COMMON CARRIER REGULATION OF THE INTERNET: INVESTMENT IMPACTS

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

OCTOBER 27, 2015

Serial No. 114–93

Printed for the use of the Committee on Energy and Commerce

energycommerce.house.gov

U.S. GOVERNMENT PUBLISHING OFFICE

99–417 PDF WASHINGTON : 2016

For sale by the Superintendent of Documents, U.S. Government Publishing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

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C O N T E N T S

[1] The information has been retained in committee files and also is available at *http://docs.house.gov/meetings/IF/IF16/20151027/104110/HHRG-114-IF16-Wstate-ShapiroR-20151027-SD002.pdf.*

COMMON CARRIER REGULATION OF THE INTERNET: INVESTMENT IMPACTS

TUESDAY, OCTOBER 27, 2015

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:13 a.m., in room 2123, Rayburn House Office Building, Hon. Greg Walden (chairman of the subcommittee) presiding.

Members present: Representatives Walden, Latta, Shimkus, Blackburn, Lance, Guthrie, Olson, Pompeo, Kinzinger, Bilirakis, Johnson, Long, Ellmers, Collins, Cramer, Upton (ex officio), Eshoo, Doyle, Welch, Yarmuth, Clarke, Loebsack, Rush, Butterfield, Matsui, McNerney, and Pallone.

Staff present: Gary Andres, Staff Director; Rebecca Card, Assistant Press Secretary; Andy Duberstein, Deputy Press Secretary; Gene Fullano, Detailee, Communications and Technology; Kelsey Guyselman, Counsel, Communications and Technology; David Redl, Chief Counsel, Communications and Technology; Charlotte Savercool, Professional Staff, Communications and Technology; Greg Watson, Legislative Clerk; Jeff Carroll, Democratic Staff Director; David Goldman, Democratic Chief Counsel, Communications and Technology; Jerry Leverich, Democratic Counsel; and Ryan Skukowski, Democratic Policy Analyst.

Mr. WALDEN. We will call to order the Subcommittee on Communications and Technology for our hearing on "Common Carrier Regulation of the Internet: Economic Impacts."

OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Good morning, everyone. I want to thank our witnesses for being here. I want to apologize for a late start on the hearing. We had a mixup on my end on the schedule.

Eight months ago, the FCC decided to grab control of the Internet and regulate it like a monopoly utility under Title II. Rather than work with Congress to adopt a statute that would have punished those who engaged in harmful actions, the FCC yielded to White House pressure and went all in for Title II. The predictable result is litigation in the courts and uncertainty in the marketplace. I understand there was great demand for strong and forceful rules to govern the relationship between the so-called edge providers, like Netflix, and Internet service providers. And I still believe that goal is achievable. But I also believe that Title II is the wrong approach and is likely to dampen investment in the Internet. Clearly the private sector will continue to invest in broadband buildout and improvements. The question is will that investment plateau or even decline over time. After all, it is the money on the margins that helps extend broadband into unserved and underserved areas.

One witness will testify today that, based on the availability evidence, the economic impacts of this type of regulation could increase costs and decrease investment of anywhere from about 5.5 percent to 20.8 percent per year, and the ratio of investment to capital stock could decline by roughly those amounts as well. To put that into context, at the low end, a decrease of that magnitude in 2014 investment could range from about $4.29 billion to a high of $15.6 billion. These studies were based on observations of other industries that have experienced a significant shift toward more economic regulation and on the pattern of decreased investment in other countries when they subject their telecommunication sectors to much higher levels of regulatory oversight than our traditional light regulatory touch has had.

There are many other ripple effects of the Commission's actions. There is the uncertainty factor. Businesses don't know what to expect as they look ahead, making them pause to do risk assessments of regulatory hurdles before expanding offerings or investing in infrastructure. What will happen in the courts? What will happen with the new chairman at the FCC? What if someone pushes the FCC to walk back some of the forbearance they agreed to as part of their open Internet order? All of these uncertainties serve to tamp down dollars spent on improving networks and services to consumers. There are also hidden costs of compliance in this new possibly litigious territory. What about fines for missteps? Given the runaway nature of the fines from the FCC's Compliance Bureau, you know this has to be a concern. Trying to navigate murky legal and regulatory rules puts quite a burden on companies who want to avoid running afoul of those rules but are unsure how the FCC will ultimately interpret these new rules.

We are not here today because we think investment will come to a screeching halt or that most of these providers will stop putting money into their valuable assets. But given the incredible levels of investment in the past, any decrease, any pause is a loss to our economy and to consumers. And in the end, the customers, the American people, are the ones who will ultimately bear the greatest loss from these rules, whether it is because the increased burden drives small providers out of the market or because there is less incentive for any company to invest in new and innovative service offerings or because additional infrastructure investment is no longer attractive to industry or investors. Title II regulations don't inspire innovation or investment confidence. In the long term, it means uncertainty, reduced investment, and a future of what might have been for our vibrant and thriving Internet ecosystem. We can do better. I look forward to hearing from the witnesses.

[The prepared statement of Mr. Walden follows:]

PREPARED STATEMENT OF HON. GREG WALDEN

Eight months ago the FCC decided to grab control of the Internet and regulate it like a monopoly utility under Title II. Rather than work with Congress to adopt a statute that would punish those who engaged in harmful actions, the FCC yielded to White House pressure and went all in for Title II.

The predictable result is litigation in the courts and uncertainty in the marketplace. I understand that there was a great demand for strong, enforceable rules to govern the relationship between so-called edge providers like Netflix and Internet service providers. I still believe that goal is achievable, but I also still believe that Title II is the wrong approach and is likely to dampen investment in the Internet. Clearly, the private sector will continue to invest in broadband build out and improvements. The question is, will that investment plateau, or even decline, over time? After all, it's the money on the margins that helps extend broadband into unserved and underserved areas.

One witness will testify today that based on the available evidence the economic impacts of this type of regulation could increase costs and decrease investment of anywhere from about 5.5 percent to about 20.8 per year, and the ratio of investment to capital stock could decline by roughly those amounts as well. To put that into context, at the low end a decrease of that magnitude in 2014 investment would range from about $4.29 billion to a high of $15.6 billion.

These studies were based on observations of other industries that have experienced a significant shift toward more economic regulation, and on the pattern of decreased investment in other countries when they subject their telecommunications sectors to much higher levels of regulatory oversight than our traditional light regulatory touch.

There are many other ripple effects of the commission's action. There's the uncertainty factor-businesses don't know what to expect as they look ahead, making them pause to do risk assessments of regulatory hurdles before expanding offerings or investing in infrastructure. What will happen in the courts? What will happen with a new chairman? What if someone pushes the FCC to walk back some of the forbearance they agreed to as part of their Open Internet order? All of these uncertainties serve to tamp down dollars spent on improving networks and services to consumers.

There are also the hidden costs of compliance in this new, possibly litigious territory. What about fines for missteps? Given the runaway nature of the fines from FCC's compliance bureau, you know this is a concern. Trying to navigate murky legal and regulatory rules puts quite a burden on companies who want to avoid running afoul of the rules, but are unsure how the FCC will ultimately interpret these new rules.

We are not here today because we think investment will come to a screeching halt, or that most of these providers will stop putting money into their valuable assets. But given the incredible levels of investment in the past, any decrease, any pause, is a loss to our economy and to consumers.

And in the end, the consumers, the American people, are the ones who will ultimately bear the greatest loss from these rules. Whether it's because the increased burden drives small providers out of the market, or because there is less incentive for any company to invest in new and innovative service offerings, or because additional infrastructure investment is no longer as attractive to industry and investors, Title II regulations don't inspire innovation or investment confidence.

In the long term, it means uncertainty, reduced investment, and a future of "what might have been" for our vibrant and thriving Internet ecosystem. We can do better. I look forward to hearing from our witnesses.

Mr. WALDEN. I yield the balance of my time to the vice chair of the committee, Mr. Latta.

Mr. LATTA. I appreciate the chairman for yielding. And thanks for holding today's very important committee hearing. Before the Federal Communication Commission's recent action to reclassify broadband as a telecommunication service under Title II of the Communications Act, the regulatory framework that governed broadband service fostered a pro-consumer, pro-business environment. However, the FCC chose to abandon the Internet as we know it today by applying outdated rules that were developed for an era of monopoly telephone providers to a cutting-edge broadband marketplace. Subjecting a thriving, dynamic industry to navigate the FCC's bureaucracy and red tape and will adversely affect innovation, investment, and consumer choice.

In addition, the FCC's reclassification will place industry into a state of prolonged uncertainty for years as litigation proceeds through the courts. An Internet service provider in my district, Amplex, relayed this concern to me, stating that the ruling does such a poor job of defining what the FCC actually intends, that many years of expensive litigation will result before we know exactly what the FCC costs are going to be. This uncertainty poses a risk to investment that could provide a disincentive to product and service offerings which ultimately harms consumers. I look to forward to hearing from the panel of witnesses.

And I thank the chairman, and I yield back.

Mr. WALDEN. The gentleman yields back the balance of his time.

The Chair recognizes the gentlelady from California, Ms. Eshoo, the ranking member of the subcommittee.

OPENING STATEMENT OF HON. ANNA G. ESHOO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. ESHOO. Thank you, Mr. Chairman, for holding this hearing, which I think is an important one. And thank you to the witnesses.

Some have been here before, and others haven't. Welcome to you. And we look forward to hearing from you.

We have heard the doomsday scenario brought on by the FCC's open Internet rule, that stock prices of major broadband providers would fall, that investment in new infrastructure would decline rapidly, and that consumers' monthly bills would become saddled with new taxes. In fact, the sky is not falling. And we have broadband providers' own data to prove it.

According to an analysis by Free Press of 18 publicly traded broadband providers, more than half increased their capital spending during the being second quarter of 2015 compared to spending during the second quarter of 2014. Earlier this year, Sprint's chief technology officer stated that he, quote, "does not believe that a light-touch application of Title II, including appropriate forbearance, would harm the continued investment in and deployment of mobile broadband services," unquote. He was right. Sprint increased their investments by 88 percent between the second quarter of 2014 and 2015. During the same period, Comcast increased their capital expenditures by 12 percent; Verizon wireless, by 13 percent; and T–Mobile, by 27 percent. Smaller providers also saw major increases, including Cincinnati Bell by 81 percent and Frontier by 31 percent.

Following Chairman Wheeler's announced plan in early February to pursue a light-touch Title II approach, the stock prices of major cable companies surged. Some suggested this was an anomaly. Yet, over the past 6 months, while the NASDAQ, S&P, and Dow have been in the negative, many of the Nation's largest communications providers, including Comcast, Time Warner Cable, and T–Mobile have outperformed the market average.

Finally, the story of investment should include not just broadband providers but the broader Internet ecosystem of mobile aps, social media, streaming video services, and so much more. According to a recent study by PricewaterhouseCoopers, venture capitalists invested $5 billion in 290 Internet-specific companies during the second quarter of 2015. The study found that this investment represents an impressive 64-percent increase in dollars and a 25 percent rise in deals compared to the first quarter of 2015. Eight months ago, the FCC took the historic step of enacting robust enforceable net neutrality rules that ensure millions of American consumers and entrepreneurs can continue to rely on the Internet they know and love—underscore that last word, "love." These rules provide certainty for the entire Internet ecosystem and can do so without curtailing investment.

Again, welcome to the witnesses. I thank you each of you in advance. And I yield the remainder of my time to the gentlewoman from California, Ms. Matsui.

