



Establishing a New Policy Paradigm That Encourages Broadband Deployment and Job Creation

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EXECUTIVE SUMMARY

With a stagnating economy and policymakers calling for much faster and more ubiquitous broadband Internet services, one pathway to success would be fostering public policies that stimulate private broadband investment, provide consumers with better and faster services, and create well-paying jobs. Yet, within the last two years, the Federal Communications Commission (FCC) reclassified providers of Internet services into a category befitting of public utilities with considerable regulatory oversight, while sparing other web-centric firms from similar regulatory treatment. With broadband investors looking for less uncertainty and more growth and earnings potential, these new regulations are out of step with encouraging more investment and furthering a National Broadband Plan. These regulations also appear to be inconsistent with the incoming administration's pledge to spur infrastructure investment and stimulate the overall economy.

The issue of stimulating broadband investment and increasing consumer welfare was explored nearly seven years ago, when one study found that broadband service providers created far more jobs and invested far more back into the economy than other web-centric firms.¹ The study also found proposed regulations targeted broadband providers while bypassing other web-based companies. It concluded that these regulations were not aligned with the national broadband policy and, if implemented, would lead to less investment and fewer jobs.

¹ Larry F. Darby, Joseph P. Fuhr and Stephen B. Pociask, "The Internet Ecosystem: Employment Impacts of National Broadband Policy," American Consumer Institute, Center for Citizen Research, January 28, 2010.

In this context, and a host of new FCC regulations over the last two years, this study reexamines the resulting investment and job impacts across the Internet ecosystem and finds:

- New and proposed regulations would dramatically increase operating costs for Internet Service Providers (referred to herein as *core providers*), as well as increase market risk, lower expected growth, suppress network investment, and dampen opportunities for network providers to maintain and create jobs.
- These regulations overlook large web-based applications providers (referred to herein as *edge providers*), who often call for the imposition of rules on their would-be network rivals – namely, core providers.
- Based on historical data, this study finds that for every billion dollars in revenue core network companies create 812 more direct jobs, or about twice as many, when compared to edge providers. When industry multiplier effects are included, this job differential results in 4,200 more jobs across the entire economy for every billion dollars of revenue, when compared to edge providers.
- In addition, core providers earn profits at lower rates and invest more back into the economy per dollar of value received in the market than do edge providers.
- Finally, regulatory rules that reduce revenue and growth for core providers serve to transfer these benefits (revenue or growth prospects) to edge providers.

Based on these findings, regulations that shift value away from core providers to edge providers work to reduce total investment in infrastructure and suppress deployment of consumer broadband services, dampen creation and preservation of jobs, and financially benefit large and already profitable edge companies. This outcome conflicts with the consensus requirements of a National Broadband Policy and runs counter to stimulating the lagging economy.

If public policies seek to revitalize the nation's infrastructure and create well-paying jobs, one way to do so is by reforming and eliminating regulations that discourage private investment and competition. Since these reforms do not place any additional burden on American taxpayers, the resulting economic benefits would be a win-win for consumers and workers.

In summary, this study shows the recent increase in regulation is woefully out of line with stimulating broadband investment and creating more permanent high-paying jobs. Congress needs to do more to stop the reregulation of the industry. It should reform and eliminate onerous telecommunications regulations and level the competitive playing field for the benefit of consumers and the general economy.

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INTRODUCTION

In terms of economic output, jobs and investment, the U.S. economy has underperformed compared to previous economic upturns, and there are few options left for the Federal Reserve to spark real economic growth. According to one estimate, the economy is running \$2.2 trillion behind its historical trend in terms of Gross Domestic Product (GDP).² The rebound continues to be slow. Despite the strongest quarterly real GDP growth in two years, the latest third quarter estimate for annualized real GDP is only 1.6% above the third quarter from the previous year.³

As economic output lags, so does investment and job creation. The stagnating economy is evident in real private fixed investment, which was lower in the third quarter of 2016 than it was the year before. As for labor, there are nearly 10 million workers who are unemployed and underemployed, despite the lowest participation rate in decades. The fact is that many workers have given up looking for work and they are no longer being counted as unemployed.⁴

One reason for the stagnating economy has been the ongoing increase in regulations. By one estimate, regulations cost the economy \$2 trillion per year.⁵ In fact, As of November 25th of this year, nearly 3,400 new rules were published in the Federal

* Authored by Stephen B. Pociask and Joseph P. Fuhr, Jr., both with the American Consumer Institute Center for Citizen Research.

² See Peter Ferrara, "Why the United States Has Suffered the Worst Economic Recovery Since the Great Depression," The Heartland Institute, August 1, 2016; and "Obama's Economic Recovery is Now \$2.2 Trillion Below Average," *Investor's Business Daily*, July 29, 2016.

³ Quarterly data available at the U.S Bureau of Economic Analysis, www.bea.gov.

⁴ All these data are available at the U.S. Bureau of Labor Statistics, www.bls.gov.

⁵ Clyde Wayne Crews, "Hairball: The Cost of Federal Regulation to the U.S. Economy," *Forbes*, September 10, 2014, at <http://www.forbes.com/sites/waynecrews/2014/09/10/hairball-the-cost-of-federal-regulation-to-the-u-s-economy/#467133ba6a91>.

Register, amassing nearly 85,000 pages of new regulations.⁶ For businesses, these regulations can increase operating costs, create uncertainty and investment delays, and restrict commerce. For consumers and workers, that result means higher prices and fewer jobs.

One area of a marked increase in regulations in the last two years is in the communications industry, where the FCC promulgated and proposed numerous new rules on Internet Service Providers (ISPs), consisting of telecommunications, wireless, satellite, cable and other communications companies. For the purpose of this study, ISPs are referred to as *core companies* and large web-based applications providers are referred to as *edge companies*. These new regulations, to be addressed later, have specifically targeted core network providers, while leaving edge companies spared from similar regulatory treatment. The differential regulatory treatment of firms between the Internet's core and edge impacts business decisions and market outcomes in ways that impede competition, and reduce investment and technological innovation, thereby negatively affecting consumer welfare.

This study explores how new FCC regulations will impact firms across the Internet ecosystem, and it will compare key financial data for various information technology companies to determine which providers create more jobs and reinvest a greater share of their cash flow back into the economy. In effect, this study will test whether onerous regulations target firms that invest the most and create the most jobs. If so, then there is yet another costly economic consequence to the application of asymmetric regulations on technology firms.

Given the lagging economy, the recent talk of additional economic stimulus plans, and the need for faster and more ubiquitous deployment of broadband services, this study evaluates whether the FCC's new regulations are out of sync with the broader

⁶ For an up-to-date tracking of new regulations, see the Competitive Enterprise Institute's Ten Thousand Commandments Project at <http://www.tenthousandcommandments.com/>.

economic policy imperative to increase infrastructure investment and create more well-paying permanent jobs.⁷ If encouraging investment and job growth are important public policy goals, as it has often been stated, then achieving regulatory parity would help achieve those goals for the benefit of consumers and the economy.

The Increased Asymmetric Regulatory Burden

Regulations can negatively impact the incentives and opportunities of firms to grow revenue, generate cash flow, invest and hire workers. Most recently, broadband providers, like Comcast and AT&T, have become more heavily regulated, while edge companies, like Google and Facebook, have not. This disparate regulatory treatment among would-be competitors creates market distortions that affect investment decisions. This gives the government a role in picking market winners and losers. It also encourages *rent-seeking*, a process where groups attempt to influence public policies for their financial gain at the financial loss of others. Managed competition by government intervention is a poor substitute for market rivalry.

Ironically, the Telecommunications Act of 1996 provided a “deregulatory framework” that intended to increase competition and “accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans.”⁸ Yet, in recent years, telecommunications policy has been on course to reregulate core network companies. A prime example of this was the FCC’s February 2015 decision to reclassify Internet Service Providers (ISPs) under 1930s-style public utility rules (also referred to as *Title II regulations*).⁹ That reclassification gave the FCC the authority to impose a host of new and potentially onerous regulations. As will be examined in this paper, these new regulations can have unintended consequences

⁷ Rene March, “Trump’s Trillion-Dollar Infrastructure Plan Faces Congressional Scrutiny,” CNN, November 17, 2016, at <http://www.cnn.com/2016/11/17/politics/donald-trump-infrastructure-plan-congress/index.html>.

