



Regulation, market structure and incentives to innovate in IoT markets

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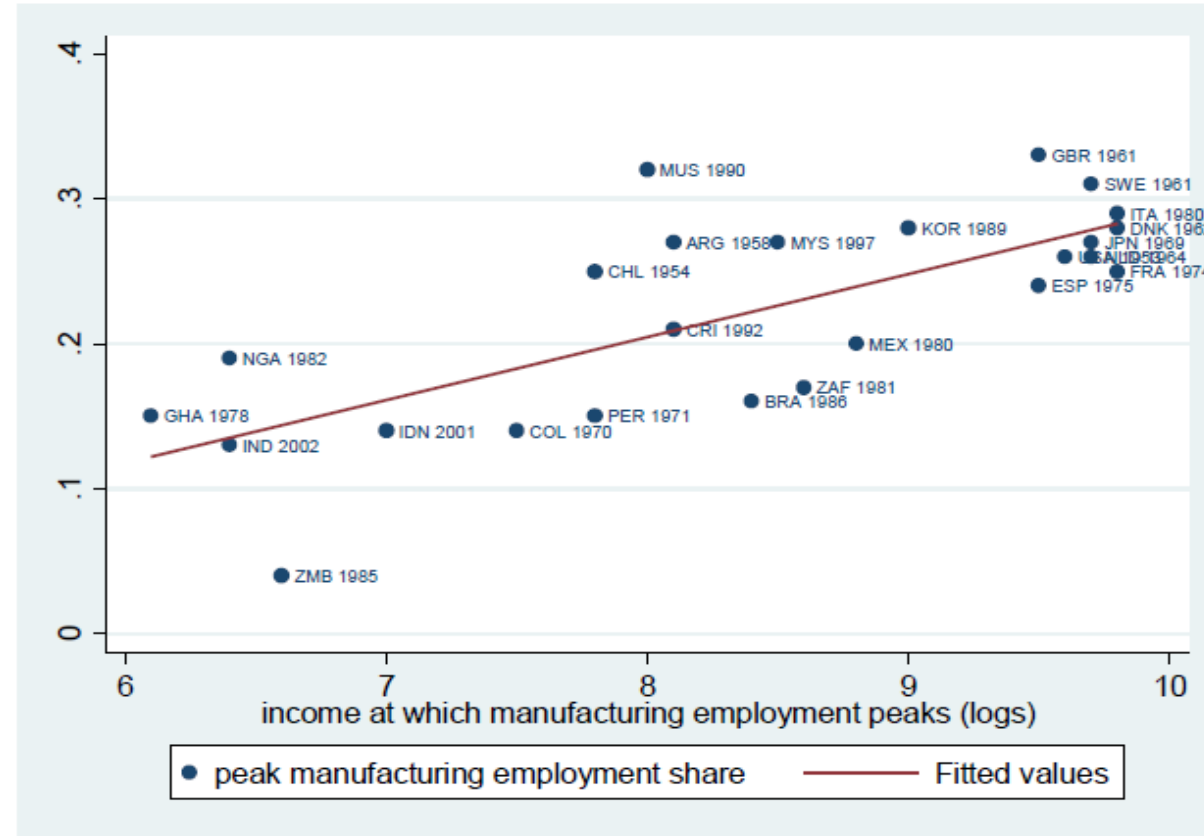
Outline

- Is ICT innovation "different"?
- Does ICT innovation create "new" challenges for regulators?



Context

- ICT innovation affecting all sectors of the economy (IoT, AI, digitisation.
- This is happening worldwide
- Premature de-industrialization: sooner and at lower levels of income (D. Rodrik)



From "Premature Deindustrialization",
D. Rodrik (2015)



