BEFORE THE FEDERAL COMMUNICATIONS COMMISSION

In the Matter of	**)**	
A National Broadband Plan for Our Future	**)**	**GN Docket No. 09-51**

Comments of the Consumer Federation of America
And
Consumers Union

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Summary

In these comments the Consumer Federation of America and Consumers Union demonstrate that the Federal Communications Commission (FCC) should focus its national broadband plan on the achievement of the central goal of the Communications Act – universal service. It should focus its attention on activating the policy tool it has to directly promote progress toward that goal. We are concerned that the broad and scatter shot nature of the Notice will carry the FCC into a morass of regulation and litigation that will slow progress down, when there is a clear need and clear authority to implement universal service policies that can have an immediate impact on solving the problem.

Changing course requires the FCC to admit that past policies have failed. The failure is evident in the fact that two-out of five of all U.S. households do not have broadband at home and the fact that the U.S. has fallen behind more than a dozen advanced industrial nations on broadband penetration, speed and price. The failure is also evident in the lack of vigorous competition in the communications sector, which is largely the result of bad policy choices in the last decade and a half. These include a lax attitude toward mergers, spectrum management and auction policies that have allowed the incumbent wireline carriers to dominate the wireless space; premature deregulation of middle mile (special access) services; and the failure to promote competition in the wireline market through wholesale access to bottleneck network elements.

While competition has failed as a means of promoting universal service, the Commission has failed to adjust its universal service funding to address universal broadband service:

- It failed to use the high cost fund to target broadband deployment,
- failed to use the lifeline and link-up programs to promote broadband connectivity, and
- failed to properly regulate middle mile charges, which increased the price of broadband.

The FCC must change course, if it is to advance the nation toward universal broadband service by adopting the following principles and specific measures.

The FCC must get back to basics and define broadband as Title II service eligible for universal service support as the means to ensure that all people of the United States have adequate facilities at charges that are just, reasonable, affordable and nondiscriminatory. The Commission should adopt an experiential approach to defining broadband, with any technology capable of supporting the range of activities in which broadband users engage being eligible for support with universal service funds.

Declaring broadband a Title II service eligible for universal service support would have profound implications.

- It would open broadband up to full universal service funding support on the supply-side (e.g. high cost) and the demand side (e.g. lifeline and link up).

- It would expand the base of the universal service fund, alleviating pressures on consumer telephone bills.
- It would also require the broadband network be operated in an open and nondiscriminatory manner and provide reasonably symmetric service, treating consumers as active speakers, rather than passive listeners.
- It would require the Commission to reform universal service funding mechanisms on both the collection and distribution sides, a reform that is long overdue.

Consistent with this approach, the Commission should conclude that the Section 230 language, which charges the Commission to "promote the continued development the Internet and…to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services," begins with the preservation of the Internet principles of end-to-end openness and the cooperative solutions to challenges posed by increasing volumes and diversity of traffic. To preserve this essential characteristic the Commission must reject all efforts by network operators to impede the flow of data with private practices such as, but not limited to filtering, deep packet inspection, throttling, blocking, or other forms of degradation.

In order to accomplish this goal, the FCC should adopt a least cost, technology neutral approach to supporting broadband service with universal service funds.

Under least cost, technology neutral principles, CFA-CU believe the Commission should support middle mile fiber to unserved and under served areas, as well as educational and health care facilities, as well as other anchor institutions, in those areas. This robust middle mile infrastructure should be coupled with wireless technology to deliver affordable Internet connections to the homes and communities that remain unconnected to the global economy.

CFA-CU expect that advanced wireless approaches to mobile computing will be particularly successful as universal service technologies because of they are low cost, provide mobility, which is a vital aspect of 21st century communications, have adequate bandwidth to support the vast majority of applications in use today, and have the potential to evolve to higher levels of capacity and functionality.

The FCC must begin to repair the damage that has been done to the competitive fabric of the industry, where competition can work. It will have to focus its attention on pro-competitive policies to revive competition on the platform and expand competition in the wireless space by increasing the availability of unlicensed spectrum, enforce strict use it or lose it policies for licensed spectrum, especially in rural areas, and promote secondary markets for licensed spectrum. Because the cost of advanced wireless approach to broadband are so much lower than the cost of wireline approaches, and they provide the vital characteristic of mobility, the Commission should carve out a significant amount of spectrum for universal service applications.

In the universal service area the commission should refocus all aspects on delivering broadband, which is the "adequate facility" for communications in the 21st century.

CONSUMER GROUP COMMENTERS

The Consumer Federation of America[1] and Consumers Union[2] have been deeply involved in telecommunications policy since the break-up of the Bell monopoly in the early 1980s.[3] Over the course of the past quarter of a century we have commented on many aspects of telecommunications policy, with a special emphasis on universal service and the Internet. Our work on telecommunications usage among low-income households was cited by the Federal Communications Commission (FCC) in the creation of the lifeline and link-up programs.[4] We were among the first consumer groups to identify the Internet as a consumer-friendly, citizen-friendly space that required public policy to

[1] The Consumer Federation of America is the nation's largest consumer advocacy group, composed of over 280 state and local affiliates representing consumer, senior, citizen, low-income, labor, farm, public power an cooperative organizations, with more than 50 million individual members.

[2] Consumers Union is a nonprofit membership organization chartered in 1936 to provide consumers with information, education and counsel about goods, services, health, and personal finance. Consumers Union's income is solely derived from the sale of *Consumer Reports*, its other publications and from noncommercial contributions, grants and fees. In addition to reports on Consumers Union's own product testing, *Consumer Reports* regularly carries articles on health, product safety, marketplace economics and legislative, judicial and regulatory actions that affect consumer welfare. Consumers Union's publications carry no advertising and receive no commercial support.

[3] Indeed, the concern about universal service began with the Michigan petition, MarkCooper, "In the Matter of the Petition of the State of Michigan Concerning the Effects of Certain Federal Decisions on Local Telephone Service," before the Federal Communications Commission, CC Docket No. 83-788, September 26, 1983

[4] Mark Cooper, *The Telecommunications Needs of Older, Low Income and General Consumers in the Post-Divestiture Era*, October 1987; *Low Income Households in the Post Divestiture Era: A study of Telephone Subscribership and Use in Michigan*, October 1986

promote and preserve[5] and among the first to recognize the importance of network neutrality.[6]

We appreciate the opportunity to comment on the National Broadband Plan. We believe that the national broadband plan should be about ensuring universal access to affordable broadband services, a view that is consistent with both the Communications Act of 1934 (hereafter the Act) and the American Recovery and Reinvestment Act of 2009 (ARRA). It is a shame that it has taken the FCC this long to take the central goal of the Ac, as amended by the Telecommunications Act of 1996 (hereafter the 1996 Act) seriously.

However, in the Notice of Inquiry, the Commission seems to have confused a long list of unresolved policy issues with the simple and primary objective of achieving universal service in the broadband age.[7] While it is possible to claim that everything the Commission does affects universal service, it is much more accurate to say that there are a few basic things that greatly affect universal service and a few critical tool sin the FCC's

[5] Mark Cooper, *Developing the Information Age in the 1990s: A Pragmatic Consumer View*, June 8, 1992

[6] Mark Cooper, "Statement before the *en banc* Hearing in the Matter of the Application of America Online, Inc. and Time Warner, Inc. for Transfer of Control," *Federal Communications Commission,* July 27, 2000; "Petition to Deny of Consumers Union, the Consumer Federation of America, Media Access Project and Center for Media Education," *In the Matter of Application of America Online, Inc. and Time Warner for Transfer of Control*, CS 00-30, April 26, 2000

[7] The first mention of section 254 of the 1996 Act, which outlines its universal service policy principles, does not occur until paragraph 111, at the tail end of the Notice. The NOI quotes the opening sentence of the Communications Act, which makes universal service the primary goal of the Act, in paragraph 54, about half way through.

policy portfolio to promote universal service.[8] In the maze of questions the Commission has posed, it needs to separate the wheat from the chaff and focus on the key aspects of universal broadband service and the policies that will accomplish it. In our view, this includes an elegant "experiential" approach to defining broadband services; investing in middle-mile Internet infrastructure; and adopting policies that lower barriers to entry and encourage competition and new market entrants among service providers.

While the Commission has been tasked by the Congress with identifying areas where legislation is needed, we believe that the Commission has more than adequate authority to achieve major progress toward universal broadband service. Therefore, in these initial comments we focus on what the Commission **can** do in the near term to accelerate progress toward the ultimate goal, rather than what it cannot, and urge the Commission to not get bogged down in policies that are tangential to the primary purpose of the Act.

BACK TO BASICS

Contrary to the requirements of the Act, as amended, the United States has not achieved universal broadband service, as we have shown in a recent, lengthy analysis, entitled *Broadband in America: A Policy of Neglect is Not Benign*, which is attached as an Appendix A to these comments. Large segments of the nation, in rural, high-cost and

[8] *In the Matter of A National Broadband Plan for Our Future*, Notice of Inquire Federal Communications Commission, April 8, 2009 (hereafter NOI), paragraph 8 asks for comments on the focus of the Commission policy in the broadband plan. Our recommendation is that the FCC focus its attention on defining broadband as a section 254 telecommunications service eligible for universal service funding support and follow the implications of such a decision under the Act.

insular areas, and among low and moderate-income households, do not have access to affordable broadband services as required by the Act.[9] The failure to achieve this important goal of communications policy in what is arguably the most dynamic decade in the history of the communications sector is a failure of immense significance for the people of the United States and for our economy.[10] But there is little to be served by pointing fingers. Now is the time to embrace the goal of universal service as articulated in the Act, admit that it has not been achieved, identify the reasons for that failure and immediately implement solutions. Now is not the time for dogma, ideology or political gamesmanship. Rather, it is time to remember we are not engaging in abstract debates, but setting out to craft policy that has dramatic implications on the quality of life for millions.

Above all, in crafting the National Broadband Plan, the Federal Communications Commission must get back the fundamental principles of the Communications Act of 1934 that served this nation well for six decades after its enactment.[11] The first sentence of the Act outlines the pragmatic, progressive approach that carried the United States to global leadership in the telecommunications sector. The Act was adopted:

> [f]or the purpose of regulating interstate and foreign commerce in communications by wire and radio so as to make available, so far as possible, to all people of the United States, without discrimination on the basis of race, color,

[9] Broadband in America, pp. 10-12.

[10] Broadband in America, pp. 7-9.

[11] "Comments of Consumer Federation, et al.", *In the Matter of Broadband Industry Practices,* Federal Communications Commission, WC Docket No. 07-52, June 15, 2007, pp. 11-13.

> religion, national origin, or sex, a rapid efficient, nationwide and worldwide wire and radio communication service with adequate facilities at reasonable charges. [12]

The Commission was empowered, unequivocally, by the Act to proactively. regulate communications in pursuit of the goal of universal service.

The phrase "all people of the United States" captures the progressive nature of the aspiration. At the time this goal was articulated, two-thirds of the people of the United States did not have telephone service.[13]

The words "efficient, "adequate facilities" and "reasonable charges" capture the pragmatic nature of the aspiration.

The 1996 Act expanded the progressive aspect of universal service to make it clear that it includes advanced telecommunications and information services, while it refined the pragmatic approach.

> Section 254 (b) Universal Service Principles -- The Joint Board and the Commission shall base policies for the preservation and advancement of universal service on the following principles:
>
> Quality and rates – Quality service should be available at just, reasonable and affordable rates.
>
> Access to advanced services – access to advanced telecommunications and information services should be provided in all regions of the Nation.
>
> Access in rural and high cost areas – Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications services and information services, that are reasonably comparable to those services provided in urban areas and that are available at rate that are reasonably comparable to rates charged for similar services in urban areas.

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[12] 47 U.S.C. Section 151.

[13] U. S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial times to 1970,* September 1995, p. 783.

> Equitable and nondiscriminatory contributions – All providers of telecommunications services should make equitable and nondiscriminatory contributions to the preservation and advancement of university services.
>
> Specific and predictable support mechanisms – There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.
>
> Access to advanced telecommunications services for schools, health care, and libraries – Elementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services as descried in subsection (h).
>
> Additional principles – such other principles as the Joint Board and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this Act.
>
> (c) Definitions – Universal service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services. The Joint Board in recommending, and the Commission in establishing, the definition of the service that are supported by Federal universal service support mechanisms shall consider the extent to which such telecommunications services –
>
> > are essential to education, public health, or public safety;
> >
> > have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;
> >
> > are being deployed in public telecommunications networks by telecommunications carriers; and
> >
> > are consistent with the public interest, convenience and necessity.[14]

The universal service provisions of the 1934 Act, as amended, are not optional. The Commission must adhere to these mandates and definitions in its pursuit of a broadband policy. Fortunately, a common sense approach to universal service answers the most important questions that the Commission has posed. The key implications of the 1996 amendments to the Act must be recognized.

[14] 47 U.S.C. Section 254.

The terms just and reasonable had appeared in the Act before, affordable had not. Affordability is the key to the adoption of services and it is an important addition to the mandate of the Commission. Our analysis of the use of the Internet demonstrates that the disconnected are, in fact, disadvantaged and disenfranchised.[15] People who do not have the Internet at home participate in economic, social and political activities in physical space at just about the same level as those with the Internet, but they are cut off from Internet participation. This participation has taken on greater and greater importance over the past decade so that those who are disconnected are severely harmed. An affordable connection to broadband is no longer a discretionary expense, but an essential service to participate economically and engage civically. Universal broadband serves "the public interest, convenience and necessity." [16]

It can be argued that the 1934 Act was always progressive and evolutionary in the sense that the definition of "adequate facilities" was not fixed but evolved over time. The 1996 Act leaves no doubt that universal service applies to evolving levels of advanced telecommunications and information services.

Similarly, the mandate to make services available to "all people of the United States" was a broad mandate. The 1996 Telecommunications Act identifies the groups and areas for whom support is necessary to achieve universal service and specifies the level and rates at which those services should be made available (reasonable comparability between urban an rural areas). There may be other problems for universal service that

[15] Broadband in America, pp. 15-18.

[16] 47 U.S. C. Section 24.

need to be solved, but the Commission's attention is directed to these key areas by the Act.

As noted above, the mandate that services be adopted by a substantial majority of the people through the operation of the market is the one aspect of the amendments that is not progressive. This reflects deference to the market that was not part of the New Deal framing of the original Act.

On the other hand, the restraint that this provision imposes may have a pragmatic purpose. It prevents universal service policy from promoting networks and services that have not become grounded in society and may be unnecessarily expensive or so specialized that they impose costs without providing significant, widespread benefits to the public. The operative word is "adequate" in the definition.

Be that as it may, the development of the communications sector has moved so rapidly in the thirteen years since the Telecommunications Act was passed that a substantial majority of Americans have chosen broadband. Broadband, as defined below, clearly meets the universal service criteria today. Fast and affordable broadband connections allow communities to reap the benefits of advanced emergency services, higher education distance learning, telemedicine and telecommuting. Broadband deserves to be supported as part of the universal service mandate and it must evolve as the commercial networks deployed and the services adopted in the marketplace do.

WHERE UNIVERSAL SERVICE HAS FAILED

With over 40 percent [17]of households lacking broadband connectivity and as much as ten percent having no broadband service available, the Commission should focus on real world, immediate actions it can take to ensure universal broadband service. Achieving maximum coverage of an affordable broadband network as soon as possible should be the goal, rather than chase a gold-platted network that will restrict the number of households that can be reached or who can afford service in the near future. We need to get people connected for the broadband communications that opens the door to economic engagement and civic participation.

INTERNET AND BROADBAND PENETRATION RATES:
PERCENT OF HOUSEHOLDS WITH SERVICE

	Income Greater Than $24,999		Income Less Than $25,000	
	Urban	Rural	Urban	Rural
Internet	70	68	33	28
Broadband	61	45	26	15

Source: National Telecommunications and Information Administration, *Netwrked Nation: Braodband in America* (Washington, D.C. January 2008), Appendices

The most recent analysis prepared by the NTIA[18] showed that low-income consumers and rural Americans are severely disadvantaged in broadband access.

[17] John B. Horrigan, *Home Broadband Adoption,* Pew Internet and American Life Project, July 2008, p. indicates the 45 percent do not have broadband. The NTIA data for late 2007 put the figure at 49%, but it is not clear that broadband measured in these studies meet the definition proposed in these comments.

[18] National Telecommunications and Information Administration, *Netwrked Nation: Braodband in America* (Washington, D.C. January 2008),

Penetration of the Internet in urban America was only 4 percentage points higher than in rural America, but penetration of broadband in urban America was 15 percentage points higher than in rural America, which reflects the lack of availability and high cost of provisioning broadband service in rural America. At the same time, the vast majority of households that do not adopt broadband service and are not located in rural areas, are low-income households that are much less likely to have broadband Internet or broadband service, as the above table shows.

The failure to achieve universal service in broadband is **both a low income and a rural problem.** Urban non-low income households are 2.5 times as likely to have broadband as urban low-income households and 4.7 times as likely as rural low-income households. Almost two-thirds of all households that do not have broadband service are low income or live in rural areas. Without access to broadband, these communities are cut off from participating in new models of economic expansion and growth, therefore exacerbating economic troubles and frustrating anti-poverty efforts. Thus, in adopting a broadband policy these facts must be balanced and it is critical to establish basic principles to guide the expenditures of funds across all agencies charged with addressing the problem of the unserved and under-served in both rural an urban America. In short, the National Broadband Plan must equally focus on access *and* affordability.

A PRAGMATIC APPROACH TO UNIVERSAL SERVICE IN THE BROADBAND ERA

We believe that the best path to achieving universal broadband service as defined by the Act in the quickest manner possible is to adopt a policy that supports least cost, no regrets technologies in a neutral manner to meet the basic communications needs of the

unserved and under-served in rural and urban America. A no regrets policy involves selecting to deploy approaches and technologies that are likely to be enduring parts of the communications space for significant periods of time. These are initial steps that need to be done and are likely to be durable, regardless of what the ultimate configuration of broadband communications networks is. Least-cost, technology neutrality and no regrets promote economic efficiency as well as affordability. Nothing in this approach prevents the technologies from evolving as networks and consumer needs change, as required by the act. To the contrary, sticking to least cost and technology neutrality principles for universal service reduces the chances that the Commission will retard the evolution of the communications network by prematurely picking and sinking costs into a technology that may prove to be unnecessarily expensive or a dead end.

If the least cost, technology neutral approach is adopted, we believe that the Commission will find that the superior strategy is to ensure access to middle mile fiber for Internet Service Providers (ISPs), with interconnection requirements, and provision first mile[19] connectivity with advanced wireless technologies. Advanced wireless technologies are extremely low in cost and deliver both mobile computing and broadband service that meets the needs of Americans at prices they can afford. Moreover, middle mile end-points can be major social institutions. We envision a community-wide fiber network linking all local government buildings, public housing, schools, and libraries. The service

[19] The notice uses the term "last mile," which is the general practice, but this term distorts the nature of the Internet. "Last mile" is grounded in the one-way one–to-many characteristics of the 20th century push media. First mile recognizes that the consumer at the edge of the network is the initiator of communications in a two-way communications network.

could be anchored by local government. The schools and libraries can also be "hot spots" in a WIFI/WIMAX network that would also be available to the community for broadband communications. Non-mobile communications flow over the fiber network, while mobile communications flow over the fiber network to a WIFI/WIMAX wireless network.

Simply put, this is the strategy that best accomplishes the primary goal of the Communications Act.

With the statutory language as a guide and a pragmatic set of principles in hand, the maze of questions the Commission has proposed becomes navigable. The Commission must not turn the report to Congress mandated by the ARRA into a mega proceeding to deal with all of the broad policy issues that the Commission confronts. In theory everything the Commission does might affect the roll out of broadband; in practice there are a small number of major decisions that will determine how quickly the U.S. accomplishes the goal of universal service. If the Commission fails to focus on the essential issues – basic definitions and principles – it will take longer to answer the questions than build the network and millions of Americans will continue to live in communities stranded without access to the global economy.

THE COMMISSION SHOULD ADOPT AN "EXPERIENTIAL," NOT A TECHNICAL DEFINITION OF BROADBAND[20]

The Commission should define broadband as "adequate facilities," using a definition that is "experiential… based on the consumer's ability to access sufficiently

[20] NOI, paragraph 17.

robust data for certain identifiable broadband services." Facilities that support the broad range of uses to which the network is put – the things the substantial majority of users do with the network – should define broadband. The current definition of "broadband" or "high speed" is grossly inadequate, an order of magnitude too slow (i.e. too slow by a factor of ten). In contrast to the current definition of broadband as networks that achieve data rates of 200kbps, the vast majority of applications in widespread use today require speeds in the range of 2 mbps to function properly. For example, a recent report in UK found that the following services that are supported by a 2 mbs system:

BROADBAND SPEEDS AND THE SERVICES THEY DELIVER TO USERS
BASIC INTERNET FUNCTIONALITIES

e-mail
IM
Fast Internet Browsing
VOIP
Network Storage/Backup
P2P File Sharing
Telehealth

AUDIO

Online Radio
iPlayer
Fast Music Download

VIDEO

Basic video streaming
Near VHS Conf. Call
Long-Form Video (MPEG-4)
Video Conferencing via TV

Department for Business Enterprise & Regulatory Reform, Department for Culture, Media and Sport, *Digital Britain: The Interim Report,* January 2009, p. 56.

This list of applications that are supported by a 2-mb network covers the gamut of activities in which American Internet users engage, as shown in the following table.

Daily Activities on the Internet: 2008

Question Code	Activity	% Yes
ACT01-Y	Yesterday, did you? Send or read email	58%
ACT52-Y	Use an online search engine to help find information yesterday	49%
ACT02-Y	Get news online yesterday	36%
ACT08-Y	Check weather reports and forecasts yesterday	30%
ACT21-Y	Do any banking online yesterday	19%
ACT87-Y	Use online social or professional networking sites like Friendster or LinkedIn yesterday	19%
ACT102-Y	Watch a video on a video-sharing site like YouTube or GoogleVideo yesterday	16%
ACT11-Y	Look for news or information about politics or the upcoming campaigns yesterday~	13%
ACT103-Y	Look for information on Wikipedia yesterday	12%
ACT03-Y	Get financial information online, such as stock quotes or mortgage interest rates yesterday	11%
ACT14-Y	Send “instant messages” to someone who’s online at the same time yesterday	11%
ACT27-Y	Visit a state, local or federal government website yesterday~	10%
ACT71-Y	Read someone else's online journal or blog yesterday~	10%
ACT54-Y	Search for information on the internet about someone you know or might meet yesterday	8%
ACT79-Y	Look for "how-to," "do-it-yourself" or repair information online yesterday	7%
ACT19-Y	Look online for information about a job yesterday~	6%
ACT111-Y	Download or share files using peer-to-peer file-sharing, such as BitTorrent or LimeWire yesterday	3%
ACT16-Y	Buy or make a reservation for a travel service, like an airline ticket, hotel room, or rental car yest.	3%
ACT58-Y	Create or work on your own online journal or blog yesterday~	3%
ACT33-Y	Go to a dating website or other sites where you can meet people online yesterday	2%
ACT24-Y	Buy or sell stocks, mutual funds or bonds yesterday	1%
ACT32 (B) - Y	Participate yesterday in an online discussion, a listserv, or other online group forum that helps people with personal issues or health problems~	1%
ACT49-Y	Make a donation to a charity online yesterday	1%

Source: Pew Internet and American Life Project; most recent percentage for 2008.
http://www.pewinternet.org/Data-Tools/Download-Data/Trend-Data.aspx

It is important to note that the list of service supported by a 2 mb system includes Voice Over Internet Protocol (VOIP). Thus, by shifting the focus to broadband, the Commission would still be taking care of concerns about voice service, the dominant 20th century means of communications, as long as any impediments to VOIP over broadband are eliminated.