⁸ Conference Report to the Telecommunications Act of 1996, Pub. L. No. 104–104, 110 Stat. 56.

⁹ John Eggerton, “Divided FCC Votes to Reclassify ISPs Under Title II,” *Multimedia News*, February 26, 2015.

on the buildout of broadband networks, because they increase risks for investors and providers. The following is a summary of the effects of newly imposed and recently proposed regulations:

1. Net neutrality

Initiated by various public groups and edge providers, most notably Google, the FCC spent nearly a decade pushing for net neutrality regulations under the guise of making the Internet “free and open.” After the courts twice struck down the FCC’s proposed net neutrality rules, in early 2015, the FCC reclassified broadband services – from an information service to a telecommunications service – which gave the FCC sweeping authority over ISPs. Many have suggested that the new rules would hamstring ISPs and keep them out of edge and application services. For some edge providers, the push for net neutrality regulations was a lobbying effort to impose restrictive regulations on ISPs.¹⁰

The new rules prohibit or limit service differentiation and prioritization, as well as the use of multi-sided pricing that could reduce consumer prices, increase consumer welfare and increase Internet investment. Instead, net neutrality rules serve to transfer economic surplus from the ISPs (and their customers) to edge providers. Specifically, Hahn and Wallsten observed that banning multi-sided pricing (effectively setting the ISP price for content providers at zero) would lead to consumer welfare losses.¹¹ In a comprehensive study on this issue, Darby and Fuhr found that a ban on multi-sided pricing would require consumers to pay for all of the upgrades to the Internet, thereby increasing consumer prices and decreasing broadband demand – both of which would

¹⁰ Several edge companies financed lobbying efforts in support of net neutrality regulations. Google provided funding to Free Press and others, including a \$1 million donation to the New American Foundation, which made Eric Schmidt its CEO. As an example of this lobbying activity, see <https://www.philanthropy.com/article/Google-CEO-Named-Chairman-of/194233>). Also, the FCC Chairman changed the net neutrality proposal just days before its release, reportedly at Google’s request <http://www.politico.com/story/2015/02/fcc-chairman-tom-wheeler-net-neutrality-plan-google-115502>.

¹¹ Robert Hahn and Scott Wallsten, “The Economics of Net Neutrality,” AEI-Brookings Joint Center for Regulatory Studies, 2006.

reduce network investment.¹² The study estimated the present discounted value of lost consumer welfare to be as much as \$32 billion over 10 years, or about \$285 per broadband household. Sidak evaluated and modified Darby's figures and re-estimated the welfare losses to be much higher – in the range of \$3.44 to \$7.74 billion per year.¹³

Litan and Singer estimated that these regulations would lead to billions of dollars of consumer welfare losses – including a \$1.5 billion decrease in consumer welfare just for foreclosing enhanced quality of service offerings to online multi-player video game providers.¹⁴ A study by The American Consumer Institute found that restrictions on multi-sided market pricing would mean that consumers would lose \$69 billion in potential benefits over 10 years.¹⁵

Years before the FCC's decision, the U.S. Department of Justice warned that consumer welfare and innovation could be harmed by net neutrality regulations:

*The FCC should be highly skeptical of calls to substitute special economic regulation of the Internet for free and open competition enforced by the antitrust laws. Marketplace restrictions proposed by some proponents of "net neutrality" could in fact prevent, rather than promote, optimal investment and innovation in the Internet, with significant negative effects for the economy and consumers.*¹⁶

That prediction now appears to have come true. In recent research, Singer found that the top twelve ISPs collectively cut spending by \$2.7 billion during the first six

¹² Larry F. Darby and Joseph P. Fuhr, Jr., "Consumer Welfare, Capital Formation and Net Neutrality: Paying for Next Generation Broadband and Networks," *Media Law and Policy*, Summer 2007, pp. 122-64.

¹³ J. Gregory Sidak, "A Consumer Welfare Approach to Network Neutrality Regulation of the Internet," *Journal of Competition Law and Economics*, 2:3, pp. 349-474, 2006.

¹⁴ Robert E. Litan and Hal J. Singer, "Unintended Consequences of Net Neutrality Regulation," *Journal on Telecommunications and High Technology Law*, 2007.

¹⁵ Stephen Pociask, "Net Neutrality and the Effects on Consumers," The American Consumer Institute, May 9, 2007.

¹⁶ "In the Matter of Broadband Industry Practices," WC Docket No. 07-52, *Ex Parte* Filing from the United States Department of Justice to the Federal Communications Commission, September 6, 2007, p. 1, available at <http://www.usdoj.gov/atr/public/comments/225767.htm>, citing studies by ACI and others.

months of this year, compared to the six-month period since the FCC decision.¹⁷ Less capital spending also means fewer jobs and a reduction in service deployment for consumers.

2. Title II Regulation

As noted, in early 2015, the FCC reclassified Internet and broadband services from an information service to a telecommunications services, thereby permitting the FCC to fully regulate the industry like common carriers or 1930s-style public utilities. The purpose of reclassification was to give the FCC the authority to impose net neutrality regulations, but that authority has also opened the door for a host of new and onerous regulations.

In the past, common carrier regulations required telecommunications providers to get approval before introducing new services, and its regulations could touch all aspects of the business, including quality of service, operations and engineering, marketing, billing, pricing and regulatory compliance standards. Multi-year regulatory proceedings were common and required service cost studies before new services could be priced, deployed or sold to any customer. Regulators established price discrimination schemes, including explicit and implicit cross subsidies between customer groups, service territories and type of telecommunications services. Innovation under Title II regulation was rare, with regulatory proceedings sometimes taking over a decade -- not at Internet speeds. Instituting this new and potentially onerous regulatory framework creates uncertainty for investors and it increases the cost of capital, thereby discouraging investment.

In fact, evidence is already mounting that core providers are cutting their investment. Singer found capital expenditures have declined on average by 12%.¹⁸ In the

¹⁷ Giuseppe Macri, "Investment Down Among Internet Providers Since Net Neutrality," *Inside Sources*, August 12, 2016, at <http://www.insidesources.com/investment-down-among-internet-providers-since-net-neutrality-economist-says/>.

last six months, AT&T, Verizon and Sprint cut their capital spending by nearly \$5 billion.¹⁹ Smaller ISPs are faring no better, where the increased costs and legal uncertainty from Title II regulations has led rural broadband providers in six states to cut their broadband deployment, according to FCC Commissioner Pai.²⁰ As a former FCC official stated:

In the face of well-documented declining capital investment by businesses, now hovering near all-time lows, actions by the Federal Communications Commission that discourage further investment are far from harmless to the nation's economy or to its consumers. It is surprising that in such a persistent, low-growth, low-investment economic environment, the agency continues to propose policies that discourage further investment by Internet service providers, despite the fact that from 2000 - 2015, ISPs had been leaders in capital investment in the United States.²¹

3. Technology Transition Order

Capital is a scarce resource and should be spent wisely. Currently, Title II Regulations require incumbent telecommunications carriers to invest and maintain outdated copper infrastructure for voice-centric services. These regulations discourage investments in state-of-the-art networks and services. Incumbents investing in all-IP networks (fiber-based services using only Internet protocol), while being forced to maintain antiquated copper network facilities, face duplicative network costs, which limits broadband buildouts and ultimately leads to higher consumer prices for the state-of-the-art services. When consumer costs rise and buildout is limited, consumer welfare suffers, and that undermines the national broadband goals of widespread deployment and more affordable prices.

¹⁸ Hal Singer, "Does the Tumble in Broadband Investment Spell Doom for the FCC's Open Internet Order," *Forbes*, August 25, 2015, at <http://www.forbes.com/sites/halsinger/2015/08/25/does-the-tumble-in-broadband-investment-spell-doom-for-the-fccs-open-internet-order/#22114ecc2627>.

¹⁹ Hal Singer, "To Evade the Wheeler Tax, Capital is Fleeing Digital Infrastructure," *Forbes*, August 10, 2016.

²⁰ "Commissioner Pai Statement on How President Obama's Plan Harms Broadband Deployment," May 7, 2015, FCC, at <https://www.fcc.gov/document/comm-pai-stmt-how-pres-obamas-plan-harms-broadband-deployment>. Most of these ISPs are in rural and underserved areas.