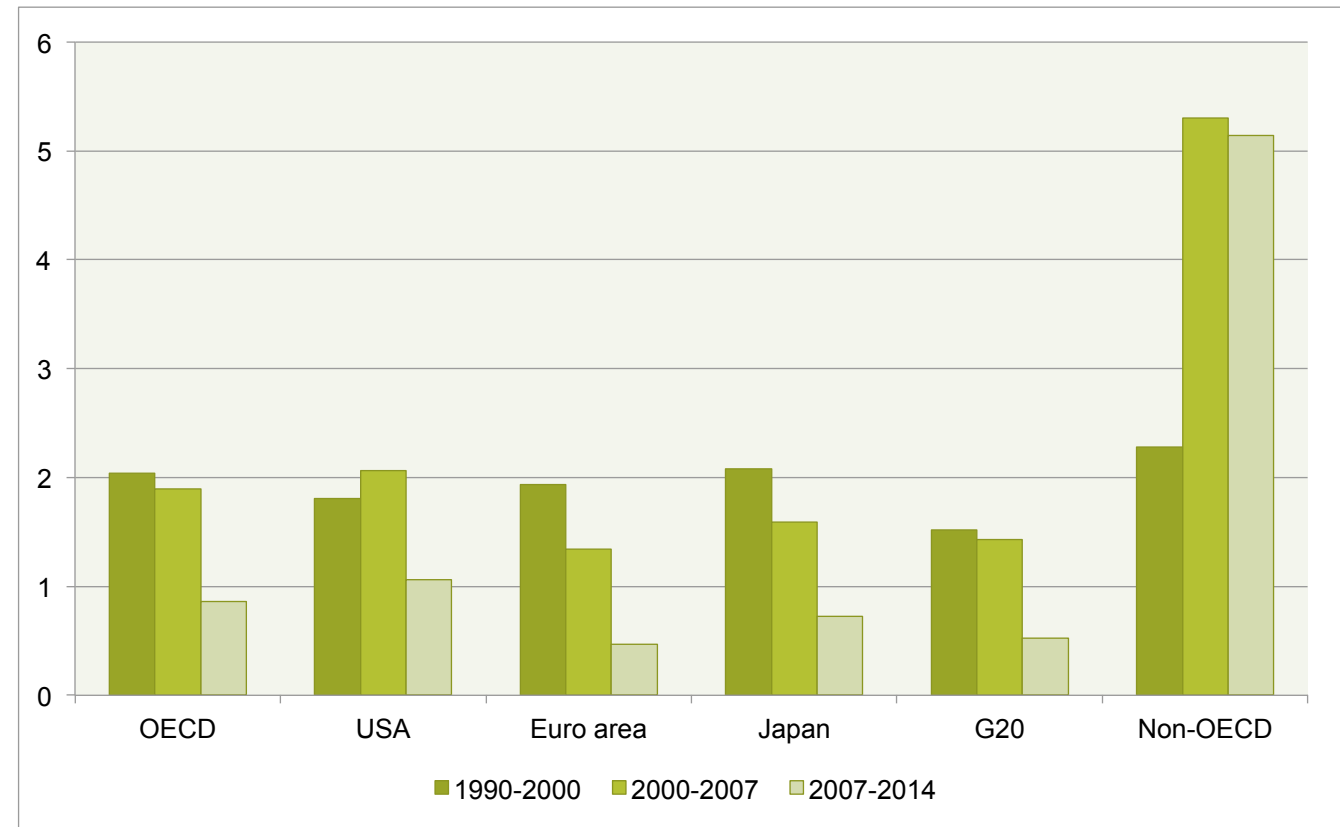
Is ICT innovation "different"?



The decline of productivity growth since the 1990s

Annualised growth of labour productivity
(output per hour worked)

Source: OECD Economic Outlook, Volume 2016 Issue 1 - © OECD 2016, data based on OECD National Accounts database; OECD Productivity database; International Labour Organisation database.





ICT vs Manufacturing

- **Alphabet:**

Operating revenues: 90,272,000 Th. USD

Employees: 72,053

Ratio: **1253** Th. USD per employee

- **Facebook:**

Operating revenues: 27,638,000 Th. USD

Employees: 17,048

Ratio: **1621** Th. USD per employee

- **Volkswagen:**

Operating revenues: 237,564,000 Th. USD

Employees: 626,715

Ratio: **379** Th. USD per employee

- **Johnson & Johnson**

Operating revenues: 71,890,000 Th. USD

Employees: 126,400

Ratio: **568** Th. USD per employee

Source: ORBIS, Bureau Van Dijk. Data refers to 2016

Champions of productivity or simply **Scale without Mass?**



Can current innovation undermine future incentives to



For example: Scale without Mass



WhatsApp: 300 M users, 50B message/day, 55 employees



Netflix: USD8.8B revenue, 3500 employees



Dropbox: 500M users, 1.2B files stored/day, 1200 employees

Challenges policies that target firms by measure of mass (e.g. employees) as well as competition policy, may contribute to productivity divergence across firms

Credits: Andrew Wyckoff and Dirk Pilat
Directorate for Science, Technology and Innovation, presentation at European Political Strategy Centre, 5 May 2017, Brussels



Does ICT innovation create "new" challenges for regulators?



