FINDING THE BOTTOM LINE:

The Truth About Network Neutrality & Investment

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Executive Summary

As the Federal Communications Commission moves closer to codifying rules to protect the open Internet, some CEOs, politicians and pundits are singing an old tune: Network neutrality will result in reduced investment in the telecommunications sector.

In this policy brief, using actual investment data, we take a close look at the impact of network neutrality and regulation on investment in the telecom sector. Some of the findings include:

- **Investment decisions are driven by a variety of factors, but in the telecom sector, regulation plays only a minor role.**
  - In general, firms' investment decisions are driven primarily by six factors: expectations about demand; supply costs; competition; interest rates; corporate taxes; and general economic confidence -- making the overall decision to invest a complex process that is highly dependent on the specific facts of a given market. It is simply wrong to suggest that network neutrality, or any other regulation, will automatically deter investment.

- **Recent data strongly indicate that network neutrality rules do not deter ISP investment.**
  - At the end of 2006, AT&T, as a condition of its acquisition of BellSouth, was required by the FCC to operate a neutral network for two years. During this period, while operating under network neutrality rules, AT&T's overall gross investment increased by $1.8 billion -- ***more than any other ISP's in America.***
  - In its wireline segment (which was specifically subject to the FCC's fifth principle of nondiscrimination in addition to the other four open Internet principles in the agency's *Internet Policy Statement*), AT&T's gross capital investment increased by $2.3 billion. As a percentage of wireline revenues, AT&T's wireline investments grew from 13.5 percent in 2006 to 20.2 percent in 2008.

- **The general belief that regulation deters investment by telecommunications companies is simply not supported by the data.**
  - During the years following the imposition of pro-competitive regulations on incumbent phone companies as stipulated in the 1996 Telecom Act, investment as a percentage of revenue by these companies rose from nearly 20 percent before the enactment of the law to a high of 28 percent in 2001. In the years following the dismantling of these rules, relative investment levels declined to below 17 percent in 2008.

- **Most U.S. ISPs are actually *disinvesting* in their networks by depleting more in asset value than they spend on new capital equipment.**
  - Gross investment data and information about capital investments as a percentage of revenue are useful metrics for analyzing investment trends. However, in capital-intensive industries like the ISP sector, firms must make massive investments just to maintain the status quo, as old equipment depreciates and outlives its productive lifecycle. But when we look at the ISP sector through this lens of "net investment," we see that for the most part, U.S. ISPs are depleting more in asset value than they spend on new capital equipment -- thus they are actually *disinvesting* in their networks.
    - During the 2005-2008 period, the top publicly traded incumbent phone and cable companies depleted nearly $5 billion more in assets than they made in new capital expenditures. In other words, these incumbents collectively made only $0.97 in new capex investments for every $1.00 in assets depleted during this period.
    - In contrast, during the 2005-2008 period, the companies of the Dow Jones Industrial Average spent $1.33 in new capex for every dollar of depleted asset value.

  - During this same period, the DJIA companies had an average operating profit margin of 17 percent, versus 23 percent for the publicly traded ISPs. This, coupled with the overall lower net investment levels, is a strong indication that inadequate competition in the ISP sector depresses investment.
  - AT&T's wireline segment during the period of mandated network neutrality saw a substantial increase in net investment. In 2006, the company invested $0.87 for every $1.00 of depleted wireline assets. By the end of 2008, after two years of operating a neutral network, the company's net investment ratio had increased to $1.07 for every $1.00 of depleted wireline assets.

- **The Endorsement of network neutrality by wireless companies such as Clearwire and Cellular South demonstrates the nakedness of the network-neutrality-harms-investment argument, and lays bare incumbent ISPs' underlying motivation to reduce competition.**
  - During the first half of 2009, Clearwire's capital expenditures were nearly 300 percent of revenues. This stands in contrast to the investment levels of the most vocal anti-network neutrality ISPs, whose relative investments during the first half of the year were in the mid-to-low teens.

In the Internet access market, there are many factors that influence investment, and network neutrality is not high on that list. Moreover, if network neutrality has any impact on investment, it is likely to be a *positive* one – network neutrality may encourage modestly higher levels of investment in network infrastructure, and even higher levels of investment in the applications and content sector, which is *the* key driver of growth in the Internet access market itself.

