

From disruptive technologies to transformative socio-technical change

The cases of the platform and sharing economy

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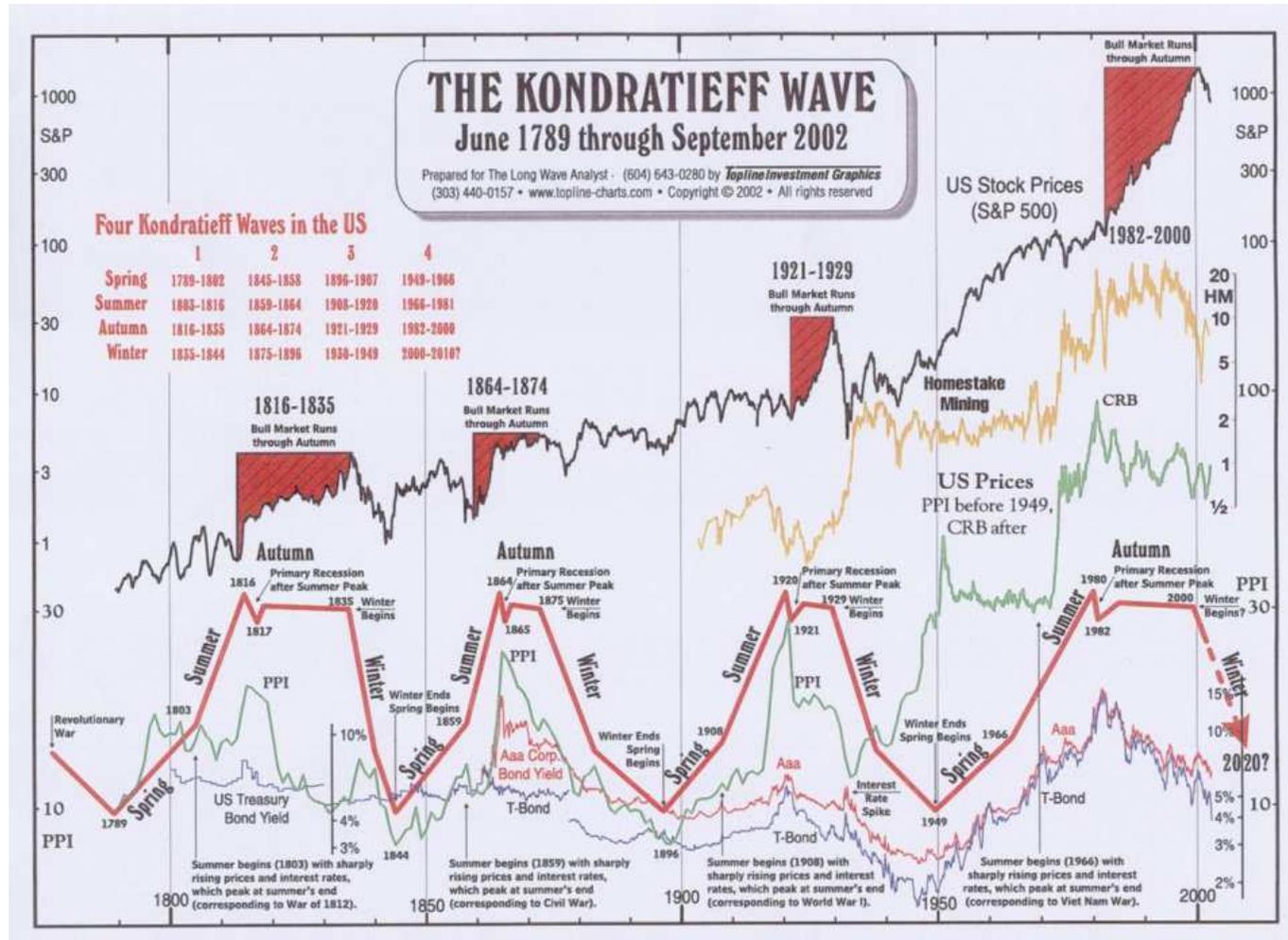
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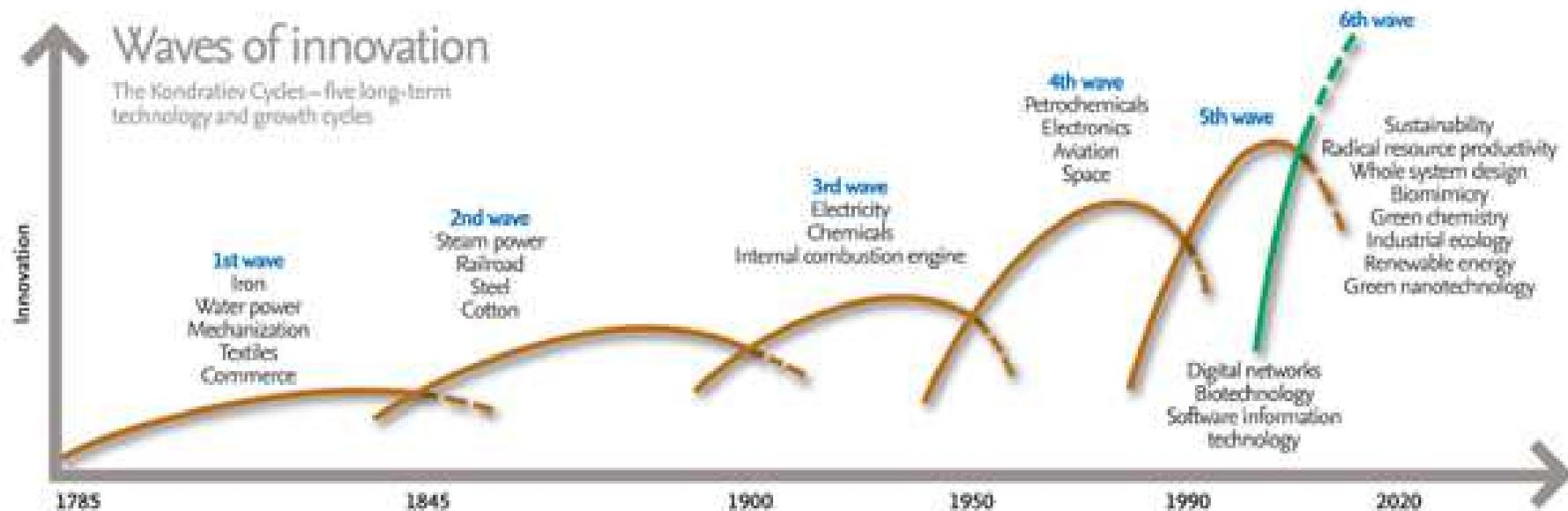
Helsinki, 21 January 2016