[The prepared statement of Ms. Eshoo follows:]

PREPARED STATEMENT OF HON. ANNA G. ESHOO

We've heard the doomsday scenario brought on by the FCC's open Internet rules that stock prices of major broadband providers would fall; investment in new infrastructure would decline rapidly; and consumer's monthly bills would become saddled with new taxes. The sky is not falling and we have broadband providers' own data to prove it.

According to an analysis by Free Press of 18 publicly traded broadband providers, more than half increased their capital spending during the second quarter of 2015, compared to spending during the second quarter of 2014. Earlier this year, Sprint's Chief Technology Officer stated that he "does not believe that a light touch application of Title II, including appropriate forbearance, would harm the continued investment in, and deployment of, mobile broadband services." He was right. Sprint increased their investments by 88 percent between the second quarter of 2014 and 2015. During this same time period, Comcast increased their capital expenditures by 12 percent; Verizon Wireless by 13 percent; and T–Mobile by 27 percent. Smaller providers also saw major increases including Cincinnati Bell by 81 percent and Frontier by 31 percent.

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Eight months ago, the FCC took the historic step of enacting robust, enforceable net neutrality rules that ensure millions of American consumers and entrepreneurs can continue to rely on the Internet they know and love. These rules provide certainty for the entire Internet ecosystem and can do so without curtailing investment. I welcome our witnesses and thank each of you in advance for your important testimony.

Ms. MATSUI. Thank you. And I thank the ranking member for yielding me time. I am a strong supporter of a free and open Internet because it is so central to the daily lives of my constituents and all Americans. Strong net neutrality rules are also critical for our economy, for the virtuous cycle of innovation and investment that has spurred broadband deployment and the development of Internet-based businesses in every corner of this country. That is why

I introduced legislation with Senator Leahy to ban paid prioritization or so-called Internet fast lanes. The FCC did the right thing earlier this year by including a ban on paid prioritization in the net neutrality rules. We know that allowing fast and slow lanes online would harm both investment in edge providers and deter broadband network investments. Net neutrality has allowed our Internet economy to become the envy of the world. I hope we can work together on bipartisan solutions that spur the kind of investment we all want to see. Thank you.

And I thank the witnesses for being here today.

Thank you. And I yield back.

Mr. WALDEN. The gentlelady yields back the balance of her time.

The chairman recognizes the chairman of the full committee, Mr. Upton, from Michigan.

OPENING STATEMENT OF HON. FRED UPTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. UPTON. Thank you, Mr. Chairman.

Few issues have consumed and divided this subcommittee quite like net neutrality over the last couple of years. From the early days of the dialogue, much of the thinking and the conversation have evolved. We are no longer debating whether there should be net neutrality rules but, instead, how to best put them into place. However, there is little debate around the fact that the FCC's Title II reclassification is the wrong way to implement smart consumer protections for folks in Michigan as well as across the country. So we are here to talk again about these rules because they are not the solution that we need. We need certainty so that companies can continue to plan their business models for the years ahead. We need investment so consumers can continue to receive the high quality, innovative broadband services that we have come to rely on in our everyday lives. And we need to return to the light-touch regulatory world that has served the industry and consumers so well over the last number of years. Recognizing that many feel that strong net neutrality rules need to be put into place, Chairman Walden, ChairmanThune, and I put together a discussion draft earlier this year to protect consumers and encourage robust investment and innovation at the same time. Instead of waiting on another round of argument in the court right now, we could have sustainable, enforceable, and reliable rules to maintain the Internet that we know. That is not the case. And we are here to talk about what the alternative means.

I yield the balance of my time to Marsha Blackburn.

[The prepared statement of Mr. Upton follows:]

PREPARED STATEMENT OF HON. FRED UPTON

Few issues have consumed and divided this subcommittee quite like net neutrality over the past few years. From the early days of the dialogue, much of the thinking and the conversations have evolved. We are no longer debating whether there should be net neutrality rules, but instead, how to best put them into place. However, there is little debate around the fact that the FCC's Title II reclassification is the wrong way to implement smart consumer protections for folks in Michigan and across the country.

We are here again to talk about these rules because they are not the solution that we need. We need certainty, so companies can continue to plan their business models for the years ahead. We need investment, so consumers can continue to receive the high-quality, innovative broadband services we have come to rely on in our everyday lives. We need a return to the light-touch regulatory world that has served the industry and consumers so well over the years.

Recognizing that many feel that strong net neutrality rules need to be put into place, Chairman Walden, Chairman Thune, and I put forward our discussion draft earlier this year to protect consumers and encourage robust investment and innovation at the same time,. Instead of waiting on another round of arguments in court right now, we could have sustainable, enforceable, reliable rules to maintain the Internet we know. But that's not the case, and we are here to talk about what the alternative means.

This isn't our attempt to undermine net neutrality, rather, it is to talk about what the realworld effects of an ill-fitting regulatory scheme are: depressed investment, fewer jobs, reduced innovation. Is this really the outcome that advocates had in mind when they pushed for stronger net neutrality rules? I don't think so, and that's why it is so important to not lose sight of the fact that we can have our cake and eat it to. We can have protections for Internet consumers and a vibrant investment environment—just not under Title II. While net neutrality was supposed to protect consumers, Title II may be having the opposite effect, and that means nobody wins.

Mrs. BLACKBURN. Thank you, Mr. Chairman.

I want to thank our witnesses for being here. As Chairman Upton just said, this is a discussion that we have had and that we are continuing to have and there is good reason for continuing this. We are looking at what are the expected costs to the system of putting in these net neutrality rules. Now, we all know that Progressive Policy Institute had done an estimate. And they said: Well, it will be an $11 billion cost to new fees and taxes that you are going to see. Free Press had estimated that it was going to be about $4 billion in new costs. Well, no one knows exactly where that is going to shake out.

But they do know this: More Government control and more reclassification under Title II is going to mean a couple of things. One is less innovation. Another is less investment by the companies that could be investing in expansion of broadband and Internet services. And what that brings to the marketplace is less certainty whether you are a company that is investing, whether you are a consumer that is trying to get broadband services into your community. The Title II power grab is something that certainly deserves our attention. It is counterproductive to a free market system.

And, Mr. Chairman, I will yield the balance of my time to any member who is seeking it.

Mr. WALDEN. Any members on the Republican side seeking comments and opening statements? Doesn't appear to be.

Mrs. BLACKBURN. I yield back.

Mr. WALDEN. The gentlelady yields back.

The Chair recognizes the ranking member of the full committee, the gentleman from New Jersey, Mr. Pallone.

OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. Thank you, Chairman Walden and Ranking Member Eshoo, for holding this hearing.

As I have said many times, I remain a strong supporter of net neutrality, and I believe that the rules the FCC adopted have already benefited consumers. And I also believe time will prove that they benefit the economy as well. We already know that many of the scariest predications about the devastation that the FCC's rules would bring have proved to be false. For instance, days before the FCC's vote. At least one analyst downgraded cable stocks due in part to concerns over the Title II rules. A few months later, the fire alarm was called off and the stocks were upgraded. This makes sense since the value of networks appears to be on the rise. The Charter/Time Warner Cable merger announced a few months after the FCC adopted its rules is valued at $55 billion. That is a nearly $10 billion increase from what Comcast was willing to pay a year earlier. And just a couple of months ago, Altice announced it is paying $17.7 billion for Cablevision.

For all these transactions, high-speed Internet service is one of the most important parts of the deal. But perhaps one of the strongest indicators is the spectrum auction the FCC conducted earlier this year. AT&T spent $18 billion on spectrum. And Verizon added another $10 billion. Those amounts dwarf the amount that carriers spent in 2008 for the 700 megahertz auction. The auction is at least one indicator that carriers are not afraid to invest in their networks.

But the truth is all these statistics miss the point. When the FCC adopted its net neutrality rules earlier this year, consumers won, innovation won, and the economy won. The value of the network goes up for everyone when people are able to use it the way that they want.

So, Mr. Chairman, again, thank you for holding this hearing.

[The prepared statement of Mr. Pallone follows:]

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

Thank you Chairman Walden and Ranking Member Eshoo for holding this hearing today.

As I have said many times, I remain a strong supporter of network neutrality. I believe that the rules the FCC adopted have already benefited consumers, and I believe time will prove that they benefit the economy as well.

We already know that many of the scariest predictions about the devastation that the FCC's rules would bring have proved to be false. For instance, days before the FCC's vote, at least one analyst downgraded cable stocks due in part to concerns over the Title II rules. A few months later the fire alarm was called off and the stocks were upgraded.

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But the truth is, all these statistics miss the point. When the FCC adopted its net neutrality rules earlier this year, consumers won. Innovation won. And the economy won. The value of the network goes up for everyone when people are able to use it the way they want.

Mr. Chairman, again thank you for holding the hearing. I yield the balance of my time to Mr. Doyle and Mr. McNerney.

Mr. PALLONE. I have a little over 3 minutes. I would like to split it between Mr. Doyle and Mr. McNerney. So I yield to Mr. Doyle.

Mr. DOYLE. Thank you, Frank.

Thank you, Mr. Chairman, for holding this hearing.

And thank you to the witnesses for appearing before us today.

The FCC took historic action this year after nearly 4 million Americans called for strong network neutrality rules. The order recognized that the Internet constitutes a virtuous cycle of investment and innovation. We are here today only talking about ISP investment, when we really need to be talking about the whole cycle.

Mr. Chairman, I would have appreciated seeing witnesses representing edge providers, venture capitalists to see how they see the order and their investment plans. Since the order was released, Uber has made major investments in Pittsburgh with a new R&D facility and is planning to raise another billion dollars of capital. To my mind, the order is driving innovation, not stifling it.

And I will yield back to the Chair.

Mr. PALLONE. I yield the balance of my time to Mr. McNerney.

Mr. MCNERNEY. I thank the ranking member for yielding. And I thank the chairman for holding the hearing here this morning. This year, the FCC took an historic step to protect the Internet as we know it. Reliable broadband access has been and will remain essential for the future of commerce, education, and innovation in this country. As an engineer and as someone who worked in the private sector for 2 decades, I recognize the need for investors and companies to make sound investments. But we also have seen how the market pushes individuals and companies to innovate, leading to new technologies and benefits the customers and consumers. And that makes the investments worthwhile.

The Internet has been a hotbed of economic growth and forward-thinking ideas. And we have seen great progress to date. The FCC's net neutrality rule will keep us moving forward, empowering consumers and businesses as technologies change and advance, benefiting the economy as a whole.

I look forward to hearing the witnesses today on the economic impacts of an open Internet.

And I yield back.

Mr. PALLONE. I don't think any other Member wants the time. So I yield back, Mr. Chairman.

Mr. WALDEN. The gentleman yields back the balance of his time. All opening statements are concluded. We will now go to our panel of expert witnesses. And we will start with Dr. Michael Mandel, the chief economic strategist for the Progressive Policy Institute.

Dr. Mandel, thank you for being here. We look forward to your testimony here, sir.

STATEMENTS OF MICHAEL MANDEL, PH.D., CHIEF ECONOMIC STRATEGIST, PROGRESSIVE POLICY INSTITUTE; NICHOLAS ECONOMIDES, PH.D., PROFESSOR OF ECONOMICS, STERN SCHOOL OF BUSINESS, NEW YORK UNIVERSITY; ROBERT J. SHAPIRO, PH.D., CO–FOUNDER AND CHAIRMAN, SONECON, LLC; AND FRANK LOUTHAN, MANAGING DIRECTOR, EQUITY RESEARCH, RAYMOND JAMES FINANCIAL

STATEMENT OF MICHAEL MANDEL

Dr. MANDEL. Thank you very much.

