Smart Regulation in the Age of Disruptive Technologies

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SMART REGULATION IN THE AGE OF DISRUPTIVE TECHNOLOGIES

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A New Wave of Regulatory Governance?

• First wave: structural reforms (1970s-1980s)
  • Privatizations, liberalizations

• Second wave: regulatory reform (1980s-1990s)
  • Ex ante filters + “Less is more”

• Third wave: regulatory governance/management (2000s)
  • Policy cycle concept + importance of oversight
  • Better is more? Alternatives to regulation, nudges, etc.

• Fourth wave: coping with disruptive technologies (2010s)
Different approaches to regulatory governance

• United States (1981-)
  • Mostly based on BCA, focused on secondary legislation
  • Implicit space for experimentation due to lack of upfront regulation

• European Union (2002-)
  • Focused on primary legislation, and policy coherence
  • Precautionary principle often leads the approach to new technologies
  • Strong focus on ethics and principles, but difficult multi-level governance

• Many other countries
  • Mostly focused on red tape reduction, coupled with “doing business” reforms
  • Slow tendency to cover also substantive compliance costs and enforcement costs
  • Tendency to embrace smart regulation (Mexico, Colombia)
Digital Technology as “enabler”

- Competition
- Collusion
- Access
- Discrimination
- Jobs
- Unemployment
- Enforcement
- Infringement
Features and trends of the digital economy

- Digitization and information goods
- End-to-end design (originally neutral)
- System goods and modularity/granularity
- Transition from goods to services ("age of access")
- Increased virtualization ("softwarisation")
- Multi-sidedness, network FX and "platformization"
- Competition for eyeballs ("attention merchants")
- Ever-changing architecture and shifting of entry possibilities
- Big data, machine learning and data-crunching algorithms
- Dynamic pricing and price discrimination
Risk assessment, dose-response

Emerging, disruptive technology

Problem definition

Alternative options & Impact Analysis

Risk management

Risk assessment, dose-response

Policy strategy and experimentation

Regulatory cycle

Evaluation

Learning

• Scientific input and forecast
• Mission-led assessment
• Long-term pathways

• Mission-oriented options
• Pilots, sprints, sandboxes, tech-enabled regulation

• Ongoing evaluation
• Pathway updates
“Regulatory engineering”

• New screens
  • Openness/neutrality
  • Interoperability
  • Scalability
  • Contestability
  • Resilience
  • Enforceability

• New experiments
  • RCTs
  • (Virtual) sandboxes
  • Ideation Sprints
  • Rapid prototyping
  • Regulation via “extensions”
  • Co-regulatory schemes
### Taxonomy of algorithmic approaches (Yeung 2017)

<table>
<thead>
<tr>
<th>Standard setting</th>
<th>Monitoring</th>
<th>Enforcement/Sanction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fixed</td>
<td>Real time reactive violation detection</td>
<td>Automated</td>
<td>Simple real-time sanction administration systems</td>
</tr>
<tr>
<td>2. Fixed</td>
<td>Real time reactive violation detection</td>
<td>Recommender system</td>
<td>Simple real-time warning systems</td>
</tr>
<tr>
<td>3. Fixed</td>
<td>Pre-emptive violation prediction</td>
<td>Automated</td>
<td>Simple pre-emptive sanction administration systems</td>
</tr>
<tr>
<td>4. Fixed</td>
<td>Pre-emptive violation prediction</td>
<td>Recommender system</td>
<td>Simple predictive recommender system</td>
</tr>
<tr>
<td>5. Adaptive</td>
<td>Real time reactive violation detection</td>
<td>Automated</td>
<td>Complex sanction administration systems</td>
</tr>
<tr>
<td>6. Adaptive</td>
<td>Real time reactive violation detection</td>
<td>Recommender system</td>
<td>Complex real-time prioritization systems</td>
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<tr>
<td>7. Adaptive</td>
<td>Pre-emptive violation prediction</td>
<td>Automated</td>
<td>Complex predictive sanctioning systems</td>
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</table>
The boom is yet to come!

- **Moore’s law is not over**: emerging trend is “parallel computing”, achieving exponential growth by using a multitude of processors at the same time. And next one is quantum computing.

- **Platformisation is not over.** Blockchain/DLTs and other forms of dis-/re-intermediation will significantly change business models and consumption patterns with the help of AI

- **IoT is in its infancy.** 1 trillion connected devices expected by 2035, with massive changes in all aspects of our lives.
Bottom line: better regulation 4.0

- **Quantity.** Regulation is increasing and concentrating on higher layers of the Internet architecture (data, content, services, AI, DLTs, etc.)

- **Scope.** Increasingly oriented towards principles-based regulation (e.g. ethics of AI) coupled with outcome based rules (e.g. strict liability)

- **Type.** Regulation increasingly takes the form of co-regulatory schemes, or command and control rules coupled with extensive guidance and interpretation

- **Mode.** Increasingly experimental, and focused on on data management and reuse. Extensive use of AI by regulators leads to both risks and opportunities

- **Enforcement.** Will increasingly rely on private regulatory settings, such as arbitration and mediation set up by online platforms. But verification of compliance will remain a blind spot for many years

- **Impact.** To be constantly verified, leading to regulatory learning and feedback
Consequences for regulatory governance

• Oversight becomes even more important, and coordinates experimentation and learning across government

• IT, e-administration, e-government and regulatory functions overlap and require enhanced merging/coordination

• Data management/policy, sentiment analysis, foresight and feedback loops enter the DNA of regulatory governance

• Stock v. flow: towards cumulative and interactive assessments of costs and benefits?
Thank you!