The simple reality is that the dominant phone, cable and wireless companies have a vested, though perhaps shortsighted, interest in reducing competition and leveraging their control over the access markets into adjacent markets like content and applications. Network neutrality acts as a light regulatory firewall to prevent anticompetitive abuses of market power -- abuses that if left unchecked would stifle the overall level of investment in the wider information and communications technology sector. Network neutrality may put the brakes on some of the ISPs' most aggressive and anti-competitive discriminatory schemes, but it is simply wrong to think that the policy will have a negative long-term impact on investment.

Whether you look at historical trends or the current market, an examination of actual investment patterns shows fears about network neutrality to be misplaced and irrational. Policymakers should look at the data themselves, so they can finally implement this basic and beneficial consumer protection, and shift their focus to the more complex and challenging issues facing our broadband markets -- like bridging the digital divide and promoting meaningful competition.

Factors That Influence Investment

The high-speed Internet service provider sector is one of the most capital-intensive sectors in our economy. Building networks requires substantial upfront investments, and decisions regarding these investments are driven primarily by factors that influence the value of the return on investment (ROI). These factors are themselves in turn driven by other considerations -- some interrelated -- making overall investment decision-making a complex process that depends on the specifics of a given market.

In general, the broad factors that influence the decision to invest are:

- **Expectations About Demand** – If a market is expected to grow, businesses have a strong incentive to invest in capacity to meet increased demand, in order to increase revenues. The overall high-speed Internet market is growing, with the wireless data sector poised for substantial future growth. However, even within the wireline sector, there is considerable potential for growth in "next-generation" high-speed Internet services -- those that can deliver speeds well above 10 megabits per second (Mbps). Companies deploying higher-end service tiers are seeing substantial growth in these faster (and more expensive) offerings.[1]
- **Supply Costs** – If the cost to serve a customer declines, the potential return on investment increases, giving a firm the incentive to increase investment. In the ISP sector, overall capital equipment costs and operating costs continue to decline. In particular, for cable operators, the relatively inexpensive cost of DOCSIS 3.0 upgrades, coupled with the strong potential growth for faster services, creates an incentive to invest. For Incumbent Local Exchange Carriers (ILECs), deploying faster fiber-to-the-home (ftth) or short-loop DSL services does require a relatively higher level of upfront investment (compared to cable's upgrade path), but the potential cost savings from copper retirement, coupled with new revenue streams from Internet-delivered TV, also creates a strong incentive to invest.
- **Competition** – In markets where technological change is relatively swift and competition is healthy, firms have a strong incentive to invest in order to keep up with or get ahead of their competitors. The current high-speed ISP market is characterized by swift technological change, but the overall level of competition is sub-optimal. The latter factor means that regulators must be vigilant to ensure that the lack of competition and presence of market power do not spill over from the ISP market into the adjacent content and applications markets. If ISPs are allowed to discriminate against content and applications, it will create incentives for them to profit from artificial scarcity by delaying or avoiding network investments -- and it will reduce investment in the content and applications sector.
- **Interest Rates** – Interest rates directly impact the cost of borrowing money, and they also impact the opportunity cost of using profits to finance investment. As interest rates decline, firms view capital investment more favorably.
- **Corporate Taxes** – Firms pay taxes based on their profits. If the corporate tax rate is reduced, or if investment tax-allowances are increased, then firms have a greater incentive to invest. In recent years, the federal government has made changes to tax law, such as accelerated depreciation, which reduce ISPs' overall tax burden.
- **General Economic Confidence** – Business confidence in the overall economy directly impacts investment. Strong GDP growth and constrained inflation usually result in strong overall capital investment. Conversely, an economic downturn, even if it disproportionately impacts certain sectors, can lead to uncertainty about growth and demand and thus deter investment. In the overall communications sector, where services are increasingly viewed as necessities, firms may indeed be "recession-proof," but still limit investment during periods of overall economic turmoil. Investment in the communications sector declined sharply following the 2001 recession, and has marginally declined during the current recession (see below).

