Valuing Data: Implications for Policy

ASSA Society of Government Economists
Session 'Big Data: Value, National Accounts,
and Public Policy' 3 January 2020
'

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A live policy issue

- Improved services, efficiency gains
  - high consumer valuations of digital services
  - new applications eg autonomous vehicles, IoT
- Potential of AI & big data for growth

BUT

- AI bias
- Privacy breaches & fines
- Commercial deals for public sector data
- Competition concerns …
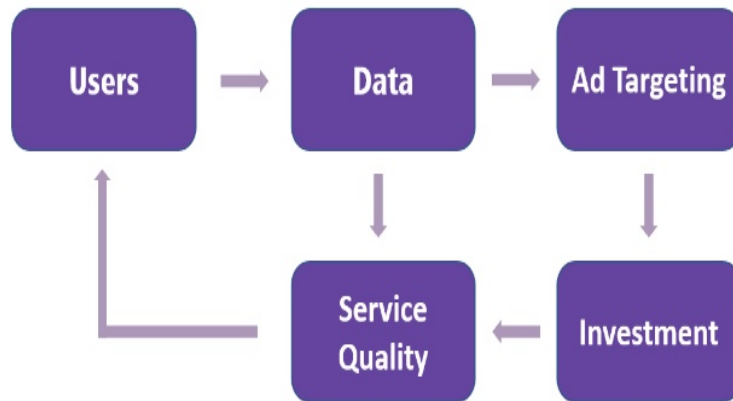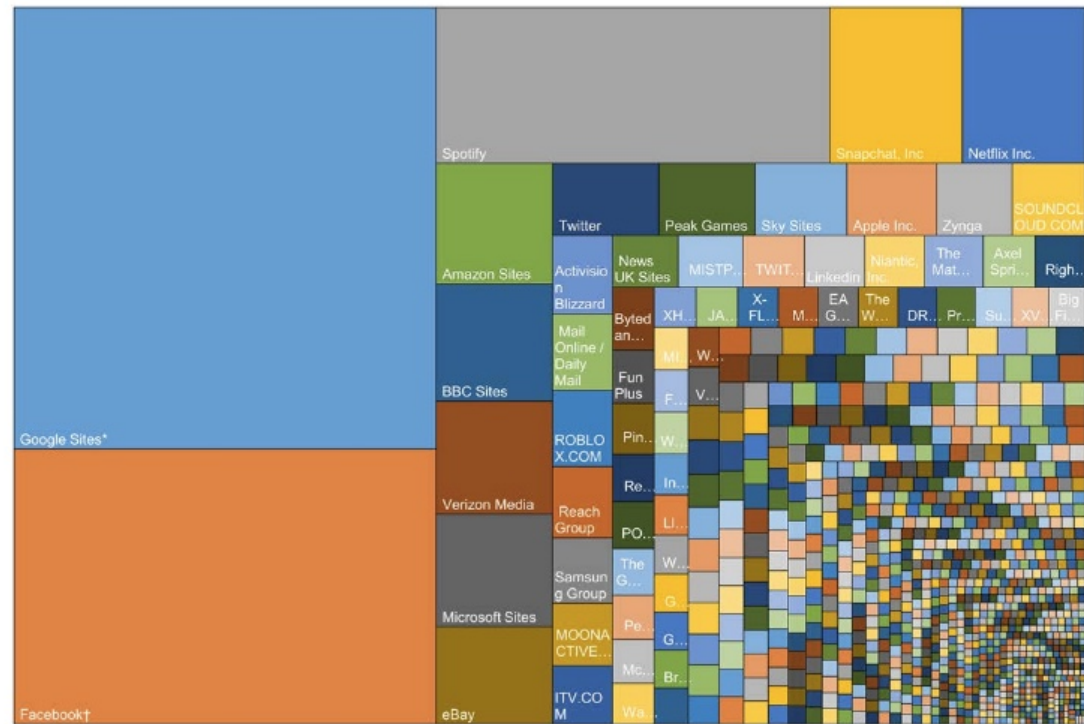
Figure 1.B: Feedback loops

Figure 2.2: Consumer time spent on top 1000 online properties

We have found that **the profitability of both Google and Facebook has been well above any reasonable estimate of what we would expect in a competitive market for many years**. In 2018 we estimated that the cost of capital for both Google and Facebook was around 9%, compared to actual returns on capital of over 40% for Google and around 50% for Facebook. This evidence is consistent with the exploitation of market power.

