An “Airbnb for Electricity”: Institutional Theory for a Platform Model in an Historically Regulated Industry

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Airbnb as a multifaceted platform

• Market – connecting buyers and sellers
• Governance – rules creating community
• Enables innovation/adaptation by users around the platform edge

Source: fontsinuse.com
Today’s power system

Source: EPRI (2014), p. 8
Distribution grid/network

Source: EPRI (2014), p. 8
Electricity as a regulated monopoly industry

- **Regulatory compact:** bargain between regulators and regulated
  - State-level regulation establishes a legal entry barrier (market & wires)
  - Monopolist earns opportunity cost of capital in return for its obligation to serve
- **Rate of return regulation** based on cost recovery
- **20th century objectives:** safe, reliable, affordable, uniform universal service
  - Even in this architecture, electricity need not be just a commodity
- **20th century model:** build build build build, regulators approve investments, expenditures, rates
Transaction cost reducing innovation at the distribution edge
Entrenchment

• Status-quo preference and resistance to innovation by regulators and regulated
  – Physical infrastructure and regulatory institutions designed for centralized control in a vertically-integrated firm

• Entrenched industry with innovation and changing priorities around its edges
  – Digital transaction cost-reducing innovations
  – Distributed energy resources (DERs)
  – Consumer desire for decentralized control and ability to automate
  – 21st century policy objectives: safe, reliable, affordable, cleaner, customizable
Thought experiment
Regulated wires company as a platform: wires and market

Source: EPRI (2014), p. 31
Platform literature

• Gawer’s (2014) three platform concepts
  – Technology
  – Economic
  – Organizational-institutional-governance

• Technology and economic concepts are primarily static; governance/organization introduces a dynamic aspect

• All three are important in an evolution to a distribution platform in electricity
Transaction cost economics

- Williamson: model the firm as a governance framework that economizes on transaction costs
- 20th century regulated utility: integrated mechanical technologies, economies of scale and scope, high transaction costs mean vertical integration – “natural monopoly”
- Innovation that reduces transaction costs changes the transactional boundary of the firm – VI not necessary because transaction costs have fallen
- VI creates potential for incumbent vertical market power in retail markets (Kiesling 2014)
Entrepreneurial theory: Experimentation

• Is part of the process of value creation through **creative destruction**
  – Product differentiation, bundling, change market boundaries, rivalry among differentiated bundles
  – New entrants are most likely to risk their resources doing so
  – **Schumpeterian** disruptive entrepreneur

• Is essential to **entrepreneurial discovery** of new knowledge, leading to value creation when innovation does not rely on regulatory permission
  – **Kirznerian** equilibrating entrepreneur (with a dash of Hayek)

• Epistemic context: the knowledge relevant to coordination across individuals and across economic and environmental objectives is **dispersed, private, often tacit**, so regulatory mandates cannot replicate it
Why a distribution (market & wires) platform?

• Technology platform: interoperability and interconnection

• Economic platform: markets facilitate exchange among heterogeneous agents, taking advantage of transaction cost-reducing innovations

• Governance platform: consistent rules for self-regulation that accommodate heterogeneity, enable adaptation, create community where relevant

• All three serve the objective of enabling innovation and new technology adoption