BBL Seminar
Handout

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"Standards, Platforms, and Public Policy"

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http://www.rieti.go.jp/jp/index.html
Standards, Networks, and Policy

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Thank you ありがとうございます

- Thank you for hosting me.
  - Big thank you Dr. Reiko Aoki!

- Thank you for opportunity to talk with you.
  - Interested to know what is useful.

- Please ask questions.
  - I tend to talk quickly…
  - Apologies in advance…just slow me down.
Outline

- Introduction, はじめ
- Illustrations, イラスト
- Key concepts, キーコンセプト
- Evolution of platforms, プラットフォームの進化
- Conclusions, 結論
What is the question?

What does the (old and new) literature on standards suggest about government policy?

- When should policy makers intervene in markets where standards play a large role?
- When is a government policy that favors compatibility between standards superior to a policy that favors competition between standards?
- How well do non-market mechanisms perform in comparison to market mechanisms?

What are the big open questions?
Let me start with a personal story....


Why did we do this book?
- Michael Moskow, head of the Chicago Federal Reserve Bank at the time, asked for it (and paid for it!).
- Moskow was Victor Stango’s boss.

Why did Moskow want his research department to investigate standards?
Moskow believed check clearing had gotten easier due to standards

- The Fed had helped push through standards for checks clearing.
  - Improved efficiency in processing checks.
  - Helped the Fed while helping the industry.
  - Large gains for US economy.
- Did not happen until Fed did it. No individual bank could get others to agree. Fed endorses a design.
  - Moskow received many suggestions for additional things to endorse.
  - But he was very wary of making a big mistake....
  - Moskow wanted to know: When to intervene and when not, and why?
Old & new literature on standards differ in their analysis of the effects of standards on markets, so differ in framework for policy.

- Old literature focuses on the demand for compatibility & the creation of switching costs.
- Focused on the number of ways in which standards limits the distortions from switching costs.

New literature focuses on competition between platforms which embed standards.

- Shifts focus to analysis of participation & adoption of platforms by users, developers, advertisers.
- Investigates multiple ways to grow a platform, and the effects of intervention on platform growth.
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The purpose for the illustrations

- Motivate general approach to thinking about standards and platforms.
  - How do standards help markets emerge out of an exploratory period?
  - What are the catalysts for growth of mass markets?

- How do competitive events and governance interplay as platforms evolve?
  - Does governance respond to competitive pressure?
  - Does competition act as check on poor choice of governance?

- Where can policy make a difference?
Experiments throughout most of the 1990s.
  ◦ Early wireless LAN designs generated little sales
  ◦ Interesting usage cases – campuses, warehousing, wireless cash registers.
  ◦ Equipment firms the primary innovators.

  ◦ Helped commit firms, grow mkt size.
  ◦ Used unlicensed spectrum so all could interoperate.

Market competition pushed it forward in 99.
  ◦ Apple commissioned first product from Lucent. Dell was next. Competitive rivalry took off after that.
Wi-fi continued
無線LANは続けた

- **Firms formed an alliance shortly thereafter**
  - For conformance testing
  - For branding. Name “Wi-fi” chosen.

- **The unexpected emergence of the “hot spot”**.
  - Experimentation by access providers.
  - This was the most valuable use. Variety of models.

- **Unexpected design of Centrino in 2003**
  - Intel designed Wi-fi into motherboard.
    - Intel also designed the chip set to be a commodity.
    - Further cost declines. Fostered ubiquitous use.

- **IEEE committee continued to upgrade speeds....**
  - Each redesign has become more contentious.
Observations about Wi–fi
Wi – Fiに関する観測

- *Experimentation continued for some time*
  - Throughout most of the 1990s wireless LANS were not a profitable market! But many believe in the usage case, which propelled experimentation by equipment firms.

- *Breakthrough with an unexpected use.*
  - Leapfrog functionality for the mass market required making equipment at a low cost price point.
  - IEEE–endorsed standards contributed to growth because antenna and receivers had to interoperate.
  - Growth in ubiquity encouraged more follow–on complementary uses.

- *Sponsors attempted to profit.*
  - By selling equipment.
  - By taking a slice of access revenue.
  - Policy enabled considerable experimentation.
Experiments early by leading firms & entrepreneurs.
- Smart phone designs from Microsoft and many others.
- Limited adoption in US, more outside US.

Unexpected emergence of the iPhone in 2007.
- One touch movement: a leapfrog in functionality.
- Bringing the iPod installed base + phone + pictures.
- Apple has a core of fanatical and loyal buyers → sales.