Chairman Walden, Ranking Member Eshoo, and distinguished members of the subcommittee, my name is Michael Mandel. And I am chief economic strategist at the Progressive Policy Institute. I am honored to testify on the investment impact of common carrier regulation of the Internet. I want to note that I have been writing about the tech-driven new economy since the mid 1990s. More recently, I have written a series of papers on the job impact of the app economy globally, which is enormous. I am going to briefly make three points here.

First, each year PPI systematically analyzes the financial statements of large U.S.-based companies. Our goal is to estimate how much each company actually invests in equipment, billings, and software in the United States. As part of this project, we publish an annual list of the top 25 investment heros, companies that are the leaders in capital spending in this country. Our most recent list came out in September 2015 based on 2014 financial data. From our perspective, domestic business investment is an essential part of any progressive policy for generating higher wages and good middle class jobs. Unfortunately, domestic investment is still well below its long-term trend more than 6 years after the official end of the Great Recession. This investment drought is a key reason for weak productivity growth and weak real wage gains. Jason Furman, head of the White House Council of Economic Advisers, who recently spoke at a PPI event, has called the decline in productivity growth an investment-driven slow down. However, our analysis has shown that the telecomm, cable, broadband sector has been one of the bright spots for domestic investment. The two top companies investing in the U.S. in 2014 were AT&T and Verizon, as they have been in all 4 years that we have done this project. Comcast and Time Warner are on our list as well. All told, the telecom cable sector was the largest single sector on our investment heroes list, accounting for almost $50 billion in capital spending in 2014. Needless to say, these figures pre-date the FCC's imposition of Title II.

Second, this bountiful investment added enough wired and wireless capacity to hold down consumer bills despite the soaring demand for data. In a forthcoming paper, I find that communication services, all wired, wireless, cable, and satellite, absorb roughly 2.9 percent of consumer spending in 2014. That is up just slightly from 2.7 percent in 2000. In other words, telecom, cable, broadband investment, under the previous light-touch regulatory regime, appears to have created enough capacity to absorb the astounding increase in data use by consumers without a significant increase in share of spending going for communication services.

Finally, what about the future of telecom, cable, broadband investment under common carrier regulation? You know, studies such as Hassett and Shapiro, 2015, conclude that Title II will likely have significant adverse effects on future investment in the Internet. To additionally support this conclusion, I would like to raise the controversial example of health care. I strongly favor the extension of healthcare coverage stemming from the Affordable Care Act. In fact, I regularly cite healthcare reform as one of the great achievements of the Obama administration.

However, let's acknowledge that health care has been the most regulated industry in the economy for decades, both to protect consumers and to hold down costs. For example, a Federal law enacted in 1974 required that all major healthcare capital investments had to get approved at the State level. The goal then was to eliminate duplication. That law is no longer on the books. But about 35 States still require certificates of need for some kinds of healthcare investments. Because of regulations such as these, health care has consistently suffered from an investment gap relative to the rest of the economy. From 1990 to 2014, real investment per worker in health care rose by 39 percent, compared to 103 percent gain in real nonresidential investment per worker in the entire private sector. Economic theory tells us that industries with less investment will have slower productivity growth and typically rising costs. And that is exactly what we see in health care. Now, broadband providers are not hospitals. However, the application of common carrier regulation to broadband is one large step towards the all-encompassing regulatory environment that has historically described health care. The degree to which common carrier regulation reduces investment and involves the FCC in micromanaging the industry, broadband consumers may find themselves with the same rising costs that has beleaguered healthcare consumers for decades. Thank you.

[The prepared statement of Dr. Mandel follows:]

Statement of Michael Mandel

Chief Economic Strategist

Progressive Policy Institute

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[redacted]

[redacted]

Testifying On the Topic of

"Common Carrier Regulation of the Internet: Investment Impacts"

To the Subcommittee on Communications and Technology

Committee on Energy and Commerce

October 27, 2015

Summary

In this testimony I will make three points. First, according to estimates by the Progressive Policy Institute, the telecom/cable/broadband providers were national leaders in domestic investment under the previous light-touch regulatory regime. Second, the share of consumer spending going for communication services has barely risen since 2000, in large part due to strong broadband and mobile investment under the previous light-touch regulatory regime. Third, I note that if we are trying to understand the impact of regulation on investment, it's worth looking at the case of health care, historically the most regulated industry. Investment per worker in health care has lagged the rest of the private economy by a wide margin over the long run. This investment gap holds down productivity in health care and ultimately drives up costs for consumers. Keeping in mind both the cautionary tale of health care and the consumer benefits associated with the previous light-touch regulatory regime, I suggest that investment—and consumers—might suffer from the common carrier approach to regulating the Internet.

Testimony

Chairman Walden, Ranking Member Eshoo and distinguished members of the subcommittee: My name is Michael Mandel, and I hold the position of chief economic strategist at the Progressive Policy Institute, a think tank based in Washington DC. I am honored to be invited to testify on the investment impact of common carrier regulation of the Internet.

In this testimony I will make three points. First, estimates by the Progressive Policy Institute show that the telecom/cable/broadband providers were national leaders in domestic investment under the previous light-touch regulatory regime. Second, the share of consumer spending going for communication services has barely risen since 2000, in large part due to strong broadband and mobile investment under the previous light-touch regulatory regime. Third, I note that if we are trying to understand the impact of regulation on investment, it's worth looking at the case of health care, historically the most regulated industry. Investment per worker in health care has lagged the rest of the economy by a wide margin over the long run. This investment gap holds down productivity in health care and ultimately drives up costs for consumers. Keeping in mind both the cautionary tale of health care and the consumer benefits associated with the previous light-touch regulatory regime, I suggest that investment—and consumers—might suffer from the common carrier approach to regulating the Internet.

Each year the Progressive Policy Institute systematically analyzes the financial statements of large US-based companies to estimate how much they actually invest in equipment, buildings, and software in this country. We undertake this unique project because we see domestic business investment as an essential component in a progressive policy for generating higher wages and good middle class jobs. As we wrote in 2012, "sustainable economic growth, job creation, and rising real wages require domestic business investment."

Unfortunately, domestic investment in productive nonresidential assets such as equipment and buildings is still well below its long-term trend, more than six years after the official end of the Great Recession (Appendix Figure 1). There are many explanations for why this might be so—including a lack of innovation and excess regulation—but the growing consensus is that the weakness in domestic investment is holding down productivity gains and real wages. Jason Furman, head of the White House Council of Economic Advisors, who recently spoke at a PPI event, has called the decline in productivity growth "an investment-driven slowdown."

However, our analysis showed several bright spots for domestic investment. One such bright spot has been the telecom/cable/broadband sector. As part of our analysis of domestic investment, we publish an annual list of the top 25 "investment heroes" --companies that are the leaders in capital spending in the United States. Our most recent list came out in September 2015, based on 2014 financial data—

that is, before the Federal Communications Commission imposed common carrier regulations on broadband providers (Mandel 2015).

Our analysis showed that the top two companies investing in the US in 2014 were AT&T and Verizon, as they have been in all four years that we have done this project (Appendix Figure 2). Comcast and Time Warner are on our list as well. All told, the telecom/cable sector was the largest single sector on our investment heroes list, accounting for almost $50 billion in capital spending in 2014 (Appendix Figure 3).

The second point I'd like to make is that this investment added enough wired and wireless capacity to hold down consumer bills, despite the soaring demand for data in recent years. In a forthcoming paper on the benefits of the tech/info sector, I calculate the share of personal consumer expenditures going to communications services (wired, wireless, cable, and satellite).

I find that under the previous light touch regulatory regime, communications services have absorbed roughly the same share of personal consumer spending since 2000. In 2014, consumer payments for all communications services took 2.9 percent of personal consumption expenditures. That's up only slightly from a 2.7 percent share in 2000. (The share fluctuated in a fairly narrow band between 2000 and 2014). This analysis is based on official data from the Bureau of Economic Analysis.

We can take this analysis a step further. The growing availability of fixed and mobile broadband services has enabled the shift from expensive desktop computers to less expensive smartphones, and reduced the need for video rentals and separate video, photographic and audio equipment. As a result, the share of consumer spending absorbed by "tech/info" goods and services has actually fallen, from 6 percent in 2000 to 5.8 percent in 2014. ("Tech/info" goods and services includes all communications services, info-tech and related equipment, and consumer content such as movies, music, and books).

In other words, telecom/cable/broadband investment under the previous light-touch regulatory regime appears to have created enough capacity to absorb the astounding increase in data used by consumers, without a significant increase in the share of spending going for either communication services or for the broader basket of tech/info goods and services.

Third, I ask the question of what will happen to telecom/cable/broadband investment under common carrier regulation. Studies such as Hassett and Shapiro (2015) have concluded that Title II regulation "will likely have significant adverse effects on future investment in the Internet."

To additionally support this conclusion, I would like to raise the controversial example of health care. I strongly favor the extension of health care coverage stemming from the Affordable Care Act. However, it is important to acknowledge that health care has been the most regulated industry in the economy for decades, both to protect consumers and to hold down costs. For example, a federal law was enacted in 1974 that required states to approve major health care capital investments in an effort to eliminate duplication. That law is no longer on the books, but about 35 states still require "certificates of need" for some kinds of health care investments (NCSL 2015).

Analysis by PPI suggests that real investment per worker in the health care industry has consistently lagged the rest of the economy for many years. From 1990 to 2014, real investment per worker in health care rose by 39%, compared to a 103% gain in real nonresidential investment per worker in the entire private sector.

Adding in the pharmaceutical industry narrows but doesn't eliminate the investment gap. From 2004 to 2014, real investment per worker in health care, including the pharmaceutical industry, only grew by 17%, compared to a 25% gain in real nonresidential investment per worker in the entire private sector (Mandel 2015). This investment gap may be one reason why productivity growth is relatively slow in health care, and why the share of consumer spending going to health care has continued to increase.

Now, broadband is not the same as health care. However, the impact of regulation on investment may be similar, since the application of common carrier regulation to broadband is moving towards the all-encompassing regulatory environment that historically has characterized health care.

In conclusion, under the previous light-touch regulatory regime, the telecom/cable/broadband industry has been characterized by strong investment and a roughly constant share of consumer spending, despite a vast increase in data usage. To the degree that common carrier regulation reduces investment, we may see the same slow productivity growth and rising costs to consumers that have characterized health care for decades. For these reasons, I suggest that Title II regulation may—in the interest of protecting consumers—have the perverse effect of reducing investment and increasing consumer costs.