²¹ Randy May, "FCC Regulations Are Pushing ISPs Out of Broadband Infrastructure Market," Free State Foundation, August 10, 2016, at <http://freestatefoundation.blogspot.com/2016/08/fcc-regulations-are-pushing-isps-out-of.html>.

In 2012, to speed fiber deployment and encourage the FCC to update its discontinuation of service rules, AT&T proposed trials in two of its wire centers in hopes that it would eventually buildout an all-IP network for its triple play services (voice, data and video), while discontinuing its legacy copper network. This was an opportunity for the FCC to reduce duplicative costs for incumbent local exchange companies (ILECs) and speed the transition to fiber-based services without having to keep and maintain an outdated legacy network. However, the FCC embraced its new Title II power and expanded these regulations.

With its new Technology Transition Order, the FCC's rules do not speed up the review for proposed discontinuance of copper services; it requires that transitioning technologies be made available to competitors at comparable conditions; in notifying consumers of proposed copper retirement, it forbids incumbents from encouraging consumers to switch to an all-fiber service that is different from the legacy service they currently subscribe to; and it allows for a single competing service provider in any market to protest (including "informal complaints") any planned copper retirements that may affect them, and that single protest may initiate an enforcement action by the FCC.²² The new rules allow the incumbent's competitors to hold up and potentially stop deployment to an all IP-network. This order provides a perfect opportunity for rent-seeking, as one FCC Commissioner notes:

Corporate interests have told us these new services threaten their business models. Companies are seeking to force their competitors [ILECs] to keep spending money on networks that those competitors no longer want to maintain. Why? So that these companies can continue to use their competitors' networks! To state the argument is to reveal its

²² In the Matter of Technology Transitions, "Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking," FCC 15-97, released August 7, 2015, noting paragraphs 5, 101, 49, 34 and 158, respectively.

*absurdity. But today the FCC has put the interests of these corporate middle-men over the welfare of consumers.*²³

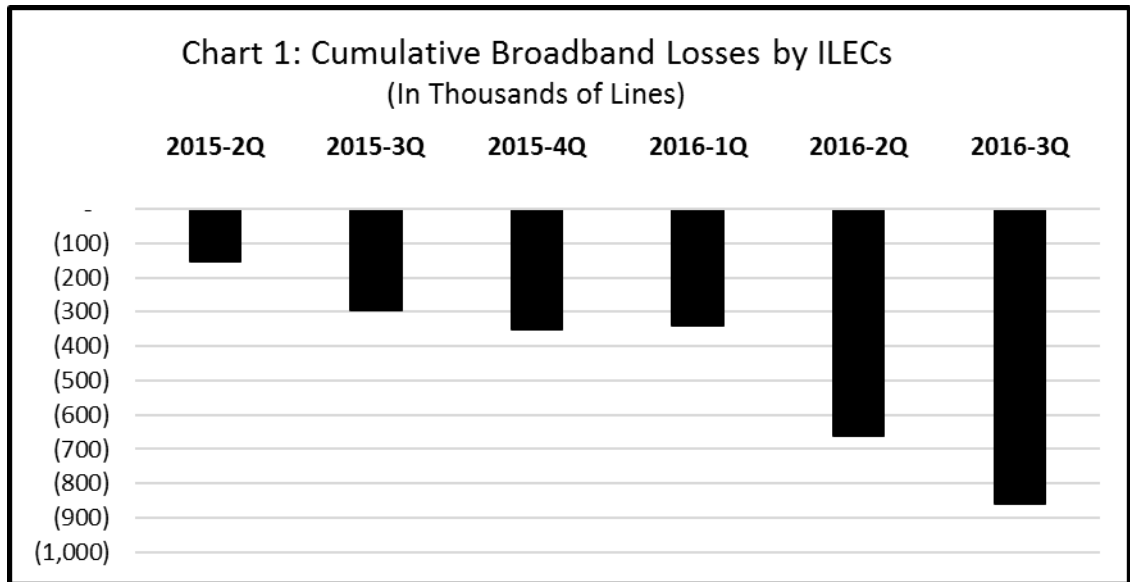
The rules mean higher costs for incumbents that maintain two networks. As FCC Commissioner Michael O’Rielly recently noted “...I had hoped to see more progress made to remove legacy rules and barriers to discontinue services that most consumers no longer use.”²⁴

The cumulating effects of just the first three enumerated regulations – 1) Title II regulations, which applies to both telecommunications and broadband services; 2) net neutrality regulations, that hamper the ability of core companies to leverage their investments into higher value-creating activities; and 3) strict technology transition regulations, that inhibit the ability of telephone incumbents from upgrading their networks from DSL to Fiber-based services – has already affected broadband investment.

ILEC broadband subscription has been in recent decline, despite a robust and growing broadband market. ILEC copper voice service have long been deemed to be a Title II service with rules put in place to prevent phone companies from discontinuing voice telephone services to its customers. With broadband services now classified as Title II, migrating consumers to IP-based voice services is looked upon by the FCC as a discontinuance of old copper-based voice services and therefore subject to the full wrath of the commission. This means that ILECs have even less incentive to migrate from copper to fiber, since they will need to operate duplicative networks much longer. As a result, ever since (and not prior to) the FCC vote for Title II regulations and net neutrality regulations, the number of ILEC broadband subscribers has been on a steady decline, as shown in **Chart 1**. Regulations can have consequences.

²³ In the Matter of Technology Transitions, Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking, FCC 15-97, released August 7, 2015, Dissenting Statement of Commissioner Ajit Pai, at <https://www.fcc.gov/article/doc-334747a5>.

²⁴ “Statement of Commissioner Michael O’Rielly Approving in Part and Dissenting in Part,” Technology Transitions, GN Docket No. 13-5, July 15, 2016.



Source: Leichtman Research Group, Inc., quarterly reports

4. Cable TV Set Top Boxes

FCC Chairman Tom Wheeler proposed a plan to unlock cable TV set top boxes (STBs).²⁵ Under the plan, consumers would be able to acquire a uniform STB from either retailers or their providers, and over-the-top competitors would be allowed to use the same box to offer alternative programming to consumers, as well as potentially taking parts of cable’s program lineup and repackaging the content. Interestingly, a mere day after the Chairman circulated his plan, Google held a public demonstration of its new STB. Since Google could not have manufactured its STB overnight, some view the FCC public interest actions to have been coordinated with private interests.²⁶

The FCC’s plan promises increased competition and choice, and the Chairman has cited rising STB costs as evidence that urgent action is needed to help consumers. In reality, cable and over-the-top competition already exists and its growing; the plan exposes competitors in the same market to different regulations, which inhibits real head-to-head competition; the cable TV market is currently moving away from STBs to apps, but the plan could forever require STBs; the original data used to demonstrate

²⁵ See “FCC Proposes to *Unlock the Box*,” NPRM FCC-16-18, FCC, adopted February 18, 2016.

²⁶ John Eggerton, “Google Gears Up” *Broadcasting and Cable*, January 29, 2016.

rising STB prices was demonstrably incorrect; and the real beneficiaries of the plan are not consumers at all, it would be Google and other edge companies, who could potentially give its customers access to cable TV content without incurring its costs.²⁷

The merits of the FCC initiating this proceeding are without any sound basis. Moreover, the FCC policy is fraught with problems – from exposing consumers to the collection of private information to enabling copyright infringement to extending the FCC’s video reach into mobile apps. The proposal creates a problem where none existed.

5. Business Data Services

From the Technology Transition Order, it has become clear that the FCC had developed an appetite to reregulate broadband services – all while protecting competitors that buy the ILECs wholesale services. Last year, the FCC opened another proceeding to investigate the pricing plans, terms and conditions of contracts between core network providers and their customers who buy wholesale services, referred to as *business data services (BDS)*.²⁸ Essentially, these are dedicated enterprise broadband lines provided to government, private companies and competitive telecommunications providers – including edge companies. The BDS market has been largely deregulated and is generally regarded as being extremely competitive in dense markets. It is a contestable market as evidenced by a recent FCC survey which found most of the incumbents’ BDS lines to be within 90 feet of a competitor.²⁹

²⁷ The plan raises risks of privacy, security and copyright infringement, see Steve Pociask, “FCC: Don’t Choose the Box,” *Forbes*, February 29, 2016, and this explains why the U.S. Patent Office has called on the FCC to rethink these regulations (see <http://www.nasdaq.com/article/us-copyright-office-criticizes-fccs-plan-on-settop-boxes-20160803-01474>). Regarding the improper comparison of prices, see Hal Singer, “The Sketchy Stat Behind the FCC’s *Unlock the Box* Campaign,” *Forbes*, February 5, 2016.