[1] *See e.g.*, Comments of Free Press, *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, A National Broadband Plan for Our Future*, WC Docket Nos. 09-137, 09-51, pp. 48-51; *See also* John Horrigan, "Home Broadband Adoption 2009," Pew Internet & American Life Project, June 2009, p. 23.

Some incumbent ISPs claim network neutrality rules will deter investment. But in order for this to be true, the rules will have to substantially impact an ISP's potential return on investment. Yet no ISP has provided a concrete example of how network neutrality will lower ROI.

The "pay-for-play" business models first discussed in 2005 have been shown to be unrealistic, and even some major network neutrality opponents have dropped this unlikely scenario from their anti-network neutrality talking points. Pay-for-play never really made much sense as an investment strategy, as these models only work in situations where congestion is the norm. In other words, once an ISP establishes a system of prioritizing certain content in exchange for payment (and thereby degrading for non-payment all other content), the ISP would have every incentive *not* to invest in increased capacity, for fear of reducing congestion and eliminating the very feature that made content providers willing to pony up for prioritized delivery.

Some ISPs' opposition to network neutrality is rooted in profitability concerns -- but these concerns have more to do with reducing competition than they do with investment. For example, AT&T's contractual obligations to Apple to block 3G VoIP applications are rooted in AT&T's desire to reduce competition in the mobile voice market. But with reduced competition comes reduced investment incentives. As we discuss below, endorsement of network neutrality by wireless companies such as Clearwire and Cellular South demonstrates the nakedness of AT&T's investment argument, and reveals the company's underlying motivation to reduce competition.

Fortunately, policymakers do not need to rely solely on theoretical arguments about how network neutrality will impact investment, as we have the results from a natural experiment implementing these rules on the largest ISP in America.

Historical Data Indicate that Network Neutrality Will Not Harm Investment

In the final days of 2006, the FCC approved the merger of AT&T and BellSouth only after the company agreed to operate a neutral network (by adhering to the four principles of the FCC's *Internet Policy Statement* as well as a fifth principle of nondiscrimination) for two years following the transaction. A review of AT&T's investments over those two years shows quite clearly that a strict network neutrality rule did not in any way deter investment.

In 2006 -- prior to agreeing to the five network neutrality principles -- AT&T and all its then-current and future subsidiaries (i.e., the full post-2006 company, which includes SBC, BellSouth, Cingular -- or AT&T Mobility -- and ATTC) made $18.45 billion in gross capital expenditure investments. After two years of operating under a strict network neutrality regime, the company's gross capital expenditures rose to $20.34 billion. In terms of capital expenditures as a percentage of revenues, AT&T's investment increased from 14.8 percent in 2006 to 16.4 percent in 2008 (see Figure 1).

These data represent all of AT&T's business segments; however, the fifth principle of nondiscrimination applied specifically to AT&T's wireline network. But in this segment, the company's investment growth under the network neutrality framework was even stronger than the overall company's. In 2006, the combined company's wireline capital expenditure was 13.5 percent of wireline revenues. By the end of 2008, this had increased to 20.2 percent (see Figure 1).

Figure 1: AT&T Investment Before and After Network Neutrality

Company	2005			2006			2007			2008		
	Gross CapEx (Billions $)	Revenue	Gross CapEx / Rev	Gross CapEx (Billions $)	Revenue	Gross CapEx / Rev	Gross CapEx (Billions $)	Revenue	Gross CapEx / Rev	Gross CapEx (Billions $)	Revenue	Gross CapEx / Rev
AT&T*	$17.7	$122.7	14.4%	$18.5	$124.7	14.8%	$17.9	$118.9	15.0%	$20.3	$124.0	16.4%
AT&T (wireline only)	$10.2	$88.3	11.6%	$11.8	$87.4	13.5%	$13.8	$71.6	19.2%	$14.1	$69.9	20.2%

*Source: Company annual reports. * Includes data for 2005 from SBC, ATTC, Bell South and Cingular Wireless. For 2006, data are included from SBC, Bell South and Cingular Wireless. This ensures accurate comparability across all years.*

Not only did AT&T's investment increase under network neutrality rules, but the company's gross investment also increased more than any other ISP's in America during this period. In the two years following the imposition of network neutrality rules, AT&T's gross capital expenditures increased by $1.8 billion, or 10.2 percent. In contrast, the other two Regional Bell Operating Companies (RBOCs) had a lower percentage increase in gross capex spending, with Verizon showing a 0.8 percent increase from 2006 to 2008 and Qwest increasing its gross capex by 8.9 percent during this period (see Figure 2).