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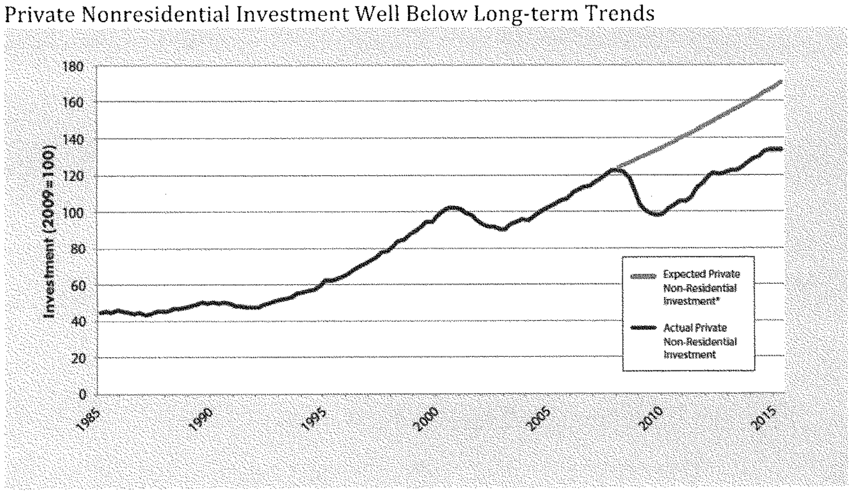
Appendix Figure 1

Private Nonresidential Investment Well Below Long-term Trends



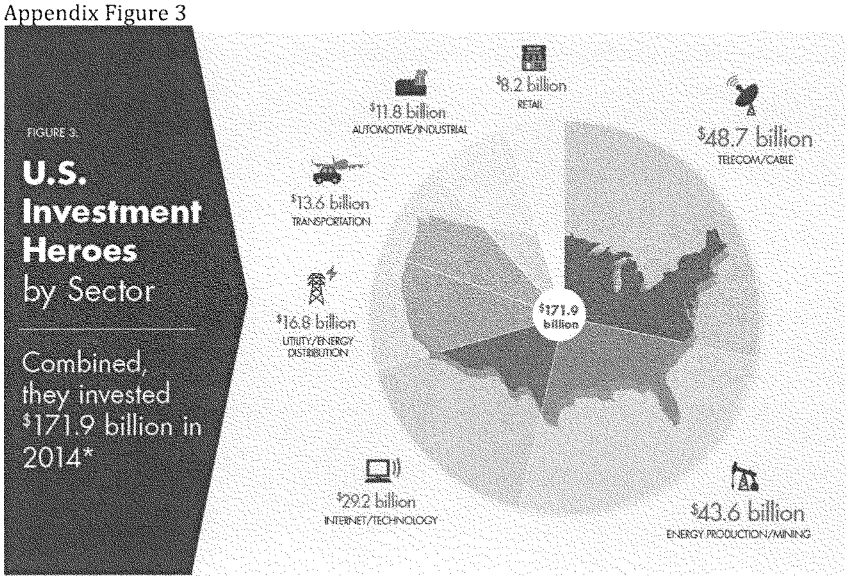
**Based on 10-year growth rate ending in 2007, extrapolated to current date.*
Data: BEA, PPI

Appendix Figure 2
U.S. Investment Heroes: Top 25 Nonfinancial Companies by Estimated U.S. Capital Expenditure

Rank	Company	Estimated 2014 U.S. Capital Expenditures (millions of dollars)	Rank	Company	Estimated 2014 U.S. Capital Expenditures (millions of dollars)
1	AT&T	21,199.0	14	American Airlines Group	5,311.0
2	Verizon	16,004.8	15	General Motors	4,924.4
3	Exxon Mobil	12,401.0	16	Amazon.com	4,808.3
4	Google	10,709.7	17	Union Pacific	4,346.0
5	Chevron	10,011.0	18	Freeport McRoRan	4,278.0
6	Walmart	8,238.0	19	Time Warner Cable	4,097.0
7	ConocoPhillips	7,618.0	20	Apple	4,076.8
8	Comcast	7,420.0	21	FedEx	3,912.1
9	Intel	6,535.2	22	Ford Motor	3,767.8
10	Exelon	6,077.0	23	Hess	3,645.0
11	Occidental Petroleum	5,657.0	24	General Electric	3,076.1
12	Energy Transfer Equity	5,381.0	25	Microsoft	3,068.3
13	Duke Energy	5,317.0	**Total**		**171,879.6**

Data: Company financial reports, PPI estimates

Appendix Figure 3



*Or the most recent fiscal year available.
Data: Company financial reports, PPI estimates

Mr. WALDEN. Thank you, Dr. Mandel.

We will go to Dr. Nicholas Economides, professor of economics, Stern School of Business, New York University. We welcome you. Thanks for being here. Please go ahead.

STATEMENT OF NICHOLAS ECONOMIDES

Dr. ECONOMIDES. Chairman Walden, Ranking Member Eshoo, esteemed Congressmen and Congresswomen, and ladies and gentlemen, I am a professor of economics at the Stern School of Business at NYU. And my name is Nicholas Economides. Thank you very much for inviting me to discuss the issue of network neutrality. In assessing the impact of network neutrality, we should look at the total benefit to three groups: Consumers; applications and content companies, such as Google; and Internet service providers, ISPs, such as, for example, AT&T. Looking at only one group would lead us to the wrong conclusions. Similarly, examining only investment is incorrect and misleading.

Instead, we should look at the total benefit for all three groups. Network neutrality has created tremendous benefits for companies at the edge of the network. It has facilitated innovation resulting in big successes, such as Google and Skype, as well as a myriad of smaller innovative companies that are the engine of growth for the United States economy. Network neutrality has contributed significantly to the fast and vigorous growth of the high-technology sector in the United States. Departures from network neutrality would not be in the public interest and would create significant social welfare losses. Consider the possibility of paid prioritization, where a company, for example, Yahoo, would pay an ISP, for example, Verizon, to get its content—here search results—delivered first. Then Yahoo results would arrive first. Google results would be delayed. This would give a huge boost to Yahoo for which Yahoo would pay a lot to the ISP. Using this method, the ISP can choose the winner in the search market and, similarly, the winner in many other markets. This is highly undesirable. It would kill innovation, as small, new, innovative companies would be unable to pay the ISP. What we want instead is a level playing field for competition. And network neutrality guarantees that. I want to focus now on the investment issue.

It has been proposed that ISPs invested less in the first two quarters of 2015 because of the new regulatory rule. I believe this proposition is incorrect. Why? First, economic models are divided on whether an ISP will invest more or less under network neutrality. The models do not tell us that the ISP will invest less under network neutrality.

Second, investment decisions follow a complex and long-term, multiyear path. Even with an upward trend, investment does not increase every quarter. If we observe the decrease in the quarter, it would not necessarily be from the impact of regulation. And there have been big fluctuations in investment in the past. In particular, in quarters 1 and 2 of 2015, almost all the change in investment came from the investment of a single company, AT&T. AT&T had advised as early as 2012, November 2012, long before the passage of the FCC regulation, that its investment will peak in 2014. In November 2014, it announced that its investment in

2015 would be at least 16 percent lower than in 2014. Then, in August of 2015, Barron's reported that AT&T said that it now expected that its 2015 investment would be the same as 2014, and it will just make the difference—for the shortfall of the first two quarters, it would make the difference in the remaining two quarters of 2015. So there is no reason for concern.

Third, the appeals process in the courts has not ended. And, therefore, the final word on the regulation has not been written. It does not make sense to change the long-run investment plans of a company already.

Fourth, even if one believes that the ISPs would decrease their investment as a result of the regulation, the period of observation between the time of the passage of the regulation at the end of February and the end of quarters 1 and 2 is too short to be able to make any meaningful inferences. It is incorrect to draw the conclusion that the FCC regulation has either an adverse or a positive impact on investment based on just observing two quarters of investment.

Fifth, a theory has been proposed that investment is lower because this regulation increased uncertainty. However, I believe that the network neutrality regulation, in fact, decreased uncertainty by clarifying the rules of competition. In conclusion, I believe that network neutrality results in very significant benefits to the Internet ecosystem. Network neutrality's impacts should be assessed at the whole ecosystem, not just on ISPs and not just on ISPs' investment. And I have outlined a number of reasons why we should not be concerned about short-term investment patterns. It seems very unlikely that these investment patterns are the effects of the network neutrality rule. Thank you.

[The prepared statement of Dr. Economides follows:]

Testimony on Network Neutrality at the
House Telecommunications Subcommittee

Prof. Nicholas Economides
Stern School of Business, NYU

October 27, 2015

1. Benefits of Network Neutrality

Network neutrality has facilitated businesses innovation "at the edge of the Internet" without seeking approval from network operator(s). The decentralization of the Internet based on network neutrality fueled innovation resulting in big successes such as Google and Skype, as well as a myriad of smaller innovative companies. Network neutrality also increased competition among applications and among services "at the edge of the network" since they did not need to own a network or have a special relationship with a network operator, carrier or Internet Service Provider (ISP) to provide a service.[1]

In summary, network neutrality has contributed very significantly to the fast and vigorous growth of the high technology sector in the United States and the rest of the world.

2. Criteria to Assess the Impact of Network Neutrality

First, I should underline that we should measure the impact of network neutrality on benefits to society of the whole Internet ecosystem, and not just on the ISPs. We should take into account and add the benefits to consumers, the benefits to applications and content providers "at the edge" of the Internet, as well as the benefits to telecom and cable ISPs. Focusing on benefits and costs of only one of three groups (consumers/users, applications and content providers, or ISPs) would be incorrect both from an economic and a public policy point of view.

[1] See Christiaan Hogendorn, Spillovers and Network Neutrality, Chapter 8 in Gerry Faulhaber, Gary Madden, and Jeffrey Petchey, eds., *Regulation and the Performance of Communication and Information Networks*, Edward Elgar, 2012.

3. Losses to Society Arising from Departures from Network Neutrality

Departures from network neutrality are likely not to be in the public interest and to result in a number of detriments to the total benefits of the Internet ecosystem.

Let's consider a key violation of network neutrality, the introduction of paid prioritization by an Internet Service Provider (ISP), such as Verizon. Under prioritization, the ISP would change the priority of information packets and services so information of companies that paid the ISP would arrive to the customers first. For example, in the market for Internet search, if Yahoo paid Verizon for prioritization, Yahoo search results would appear at Verizon's customers before the results of Google and other search engines. Clearly, some customers would not wait for search results of other search engines, thereby giving a significant advantage to Yahoo for which Yahoo would pay Verizon. In this example, it is clear, that violating network neutrality allows Verizon to determine (or very significantly influence) the winner in the Internet search market. In a similar fashion, if network neutrality is abolished, ISPs can also influence the winner in many different services or products delivered through the Internet. And it should be clear that prioritization does not require actually faster delivery. An ISP can generate profits by just degrading the arrival time of information packets that originate from non-paying firms while keeping the arrival timing of the paying firms the same as before the violation of network neutrality.

Paid prioritization would create artificial scarcity which is profitable to residential ISPs but detrimental to the public interest. Paid prioritization would create a "special lane" for the information packets of the paying firms while restricting the lane of the non-payers without expanding total capacity or requiring additional investment. By manipulating the size of the paying firms' lane, the ISP access provider can guarantee a difference in the arrival rates of packets originating from paying and non-paying firms, even if the arrival time for paying firms' packets is not improved over net neutrality. This would create a significant reduction of innovation at the edge of the network.

New firms with small capitalization (and those innovative firms that have not yet achieved significant penetration and revenues) will very likely not be able to pay the fees of paid prioritization. This will likely lead to a calcification/freezing of industry structure and will significantly reduce innovation and economic growth.

Typically access ISPs also provide their own content and applications, or, more generally, they provide substitutes to the content and applications of independent firms. For example, Netflix's customers may use Comcast to download video from Netflix, while Comcast sells video services delivered through cable TV. Similarly, both telecom and cable TV ISPs provide their own phone services that are also provided by independent VOIP providers such as Vonage. ISPs may favor their own services and degrade transmission of rivals that use their pipes. This is likely to distort competition and reduce the social benefits of the Internet.

Finally, there are political opinions and news diversity concerns if content in newspapers and websites is delayed in comparison with sites and newspapers that pay for prioritization.

4. <u>Investment is Not the Goal of Public Policy</u>

The goal of public policy, such as the network neutrality rules, is to maximize the total public benefit to participants of the Internet ecosystem that includes consumers/users, applications and content providers, and ISPs. Investment by ISPs is one of the variables that may contribute in public benefit. It is not the appropriate measure of the public benefit to the ecosystem. Instead of focusing on ISP investment, we should look carefully at all aspects of the impact of the regulation. As discussed earlier, there are very significant benefits of network neutrality to applications and content providers sector, including investment in that sector, as well as substantial benefits to consumers.