²⁸ In the Matter of Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans, Order Initiating Investigation, FCC, DA 15-1194, released and adopted October 16, 2015, at <https://www.fcc.gov/document/business-data-services-tariff-investigation-order>. Historically, these services were referred to as *special access services*.

²⁹ Fred Campbell, “Is the FCC Prepared to Say Eighty-Eight Feet is a Market Failure?” *Forbes*, April 22, 2016.

While final rules are still pending, the FCC seems to be heading into regulating very slow speed copper-based services, which are obsolete in the fiber world.³⁰ It also seems that the FCC is focused on protecting the ILEC's competitors that rent these dedicated lines, rather than encouraging competitors to invest and build.³¹ One thing is for sure, if price regulations result in artificially lower BDS service prices, which would discourage facility-based investment by both incumbents and competitors. For cable operators, who compete with ILECs and have steadily increased their investments in this market, they are left wondering if their business line investments are now wasted.³²

6. Free Data

All the major wireless Internet service providers are beginning to offer consumers access to some free content, including videos and music, without impacting their data plans.³³ These free offerings, called *free data plans*, allow consumers to stream content from select sources, such as HBO, Starz, Hulu, ESPN and others, to their mobile devices without having the resulting usage count against their monthly wireless data cap. While some content providers are willing sponsors because these offerings can expand their viewing audience, other edge providers have coaxed the FCC into investigating to see if these wireless plans violate net neutrality. To be clear, these services are optional and free to consumers.

³⁰ See Bruce Mehman, "FCC Rush to Regulate Nearly Obsolete Technology Hurts Broadband," *The Street*, November 1, 2016, at <https://www.thestreet.com/story/13875791/1/fcc-s-rush-to-regulate-nearly-obsolete-technology-hurts-broadband.html>.

³¹ For a discussion of rent-seeking associated with this special access proceeding, see Fred Campbell "FCC Chairman Wheeler Plans to Give Special Access Favors To Former Lobbying Clients," *Forbes*, October 26, 2015, at <http://www.forbes.com/sites/fredcampbell/2015/10/26/fcc-chairman-wheeler-plans-to-give-special-access-favors-to-former-lobbying-clients/>; Hal Singer, "The FCC's Competition Agenda," *Forbes*, October 23, 2015, at <http://www.forbes.com/sites/halsinger/2015/10/23/the-fccs-competition-agenda/> and; Roger Entner, "Special Access – However Government Preference for Some May Mean Higher Prices for All," *FierceWireless*, October 21, 2015, at <http://www.fiercewireless.com/story/entner-special-access-how-government-preference-some-may-mean-higher-prices/2015-10-21>.

³² "ACA to FCC: Don't Rate Regulate BDS Providers Bringing Competition to the Market," American Cable Association, June 29, 2016, at <http://www.americancable.org/node/5772>.

³³ Many wireless providers are now offering these plans to consumers and this serves to differentiate their products. It is a form of competition. Today, for example, T-Mobile is offering Bing On, AT&T is offering Sponsored Data, Verizon is trialing FreeBee Data and Virgin Mobile is offering Data-Free Steaming Music. Content providers have no obligation to participate.

Since these services can make some consumers better off without making other consumers worse off, these plans represent (by definition) a “*Pareto improvement*” in the market place, which unquestionably increases consumer welfare. These plans serve as a form of product differentiation. Thus, blocking these plans will adversely affect consumers, wireless competition, innovation, and it will curb investment.

7. Customer Proprietary Network Information

Web-based companies are buying, trading and selling consumer information for online advertising. As more devices become connected and information exchanged online, consumers are inherently at a greater risk of having their sensitive personal data exploited and compromised. “Free” applications, like social media and search, are not really free because online firms capture, store and use customers’ personal identifiable information.³⁴

Consumer privacy risks associated with online applications and web companies, as well as the threat of hackers pose a real threat to personal information. Yet, rather than addressing this broader privacy issue, the FCC’s solution is to go after the ISP’s use of consumer data known as *Consumer Proprietary Network Information*. The FCC approach to privacy issues has little to do with the online advertising and the abuses in question, and it is a holdover from legacy Title II regulation and lead to higher broadband prices, or as FCC Commissioner Michael O’Rielly stated when referring to these new regulations:

*But when consumers find out the end result is that they may have to pay more for heightened privacy rules that they never asked for, I doubt they will be grateful that the FCC intervened on their behalf.*³⁵

³⁴ Peter Swire, Justin Hemmings and Alana Kirkland, “ISP Access to Consumer Data is Limited and Often Less Than Access by Others,” The Institute for Information Security & Privacy, Georgia Tech, February 29, 2016.

³⁵ Michael Horney, “Privacy Order Would Hike Broadband Prices,” *Multichannel News*, November 21, 2016, at <http://www.multichannel.com/node/409210>.

Although the FCC is targeting this as an ISP problem, it is a larger Internet ecosystem problem. The FCC can deal with the former, but it has no authority dealing with the latter. That authority belongs to the FTC. Effectively, the FCC actions single out some firms, but leave the vast majority of firms exempt from regulation and oversight, including those most notorious for the collection, retention and abuse of online consumer data. With the FCC focused squarely on core network providers only, if consumer protection is the goal, the asymmetry of privacy regulations could not be more divergent and misplaced across the Internet ecosystem.

How Regulations Affect Investment

This study has reviewed several asymmetric regulations being imposed on core networks by the FCC, often at the urging of rival edge companies. This section will explore the financial characteristics of edge and core companies, and will address whether edge companies need this favorable regulatory treatment. However, before we explore the financial performance between edge and core companies, the following summarizes how these FCC regulations impact ISPs and their investments.

1. Summary of Regulatory Effects

In recent years, the FCC has reversed its gradual withdrawal of regulations and now embraces them. These new and proposed regulations are coming about without any consideration of its effects on financial risk and prospects for return and growth, as viewed by investors. These investors supply the scarce capital to achieve high rates of capital formation needed for competitive and ubiquitous state-of-the-art broadband networks.

The FCC's regulatory inclination negatively affects the ability of core network firms to differentiate their services among rivals; it restricts the ability of operators to manage networks in ways that are privately beneficial without being publicly detrimental; it requires infrastructure providers to subsidize would-be rivals through

below cost wholesale rates irrespective of the relationship between expected costs, revenues and cash flows; and it imposes onerous common carrier regulations without first demonstrating a market failure.

The imposition of common carrier type regulations on network providers will diminish incentives and opportunities to continue innovation and investment at the core, thereby affecting the spillover of benefits to edge providers. New constraints on core providers increase uncertainty and risk, reduce prospects for growth, and undermine network managers' incentives and opportunities to adapt to rapidly changing market conditions in the Internet ecosystem. Thus, policies that reduce network investment also reduce innovation in the Internet ecosystem and may ultimately increase concentration in the market.³⁶

2. Consequences on Cash Flow and Investment

Decisions about “where” to invest and “how much” have been a staple of introductory economic and financial textbooks for a very long time. In general, firms invest in order to maximize shareholder value. The decision to invest is affected by uncertainty, which is influenced by regulatory changes that cannot reasonably be forecasted or estimated at the present time.

In this case, the risks stemming from FCC regulations are obvious. Because capital expenditures on plant and equipment have long lives, their value rests on the present value of future cash flows. These cash flows are dependent on, and may be influenced by, future regulatory changes. These regulatory changes can add, delay or create ambiguity, take away opportunities of value, lack transparency, lead to rent-seeking and gaming by competitors, and others risks. One can easily find each of these sources of risk in most FCC Notices of Rulemaking.

³⁶ Steve Pociask and Joseph Fuhr, “Concentration by Regulation: How the FCC’s Imposition of Asymmetric Regulations Are Hindering Wireline Broadband Competition in America,” The American Consumer Institute, January 2016.