Adequacy should be defined as supporting the basic need for communications services. Networks that support those basic communications should be deemed adequate. To the extent that the Commission feels it must qualify technologies, it should do so with a test of practical, real world results – "does it work to support the communications applications."

THE IMPLICATIONS OF DECLARING BROADBAND A TITLE II UNIVERSAL SERVICE

Declaring broadband is a Title II universal communications service will enable it to receive of universal service support. The declaration has numerous important implications.

The base of the universal service fund would be expanded because broadband service providers would be required to contribute to the fund under section 254.[21]

Treating broadband as a universal service under Title II means it should be subject to the nondiscrimination obligations of sections 201 and 202. The Commission has replaced those obligations with the Internet Policy Statement, which articulates the four

[21] 47 U.S.C. section 254 requires equal and nondiscriminatory contributions to the universal service fund from all telecommunications service providers.

Internet freedoms.[22] The Commission is laboring to ensure that those four freedoms are enforceable[23]. Regardless of the outcome of the pending court case, the Commission should undertake a rulemaking to ensure and improve the enforceability of the four freedoms. This is the minimum necessary to accomplish the goal of the Act. As part of that proceeding, the Commission should examine the costs and benefits of a return to full section 201-202 nondiscrimination principles.

Consistent with this approach, the Commission should conclude that the Section 230 language,[24] which requires the Commission to "promote the continued development the Internet and other interactive computer services and other interactive media; to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services," begins with the preservation of the Internet principles of end-to-end openness and the cooperative solutions to challenges posed by increasing volumes and diversity of traffic. The vibrancy of the Internet that gives rise to what one of the fathers of the Internet protocol describes as "innovation without

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[22] NOI paragraphs 24, 47.

[23] See generally Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications; Broadband Industry Practices; Petition of Free Press et al. for Declaratory Ruling that Degrading an Internet Application Violates the FCC's Internet Policy Statement and Does Not Meet an Exception for "Reasonable Network Management," File No. EB-08-IH-1518, WC Docket No. 07-52, Memorandum Opinion and Order, 23 FCC Rcd 13028 (2008) (Comcast Order) pet. for review pending, Comcast Corporation v. *FCC*, No. 08-1291 (D.C. Cir. Sept. 4, 2008) (asserting the Commission's authority to enforce the *Internet Policy Statement* and addressing network management practices and consumer notice issues); *Broadband Industry Practices*, WC Docket No. 07-52, Notice of Inquiry, 22 FCC Rcd 7894 (2007).

[24] NOI paragraph 110; Broadband Practices, pp. 9-11 made this argument.

permission," flows from the carriage of all data across interconnected networks regardless of the kind of data subject to protocols that were clearly defined by public processes.[25] To preserve this essential characteristic the Commission must reject all efforts by network operators to impede the flow of data with private practices such as, but not limited to filtering, deep packet inspection, throttling, blocking, or other forms of degradation.

The Internet protocols coupled with the principle of cooperative solutions to network management that preserve the flow of information have proven remarkably robust through a huge increase in traffic flows and a remarkable flowering of diversity of applications.[26] It would be a grave mistake and a violation of the language of the statute to abandon this approach to Internet management and evolution. The FCC clearly has the authority to prevent communications network operators from undermining the Internet principles with the network management practices.

At the same time, the commission should not require a gold platted network in the effort to ensure that all manner of future applications can be supported. Such an approach would drive up the cost dramatically, undermining the goal of affordability and delaying the accomplishment of universal service that supports the services people currently need and use.

Technologies that are eligible should deliver reasonably symmetric capabilities.[27] The tendency for network operators to treat broadband as a one-way push medium, to

[25] Broadband Practices, pp. 22-68, and attachments.

[26] Broadband Practices, pp. 22-68.

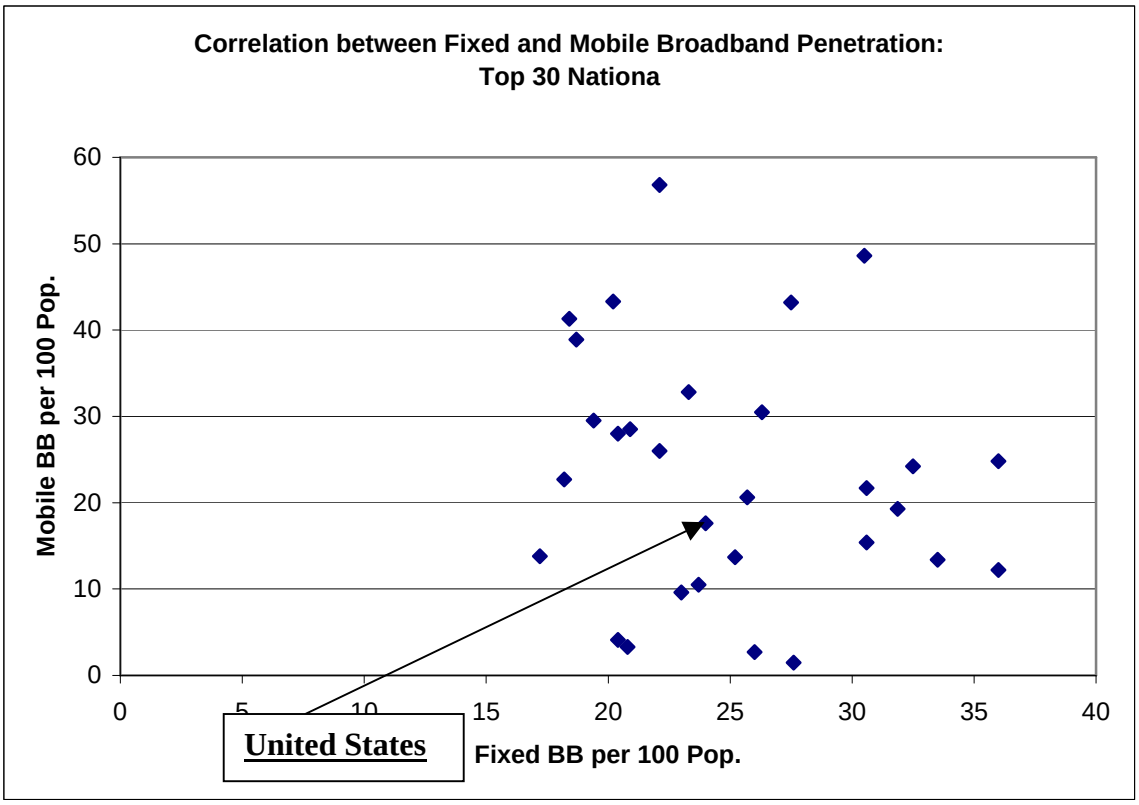
[27] Broadband Practices, pp. 15-22.

view it as a Title III broadcast or Title VI cable service, should be rejected. Fair treatment of consumers as speakers under Title II requires that supported services have reasonably symmetric up and down capabilities.

THE CRITICAL FIRST MILE

The Act clearly identifies wired and wireless (radio) as distinct communications services subject to the universal service policy. Whether or not the Act had the contemporary distinction between two-way wired and wireless 9RADIO) networks in mind is irrelevant. Mobile communications and advanced telecommunications are an important part of the 21st century communications ecology. The important development in this aspect of the contemporary communications space is that the capacity of wireless networks to support mobile computing has advanced to the point where wireless networks can meet the definition of broadband given above. They can support the services that make up the vast majority of uses of broadband. Mobile computing is a three-fer. It delivers adequate facilities that constitute broadband; it delivers mobile communications; it provides a level of affordability that wire line services cannot.

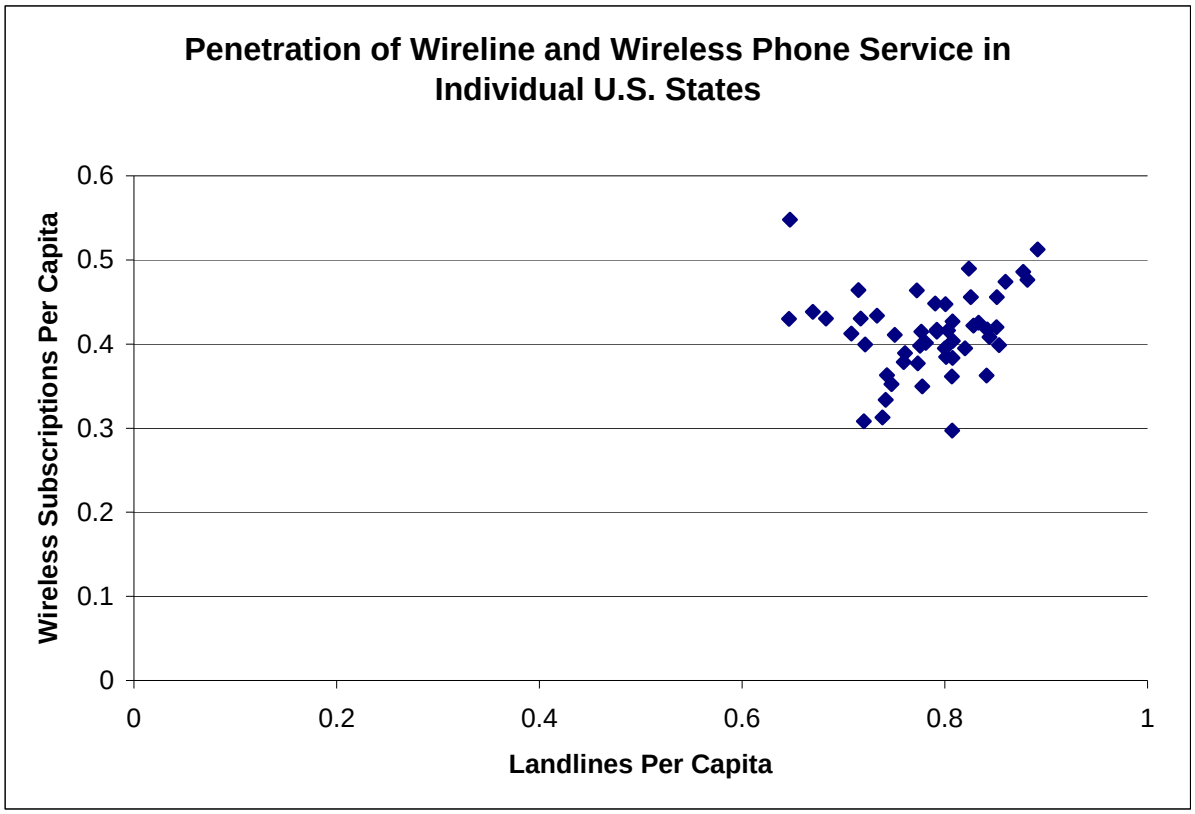
The most recent estimates of both fixed and mobile broadband penetration across the globe suggest that broadband and mobile are different services, as the following figure shows. If the service were substitutes, we would expect to see a negative correlation. If they were complements, we would expect to see a positive correlation. The fact that the penetration of these two services is almost identical for the top nations (fixed broadband per 100 Pop. = 25.1; mobile broadband per 100 Pop. = 23.3) and yet there is virtually no correlation (r=.16, t =.84) suggests they are distinct products.



International Telecommunication Union, *Measuring the Information Society: the ICT Development Index*, 2009, Annex 4.

The graph also makes it clear that the U.S. is not doing very well on broadband adoption with regard to fixed or mobile service. The U.S. ranks 15th on fixed broadband and 19th on mobile broadband. The U.S. needs the "three-fer" of mobile computing.

Data on the penetration of wireless and wireline communications in the states reveals a similar pattern. There is virtually no correlation between the penetration of wireless and wireline, suggesting that they are neither substitutes nor complements, but simple different products.



Source: Industry Analysis and Technology Division, *Local Telephone Competition: Status as of December 31*. State population data from Wikipedia.

Wrapping the universal service frame around advanced wireless mobile computing at the heart of the national broadband plan is vastly superior to adopting a Silicon Valley economic development through fiber approach (i.e. build an extremely high capacity network and wait for large bandwidth apps to fill it up), for several reasons.

- Advanced wireless is far less expensive, while meeting the need for broadband connectivity, promoting affordability and greater coverage.[28]
- The technology is suited to both rural high cost and urban low-income areas.

[28] Comments of the Consumer Federation of on the America American Recovery and Reinvestment Act of 2009 Broadband Initiatives, NTIA Docket No. 090309298-9299-01, April 13, 2009, pp. 7-8, show that wireless is less than one the cost of the least expensive wireline alternative (copper) and one tenth as expensive as fiber.

- The potential for development to higher levels of functionality is substantial. Evolution to 10 or 20-megabit speeds is on the horizon.[29]

Having defined broadband "experientially" the Commission meets the obligation to support services that have been chosen by a majority of consumers in the market place because they have been widely deployed. The Commission cannot single out fiber to the home as the only service that is eligible for universal service support, as it does not meet the basic statutory requirement. It is not being deployed by anywhere near a majority of carriers and it has not been chosen by a substantial majority of consumers. While fiber to the home meets the experiential definition, it should have to compete with other, less expensive alternatives that also meet the definition and fiber to the home suffers the drawback that it cannot provide mobility.

MIDDLE MILE[30]

Using an experiential definition also solves the problem of how far into the network the Commission's inquiry should go. The consumer experience is definitely affected by the availability, adequacy and price of middle mile services and middle mile services have traditionally been subject to the authority of the Commission. The abuse of market power that has resulted from the Commission's decision to cease regulation of

[29] Theoretical speeds are quite high for all advanced wireless networks (see "WiMAX vs. LTE vs. HSPA+: Who Cares Who Wins, *Telecom. Com,* achieving actual speeds is the challenge.

[30] NOI, paragraph 17.

special access rates underscores the importance of including middle mile services in the national broadband plan.[31]

The Commission should move swiftly to correct the mistake of the premature deregulation of special access, both because it has resulted in the rampant abuse of market power and because it poses an impediment to universal broadband service. The Commission has clear authority and a long-standing open docket, in which the evidence shows overwhelmingly that competition has not prevented rampant pricing abuse.[32]

Traditionally, the reach of the Commission has not extended to the backbone or the Internet cloud (except in merger proceedings). As a matter of regulatory oversight and universal service, the Commission should focus its attention on the first and middle miles of the communications network.[33] To the extent that there are backbone issues

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[31] The Commission has prematurely chosen to grant pricing flexibility to middle mile services in its decision to abandon rate regulation of special access. The result has been disastrous. With inadequate competition, incumbent local exchange companies have been abusing their market power and extracting monopoly rents. This dynamic is present among multiple market firms and there is no market constraint to discipline price. " Petition to Deny of the Consumer Federation of America, et al." *In the Matter of AT&T and Bell South Corporation Applications for Approval of Transfer of Control,* before the Federal Communications Commission, WC Docket No. 06-74, Affidavit of Trevor Roycroft and Mark Cooper, pp. 40-44 (hereafter CFA, ATT-BS); "Reply of Consumer Federation of America, et al.," *In the Matter of Verizon Communications Inc and MCI Inc. Application for Approval of Transfer of Control,* before the Federal Communications Commission, WT Docket No. 05-75, May 9, 2005, pp. 15-17,31-39 (hereafter Verizon-MCI Reply)..

[32] *Special Rates for Price Cap Local Exchange Carriers,* WC Docket No. 05-25.

[33] Similarly, in developing the national broadband plan the Commission should refrain from extending its reach by applying regulatory principles "more broadly in light of the evolving ways providers store, distribute, and otherwise provide service via broadband access facilities, particularly in ways that are not carried over the Internet," unless these activities involve telecommunications services historically regulated by the FCC. To the extent the FCC contemplates such regulation, it should do so in separate

affecting the quality of service, they likely affect all consumers and are not a universal service concern, but a competition policy concern.[34].

The definition of broadband must be dynamic, as a matter of law and principle. Section 254 of the Telecommunications Act of 1996 is quite explicit about the evolving nature of the service that is to be universal. The definitions in the Communications Act should take precedence, since the FCC is the agency with primary jurisdiction and expertise in this area. Other agencies should conform their definitions to the FCC, not *vice versa.*

DIFFERENTIATION AND EVOLUTION OF BROADBAND.

The use of an experiential definition results in a technology neutral definition. Multiple definitions for different technologies or customer classes will create a regulatory nightmare and open the door to creating differences between geographic areas that violate the intent of the act that 'reasonably comparable services be available at reasonably comparable prices' across the nation. Technologies that are not adequate to provide broadband services chosen by a substantial majority of consumer should not receive support, and technologies that provide levels of functionality that exceed the level required by the services chosen by a substantial majority of consumers should not receive support for those higher levels of service functionality. Inferior or superior services can find niche markets once access to broadband is universal, but the national broadband plan

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proceedings that do not slow the effort to achieve universal service, as such proceedings will inevitably be contentions, involve extensive litigation and be exceedingly time consuming.

[34] CFA, ATT-BS, pp. 57-62.

should focus on achieving adequate facilities available to all people of the United States at rates that are just reasonable and affordable.[35]

The fact that the Commission has asked the following question –: "Should rural regions with their inherently higher deployment costs, have different definitions or standards for broadband than urban areas?" – is deeply troubling. Unless the Commission believes that section 254(k) of the 1996 Act has been repealed and it is no longer obligated to promote 'reasonably comparable service at reasonably comparable prices,' it should not contemplate violating the law. Adopting such an approach does not achieve universal service as defined by the Act; it abandons the goal of universal service and cements the digital divide into U.S. broadband policy.[36]

The "experiential" definition also renders it unnecessary to specify the characteristics of individual technologies. It is widely recognized that many currently deployed technologies do not live up to the advertized "up to" speeds. That is a matter that should be addressed under the consumer protection powers of the Commission and other federal agencies, but it should not be central concern in the national broadband plan defined as achieving universal service. Here the central concern is whether or not a technology works well enough to support the communications functions for which the

[35] The implication of this approach is that universal service support should be set at a level necessary to promote deployment of the least cost technology that meets the "adequacy" criteria.

[36] The Commission makes a similar error in its discussion of WiFi as a potential universal service technology. Here it notes that "a particular quality of service or data speed cannot be assured" and asks "Should we treat data speed and metrics for unlicensed devices and services differently because the sharing scenarios and their impact on reliability and data speeds are difficult to predict?" Such an approach fails to achieve reasonably comparable levels of service, "particularly where no other service exists."

network is used by a substantial majority of consumers. Attempting to specify the adequacy of each technology in terms of the determinants of service quality specific to that technology – bandwidth, latency, contention, distance, location in the network, location in the spectrum, frequency re-use, licensing status – will involve the Commission in a level of micromanagement and micro-measurement that will ensure interminable proceedings and do little to promote universal service. We believe the National Broadband Plan should ensure networks can deliver reasonably symmetric capabilities. However, the Commission's standard should be practical and real world. A technology, as deployed, should adequately support the communications functions the public has come to use.

Business users of the network have traditionally been defined as discretionary users whose demand for higher levels of functionality and service has not been the object of universal service support. The higher level of functionality that business users demand is paid for by the businesses and the costs are recovered in the prices of good and services they sell. Business users of the communications network have also been the beneficiaries of much higher levels of competition than residential customers. To the extent that business customers have unique needs that are not being met in the marketplace, the Commission should deal with that as a matter of competition policy, not universal service policy.

If the Commission adopts the "experiential" definition of service that is baked into the statue, it will not have to worry about " monumental shifts in technological platforms that would render definitions obsolete or indeed harmful." Shifts in technology do not

become monumental until they are deployed and capture a substantial majority of the public by choice. If the Commission tries to guess which technologies might become monumental and direct policies toward support of those technologies (i.e. direct universal service support to them), in all probability it will guess wrong more often than right. There is a much greater probability that he Commission will do harm by using universal service support to pick winners, than do harm by supporting a technology that conforms to the pragmatic conditions set down in the 1996 Act.

MARKETPLACE COMPETITION, OR THE LACK THEREOF[37].

The failure to achieve universal service is, at root, a market failure. Large segments of the population cannot afford or do not have available broadband services that meet their needs. In part this market failure is the result of fundamental conditions – supply-side costs that are too high or demand-side incomes that are too low. In large part, this market failure is the result of policy choices that have failed to promote competition in telecommunications markets, as described in the attached analysis of "The Failure of Market Fundamentalism: What Are the Issues in the ICT Sector?"

The Commission must not hesitate to reach the obvious conclusion that the marketplace has not and will not achieve the goal of universal service and that competition does not and is not likely to solve the problem.[38] The 1996 Act states a preference for competitive and marketplace solutions, but it is only a preference.[39] The

[37] NOI, paragraph 49.

[38] NOI, paragraphs 37, 50.

[39] NOI paragraphs, 35-36.

market is a means to an end, not the end in itself. At every critical juncture the Commission is told that if it concludes the market will not achieve the goal, it should resort to other means, direct policies and regulation to accomplish the goals of the Act. With two-in-five of all U.S. households without broadband and the U.S. lagging badly behind over a dozen advanced industrial nations on penetration, speed, price, etc., it is time admit the failure of past policies and adopt new ones to address the problem.[40]

This failure to promote competition has occurred at two levels.[41]

First, soon after the 1996 Act was passed, the industry experienced a series of mergers and acquisitions that restricted competition. These included mergers between regional Bell operating companies, which were strong potential, if not actual competitors, as well as mergers between actual competitors, most notably the AT&T-SBC and Verizon-MCI mergers.[42] Simultaneously, the incumbent local exchange carriers were allowed to acquire large blocks of local spectrum, which restricted the ability of wireless to compete, and the FCC made matters worse by failing to set significant spectrum aside

[40] Broadband in America, pp. 19-26.

[41] NOI, paragraph 37, uses a conditional unreal future tense ("have not yet") to describe the performance of the market when it should be using a real past tense frame. The market has failed.

[42] In addition to CFA, ATT_BS, pp. 2-4, CFA ATT-SBC, pp. 2-3; see also ("Comments of the Consumer Federation and Consumers Union on the Impact of Megamergers on the Prospects for Competition in Local Markets," *In the Matter of the SCB Inc. and Ameritech Inc. Proposed Transfer of Control,* before the Federal Communications Commission, Docket No. 98-141, October 15, 1998, pp. 2-3, for an early analysis the warned of the merger was

for unlicensed uses.[43] As a result of these mergers and acquisitions, the number of facilities based competitors in any given market is quite small.[44]

Second, the FCC failed to implement network unbundling in a manner that effectively opened the incumbent monopoly telecommunications platform to competition for services. The 1996 Act clearly intended for there to be vigorous competition in the incumbent t network by making the monopoly elements available on rates, terms and conditions that would allow and facilitate competitors to combine the monopoly elements at wholesale with competitive elements that they self-provisioned. The FCC failed to implement these conditions effectively and this type of competition has all but disappeared. It is noteworthy that many of the nations that have passed the U.S. by in broadband did so by effectively implementing competition on the incumbent platform.