Past transformations – Kondratieff waves



Past transformations – Kondratieff waves and innovation

- Schumpeter’s contribution was to tie long waves to fundamental innovations („Basisinnovationen“)
- Uncertainty about the next wave

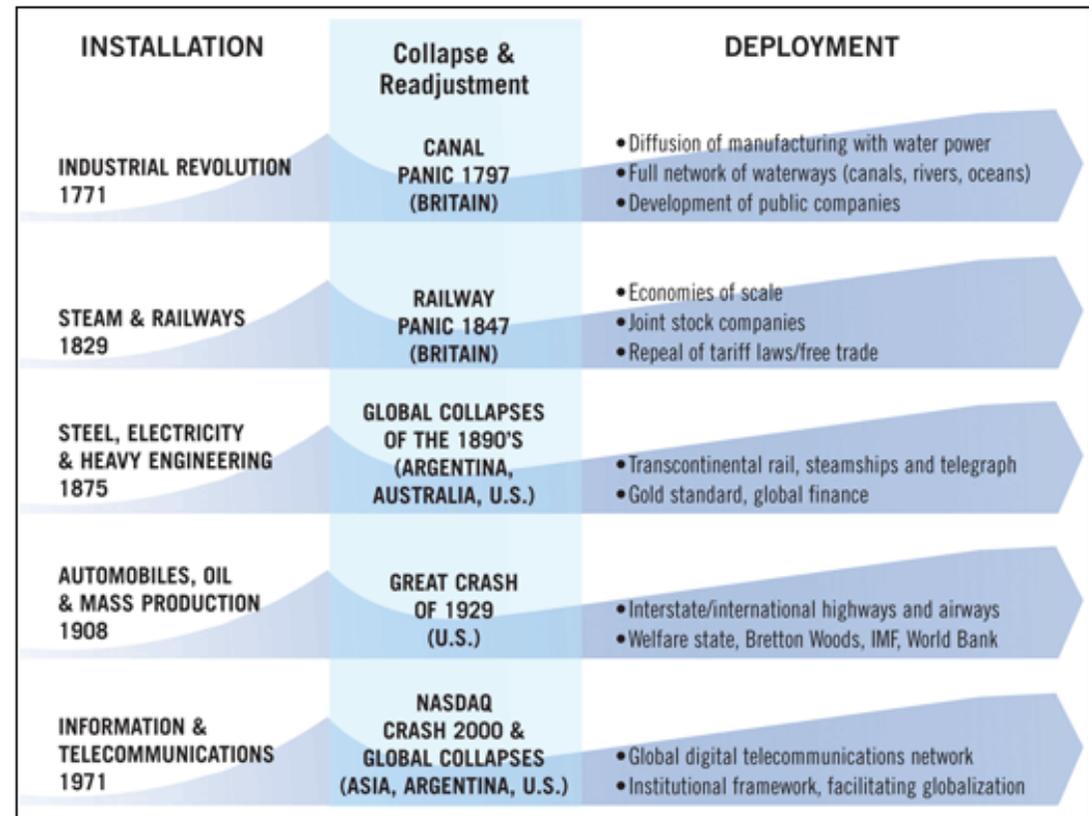


From long waves to techno-economic paradigm shifts

Techno-economic paradigms are

„a combination of interrelated product and process, technical, organisational and managerial innovations, embodying a quantum leap in potential productivity for all or most the economy and opening up an unusually wide range of investment and profit opportunities“

Perez/Freeman (1988)



From long waves to techno-economic paradigm shifts

- Perez and Freeman (1988) tied long waves to three conditions applying to the underlying „key factor“:
 - Major and persistent reduction of relative cost with the power to transform the decision rules
 - Almost unlimited supply over long periods
 - Potential for the use or incorporation of the new key factor in many products and processes throughout the economic system



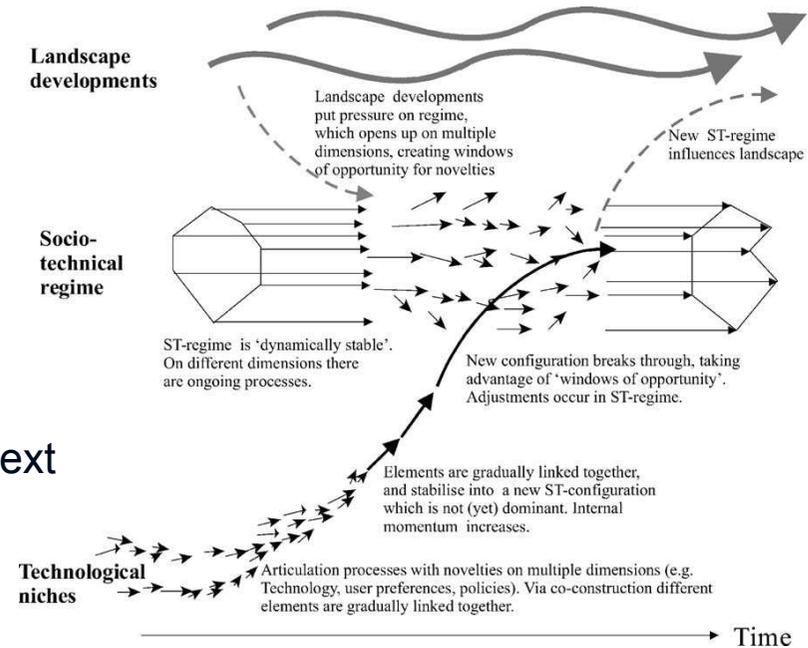
Towards a theory of transformative change

Socio-technical transitions

- Multi-level perspective
 - Landscape
 - Sociotechnical regime
 - Technological niches

- Emphasis on
 - Transformation of existing systems
 - Interdependence of technology and context
 - Recognition of complex mechanisms
(path-dependencies, self-reinforcing mechanisms, network effects, ...)

