Big data markets

Professor Martin Peitz

Research Fellow, CERRE

MaCCI, University of Mannheim

![Centre on Regulation in Europe — cerre — Improving network and digital industries regulation]

Report on data markets for the BMWI

- Published in German as ZEW Discussion Paper (with executive summary in English)

- Co-authored by:
    - Professor Heike Schweitzer (Freie Universität Berlin)
    - Professor Martin Peitz (MaCCI, University of Mannheim)

Digital data
Data markets
(In)efficiency of data markets
Data access and regulation

cerre Centre on Regulation in Europe
Improving network and digital industries regulation

Digital data

Data markets

(In)efficiency of data markets

Data access and regulation

Digital data

- **digital data**

- **in particular,** *big data*

  - large amounts of data, often complex, short-lived and non-structured

- **personal vs. non-personal data**

  - personal data

    "'personal data' means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person " (from: Art 4 General Data Protection Regulation)

  - non-personal data

Machine data (1/2)

Purposes of data usage:

- Improvements of production and logistic processes

- Product development and innovation

- Improved marketing (pricing, advertising, assortment,…)

- …

Machine data (2/2)

Examples

- Precise high-frequency weather data used in agriculture

- Mobility data to manage traffic flows

- Machine data – for instance, related to transport or manufacturing – to manage maintenance works

- Data on the efficacy and side effects of drugs with the purpose of personalised medicine

Data value chain

data generation
data storage
data preparation
data analysis
usage idea
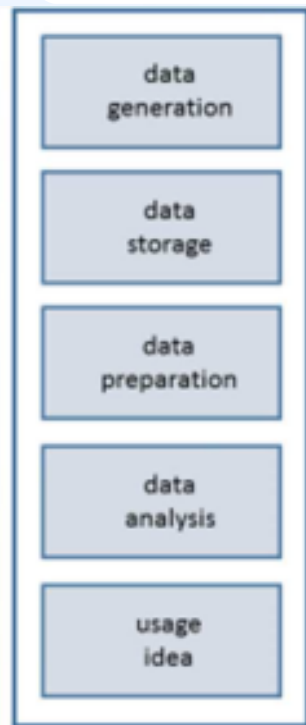
- **Items are *complements***

- **combination of these items**

  -> private economic value that is generated from data use

  - term "value of data" may be misleading

Centre on Regulation in Europe
Improving network and digital industries regulation

Digital data
Data markets
(In)efficiency of data markets
Data access and regulation

Data markets (1/3)

Access to data

- **Primary market**

  - Obtain data directly at the data generator (e.g. consumer)

- **Secondary markets in a narrow sense**

  - Access based on bilateral negotiations OR
  - More standardised data access (e.g. financial market data, weather data)

    - possibly intermediated through a platform

    - few examples of 2-sided platforms that facilitate access to commercial (private) data

Data markets (2/3)

Access to data (continued)

- **Data sharing**
  - Leads to a mix of data from a primary and a secondary market
  - Usage for different purposes (e.g., along vertical supply chain)

- **Alternative: Markets for data derivates**
  - Usage of data services

Data markets (3/3)
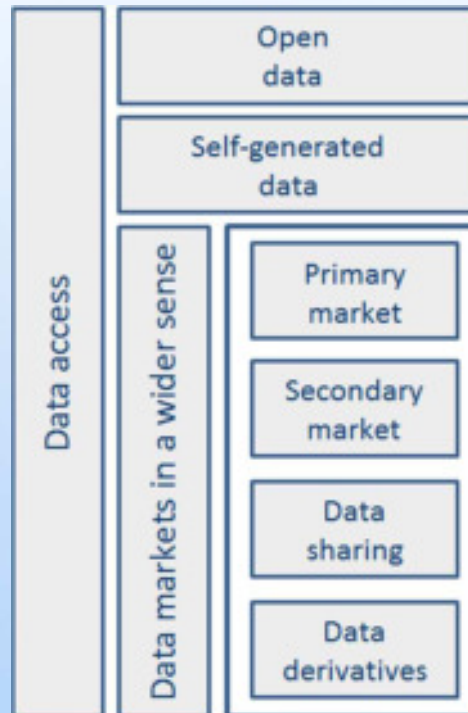
Data access and usage