The disappearance of potential competitors through mergers, the domination of the in-region wireless market by the dominant incumbent local exchange carriers, and the failure of CLEC competition on the platform have left residential consumers with, at best, a cozy duopoly that dribbles out bandwidth at high prices.[45] While the Commission should prioritize its efforts according to the extent of market failure – zero providers is a worse outcome than one and one is worst than two – it should not fool itself in to believing that the mere presence of two competitors is sufficient rivalry to ensure consumers will get the benefit of real competition. This is particularly true in urban areas,

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[43] CFA, ATT-BS, Reply Comments, pp. 20-24; CFA, ATT-BS Affidavit, pp. 22-25

[44] For HHI analysis see CFA, Verizon-MCI, pp. 12-15 and the Attachment, pp. 20-23.

[45] The term cozy duopoly is from Catherine Yang, "Behind on Broadband," *Business Week online,* April 6, 2005, cited in CFA, SBC-ATT, pp. 3-7.

where low-income households have been priced out of the marketplace. There is nothing in economic theory or real world experience to suggest that two is enough for vigorous competition. In short, the FCC contributed significantly to the problem by failing to foster the vigorously competitive environment that the 1996 Act mad possible.

The FCC compounded the problem by failing to effectively use the tools it had to address the market failure that was inevitable (i.e. lack of service and/or competition in high cost and low income areas).[46]

- It failed to use the high cost fund to target broadband deployment,
- failed to use the lifeline and link-up programs to promote broadband connectivity, and
- failed to properly regulate middle mile charges, which increased the price of broadband.

The FCC must change course in these aspects of public policy to address the failure of universal service. It must begin to repair the damage that has been done to the competitive fabric of the industry, where competition can work. Because there are so few potential competitors left in the traditional wireline market, it will have to focus its attention on pro-competitive policies to revive competition on the platform and expand competition in the wireless space by increasing the availability of unlicensed spectrum, enforce strict "use-it-or-lose-it" policies for licensed spectrum, especially in rural areas, and promote secondary markets for licensed spectrum. Because the cost of advanced

[46] The NOI at paragraph 36 asks about how to evaluate the use of high cost and other funds to promote universal service. Since the Commission has not used these funds to do so, there is nothing to evaluate. The Commission should build an evaluation component into its oversight, once it begins to use universal service funds to promote broadband deployment and take up.

wireless approach to broadband are so much lower than the cost of wireline approaches, and they provide the vital characteristic of mobility, the Commission should carve out a significant amount of spectrum for universal service applications.

In the universal service area the commission should refocus all aspects on delivering broadband, which is the “adequate facility” for communications in the 21st century.

APPENDIX A

BROADBAND IN AMERICA:
A POLICY OF NEGLECT IS NOT BENIGN*

MARK COOPER

***This is an updated and expanded version of *Broadband in America* (Consumer Federation of America and Consumers Union, January 2009) as well as a chapter by the same name in Enrico Ferro, Yogesh K. Dwivedi, J. Ramon Gil-Garcia, and Michael D. Williams, Eds., *Overcoming Digital Divides: Constructing an Equitable and Competitive Information Society,"* IGI Global Press**.

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Abstract

In February 2002, the newly appointed FCC Chairman Michael Powell sought to shift the debate over Internet policy from the Clinton era concern over the digital divide ("I think there's a Mercedes Benz divide, I'd like one, but I can't afford it") to broadband deployment ("We have a clear vision for this migration to advanced platforms: stimulate investment in next-generation architectures, apply a light hand and let entrepreneurs bring the future to the American people"). President Bush reiterated this shift in the 2004 election ("We ought to have universal, affordable access for broadband technology by the year 2007… The role of government is to create an environment I which the entrepreneurial spirit is strong and in which people can realize their dreams"). Four years later the National Telecommunications Information Administration declared the "results have been striking… a reasonable assessment of the available data indicates that the nation has, to a very great degree, realized this objective."

However, a careful look at the data for 2001 and 2007 contradicts the claim of success on both the digital divide and broadband deployment.

In 2001, 54 percent of households did not have the Internet. In late 2007, 49 percent of households did not have broadband. About 25 percent of households with incomes below $25,000 per year had broadband in 2007; whereas over 80 percent of households with incomes above $75,000 did.

In 2001 the OECD rankings on Internet penetration put the U.S. third; by 2007 it had fallen to 15th on broadband. A variety of measures of performance and econometric models that control for a wide range of economic and social variables show a dozen nations are ahead of the U.S.

The *laissez faire* policy pursued by the Bush administration let a duopoly of cable and telephone companies dribble out broadband at slow speed and high prices. In contrast, the nations that passed the U.S. implemented much more aggressive policies to promote broadband and instead of relying on weak intermodal competition, they required the dominant networks to be open to competition in Internet services. This kept the price down and stimulated adoption and innovation.

I. A PERMANENT DIGITAL DIVIDE OR ANOTHER "MISSION ACCOMPLISHED?"

From Digital Divide to Falling Behind on Broadband

Barely a decade after the Internet became widely, commercially available and at a moment when high-speed Internet access was just becoming widely available in the mass market, the digital Divide had already become a topic of vigorous debate in Washington policy circles. The debate over the speed of the penetration of the new communications technology became a permanent fixture of technology policy discussions.

This paper addresses three empirical questions that have been at the center of the now decade long debate over the digital divide.

> *Does the digital divide still exist; is there a significant difference in penetration among specific groups in the population?*
>
> *Does it matter that households are not connected; does being disconnected cause households to be disadvantaged or disenfranchised?*
>
> *Is the U.S. ahead of other nations or behind in the penetration of this technology and what does that mean for the policies chosen to promote the deployment of the technology?*

The issue was originally framed by the Clinton administration in the late 1990s as a concern that instead of being a great leveler of opportunity, the uneven penetration of Internet service was replicating and reinforcing existing social divisions (e.g. Wilhelm, 2000; Cooper 2001). However, others argued that the normal pattern of adoption of mass market goods was for upper income households to be early adopters but, ultimately, the good would spread throughout society (Thierer, 2000; Compaine, 2001). With the rapid uptake of the Internet and broadband being faster than other consumer goods and services like telephones, televisions, and VCRs, they argued there was little cause for concern.

Reactions to a *Washington Post* (Schwartz, 1999) article summarizing the findings of a mid-1999 Clinton Administration report on the digital divide suggest how prominent the debate had become. In a front-page story the newspaper summarized the report from the National Telecommunications Information Administration (1999), entitled *Falling through the Net*, as follows, "Despite plummeting computer prices and billions of dollars spent wiring public schools and libraries, high-income Americans continue to predominate in the online world" (Schwartz, 1999, p. A-1).

This conclusion was immediately cast in highly charged public policy terms by President Clinton.

> There is a growing digital divide between those who have access to the digital economy and the Internet and those who don't, and that divide exists along the lines of education, income, region, and race… If we want to unlock the potential of our workers, we have to close that gap (Schwartz, 1999, p. A-1).

By contrast, Executive Vice President David Boaz of the ultraconservative Cato institute — dismissed the notion of the digital divide:

> We've got a new technology spreading more rapidly than any new technology has spread in history. And of course, it doesn't spread absolutely evenly. Richer people have always adopted new technology first – and that's not news. There's no such thing as information haves and have-nots, there are have-nows and have-laters. The families that don't have computers now are going to have them in a few years (Schwartz, 1999, p. A-1).

With a change in Administrations in 2001, the alternative view became the official view in Washington, a shift made clear just weeks after the inauguration of President Bush, when Michael Powell, newly appointed Chairman of the Federal Communications Commission (FCC), declared at his first press conference that at worst there was a "Mercedes Benz divide."

> I think the term ["digital divide"] sometimes is dangerous in the sense that it suggests that the minute a new and innovative technology is introduced in the market; there is a divide unless it is equitably distributed among every part of society, and that is just an unreal understanding of an American capitalist system… I think there's a Mercedes Benz divide, I'd like one, but I can't afford it… it shouldn't be used to justify the notion of, essentially, the socialization of deployment of infrastructure (Powell, 2001).

Chairman Powell articulated the Bush administration's policy as a reliance on laissez faire, trickle down of technology and a rejection of policies to stimulate the spread of Internet service. "We have a clear vision for this migration to advanced platforms: stimulate investment in next-generation architectures, apply a light hand and let entrepreneurs bring the future to the American people (Powell, 2001)."

Two years later, in March of 2004, in the midst of his re-election campaign, President Bush reiterated the policy. He declared a national policy goal and an approach to achieving it, stating, "this country needs a national goal for broadband technology, for the spread of broadband technology… The role of government is to create an environment in which the entrepreneurial spirit is strong and in which people can realize their dreams" (Bush, 2004).

The justification he gave for the policy helps to establish the criteria by which its success should be measured. The primary justification was to provide a wide range of services to consumers, with market forces driving prices down and expanding choice for consumers. Ultimately, the market process would keep the U.S. at the leading edge of technology development.

> We ought to have universal, affordable access for broadband technology by the year 2007, and then we ought to make sure as soon as possible thereafter, consumers have got plenty of choices when it comes to purchasing their broadband carrier. The more choices there are, the more the price will come down; and the more the price comes down, the more users there will be; and the more users there are, the more likely it is America will stay on the competitive edge of world trade. The more users there are, the more likely it is people will be able to receive doctor's advice in the

> home. The more affordable broadband technology is, the more innovative we can be with education. It is important that we stay on the cutting edge of technological change and one way to do so is to have a bold plan for broadband (Bush 2004).

Perhaps inadvertently, President Bush and Michael Powell had shifted the emphasis in the public policy debate over Internet deployment and penetration. The focus of the debate changed in two respects when the framing shifted from the from a digital divide that needed to be addressed by public policy to a Mercedes Benz divide that would be addressed by market forces.

First, the Powell/Bush Mercedes Benz formulation places greatest emphasis on the supply-side production of services to be consumed, while the digital divide framing shows greater concern for the consumer use and citizen participation aspects of the communications. Bush's emphasis on services is quite different from Clinton's emphasis on unlocking the potential of workers.

Second, concern about the rate of adoption of Internet across groups within the U.S. was replaced by concern about the overall rate of U.S. adoption compared to other nations. This highlights the public policy differences between nations, based on the need to "stay on the cutting edge of world trade." Whether inadvertent or not, the digital divide debate became a "falling behind on broadband" debate.

Over the course of the 2004 presidential campaign, members of the White House staff made it clear that broadband deployment would not be the object of active policy.

> In explaining the Administration's policy on broadband, the Associate Director of the Office of Science & Technology Policy has declared that 'we have not come out with a universal service platform'" (Patrick, 2004). When pressed about whether broadband should be the target of social policy the Administration spokesman reaffirmed that it simply was not part of the program. "Asked whether the Universal Service Fund should be used for broadband, as many suggest, Russell said 'then you automatically assume that broadband pays into Universal Service. Cable, he noted, does not'" (Patrick, 2004).

Cable does not pay into the Universal Service Fund because the Powell-led FCC has decided it should not.

This *laissez faire,* trickle down theme was reiterated by others in the Administration, as well. Undersecretary of Commerce- Technology, Phil Bond "reiterated Bush's goal of universal access to broadband by 2007… Bush's stated goal is universal access, not adoption, Russell said. As for Broadband adoption, Marburger said new services and applications will make broadband more attractive to fence sitters. But Russell said a less-quoted line of Bush's after the 2007 promise is endorsing "competition as soon as possible thereafter." Russell predicted broadband prices will drop as more competitors enter a market (Patrick, 2004).

Four years later, in January 2008, the National Telecommunications Information Administration (2008, p. 1) declared 'mission accomplished' in a report entitled *Networked Nation: Broadband in America,* stating

> four years ago President Bush articulated a National vision: universal, affordable access to broadband technology… The results have been striking… Penetration continues to grow and prices continue to fall… The President has made it a priority to ensure that all Americans have affordable access to this important resource by harnessing the power of the competitive marketplace. As this report demonstrates, a reasonable assessment of the available data indicates that the nation has, to a very great degree, realized this objective."

As discussed below, a close look at the data casts considerable doubt on this claim. The data does not support the claim to success measured by either of the policy frames.

- The digital divide has persisted. In a space that is as dynamic as cyberspace, a decade is a long time to be disconnected, rendering the disadvantage essentially permanent.
- The U.S. has fallen behind about a dozen nations in broadband and is beginning to suffer the consequences.

An understanding of the parameters of the debate and an evaluation of the extent to which the goal has been achieved is important because the issue remained front and center in the 2008 presidential campaign. The debate over public policy was renewed in exactly the same terms in the 2008 campaign (Korver, 2008; USC Annenberg 2008). Mike Powell was a prominent spokesperson for McCain on Internet policy, frequently debating Reed Hundt, President Clinton's first Chairman of the Federal Communications Commission, on these issues.

> The potential role of the USF in subsidizing broadband is a currently under debate in Congress and at the FCC.
>
> Hundt touted Obama as a candidate well versed in technology, and well equipped to use information technology to improve the operation of government.
>
> Powell said that McCain is knowledgeable of technology through his role as former chairman of the Senate Commerce Committee.

Powell praised McCain for understanding that government must create an environment encouraging American innovation. In order to create such a model he argued, Americans must have access to risk capital, and entrepreneurs deserve "to enjoy the fruits of their labor" (Korver, 2008).

Purpose and Outline of the Paper

Both of the threads in the debate over the adoption of Internet service focus on a very narrow set of issues – to whom is it available and which households subscribe to the service. There is a broad and valid critique of the framing of the digital divide issue to the effect that the focus on "penetration" (the calculation of the percentage of households with access) of technologies like the Internet and broadband is too narrow, ignoring a host of social, economic and psychological issues (van Dyk, 2005; Warschauer, 2003). Nevertheless, the question of penetration is **an** important issue, if not the only important issue. Moreover, even within the narrow question of who has adopted the service there are profound policy disputes.

The primary focus of this paper is the penetration issue. The paper is largely empirical, looking at survey, census and other data on the penetration of Internet access and its implications. It is also comparative, looking at the issue of the digital divide across time and space. The data comes from two points in time, late 2000/early 2001 and late 2007/early 2008. The first data point captures the exact moment when the framing of the digital divide debate shifted in Washington with the change in administrations. It also captures the moment when Internet access shifted from dial up to broadband.

The data is ideally suited to evaluate the claim made at the end of the Bush Administration that the goal 'to ensure that all Americans have affordable access to this important resource by harnessing the power of the competitive marketplace" has been achieved and to evaluate whether "a reasonable assessment of the available data indicates that the nation has, to a very great degree, realized this objective.'

The paper is divided into four parts. Part II provides the context for the debate by explaining the policy background as well as the social implications of the new technology.

Part III examines the status of the digital divide in terms of the adoption and use of the technology.

Part IV examines the issue of the status of the deployment of broadband technology in comparison to other nations.

Part V reviews the policy implications of the continuing digital divide and the lagging performance of the U.S. on broadband.

II. THE GOAL OF UBIQUITOUS, AFFORDABLE ADEQUATE COMMUNICATIONS SERVICE

The Legal Framework

The legal and policy framework in which the digital divide debate is located is important because it offers the essential rationale for carrying out the conversation and analyzing public policy. The Bush administration chose the standard by which it wanted to be measured – ubiquitous, affordable, broadband (advanced) communications. President Bush outlined some of the key reasons that achieving this goal would be important in the broadband era. In fact, the goal is nothing more than the original goal of the 1934 Communications Act restated for the twenty first century, "to make available, so far as possible, to all people of the United States a rapid, efficient, nation-wide and world-wide wired and radio communications service with adequate facilities at reasonable charges" (U.S.C.A. 1934). The goal was always implicitly progressive – encompassing the notion that as the communications network advanced, the universal service goal should advance as well. In 1934, when universal service was first articulated as national policy, two-thirds of American households did not have a telephone (Cooper, 1996).

The 1996 Telecommunications Act amendments to the 1934 Communications Act explicitly embraced the notion that the target should evolve and include access to information services:

> **S. 254 (b)** Universal Service Principles – The Joint Board and the Commission shall base policies for the preservation and advancement of universal service on the following principles:
>
> (1) Quality and Rates **–**Quality services should be available at just reasonable, and affordable rates.
>
> (2) Access to Advanced Services **–** Access to advanced telecommunications and information services should be provided in all regions of the nation.
>
> (3) Access in Rural and High Cost Areas **–** Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas (U.S. Telecommunications Act, 1996).

There is one aspect of the 1996 Act, however, that is implicitly less progressive than the underlying law that it amended. While the statute does envision the evolution of universal service, it also sees universal service policies called for only after the market has delivered the service to the majority.

> **S. 254 (c) (1)** Universal service is an evolving level of telecommunications service that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services. The Joint Board in recommending, and the Commission in establishing definitions

of the services that are supported by Federal Universal service support mechanisms shall consider the extent to which such telecommunications services

(a) are essential to education, public health or public safety;

(b) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;

(c) are being deployed to public telecommunications networks by telecommunications carriers; and

(d) are consistent with the public interest, convenience and necessity (Telecommunications Act of 1996).

Thus, the goal is contingent upon adoption by a "substantial" majority of consumers of services that are being deployed by private sector companies, services that have other "social" characteristics. Progressive, or not, there is little doubt that Internet service meets the definition of a universal service today.

Moreover, as more and more commerce and political expression moves onto the Internet, and more and more applications require the capacity of a high-speed communications network to function, broadband communications become the standard for "adequate facilities." Indeed, the expanding importance of communications in the information economy and the convergence of communications and commerce make the need to achieve the goal of universal service even more critical. The consequences of falling off "the cutting edge of technological changes" are severe for both the nation and households.

However, the supply-side view is too narrow. Internet connectivity not only delivers goods and services to consumers, it empowers consumers and, more importantly, citizens. As a potent two-way, many-to-many communications medium, not just a one-way, push consumption medium, it transforms the nature and capacity for participation in social and political activities. The importance of broadband on the supply-side, innovation front is widely recognized, but it is no more compelling as a basis for public policy to ensure ubiquitous, affordable broadband than the social and civic participation aspects. Viewing internet access as a tool for participation links it directly to the notion of equality of opportunity and equality in the political space is a much more compelling principle (Baker, 2007, pp. 7-16).

The Social and Economic Framework

The intensity of the debate over the digital divide reflects more than political opportunism by administrations and candidates; it has a firm grounding in the impact of a transformative technology on the economy, society and culture, as well as politics (Cooper 2002, 2003b, 2006; Benkler 2006)). Early in the spread of the technology, Manuel Castells, Professor of Sociology and Planning at the University of California, Berkeley and author of a three-volume work on *The Rise of the Network Society*, anticipated this rancorous debate. He noted that timing in the distribution and adoption of technology is a critical factor in determining economic chances, especially in a digital age.

> There are large areas of the world, and considerable segments of the population, switched off from the new technological system . . . Furthermore, speed of technological diffusion is selective, both socially and functionally. Differential timing in access to the power of technology for people, countries, and regions is a critical source of inequality in our society (Castells, 1996: p. 34).

One does not have to be a left-leaning, academic sociologist to arrive at the conclusion that lack of access to the new technologies puts people at a severe disadvantage. Not long before he became Secretary of State, Colin Powell, Chairman Michael Powell's father, described the problem in dramatic terms.

> We hear today about the "digital divide" – the gap between those who have access to the wonders of digital technology and the Internet and those who do not. When I address this issue I use an even stronger term: digital apartheid. What is at stake is today's digital "have nots" – especially the young – and whether they may find themselves marginalized for life because they lack the skills and tools to participate in our globalized, knowledge-based economy. This is true in America and in the rest of the world (Colin Powell, 2000).

Perhaps in the early days of the analysis of the digital divide, it was possible to downplay the importance of the penetration of the new communications medium into society, but after a decade there can be little doubt that Internet and activities in cyberspace are transforming society powerfully and rapidly (Benkler, 2006). Because the Internet has been an open and accessible place for new forms of expression, it was hoped (believed) that it would democratize society and equalize opportunity (Cooper, 2003a, pp. 92-95). The maldistribution of access to cyberspace flies in the face of that hope. In fact, because the opportunity to participate is less equally distributed in cyberspace than in physical space, the persistence of this problem may make matters worse; it may become is a new source of inequality in society.

Access to the Internet at home has been the focal point for U.S. policy debates for good reason. Because the U.S. is not a "café" culture, most personal business is conducted from the home. Searching for information, looking for a job, and entertainment activities (especially TV viewing) are typically done in the privacy of the residence. For this reason, we have measured the digital divide, as we have measured universal telephone service, by the availability of the means of communications (telephone or the Internet) in the home. Stopping by the library to use the Internet or using it at work may be transitional steps useful for creating skills in the population, or carrying out specific tasks associated with the activities of those locations, but they are not a replacement for its availability in the home.

The urgency to close the digital divide faster reflects two important characteristics of the Internet age (Cooper, 2002). First, it is well recognized that things happen much more quickly in cyberspace. If a household is cut off for a decade, its ability to participate and prosper in the new economy may be permanently impaired. If a groups is not well represented as the architecture of the Internet becomes defined and the patterns of deployment established, the needs of the group may never be well represented in cyberspace. Second, the convergence of commerce and communications in the digital information age gives this technology a special transformative power (Cooper 2003b; Benkler 2006)). The Internet is not just communications or just a means

of commerce. It promises to enhance productivity in many aspects of life and to transform the production of goods and services (Cooper 2006).

According to this line of reasoning, in the digital age, waiting "a few years" for technology to trickle down may seriously impede the economic aspirations of the "have laters." "Having later" may be almost as bad as "having not" because the good opportunities are gone and the patterns of activity are set, leaving latecomers excluded and switched off. The important point about the digital divide is not simply that some people have the technology and others do not, but that not having it puts people at a disadvantage and cuts them off from participation in important economic, social, cultural and political activities.

This leads directly to the second major point of emphasis in our analysis. It is what people can do with the Internet that makes it so important and makes closing the divide so critical. We reject the argument of some critics of the digital divide concept who claim we should not worry because Internet access is spreading as rapidly as some consumer appliances, like TVs and VCRs. Access to the Internet is much more important than access to a VCR. It may be an overstatement to say that the Internet changes everything, but it changes a lot of important things. Not having access seriously disadvantages the household. Acquisition of these new and powerful means of communications becomes the central determinant of participation in the digital information age. Routine use of these technologies makes for more efficient consumers and more effective citizens.