5. <u>The Impact of Network Neutrality on Investment</u>
    a. <u>Predictions of Economic Models</u>

Economic models give mixed results on the impact of a network neutrality regulation on the incentive of ISPs to invest more. The results depend on the specification of the model in terms of the underlying features of the consumers as well as on the investment technology that ISPs may use for potential network expansion. Thus, in some models and for some parameters, the ISP wants to invest less under network neutrality, but in other models or even in the same model for other parameters, the ISP wants to invest more under network neutrality.[2] Therefore one cannot claim that network neutrality should result in lower investment by ISPs. It is equally possible that network neutrality will prompt ISPs to invest more.

b. Did the FCC Rules of End of February 2015 Lead ISPs to Invest Less in the First and Second Quarter of 2015?

The proposition that ISPs decreased investment in the first two quarters of 2015 as a result of the passage of the network neutrality rule at the end of February 2015 is very likely incorrect for a number of reasons outlined below.

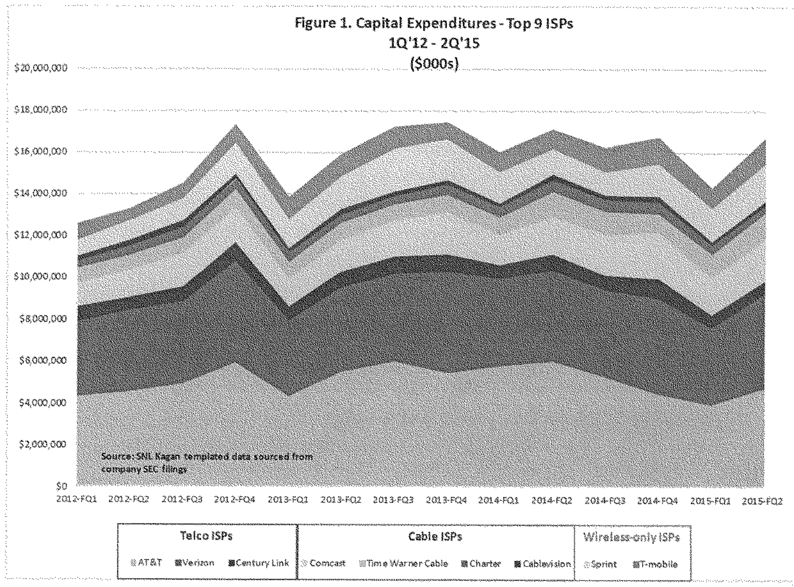
First, as discussed above, economic models are divided on the incentives of an ISP to invest more or less under network neutrality. The results of the economic model are that it is equally likely that an ISP should invest more as it is that it should invest less under network neutrality.

Second, we should keep in mind that how much to invest, on what and when is a complex decision, and companies typically have long term, multiyear, investment plans, that are often communicated to investors of publicly traded companies. These plans may not involve investment

[2] Different academic papers give opposite directions in the incentive to invest when network neutrality is imposed. J. Gans, "Weak versus Strong Net Neutrality" Rotman School of Management Working Paper No. 2439360 (2014), shows that "strong net neutrality may stimulate content provider investment while the model concludes that there is unlikely to be any negative impact from such regulation on ISP investment." J.P. Choi and B.C. Kim "Net Neutrality and Investment Incentives." RAND Journal of Economics, vol. 41 (2010), pp. 446–471 underline "the ISP's incentive to invest on capacity under a discriminatory network can be smaller than that under a neutral regime where such rent extraction effects do not exist. Contrary to ISPs claims that net neutrality regulations would have a chilling effect on their incentive to invest, we cannot dismiss the possibility of the opposite." N. Economides and B. Hermalin, "The Economics of Network Neutrality," RAND Journal of Economics, vol. 43, no. 4, Winter 2012, pp. 602–629, discuss a special case of their general model where under specific conditions, ISPs decrease investment as a result of imposing network neutrality. In the general model of Economides and Hermalin (2012), under alternative specific conditions, investment may also increase as a result of imposing network neutrality.

expansion in every quarter even if the general plan is to expand on the average.

There is evidence of significant fluctuations in total investment by telecom and cable companies over time. Figure 1 shows the capital expenditures of the top nine ISPs over time. We observe very significant fluctuations over time. For example, the data shows a larger reduction in investment in the first quarter of 2013 than in the first quarter of 2015. It would be misleading to attribute these changes to specific regulatory actions.



Careful examination of the data shows that the decline in capital expenditure in 2015 is almost entirely due to a decline in investment of one company, AT&T. AT&T had announced in November 2014 an expected decline in capital expenditure for 2015 due to the completion of the large investment project, "Project VIP."[3] Even as far back as 2012, AT&T had announced it expected "to increase its capital intensity to the high end of the mid-teens as a percentage of revenues in the next two years, returning to normal levels in 2015."[4] Additionally, in its 10-K filing to the SEC, dated 2/20/15, that is before the FCC Order, AT&T notes "We expect our 2015 capital expenditures for our existing businesses to be in the $18,000 range. Due to our completion of Project VIP, we anticipate lower capital spending in our Wireless and Wireline segments in 2015." This is an anticipated over 16% decline in investment, <u>before</u> the FCC Order.

Third, the appeals process has not ended, and therefore the actual event on which the change in investment decision is supposedly based is not final.

The network neutrality regulation was decided at the end of February 2015 with implementation starting in June 2015. ISPs have appealed the FCC decision, and the case has not yet been heard at the Appeals Court. Additionally, such highly contested issues often are appealed further and reach the Supreme Court. Therefore, one cannot consider the present regulation as the final word. It would not be prudent for telecom and cable companies to change their long run decisions on investment before the legal process ends. And, as discussed earlier, even if telecom and cable companies were to change their investment decisions immediately, the economics literature does not give them guidance on whether to increase or decrease investment under network neutrality.

Fourth, even if one believed that the ISPs would decrease their investment as a result of the regulation, the period of observation between the time of the passage of the regulation at the end of February 2015 and the end of the second quarter of 2015 is too short to have any meaningful inferences. From an economics point of view, it is incorrect to draw conclusions that the FCC regulation has either an adverse or a positive impact on investment based on one or two quarters observations on investment.

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[3] See AT&T's announcement on November 7, 2014, http://about.att.com/story/att_to_acquire_mexico_wireless_provider_iusacell.html

[4] See AT&T's announcement of November 7, 2012, http://www.att.com/gen/press-room?pid=23506&cdvn=news&newsarticleid=35661&mapcode

Fifth, some claim that regulation increased uncertainty and therefore dissuaded companies from investing. However, I believe that the network neutrality regulation in fact decreased uncertainty by defining the framework of permissible actions. Therefore, if we accept that in principle more uncertainty reduces investment, the passage of the regulation should increase rather than decrease investment.

6. Conclusion

Network neutrality has contributed very significantly to the fast and vigorous growth of the high technology sector. The impact of network neutrality should be assessed on the whole ecosystem, not just on ISPs and not just on ISPs investment. I outlined a number of reasons why we should not be concerned about short term investment patterns. It seems very unlikely that these investment patterns are a result of the passage of the network neutrality rules.

Mr. WALDEN. Thank you, Doctor, we appreciate your testimony and your learned comments.

We will now go to Dr. Robert Shapiro, the co-founder and chairman of Sonecon, LLC.

Dr. Shapiro, thank you for being here. We look forward to your comments.

STATEMENT OF ROBERT SHAPIRO

Dr. SHAPIRO. Thank you, Chairman, and members of the subcommittee. I appreciate the opportunity to discuss how the FCC's recent decision to apply Title II regulation to Internet service providers will affect their investments in Internet infrastructure. I am Dr. Robert Shapiro. I am on the faculty of the McDonough School of Business at Georgetown; chairman of the advisory firm Sonecon; and former Under Secretary of Commerce for Economic Affairs under Bill Clinton. You have my complete CV.

On this matter, I conducted my analysis with a co-author, Dr. Kevin Hassett, director of economic studies at the American Enterprise Institute. And our study was published by the McDonough School of Business at Georgetown. I append a copy of the study to the testimony. The views I express are solely my own.

The question we asked about how Title II regulation could affect investments by ISPs and Internet infrastructure is a subset of a more general issue which economists have pursued for decades: namely, how regulation affects investment and fixed capital. Economists have long recognized that, under some conditions, regulation can increase investment in social welfare. For example, when regulation forces firms that produce negative externalities, such as pollution, to invest in ways to reduce it. In these cases, the goal is to promote more optimal levels of investment in the presence of a market failure. Without such market failures, economists have found that regulation usually reduces investment.

In assessing whether that will happen here, we cannot proceed directly because it hasn't happened yet. However, my recent study explored how to approach new regulatory issues using analogous issues and conditions to assess the direction and the scale of their effects. In this case, the FCC's decision reversed its longstanding view of ISPs as information providers not subject to Title II, an approach that had let the marketplace drive the development of a range of technologies to deploy broadband. The result was rapidly rising levels of investment across cable, telephone, and other types of broadband service providers. Without Title II regulation, broadband uptake had proceeded faster than any other technology on record, faster than telephone, faster than television, faster than computers, faster than cell phones. Further, the National Economic Councilhas reported that 94 percent of U.S. households have access to terrestrial broadband service and the other 6 percent have access to satellite-based broadband.

Title II regulation in order to ensure universal access to broadband is a solution in search of a problem. The FCC also has long barred ISPs from discriminating against any legal content, guaranteeing consumers access to any lawful content, as well as the rights to run any lawful applications, and connect to any lawful device. In this regard, Title II regulation to ensure that all content providers have access to high-speed, large-capacity technologies at market prices is also a solution in search of a problem.

It also is clear that Title II regulation of ISPs falls in the class of policies that increase costs and regulatory hurdles. For example, if Title II here entails a universal service program analogous to that applied to telephony under Title II, it would mean significant new fees. And the fees needed to finance it would likely increase costs I believe enough to depress the uptake of broadband by more households than would benefit. But we don't know if that will occur because this is still subject to a very long and extended regulatory and judicial process.

Even larger costs, however, involve the diversion of resources and strategic attention by Internet companies from their basic business challenges and the investments required to meet those challenges, rather shifting to how best to accommodate and comply with Title II. These costs could affect any Internet company with transmission capacity, not just the Internet service providers, including online video services, Web search advertising services, and cloud computing services.

This reasoning leads us to conclude that Title II would negativity affect ISP investment. The question is, by how much? One analogy involves Title II regulation and telephony investments. Economists who examined the period of 1996 to 2008, when telecom companies—but not cable companies—were subject to Title II, found that cable capital expenditures grew 7.5 percent per year over those years versus 3.2 percent by the telecom companies. We also can compare Internet capital spending rates here and in leading European nations subject to title-2-like regulation. OEC data show that in 2012, those capital spending rates in the United States were about double those in Europe.

Again, we cannot estimate the long-term effects yet until this regime is in place. This is designed to give us a sense of the dimensions of those effects. And it suggests the dimensions are very substantial and that the direction is negative. Some of these effects may be felt already because the character of the proposed Title II regulation remains uncertain. The notion that, the announcement that Title II creates certainty ignores the entire—the nature of the regulatory process, and the nature of the litigation process in response to that.

