Designing Adaptive Regulation

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Why adaptive regulation?

- Recognition that *ex ante* regulation is difficult if not impossible to design for the dynamic Internet
  - Growing interdependence among players in two- and multi-sided markets
  - Continued rapid technological and economic change and plasticity of digital technology
  - High fixed/near-zero incremental cost technology requires innovative pricing
  - Shared resource use creates externalities and raises public good problems
- More realistic view of the strengths and weaknesses of markets and regulation

Basic characteristics

- Cherry and Bauer (2004) discussed conditions for sustainable policy under conditions of co-evolving technology, economics, and policy
- Whitt (2007, 2009) proposed that adaptive regulation should have the following characteristics

(1) cautious
(2) macroscopic
(3) incremental
(4) experimental
(5) contextual
(6) flexible
(7) provisional
(8) accountable
(9) sustainable

- Recent contributions by Noam (2010), Yoo (2012), Bauer (2014) echo similar concerns

Normative foundations

- Not every problem can and should be fixed with (adaptive) regulation
- Compared to traditional regulation, lack of clear normative foundations for adaptive regulation
  - Coordination problems across complex value nets
  - Aligning incentives of players with performance
  - Spill-overs, externalities, and public good problems
  - Complementarities between policy and markets (e.g., Mazzucato, 2013; Block & Keller, 2011)
- Policy making as tuning, caretaking, stewardship

Operationalizing “adaptability”

- Most institutional arrangements adapt to changing external circumstances and in response to the performance of the system they govern
  - At varying speed and at varying cost
- Adaptability can refer to dynamic adjustments of
  - objectives (e.g., performance metrics, adoption patterns)
  - instruments (e.g., financial incentives and disincentives, rights and obligations)
  - intensity of instruments (e.g., reward or penalty payment)