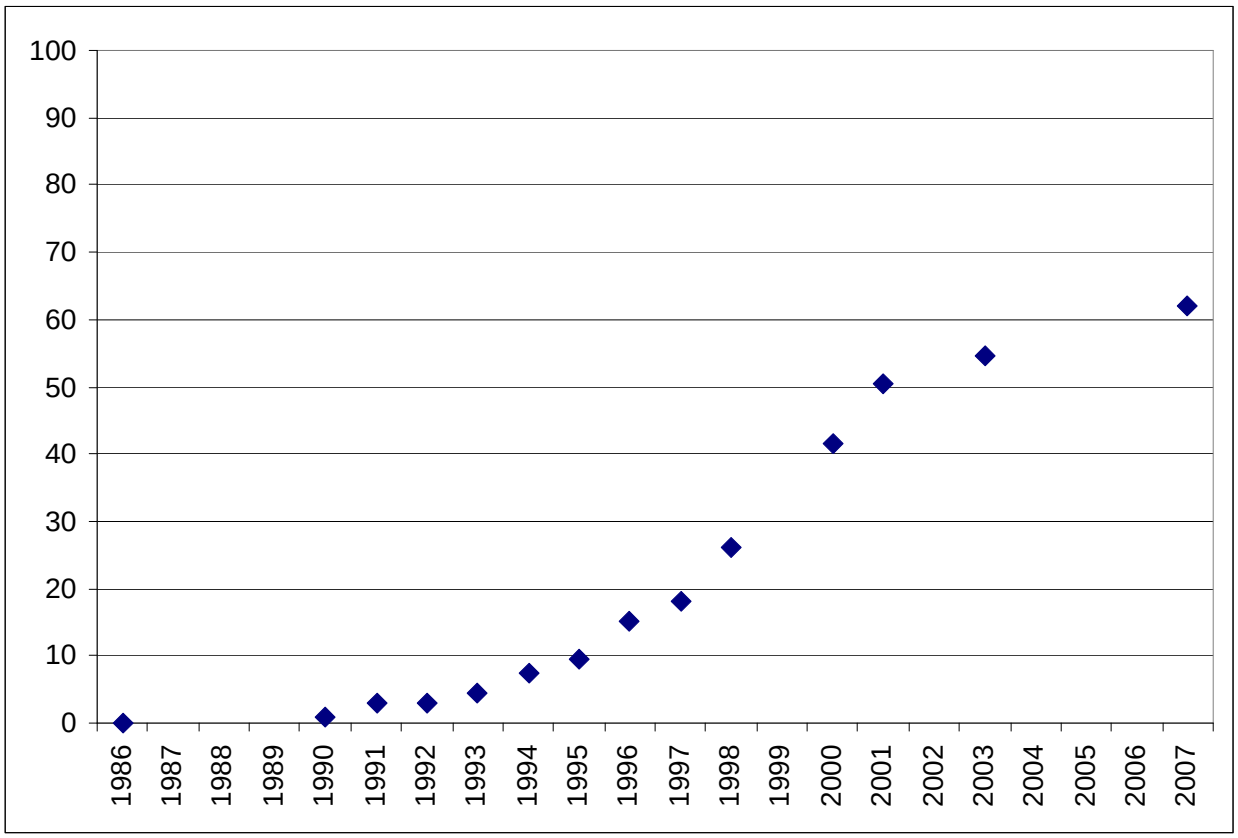
III. THE ENDURING DIGITAL DIVIDE

Because the digital divide has been a major concern since the Internet became widely available to the public and for commercial activities, the Bureau of the Census collects and makes available the raw data on how Internet access and advanced communications facilities are spreading throughout the nation. With these data available, it is hard to gloss over the failure to close the digital divide.

Internet Penetration has Stalled

The overall spread of Internet service is captured in an innovation adoption curve (see Figure 10. The curve has the typical shape of a logistic or S-curves, with a slow initial period, a rapid build up, and then a leveling off. It is clear that penetration has stall at less than two-thirds of the

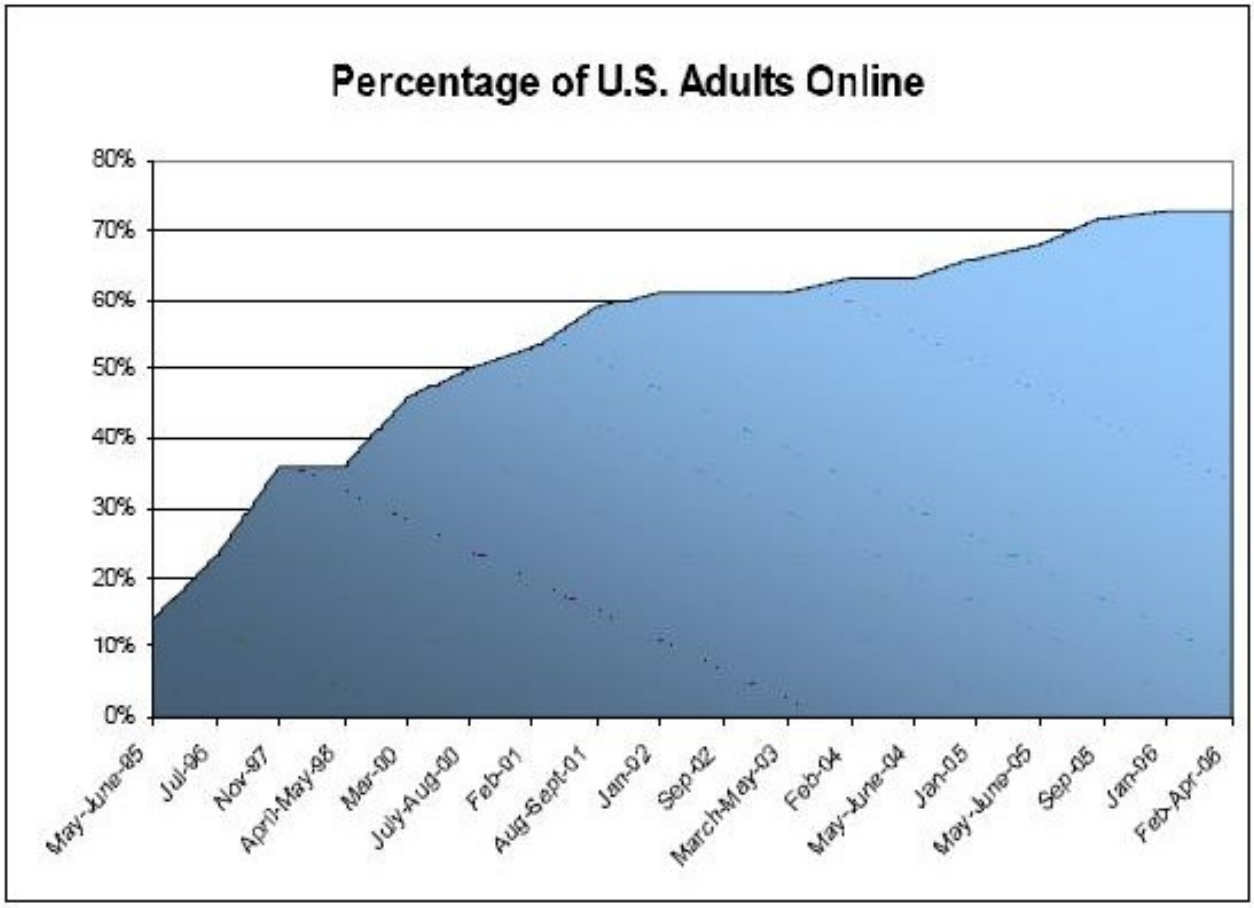
Figure 1: Percentage of Household with Internet Service



Source: National Telecommunications Information Administration, *Networked Nation: Broadband in America* (Washington, D.C.: January 2008) for 2007; U.S. Census Bureau, *Computer and Internet Use in the United States: 2003* (Washington D.C.: October 2005) for 1997 – 2003; Mark Cooper, *Developing the Information Age in the 1990s: A Pragmatic Consumer View.* (Washington, D.C. Consumer Federation of America, June 8, 1992).

Population. As shown in Figure 2, the percentage of households with Internet service at home (the penetration rate) has generally been about 5 to 10 percentage points behind the percentage of adults who have access to the Internet more broadly (Pew Internet and American Life Project). The difference is generally made up by access to the Internet at work. Both of the adoption curves suggest that Internet penetration is topping out at well below 100 percent. In 2007 over one-third of households did not have Internet service at home and over one-quarter did not use the Internet anywhere.

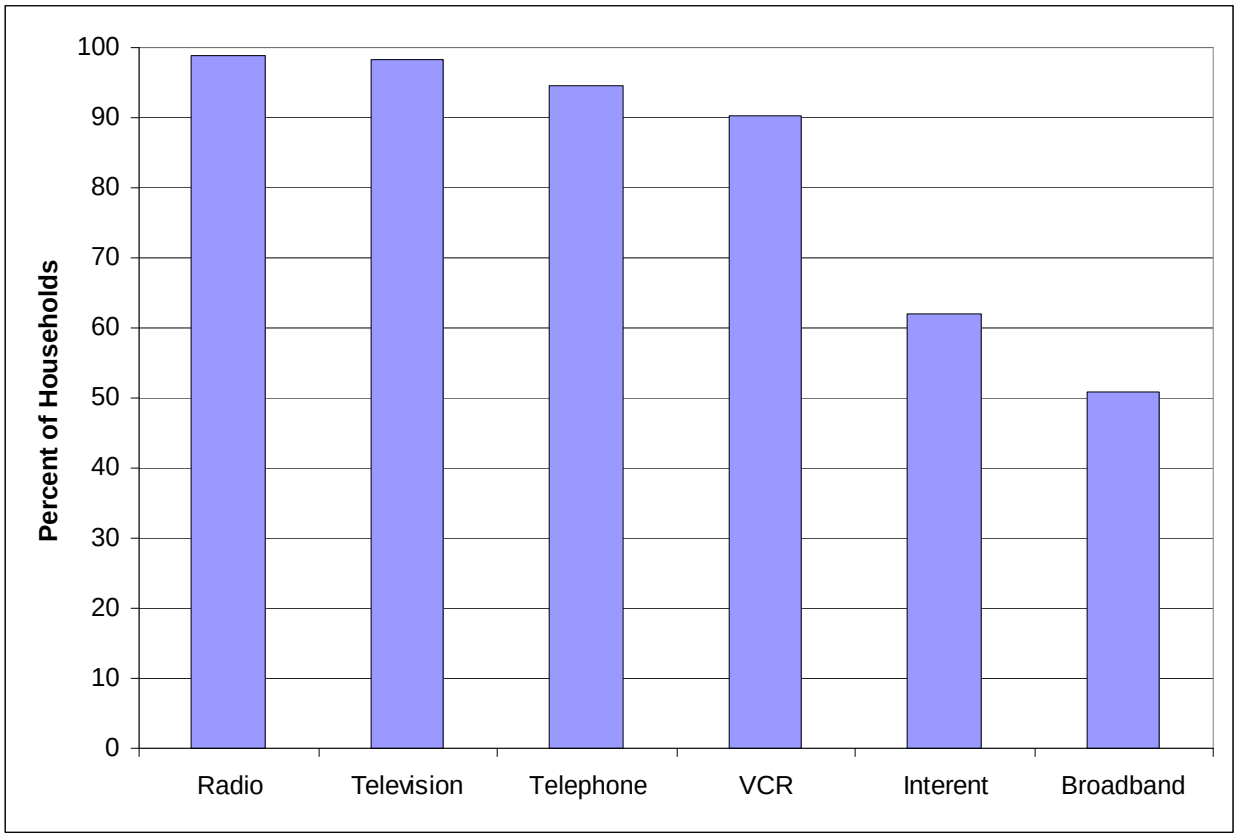
Figure 2: Percentage of U.S. Adults Online



Source: Pew Internet & American Life Project Surveys, March 2000-April 2006. All surveys prior to March 2000 were conducted by the Pew Research Center for People & the Press.[2]

Thus a substantial percentage of the population is not connected. It appears that penetration of Internet at home is not only leveling off well below 100 percent, but also well below the penetration of the dominant means of communications in the twentieth century including telephone, radio, and television (see Figure 3).

Figure 3: Percent of Households with Various Communications Technologies



Sources: U.S. Bureau of the Census, *Statistical Abstract of the United States: 2007, Table 1099,* 2005 for radio, TV, VCR; National Telecommunications and Information Administration, *Netwrked Nation: Braodband in America* (Washington, D.C. January 2008), Appendices Federal Communications Commission, Monitoring Report, 2007, Table 6-1, March 2007 for telephone.

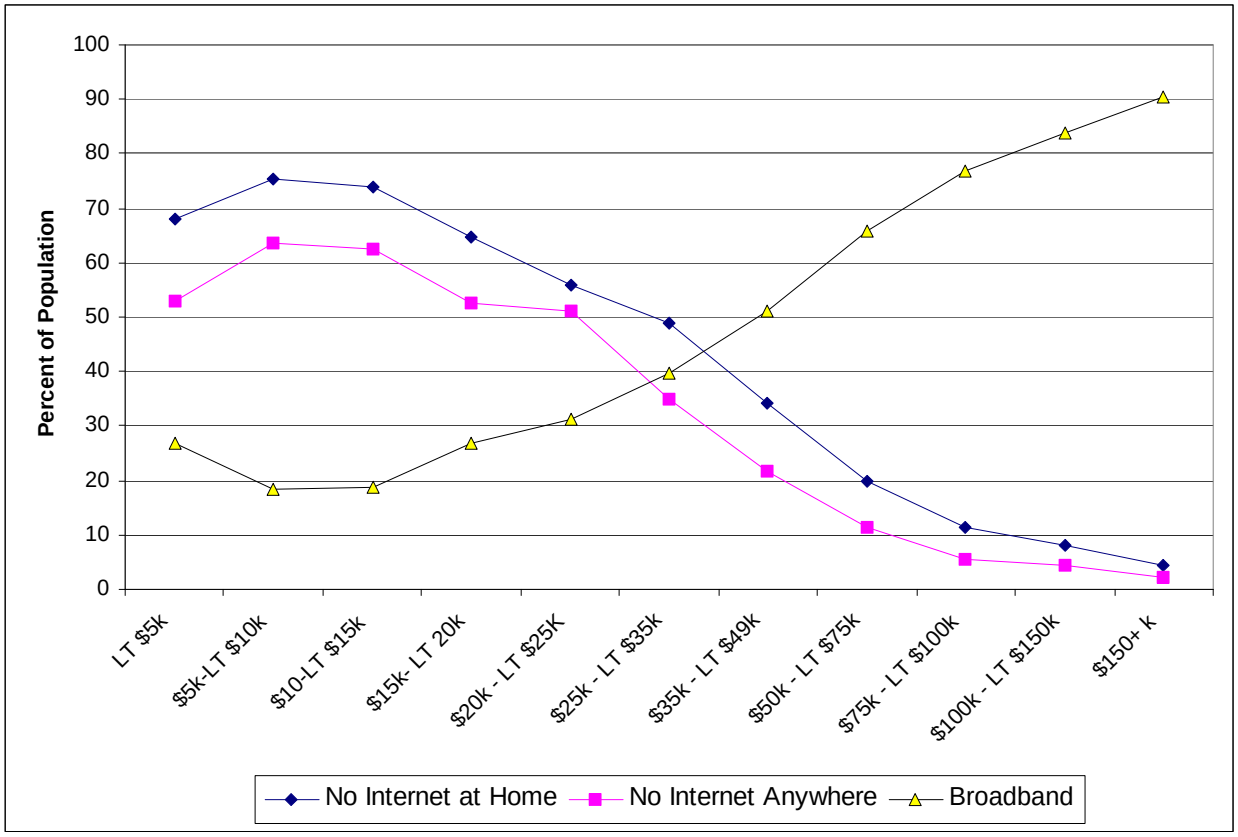
The Digital Divide Affects Specific Groups in Society

The distribution of disconnectedness is not random (see Figure 4). Lower income households are much more likely to be disconnected. Households with incomes below $25,000 per year are twice as likely to be among the disconnected. They account for 52 percent of all households without Internet at home, while they constitute only 27 percent of the total of households. They are also less likely to have broadband. Almost three quarters of households with income below $25,000 did not have Internet service at home. In contrast, among households with incomes above $25,000 about four-fifths had broadband. About 90 percent of households with incomes above $75,000 have broadband at home; over 70% of households with incomes below $25,000 do not.

The most recent data confirms a second aspect of the digital divide that was at the heart of the early identification of the problem (National Telecommunication Information Administration, 2008, Appendices). Income is associated with race and ethnicity in America, so

we find that White, non-Hispanics are much more likely to have broadband (69 percent) than Blacks and Hispanics (46 percent and 43 percent, respectively). White, non-Hispanics are less likely not to have Internet at home (23 percent) than Blacks and Hispanics (39 percent and 45 percent, respectively).

Figure 4 Households without Internet at Home by Level of Income

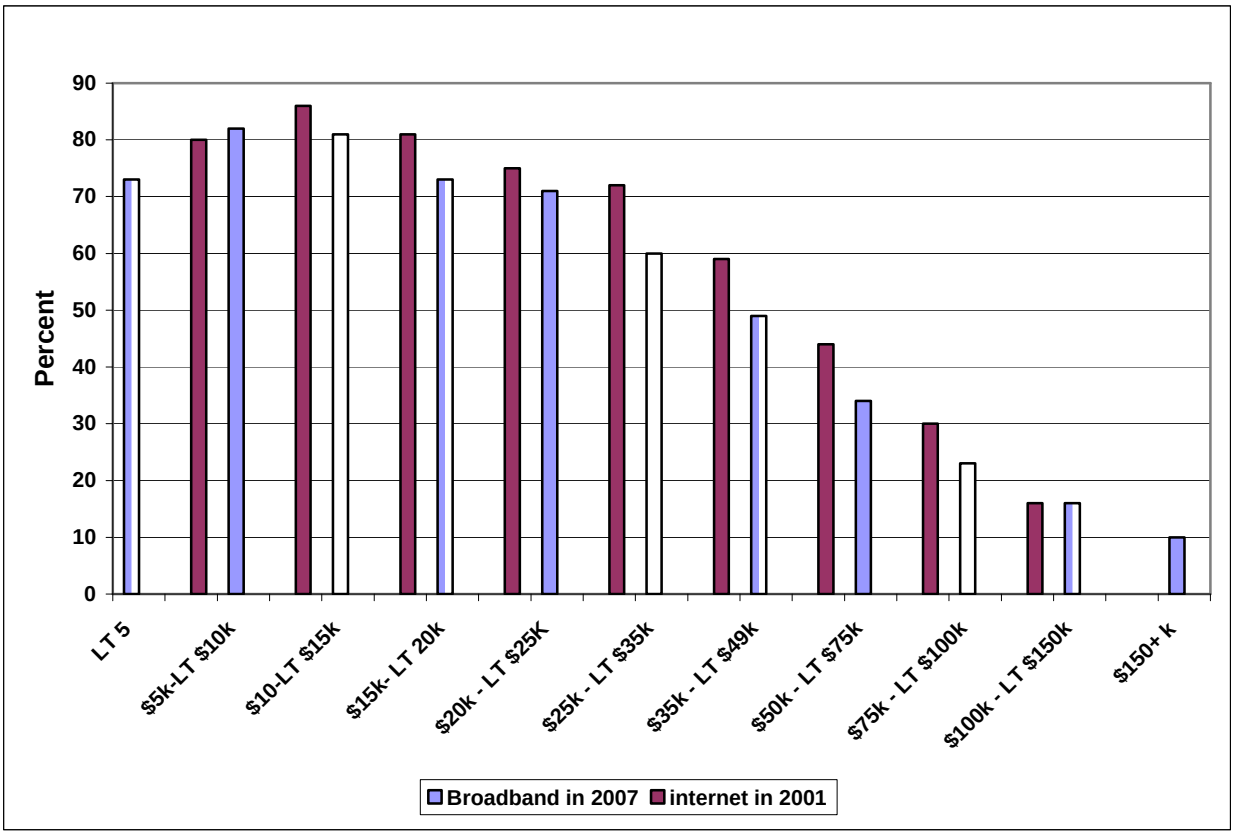


Source: National Telecommunications and Information Administration, *Netwrked Nation: Braodband in America* (Washington, D.C. January 2008), Appendices

The persistence of the digital divide can best be seen when we compare Internet access in 2001 to broadband access in 2007. Overall, 54 percent of households did not have the Internet in 2001; 49 percent of households did not have broadband in 2007 (see Figure 5). For households with incomes below $25,000 per year, about 75 percent did not have broadband; the same percentage as did not have Internet in 2001. For households with incomes between $25,000 and $50,000, over 50 percent did not have broadband in 2007, as opposed to 60 percent who did not have Internet in 2001. In contrast, for households with incomes above $75,000 almost 90 percent have broadband, a slightly higher percentage than had the Internet in 2001. It may not be a Mercedes Benz divide, but there is still a wide rich-poor gap in access to broadband in the home.

The most recent census data also confirm a third aspect of the digital divide, the rural - urban divide. Rural households are slightly less likely to have Internet at home (42 percent without access in rural areas compared to 38 percent without access in urban areas), but there are two other aspects of the digital divide in rural America that are notable. First, the distribution of access is somewhat more skewed across income groups in rural areas. Lower income rural households are somewhat less likely to have Internet access than urban lower income

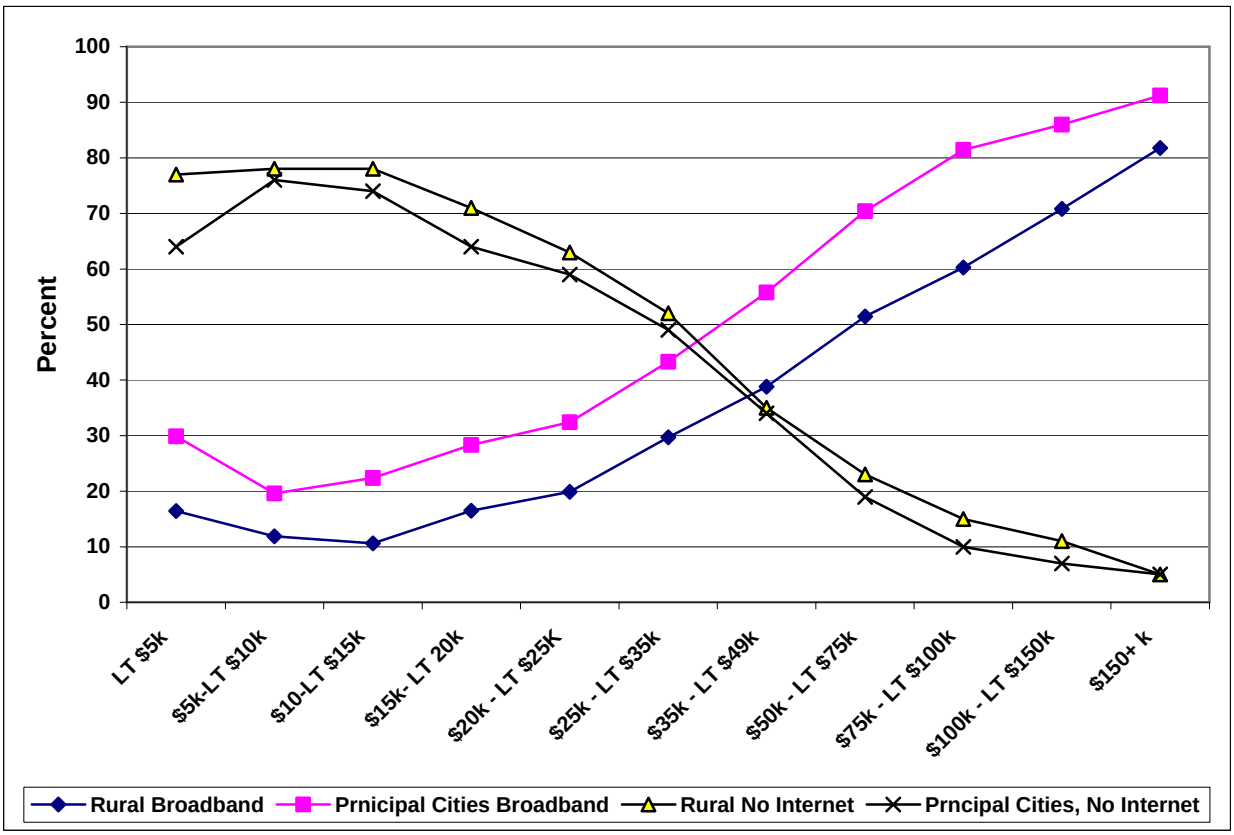
Figure 5 The Digital Divide Persists in Broadband: Households without Broadband 2007 v. Households without Internet 2001



Source: National Telecommunications and Information Administration, *Netwrked Nation: Braodband in America* (Washington, D.C. January 2008), Appendices

households. Second, although rural households have caught up in dial up Internet, they are lagging behind in broadband (see Figure 6). Here the problem is the high cost of getting high-speed to rural areas. We see a substantial difference in penetration of broadband, with the principal cities having penetration rates that are 10 to 20 percentage points higher. Interestingly, the larger differences are at higher income levels. This suggests that the availability of rural broadband is likely the problem. Upper income households are most able to afford broadband, but are unable to access it in rural areas.