Figure 2: Major ISP Gross Capital Investment 2006-2008

Company	2006 Gross CapEx (Billions $)	2008 Gross CapEx (Billions $)	Growth in Gross CapEx 2006-2008 (Billions $)	Percent Change in Gross CapEx 2006-2008
AT&T*	18.46	20.34	1.88	10.2%
Comcast	4.70	6.28	1.58	33.5%
Time Warner Cable	2.77	3.52	0.75	27.0%
Qwest	1.63	1.78	0.15	8.9%
Verizon	17.10	17.24	0.14	0.8%
CenturyTel	0.31	0.44	0.12	38.8%
Charter	1.10	1.20	0.10	9.0%
Fairpoint	0.21	0.30	0.08	38.9%
Cincinatti Bell	0.15	0.23	0.08	52.6%
MediaCom	0.21	0.29	0.08	37.9%
RCN	0.09	0.14	0.06	66.2%
Cablevision	0.89	0.92	0.03	3.9%
Frontier	0.27	0.29	0.02	7.2%
Windstream	0.37	0.36	-0.01	-2.4%
Embarq	0.92	0.69	-0.24	-25.7%
Adelphia	0.33	n/a	n/a	n/a
All Major U.S. ISPs	49.52	54.00	4.81	9.7%

*Source: Company annual reports. * Includes data for 2006 from SBC, Bell South and Cingular Wireless. This ensures comparability across years.*

While gross capital expenditures are an obvious investment metric, these absolute figures can be somewhat misleading depending on the overall size of a business. Hearing that a company spent $100 million on capex certainly sounds impressive, unless you then consider that the company also took in $100 billion in revenue. This is why it is also useful to measure capital investment as a percentage of revenues. Looking at all the major U.S. ISPs' investments during the 2006-2008 period, we see that AT&T under network neutrality rules had higher levels of relative investment growth than many other companies, with relative investment levels by Verizon, Comcast and Time Warner Cable actually declining during this period (see Figure 3).

Figure 3: Major ISP Relative Capital Investment 2006-2008

Company	Sector	2006 Gross CapEx/Rev	2007 Gross CapEx/Rev	2008 Gross CapEx/Rev	Change 2006-2008
Fairpoint	ILEC	17.9%	12.5%	23.3%	5.4%
RCN	Cable Overbuilder	14.7%	18.2%	19.4%	4.7%
Cincinatti Bell	ILEC	11.9%	17.3%	16.5%	4.5%
CenturyTel	ILEC	12.8%	12.3%	16.8%	3.9%
MediaCom	Cable	17.4%	17.6%	20.7%	3.3%
AT&T*	ILEC+Wireless	14.8%	15.0%	16.4%	1.6%
Qwest	ILEC	11.7%	12.1%	13.2%	1.5%
Frontier	ILEC	13.3%	13.8%	12.9%	-0.4%
Comcast	Cable	18.8%	21.2%	18.3%	-0.5%
Windstream	ILEC	12.1%	11.5%	11.3%	-0.8%
Charter	Cable	20.0%	20.7%	18.6%	-1.5%
Verizon	ILEC+Wireless	19.4%	18.8%	17.7%	-1.7%
Cablevision	Cable	15.2%	12.3%	12.8%	-2.5%
Time Warner Cable	Cable	23.6%	21.5%	20.5%	-3.1%
Embarq	ILEC	14.5%	13.0%	11.2%	-3.3%
Adelphia	Cable	12.0%	n/a	n/a	n/a
All Major U.S. ISPs		16.7%	17.0%	16.9%	0.2%

*Source: Company annual reports. * Includes data for 2006 from SBC, Bell South, and Cingular Wireless. This ensures comparability across years.*