  in response to the state of the system

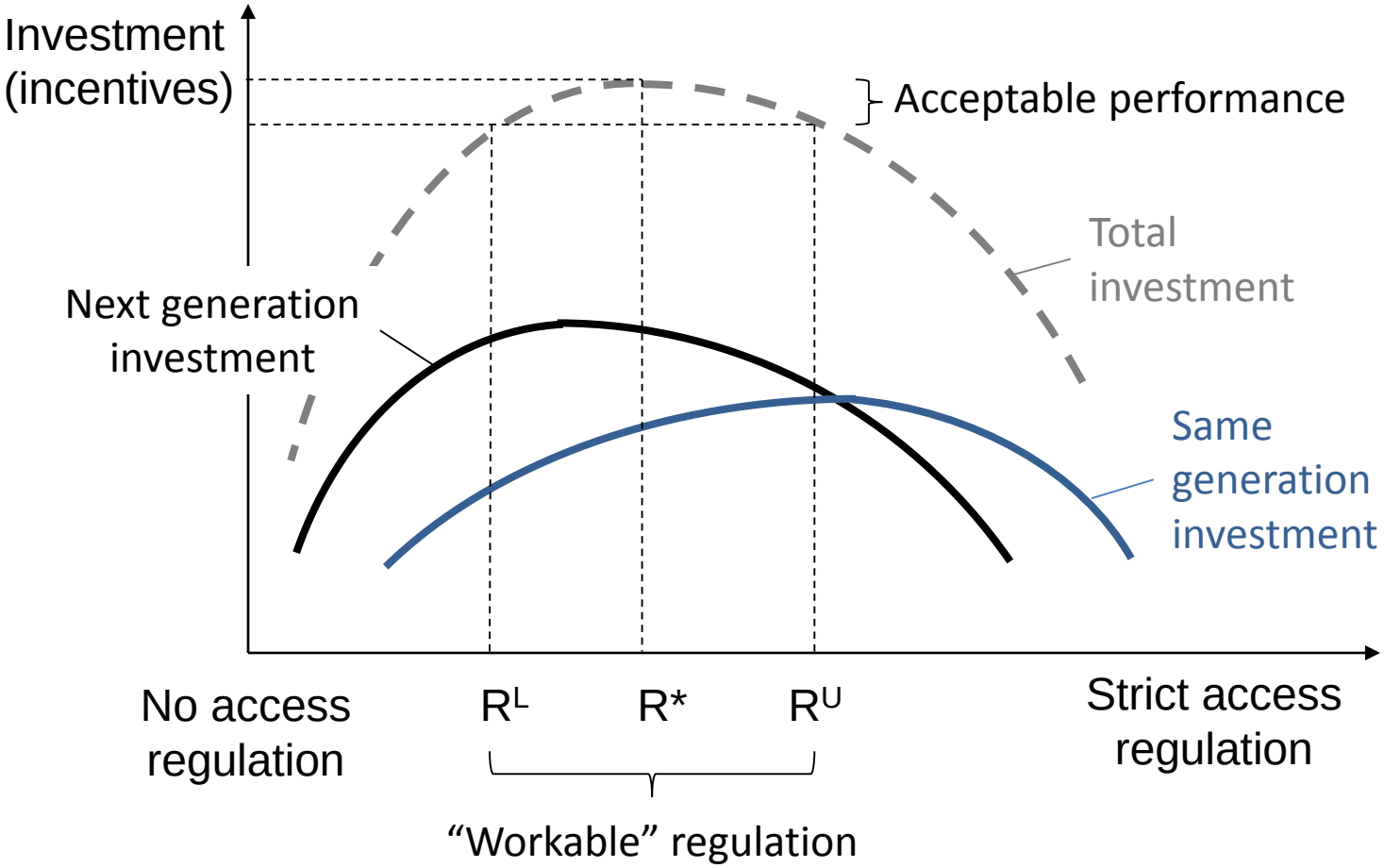
Requirements

- Understanding of the working of the system and its dynamic properties (“fitness landscape”)
- Performance information at micro, meso, and macro levels (e.g., routers, links, ISPs, regions, whole network)
- Target levels or target rates of change of performance
- Politically feasible policy instruments capable of achieving the objectives
- Understanding of the effects of governance and its adaptation on performance
- Continuous monitoring of performance and feedback so that governance can be adapted

Mechanism design

- Adaptability can be designed into Internet governance at different levels
  - Periodic reviews of the overall system of rules governing the Internet
  - Periodic reviews of specific areas of policy intervention (e.g., universal service, interoperability, network openness)
  - Case-by-case reviews of specific situations (e.g., contracts between players, network management)
- Incentive mechanisms targeted at individual players and groups of players (e.g., Laffont & Tirole 1993;)
  - Accelerating response to congestion via a price mechanism
  - Mechanisms that incent ISPs to offer a contractually agreed service quality to other firms and end users
  - Mechanisms that keep players within a target security zone
  - Automatic stabilizers that nudge the system in a desired direction (e.g., R&D tax incentives)

Example network investment



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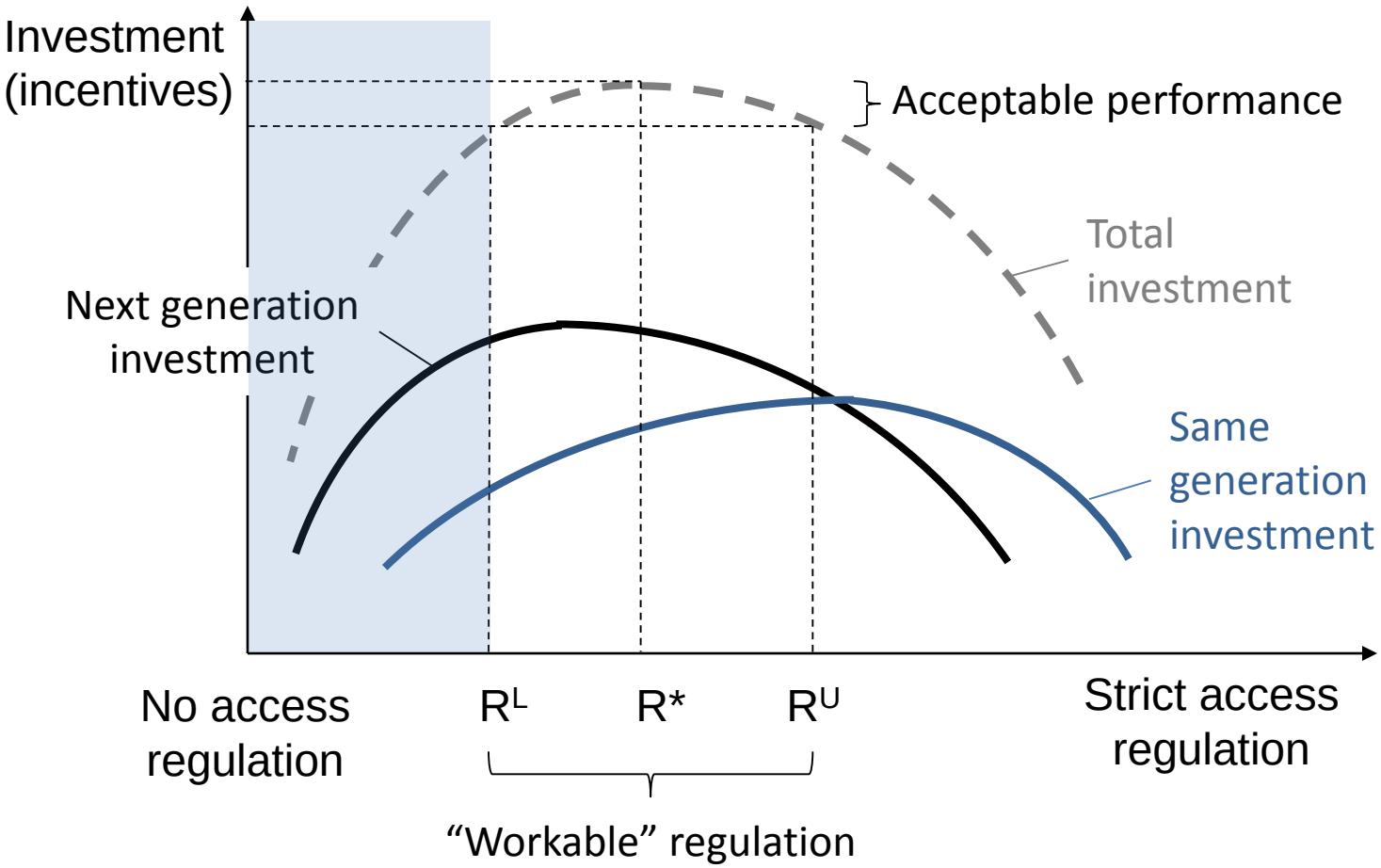

