Broadband Policy: Competition and Investment

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Current Broadband Policy Issues

1. Network Neutrality
2. Potential employment effects of broadband deployment.
3. Inter-platform vs. intra-platform competition.
4. The urban-rural “digital divide” in broadband access and use.
5. Providing incentives for investment in new higher-speed networks.

I concentrate primarily on 3-5 in this presentation.

Competition Now Focuses on the “Triple Play”: Voice, Video, and Data Services

- Substantial customer switching costs lead to very large marketing costs: new voice/data carriers often spend 20-30% of revenues on marketing simply to maintain their customer base

- All but a few geographical markets now have at least three major competitors, the ILEC, the cable company, and one unaffiliated mobile wireless carrier, and each now offers the triple play in at least some form

- Further facilities-based entry into standalone voice service or even voice/data services is not likely to be successful because of the large marketing costs

- To amortize the cost of new broadband networks, carriers must offer video services as part of the triple-play

Broadband Competition from New Entry

- Additional competition can come from:
  - Entry of new fixed-wire carriers with existing or more advanced technology (FTTH)
  - Entry of new wireless carriers
  - Expansion of existing wireless carriers through the deployment of improved technology (4G)
  - Municipal WiFi or fiber-optic networks
  - Network sharing --"Intra-platform competition"

Entry of New Broadband Carriers – Inter-Platform Competition

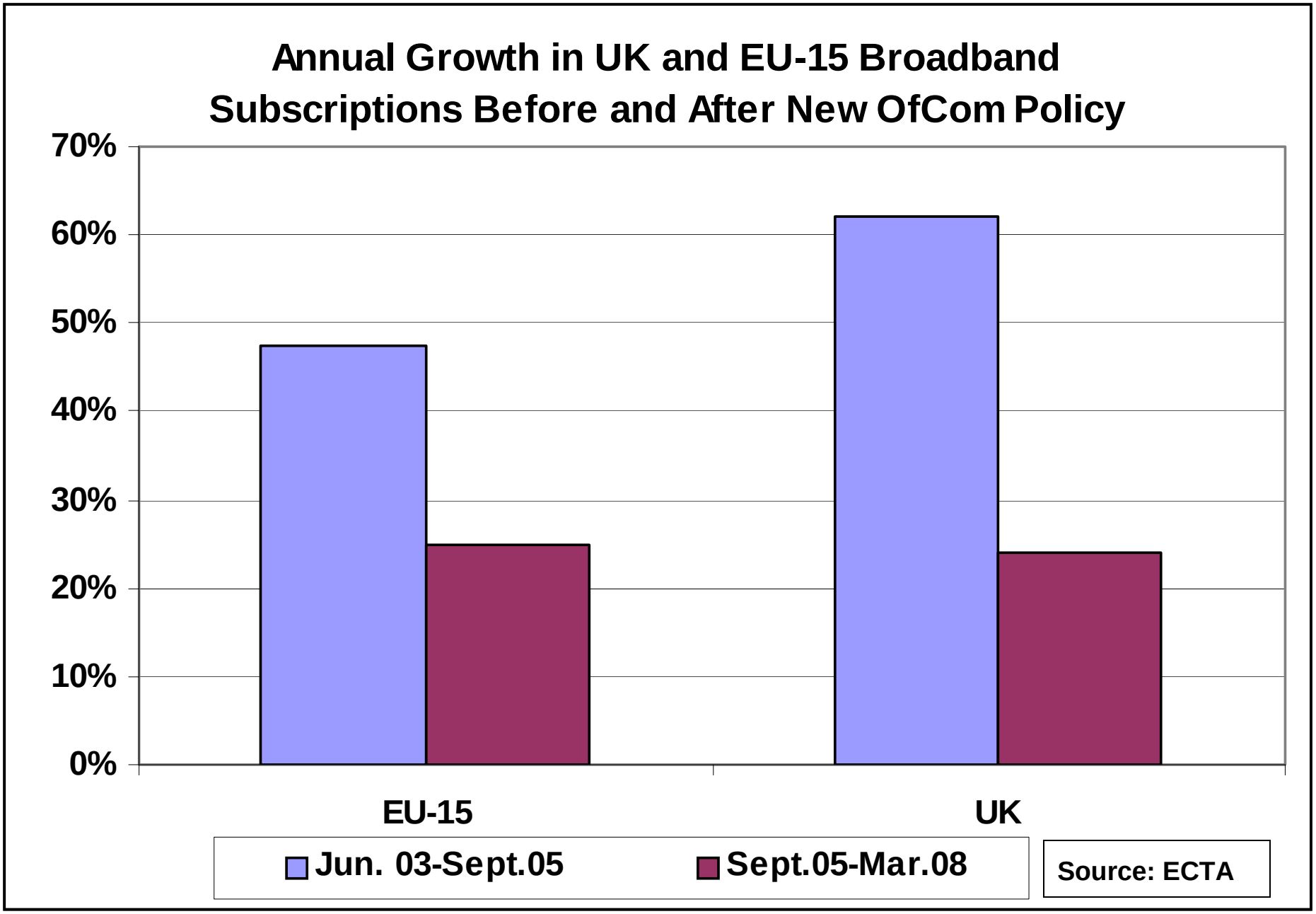
- A third fixed-wire network is unlikely to develop unless it is provided by electric utilities (BPL) or municipal governments
- Municipalities' Wi-Fi gambits – San Francisco, Philadelphia, Chicago, Houston, etc. – have not been successful thus far because private investors have lost interest (and, presumably capital).
- Municipal fiber networks are much more expensive and thus even more unlikely to succeed (Municipalities in Sweden have invested more than $2 billion to generate 500,000 subscribers)
- The most promising potential sources of new *platform* competition are now commercial mobile wireless services (4G) and WiMax (Sprint-Clearwire).