Ecosystem develops for mass market iPhone.
- Tries to dictate standards (e.g., Flash). Anger.
- Apple profits in App store.
Android continued
Androidは続けた

- **Google looks for competitive response to Apple.**
  - Strategic issue: deter proprietary standards.
  - Buys Android OS, redeployes it with open APIs to invite partnerships. Allows variance in implementation.
  - App store → ecosystem, Android profits in app store.

- **Growth due to less restriction and lower price**
  - Not as profitable as iPhone. Growth through variety.

- **Change in competitive landscape?**
  - MS almost gone, Symbian declines, Blackberry in trouble.
  - Tablet competition? Amazon, Apple, B&N, Sony.
  - Many other firms involved (Nokia, MS, HP, Samsung, etc.)
Observations about Android

- **Experimentation propelled by software firms.**
  - Through most of the 2000s Microsoft did not have a profitable mobile segment. Usage case presumed strong interplay with PC. Presumed pieces came from many players, organized by Microsoft.

- **Breakthrough with an unexpected use.**
  - Music + phone + pictures + finger navigation = leapfrog functionality for the mass market
  - Required making equipment at a low cost price point.
  - Proprietary standards contributed to the virtual cycle because copyright holders wanted IP for music.

- **Android a competitive response**
  - Strategic benefits towards openness pay off for Google.
  - Revenue in app store too.
  - Many others want open, such as Amazon, and most entrepreneurs and their VCs....
Summary of lessons

レッスンのまとめ

- **Experimentation can continue for some time**
  - Variety of strategic choices over time.
  - Usage case propels activity, search for value.
  - Often unprofitable for extended periods.
  - Standard/platforms vary with experimentation.

- **Breakthrough often unexpected.**
  - Leapfrog functionality or other catalyst, such as a new design with wide appeal.
  - Important: Applications develop → ecosystem.
    - Especially developer behavior → choose among platforms.

- **Sponsors attempt to profit.**
  - Sell equipment, gain revenue within given platform.
  - Designers, sponsors, close allies typically benefit more.
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What role do standards play?
基準は、どのような役割を果たすのですか？

- **Facilitate inter-networking.**
  - Data in one location shared w/many other locations.
  - Contribute to low costs for Internet applications.
  - Many standards facilitate routinized procedure for sharing data.

- **Facilitate network effect.**
  - Value of a standard rises w/participation.
  - Standards facilitate interoperability, services build on top of that interoperability, and these services display network effects.

- **Platforms reduce transactions costs**
  - Between complements components that work together…
  - Between users and application developers.
Multi-sided platforms play a role
マルチサイドプラットフォームの役割を果たす

- A platform: Reconfigurable base of compatible components on which participants build applications.
  - Multisided: Many distinct group of participants
    - Users, advertisers, content providers, app developers, etc.
  - Platform accommodates each group.
  - Often subsidy/cost for one group & revenue from another.
    - Ex: Newspaper, Google search, Apple iPhone.

- Platform serves economic function, as intermediary between groups with different interests.
  - Which supports mix&match.
    - Among antennae and receivers in Wi-fi.
    - Among apps, handsets, and users in Android.
Leadership affiliated w/designing computer hardware and/or software that mediates activities among participants.

- Many firms aspire to leadership role.
  - MS, IBM, Oracle, Google, Apple, Amazon, etc.
  - Windows, web services, search, mobile devices.

What role entails

  - Lower the transactions costs for partners.
- Timing mismatch of costs/revenues: Expend costs in design/operations. Gain revenue later.
Variety of platform leadership

Both profit or not for profit forms
- NFP: Industry consortia, SSOs, Open source org.

Important aspects: Restrictions/limitations on participation and release of information.
- Open: make all info available. No limits on use.
- Differ on interconnection. Open has no limit.
- Pricing at zero? Maybe in open source, but not necessarily.
  - Confusion about free/libre.

Platform governance shapes several margins of potential platform value.
- Not only price. Many strategic choices, often taken at moments when payoffs quite uncertain.
- Particularly important decision: what technical information developers know about present and future plans for the platform.
Analysis of standards needs to frame issues in terms of platforms.
- Platforms are an organizational form for market oriented users & firms, designed to diffuse standards in manner that serves platform sponsor.
- Literature stresses private strategic purposes.

Analysis should focus on participation in and adoption of platforms.
- By users, developers, advertisers.
- Shift in emphasis. Places less emphasis on engineering function, more on economic decision making and economic contribution of platform.