Skeptics about the existence of regulatory uncertainty and the effects of financial risk should consider the glacial pace of regulatory decision-making in the context of the rapid pace of technological innovation. The time lag for a single regulatory decision can span several generations of wireless handsets. Administrative procedure requirements dictate long pleading cycles, while the resulting long records contribute to delays in review and analysis, as well as added costs.

Even more important are regulatory decision lags. Regulatory history establishes clearly that the greater the economic stakes and the greater the financial or political strength of stakeholders, the slower the regulatory process will be, and the less definitive will be any regulatory outcome.

Investment managers and capital budgeters within firms, and financial market investors alike, will regard all this regulatory uncertainty as undermining efforts to forecast operating costs and revenues, thereby increasing investment risk, and raising capital costs. Simple microeconomics show that as production cost increases, quantity (and quality) produced decreases and consumer welfare decreases.

Higher regulatory costs and risks will mean that core network providers will invest less, and that consumers will pay more for less. Network providers are worse off, but so are consumers. For every billion dollars of lost investment the communications sector loses 15,000 high-paying full time jobs, which decreases investment and leaves workers worse off.³⁷

Given the disparate application of regulations between core and edge companies, how do these companies compare financially? Is protection of edge companies versus core companies needed to promote the survival of edge companies, and is that evident in their financial characteristics?

³⁷ U.S. Bureau of Economic Analysis, RIMS II, 2010 benchmark, Internet services, at www.bea.gov.

Financial Comparison of Firms in the Internet Ecosystem

How does the resulting financial performance of edge and core companies square with the FCC's approach to regulatory asymmetry? This section will evaluate the financial results of core and edge companies in terms of cash flow, investment, job creation and profits.

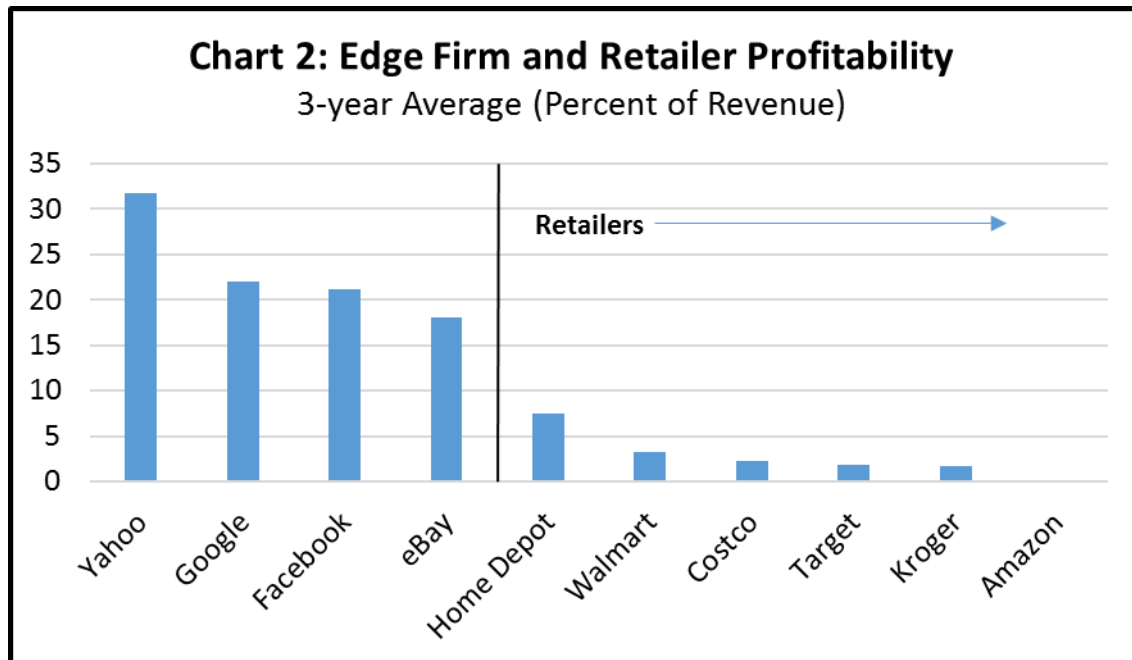
An earlier study undertook a similar analysis.³⁸ That study compared large core and edge companies, in terms of cash flow, investment and employment and found that core companies returned a larger proportion of cash flow back into investment, earned less profits and created twice as many jobs, compared to their edge counterparts. The earlier analysis concluded that regulations were unnecessary to help edge providers and it was harmful to jobs and investment for broadband services. This section updates the results from that study.

This analysis begins with the same core and edge companies used in that original study with some necessary modifications. In selecting telephone network providers, the original study included Verizon, AT&T and Qwest. Since Qwest merged with CenturyLink, this change will be reflected in the new market basket. Also, previously included as core network companies were the largest wireless and cable providers. For wireless, the original study analyzed Sprint, US Cellular, Metro PCS and Leap. With Leap now part of AT&T, US Cellular now part of Sprint and Metro PCS now with T-Mobile, Sprint and T-Mobile will be included in the market basket of wireless companies. As for cable operators, Comcast, Time Warner Cable (now part of Charter) and Cablevision will be part of market analysis, as before.³⁹ Satellite network providers -- DISH and DirecTV -- will continue to be part of the analysis (as before), but with DirecTV as part of AT&T.

³⁸ Larry F. Darby, Joseph P. Fuhr and Stephen B. Pociask, "The Internet Ecosystem: Employment Impacts of National Broadband Policy," The American Consumer Institute, January 28, 2010, available online at <http://www.theamericanconsumer.org/wp-content/uploads/2010/01/aci-jobs-study-final1.pdf>.

³⁹ This year, Bright House Networks also merged with Time Warner Communications and Charter, but Bright House's data are not included in this analysis, since the company had been privately-owned.

With regard to edge providers, the original study included Google, Yahoo, Amazon and eBay. This study will include the same edge companies, except for Amazon, which now exhibits financial characteristics more akin to the major big box chains and not like larger edge firms, as shown in **Chart 2** below.⁴⁰ Since Facebook’s revenues have grown substantially larger than eBay’s and Yahoo’s, it will be included in the analysis of edge companies. Twitter, Netflix and Yelp were also considered, however none of these companies approached the size of any other firms in the analysis.



Source: SEC Reports

Using this market basket of selected firms, a financial comparison of edge and core companies shows how current market and regulatory forces affect value among

⁴⁰ Amazon, like retailers, have warehousing, transportation and fulfillment costs that are unique compared to web-based firms. In fact, now Amazon plans to build brick and mortar stores, See Steve Pociask and Joseph Fuhr, “A Tech Wonder or Another Big Box Retailer? Forbes, September 27, 2016, at <http://www.forbes.com/sites/stevepociask/2016/09/27/a-tech-wonder-or-another-big-box-retailer/#4c5a09ce6141>; and see “Internal Amazon Documents Reveal a Vision of Up to 2,000 Grocery Stores Across the US,” *Business Insider*, October 27, 2016 at <http://www.businessinsider.com/amazon-2000-grocery-stores-10-years-2016-10>.

selected firms in the Internet ecosystem, as reflected in terms of 3-year average profit margins, employment and capital expenditures, as shown in **Table 1** (below).⁴¹

**Table 1: Profit, Employment and Capital Expenditures
For Selected Internet Ecosystem Firms**

	3-Year Avg. Net Profit Margin (%)*	Employ- ment 2015 (000)	Cap Ex 2015 (\$B)
S&P 500	9.8%	N.A.	N.A.
Telephone Network Providers	9.3%	502.2	39.9
AT&T	9.4%	281.5	19.2
Verizon	10.3%	177.7	17.8
CenturyLink	2.6%	43.0	2.9
Wireless Network Providers	-3.2%	87.4	12.3
T-Mobile	1.2%	50.0	4.7
Sprint	-8.6%	31.0	7.0
US Cellular	3.6%	6.4	0.6
Cable Network Providers	8.7%	264.0	16.5
DISH	5.7%	18.0	0.8
Comcast	11.2%	153.0	8.7
Charter	5.4%	80.1	6.3
Cablevision	5.0%	12.9	0.8
Core Providers	7.5%	853.5	68.7
Edge Providers	22.0%	97.4	13.7
Google	22.0%	61.8	9.9
Yahoo	31.7%	10.4	0.6
Facebook	21.1%	13.6	2.5
eBay	18.0%	11.6	0.7
* Quarterly averages over a three-year period, see Factset.com at http://www.factset.com/insight/2016/03/earningsinsight_03.18.16#.V6oph4-cG3A , March 18, 2016. All other figures from SEC filings.			

