

# Emerging Market Structure



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# The Fundamentals

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**REASONABLE EXPECTATION OF MARKET STRUCTURE**

# How Many is Many?

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- One of biggest problems of past telecoms policy is unreasonable expectations of market structure:
  - At one extreme: “A Thousand Broadband Flowers are Blooming...”
  - At the other: “Cozy duopoly” and you need to have a minimum of five to seven networks for effective competition
- PHOENIX CENTER POLICY PAPER NO. 21, *Competition After Unbundling: Entry, Industry Structure and Convergence*, (July 2005).
  - <http://www.phoenix-center.org/pcpp/PCPP21Final.pdf>
- There exist an equilibrium number of firms in an industry ( $N^*$ ).
- $N^*$  is related to:
  - Size of the market (bigger market, bigger  $N$ );
  - Sunk Entry Costs (higher cost, fewer  $N$ );
  - Degree of Price Competition (more competition, fewer  $N$ ).

# Equilibrium Industry Structure

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$$N^* = \sqrt{\frac{\phi S}{E}}$$

$N^*$  = Equilibrium Number of Firms

$S$  = Market Size (+)

$\phi$  = Index of Weakness of Price Competition (+)

$E$  = Sunk Entry Costs (-)

- So what does this mean?
- Markets are going to be highly concentrated (although there may be high cost areas where  $N^* = 1$  or, worse,  $N^* < 0$ ).
- However, high concentration is not *per se* indication of poor market performance, particularly in markets characterized by high fixed and sunk costs.
- Concentration is an equilibrium – can't do much about it.
- Need to rethink cost/benefits of regulation. Specifically,
  - Make sure firms invest and compete, rather than engage in strategic unilateral anticompetitive conduct, collude, or worse yet, exit the market...

# Understanding the Basic Economics of Entry



- If goal is to promote “universal broadband”, then we need to understand the economics of entry and investment decision:
  - Post-Entry Profit (d), minus
  - Inherent (exogenous) Entry Costs (x), minus
  - Regulation-Induced Entry Costs (endogenous) (e), plus any
  - Spillover Effects (s) – i.e., when some firms can enter more cheaply than others
  - Must be greater than Zero
  - $D - X - E + S > 0$
- Not much we can do about exogenous costs, but policy can certainly do some things to lower endogenous costs and to maximize spillover effects.

# The Problem of Ubiquity

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**REASONABLE EXPECTATIONS OF DEPLOYMENT AND ADOPTION**

# Equilibrium Industry Structure

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$$N^* = \sqrt{\frac{\phi S}{E}}$$

- FCC Broadband Task Force understands this formula has made some important findings:
  - First, competitive intensity will depend on different end-user broadband demand scenarios (OBI September 29, 2009 Slide Presentation at 39);
  - Why? Because the incremental cost to universal availability varies significantly depending on speeds required (OBI September 29, 2009 Slide Presentation at 45 and n. 1).
    - ✦ Incremental cost to build one 3-10 Mbps network to 7-10 million households is approximately \$35 billion.
    - ✦ Incremental cost to build one 100+ Mbps network to 111-116 households is approximately \$350 billion.
- What is realistic and attainable (and are we comfortable with the results)?

# Economic and Demand-Side Drivers

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**HOW DO WE ENCOURAGE PEOPLE TO PURCHASE AND  
USE BROADBAND?**



# Economic and Demand-Side Drivers

- *The Demographic and Economic Drivers of Broadband Adoption in the United States*, PHOENIX CENTER POLICY PAPER NO. 31 (November 2007).
  - <http://www.phoenix-center.org/pcpp/PCPP31Final.pdf>
- 91% of the variation in broadband adoption has NOTHING to do with telecom policy.
- Instead, broadband adoption driven by demographic and economic conditions, such as household income, education, age, immigration and, most significantly, income inequality.
- For rural broadband, density remains a major problem.
- What do you do about people who don't want broadband for personal reasons?

# Supply-Side Drivers

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**WHAT IS UBIQUITOUS BROADBAND GOING TO COST?**

**(AND HOW DO WE PAY FOR IT?)**

# Supply-Side Ideas

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- Let's repeat the obvious just to re-emphasize the point:
  - *Building and operating networks is a really, really, expensive proposition...*
    - ✦ Plant Costs
    - ✦ Non-Plant Costs often exceed Cap Ex costs
- Exacerbating problem are “carrier of last resort” obligations.
  - *“Competition without change...”*
- Policy should “rig the game for entry/investment” by removing “policy relevant barriers to entry...”
  - i.e., reduce entry costs where possible
- If FCC can figure out policies that mitigate costs of entry, then amount required for subsidy should also decrease.

# Supply-Side Ideas

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- Intercarrier Compensation/USF Reform
  - *Do High Call Termination Rates Deter Broadband Deployment?* PHOENIX CENTER POLICY BULLETIN NO. 22 (October 2008).
    - ✦ <http://www.phoenix-center.org/PolicyBulletin/PCPB22Final.pdf>
- Franchise Reform
  - (Never did a clean resolution of this issue)
  - Key principle here is that ***firms should be able to sell anything they want on the network without restriction***
  - Need to put value into the network and maximize business case
    - ✦ <http://www.phoenix-center.org/rt2.html>
- Pole Attachments
  - *The Pricing of Pole Attachments: Implications and Recommendations*, PHOENIX CENTER POLICY PAPER NO. 34 (December 2008).
    - ✦ <http://www.phoenix-center.org/pcpp/PCPP34Final.pdf>
- Other ideas?
  - Remove spectrum caps, tower siting, secondary market for spectrum, digging up streets, etc.