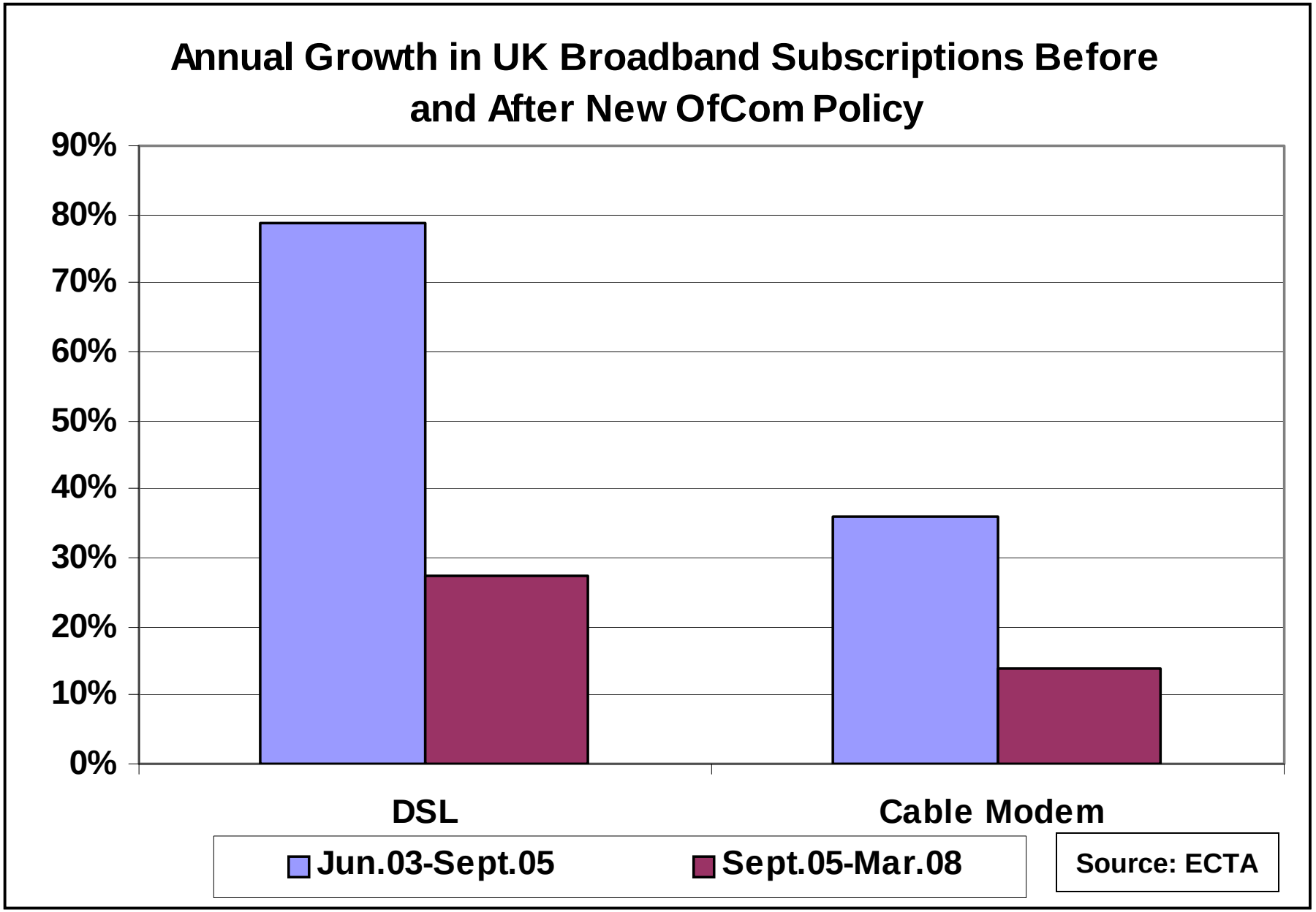
Intra-platform Competition?