- Governance of socio-technical transitions
 - Experimentation & learning
 - Network development and its externalities
 - Visions



Source: Geels 2004

Socio-technical transitions at different levels

- Transforming specific local systems systems
 - Infrastructure systems
 - Local production-consumption systems
 - ServPPINs – Public-Private Innovation Networks in Services

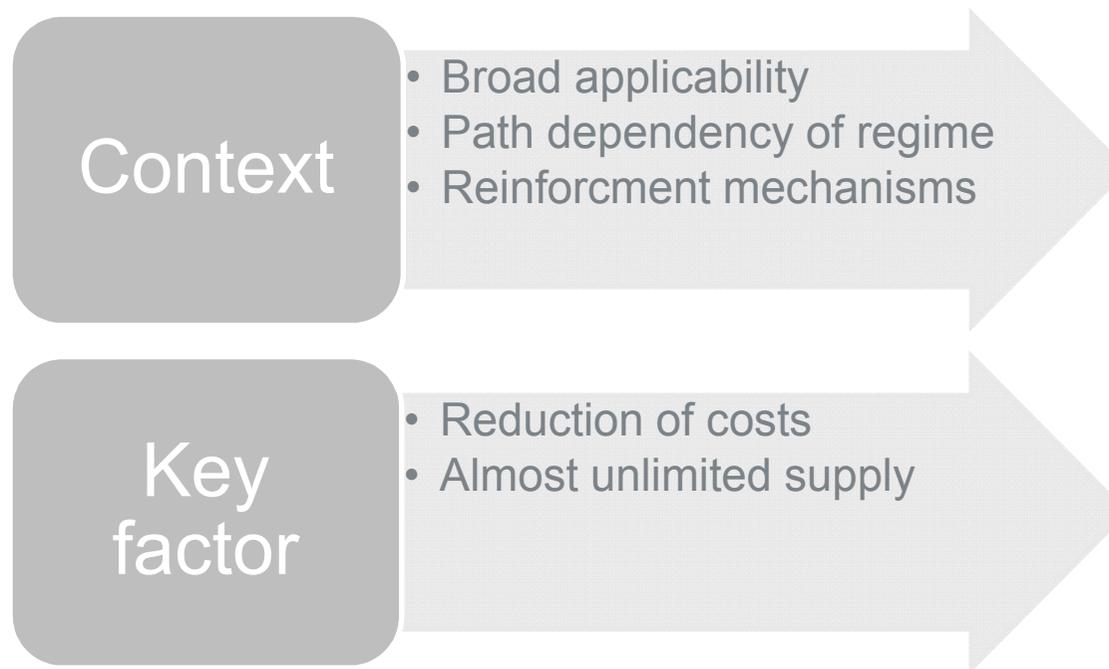
- Transforming large socio-technical systems
 - Often already in place: need to transform existing systems
 - „Managed“ transformation process

- Transforming basic operation of our economies
 - Hydrogen economy
 - Transforming capitalism