Sources: Furman 2019, CMA 2019

But above all…. sub-optimal provision & misallocation

Data economics

- Data is non-rival – technically a public good (club good, if access excludable) – and low marginal cost

Market mechanisms will not deliver socially optimal outcomes

- Private and public value diverge - +ve & -ve externalities

Too much or too little data both possible

- Value often due to combination with other data

'Personal' data has legal status but not a useful economic frame

- Data value unlikely to be related straightforwardly to volume (records, bits) because information content matters

Data has no 'fundamental' value

Two lenses on value of data

Economic lens

- Non-rival
- Externalities
- In-/De-creasing returns
- Option value
- High fixed/low marginal costs
- Complementary investments

Information lens

- Subject
- Generality
- Temporal characteristics
- Quality
- Sensitivity
- Interoperability & linkability

Existing approaches

- Stockmarket valuations
- Business outcomes – production or revenues
- Income generated in data value chain
- Cost-based methods
- Data markets
- Insurance premia
- Dark web markets
- Contingent valuation

Wide range of estimates for personal data

- **26 cents** FT calculator based on data brokers
- **£1-£200** Dark Web offers
- **$2** FB average annual profit per active user
- **$5/m** WTP for privacy; willingness to forgo privacy **$80/m** (Winegar & Sunstein 2019)
- **£0.005** ICO's 2019 £500,000 fine on FB
- **$125** FTC's 2019 fine on Equifax

Approaches to valuation?

Characteristic	Issues	Evaluation
Diminishing/increasing marginal returns?	How granular is the necessary data? How much data is needed for prediction models? Is the holder using data accumulation as a source of market power?	Accuracy of predictive models Innovations and quality improvements in services Monopoly rents - profitability, absence of new entry
Externalities	Does aggregation, sharing/open data or joining different data sources add information?	Innovations and quality improvements in services Contingent valuation methods
Optionality	Does gathering more information provide scope for future process or quality improvements or innovation?	Real options methods?
Consequences	Are decisions made using the data highly consequential?	Value at Risk methods?
Costs	What costs need to be covered - data acquisition, cleaning, storage, skills/capabilities, governance What are the contingent costs - security breaches, loss of sensitive information, reputational damage, fines?	Harm to identified individuals (eg if later defrauded), loss of commercial confidentiality Risk assessments

Limitations of market approaches to valuation

- Market prices depend on policy framework – access rights, regulation etc.
- They do not fully capture forgone social welfare due to failure to recognise externalities
- To the extent they do internalise them, they are captured as monopoly rents