⁴¹ The three-year perspective hides different cyclical impacts on firm financial, investment and jobs performance related to the economic cycle.

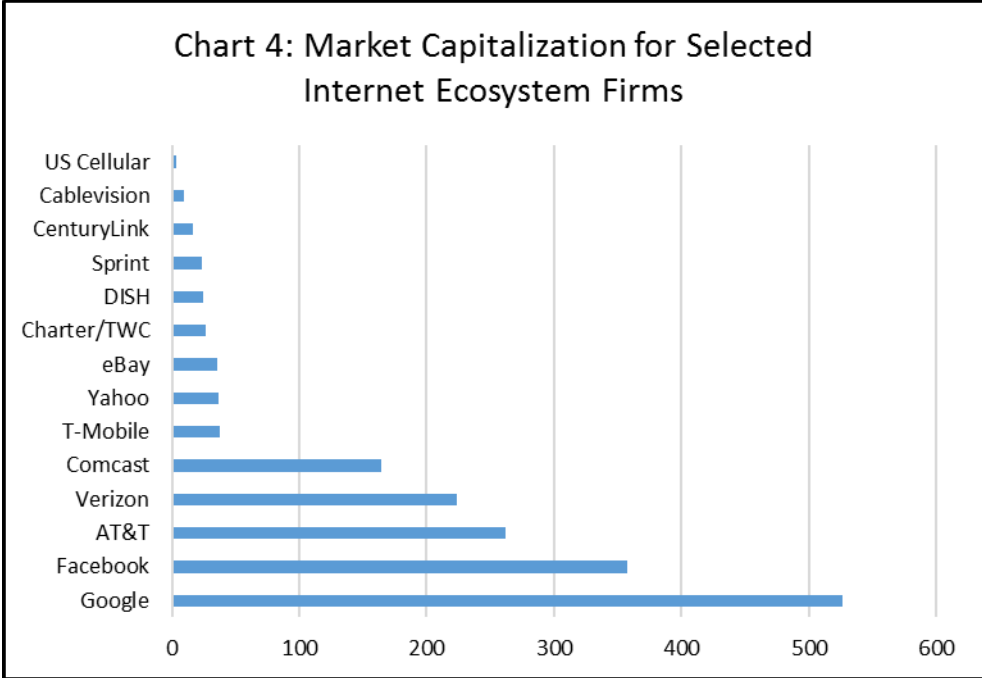
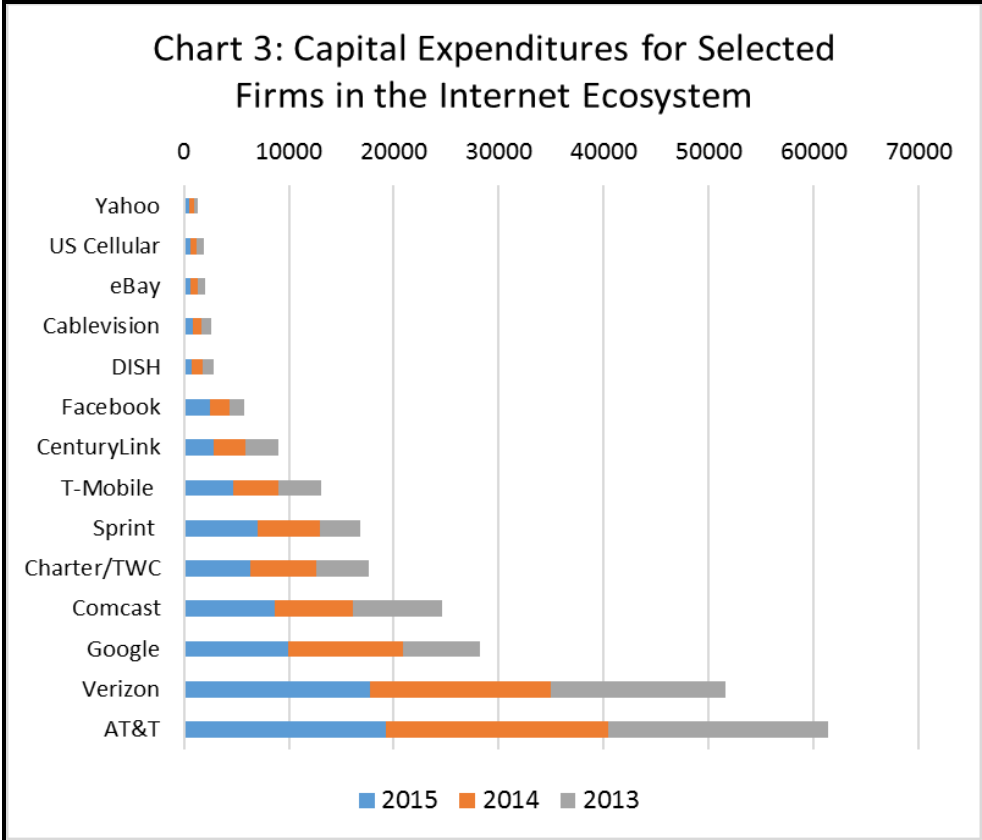
Comparing the profit, employment and capital expenditures of the selected edge and core companies show some interesting differences. As **Table 1** shows, despite more than seven years since the last study, edge companies continue to employ fewer workers and invest less than core companies, which is consistent with the original study.

Also, like the original study, Google continues to dominate the other edge providers in the market basket, accounting for 71% of the 3-year profitability, 63% of 2015 employment and 76% of 3-year capital expenditures (see **Appendix**).

Most striking in the financial data, shown in **Table 1**, is that core companies earn lower profits, as was the case in the original study, and lower than the S&P average. Edge companies earn nearly three times the rate of profits as core companies.

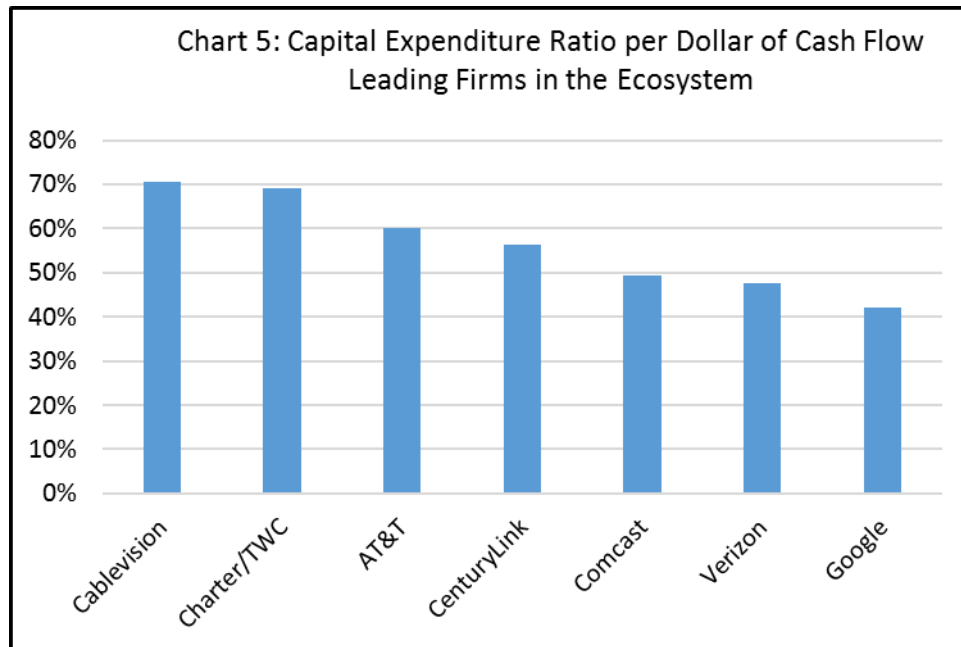
The data can be interpreted in various ways, but the purpose here is to indicate that returns to network operators are not supernormal or otherwise excessive when compared to the average for all firms in the S&P 500 and, indeed, are below those for other highly visible firms in the Internet ecosystem. The table also shows the relative contributions of these firms in the current macroeconomic environment with respect to capital expenditures and jobs.