- Econometric studies fail to find any lasting effect of network unbundling on broadband penetration.

- Aron-Burnstein (2003), Distaso, *et.al.* (2004), Deni and Gruber (2005), Wallsten (2006) have found that interplatform competition is much more important than intra-platform competition in driving broadband penetration

- Best recent evidence comes from the United Kingdom, which introduced a strengthened unbundling policy and functional separation in late 2005


Annual Growth in UK and EU-15 Broadband Subscriptions Before and After New OfCom Policy
70%
60%
50%
40%
30%
20%
10%
0%
EU-15
UK
Jun. 03-Sept.05
Sept.05-Mar.08
Source: ECTA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DSL
Cable Modem
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Source: ECTA

The Effect of Competition on Prices

- Quality improvements in most services make inter-temporal price comparisons difficult

- Digital video offerings have expanded substantially and now include HD

- Broadband download speeds have increased substantially:

  – **Cable Modems: from 1.5-3.0Mbs at $30-$40/mo. in 2003 to 8.0-15.0 Mbs at $40-$50/mo. in 2008**

  – **DSL: from 0.256-1.5 Mbs at $27-$50/ mo. in 2003 to 6.0-7.0 Mbs at $35-$42/ mo. in 2008**

  – **Uverse offered 10 Mbs at $100/mo. in 2008**

  – **FIOS offered 10-50 Mbs at $43-$140/mo. in 2008**

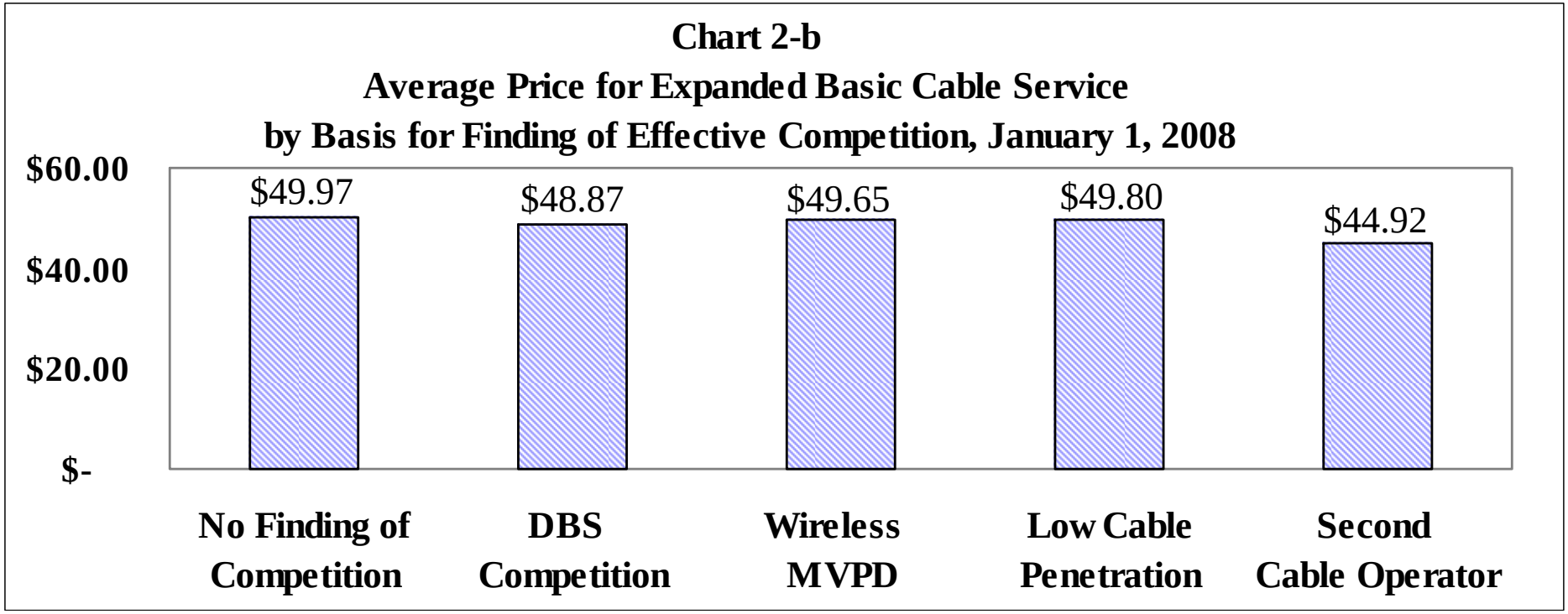
Example of Comcast ARPUs

	2003	2004	2005	2006	2007	2008(e)
			($/Month)			
Analog Video	46.60	48.79	51.33	54.94	56.8	58.36
Analog + Digital Video	76.00	78.49	80.51	85.03	88.56	91.77
Broadband	42.38	42.41	40.48	41.35	40.74	39.40
Telephony	48.99	47.38	46.06	44.6	41.67	39.20

Source: MorganStanley

Fixed-Wire Competition Has Substantial Impact on Video Prices

- Recent FCC Cable Prices Report (2009) shows substantial effect of second fixed-wire video service in a market:



FCC's Regression Estimates of Determinants of Expanded Basic Cable Rates, 2006-08

Dependent Variable (Log Price)	Estimated Coefficient	t-Statistic
Log HHI	0.072**	2.26
Log Income	0.026**	2.31
Log National Subscribers	0.030***	14.58
Log Capacity	0.071***	3.22
Log Density	**0**	**0.87**
Log Density Squared	**0**	**0.69**
Overbuild Competition	**-0.141*** **	**10.89**
Local-into-Local	0.034***	4.43
Vertical Affiliation	-0.059***	7.01
Log Channels	0.130***	4.06
2007	0.051***	9.08
2008	0.100***	16.18
Constant	1.834***	4.91
Observations	1846	---
Centered R-Squared	0.47	---
Root Mean Squared Error	0.099	---

Narrowing the Urban-Rural Digital Divide -- Subsidizing Entry in Rural Areas

- Considerable policy discussion focuses on subsidizing rural broadband to overcome a “digital divide”

- Unfortunately, there is no evidence that the existing $4 billion “high-cost universal service” subsidies reduce traditional voice telephone rates or increase telephone subscriptions in rural areas.

- Crandall (2008) finds that subsidized rural Iowa carriers do not offer lower rates than unsubsidized rural Iowa carriers.

An Example: The Effect of Rural High-Cost Subsidies and Telephone Rates in Iowa

Communities	Population Density	Average Telephone Rate ($/Mo.)	Average Subsidy per Line ($/Mo.)	Average Telephone Rate Plus Subsidy ($/Mo.)
Rural With High-Cost Subsidies	50	21.22	19.40	40.62
Rural With Limited High-Cost Subsidies	35	25.91	1.63	27.54
Urban	349	25.10	0.04	25.14

Source: Crandall, RNE, forthcoming

Narrowing the Urban-Rural Digital Divide -- Subsidizing Entry in Rural Areas (II)

- Lower broadband penetration in U.S. rural areas may reflect lower demand for the service, not simply the effects of population density on the economics of deploying it.