We certainly know, economists certainly know that uncertainty adversely affects investment. One analyst reports that compared to the first half of 2014, capital expenditures by all wireline ISPs fell 12 percent in the first half of 2015, and capital expenditures by wireline and wireless ISPs fell 8 percent. ISP capital expenditures, relative to the prior year, had fallen only twice before, following the dot-com meltdown and recession in 2001; and in 2009, during and after the Great Recession. No such conditions held in the first half of 2014. The only change was the FCC's order to regulate ISPs under Title II.

The extent to which that order and the uncertainty effects affected, drove these declines is still unknown. And anyone who claims that they know it is talking through their hat, frankly. But what we do know, we have established there is a substantial effect that we are already seeing. And the direction of that effect is negative. It is consistent with a long economic literature on the impact of uncertainty on fixed investments. That is particularly true in the case of what are called irreversible investments, which are fixed investments which cannot be resold. And that happens to characterize much of the investment by ISPs. I conclude, therefore, that Title II regulation of ISPs is very likely to increase costs and reduce investment in Internet infrastructure and likely by very substantial amounts. Thank you.

[The prepared statement of Dr. Shapiro follows:]

Statement of Robert J. Shapiro
Subcommittee on Communications and Technology
U.S. House Committee on Energy and Commerce
October 27, 2015

Mr. Chairman and members of the Committee on Energy and Commerce, thank you for inviting me to discuss my analysis of how the recent decision by the Federal Communications Commission (FCC) to apply Title II regulation, under the Telecommunications Act of 1934, to Internet Service Providers (ISPs) could affect future investments in Internet infrastructure. I conducted this analysis with my co-author, Dr. Kevin Hassett, the director of economic studies at the American Enterprise Institute. Our study was published by the Center for Business and Public Policy at the McDonough School of Business at Georgetown University, and I append a copy of that study to this testimony as part of the record. The view I express here today are solely my own.

The question we asked about how Title II regulation of Internet service providers could affect their investments in Internet infrastructure, is a subset of the larger question which economists have pursued for decades, of how regulation affects investment in fixed capital. Economists have long recognized that some regulation can improve social welfare, for example in cases of monopoly. Regulation also can increase investment – for example, in cases in which firms produce negative externalities, most notably pollution, and regulation forces them to invest in ways that reduce those externalities. In these cases, regulation addresses "market failures" which, if left unaddressed, will produce under investment. The regulator's goal in these cases, therefore, is to promote more optimal levels of investment.

In the absence of such market failures, economic analysis has generally found that regulation reduces investment. In assessing whether that would happen in this case, however, we cannot proceed directly, because it hasn't happened yet. In our recent study, Dr. Hassett and I explore how to approach the analysis of new regulatory issues or analysis of established issues under new conditions, by using analogous issues and conditions, especially to assess the direction and scale of the effects.

In the case of the FCC's recent decision to subject ISPs to Title II regulation, we note, to begin, that the decision reversed the FCC's longstanding view of ISPs as information providers under the Telecommunications Act of 1996, rather than telecommunications providers subject to Title II of the 1934 Act. We further note that this approach allowed the marketplace to incentivize the development and deployment of a range of technologies to deploy broadband. The result was rapidly rising levels of investments across cable, telephone and other types of broadband service providers. Moreover, the share of U.S. households with broadband service increased from 4 percent in 2000 to 68 percent in 2010. So, without Title II regulation, the uptake of broadband has proceeded more rapidly than any other technology on record, including telephone, television, computers, and cell phones. Further, the National Economic Council and White House Office of Science and Technology Policy have reported that 94 percent of US households have access of terrestrial broadband service. Establishing terrestrial access for the remaining 6 percent of more remote households would be very costly; but fortunately, that 6 percent already have access to satellite-based broadband services. Unfortunately and illogically, the FCC does not classify satellite-based service as broadband.

Title II regulation in order to ensure universal access to broadband, in short, is a solution in search of a problem. Similarly, the FCC has long barred ISPs from discriminating against any legal content, subject to normal network management, and guaranteed consumers access to any lawful content and the right to run any lawful applications and services and to connect to any lawful device. In this regard, Title regulation to ensure that all content providers have access to high speed, large capacity technologies at market prices also is a solution in search of a problem.

In classifying Title II regulation for our analytic purposes, through the use of analogy, we believe it falls in the basket of regulatory policies that have increased costs and regulatory hurdles. For example, if the regulation entails a universal service program analogous to that applied to telephony under Title II, we should expect significant new fees or costs to achieve it. Moreover, those costs can only slow the current process of broadband uptake. In fact, the fees required to finance a universal service program for broadband, consistent with Title II regulation, would likely increase costs sufficiently to depress uptake by more households than would benefit from a universal service program.

Even larger costs arising from Title II regulation of ISPs involve the diversion of resource and strategic attention by Internet companies from their basic business challenges, and the investments required to meet those challenges, to how best to accommodate and comply with the new regulatory regime. These costs, we should note, could affect not only ISPs, but also any Internet company with transmission capacity, including online video services, web search advertising services, and cloud computing services. That's much of the Internet. And the associated burdens would be greatest for smaller firms.

This reasoning leads us to conclude that Title II would negatively affect ISP investment. The question is, by how much? One appropriate analogy involves how withdrawing Title II regulation affected telephony investments. Studies found, for example, that the phase out of Title II regulation was associated with an increases in new service offerings of 60 percent to 99 percent, and therefore with increased investments to develop and deploy these new offerings. Similarly, economists have examined investment over the period 1996 to 2008, when telecom companies but not cable companies were subject to Title II regulation. They found that cable capital expenditures grew 7.5 percent per year over those years, compared to telecom companies' capital expenditures of 3.2 percent per-year, a difference of 5.5 percent per-year. Similarly, we can compare Internet capital spending rates in leading European markets, long subject to Title II-like regulation, and in our own markets. OECD data suggest that in 2012, these capital spending rates in the United States were about double those in Europe. All of these studies lead us to conclude that Title II regulation would have large negative effects on investment in Internet infrastructure.

Moreover, the effects are probably being felt already, because the precise extent and character of the proposed Title II regulation of ISPs remains uncertain, and we know that uncertainty adversely affects investment. This would be particularly true for capital investments by ISPs, because many of those investments are what economists call "irreversible" – that is, investments in forms of capital that could not be resold. There is some early evidence of this effect: Hal Singer has reported that compared to the first half of 2014, capital expenditures by all wireline ISPs fell 12 percent in the first half of 2015; and capital expenditures by wireline and wireless ISPs fell 8 percent. These declines are extraordinary, given that ISP capex fell relative to the prior year only twice in the past – In 2001 following the dot.com meltdown and recession of that year, and in 2009 during and after the Great Recession. No such recessionary conditions held in the first half of 2015. The only change in early 2015 was the FCC's order to subject ISPs to Title II regulation.

To summarize, Title II regulation of ISPs will increase costs and reduce investment. Reviewing the available evidence, we estimate that the scale of this effect could range from 5.5 percent to 20.8 percent per-year; and the ratio of investment to capital stock would be expected to decline by roughly that extent as well.

[Additional information submitted by Mr. Shapiro is available at *http://docs.house.gov/meetings/IF/IF16/20151027/104110/HHRG-114-IF16-Wstate-ShapiroR-20151027-SD002.pdf.*]

Mr. WALDEN. Thank you, Dr. Shapiro.

Our final witness, Mr. Frank Louthan—thank you for being here—managing director, Equity Research, Raymond James Financial.

Mr. Louthan, thank you. And we look forward to your comments.

STATEMENT OF FRANK LOUTHAN

Mr. LOUTHAN. Thank you, Chairman Walden, Ranking Member Eshoo, and members of the subcommittee. I appreciate you asking me to be here today. My name is Frank Louthan. I am a managing director at Raymond James covering the telecom, cable, and data center industries. I analyze companies that provide voice, data, Internet, and pay TV services for the vast majority of American consumers, businesses, and Government institutions, both on a wireline and wireless platforms, as well as companies that transport, store, and enable the majority of the world's Internet traffic.

In general, we believe that the move by the FCC to impose Title II regulation on the Internet is a mistake that ultimately harms consumers, restricts investment, and adds unnecessary costs to the industry. When you hear me discuss investment, you should really think of it as the means by which the industry offers service to consumers, not selfish moneymaking schemes for wealthy people. The industry is about providing essential services to individuals, businesses, and Government, which takes capital to make it a reality. The overhang from Title II will be a drag on this investment, lower investment returns, all of which will result in less telecom deployment, consumer choice over time, in spite of well-meaning intentions to the contrary. Thus, regulation, in an effort to prevent problems that could occur instead of addressing actual consumer harms that have occurred, will restrict the industry's ability to expand by diminishing returns in attractiveness to capital.

As I look at the industry from an investment perspective or a capital required to enable essential services perspective, I focus on the amount of capital invested, the rate of return on that capital. The main objectives of my clients, who represent large mutual funds, pension funds, investment firms, and other investment institutions, is to get an adequate risk-adjusted rate of return on their capital. Many of these investors are individuals with modest 401(k) and pension assets looking for better growth in their savings. The investment is not about someone's bank account clipping better interest income, but rather it provides the ability for companies I follow to provide essential services that produce the valuable public policy goals, the near ubiquitous voice service in the last century, and almost universal broadband availability now. All citizens in this country benefit from the money invested and reinvested in the industry, probably more so than the investors that risked their capital. The telecom industry currently spends $60 billion to $65 billion in annual and capital expenditures. While this is often referred to as investment, the vast majority of this is simply what it table stakes to keep the business going but with only small amounts of this for expansion and new investment. This limited new investment is not surprising since the industry as a whole has earned a modest 4.9 percent return on capital over the last 3 years and the long-term returns are not much better. Regulation has played a significant role in this low investment return. And less regulation would improve the returns to your constituents' 401(k)s and the telecom choices in your district. More regulation under Title II will have the opposite effect and threaten the availability of affordable capital needed to reinvest to keep the business going, let alone expand broadband and data services. I cannot argue that the state of Title II with the heavy forbearance is not, for the moment, impacting industry any worse than the opportunity costs that have faced the industry under the prior FCC net neutrality orders. But the rate of change in the telecom industry is very, very slow. Network privacy, pole attachments, and interconnection obligations are all real concerns that are just starting to come into the marketplace after the Title II regulation, and they are beginning to add cost.

The deceiving part is that everyone is really waiting on the court case to see what the real rules are. But don't mistake this as an endorsement for the current status quo. Similar levels of capital spending each year do not mean that all is well. I am also concerned that today's heavy forbearance will change in the future. This is where the just and reasonable standard under the future Commissions could mean something different and costly for the industry. Price regulation and required resale of facilities are good examples of future risks. With approximately 10 major wireline ISPs and 6 national and regional wireless providers, consumers have a diversity of Internet access to judge discriminatory behavior for themselves, the prevention of which was the original intent of the open Internet order to begin with.

And I would ask, where have we seen increased access to capital and higher levels of investment follow once regulation has been put into place? I would argue we see the opposite. I cannot imagine growing industries lobbying Congress to impose regulation on them so they can better raise capital and invest. Ultimately, I believe the FCC is attempting to use a large, blunt instrument to address unfounded fears when a swift surgical procedure in the form of targeted legislation would be a better choice. I would argue members of this committee should look to a legislative solution that will not limit investment choice and/or product development for consumers.

So, from my perspective, Title II is restricting overall investment and returns; it is beginning to slow down and overcomplicate an industry in unnecessary ways; and has yet to see the full effect while the court case is pending. We do not believe the imposition of Title II regulation will make the industry as attractive for capital as it has been in the past. Less investment will eventually result in degrading consumer experience and fewer choices in the market. I would encourage members of this committee to seek out a simple legislative solution to ensure the main goals of Title II proceeding rather than allow the current blunt force approach to have unattended consequences that degrade one of the best tech stories in the U.S. ever—the Internet.