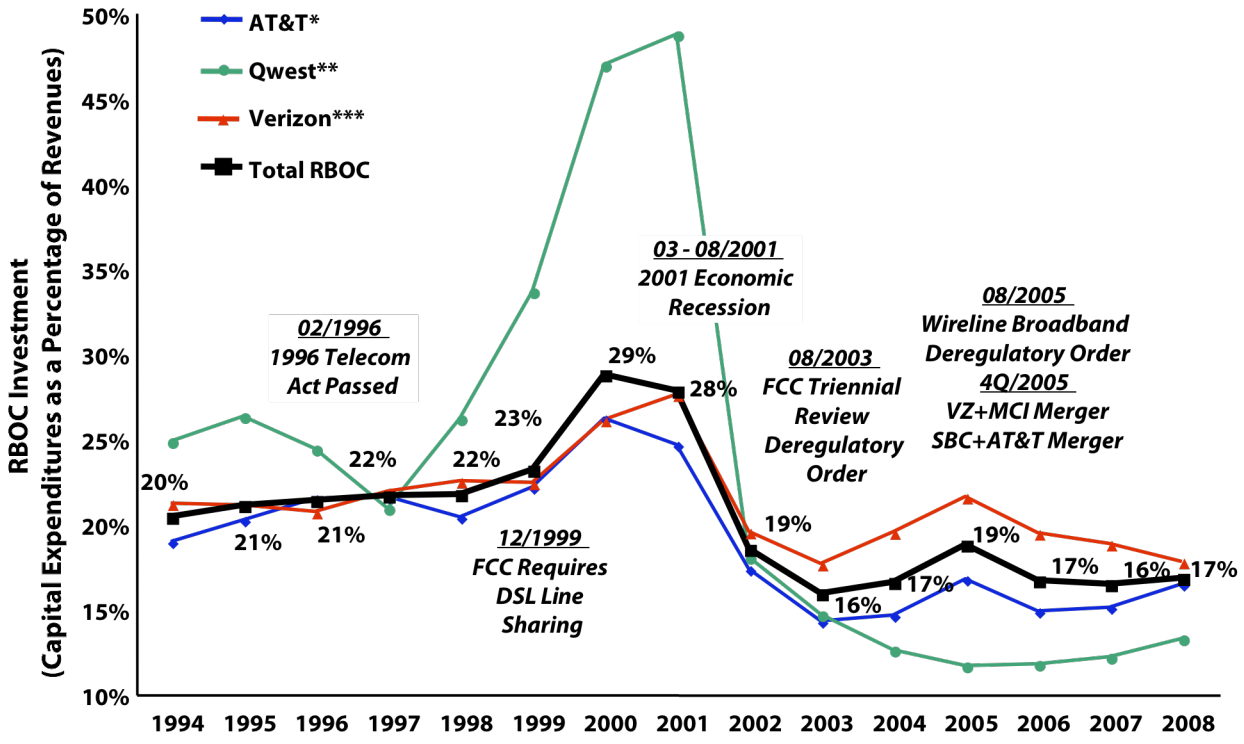
The rhetoric about network neutrality discouraging investment is just a general reflection of the common but misguided belief that any and all regulation discourages investment. According to this theory, regulation will perpetuate uncertainty and will reduce potential return on investment, thereby reducing the incentive to invest. But all regulation is not created equal. Some regulation is heavy-handed, designed to control retail prices in a monopoly market, while other regulation can be much lighter, providing basic rules of the road that ensure healthier competition in an otherwise concentrated market.

So what should we make of the theory that regulation reduces investment? Evidence from the past 13 years from the Incumbent Local Exchange Carrier sector suggests little support for this theory. In fact, during this period, which saw the imposition of substantial regulation followed by equally substantial deregulation, we see that regulation may have actually encouraged investment -- and that deregulation and consolidation may have decreased investment.

In 1994, two years before the 1996 Telecom Act was passed, the combined gross capital investment of the RBOCs was 21 percent of revenues. Immediately following the passage of the 1996 Act, RBOC investment as a percentage of revenues grew, despite substantial regulations at the wholesale and retail levels. By 2001, RBOC investment as a percentage of revenues reached 28 percent (see Figure 4).