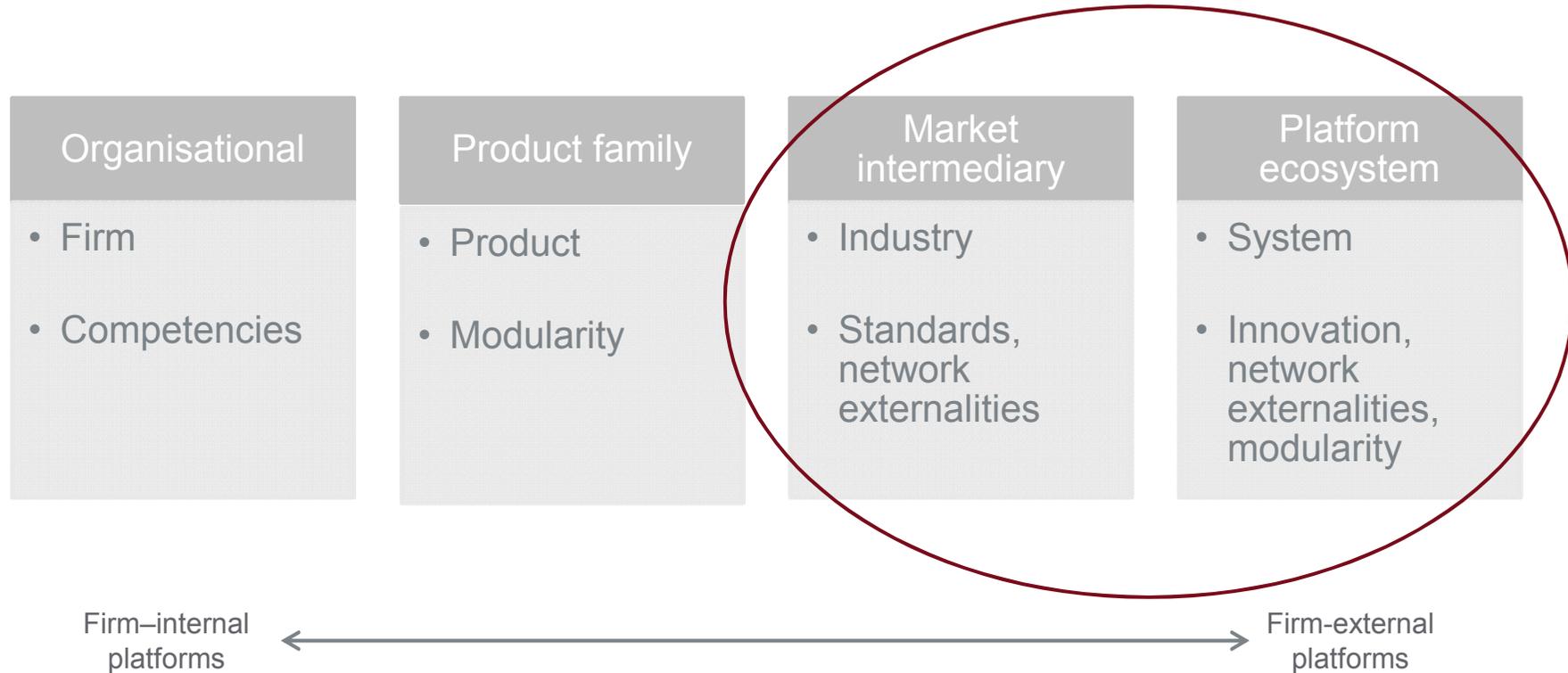


Beyond disruptive technologies ...

- „Disruptive“ technology as enabler of transformative change, but embedded in a system context
- Criteria for assessing the disruptive potential



Types of platforms in management studies



Source: Llewellyn et al. 2014

Platform and sharing economy and what else ...?



- Platforms as the „factory locations“ of the future
- Sharing economy as a specific case of platform economy (C2C)

Some definitions

- The platform economy is based on
 - *„a published standard that lets others connect to it, together with a governance model, which is the rules who gets what“ (Regalado 2014)*
 - *„platforms are frameworks that permit collaborators – users, peers, providers – to undertake a range of activities, often creating de facto standards, forming entire ecosystems for value creation and capture“ (Kenney/Zysman 2015)*

- Sharing economy are based on consumer-to-consumer platforms
 - *„consumers granting each other temporary access to under-utilised physical assets („idle capacity“), possibly for money“ (Frenken et al. 2015)*

The diversity of platforms

- Platforms for platforms
 - (Internet), Amazon Web Services
- **Platforms mediating work**
 - TaskRabbit, Handy
- Platforms making tools available online
 - Github for software
- Electronic goods markets for retail and business
 - Ebay, android store, apple store
- **Platforms intending to transform service industries**
 - Airbnb, Uber, RelayRides
- Platforms shifting the place of intermediaries in finance
 - Kickstarter, Angelslist
- Platforms facilitating social and political organisation
 - Twitter, facebook
- Platforms supporting production processes in industrial value chains
 - IoT, industrial internet platforms

Disruptive technologies: algorithmic revolution and cloud

- Reduction of activities into formalisable, codifiable algorithms
 - Computing power is converted into economic tools by algorithms operating on the raw material of data
 - Sensors / actors in the IoT/industrial internet

- Availability of tools and applications in the cloud
 - Cloud computing eases the creation of platforms
 - Race to zero cost of computing due to scale effect

- Master platforms
 - Master platforms as virtual infrastructures and enabler for complementor platforms
 - Mutual reinforcement of master and complementor platforms („ecologies“)

What does the disruptive effect depend on?