Example: Smart home system

Two different scenarios:

1. **Closed bundles:** Producers sell the whole system, i.e. components are compatible only with other components produced by the same company.
2. **Compatibility:** other producers can sell separate components that enrich the smart home system



Cartoon by Teddy Tietz
<https://www.teddytietz.com/2015/12/>

What can determine the prevalent scenario?

Innovation@ITU-D

The usual suspects

- Competition policy
- Initial market power
- Quality
- Technological constraints
- Patent ownership
- Reputation
- etc...

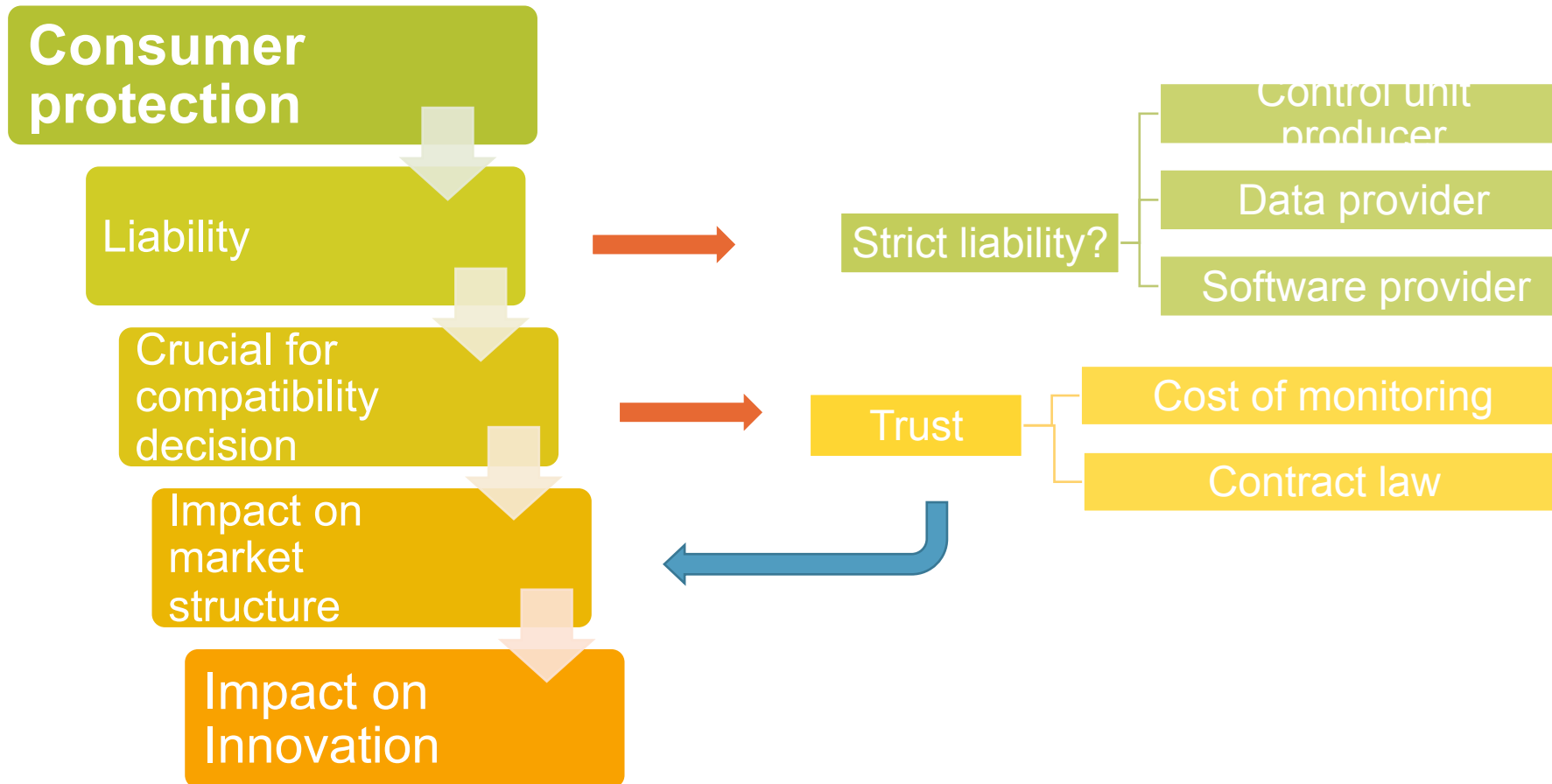


Vast related literature

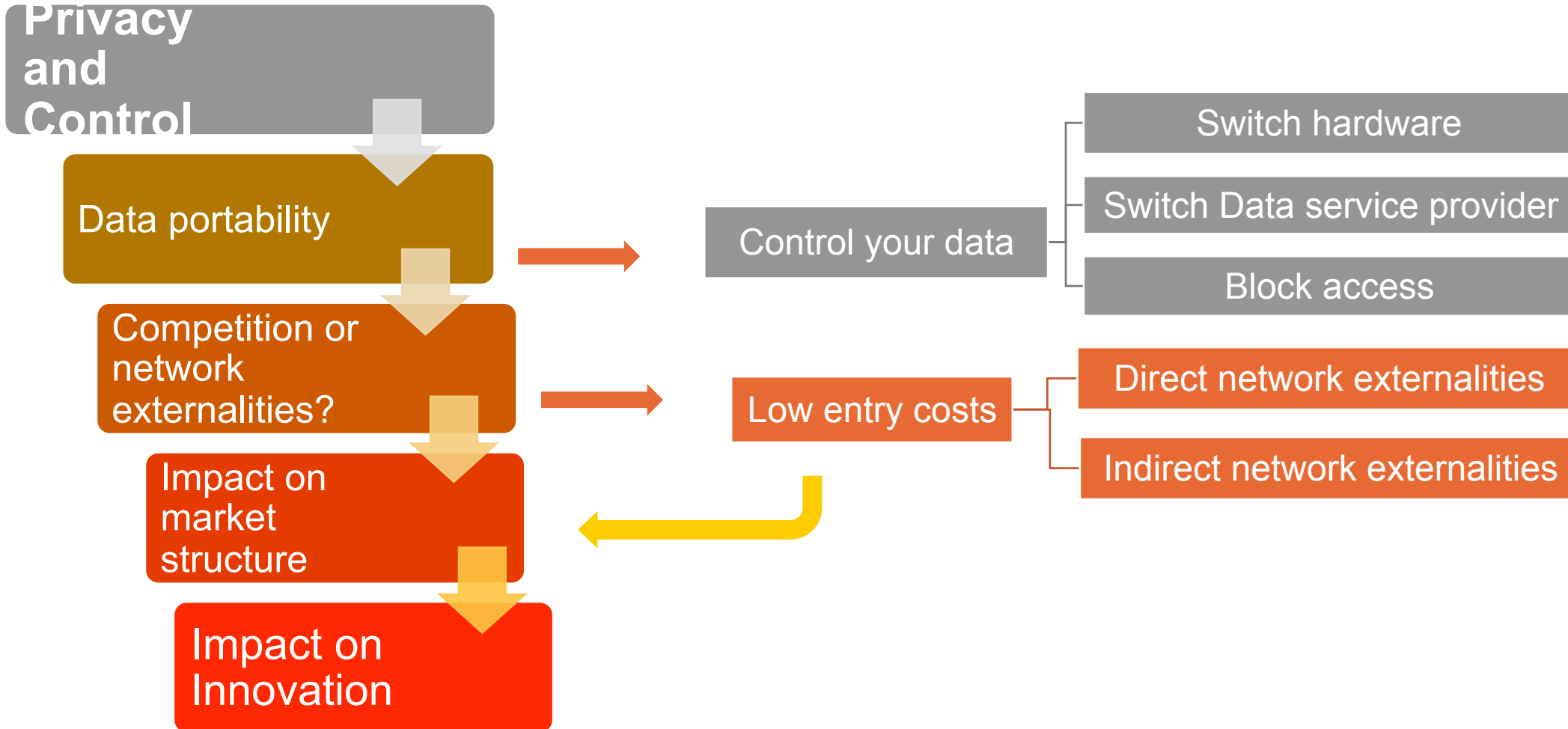