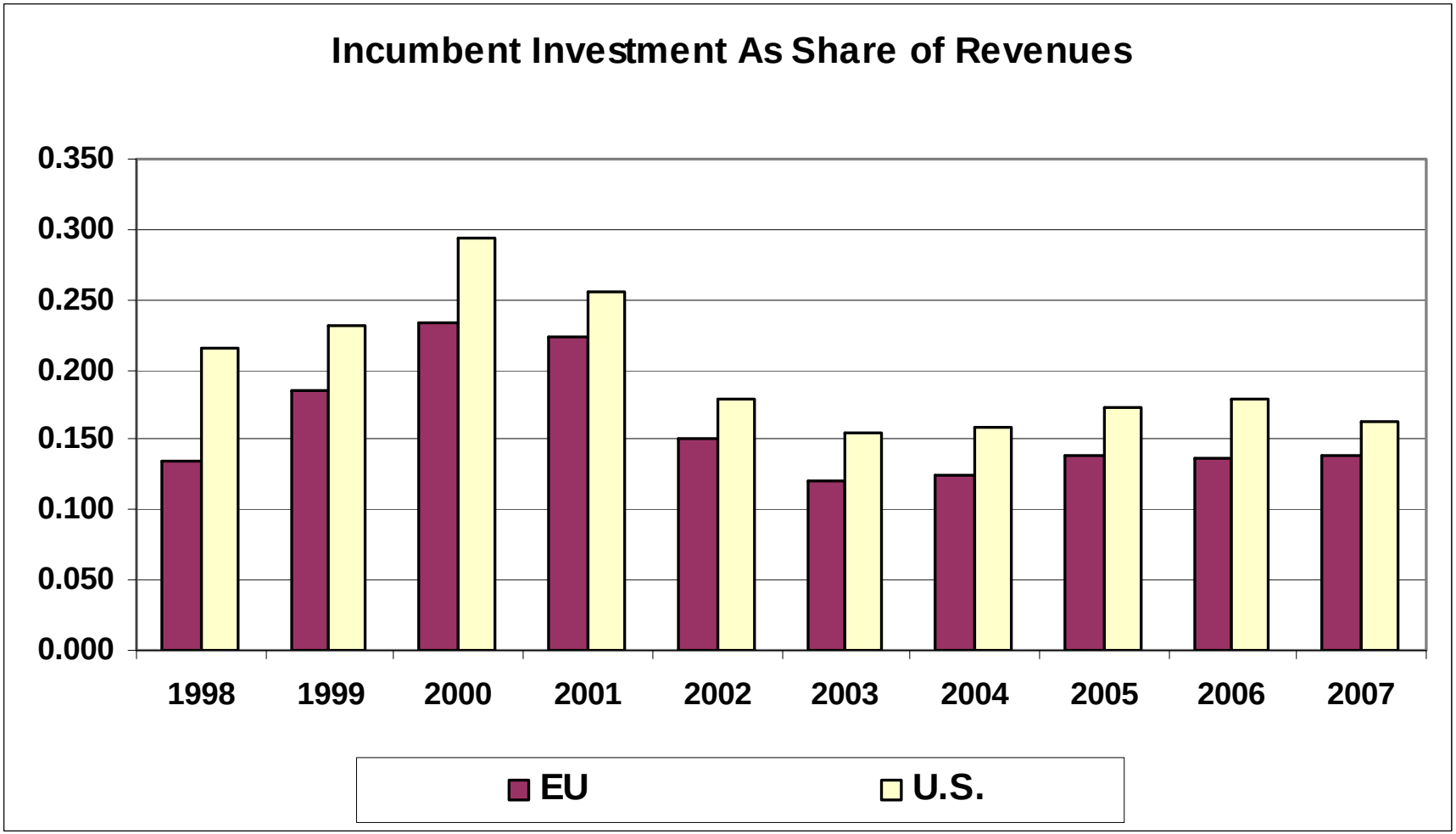
- Adding broadband to the menu of subsidized U.S. services may simply increase costs without commensurate benefits.

- If rural subsidies are provided, they should be directed solely at initial construction costs in rural areas still lacking broadband infrastructure. (Goolsbee, 2002)

Rivalry Drives Quality Improvements Which, in Turn, Require Network Investment

- Increasing fixed-wire broadband speed is very expensive if it requires large deployments of fiber in the last mile
- Verizon and AT&T are spending heavily on FTTH and FTTN networks that deliver much greater speed, but analysts still question the economic viability of these network investments, given current demand forecasts
- Recent U.S. policy has moved away from mandated network unbundling in order to stimulate investment; EU is moving towards a more aggressive policy of unbundling and functional (structural?) separation
- Waverman, et.al. (2007); Crandall, Ingraham, & Singer (2004) have shown that network unbundling reduces investment in competitive platforms

Heavily Regulated EU-15 Incumbents Invest Much Less than U.S. Incumbents



Source: Company Financial Reports

But Less-Regulated EU Cable Companies Invest About As Much As U.S. Cable Companies