Impact of Wireless: Market and Industry Performance

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How does this work?

What are the big ideas?

Which policies?
Approaches that Work

Who has say?
Jurisdiction and

What can this do?
Applications and

What works?
Crossfire and Cases

How is it paid for?
Financing Wireless
How does this work?

Which policies?
Approaches that Work

What can this do?
Applications and

How is it paid for?
Financing Wireless

What are the big ideas?

Who has say?
Jurisdiction and

What works?
Crossfire and Cases
The first dropped call was experienced by...

a. Ronald Reagan  
b. John Kennedy  
c. Winston Churchill  
d. Czar of Russia
What do you think about when you think of wireless?

*Rank the following roles or benefits of wireless services in order of importance for your state. Use “1” to represent the most important and “6” to represent the least important.*

<table>
<thead>
<tr>
<th>Item</th>
<th>Rank</th>
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<tbody>
<tr>
<td>Emergency and public safety services in your state</td>
<td></td>
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<tr>
<td>Part of a health care solution for your state</td>
<td></td>
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<tr>
<td>Part of an education solution for your state</td>
<td></td>
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<tr>
<td>Tool for state business and economic development</td>
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<tr>
<td>Source of tax revenue for state and local coffers</td>
<td></td>
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<tr>
<td>Means of personal communication</td>
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What has mattered?

*Policy makers have tried many things to ensure efficient and effective wireless services. Which two from the list below do you think have been most effective?*

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<tr>
<td>Regulating service quality and billing</td>
<td></td>
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<tr>
<td>Carefully choosing who could provide service</td>
<td></td>
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<tr>
<td>Setting minimum standards for network deployment</td>
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<tr>
<td>Issuing licenses to a large number of service providers</td>
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<tr>
<td>Letting the industry compete on technology choices</td>
<td></td>
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<tr>
<td>Raising taxes</td>
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</table>
Performance

Service coverage and competition
Are We Being Served?

U.S. Population and Geographic Coverage by Mobile Operators, 2009

Voice

Broadband

Population is well covered, but there are gaps in largely unpopulated areas

Source: FCC, 2009

Public Utility Research Center
UNIVERSITY of FLORIDA

“Leadership in Infrastructure Policy”
Do We Have Competition?

96% of population has 4 or more voice providers available.

76% of population has 3 or more broadband providers.

Source: FCC, 2009

Public Utility Research Center
UNIVERSITY of FLORIDA

“Leadership in Infrastructure Policy”

www.purc.ufl.edu
Do we have effective competition?

Mobile Competition in Highest Ranking Countries, 2009

- U.S. scores much higher than other countries in market competition
- U.S. is only OECD country not considered highly concentrated per DOJ and FTC guidelines

Diffusion of Market Shares

\( \frac{1}{HHI \times 1000} \)

Source: Bank of America Merrill Lynch

"Leadership in Infrastructure Policy"
Does Market Concentration Lead to Market Power?

Market Concentration and Penetration, 2008

Higher market concentration does not appear to result in supply restriction

Source: FCC, 2009
Performance

Value for Money
Do We have Value for Money?
Prices and Minutes of Use for Mobile for the Top 10 Countries, 2009

Low prices and high usage indicate U.S. consumers are getting most bang for their buck

Source: Bank of America Merrill Lynch
www.purc.ufl.edu
Are Prices Increasing or Decreasing?

Average revenue per minute has steadily declined over the years.

Source: FCC, 2009

www.purc.ufl.edu
Performance

Innovation
Are We Innovating with Networks?

Broadband Coverage Expansion for Top Four Companies, 2008-2009

Coverage grew 14% in single year

Source: FCC, 2009
Are We Innovating with Phones?

New Phone Models Introduced in U.S., 2008-2009

65 new phone models introduced 2008-2009

Source: FCC, 2009
Examples of Innovations

• Customized and Simplified Pricing
  ▪ Menus of Options; Flat Rate Pricing; Sprint’s Solution to Overages; Nationwide; International

• Intermodal features
  ▪ Unified GUls; e.g., Vodafone live!, Microsoft OS, Google wireless search
  ▪ Interoperable features; e.g., IM, SMS

• Personalized mobile services; e.g., Qualcomm’s MediaFlo, ESPN wireless, personal safety applications like uLocate
Impacts of Regulation

Consumer Protection
Customer Protection Attempt

• In 2004, California required
  ▪ Detailed service agreements
  ▪ Specific formatting and wording on bills (for clarity)
  ▪ Late fee thresholds
  ▪ Separate listing of all federal, state, and local taxes, surcharges and fees

Effects of California Regulation

• Increased billing costs because carriers had to create billing system just for California

• Increased app costs because of authorization requirements

• Led to revision by CPUC (the regulator)