Figure 6 Rural v. Urban Internet and Broadband Penetration



Source: National Telecommunications and Information Administration, *Netwrked Nation: Broadband in America* (Washington, D.C. January 2008), Appendices

Empirical Evidence on the Importance of Connectedness

In assessing the impact of the digital divide in the early years of the debate we examined the patterns of utilization of the Internet and rates of participation in various social, political and economic activities for two reasons (Cooper, 2000, 2002). First, since it was unclear what the impact of the technology would be, it was important to chart its uses. Second, if the technology became an important means of commerce, communications and expression, it was important to document what it means to be disconnected. Are those who are disconnected, really disadvantaged or disenfranchised as a result? In particular, if the disconnected did not participate in social, economic and political discourse in either physical space or cyberspace, then the digital divide would not be a unique new source of inequality, it would just replicate existing inequalities in society. If people have higher rates of participation in physical space than cyberspace, then it is a new source of inequality.

We captured the difference by matching activities. We covered a range of economic/commercial activities (job search, commercial information gathering, online purchases) as well as civic and political activities such as gathering information (e.g. read a newspaper or magazine, attend a lecture), engaging in political activity (e.g. contact a public

official, circulate a petition, attend a political rally) or engaging in civic discourse (e.g. write a letter to the editor, discuss politics with a neighbor).

In 2000 the connected respondents had dial-up at home, while the disconnected had no Internet access. The middle category included people who had some Internet access or digital devices. For 2005, we distinguish between broadband at home, on one side, and those who say they do not use the Internet on the other side. In the middle are those with dial-up and those who use the Internet but not at home. The percentage of people who are disconnected has increased somewhat because of the change in definition, but the 35 percent figure is consistent with the percentage who do not have Internet at home in 2008, as noted above.

For the economic activities, we simply identified the level of activity in cyberspace and did not include questions on physical space activities, since most households engage in basic economic activities (see Table 1).

Table 1: Commercial Activities on the Internet Across Time

	2002	**2007**
Ever purchased a product	**22%**	**49%**
Ever made travel reservations	**18**	**47**
Ever done online banking	**9**	**39**
Sought online information daily	**7**	**?**
Used Internet to acquire music	**na**	**46**
Looked for real estate	**na**	**49**

Source: John B. Horrigan, *Online Shoping* (Washington, D.C.: Pew Internet and American Life Project, February 13, 2008), *The Internet and Consumer Choice: Online American Use Different Search and Purchase Strategies for Different Goods,* (Washington, D.C.: Pew Internet and American Life Project, May 18, 2008).

Here the growth of the activities is what is striking. Online information seeking, purchases and banking have become common activities for those with Internet access. Half of all respondents have engaged in these activities, which suggests that two thirds or more of those with Internet access have done so. A world of economic commerce has been built in cyberspace from which those who lack access are excluded. The disconnected are placed at an increasing disadvantage.

For the social and political activities we included items to compare physical space activities and cyberspace activities. Table 2 presents the result from both surveys.

Survey research in 2000 showed that the digital divide magnified inequalities of involvement and participation (see Table 2). The disconnected in society participated much more in physical space than they do in cyberspace. Replication in 2005 confirms those earlier findings.[47] The differences between those who are connected and the disconnected in key

[47] The primary shift between 2005, when this data was gathered, and 2008 has been a shift from dial-up to broadband, but as the title of a study from the Pew Internet and American Life Project suggests the 2005 results apply to 2008: "Adoption Stalls for Low-Income

physical space activities are small or non-existent, with those who were connected being only slightly more likely to be active in some measures of civic discourse. The advantage of the connected was much greater when cyberspace activities were considered.

While physical space activities still dominate, cyberspace activities are quite extensive. Evaluating the relative magnitude of the impact requires complex econometric modeling. Such an approach has been applied to the large data set in which the 2000 measures of media usage were embedded. The conclusion was striking, even then, with lower levels of overall activity: "Online information seeking and interactive civic messaging – uses of the Web as a source and a forum – both strongly influence civic engagement, often more so than do traditional print and broadcast media and face-to-face communications… [B]oth online and offline channels culminate in actual participation (Shah, et al. pp. pp. 551…553). The disconnected do participate in physical space; they are disenfranchised in cyberspace.

Table 2:
Survey Resulsts: Percent of Respondents Engaging in Selected Social, Civic and Political Activities in Physical Space and Cyberspace (Cyberspace activities in bold)

2000 Survey

	Disconnected	**Partially Connected**	**Fully Connected**
Percent of population	26	38	36
Information Gathering			
Read a newspaper	92	95	97
Obtained online news or sports results	**24**	**43**	**65**
Read a news magazine	62	69	79
Visit a news website	**18**	**41**	**70**
Attended a lecture	29	48	55
Obtained educational information	**26**	**55**	**73**
Political Activity			
Contacted a local official	31	37	40
Visited a gov't agency website	**13**	**26**	**40**
Circulated a petition for a politician	10	11	12
Signed or forwarded a petition	**5**	**7**	**14**
Attended a political rally	22	21	19
Visited a politician's website	**8**	**12**	**19**
Civic Discourse			
Wrote a letter to the editor	20	21	27
E-mailed a newspaper	**8**	**10**	**16**
Discussed politics with a neighbor	46	51	50
Discussed politics in e-mail	**7**	**6**	**12**

Americans even as many Broadband Users Opt for Premium Services that Give them More Speed" (Horrigan, 2008c).

Table 2: **Constinued**

2005 Survey

	Disconnected	Partially Connected	Fully Connected
	Do not use	**Dial-up**	**Broadband**
Percent of population	35	42	24
Information Gathering			
Local TV new***	96	95	92
Morning news show	70	68	63
Checked news online* **	**19**	**67**	**64**
Political Activity			
Attended a political rally	10	10	10
Visited political web site* **	**3**	**13**	**9**
Circulated a petition	7	10	9
Political discussion with e-mail* **	**5**	**17**	**13**
Sought/Expressed political opinion in blogs* **	**2**	**8**	**7**
Civic Discourse			
Wrote a letter to the editor	12	11	12
E-mailed editor or politician* **	**5**	**17**	**12**
Participated in a community project*	25	24	29
E-mailed to organize community project* **	**3**	**12**	**13**
Went to a club	34	39	40
Participated in a chat room*	**6**	**14**	**14**
Forwarded a news article with e-mail* **	**10**	**36**	**33**
Worked for a social group or cause	23	24	28
Visited we site of a social group or cause* **	**5**	**30**	**15**

Source: The data for the 2000 analysis was supported by the Digital Media Forum, a media policy consortium established by the Ford Foundation. Additional support was provided by research funding to Dhavan Shah from the School of Journalism and Mass Communications, University of Wisconsin, Madison, as well as grants to William Eveland form the Institute for Social, Behavioral, and Economic Research and the Department of Communications, University of California at Santa Barbara. Access was also provided to DDB-Chicago for some data. The for 2005 data analyzed in this report was collected with the support of grants from the Carnegie Corporation of New York, Pew Charitable Trusts through the Center for Information & Research On Civic Learning & Engagement (CIRCLE), Rockefeller Brother Fund, and Damm Fund of the Journal Foundation to Dhavan Shah (Principal Investigator) and Douglas McLeod (Co-Principal Investigator). The authors would like to thank DDB-Chicago for access to the Life Style Study, and Marty Horn and Chris Callahan, in particular, for making the survey data available and sharing methodological details. Opinions, findings, and conclusions in this report are those of the authors and do not necessarily reflect the views of the supporting sources or DDB-Chicago.

IV. FALLING BEHIND ON BROADBAND

The fact that the Bush Administration shifted the focus of policy to "being on the cutting edge" is reason enough to examine the performance of the U.S. compared to other nations, but there is a second reason to do so. In order to reach a final conclusion on the digital divide issue, one other possibility must be considered. Maybe it is not a problem of laissez faire trickle down economics, but a real "Mercedes Benz Divide." Maybe broadband is an expensive technology that will never reach the broad penetration of a communications platform that the telephone did. The U.S. chose a particular policy path to deployment of broadband technology and has failed to achieve the goal of ubiquitous affordable service that is adopted by almost all households. Is it the technology or the policy that is the problem?

Falling Off the Cutting Edge

When the Bush Administration took office the U.S. ranked third in the world in the penetration of broadband (see Table 3). In the following seven years, the U.S. slipped behind more than a dozen industrial nations. By some measures, it is behind two dozen.

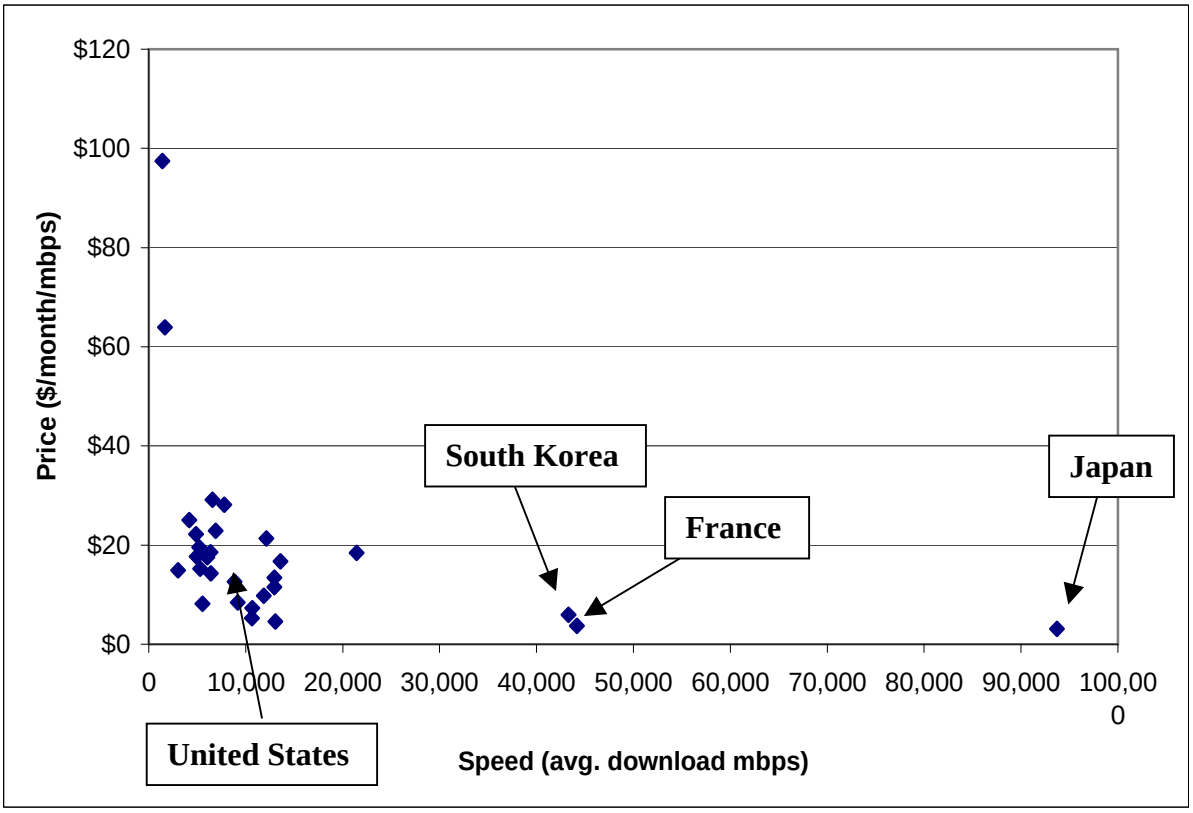
Table 3: Falling Behind on Broadband (Subscribers per 100 popultion)

Rank	2001	2007
1	Canada	Denmark
2	Sweden	Netherlands
3	*United States	Iceland
4	Belgium	Norway
5	Denmark	Switzerland
6	Netherlands	Finland
7	Iceland	Korea
8	Austria	Sweden
9	Germany	Luxembourg
10	Japan	Canada
11	Switzerland	United Kingdom
12	Korea	Belgium
13	Norway	France
14	Finland	Germany
15	Spain	*United States
16	France	Australia
17	Portugal	Japan
18	Australia	Austria
19	Italy	New Zealand
20	New Zealand	Ireland
21	United Kingdom	Spain
22	Hungary	Italy
23	Luxembourg	Czech Republic
24	Czech Republic	Portugal
25	Mexico	Hungary
26	Poland	Greece
27	Greece	Poland
28	Ireland	Slovak Republic
29	Slovak Republic	Turkey
30	Turkey	Mexico

Source: Organization for Economic Cooperation and Development, *Broadband Statistics to December 2006, June 2007; Broadband Subscribers December 2007.*

The reason that the other nations have passed the U.S. and the reason there is still a big digital divide is that Americans pay higher prices for slower speeds service than in many other advanced industrial nations (see Figure 7). While the Administration has tried to downplay this failure, the *Economist* magazine, hardly a radical, left wing publication, took American policy to task in an editorial entitled "Open Up Those Highways," pointing out that "A New Yorker who wants the same quality of services of broadband has to pay around $150 more per month than a Parisian" (Anonymous, 2008). And, the French, who get, on average, three times the speed at one third the cost as Americans, are not the world leader by any stretch of the imagination, as Figure 7 shows. The Asian nations of Korea and Japan have speeds that are almost ten times faster at prices that are less than half of what U.S. consumers pay.

Figure 7 Mediocre Speeds and Mediocre Prices Result in Mediocre Penetration



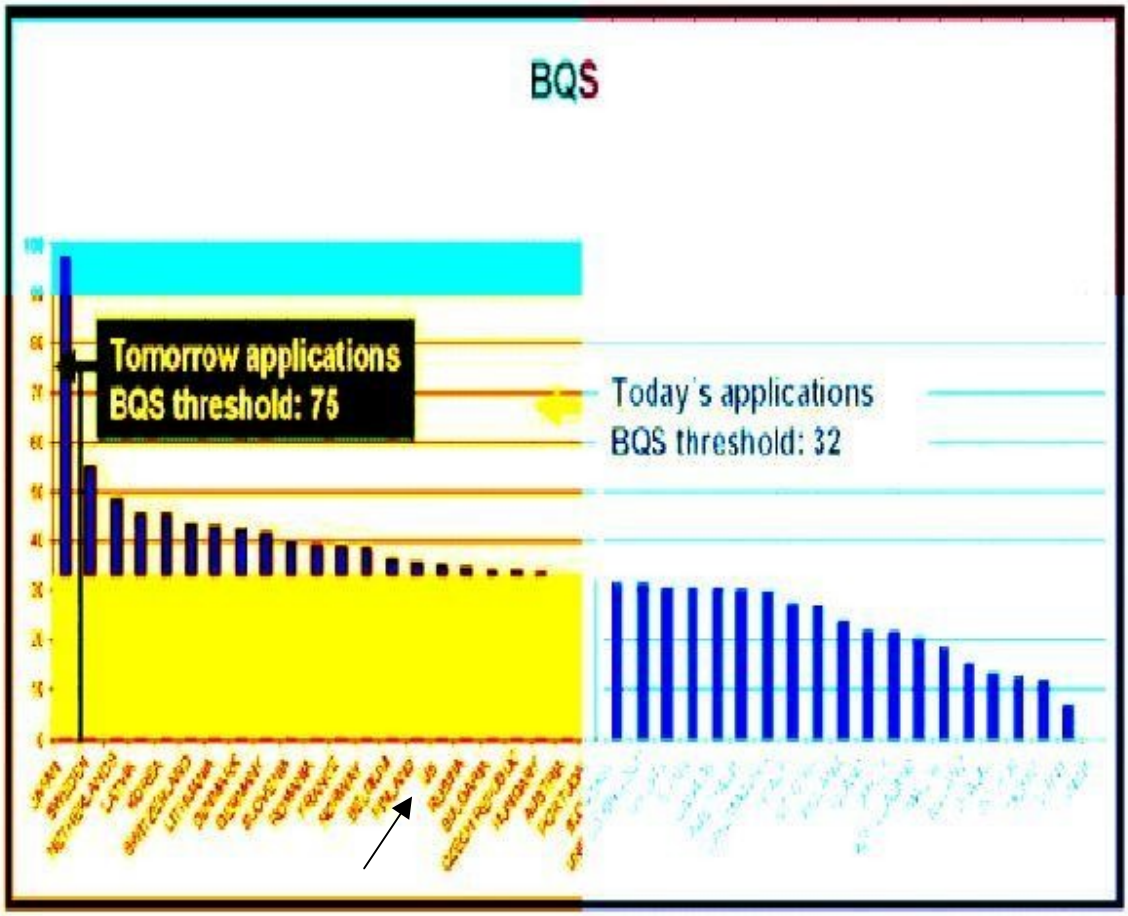
Source: OECD, Broadband Portal, Tables 4f and 5d, data for October 2007.

Exactly how *The Economist* arrived at its calculation is not clear, but there is no doubt that the U.S. lags behind on price and speed. U.S. consumers pay on average four times as much per thousand bits per second and receive services, but the French receive service that is five times as fast, on average and the Japanese receive services that are ten times as fast. The maximum speeds available are greater in France and Japan for every technology – 1.5 times as fast for cable, 2 times as fast for fiber optic network, and 5 to 15 times as fast for DSL (copper).

High prices are a major cause of the digital divide. Slow speeds are a major component of the wider problem of lagging performance on broadband.

An analysis prepared by the Said Business School at Oxford University and the University of Oveido highlighted the issue of "staying on the cutting edge" by developing a broadband quality score that measured "*download* and *upload* throughput and latency" (Said Business School 2008: 2). The logic of the approach was to move beyond the simple numbers of the penetration of broadband (see Figure 8).

Figure 8: SAID Quality of Service Ranking



Source: Said School of Business Oxford University and University of Oveido, 2008, *High Quality Broadband Essential to Growth of the World's Knowledge Economies,* September12.

> A nation's leadership in broadband was typically deteremined by its ranking on penetration, and now we know that this will not be enough. This study gives broadband stakeholders, from governments to telecom and cable operators and vendors like Cisco, as well as consumers a better understnading of the importance of quality broadband connections. Without high-quality broadband, we will not be able to take full advantage of the next waved of productivity, collaboration and entertianment that can be gained from the web" (Said Bsuiness School 2008:2).

The U.S. ranked 16th among the 42 nation's studied including almost all of the dozen nations ranked ahead of of the U.S. based on simple penetration.

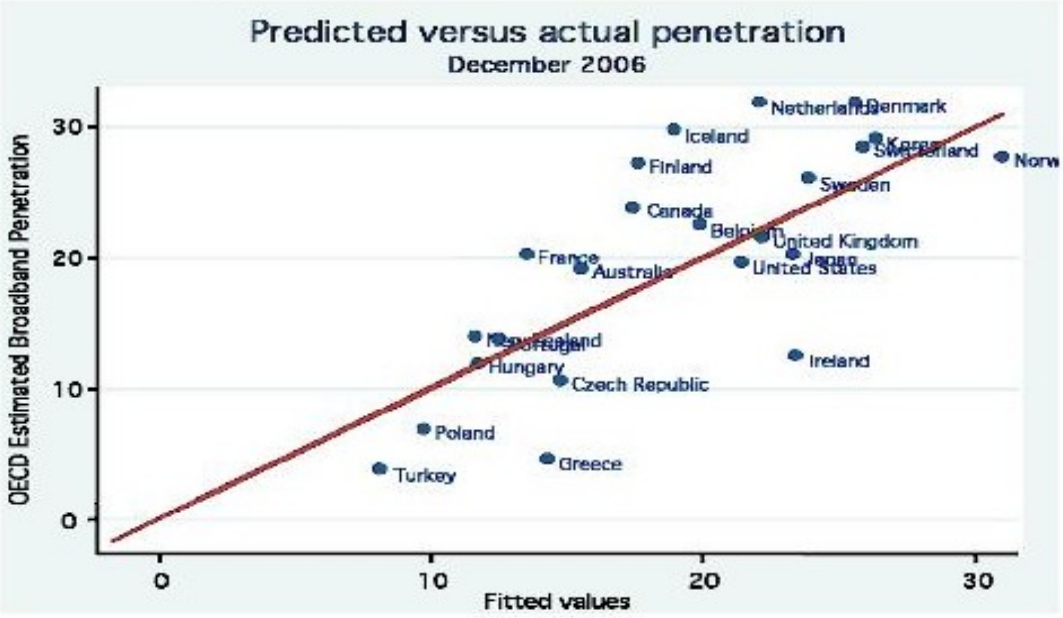
Efforts to Explain Away the Inconvenient Truth

Stung by the findings that the U.S. is falling behind and the implication that the policy has failed, three general types of responses have been offered by governmental and industry spokesmen to explain away the fact that the U.S. is not doing so well.

The first approach to explaining away the declining status of the U.S. calls for more independent variables. It points to other factors that might account for differences between broadband penetration including -- population density, market concentration, household size, income levels, income inequality, education, and age, among other factors. By creating a predicted score for penetration based on these other factors, these studies tried to absolve policy as the cause of falling behind, claiming that the U.S. is doing as well as could be predicted/expected given its income, income inequality, population density, etc. Figures 9 through 12 present the results of several studies of this type (Wallenstein 2007, Atkinson, Correa, and Hedlund 2008; Ford, Koutsky and Spiwak 2008' Turner, 2005)). All of these analyses tell essentially the same story. The U.S. is below the regression line that relates actual performance to predicted performance and well behind about a dozen nations. The very same nations that lead the U.S. in the simple speed, penetration, and price comparisons also outperform the U.S. in the more complex analyses.