Data sharing & open data
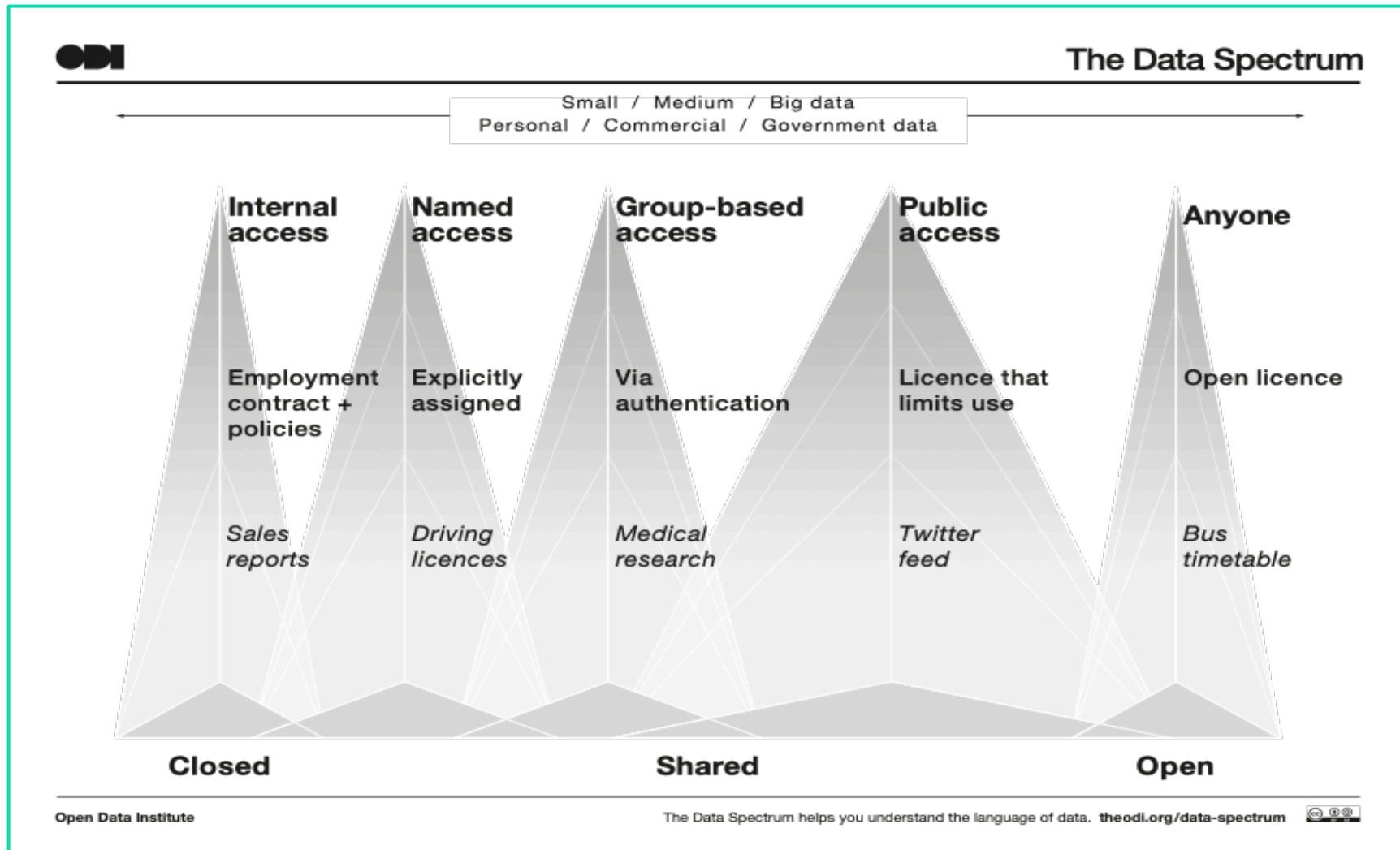
Policy challenges

- Trade-off between incentivising/funding investment and shared access
    - Parallels with IP debates eg patent pools, compulsory licences?
- Regulatory framework will affect value of private assets
    - How should public bodies think about value of commercial deals?
- Institutional & regulatory design
    - Low trust
    - Asymmetric information, contract design under uncertainty, principal-agent problems
- Privacy/security concerns
- Current data sharing models have all required public sector initiative and/or funding

Lessons from institutional economics: Ostrom's governance principles

There are clear boundaries and rules about who is entitled to what	Requires debate about 'permissions' - which entities can access which data?
Monitoring actions is feasible	Requires transparency about terms and conditions, and auditability
There are mechanisms for resolving conflicts	These could range from withdrawal of access permission up to legislated penalties
Individual responsibilities and benefits broadly balance	Requires transparency and better understanding of value exchanges that are occurring, including short term gain for long-term cost
Users themselves are responsible for monitoring and enforcement	A minimum requirement is transparency and contractual terms that enable monitoring and auditing of all subsequent data uses/transactions; may involve agents acting on behalf of data subjects
Sanctions for abuse are possible and graduated, getting progressively tougher	Suggests enhancing current approach - more enforcement
Decisions are legitimated by the participation of users	For individuals, opt outs need to be viable; importance of competition so users have alternatives; trustworthy institutions have representative governance bodies
Decisions are also legitimated by government recognition	Comprehensive data strategy and legal/regulatory framework will be needed

Lessons from IO/regulatory economics?

- Patent pools, compulsory licences, network sharing → interoperability, open APIs, codes of conduct (but NB regulatory thickets)

- Incomplete contracts and asymmetric information → incentives to invest & share access to data

- Business models & charging structures → private/public mix

Thankyou!

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