Investment continued to rise throughout the year 2000, despite the bursting of the dot-com bubble in March of that year. In 2001, despite a six-month recession, RBOC investment held steady. It wasn't until 2002, when the FCC began dismantling the 1996 Act's regulations, that relative investment declined sharply, to a low of 15.9 percent in 2003. Investment rose slightly in 2004 and 2005, but then declined and held flat following the FCC's subsequent complete deregulation of broadband and approval of a series of massive mergers (see Figure 4).

Figure 4: RBOC Capital Investment as a Percentage of Revenues 1994-2008



*Source: Company annual reports. * Data for AT&T incorporates all the data from the company's predecessor ILEC RBOCs (Southwestern Bell, SBC, PacTel, SNET, BellSouth and Ameritech, as well as their wireless subsidiaries, which from 2000-2006 were subsumed under the Cingular/AT&T Mobility banner). Data prior to 2006 does not include AT&T Corp (ATTC) information, as this company was a CLEC prior to the merger with SBC. ** Data for Qwest prior to 2000 is for US West, but excludes prior information for Qwest, which operated as a CLEC prior to the 2000 takeover of US West. *** Data for Verizon incorporates all the data from the company's predecessor ILEC RBOCs (Bell Atlantic, NYNEX and GTE, as well as Verizon Wireless). Data prior to 2006 does not include MCI/WorldCom information, as this company was a CLEC prior to the merger with Verizon.*

In short, these data suggest that ISP investment decisions are not driven simply by regulation or the lack thereof. In fact, it appears that regulation, especially if designed to promote competition, can stimulate investment.

While no one can say for certain what precise outcome network neutrality will have on ISP sector investment, we should take stock in what is going on behind the scenes in the networking equipment market. The so-called deep-packet inspection (DPI) technology that enabled Comcast to secretly block the BitTorrent application is now being marketed to ISPs as a technology that can be used to avoid investing in new capacity. For example, one DPI vendor states that "by shaping traffic at the subscriber-level [using DPI], bandwidth is made available for new revenue generating services. Rate limiting traffic allows network infrastructure build-out to be deferred, *thereby reducing capital expenditures*."[2]

The Lack of Competition in the Broadband Sector Depresses Investment and Boosts Profits

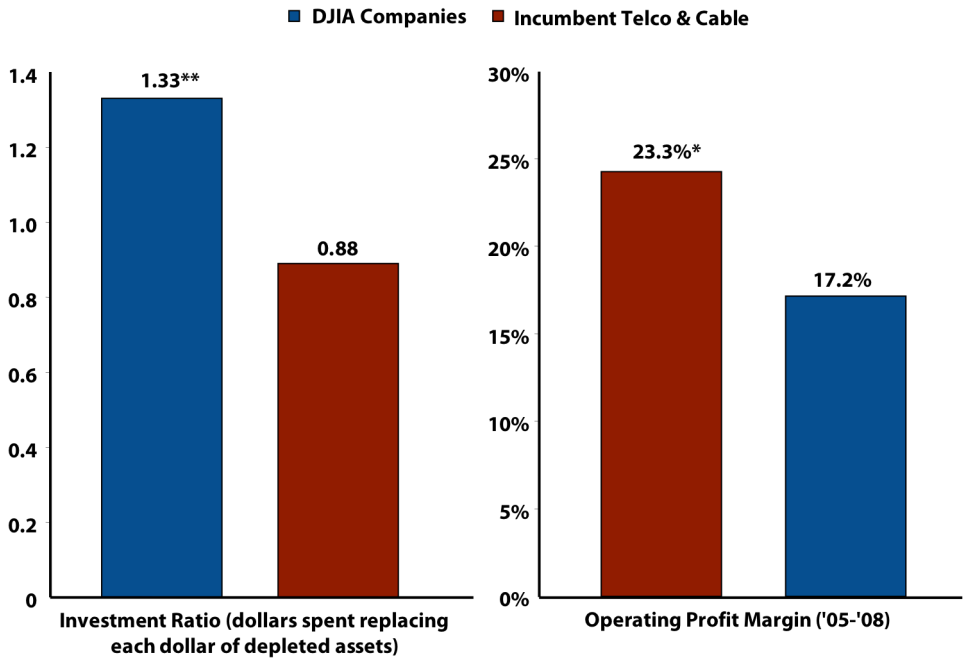
In capital-intensive industries like the ISP sector, firms need to make substantial capital investments just to maintain the status quo -- i.e., to replace outdated equipment. Thus, a company could make billions in so-called "replacement investments" and still be letting its network fall apart. That's why it's important to examine "net investment," or the level of gross investment minus the value of depreciated assets. Depreciated assets can still earn revenues, but in competitive markets such a practice is infeasible. Consider, for example, the car rental business. A company might purchase a car with a value of $20,000, and then estimate that after four years, the wear-and-tear on the vehicle will result in the full depreciation of the asset (i.e., the car will be worth no more than the salvage value). With maintenance, the rental company could of course operate the car for several additional years. But in a competitive market, such a practice would never occur, because other companies would gain market share by offering newer vehicles (indeed, in the rental car industry, which is regarded as moderately competitive, companies often replace fleet vehicles after one year of use).