To summarize, firms in the applications space tend to earn more, invest less and create fewer jobs than most firms providing the broadband network platforms that they use. In fact, compared to edge companies over the last three years, capital expenditures are highest among core network companies, as shown in **Chart 3** below. While core companies take up a large share of investments, edge companies, on the other hand, tend to be larger in terms of market capitalization, as depicted in **Chart 4** below.



Source: SEC Filings

The general linkages between regulation and investment have been well established and widely recognized in terms of the uses of cash from operations for capital expenditures for network plant and equipment.⁴² The FCC, through its regulatory actions, may encourage or discourage investment and job creation depending on investor and manager perceptions of the impact of the new rules on key elements of different firms' future business prospects. **Chart 5** shows the relationship between capital expenditures and cash flow in 2015 for select firms.⁴³



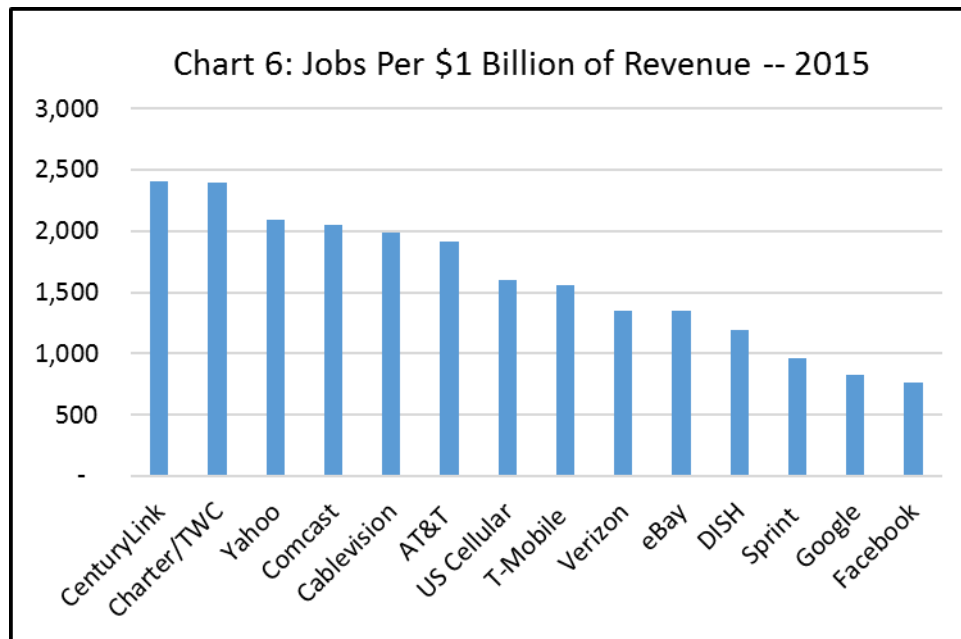
Source: SEC Reports

⁴² Larry F. Darby and Joseph P. Fuhr, Jr. "Investing in Economic Growth: Broadband Network Tax Forbearance," *Media Law & Policy*, 2008, pp.1 - 43. For recent views from Wall Street analysts, see: Ted Hearn, "Analysts Question Bell Investments," *Multichannel News*, March 14, 2006. Online at: <http://www.multichannel.com/article/CA6316081.html?display=Breaking+News>. For testimony from the full Senate Committee Hearing on Net Neutrality, Wall Street's Perspective on Telecommunications", March 14, 2006, see <http://commerce.senate.gov/hearings/witnesslist.cfm?id=1705>. Claims that regulation of network infrastructure providers stimulated higher levels of network investment or, alternatively, had no impact at all, were addressed and refuted. See: Larry F. Darby, "The Informed Policy Maker's Guide to Regulatory Impacts on Broadband Network Investment," November, 2009. Online at: <http://www.theamericanconsumer.org/wp-content/uploads/2009/11/fp-report1.pdf>.

⁴³ Cash flow from operations is net operating income (revenue minus cost of revenue, S, G & A and assorted other operating expenses) plus depreciation and amortization minus deferred taxes with adjustments for noncash items and changes in working capital. Cash flow defined and accumulated thusly is available for different uses including, mainly, investment, retained earnings, distribution as dividends to shareholders, acquisitions, or retirement of outstanding stocks and/or bonds.

These ratios may be thought of as a comparative measure of selected firms' average propensity to invest as revenue and cash flow grows. These ratios, while indicative and not predictive, are also very sensitive to the impact of regulation on the risk, return, growth and business opportunity profiles of individual firms.

Chart 6 (below) shows the relationship between jobs in 2015 by select firms in the Internet ecosystem and revenue by comparing the number of jobs per \$1 billion in revenue. This number might be thought of as a comparative measure of the propensity of different firms to hire workers as their revenue grows based on the firm's average historical relationship between jobs and output. While it may not be a precise indicator of the marginal propensity to hire new workers in direct response to changes in sales revenue for a particular firm, it does serve as a baseline for comparison among different firms if they tend to maintain their historic revenue to employment ratios. In short, the ratios give a sense of historic labor intensity among these firms and a reasonable indicator of the pattern of reactions to changes in public policy that may influence future revenue growth.



Source: SEC Reports

DIRECT EMPLOYMENT IMPACTS OF BROADBAND POLICY CHANGES

The foregoing provides a review of the literature and a discussion of formal linkages among different measures of financial conduct and performance among firms in the Internet ecosystem. The data are presented in ways that permit comparisons of jobs and investments among network infrastructure and service companies and non-network service companies. We turn now to an issue of critical importance in the context of current economic malaise and the increasing concern for preserving and creating jobs through enlightened public policies.

Since some edge providers support the imposition of these FCC regulations on core providers, it is safe to assume edge companies will benefit from these regulations, while core companies will not. Will the transfer of producer surplus from edge companies to core companies lead to a change in “net” jobs and private investment?

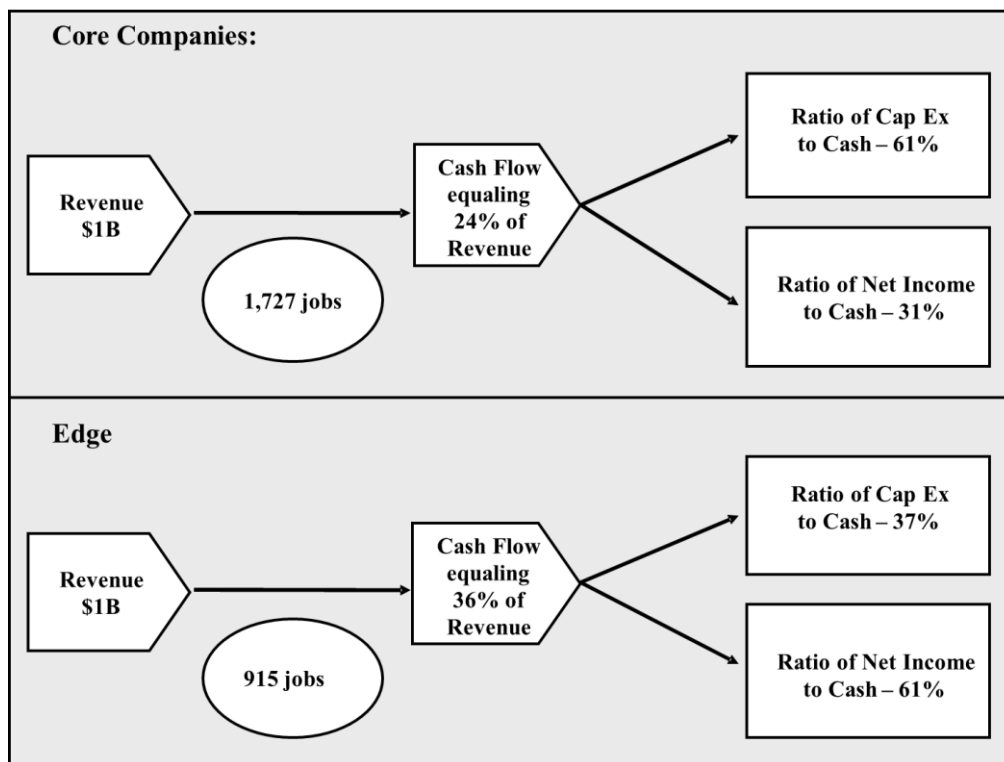
To answer that question, we attempt to “follow the money” by showing how revenue is used for jobs; how cash flow is used for investment; and how regulations, which will surely change the distribution of future revenue and cash flow among core versus edge firms, might: 1) impact future investment in broadband networks and the ability to meet the consensus goal of the emerging national broadband policy, and 2) help or hinder job creation.