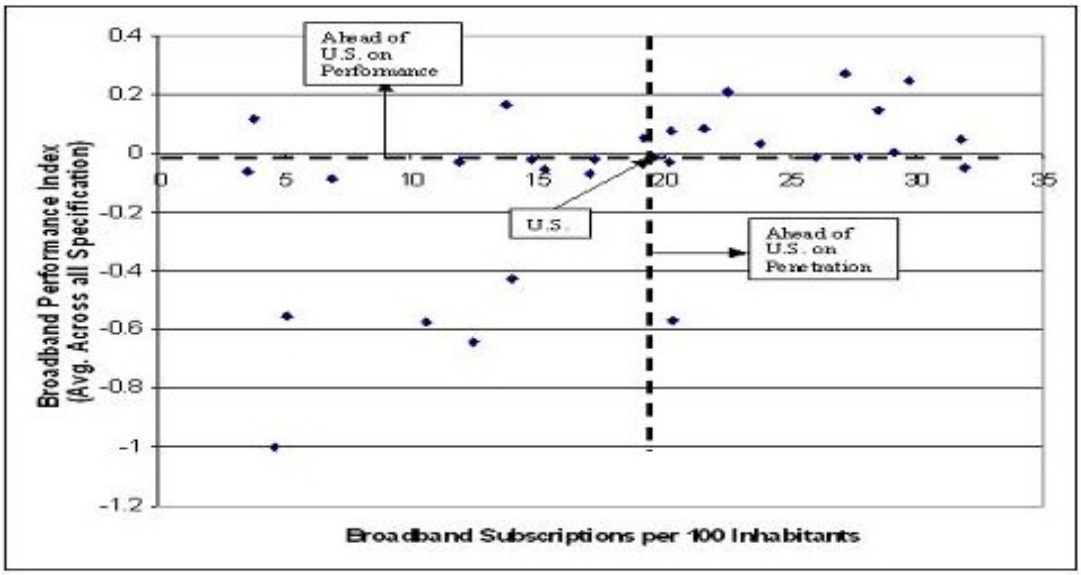
The second approach to explaining away the poor U. S. performance is to redefine the dependent variable. Here the claim is that other technologies, like G3 wireless should be included. However, these technologies do not come close to matching the speeds of wire line broadband and appear to be used as a complement for mobile communications by the very same people who have wireline broadband, not as a substitute for full service wire line broadband (Horrigan 2008c). Although Europeans have been ahead of the U.S. on wireless telephony, the wireless broadband services have fared much worse in Europe than in the U.S., suggesting that the availability of much more attractive wireline broadband speed/price options is crucial.

Figure 9: Controlling for Urbanicity and Industry Concentration, the U.S. is Outperformed by 15 OECD Nations



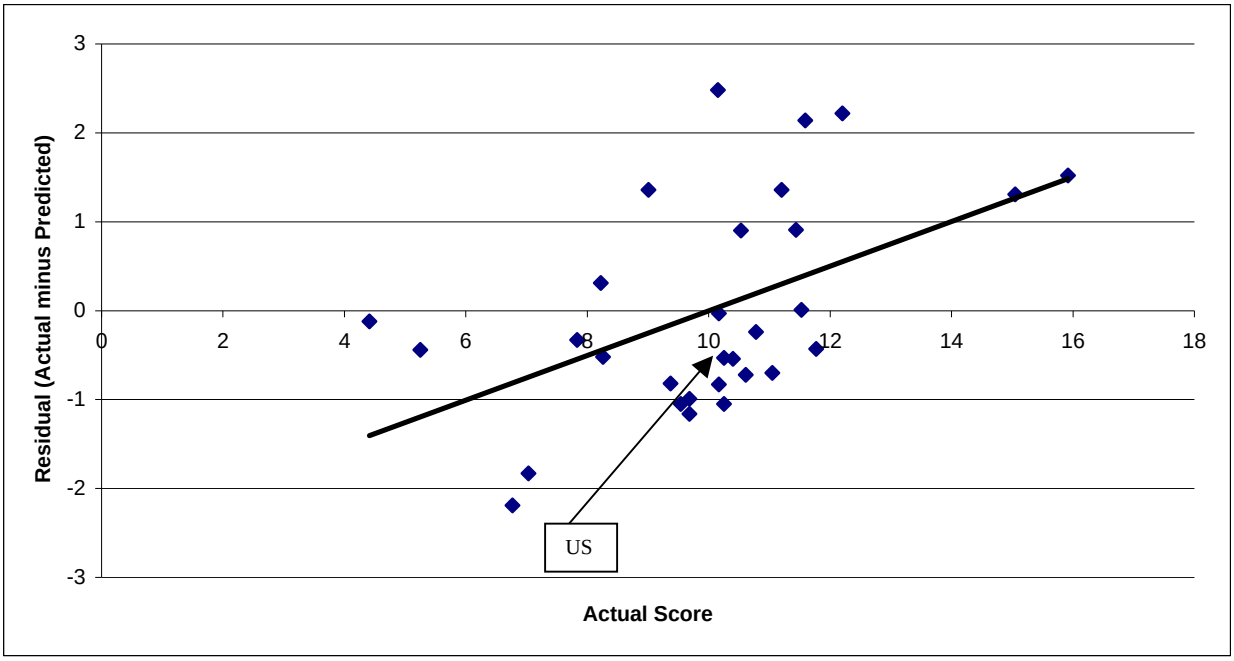
Scott Wallenstein, *Everything You Heard About Broadband in the U.S. is Wrong,* **Progress and Freedom Foundation, June 2007**

Figure 10:
Lowering Expectations Does not Improve the Picture: The U.S. Ranks 14th on Performance and 13 nations are Outperforming the U.S.



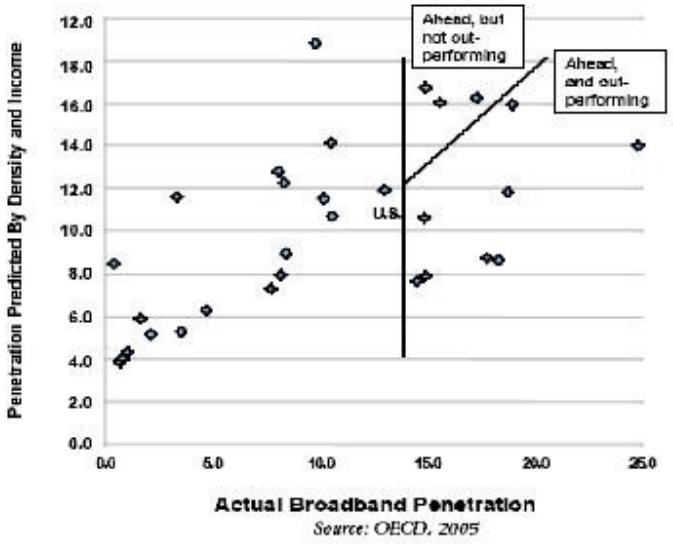
Source: Phoenix Center, *The Broadband Performance Index,* **July 2007.**

Figure 10: The U.S. is Underperforming on the ITIF Index, while the Nations Ahead of It are Over performing



Source: Robert Atkinson, Danieal K.Correa and Julie A. Hedlund, *Explaining International Broadband Leadership* (Information Technology and Innovation Foundation, May 1, 2001).

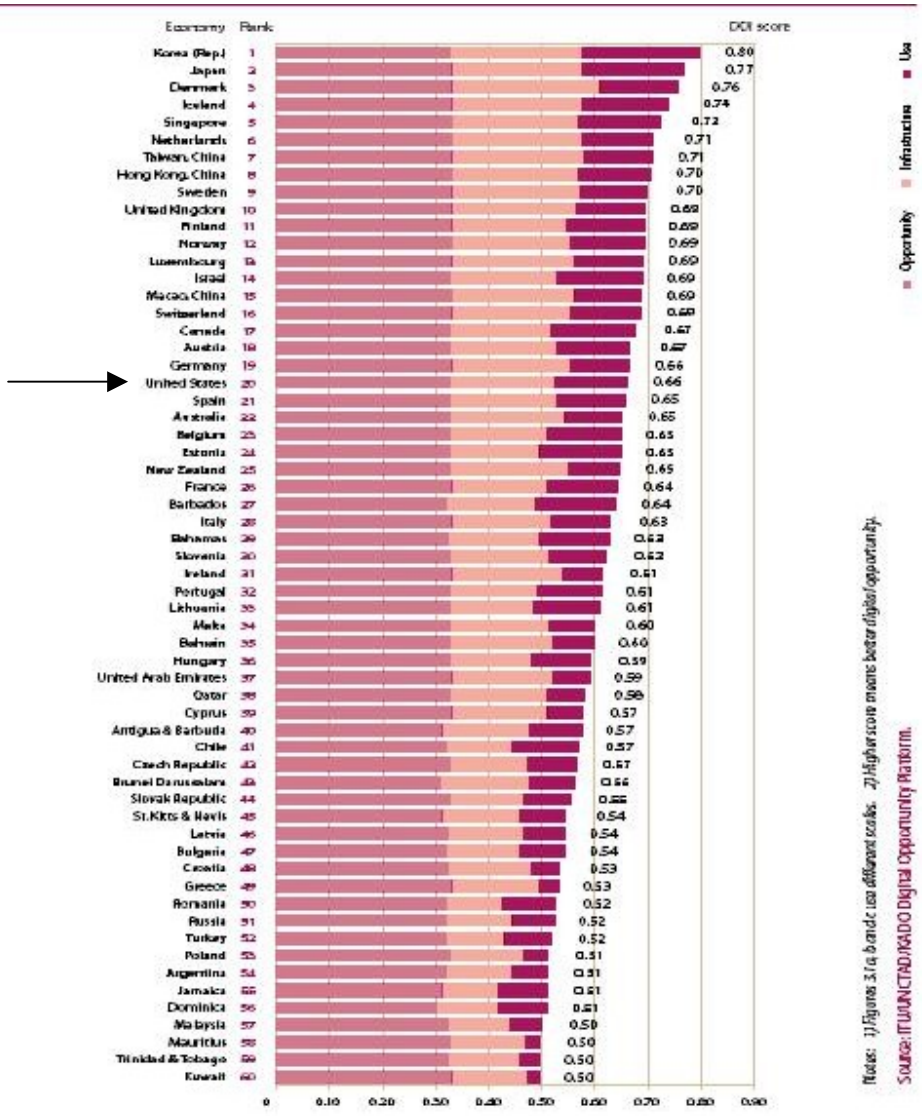
Figure 12: U.S. v. Other Nations in Broadband Penetration



Source: S. Derek Turner, *Broadband Reality Check,* Washington, D.C.: Free Press, August 2005), p. 7.

Ironically, a global index that includes penetration of cellular and wireless technologies with equal weight to wireline service, the Digital Opportunity Index sponsored by the World Summit on the Information Society (2008), ranks the U.S. 16th among the OECD national analyzed by the above indices (see Exhibit 13).

Figure 13: Digital Opportunity Index



Source: World Information Society Report 2007: Beyond WSIS, 2007, chapter 3.

Taken together, the six different rankings present a dramatic picture of the U.S. falling behind on broadband. Eleven nations of the thirty OECD nations are ranked ahead of the U.S. in a majority of the evaluation approaches (6-0: Denmark, Finland, Sweden, Switzerland; 5-1: Belgium, France, Korea, Netherlands, Iceland; 4-2 United Kingdom, Norway). Another two that were certainly behind the U.S. in 2001 now split the rankings 3 to 3 with the U.S. (Portugal, Japan). Looking back at Table 3 we find that after controlling for a variety of other factors and seeking to measure the outcome in different ways, the same set of countries has caught up to or passed the U.S. in broadband deployment.

The third approach to explaining away the poor U.S. performance is an extension of the second. It expands the dependent variable to include a whole range of factors beyond technology. This multi-attribute approach essentially skips over the basic issue as laid out by President Bush. A report from an international business school in France prepared for an anti-regulation, free trade group (Markhoff, 2008a) provides a perspective on this approach. The report glosses over the questions of infrastructure deployment and adoption by focusing on "cultural, economic and political" factors to conclude that the U.S. is fourth in Internet readiness, broadly defined. The criticism of France offered by the director of the study reveals the not-so-hidden agenda. Whereas France is well ahead of the U.S. in broadband capacity and price, as noted above,

> in the study it ranked at 21… It's not because France is lacking in technology, Professor Dutta said. 'If you look at other kinds of regulatory issues and labor conditions, you find a rigid situation that prohibits its companies from making the most effective use of technology." In contrast, "the United States came in fourth, which is up three places from last year. It's rated highly for its research institutions, innovation – the U.S. files for the most patents of any country – and thriving marketplace (Worthen, 2008).

While some multi-attribute approaches to measuring Internet readiness may gloss over the infrastructure problems and rank the U.S. higher, others do not. Broader measures of competitiveness suggest that President Bush was right to identify broadband deployment as a critical aspect of remaining "on the competitive edge of world trade… and the cutting edge of technological change." With lagging broadband penetration, innovation in the applications layer and the services that use the physical connection had gone abroad. Even the multi-attribute studies suggest problems. For example, the U. S. ranks seventh on the A.T. Kearney Globalization Index (2008). Six of the seven nations are included in the OECD studies and all of them rank ahead of the U.S. on at least three of the indices of broadband performance. Singapore, Taiwan and Hong Kong, which are not included in the OECD studies, also are consistently ranked ahead of the U.S. on broadband and in some of the multi-attribute studies.

The most recent rankings of the ITU pulls many of these pieces of the argument together, including mobile broadband, households with Internet and other characteristics of the information communications technology environment (ITU, 2009). It has the U.S. falling from 11th in 2002 to 17 in 2007 on the Information Communications Technology Development Index. While such summary indices have been a focal point of debate, there is no doubt that the U.S. has stumbled badly in comparison to other nations on this vital measure of market performance. While the ITU index is a multi-attribute study that includes landline and wireless

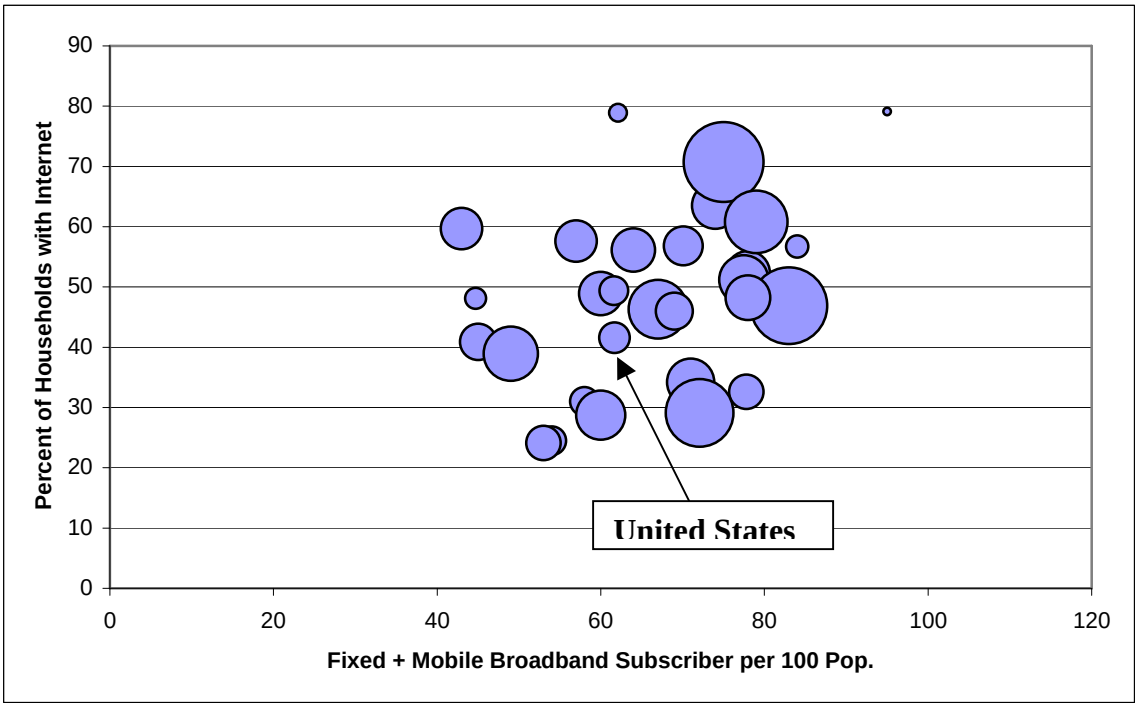
telecommunications, the Internet and broadband sub-indices underscore the poor performance of the U.S. The U.S. ranks even worse on several of these.

Table 4: 2007 ITU Ranking on Various Measures of Information Communication Technology Development

ICT Development Index	17
Fixed Broadband subs per 100 pop.	15
Mobile Broadband subs per 100 pop.	19
Total Broadband Subs per 100 pop.	21
% of Households with Internet	18
Backbone per Sub.	22

Figure 14 plots the final three of these dimensions for the top 30 national in the ITU index. It turns out that 28 of the top 30 nations exceed the U.S. on at least one of the three dimensions. Taken together, it does no present a pretty picture.

Figure 2: ITU ICT Development Indicators (Size of Circles = Backbone/ Sub)



International Telecommunication Union, *Measuring the Information Society: the ICT Development Index*, 2009, Annex 4.

V. THE POLICY IMPLICATIONS OF FALLING BEHIND

A Policy of Neglect is Not Benign

Ultimately, the intent of both the "digital divide" and "falling behind on broadband" debates is to influence policy. The differences in performance between nations are correlated with sharp differences in policy. The observations on and reactions to U.S. broadband deployment and adoption stimulated by the INSEAD study are particularly revealing in the context of the long running debate over broadband policy. David J. Faber, "an Internet pioneer and professor of computer science at Carnegie Mellon University observed 'My gut felling is that we don't have the type of deployment you have abroad. If you are looking at broadband, we have a lot of problems. We are slow as molasses in deploying the next generation'" (Markhoff, 2008a). Moreover, the article points out that the network that is deployed is not being taken up as fast as in other countries. "More customers have retained dial-up service than most countries, which might be explained by price or lack of attractive broadband services" (Markhoff, 2008a). Whatever the 68 variable approach to Internet readiness used by INSEAD is measuring, it cannot gloss over the basic fact that technology use and take-up have not accomplished the President's goal.

An economist from the Organization for Economic Co-operation and Development (O.E.C.D.), commenting on the INSEAD study, attributed the problem to a policy choice made by the U.S.

> "I think we can say that a lot of the situation in the United States is a result of the lack of competition," said Taylor Reynolds, an economist in the Internet and Telecommunications Policy section of the O.E.C.D. "In Europe we have adopted an unbundling strategy wholeheartedly." That has led to more competition in markets outside the United States, he said, which in turn has driven Internet service providers elsewhere to offer speedier service and lower prices (Markhoff, 2008a).

The loss of U.S. leadership can be measured in the routing of Internet traffic. Over the course of a decade, the share of global traffic routed through the U.S. declined from 70 percent to 25 percent.[48] While some of the decline was inevitable, as Internet usage spread, "economics also plays a role (Markoff, 2008b)." Policies to capture the flow of traffic for economic and strategic reasons were pursued by individual nations.

> Indeed, more countries are becoming aware of how their dependence on other countries for their Internet traffic makes them vulnerable. Because of tariffs, pricing anomalies and even corporate cultures, Internet providers will often not exchange data with their local competitors. They prefer instead to send and receive traffic with larger international Internet service providers…. [T]he shift away from the United

[48] Andrew M. Odlyzko, a professor at the University of Minnesota who tracks the growth of the global Internet, added, "We discovered the Internet, but we couldn't keep it a secret." While the United States carried 70 percent of the world's Internet traffic a decade ago, he estimates that portion has fallen to about 25 percent.

> States was not limited to developing countries. The Japanese "are on a rampage to build out across India and China so they have alternative routes and so they don't have to route through the U.S… International networks that carry data into and out of the United States are still being expanded at a sharp rate, but the Internet infrastructure in many other regions of the world is growing even more quickly. (Markoff, 2008b)

The potential harm in these shifts is loss of leadership in this critical sector. "The risk, Internet technologists say, is that upstarts like China and India are making larger investments in next-generation Internet technology that is likely to be crucial in determining the future of the network, with investment, innovation and profits going first to overseas companies (Markoff, 2008b)."

The investment pattern reflects a mix of government policies that promote the deployment of the technology and private sector investment decisions that neglect it.

> Internet technologists say that the global data network that was once a competitive advantage for the United States is now increasingly outside the control of American companies. They decided not to invest in lower-cost optical fiber lines, which have rapidly become a commodity business.
>
> While there has been some concern over a looming Internet traffic jam because of the rise in Internet use worldwide, the congestion is generally not on the Internet's main trunk lines, but on neighborhood switches, routers and the wires into a house.
>
> The increasing role of new competitors has shown up in data collected annually by Renesys, a firm in Manchester, N.H., that monitors the connections between Internet providers. The Renesys rankings of Internet connections, an indirect measure of growth, show that the big winners in the last three years have been the Italian Internet provider Tiscali, China Telecom and the Japanese telecommunications operator KDDI.
>
> Firms that have slipped in the rankings have all been American: Verizon, Savvis, AT&T, Qwest, Cogent and AboveNet.
>
> "The U.S. telecommunications firms haven't invested," said Earl Zmijewski, vice president and general manager for Internet data services at Renesys. "The rest of the world has caught up. I don't see the AT&T's and Sprints making the investments because they see Internet service as a commodity" (Markoff 2008b).

The Importance of Price

The nations that have passed the U.S. on broadband have not relied on trickle down economics to get the job done, but have implemented much more aggressive policies to promote broadband. Instead of relying on weak competition between, at most, a couple of advanced communications service providers, they required the dominant networks to be open to competition in Internet services. This kept the price down and stimulated innovation.

Econometric analyses by the critics of the simple ranking approaches include a price variable and it is one of the most important factors affecting penetration.[49] Ironically, they do not consider price to be a "policy" variable, although many others do.[50] Price has been a policy variable in the U.S. for at least three-quarters of a century, since the Communications Act of 1934 which included the goal of making available "adequate facilities at **reasonable charges**."

Even controlling for the large number of demographic and other factors, the importance of price can be seen if we plot the effect of price on the relative ranking of the nations. Figure 14 shows the nations arrayed by the net number of times they were ranked higher than the U.S. in six studies cited above plotted against the impact of pricing on the penetration rate. There is a strong relationship between price and performance of broadband. Nine of the thirteen nations that outperform the U.S. have a positive pricing policy. In all of these analyses, if the U.S. had the same "average" pricing policy as the nations ranked ahead of it, it would be outperforming most of them.

The Broad Policy Palate

While the studies that call for more complex analysis of the broadband issue tend to reject price as a policy variable, they do not conclude that there is no room for policies to promote broadband penetration. Some explicitly accept the idea of a market failure.

> The United States can learn from the broadband policy best practices in other nations. First and foremost, America needs a national broadband strategy that focuses on both broadband supply as well as broadband demand. Some may argue that national strategy is unnecessary because the United States already has strong intermodal broadband competition. In part because of significant market failures with regard to the provision of broadband, relying on market forces alone will not meet our country's future broadband need (Atkinson Correa and Hedlund, 2008: 40).

Others see the problem flowing from basic demographic factors that reduce subscription to Internet service that can be addressed by policy.