Lastly, I don't have any shares of any of the companies that we would cover. And we have provided disclosures of any business relationships my firm may have. I look forward to your questions.

[The prepared statement of Mr. Louthan follows:]

RAYMOND JAMES®

Equity Research
Published by Raymond James & Associates

October 27, 2015

Chairman Walden, Ranking Members and Members of the Subcommittee:

I appreciate your asking me to be here today to discuss the current state of common carrier regulation as it impacts investment in telecom networks and the Internet following the FCCs Title II order earlier this year. I am a Managing Director at Raymond James covering the telecom, cable, and data center industries, and have done so for 16 years. I do not own shares in any of the companies that I cover and we have provided disclosures about any current or potential business relationships my firm may have with the companies I follow in the documents I submitted previously.

In my role, I analyze companies that provide voice, data, Internet, and pay-TV services to the vast majority of American consumers, businesses, and government institutions both on wireline and wireless platforms, as well as companies that transport, store, and enable the majority of the worlds Internet traffic. Regulation including Title II has a direct impact on the companies I cover and their customers specifically.

In general, we believe the move by the FCC to impose Title II regulation on the Internet is a mistake that ultimately harms consumers, restricts investment, and adds unnecessary costs and burdens to the industry. As with everything in telecom, the rate of change is slow, but we believe the overhang from this regulation (as well as the lighter net neutrality rules that preceded it) have already been a drag on investment, lowered investment returns, and limited consumer choice, in spite of well meaning intentions to the contrary.

As I look at the industry from an investment perspective, the main factors to consider are the amount of capital that is invested, and the rate of return earned on that capital. The current impact on the industry from net-neutrality and Title II is largely felt in the enormous opportunity cost to the carriers. Carriers have limited their investment in networks and products to fit the current rules and the potential future changes that they perceive as likely when Title II regulation becomes implemented after the legal cases are resolved. If carriers had the ability to have more creative models for revenue, whereby they could earn acceptable returns for their investors, I would argue they would spend even more than the $60-$65 billion they invest annually, and customers would have a wider variety of choices to more locations.

Please read disclosure/risk information and Analyst Certification beginning on slide 6.

Unfortunately, regulation, in an effort to prevent problems that *could* occur instead of addressing actual consumer harms that *have* occurred remains a significant restriction on the industries ability to innovate. This is unfortunate and unnecessary in an environment where there are approximately 10 major wireline ISPs in the U.S. and six national and regional wireless providers who represent a significant diversity of Internet access such that industry observers and savvy customers are likely to have multiple vantage points from which to judge discriminatory behavior. This has in the past and would in the future quickly and readily expose any ISP for blocking, throttling, or preferential access regulators fear might occur. Personally, I would have to seriously consider lowering my investment recommendation for any carrier that was foolish enough to block content or charge its customers fees for what is now viewed as just basic Internet access, as the potential loss of revenue would be significant. Losing 25% of your market cap in short order is a career limiting decision for a CEO, and I believe the regulators are naïve to think anything less than a swift, market related reversal of a carriers discriminatory practices would occur in this situation. While we currently lack a record of any actual harm shown, why did we not allow this approach to address the issue before putting onerous rules on a thriving industry?

Which brings us to returns on the invested capital for the industry. The main objective of my clients who represent the large mutual funds, pension funds, insurance companies and other investment firms, is to get an adequate return on their capital. Therefore, they seek out investments in industries that can generate the highest overall risk-adjusted returns. The carriers I follow are seeking this mandate as well in order to attract the ongoing capital necessary to maintain their current services to customers while providing new ones, all of which results in better network facilities t offer to consumers, businesses, and government customers. I believe that these companies are willing to invest even more than the $60-$65 billion they spend each year, but they need reasonable assurance that they can earn a return. This is even more challenging when you consider that the industry as a whole only has earned a modest 4.9% return on invested capital over the last 3 years, and the long-term returns are not much better. So beyond the aforementioned opportunity costs that contributes to this relatively low ROIC, the potential negative impact of Title II makes the sector less attractive, threatening the ability to have affordable capital needed to invest and expand broadband and data services.

I cannot argue that the current state of Title II with the heavy forbearance in place is not, for the moment, impacting the industry any worse than it was under prior FCC orders on Net Neutrality. I do believe, however, that we are seeing the beginnings of Title II adding costs to the industry, as negotiations between carriers are taking longer and it remains unclear what will and will not be allowed and which parts of Title II regulations do and do not apply. Network privacy, pole attachments, and interconnection obligations are all examples of real concerns in the marketplace now. The deceiving part for Congress and industry observers is that everyone is really waiting on the court case to be decided to see what the "real" rules are, but don't mistake this apathetic view with an endorsement for the situation.

I am also concerned that the current environment of heavy forbearance where the FCC is on its best behavior can change swiftly should a different interpretation of the intent of Title II and the proper forbearance be imposed. This is where the "just and reasonable" standard has the potential to be employed, leaving a considerable threat of potential future litigation. While the FCC is trying its best to live to the letter of its promises until the court has a say in the mater, over time the courts and new commission members and staff have the ability to alter this path to be more "just and reasonable". We believe this would be very detrimental to investment and product deployment. Price regulation, required resale of facilities, and onerous accounting and record keeping burdens will have the impact of fewer investments, less deployment of broadband, slower innovation, and general harm to consumers who are ultimately going to pay higher prices for broadband service, if they get the service at all. Effectively, the potential future world of regulation brings a much flatter trajectory of network investment than we have seen in the past.

Wireless is another area that I have significant concerns about with regards to Title II implementation. Network management is even more important to these carriers for the simple reason that wireless networks have inherently less bandwidth to begin with and traffic patterns can cause unpredictable fluctuations and services levels. Under Title II, it is not clear what sort of network monitoring tools will be able to be employed and what sort of business models will be allowed. One of the most obvious trends is TV everywhere, including the ability of consumers to watch TV on their phones, tablets, connected cars, and other devices. A model allowing the content owner or advertiser to pay for a customers data usage might be very attractive, but could be made unlawful under Title II. This will limit the carriers ability to invest to provide advanced wireless data services, in my opinion. Generally, as I have outlined for the wireline sector, the Title II impact on wireless carriers is highly likely to infuse doubt as to where the industry will be able to invest to get any returns, and risks the **U.S.** wireless industry's leadership globally. Again, without adequate returns on investment, the wireless carriers are unlikely to increase their spending, and could see it decline.

Ultimately, I believe that the FCC is attempting to use a large, blunt instrument to address unfounded fears when a swift surgical procedure would suffice. None of the carriers that I cover are or will engage in blocking, throttling, or degrading lawful content, and have even said they will not offer business models that would give products preferential access regardless of potential consumer and public policy benefits. These are simple and uncontested principles that should have a legislative solution, not an imprecise and overreaching agency authority grant. First we see Title II as a way to assume congressional authority, what's next? I would argue that the members of this committee should look to a legislative solution that will not impact the industry in ways that limit investment, choice, and product development for consumers.

So, from my perspective, Title II is restricting overall investment and returns, is beginning to slow down and over complicate an industry in unnecessary ways, and has yet to see the full effect while the court case is pending. The full impact is unlikely to be known for some time, but we do not believe it will make the industry as attractive to capital as it had been in the past. This will result in less investment. Less investment will, eventually, result in a degrading customer experience, and fewer choices in the market. I would encourage the members of this committee to seek out a simple legislative solution to the main goals for the actions on Title II rather than allow the current blunt force approach to have unintended consequences and degrade the biggest investment and tech success story ever in the U.S.: the Internet.

US Telco ROIC	2013-2015
AT&T	5.3%
CenturyLink	2.9%
Frontier	3.3%
Windstream	3.1%
Cincinnati Bell	4.9%
Consolidated Comm.	3.6%
Verizon	8.2%
Comcast	6.7%
Time Warner Cable	6.2%
Charter	3.7%
Cablevision	5.8%
Wireline - Avg.	4.9%

Source: Company reports & Raymond James Estimates

US Telco Capex - Wireline

($ mm)	2009	2010	2011	2012	2013	2014	2015E
AT&T	11,428	11,107	10,351	8,670	9,753	9,816	8,621
CenturyLink	2,163	2,554	2,979	2,858	3,001	3,026	2,832
Frontier	812	749	825	803	635	572	738
Windstream	487	647	892	1,101	841	787	894
Cincinnati Bell	195	150	256	367	197	182	280
Consolidated Comm.	42	42	43	77	107	109	132
Verizon	9,895	8,119	7,271	7,318	7,179	6,676	5,822
Comcast	5,037	4,853	4,806	4,921	5,403	6,154	6,818
Time Warner Cable	3,231	2,930	2,937	3,095	3,198	4,097	4,455
Charter	1,134	1,209	1,311	1,745	1,825	2,221	1,725
Cablevision	613	682	654	916	807	744	745
Wireline - TOTAL	35,038	33,041	32,324	31,871	32,946	34,384	33,061

US Telco Capex - Wireless

($ mm)	2009	2010	2011	2012	2013	2014	2015E
AT&T Wireless	5,907	9,204	9,759	10,795	11,191	11,383	9,385
Clearwire	1,540	2,545	228	183	128	0	0
Sprint Nextel	1,597	1,926	2,855	5,370	7,451	5,524	5,197
Verizon Wireless	7,152	8,438	8,973	8,857	9,425	10,515	11,721
T-Mobile	3,861	2,808	3,619	3,747	4,350	4,317	4,648
TDS/US Cellular	671	755	987	1,005	908	771	830
Ntelos	103	91	58	72	81	107	101
ShenTel	54	56	75	113	101	60	75
Wireless - TOTAL	20,885	25,823	26,554	30,141	33,636	32,677	31,957
Total Capex	**55,923**	**58,864**	**58,878**	**62,012**	**66,581**	**67,061**	**65,019**

Source: Raymond James estimates and company reports

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Outperform (MO2) Expected to appreciate and outperform the S&P 500 over the next 12-18 months. For higher yielding and more conservative equities, such as REITs and certain MLPs, an Outperform rating is used for securities where we are comfortable with the relative safety of the dividend and expect a total return modestly exceeding the dividend yield over the next 12-18 months.

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Underperform (MU4) Expected to underperform the S&P 500 or its sector over the next six to 12 months and should be sold.

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Market Perform (MP3) The stock is expected to perform generally in line with the S&P/TSX Composite Index over the next twelve months and is potentially a source of funds for more highly rated securities.

Underperform (MU4) The stock is expected to underperform the S&P/TSX Composite Index or its sector over the next six to twelve months and should be sold.

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Market Perform (MP3) Expected to perform in line with the underlying country index.

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Mr. WALDEN. Thank you, Mr. Louthan. We appreciate your testimony, as well as that of your colleagues on the panel.

I will start off with questions. And I wanted to go to Dr. Shapiro first because in your testimony, in additional data, you indicate that Title II regulation of ISPs will increase cost, reduce investments. You say reviewing the available evidence, we estimate the scale of this effect could range from 5.5 percent to 20.8 percent per year. Can you translate that for me into how many dollars we might not see invested in the Internet that we would otherwise see?

Dr. SHAPIRO. Well, as Mr. Louthan just informed us, the investment rates have averaged about $60 billion a year. And so 5 percent of that would be $3 billion. And 20 percent would be $12 billion. So these are——

Mr. WALDEN. Per year?