To do this, it is instructive in this regard to track how \$1 billion in revenue affects employment of the largest core and edge companies. **Chart 7** shows that for every \$1 billion in revenue, core companies provided 1,727 jobs, while edge companies provided only 915 jobs or roughly half as many jobs. On average, these jobs pay more than twice as much as other nonfarm jobs.⁴⁴ This simple comparison suggests that regulations that

⁴⁴ Median salaries in the information technology sector (which includes the cable, telecommunications, Internet services industries and related service industries) pays about 2.2 times higher than salaries for the median U.S. workers, according the Bureau of Labor Statistics, *Occupational Outlook Handbook*, December 17, 2015, at <http://www.bls.gov/ooh/computer-and-information-technology/home.htm>.

reduce revenues or revenue growth for core companies and transfer benefits (revenue or growth prospects) to edge companies would result in fewer jobs.

Chart 7: Comparison of Uses of Revenue and Cash Flow Selected Firms in the Internet Ecosystem



After paying operating costs, what do these firms do with the remaining cash from operations? Network companies produce less operating cash flows than edge companies, reflecting higher operating expenses. Moreover, the use of that cash by the two subsets of companies differs significantly. For core companies, 61% of operating cash flow is reinvested into the network (as capital expenditures) and 31% of it is taken as profits. In contrast, edge companies invest only 37% of cash flow generated by operations back into the economy, while retaining 61% of the cash as profits. Based on earnings and compared to core companies, edge companies are very profitable.

To emphasize, based on historic SEC data, core network companies may be expected to yield 812 more direct jobs per \$1 billion in incremental revenue than edge companies. These are direct jobs. In addition, every direct job results in indirect and induced effects, which means that differential of 812 new jobs would yield a change of 4,200 new jobs across all industries, based on multiplier estimates for the Internet services industry.⁴⁵ Our analysis shows that bad regulations have bad consequences.

Conclusion

We are well aware of the limitations of attempts to measure and define the composition of jobs likely to be created (or foregone) by any stimulus program or regulatory change. While there may be questions about the accuracy of point estimates, we are confident of the directions of regulatory impacts on investment and jobs.

Based on our analysis, core network companies created 4,200 more jobs per billion dollars of investment and they invest a higher percentage into the economy than edge companies. In addition, core companies earned lower profits compared to the S&P average, while edge companies earned nearly three times more than core companies. The imposition of asymmetric regulations cannot be justified based on industry profits.

This study shows that the current array of FCC regulations – imposed and proposed – create market risk and uncertainty, which increase costs that adversely affects investors and network operators. Since broadband investments have long lives and take a long time for payoff, the risks, costs and uncertainty associated with onerous regulations become embedded in day-to-day budgeting, as well as longer term network planning and investment decisions.

⁴⁵ Using data from the BEA's (RIMS II) job's multiplier for Internet Services, we estimate that a change of one direct job yields 5.1840 new jobs throughout all industries (direct, indirect and induced effects).

FCC regulations are having consequences on core network companies. The cited reductions in investment by large ISPs and small rural ISPs, as well as the reduction in number of broadband subscribers using ILEC facilities, provides evidence that investment is now in decline. As some ILECs sell their service territories and look to purchase edge and competitive providers, they effectively are moving in the direction of the subsector coddled by FCC policy.⁴⁶

This study's results clearly indicate that regulations and policies that favor edge companies at the expense of core companies will hamper the ability of network owners to earn revenue and generate cash flow. In fact, asymmetric regulations are creating a transfer of welfare from consumers and core companies to edge companies, and the resulting transfer will lead to a net decrease in investment and jobs.

This study shows some alarming affects that regulations are and will be having on broadband investment, but it also provides policymakers a clear direction for change – an opportunity to increase private investment and job creation by reforming and eliminating onerous regulations on the industry. That policy change would yield an economic stimulus without placing any additional burdens on taxpayers. If policymakers are looking to revitalize the nation's infrastructure, encourage private investment in America and create well-paying jobs, they need not look further than here.

Throughout history, regulators seldom give up their power and authority to regulate. Deregulation can only come from Congressional action. This study shows that current regulatory policies at the FCC come at a net loss in jobs and investment to the overall economy. Without increased broadband investment, consumers become the real losers from these policies. Action to reduce network regulations would be a meaningful

⁴⁶ The same month Title II and net neutrality regulations were approved by the FCC, one ILEC announced sale of its properties in California, Florida and Texas. See Katie Lobosco, "Verizon Unloads Landline Service in \$15B Deal," CNN, February 5, 2015. Also, see Antoine Gara, "Verizon to Buy XO Communications' Fiber Business for \$1.8B from Billionaire Carl Icahn," *Forbes*, February 22, 2016; and Richard Nieva, "Verizon to Buy Yahoo for \$4.83 Billion, Merge It with AOL," *CNET*, July 25, 2016.

step toward putting broadband policy back on track to encourage investment, create jobs and benefit consumers – all giving a much-needed boost to the U.S. economy.

**Appendix: Summary of Financial
Information on Core and Edge Companies**

	Market Cap 7/28 (\$B)	3-Yr Revenue (\$M)	3-YR Op Cash Flow (\$M)	3-Yr Net Income (\$M)	2015 Employ- ment	3-Yr Cap Ex (\$M)
AT&T	\$262	\$408,000	\$102,014	\$38,205	281,450	\$61,361
Verizon	\$224	\$379,249	\$108,379	\$39,001	177,700	\$51,570
CenturyLink	<u>\$17</u>	<u>\$54,026</u>	<u>\$15,899</u>	<u>\$1,411</u>	<u>43,000</u>	<u>\$8,967</u>
	\$502	\$841,275	\$226,292	\$78,617	502,150	\$121,898
T-Mobile	\$38	\$86,037	\$13,105	\$1,015	50,000	\$13,066
Sprint	\$24	\$83,603	\$6,286	(\$7,200)	30,000	\$16,823
US Cellular	<u>\$3</u>	<u>\$11,809</u>	<u>\$1,018</u>	<u>\$423</u>	<u>6,400</u>	<u>\$1,904</u>
	\$65	\$181,449	\$20,409	(\$5,762)	87,400	\$31,793
DISH	\$25	\$43,617	\$7,086	\$2,498	18,000	\$2,881
Comcast	\$165	\$207,942	\$49,883	\$23,359	153,000	\$24,640
Charter	\$27	\$95,646	\$25,518	\$5,206	80,060	\$17,627
Cablevision	<u>\$10</u>	<u>\$19,203</u>	<u>\$3,771</u>	<u>\$951</u>	<u>12,920</u>	<u>\$2,660</u>
	\$226	\$366,408	\$86,258	\$32,014	263,980	\$47,808
Total Core	\$794	\$1,389,132	\$332,959	\$104,869	853,530	\$201,499
Google	\$526	\$196,509	\$67,059	\$43,217	61,814	\$28,232
Yahoo	\$37	\$14,267	(\$271)	\$4,529	10,400	\$1,310
Facebook	\$358	\$38,266	\$18,278	\$8,085	13,598	\$5,716
eBay	\$35	\$25,639	\$14,705	\$4,627	11,600	\$1,968
Total Edge	\$955	\$274,681	\$99,771	\$60,458	97,412	\$37,226

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Dr. Fuhr is a retired Professor of Economics from Widener University and Senior Fellow at The American Consumer Institute. He received his Ph.D. from Temple University. His primary research areas are antitrust, pharmacoeconomics, health economics, telecommunications, and sports economics. He has published over fifty journal articles. In the field of telecommunications, he has written on investment and innovation, rural telephony, terminal equipment and universal service. Professor Fuhr has been an expert witness on antitrust matters.

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