Important policy question: regulatory and legal rules for how platform leader treats participants.
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Standards and platforms are rarely static.
- Most are embedded in products that continually upgraded, etc. Standards change.
- Platforms add value over time.

Platforms shapes firm competition.
- One ecosystem may compete with another.
- Competition evolves as both platforms evolve.

Policies shape the evolution of competition
- By shaping firm incentives, and rules for platform.
- By shaping the margins on which firms compete
Coordination and Learning
協調と学習

- **Participants gain from involvement w/platform.**
  - In comparison to unilateral action.
  - Potential bargaining issues or misalignment of cost/benefit.
    - Ex: Bar code scanner useful if all cooperated. Bar code almost collapsed b/c little profitability in first decade.
- **Platforms become focal for learning and experimentation.**
  - A societal trade-off: Concentrate learning with fewer platforms, but more platforms nurtures variety & competition.
Key questions for policy analysis
政策分析のためのキーの質問

- *If platforms add value w/o limit...*
  - Existing platforms grow, but there are inherent limits on numbers of platforms.
  - Backward compatibility tends to limit growth of any specific platform (eventually).

- *Platforms competition incents platform differentiation.*
  - Nurture survival of multiple platforms in market.
  - On what margins do platforms compete?
    - Generally, not on all margins.
Multi-homing: users and/or firms maintain viable economic relationships w/multiple platforms.
- More MH can help sustain more platforms competition.
- Absence of MH can contribute to monopoly of platform.
- Many examples of where it matters: Bar codes, Battle of the Bund, Internet BB, Smartphones

Converter: Technical bridge b/w platforms
- Can change size of market, alter evolution of platforms.
- Examples: US email systems in 1987; Resolution of 56K modem fight.

Multiple pathways to platform development.
- Many ways for market to evolve and achieve economies of scale.
Symptoms of experimentation?
実験の症状？

- *Early stage quandary: what design/operation most valuable?*
  - Many usage cases for early adopters do not imply usage case for mass market adopters.
  - Public actors can facilitate experimentation.
    - At early moments, pursuit of variety of approaches.

- *Quandary: Is market working? Look for symptoms of health.*
  - Economic experiments, entrepreneurial entrants, vigorous standards competition, absence of unilateral bargaining.
Symptoms of virtuous cycles?
好循環の症状？

- **Quandary: Are platforms growing? Hints of virtuous cycles.**
  - One participant’s action raises value of participation in another type of participant. E.g., more users → more apps → more ads.
  - E.g., IBM PCs in early 80s, Apple iPhone in ’07.

- **Developers are focal for analysis.**
  - As symptom of success/failure of virtuous cycle.
  - Difficult management challenge for many platform sponsors.
Summary

A complete analysis requires analysis of change over time, (often) at level of platform & (sometimes) at level of firm.

Multiple pathways for platform evolution to take. Firms usually have preferences about which path the market takes, but policy may not have strong preferences.

There are a variety of intuitive concepts to analyze evolution as it occurs.
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Policy when standards are not static
標準は静的ではない政策

- *Private orderings can (& do) resolve issues.*
  - If the conditions are right.
    - Often a few large lead organizers w/incentives to lead.
    - Many producers of complementary goods.
  - If “joining” a coalition is voluntary, hard to design standards that makes everyone happy.
    - Bargaining and negotiation inevitable.

- *Standard more than just endorsement of a design.*
  - Changing w/technological possibilities, firm needs.
  - Institutions to support, upgrade, test.
    - Firm interest change over time.

- *Even after a breakthrough, there will be many changes in a design.*
  - This usually creates more value for all participants.
  - Implies policy cannot be static.
Disclosure raises many issues.

- Disclosure rules in standards committees shapes whether firms participate.
  - Sometimes interoperability is why firms participate – they want assurances that all the complementary equipment works together.
- Firms pay close attention the disclosure rules.
  - Big difference between open and proprietary platforms when IP is at stake.
  - Open platforms will elicit disclosure from private firms, but only if rules are tightly written.

Who is favored by disclosure rules?

- Important open question for policy.
Summary of broad policy lessons

Generally when to consider intervening.
- When one platform better than none. When intervention can avert bargaining failure.
- When public actor hold statutory authority over key input into platform components.
- When intervention facilitates entry and/or experiments.

Generally when not to intervene.
- When private orderings can manage platform development.
- When platform competition shows symptoms of vigor.
- When use case remains uncertain, but private initiatives continue to experiment and compete.

Government mandates for designs only rarely will work better than market processes.
- Due to leadership failures or statutory requirements.
ご清聴ありがとうございました
ご質問は？