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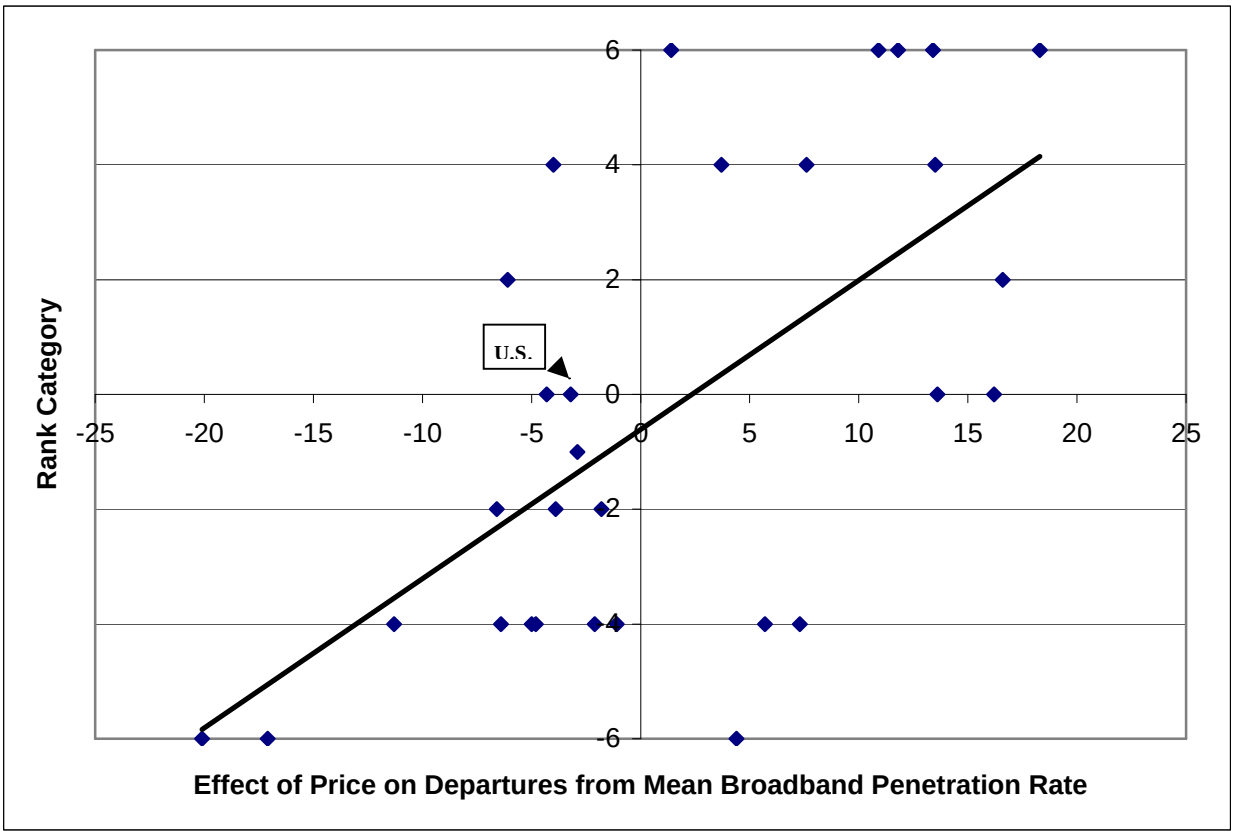
[49] Atkinson, Correa and Hedlun (2008: 14) find price to be the most important factor. Ford, Koutsky and Spiwak (2008) rank income, income inequality and telephone penetration ahead of price.

[50] Atkinson, Correa, and Hedlund (2008: 14) include price in a model labled, "Non-policy Variables Related to Broadband Penetration in OECD Countries. " Similarly, Ford, Koutsky and Spiwak (2008:12) state that "non-policy variables explain nearly all variations in subscription rates" and include price among the non-policy variables. When they turn to recommendations, they point to policies to influence several variables in the non-policy model, but not price, when at lease some of those variables have smaller coefficients (2008: 1, 18).

Figure 14: Nations Ranked Ahead of the U.S. on Six Indices and Effects of Price



Source: Robert Atkinson, Daniel K. Correa and Julie A. Hedlund, *Explaining International Broadband Leadership* (Information Technology and Innovation Foundation, May 1, 2001); Organization for Economic Cooperation and Development, *Broadband Statistics to December 2006, June 2007; Broadband Subscribers December 2007;* Scott Wallenstein, *Everything You Heard About Broadband in the U.S. is Wrong,* Progress and Freedom Foundation, June 2007; George S. Ford, Thomas M. Koutsky and Lawrence J. Spiwak, *The Broadband Efficiency Index: What Really Drives Broadband Adoption Across the OECD?* (Phoenix Center Policy Paper Number 33, May 2008); S. Derek Turner, *Broadband Reality Check,* Washington, D.C.: Free Press, August 2005); World Information Society, World Information Society Report 2007: Beyond WSIS, Digital Opportunity Index.

> We do not mean to suggest that policymakers should be content with the current level of performance, or that broadband policy is irrelevant. Indeed, our results should encourage policymakers to focus their attention on policies that will cultivate or enhance the endowments that increase broadband adoption or that will counterbalance the adverse effect of endowments that suppress broadband adoption. For example, programs focused on overcoming the effects of income and income inequality might significantly spur broadband adoption (Ford, Koutsky and Spiwak, 2008:15)."

Programs to address the adverse effects of income and income distribution are very much in the "digital divide" frame – suggesting universal service approaches, which are precisely the policies rejected by the Bush administration.

Contrasting the policies of the Bush and Clinton administrations is informative.

The Bush Administration

The policy outlined by Chairman Powell at the start of the Bush Administration and implemented by both Chairman Powell and later Chairman Kevin Martin was essentially to let a duopoly of cable and telephone companies dribble out broadband at high prices without obligations to allow competition to flourish on their networks or policies to promote universal service.

Attempting to provide incentives to the incumbent duopolists to roll out the new technology quickly and keep the price low, the FCC abandoned one of the cornerstone of communications policy in America, the obligation that communications network be available without discrimination. It also abandoned the efforts to support vigorous service competition on advanced networks, which was the cornerstone of the success abroad.

After failing to promote competition within the telephone network, the Bush Administration allowed a merger wave to dramatically reduce the number of potential competitors who could build networks. The dominant telephone companies were rewarded for failing to compete with one another by being allowed to buy each other up. When competition floundered under the weight of decisions that made it impossible for even giants like AT&T and MCI to compete in local phone service, the FCC let the largest Baby Bells buy out their biggest actual and potential competitors.

The FCC also squelched competition in wireless communications by allowing the largest incumbent telephone companies to expand their control over wireless communications by lifting the cap on the amount of spectrum that an incumbent landline company could license. After the wireless mergers, the FCC then auctioned new spectrum, allowing the dominant Bell operating companies to buy up licenses to use more spectrum, closing out new entrants.

Having allowed the incumbent wireline companies to achieve market power over price through mergers, the FCC failed to prevent pricing abuse of key network services (like wholesale loops and special access) that were critical for new entrants (either landline or wireless) to compete.

While competition floundered, the FCC did little to promote universal service. In eight years, the FCC failed to reform the universal service fund so that it would support advanced communications facilities in rural areas or make them more affordable in urban area. The fund grew dramatically, enriching the incumbent telephone companies, without promoting the public interest in a ubiquitous broadband network.

Finally, the FCC sought to slash the power of local governments to establish the public interest obligation on cable communications companies, who were moving into the communications business, to meet the needs of local communities, without establishing public interest obligations at the federal level. This triggered a race to the bottom, restricting the ability of local governments to deploy advance communications networks for public services.

The Clinton Administration

Although the Clinton Administration identified the universal service problem early, its policy was mixed. On the universal service front, the Clinton administration embraced an expansive approach to the e-rate programs that supported advanced service for schools and libraries and implemented other institutional programs to promote technology literacy and use in institutional settings, but it did not reform universal service to promote broadband penetration.

On the broader telecommunications policy front, it fully embraced platform service competition, attempting to ensure that unbundling of network elements would make the monopoly elements available to competitors, but it struggled to keep the platform open under the convoluted language of the Telecommunications Act. It repeatedly lost court cases to the Regional Bell Operating companies, cases that ultimately allowed Michael Powell to implement his full-throated hostility to platform service competition.

While the Clinton administration embraced platform service competition, it set the precedent of allowing local telephone companies to merge, undermining the possibility for vigorous head-to-head competition between telephone companies. The Bell Atlantic/NYNEX and SBC/Ameritech mergers were crucial in this regard, as they were mergers between contiguous service areas, where cross-border competition was likely and in the later case actually existed. While the Clinton Administration made it clear it would oppose mergers between local and long distance companies, the loss of the local companies as potential competitors severely limited the prospects for facilities based competition and placed much more pressure on the platform service competition model to deliver effective competition. Ironically, at the very same time that this model succeeded abroad, it was abandoned in the U.S.

In the wireless space, the Clinton Administration preserved the cap on the holding of wireless licenses in place, but it did not expand the unlicensed use of spectrum.

VI. CONCLUSION

Neither the digital divide nor the precipitous decline in the U.S. standing in broadband was inevitable. The Clinton Administration's declaration of a digital divide problem may have seemed to come a bit early in the process of deployment of the new technology and may have been driven by a desire to exploit a political opportunity because of the constituencies that would be served by implementing policies to close the divide. However, given the immense importance that the Internet has taken on in social, economic and political life and the persistence of the digital divide, early attention given to the issues seems more like good foresight than politically motivated analysis. On the other hand, the Bush Administration's declaration of "mission accomplished" in broadband seems to play out in the opposite manner; bad analysis put forward in defense of bad policy.

Those who argued for the "have later" position have had the ground cut from under them. A decade and a half after the Internet began its powerful penetration and transformation of economic, political and social life, more than one-third of American households remain disconnected, disadvantaged and disenfranchised. TV, radios, telephone, VCRs DVD players, cell phones, have all achieved higher levels of penetration and several of them achieved it faster than Internet connectivity. The households that are disconnected are overwhelmingly low income and tend to be disproportionately, minority households; the digital divide compounds existing fault lines in the U.S.

A decade and a half of policy implementation may have closed off some policy options, like the mergers and auctioning of spectrum to the large incumbents, but others remain open.

The reliance on a cozy duopoly of facilities-based competitors to achieve the goal of universal service appears to have failed and is not likely to deliver service that will match the nations that have passed the U.S. The FCC could ensure that the dominant networks allow competition in services without discrimination. This would spur the development of applications and services that would stimulate demand. Promoting within platform competition and the deployment of the dominant platform were the keys to the success of other nations. They were also central to U.S. world leadership in telecommunications prior to the passage of the Telecommunications Act of 1996.

The FCC could make more airwaves available for unlicensed use, which would avoid the stranglehold that the deep-pocketed incumbents have on the auction of spectrum, and expand the scope of WiFi approaches to service.

The FCC could aggressively reform universal service funds to support broadband.

Ultimately, Congress could conclude that more vigorous efforts are necessary to ensure leadership in broadband, but that would require policymakers to abandon the do nothing approach that has failed over the past eight years.

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APPENDIX B

The Failure of Market Fundamentalism
What are the Issues in the ICT Sector?

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Director of Research
Consumer Federation of America

The New Economics of ICT:
Implications of Post-neoclassical Economics for the Information & Communications Technology Sector

Columbia University
March 20, 2009

THE COLLAPSE OF MARKET FUNDAMENTALISM

I made a new year's resolution to begin every speech this year with the observation that the long experiment with market fundamentalism and its irrational exuberance for deregulation is over. It started symbolically on January 20, 1981 when Ronald Reagan declared, "Government is the problem," and ended symbolically on October 23, 2008, when Alan Greenspan, the leading apostle of deregulation in the financial sector, admitted that there is a flaw in his theory.

"Those of us who looked to the self-interest of lending institutions to protect shareholders' equity, myself included, are in a state of shocked disbelief… I made a mistake in presuming that the self-interests of organizations, specifically banks and others, were such that they were best capable of protecting their own shareholders and their equity in the firm."

We in the consumer movement have long held that the pursuit of private profits is not synonymous with the public good, but Greenspan went us one better by suggesting that the pursuit of private profit is not even synonymous with the private good. If pursuit of profit cannot protect the private interests of equity owners, you can imagine what a mess it can make of the public interest.

Note that Greenspan's admission is not specific to the financial sector but is a general proposition about economic incentives. Greenspan's observation undercuts one of the central assumptions of market fundamentalism – the claim that markets tend toward efficient equilibrium (the efficient market hypothesis). The recent economic and financial meltdown has also undercut two other central assumptions of market fundamentalism – the claim that "government is the problem" (the less government hypothesis), and that inequality does not matter (the trickle down hypothesis). Thus the three central tenets of market fundamentalism have turned out to be fallacies, which leads to the collapse of its main empirical prediction, the great moderation.

Some have called the system that has been in place for the last thirty years "Casino Capitalism," others "Speculative Capitalism," but the term market fundamentalism has recently been used by both Joseph Stiglitz and George Soros. I think this is an apt description of the economic ideology that has governed the last thirty years, not only because it captures the content of the economic principles on which the economic system rested, but also because it conveys the sense of a religious belief based on faith rather than fact, which is very much the way advocates and apologists for market fundamentalism act.

Over the past 30 years, there have been a series of domestic economic crises and financial meltdowns: the S&L crisis of the 1980s, the derivatives crisis of the 1994, the collapse of a famous hedge fund, Long Term Capital Management in 1998, the California electricity meltdown in 2000, the tech stock bubble of 1999-2000, the Enron fiasco of 2000-2002, the housing bubble of 2005-2007, and the energy speculation bubble of 2006-2008. There have also been three recessions and a series of foreign financial and economic crises – the Japanese malaise of the 1990s, currency crises in Mexico (1994-1995), Thailand (1996-1997), South Korea and Brazil (1998-1999), and Argentina (2002). In short, barely a year went by in which one could not find a major market failure that should have raised loud alarms about the economic structure that we were building in the world. This time things are much worse, and policymakers are forced to pay attention

Because market fundamentalism was religiously applied across the economy, and because there are differences in economic structure across the sectors, the manifestations of the problem differ across the sectors, but they share common themes. In the financial sector the core cause of the failure of unregulated markets is a nexus of endemic problems including asymmetric information, perverse incentives, agency, conflicts of interest, moral hazard and unfairness. In the real economy the core causes of the failure of unregulated markets lies in basic market conditions and persistent flaws in market structure – low elasticities of supply and demand, high barriers to entry, economies of scale and scope, vertical economies, network effects, and externalities – that undermine competition and result in the abuse of market power. Left to its own devices the market fails to consistently achieve its primary function of efficiently allocating resources to uses. Economic theory could envision a more efficient outcome without regulation only by ignoring or downplaying the flaws in the market, but reality could not produce the theoretical outcome because the flaws inevitably assert themselves.

Left to its own devices, the market suffers from inherent or endemic flaws as a result of which it fails to consistently achieve its primary function of efficiently allocating resources to uses. The implementation of market fundamentalism in policies undermined the regulatory institutions that were intended to address these flaws – removing or reducing their power where the institutions existed or preventing the creation of new regulatory institutions where they were needed. Economic theory could envision a more efficient outcome without regulation only by ignoring or downplaying the flaws in the market, but reality could not produce the theoretical outcome because the flaws inevitably assert themselves.

In keeping with the theme of the conference, this observation on the different sources of market failure in the financial sector and the real economy lead me to suggest how the existing economic paradigm should be modified. I, however, start from a somewhat different paradigm than the market fundamentalist. The economic paradigm that guided the construction of new

deal institutions was the Structure Conduct Performance paradigm in its early days. This paradigm remained dominant for about forty years until the Chicago School provided the intellectual underpinnings for market fundamentalism.[51]

The structure, conduct, performance paradigm identifies the factors that affect market performance. Figure 1 shows three graphic representations of the paradigm from well-known texts. These formulations identify different sets of "conditions" or "determinants" that affect structure and behavior indirectly, but they do not see direct relationships between determinants or basic conditions and behavior. Conduct is primarily the result of structure. The paradigm was primarily structural and oriented toward the real economy. Indeed, in Shepherd's identification of industries, he depicts Financial Markets, Banking and Securities as floating above the industries of the real economy.

The clear distinction between the real economy and the financial sector and the growing recognition of behavioral economics suggests that the paradigm needs to give more weight to behavior and its determinants as autonomous causes of market performance (as in the final panel of Figure 1). This distinction fits the current crisis well, since the market imperfections identified as afflicting the financial sector tend to be behavioral, while the imperfections that afflict the real economy tend to be structural. This is not to say that behavioral problems cannot afflict the real economy and structural problems cannot afflict the financial sector. To the extent that the SCP paradigm was significantly concerned with the conditions that caused markets to deviate from the theoretically efficient outcome and behavioral economics is concerned with deviations from presumed rational behavior and the resulting market inefficiencies, the union of the two should not be problematic. Thus, we might talk of the behavioral, structure, conduct, performance paradigm (BSCP).

MARKET FAILURE IN THE ICT SECTOR IN THE U.S.

The ICT sector has three characteristics that make it particularly prone to problems of market failure.

First, the sector is infrastructure in the classic sense because "it has very great influence, as a supplier of essential inputs to other industries, on the size and growth of the entire economy. It conditions the possibilities of growth."

Second, in the digital age IT goes beyond mere infrastructure. The Internet is a meta-platform that rides atop the communications network and supports a vast array of other platforms and economic activities that generate massive positive externalities.

[51] Robert Pitofsky (Ed.), *How the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on U. S. Antitrust* (New York: Oxford University Press, 2008).

Third, the physical layer of this platform exhibits classical characteristics that inhibit competition – economies of scale and scope. The result is at best small numbers competition, which is not likely to be vigorous and poses major challenges of market power.

The impact of market fundamentalism on the ICT sector in U.S. has been profound. Beyond the tech stock bubble, which has been attributed in part to market fundamentalism by Joseph Stiglitz,[52] we have the ongoing spectacle of a steady decline of the standing of the U.S. in broadband deployment and adoption as the highly symbolic measure of the failings of the *Laissez Faire* approach to telecommunications policy. The most recent rankings of the ITU has the U.S. falling from 11th in 2002 to 17 in 2007 on the Information Communications Technology Development Index. While such summary indices have been a focal point of debate, there is no doubt that the U.S. has stumbled badly in comparison to other nations on this vital measure of market performance.[53] While the ITU index is a multi-attribute study that includes landline and wireless telecommunications, the Internet and broadband sub-indices underscore the poor performance of the U.S. The U.S. ranks even worse on several of these.

Fixed Broadband subs per 100 pop.	15
Mobile Broadband subs per 100 pop.	19
Total Broadband Subs per 100 pop.	21
% of Households with Internet	18
Backbone per Sub.	22

Figure 2 plots the final three of these dimensions for the top 30 national in the ITU index. It turns out that 28 of the top 30 nations exceed the U.S. on at least one of the three dimensions. Taken together, it does no present a pretty picture. Most of the nations that rank ahead of the U.S. did not pursue a *laissez faire* policy. On the contrary, they pursued a much more activist intervention policy – the very policy the U.S. abandoned to market fundamentalism. Thus, the failure in broadband is a failure of market fundamentalism, not as spectacular as the financial meltdown, perhaps, but a substantial failure nonetheless.

THE FAILURE TO ENFORCE PRAGMATIC, PROGRESSIVE POLICIES IN THE ICT SECTOR .

The failure of market fundamentalism in the ICT sector spans the two primary areas of policy identified in the BSCP paradigm, antitrust and regulation. The logic of divestiture was crystal clear within the framework of pragmatic, progressive capitalism – inject competition into the monopoly structure where it was viable, continue to regulate where it

[52] Joseph Stiglitz, *The Roaring Nineties* (*The Roaring Nineties* (New York: Norton, 2003).

[53] See Mark Cooper, "Broadband In America: A Policy of Neglect is Not Benign," in Enrico Ferro, Yogesh K. Dwiviedi, J. Ramon Gil-Garcia,a nd Michael D. Williams (Eds.) *Overcoming Digital Divides* (IGI Global, forthcoming), for a discussion of a number of studies that seek to explain away the poor performance of the U.S.

was not. But divestiture occurred at the start of the age of market fundamentalism and market fundamentalists have no self-control. Since they cannot accept that market failure is a real threat, they push deregulation beyond its rational limits and, as is the case in the implementation of the Telecommunications Act of 1996, they lack the intestinal fortitude to control monopoly power sufficiently to allow competition to grow.

Make no mistake about it; divestiture and deregulation are linked in a direct way. The Telecommunications Act of 1996 was pushed by incumbent local exchange carriers, who chaffed under the yoke of public utility regulation at the state level and antitrust restraints on their market power at the federal level. The 1996 Act opened the door to the reunification of local and long distance service, upon a showing that the local monopoly had been eroded by new entry. Unfortunately, market fundamentalists confused the slightest hint of entry with workable competition.

Regulators, legislators and the courts made a series of critical mistakes if they really intended to create a vigorously competitive environment in the telecommunications space. Based upon decades of experience and theory, the Department of Justice *Merger Guidelines* suggest that mergers in markets that have fewer than the equivalent of six equal sized competitors are harmful and should be challenged. In the past decade, that standard seems to have deteriorated into a standard of 'more than two is enough." This lax standard has been coupled with a total disregard for the problems that vertical mergers pose in a platform industry, where complementary markets are closely linked together. The lax standard has been driven by an over reliance on intermodal and potential competition to excuse the massive build up of market power that is evident when a rigorous 'traditional' view of product and geographic markets is taken. Intermodal and potential competition have simply not provided the effective disciplining force that head-to-head competition provides.

The Regional Bell Operating Companies were allowed to reconstruct regional versions of the old bell systems with mergers of contiguous telephone companies under the theory that one big monopolist is no worse two small ones. They were essentially excused from competing with one another through these mergers, even though there was solid evidence that they would and could do so. Ultimately, they were allowed to acquire their largest actual and potential head-to-head competitors, the long distance companies, under the theory that intermodal competition would restrain market power. Theses mergers were approved in spite of the failure of network unbundling to open local markets to competition. The dominant incumbent wireline companies were also allowed to dominate the wireless space by being giving initial cellular licenses, being allowed to merge with actual competitors, and being permitted to acquire huge quantities of the most vital assets for local competition in the wireless product market, spectrum.

As a result, the public has been left, in many cases, in the hands of a cozy duopoly or near monopoly and suffered the consequences that sound antitrust policy is intended to prevent by promoting competition – rising prices, anti-consumer terms of service,

underinvestment in critical facilities and a lack of innovation. As the market power of the incumbents was ramping up due to lax antitrust policy, the 1996 Act simultaneously set in motion policies to relax regulation over the sector.

The 1996 Act also set in motion an even more serious shift in communications policy by fumbling the definitions of telecommunications services. The 1996 Act opened the door to the repeal of the obligation of nondiscriminatory interconnection and carriage that had ensured an open communications infrastructure.

In 1968 the Federal Communications Commission entered into a new regulatory experiment that might be called the open platform era. It abandoned the monopoly provision of customer premise equipment and adopted an open standard approach to Customer Premise Equipment that required AT&T to allow any equipment that met the standard to be attached to the network. This is known as the Carterfone decision. In the same year, it took a similar approach to the transport of data traffic deciding that AT&T would have to treat data traffic in a non-discriminatory manner. This is known as the first Computer Inquiry.

This was progressive, pragmatic capitalism at its best. For thirty years virtually every bit that traversed the Internet to serve the mass market was transmitted and received by devices that were approved under Carterfone and carried by regulated common carrier networks on just, reasonable and nondiscriminatory rates, terms, and conditions set by the Computer Inquires.

If you had listen to the market fundamentalists, however, you would have been told that these two attempts at regulated open access were doomed to fail. Although AT&T fought mightily against these incursions into its monopoly power, the market fundamentalists argue that the unregulated abuse of market power would be temporary. They predict that excessive profits would attract new investment in competing networks, or better still, the threat of competition and the realization that the incumbent network operators' interests are served by promoting complementary services will keep them from behaving too badly. The market fundamentalists believe that incumbent monopolist will embrace the principles of nondiscrimination as a reflection of enlightened self-interest.

