: first buyers of data resell them => market failure

- Direct market solutions:

    + contractual solutions that prohibit reselling / access to other parties

    + technical restrictions, which make transfer and access through other parties technically impossible

    + but empirical question whether it works well

- Indirect market solutions: Offering services based on information

    + business models that do not directly sell or grant access to data but sell services based upon data

    + e.g., data-based „targeted advertising" (Google, Facebook)

    + indirect sale/use of data via services can work very well and can be a substitute to direct trade and use of data

4. Problems regarding trade and use of data (3)

- Research question: How well do data markets work (market failures)?

  + lack of empirical studies about data markets / data transactions

  + data markets (data broker, data intermediaries, data market places etc.) are still fragmented and under-developed

  + first results: problems through lacking demand, lacking interoperability / standardization, lack of skilled workers, data quality problems, but data ownership and copy / reselling problem less important

  + but: more empirical research about specific transaction problems are necessary (also for different kinds of data)
    > what business models?
    > what contracts are used?
    > what are the specific transaction problems?

 => so far no evidence that lacking property rights on data impede trade and use of data (but: problem of leaking data in chains of contracts?)

4. Problems regarding trade and use of data (4)

- Economic policy perspective:
  Identifying empirically the specific data transaction problems and what specific policy solutions can help to reduce transaction costs

- Very helpful proposals in the Communication:

  + promoting interoperability / standardization

  + developing default contract rules, standardized contracts in regard to data transactions and data licensing

  + technical solutions for reliable identification, traceability and exchange of data (for better monitoring of compliance with contracts etc.)

  + (missing: proposals about more transparency about quality of data)

  => all these non-mandatory measures might help to solve transaction problems on markets for the trade and use of data

5. Property rights for solving distributional questions? (1)

Additional issue are questions of distribution / fairness in regard to the participation in the benefits of data:

- Discussion 1: who „owns" data or gets the benefits of data in integrated networks of firms (e.g. „smart manufacturing"/„Industry 4.0")

  + data governance within an integrated network of firms is based upon contractual relationships

  + concerns that small- and medium-sized firms do not get a fair share of the benefits of „their" data, because powerful firms might impose „unfair" contracts on smaller firms („unequal bargaining power")

- Discussion 2: in the context of connected cars / internet of things, consumers might not get a fair remuneration for „their" data, e.g. through standard term contracts or information / rationality problems

- Can the definition and assignment of property rights on data to the „data producer" solve these kinds of problems?

5. Property rights for solving distributional questions? (2)

Economic policy perspective:

- Usually competition in markets is best capable of finding the optimal data governance in regard within a network of firms (=> contractual solutions)

- If however market failures, e.g. through market power or information / rationality problems, then

    + proper solution is applying specific regulations, i.e. competition law for market power problems and consumer / data protection law for protection of consumers in regard to data (also lock-in problems)

    + defining and assigning exclusive property rights on data does not help, because they would be contracted away in these situations

    + distributional concerns can also addressed by direct access rights

- Research necessary about distributional / fairness questions, because very difficult to define clear assessment criteria for such problems!

6. Data access problems and access rights on data (1)

Access problems to privately held (de facto exclusive) data:

- Data are non-rivalrous: promoting data-sharing (esp. anonymized data)

- Specific public interests in access to data: public statistics / public policy

- In many contexts firms or persons have a strong legitimate interest for access to privately held data
  + firms/service providers in value chains / network of firms (e.g. for maintenance, liability etc.)
  + persons, e.g. in regard to data from smart home applications / connected cars, health data
  + Multi-stakeholder problem: often several parties participate in data production and have specific legitimate interests in the data
  + assigning an exclusive property right on these data to one single „owner" produces difficult transaction problems through hold up-situations (=> inefficient specification of property rights)

6. Data access problems and access rights on data (2)

How can access problems be solved?

- Important: access problems both with de facto exclusivity and property
- Option 1: combining property rights with specific access rights (limitations)
- Option 2: Defining directly data access rights to de facto exclusive data
  + proposal of MPI (position statement, 26 April 2017): targeted and non-waivable data access rights (instead of data producer right)

- Economic perspective:
  + advantage: sets of access rights or entire access regimes can be tailored to the specific economic, technical and legal conditions of the situation that might be very different (with and without remuneration)
    => balancing costs and benefits of incentives and access
  + search for problem- and/or sector-specific solutions!

7. Conclusion: Tailoring specific data governance regimes
   instead of a (general) property approach for data (1)

Conclusions: exclusive property rights on data not helpful, because

- No general incentive problem for producing data (de facto exclusivity)

- So far no evidence that lacking property rights are the decisive problems
  in regard to markets for trading data (=> facilitative contract law etc.)

- Property rights cannot solve market failure problems due to market
  power and information problems (=> regulations)

- The manifold problems of access to data are not solved by introducing
  property rights on data (=> specific data access rights / regimes)

- Not discussed here: exclusive property rights on data can cause huge
  problems, esp. for innovation in digital economy
  (Big Data and data-driven innovation needs easy access to data)

7. Conclusion: Tailoring specific data governance regimes instead of a (general) property approach for data (2)

Towards specific data governance regimes:

- all legal rules / rights that are relevant for the collection/production, storing, processing, analyzing, access, use, and sale / licensing of data (including data protection / personal data, data portability rights)

- Wide continuum of very different designs of governance regimes: from exclusive property to open publicly available data with many specifically tailored intermediate solutions

- Optimal governance regime of data are very different for different kinds of data and different sectors/industries (context-specific)
    + autonomous driving, internet of things (smart homes)
    + agriculture
    + health sector

- Economic analysis important for analyzing benefits and costs

7. Conclusion: Tailoring specific data governance regimes
    instead of a (general) property approach for data (3)

Conclusions in regard to Communication (2017):

- Communication is right about the diagnosis of problems of data transfer and data access

- Suggestions for EU framework for data access:

  + helpful are facilitating data-sharing, trade / licensing of data through non-mandatory measures for reducing transaction problems

    => research: understanding better the transaction problems!

  + data producer right as exclusive right is not helpful and should be re-placed by regulatory solutions and data access rights (MPI proposal)

  + mandatory access regimes to data can be very helpful if they are part of a carefully tailored specific data governance solution that also considers incentive problems and balances benefits and costs

    => research: developing specific data governance regimes!

Appendix: Problems and dangers of a new IPR on data (1)

Experiences with traditional IPRs:

- Large problems in patent law: danger of blocking of innovations and large costs of legal uncertainty / litigation

=> Necessity to analyze carefully the dangers of new IPR !

Possible risks and costs of a new IPR for data:

- Legal discussion (Wiebe 2016): danger of legal uncertainty due to difficult problems of specification and assignment of IPR on data
- Danger that not only „data" but also semantic information is protected and thus monopolized
- Can competition problems with data (market power through data) be aggravated by exclusive property rights on data?
- Can similar competition problems emerge as with patents? (e.g., data pools, data hold-up problems, access to „essential" data, data trolls)

Appendix: Problems and dangers of a new IPR on data (2)

Do IPRs on data fit into functional logic of Big Data / digital economy?

- Basic idea: to use data from very different sources, combine them,
  analyze them for different uses, derive new data etc.

- Crucial: easy access to many different data and „free flow of data"

- Exclusive property rights on data might be barriers that hamper
  innovation in the digital economy

Alternative concepts of open data, data commons, and open innovation:
- OECD (2015: Data-Driven Innovation):
  data seen as an„infrastructure" for innovation in the digital economy

  + important is access to data

  + developing data governance system that overcome barriers to data
    access and data sharing (interoperability / standardization)