CPUC 2006

• Formed fraud unit within regulator
• Helped launch a state effort to educate consumers

• At the end of the day, the best regulator was:
  ▪ Normal fraud prevention
  ▪ An educated consumer

Impacts of Regulation

Control of Services and Markets
Basic Lessons

• Regulatory delays cost customers and the industry

• Competition has been the most important driver of industry development
  - Market and price performance
  - Dynamics of Competition
Lost Opportunities

• Time from invention to service – about 20 years
• Time from limited licensing to embracing of competitive entry – about 15 years
• Regulatory delays meant Europeans (Nordic countries) beat the inventor (the U.S.) to market
Millions of Customers or Households

FCC Issues First Cellular Licenses

MCI Sells To McCaw

McCaw Sells To AT&T

Federal Deregulation

FCC Licenses PCS

Key Policies Embracing Competition

Customers

Households

Year


0 50 100 150 200 250 300

Millions of Customers or Households
Unfounded Regulatory Worries

- 1970s-80s: Concern that no one would want to provide service, so tried to micromanage
  - Bureaucratic licensing process overwhelmed FCC
- 1990s: Concern digital cellular providers might not build networks fast enough or far enough, so licenses required build-out
  - Competition pushed build-out faster than required
Mobile radio

• Push to talk in 1920s-30s
  ▪ Car phone
  ▪ No handoff. 75 mile limit.
  ▪ Motorola -- world's first hand-held portable two-way radio system, the Handie-Talkie.
Early Indications of Wireless Competitive Impact

• 1915 – AT&T decides to not pursue cellular because of wireline monopoly

• Carterphone
  ▪ Customer desire to integrate wireline and wireless

• Above 890 Decision
  ▪ Opens door for MCI to compete with AT&T
From radio to cellular

• Limited airwave space
  ➤ New York City in 1981 (pre-cellular) mobile phone system could handle only 700 customers

• AT&T asks for more spectrum, but FCC declines
Inventing cellular

• AT&T Bell Labs developed cellular technology in 1947
• By early 1970s, technology was ready for commercial application
First cellular calls

• First private cell call made by Motorola’s Martin Cooper in 1973
  ▪ DynaTAC or The Brick
• First commercial cell call made by Ameritech’s Bob Barnett from Soldier Field in Chicago to Alexander Graham Bell’s grandson in Germany, 1983

Source: Rico Shen
Getting permission

• AT&T needed a license to use the radio spectrum for cellular
  ▪ Sought FCC permission in 1950s and 1960s, but FCC said, “No”
• Finally in 1970s, FCC authorizes
  ▪ AT&T test in Newark and Philadelphia
  ▪ Trials in Chicago (AT&T) and Baltimore (American Radio Telephone Service)
Getting started

• Because of regulatory approval delays, Nordic countries begin using first generation cellular in 1981
• FCC authorized cellular service for U.S. in 1982
  ▪ But licensing was bureaucratic, slow and awkward
Summary of Regulatory Delays

- FCC says “no” to cellular several times
- FCC reconsidered in 1970s
- So after about 15 years, FCC decides to license cellular
- Breakup: AT&T gives away cellular
FCC’s First Cellular Licenses

• Duopoly
  ▪ Wireline licenses issued and service begins
  ▪ Non-wireline clumsy and long

• Non-wireline
  ▪ Comparative hearings process
  ▪ Lottery
Comparative hearings

• Trying to determine who is a good provider
• How much paper was required to apply for the first FCC cellular licenses?
  ▪ One company (Graphic Scanning) used two semi trucks to deliver its applications.
    • Graphic Scanning applied for a license in each of the first 30 markets
• FCC gets arbitrary. Then chooses lottery.
Finally: Policy makers choose competition

- FCC decides to use auctions to license spectrum
- Federal deregulation in early 1990s
- FCC auctions PSC spectrum in mid 1990s
- Service grows
Impacts of Regulation

Control of Technologies
Conventional Wisdom

• “European regulation gave customers more choices and better service”

• What was European regulation?
  ▪ Single technology (GSM) for all mobile operators
  ▪ No locked phones

• Contrast of US deregulation
  ▪ Allowed multiple technologies and locked phones
Reality: Technology Choice

• Technology competition results in
  ▪ Faster network expansion for voice in the U.S.
  ▪ Faster network expansion for broadband worldwide
Reality: Locked Phones

- Locked phones
  - Greatest innovations have came in locked phones (e.g., iPhone, Android)
  - Customers can purchase unlocked phones, but most prefer to purchase locked
  - U.S. is a leader in variety of phones offered
Impact of Taxes
Briefly on Taxes

• Other speakers will cover this topic, but…
• Conventional Wisdom
  ▪ Corporations should pay their fair share of taxes
• Reality
  ▪ People pay taxes
  ▪ Taxes always lower economic activity (direct effect)