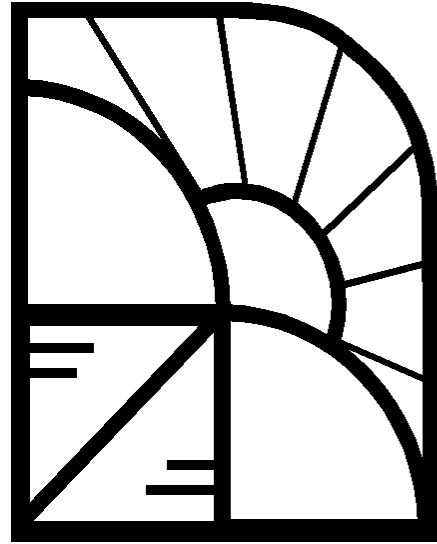
# Supply-Side Ideas

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- **The big enchilada: Net Neutrality**
- **Phoenix Center theoretical and empirical research shows that network neutrality rules will likely lead to increased broadband prices, lower deployment and higher industry concentration.**
  - *Expanding the Digital Divide: Network Management Regulations and the Size of Providers*, PHOENIX CENTER POLICY BULLETIN No. 23 (October 2009)(<http://www.phoenix-center.org/PolicyBulletin/PCPB23Final.pdf>).
  - *The Welfare Impacts of Broadband Network Management: Can Broadband Service Providers be Trusted?* PHOENIX CENTER POLICY PAPER NO. 32 (March 2008)(<http://www.phoenix-center.org/pcpp/PCPP32Final.pdf>).
  - *Network Neutrality and Foreclosing Market Exchange*, 1 INT. J. MANAGEMENT AND NETWORK ECONOMICS 160 (2009).
  - *A Policy And Economic Exploration of Wireless Carterfone Regulation*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 647 (2009).
  - *Using Auction Results to Forecast the Impact of Wireless Carterfone Regulation on Wireless Networks*, PHOENIX CENTER POLICY BULLETIN NO. 20 (Second Edition) (May 2008)(<http://www.phoenix-center.org/PolicyBulletin/PCPB20Final2ndEdition.pdf>).
  - *Network Neutrality and Foreclosing Market Exchange: A Transaction Cost Analysis*, PHOENIX CENTER POLICY PAPER NO. 28 (March 2007)(<http://www.phoenix-center.org/pcpp/PCPP28Final.pdf>).
  - *The Efficiency Risk of Network Neutrality Rules*, PHOENIX CENTER POLICY PAPER NO. 16 (May 2006)(<http://www.phoenix-center.org/PolicyBulletin/PCPB16Final.pdf>).
  - *The Burden of Network Neutrality Mandates on Rural Broadband Deployment*, PHOENIX CENTER POLICY PAPER NO. 25 (July 2006)(<http://www.phoenix-center.org/pcpp/PCPP25Final.pdf>).
  - *Network Neutrality and Industry Structure*, 29 HASTINGS COMMUNICATIONS AND ENTERTAINMENT LAW JOURNAL 149 (2007)
- **Big Inconsistency Here: You can't say you want ubiquitous coverage at affordable prices and then enact policies that will raise deployment costs and restrict profits.**
- **So let's just be honest and start figuring out the size of the subsidy.**

# Some Concluding Thoughts...

- National Broadband Plan provides a unique opportunity to take a holistic approach to broadband deployment and adoption.
  - This is a GOOD THING.
  - Broadband has transformative social effects.
- Arguments that we should have 100% broadband and, worse, 100% adoption at 100 Mb are rhetoric, not reality.
- Conversely, nobody buys the “A Thousand Broadband Flowers are Blooming” argument either.
- Similarly, expecting that spending \$7.2 billion and a National Broadband Plan will somehow drastically boost our OECD ranking of per capita broadband adoption will lead to disappointment because of problems in the way the OECD calculates their ranks.
  - “Broadband Nirvana” Problem
  - *The Broadband Performance Index: A Policy-Relevant Method of Comparing Broadband Adoption Among Countries*, PHOENIX CENTER POLICY PAPER NO. 29 (July 2007).
    - ✦ <http://www.phoenix-center.org/pcpp/PCPP29Final.pdf>
  - *The Broadband Efficiency Index: What Really Drives Broadband Adoption Across the OECD?* PHOENIX CENTER POLICY PAPER NO. 33 (May 2008).
    - ✦ <http://www.phoenix-center.org/pcpp/PCPP33Final.pdf>
- What we need to do is to establish realistic benchmark targets based on the social value assigned to various Internet access technology (data intensive process but worth it).
  - *The Broadband Adoption Index: Improving Measurements and Comparisons of Broadband Deployment and Adoption*, Phoenix Center Policy Paper No. 36 (July 2009).
    - ✦ <http://www.phoenix-center.org/bai.html>



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