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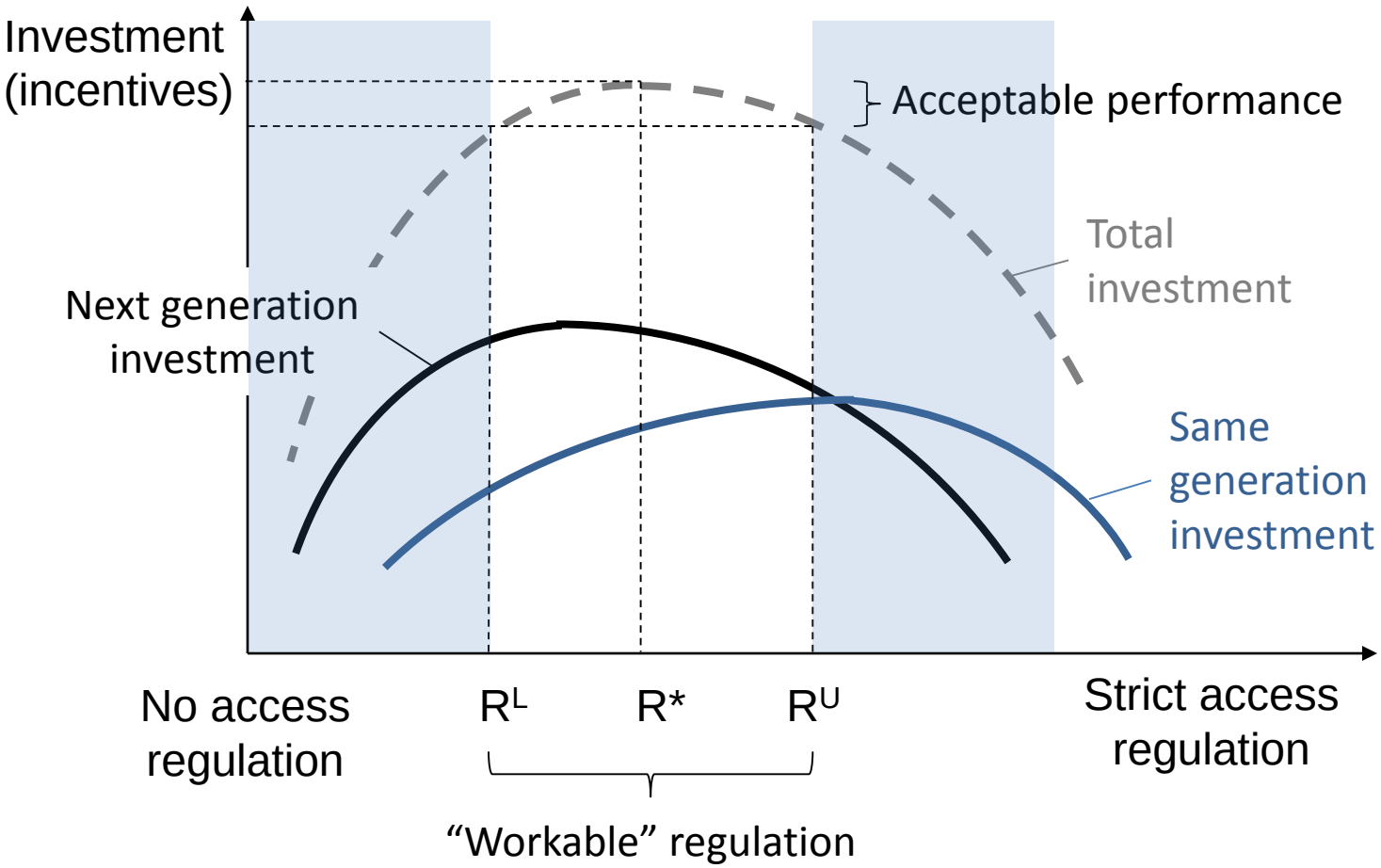

Pitfalls and limitations

- Information requirements may be daunting
- Identifying the actor who is in a position to implement the mechanism
- Adaptive strategies may constrain the system to improvement and local optima
- Incentive mechanisms may inadvertently bias decisions strategically
- Development, implementation and enforcement of adaptive policy may have high transaction costs
- Adaptive changes of broader policy rules may not be feasible or imply high cost (regulatory re-contracting)
- The set of feasible policies may be empty, especially at the international level

Take away

- The call for adaptive regulation is a response to dynamic change and system complexity
- While the general principles are appealing, practical implementation needs to overcome considerable obstacles
- These include information requirements, political feasibility constraints, and trade-offs between stable rules and flexible change
- Overall, the concept has great potential for the design of mechanisms that can keep the Internet on a desirable performance trajectory

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