But regulators may need to protect citizens against "new" threats

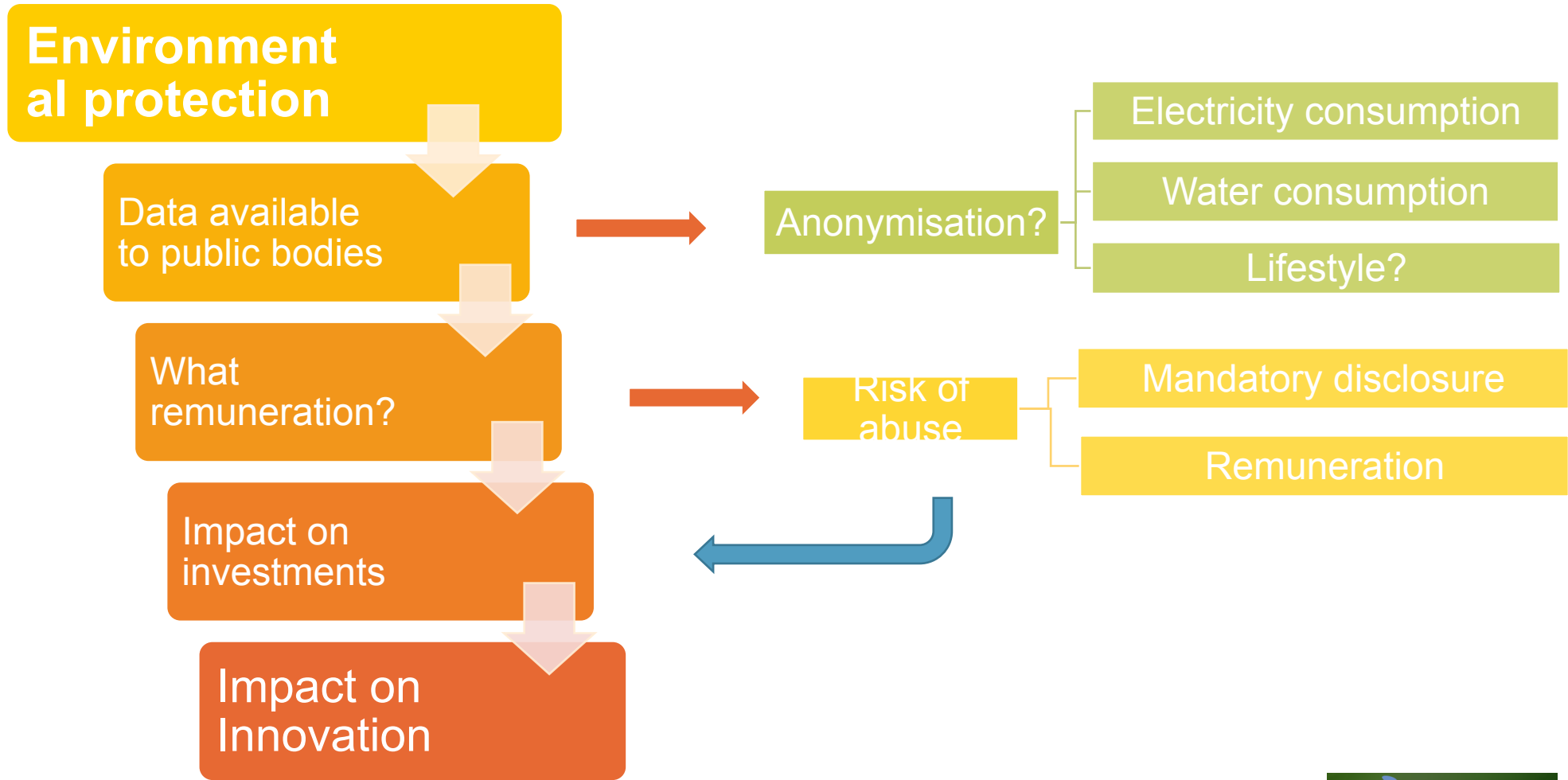
Ex. 1: Strict Liability



Ex. 2: Data portability



Ex. 3: Access to data





Conclusions

- Balancing public interests and market economy
- Public – Private partnerships
- International harmonisation of regulation