- **Different types of data access are substitutes**
    - How close? Depends on data user

- **Lack of a particular type of data access is not proof of market failure**
    - The availability of a particular type depends on market conditions and the legal framework

cerre Centre on Regulation in Europe
Improving network and digital industries regulation

Trade with personal data

- *Trade of personal data* **(in a narrow sense) is very much limited by data protection law**
- **Individuals have to explicitly approve the transfer of their data to third parties (or legal exemption)**

  - Personal Information Management Systems (PIMS)

  - Their future success is unclear

Portability of personal data

- **Right to data portability (Article 20 of the GDPR)**

- **Data subject may request the transfer of the data related to her**

- **Real function of data portability:**
  - avoidance of an aftermarket lock-in
  - promotion of competition

- **The right to portability of personal data as a compensation for the weakening of the secondary markets for personal data by data protection law**

Trade and anonymisation (1/2)

- **Transfer of *anonymised* data not subject to data protection law**
    - General correlation results can be transferred
    - NOTE: stringent legal requirements for anonymisation

Trade and anonymisation (2/2)

- **Insights from anonymised data can be substitute for those obtained from personal data**
  - From a consumer perspective the consequences from the use of these insights may be desirable (e.g. personalised medicine) or sometimes undesirable (in some instances, targeted pricing)
  - When combining anonymised data with observable characteristics of an individual, data protection law again applies

Centre on Regulation in Europe
Improving network and digital industries regulation

Digital data
Data markets
(In)efficiency of data markets
Data access and regulation

Potential market failures

- **Potential *market failures* in the use of data**

  - Private economic value not maximised along the data value chain (inefficiency within the value chain)

  - Private value differs from social value (overall inefficiency)

Inefficiency within the data value chain

- **Possible causes**

  - **Market power at several layers (economic mechanism: double marginalisation)?**

    - currently competition, in particular, for storage and analytics

    - contracts may help to avoid double marginalisation

  - **Information asymmetries (regarding quality of the data set)?**

    - data quality can be checked through samples from the data set

Inefficiency within an extended value chain

- **Possible causes**

  - **Leverage of market power in related markets (see aftermarket problem below)**

  - **Contractual incompleteness (Hold-up problem)**
    - Hypothesis: Startup with an innovative idea how to use data has to invest first in the development of its service; relies on data access controlled by a firm with market power in the generation of the relevant data
    - How can the startup make sure that the terms and conditions for data access justify the required upfront investment?
    - Real-world examples?

21

Economic inefficiency

- **Other possible causes**
  - **Asymmetric information between data user cum seller and consumer**
    - In some instances, the use of data may actually increase efficiency

  - **External effects in data generation**
    - Example: Provision of consumer data as part of a loyalty program; external effect on other consumers

Centre on Regulation in Europe
Improving network and digital industries regulation

Digital data

Data markets

(In)efficiency of data markets

Data access and regulation

Missing data access as a competition problem?

- **Lack of data access may make market access more difficult**

- **Aftermarket problem may arise**
  - **Examples: markets for product maintenance or value added services**
  - **Instruments of competition law**
    - EU+Germany: Abuse of a dominant position (Art. 102 AEUV, §19 GWB)
    - Germany: Abuse of "relative market power" (§20 GWB)

- **BUT: <u>do not see evidence of systematic market failure</u>**

Data access as a competition problem?

- **Data sharing or data access via a platform may facilitate coordinated behavior in downstream markets for products and services**

- **Make sure that general prohibition of cartels not violated**
  - Distinction between tacit and explicit collusion?
  - Detection tools of the antitrust authority?

cerre Centre on Regulation in Europe
Improving network and digital industries regulation

Property rights for non-personal data?

- **Property rights for non-personal data**
  - Main purpose: access for machine and service users to usage data
  - In general: do not reduce transaction costs
  - Unsuitable to address market imbalances

- **Opposed: Interests of machine producer and service provider**
  - Concerns about product safety in case of data access by third parties
  - Legitimate interests to keep data secret

- <u>**Functioning of markets for non-personal data probably does not depend on new formal property rights for data**</u>