When viewed through this lens of net investment, the recent investment record of U.S. ISPs looks very spotty. While at first glance it may seem impressive that a company like Qwest made $6.7 billion in capital expenditures between 2005 and 2008, this figure loses its luster when you consider that during the same period, Qwest depreciated $10.7 billion in assets. That is, during the time when Qwest was receiving substantial deregulatory FCC treatment, the company depleted $4 billion more in assets than it made in new capital investments. Put another way, during the 2005-2008 period, for every dollar of assets Qwest depleted, it only spent $0.63 replacing those depleted assets.

This pattern of disinvestment is industry-wide. During the four-year period from 2005 to 2008, the top publicly traded incumbent phone and cable companies depleted nearly $5 billion more in assets than they made in capital expenditures. In other words, for every $1.00 in assets that was depleted during this period, the largest publicly traded incumbents collectively made only $0.97 in new capex investments, while the *average* incumbent made only $0.88 in investments for every dollar of assets depleted. Compare this to the companies that make up the Dow Jones Industrial Average (excluding AT&T and Verizon), which spent $1.33 for every dollar of assets depleted during the 2005-2008 period (see Figure 5).

[2] *See* M. Chris Riley and Ben Scott, "Deep Packet Inspection: The End of the Internet as We Know It?" March 2009, at n. 51 (*emphasis added*).

Figure 5:
The Lack of Effective Competition in the ISP Sector Depresses Investment and Boosts Profits



*Source: Company annual reports. DJIA companies include the 30 DJIA, except AT&T, Verizon (which are included in the incumbent group), JP Morgan and Travelers (excluded due to incomplete data). * p = 0.11. ** = p = 0.004. Data for AT&T and Verizon include all company segments in order to ensure comparability. Thus, for 2005, AT&T data included SBC, BellSouth, ATTC and Cingular, and for 2006 included SBC, BellSouth and Cingular. Likewise, for 2005, Verizon data included Verizon and MCI. Depletion values represent depreciation plus amortization, as most of these companies did not separate out this data in their annual reports. However, the ISP net investment ratios are still well below that of other publicly traded companies when examined using the same methodology. In order to more accurately reflect Time Warner Cable's business health, operating margins for TWC exclude 2008, which was artificially low due to a one-time non-cash accounting expense of $14.8 billion recorded for the "impairment of cable franchise rights."*

Overall, the DJIA companies have significantly higher levels of net investment but lower profit margins than the ISPs (see Figure 5). This is a strong indication that the phone and cable incumbents operate in concentrated, uncompetitive markets where they abuse market power by delaying investment in order to reap higher short-term profits.

Interestingly, according to this metric of investment, the network neutrality conditions placed on AT&T do not seem to have negatively impacted investment. In 2006, the year prior to the imposition of network neutrality conditions, AT&T's wireline net investment ratio was 0.87. In 2007, this increased to 1.03 and rose to 1.07 by the end of 2008 (see Figure 6).