Unfortunately, neither history nor contemporary behavior supports this hope. Back at the turn of the twentieth century, AT&T was pressed to interconnect with independent telephone companies. It did not do so voluntarily. It was only after the states began to impose interconnection obligations and regulation that it issued a famous commitment to one network, universal and interconnected. The Regional Bell Operating Companies certainly made the life of the Competitive Local Exchange Carriers miserable when they tried to interconnect to provide local service.

The Internet is a meta-platform, infrastructural sector, like the banking system, in which we simply cannot tolerate even a low level probability of market failure. Notwithstanding the griping of the incumbents, the regulated telecommunications network had a pretty good run at providing ubiquitous, affordable telephone service. More importantly, there is no doubt that regulated competition preserving and extending the obligations of interconnection and carriage

in Carterfone and the Computer Inquiries were unmitigated successes that provided the communications pillar for the Internet.

Market fundamentalists make two critical errors when they analyze the Internet. They underestimate the likelihood of market failure and, treating the sector like just widgets rather than infrastructure, vastly underestimate the cost of market failure. If the market fundamentalist approach had reigned in 1968, AT&T's arguments would have prevailed in its opposition to Carterfone and the Computer Inquiries. Obligations of nondiscriminatory treatment of data traffic and publication of open standards for equipment would not have been adopted and the Internet would have been stifled; at least that was AT&T's intention. A decade later, when AT&T's progeny made their first run at nondiscrimination as the commercial Internet was emerging, their arguments that they should be allowed to re-assert centralized control over the Internet because they could not count on services to fill the fat pipes they were proposing to build would have been accepted. The Internet would have looked more like ISDN service, which the Baby Bells throttled to avoid cannibalizing existing revenues, or Minitel, retarded to funnel application revenue to network owners.

Fortunately, the market fundamentalist arguments were rejected for three decades and the Internet was allowed to flourish in an open communications environment. Unfortunately, after the 1996 Act was passed, the market fundamentalists used its ambiguity to declare that the obligations of nondiscrimination should not be extended to the broadband telecommunications services of the cable operators. This decision was used to bootstrap the deregulation of incumbent local exchange carrier broadband telecommunications.

Having abandoned intramodal competition, failed to promote competition on the communications platform and relied on feeble intermodal competition, we are left with a cozy duopoly in network access that has escaped from public interest obligations because of deregulation. The duopoly of cable and telephone companies was allowed to dribble out broadband at high prices. Attempting to provide incentives to the incumbent duopolists to roll out the new technology quickly and keep the price low, the FCC not only abandoned the obligation that communications network be available without discrimination, it also abandoned the efforts to support vigorous service competition on advanced networks and failed to prevent pricing abuse of key network services (like wholesale loops and special access) that were critical for new entrants (either landline or wireless) to compete.

While competition floundered, the FCC did little to promote universal service. In eight years, the FCC failed to reform the universal service fund so that it would support advanced communications facilities in rural areas or make them more affordable in urban area. The fund grew dramatically, enriching the incumbent telephone companies, without promoting the public interest in a ubiquitous broadband network.

CHANGING COURSE

In order to restore the U.S. to leadership in the ICT sector, we must change direction in policy. It is time for us to abandon the market fundamentalist view that sees regulation and

antitrust as the *ex post* clean up after the occasional market failure, and to return to the New Deal view which understood that regulation and antitrust are the *ex ante* prophylaxis to prevent market failure. We must restore the central tenet of communications regulation that was enshrined in the Communications Act of 1934 – nondiscriminatory interconnection and carriage. History shows that a communications space based on nondiscrimination is an infinitely more innovation-friendly ecology than the walled gardens the network operators want to build. If the physical layer were as competitive as the applications layer, the argument against regulation would be more convincing, although obligations of nondiscrimination never rested solely on claims about market power, but the physical layer isn't even close to that competitive. The debate over 2, 3, or 4 competitors misses the point.

The physical layer simply cannot be allowed to throttle the applications layer. We must not sacrifice innovation without permission in the applications layer for rent maximization in the physical layer because that is what the private owners think is in their interest. In short, communications regulators must establish public interest obligations, just like financial regulators should have exercised authority over shadow banks and exotic financial instruments, set capital and margin requirements, rejected claims that only the corporations could properly evaluate risk, and enforced rules of prudential behavior.

We need to revive vigorous antitrust oversight. Competition and regulation should go hand in hand in rebuilding the economy. Effective regulation should establish the framework within which competition can work. Federal antitrust authorities should take their own guidelines more seriously and return to fundamental head-to-head competition as the foundation of antitrust, challenging mergers more consistently in highly concentrated markets. Theories of the dynamic duopoly, intermodal and potential competition have proven to be just as wrong headed as market fundamentalism.

Indeed, economics has relied so much on theory that it has lost touch with reality, a situation that Lord Keynes observed at the onset of the great depression. If you intend to do theory, I challenge you to take the fundamental market imperfections I identified, put them into you favorite economic paradigm and observe the damage it does to the expected efficient market outcome.

Behavioral Determinants: asymmetric information, perverse incentives, agency, conflicts of interest, moral hazard and unfairness.

Structural Conditions: low elasticities of supply and demand, high barriers to entry, economies of scale and scope, vertical economies, network effects, and externalities

You should then propose prophylactic *ex ante* policies for each of the imperfections because without policy, the market will fail.

Over the past several decades antitrust and regulation have given far too much deference to efficiency and the enlightened self-interest of corporations at the expense of competition. The assumption that private actors will be perceptive and well-intentioned in their pursuit of efficiency and efficiency gains will be passed on to consumers even where competition is feeble,

never made sense and, in light of the collapse of market fundamentalism must no longer be relied upon. Private actors are at least as likely to be myopic, misinformed and maleficent.

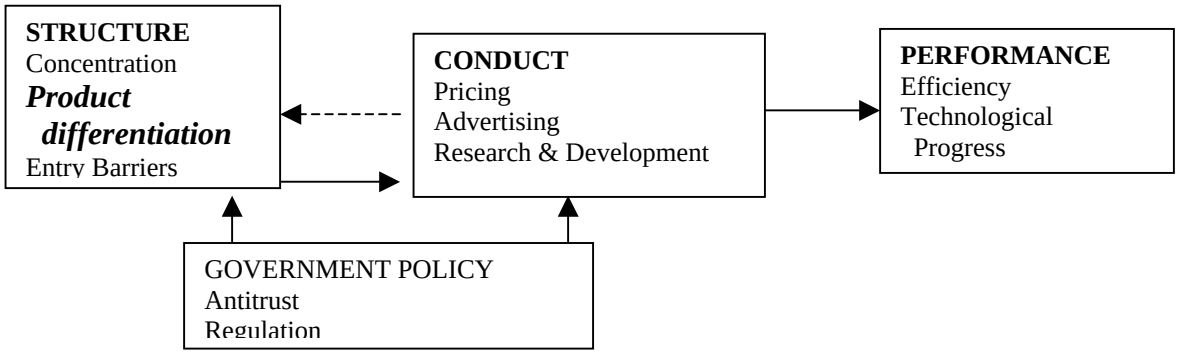
In both antitrust and regulation we must pay much greater attention to vertical relations, since the digital economy of the 21st century is very much an economy made up of platforms in which layers of complementary products and services sit atop one another and their close technological interconnection renders the threat of exercise of vertical leverage much greater than was the case in the physical markets of the 19th and 20th centuries. Tying, anticompetitive bundling and exclusionary conduct take on much greater significance.

Having launched my discussion with a sweeping claim, I will finish with one. The debate is not between capitalism and socialism, as it was recently portrayed in the election campaign, but between a pragmatic, progressive approach to capitalism that was implemented in the U.S. in the New Deal and the radical market fundamentalist approach to capitalism that has been pursued for the past 30 years. Market fundamentalism is the radical experiment that has gone wrong.

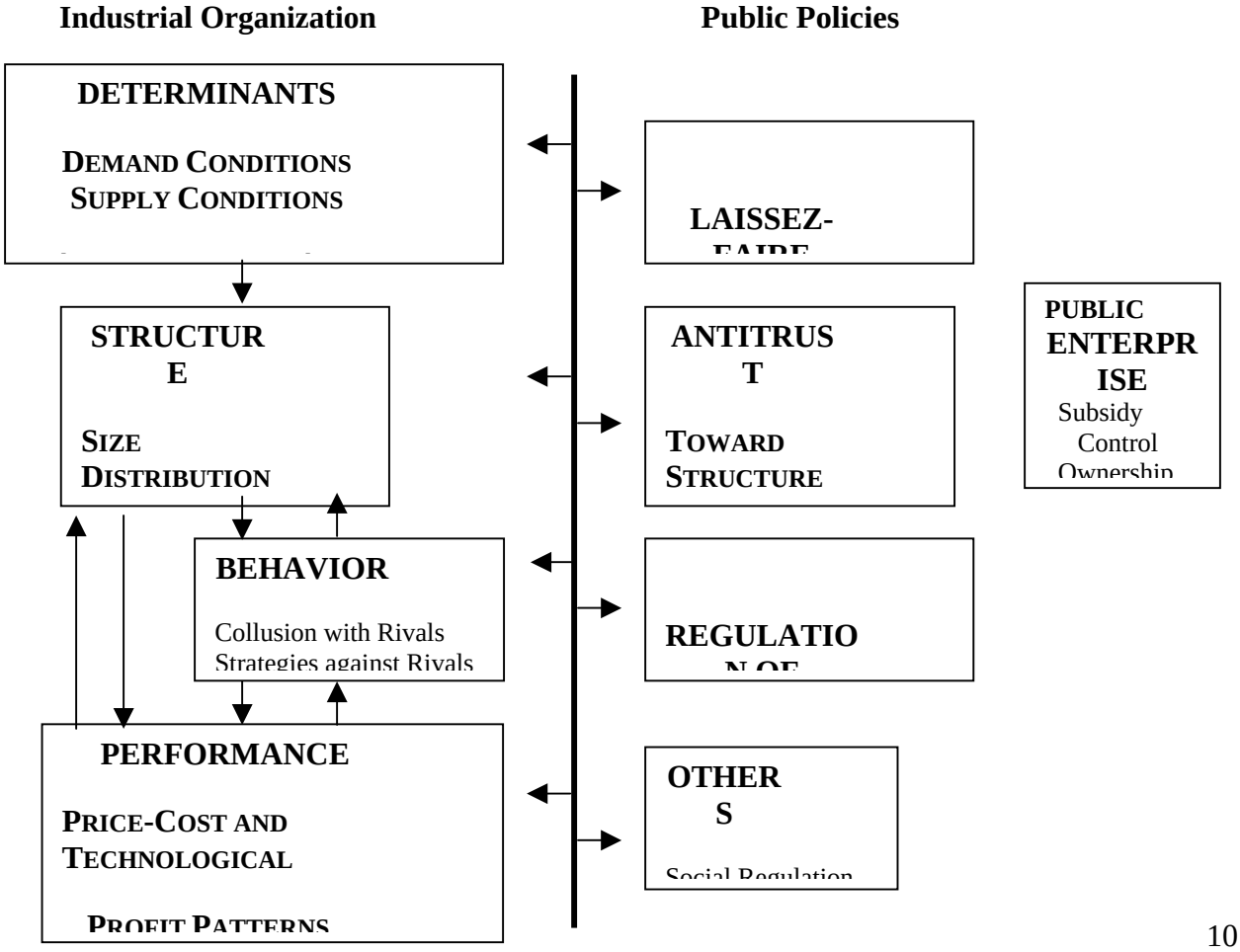
The genius of the New Deal was to use regulation to direct the powerful forces of capitalism to socially productive endeavors, without abandoning the precompetitive legislation of the progressive era. When the News Deal created the institutions of regulation to repair the economy after the collapse at the end of the roaring twenties, it did not repeal the antitrust laws**.** It layered regulation atop the antitrust laws. The result was a most remarkable half-century, the only half century that was free of major domestic financial crises in the history of the Republic and a half-century in which economic growth was not only vigorous but also widely distributed across the entire income distribution. Indeed, we now know that it was vigorous precisely because it was widely distributed. That is what we lost in the decades when market fundamentalism wrecked the economy and that is what we must recapture if we are to rebuild our economy on a sound basis.

Figure 1:
Models of the Structure-Conduct-Performance (SCP) Paradigm of Industrial Organization

Viscusi, Kip, W. John M. Vernon and Joseph E. Harrington, Jr., *Economics of Regulation and Antitrust* (Cambridge: MIT Press, 2001), p. 62.



William G. Shepherd, *The Economics of Industrial Organization* (Englewood Cliffs: Prentice Hall) p. 5.



F. M Scherer and David Ross, *Industrial Market Structure and Economic Performance* (Houghton Miflin: Boston, 1990) (hereafter Scherer and Ross), p. 5.

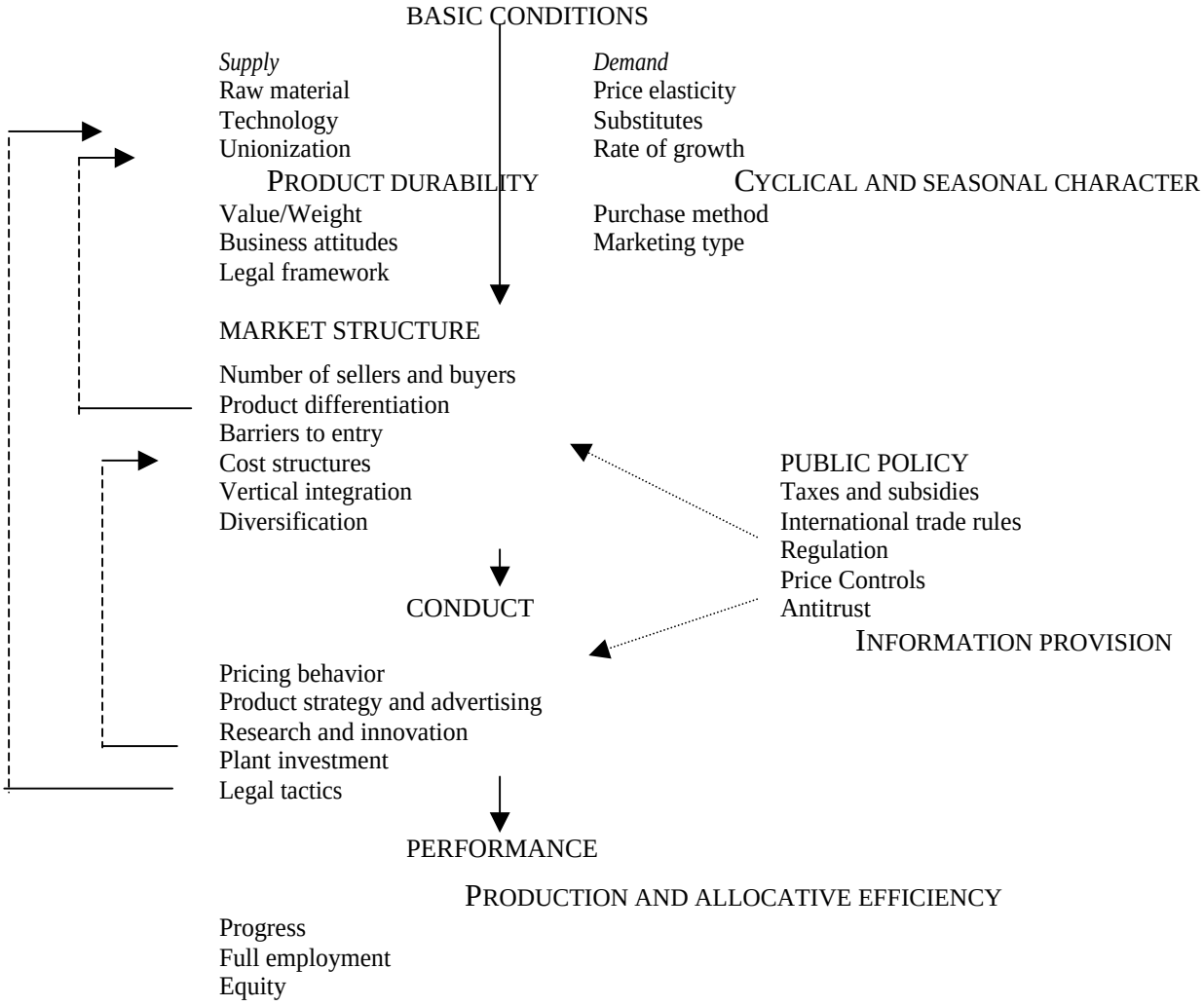


Figure 2: Adjusting SCP to Recognize the Importance of Behavioral Economics and the Financial Sector

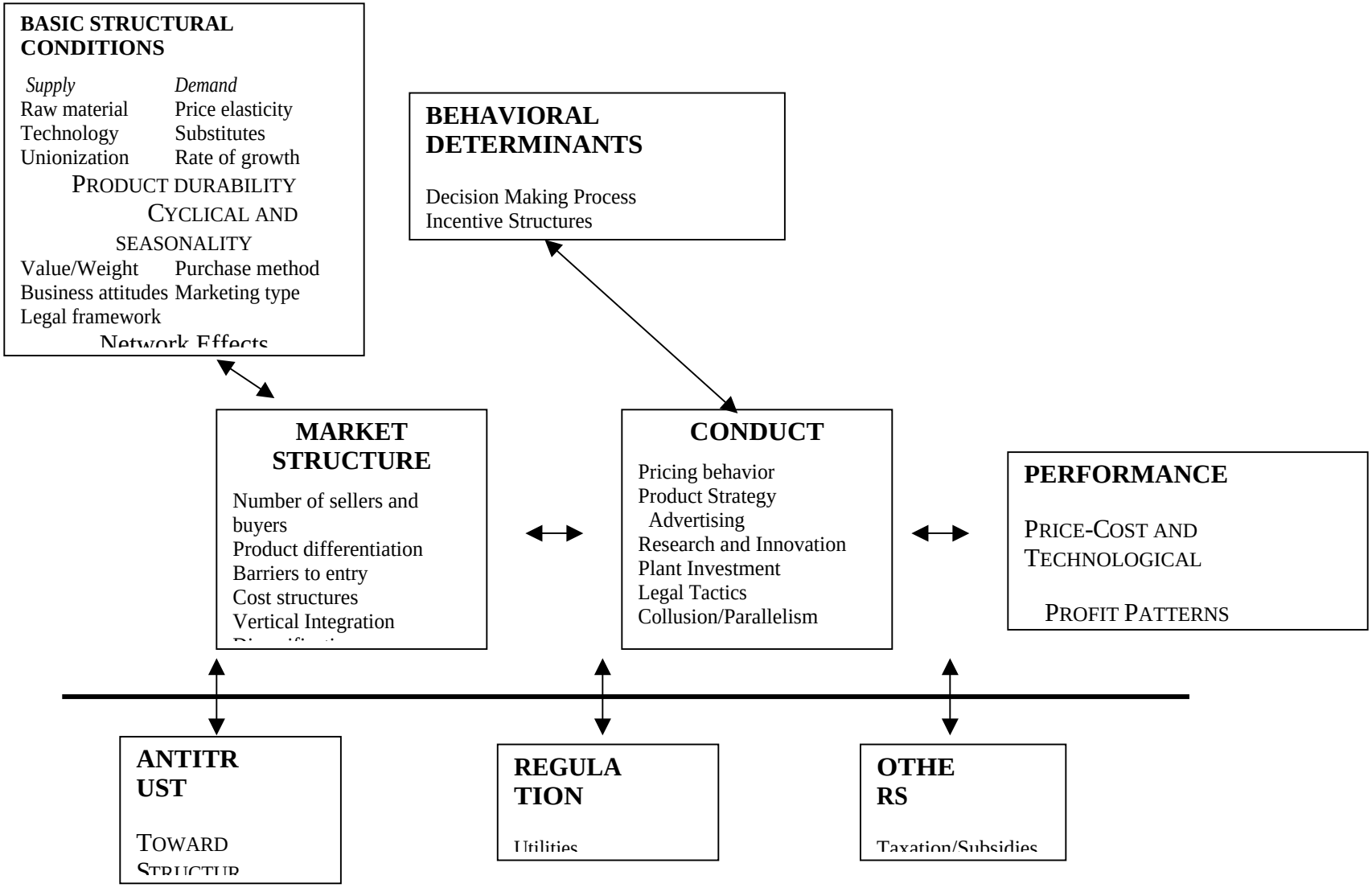
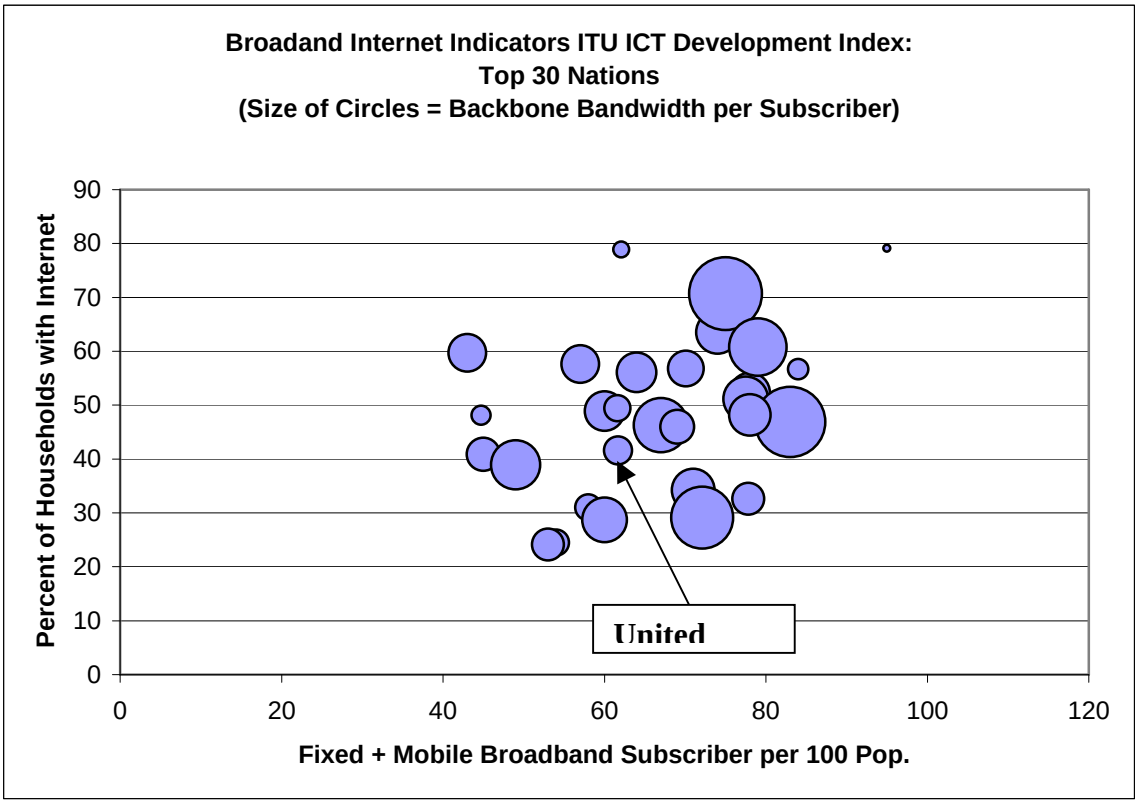


Figure 3:



International Telecommunication Union, *Measuring the Information Society: the ICT Development Index*, 2009, Annex 4.