- There is a sense that „*many traditional business models, organisations and forms of organising value creation will be either swept away or radically transformed*“ (Keeney/Zysman 2015)

- The five criteria
 - **Cost reduction:** low barriers to entry for entrepreneurship, reduced cost of service for users
 - **Unlimited supply:** computing power in the cloud
 - **Broad application potential:** relevant for many types of economic activities
 - **Path-dependency of prevailing regime:** existing institutions (rules and regulation for labour, markets, safety, etc.), organisational structures, behavioural routines, physical assets
 - **Reinforcing mechanisms and leverage:** Network externalities/critical mass, openness, standards, learning

 While there is clearly a disruptive potential, a transformative pathway should not be taken for granted!

Contentious issues: Between utopian and dystopian views

- Entrepreneurial opportunities
 - Stability: Very few platforms survive
 - Growth prospects: Low-level entrepreneurship vs. the lucky few

- Work and jobs
 - Reframing of work: connecting workers with customers in new ways, but nature of jobs will change: from lifelong employment to more fragile jobs
 - Precarious jobs: evidence suggests that many jobs are just additional and/or temporary (TaskRabbit: 10% full-time)
 - Motivations: economic AND social, but a shift away from idealistic early adopters to mainstream
 - Wages: no race to the bottom observed, rather shifting upwards
 - Inequality: upward redistribution of opportunity and earnings within the bottom 80-90%: the better-off segment boosts earnings
 - Labour conditions: limited evidence of deterioration over time, but many seek regular full-time employment

Contentious issues: Between utopian and dystopian views (II)

- System control and value capture
 - Value capture: More dispersed work and value creation, but value capture is more centralised: How to strike the right balance?

- Platform monopolies
 - „Winner takes all“: platform monopolies likely to arise due to network effects
 - Ensuring competition between platforms is a serious issue: empowering users to avoid lock-in, e.g. easy switching, portability of user-generated data, etc.

- Unfair competition
 - New platforms vs. existing business models: Platform-based companies not eager to take responsibility and do not feel bound by the rules
 - Unclear rules: applicability of competition and market access rules

Contentious issues: Between utopian and dystopian views (III)

- Global competition
 - Global balance of economic power: fear of shift of centres of gravity, e.g. regarding industrial internet (US, China, Germany)
 - National policy fears of loosing their industrial base: SMEs in Austria at risk?

- Societal benefits
 - Sustainability: platforms as a contribution to a more sustainable economy (sharing, resource efficiency)?

➔ In spite of some first empirical indications, very uncertain and diverse picture of the social and economic effects of the platform economy

Policy choices ahead: four examples

- „Smart regulation“ ?
 - How to realize the desirable effects while avoiding the negative ones?

- Social security policy
 - Encouraging entrepreneurial risk-taking by enhanced social security system (Nordic model, basic income)

- Competition policy
 - Ensure low switching costs between platforms
 - Portability of user-generated data to avoid lock-in

- Market rules
 - Keeping sharing services and commercial services apart: cooperatives model?
 - Uber as a ride-sharing service rather than an on-demand taxi service
 - Amsterdam model: Airbnb < 60 days/year

Conclusions

- Avoid the hype!
 - Platform economy has a disruptive potential, but as a phenomenon arising in a complex ecosystem, it is constrained by its context

- The Collingridge dilemma - Coping with uncertainty
 - We still know very little about the social and economic effects of the platform economy, but need to make choice to guide the future pathway

- Framing the transformation process: Towards an experimental governance approach
 - Social and political choices needed to shape the context and the operation of platforms

- Helping existing businesses to get prepared for the platform economy
 - Vulnerability of traditional business models can lead to a real disruption with many negative consequences

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