Figure 6:
AT&T's Net Investment 2005-2008

Company	2005			2006			2007			2008		
	Gross CapEx (B$)	Asset Depletion (B$)	Invest-ment Ratio	Gross CapEx (B$)	Asset Depletion (B$)	Invest-ment Ratio	Gross CapEx (B$)	Asset Depletion (B$)	Invest-ment Ratio	Gross CapEx (B$)	Asset Depletion (B$)	Invest-ment Ratio
AT&T*	17.95	19.98	0.90	18.46	19.92	0.93	17.89	21.58	0.83	20.34	19.88	1.02
AT&T (wireline only)	10.48	13.40	0.78	11.78	13.49	0.87	13.77	13.42	1.03	14.11	13.15	1.07

*Source: Company annual reports. * Includes data for 2005 from SBC, ATTC, BellSouth and Cingular Wireless. For 2006, data are included from SBC, BellSouth, and Cingular Wireless. This ensures accurate comparability across all years.*

Emerging ISPs and Investors Embrace Openness

As the data in this policy brief indicate, when a company decides how and when to make network investments, a multitude of factors are considered -- but it does not appear that network neutrality in any way deters investment. Indeed, some financial analysts are unconcerned about the FCC's pending move to enact network neutrality rules.[3] Even some ISPs are rejecting this stale claim. Mobile wireless companies Clearwire and Sprint -- both of which are in the process of making massive new network investments -- initially reacted to FCC Chairman Julius Genachowski's announcement by issuing general statements of support for rules protecting the open Internet.[4]

Clearwire, Cellular South and XO Communications have now gone on the record supporting the FCC's pending notice of proposed rulemaking.[5] Clearwire is an interesting case, as it of all companies would stand to lose the most if it were indeed the case that network neutrality (particularly on wireless networks) harms return on investment. Currently, the small company is undertaking a massive capital deployment effort, with capex spending for the first half of 2009 coming in at nearly 300 percent of revenues. This data point alone reveals that AT&T and other dominant providers' rhetoric about network neutrality and investment is nothing more than a transparent attempt to confuse the debate, in order to ensure that they are protected from the very types of competition that network neutrality will promote.

Figure 7:
2009 Investment - Clearwire vs. Top Incumbents

Company	1Q 2009 CapEx/Rev	2Q 2009 CapEx/Rev	YTD 2009 CapEx/Rev
AT&T	10.3%	12.6%	11.5%
Verizon	13.9%	15.2%	14.6%
Comcast	14.6%	13.8%	14.2%
Time Warner Cable	17.6%	17.0%	17.3%
Clearwire	191.7%	372.9%	283.4%

Source: Company quarterly reports.

Conclusion: The FCC Must Be Guided by Evidence, Not Rhetoric – Network Neutrality Rules Will Promote Overall Investment

Much of the rhetoric directed against network neutrality policy centers on the claim that this basic rule of the road will somehow deter network operators from making future investments in their core business. As this policy brief shows, these claims are completely unsupported by all available data. The simple fact is, network neutrality will act as a very light regulatory firewall ensuring that ISPs do not abuse their market power. Network neutrality will also ensure that the right market signals are present, encouraging ISPs to make efficient and profitable network investments and discouraging them from profiting from artificial scarcity.

But while the impact of network neutrality obligations on network investment is likely negligible -- or even positive -- the absence of nondiscrimination protections will have a substantial negative impact on investments made in the content and applications markets. Currently, the Internet is an open platform that provides online innovators with a high degree of predictability about a major segment of their business. An innovator knows that she can develop a new idea or application, and that it will work on any end-user's Internet-connected device. Without network neutrality, this certainty is lost. Losing network neutrality could badly undercut the current investment in applications and services -- a sector of our economy much larger than the network infrastructure itself.

[3] *See e.g.* Andrew LaVallee, "Telecom Analysts Downplay Net Neutrality Concerns," *Wall Street Journal Digits Blog*, Sept. 24, 2009.

[4] *See* Mike Dano, "Cheers, Jeers Greet Genachowski's Push for Net Neutrality," *Fierce Wireless*, Sept. 21, 2009.

[5] *See* "Clearwire Stresses Confidence, Backs Open Access; Switch to LTE Seen as Possible", *Communications Daily*, September 30th, 2009. *See also* Cecilia Kang, "Cellular South CEO Hu Meena on Net Neutrality", *Washington Post - Post Tech*, October 14, 2009. *See also* Cecilia Kang, "My Q&A with XO Communications, an ISP that favors net neutrality", *Washington Post - Post Tech*, October 20, 2009.