Dr. SHAPIRO. Yes, per year. Let me say, that is what our both models and analogies tell us are the range of the dimensions. It could be substantially greater. It could be somewhat less. What we know, again, from decades of economic analysis of the impact of regulation on this particular kind of fixed capital investment is that unless it is correcting a market failure, unless there is something that is suppressing investment, some distortion in the market that is suppressing investment, the direction of the effect is negative—costs go up, attention is diverted, and companies invest less—and that the scale, particularly based on international comparisons and the comparisons of telephony before and after Title II is substantial.

Mr. WALDEN. Do you think that is part of why the Clinton administration chose to go with a light-touch regulation as opposed to Title II through the FCC?

Dr. SHAPIRO. I know that is why. And the fact of the matter is that the Clinton administration was absolutely committed to allowing the Internet to develop in its own way. This is a sector driven by technological and organizational innovation. And regulation constricts that.

Mr. WALDEN. And I just want to point out $3 billion would be on the low end, you estimate, that we could lose per year in the U.S.

Dr. SHAPIRO. Yes.

Mr. WALDEN. And $12 billion on the upper end. I think the stimulus spending for Internet was something like $7 billion that Congress passed. I did not support that. But these are substantial numbers.

Dr. SHAPIRO. Right. Let me say that the Obama administration also supported the view of ISPs as information providers not subject to Title II regulation for several years before reversing itself.

Mr. WALDEN. Yes, it did.

Dr. SHAPIRO. So this has been a consensus view across both parties.

Mr. WALDEN. Up to a certain point. And then Obama, Mr. President, decided to go a different direction. I want to differentiate too between the open order and net neutrality discussion and Title II as common carrier regulation.

And Dr. Shapiro, Mr. Louthan, anybody else on the panel, there is a pretty distinct difference between net neutrality, which we proffered a legislative product on, and Title II, right? And isn't there uncertainty in the marketplace when it comes to the issue of how much the FCC can forbear against existing statute and get away with it in courts and just the uncertainty and the rule structure and litigation? I have heard from Dr. Economides that there is, this actually gave certainty. I am hearing from you it didn't give certainty. Dr. Shapiro? Mr. Louthan?

Mr. LOUTHAN. My argument is that it brought a lot of clarity to the industry. It absolutely clarified that it is a less attractive place to investment. I mean, that was what everyone was sort of waiting for. And right now, that is current the status quo. Everyone assumed that, if you look at the way Title II is now with the heavy forbearance, it is not that different than under net neutrality. What you can see, what I would argue, the $60 billion, $65 billion they are spending already reflects a depression in potential investment in the sector. That is how much the investors and my clients are willing to put up with these guys investing.

Mr. WALDEN. And you know that from discussions you are having with your own clients, the investors?

Mr. LOUTHAN. Yes. The discussions I would have with investors going into Title II basically would say, well, the sector is uninvestable, which means they are not willing to risk capital in the investment if the Title II regulations are——

Mr. WALDEN. Because they don't see enough return or there is more uncertainty?

Mr. LOUTHAN. Because the lack of clarity on exactly how the forbearance was going to play out. And then going forward, even if today we say they are going to implement these few things, these other 200 rules they are going to forbear from, what is to say that doesn't change in the future? That potential risk in the future, which could be very detrimental—price regulation and resale of facilities—limits the amount they are going to risk.

Mr. WALDEN. So do you think we would be better off, then, to go with a statutory framework on net neutrality, as some of us have proposed, as opposed to letting this play itself out under Title II?

Mr. LOUTHAN. Absolutely. That would bring a lot of clarity, and that would open up a lot more investment back into the sector.

Mr. WALDEN. Dr. Shapiro?

Dr. SHAPIRO. Title II regulation was created in 1934 for a monopoly telephone system. It then developed over many decades of regulatory responses as conditions changed. That is why the regulatory process, no matter what is said today about the particular dimensions of forbearance, is not dependable with respect to certainty.

Mr. WALDEN. Thank you. My time has expired. I am going to turn now to the ranking member from California, Ms. Eshoo.

Ms. ESHOO. For a different point of view. I am having trouble discerning from at least some of the witnesses between investments that have been made since the FCC came out with its net neutrality rules and what your opinion is. So there is a lot of fog in between because there are facts in terms of earnings of the major companies. And they are quite robust.

And going first to Mr. Louthan, I think that, you know, the whole issue—or maybe Dr. Shapiro, in your testimony, you cite the data from Hal Singer that suggests capital expenditures for wireline and wireless ISPs fell between the first half of 2014 and the first half of 2015. And, yet, Professor Economides has told us that this decline in capital expenditures is due almost entire to one company, a decline which this company predicted as far back as 2012.

And also I think you all need to take into consideration that mobile voice has operated under Title II for almost 20 years. So how do you reconcile these?

Mr. Louthan, I know that you are an analyst, a Wall Street analyst. And your analysis to me sounded extraordinarily dim. And, yet, that analysis doesn't seem to have had an effect relative to shareholders or the companies and what they have produced in the last, in the last quarter since the FCC took its step. And to suggest that legislation brings about great stability, I would question that, as a Member of Congress. So why don't we go with Dr. Shapiro first and then Dr. Economides, and then Mr. Louthan.

Dr. SHAPIRO. Sure. Look, there are many ways to interpret these data.

Ms. ESHOO. Uh-huh.

Dr. SHAPIRO. Yes, for example, AT&T did announce that when a certain investment project was over, they would recur to historic levels of investment.

Ms. ESHOO. Give me an 18-carat example, if you will, of where investment since the FCC came out with what they came out with, where essentially the sky is falling in or a dark pattern has emerged since then that this is so off the charts that America and shareholders beware across the whole ecosystem. Where is it?

Dr. SHAPIRO. What I have said is that economists cannot say at this point——

Ms. ESHOO. OK. That is a good answer.

Dr. SHAPIRO [continuing]. With using direct data because the data aren't in yet. What we can say——

Ms. ESHOO. What is in, though? What is in?

Dr. SHAPIRO. What is in, according to the way I read those data, show a decline which I attribute to uncertainty. Now, the argument about this, for example, on AT&T——

Ms. ESHOO. I only have 1 ½ minutes left. So, Mr. Louthan?

Mr. LOUTHAN. I think I can summarize this. Net neutrality provisions were in place. Title II comes in, which looks very much like the current net neutrality today. It has the potential to be a lot worse in my opinion. But today it looks the same. So, as a result, the world the way it was and the world the way it is now, and the carriers are not necessarily changing in spending. I can give you a long, what happened with AT&T was very specific circumstances for them for some—we can talk about that later. But, in general, the industry is staying the same. And then they are all assuming until the court case is over, we really don't know how this is going to play out. And we are assuming everything is going to stay the same for the next 18 months until the court case is over. At that point, then we are going to find out which way it goes in the courts. And at that point, we will probably see a slow——

Ms. ESHOO. Well, you are making projections about what you think is going to happen. But the case so far, from February to now, does not—that is what I am looking for. I am looking for something different.

Dr. Economides?

Dr. ECONOMIDES. It is really true, we don't see evidence. We don't see right now evidence of very significant reductions or even significant reductions in investment. And AT&T itself says that whatever lower investment they did in the first two quarters, they will make it up in the next two quarters. So I don't see an issue with that. Now, I think that the general issue that Dr. Shapiro brings up, which is, well, regulation necessarily reduces the returns on investment, that has to be looked at more generally in the ecosystem of the Internet because if we just reward telephone companies much more but it kills innovation in the whole other sector, then we are doomed. We are doing the wrong thing.

Mr. WALDEN. The gentlelady's time has expired.

Ms. ESHOO. Thank you very much.

Mr. WALDEN. The Chair recognizes the gentlelady from Tennessee, Mrs. Blackburn.

Mrs. BLACKBURN. Thank you, Mr. Chairman.

Mr. Louthan, I want to come to you and go back to your testimony on page 3 of your testimony, where you said we are seeing the beginnings of Title II adding cost to the industry as negotiations between carriers are taking longer, and it remains unclear what will and will not be applied or be allowed and which parts of Title II regulations do and do not apply.

OK, network privacy, pole attachments, and interconnection obligations are all examples of real concerns in the marketplace now. And I can tell you they are. And I agree with you on that. May 15, the FCC issued an enforcement advisory that broadband providers should take, and I am quoting, "reasonable and good faith steps to protect consumer privacy." I was recently joined by 14 other members of the subcommittee in sending a letter to Chairman Wheeler questioning the FCC's potential entry as a privacy regulator in the online space. The FTC has traditionally been our Government's sole online privacy regulator. So now what we have is confusion and uncertainty. So I would like for you to elaborate, if you will please, on how the FCC becoming a privacy regulator and trying to preempt the FTC may lead to marketplace uncertainty and impact the investments of the ISPs.

Mr. LOUTHAN. Well, in general, what, this complicates negotiations. So if two carriers have interconnection agreements and they are looking at what—they knew what the rules were before. They knew what they were allowed to do. But now under Title II, if you suddenly have additional regulatory burdens or like the network privacy issue, are you allowed to collect data? Are you not allowed to collect data? Who is going to make those decisions? Well, before, we knew. And well, wait a minute, if we are interconnecting with you, do you have all the right approvals to do this? It has become very unclear. So I have spoken with most of the companies that I follow. And they all say that they are having negotiations, which normally they would have expected to, for interconnection agreements and other things that the carriers all have to rely on each other for, these negotiations are taking longer than they were in the past. And they are potentially adding cost. And in some cases, they are signing agreements that they are not really sure if they are not going to come out later and find out that they are not legal.

And, of course, this could all change. And that is the biggest fear is that you have a tremendous amount of other regulation under Title II that right now everyone is saying we don't need to forbear. But what if someone comes later and says, "you know what, you can't forbear from that, you have to enforce this new regulation, you must put this sort of price regulation"? That is a big concern. And that completely changes the dynamic of the Internet, the way we have seen it for many, many years, particularly the privacy issues and being able to gather network data. That is basically Google's entire business model. I don't think that is what the intention is. But that is the potential result of some of this Title II regulation.

Mrs. BLACKBURN. Thank you. I appreciate that.

Mr. Shapiro, I want to come to you for a minute. I have a lot of rural area in my district. I have 19 counties in Tennessee. So broadband expansion and the investment for that broadband expansion is something that is a topic of discussion. You can't get the education system you want or access that you want or the economic development that you want unless you are going to have that high-speed Internet.

And so we look at this, and I was interested in your comments about Title II regulation of the ISPs would increase their cost and is going to reduce their investment and the impact that such regulation and the corresponding higher costs there are going to be there are going to have on the quality of broadband service and especially in these less populated areas. And so speaking to someone that represents rural America and saying these are the warning signs, what would you highlight? Because in my district, this is what people are looking for. They need this high-speed Internet. And they are incredibly frustrated right now with some of the carriers that are not living up to promises made.

Dr. SHAPIRO. Right. Well, I think everybody has complaints about the providers of services which have become so vital to us. We expect the service to be 100 percent all the time. We depend on it so vitally. Having said that, the fact is that as the National Economic Council has reported, without this kind of regulation, broadband access is available for 94 percent of all the households in this country. The buildout of broadband capacity and the uptake of broadband service has proceeded faster than any other technology we have ever seen: faster than telephone service, faster than television, faster than computers, faster than dial-up. So the model of innovation and competition has been very successful.

Having said that, there are 6 percent of remote households who don't have access. And we need to address that. But, again, that is a very specific problem. And if we address it in a way which increases the costs for everyone else, for example, through a universal service fee—and we have experience of this with telephone. It is not to say universal service isn't important. It is to say that this particular mechanism if applied to the Internet would likely increase costs sufficiently so that the reduction in uptake by people who cannot afford the increased costs would more than counter-balance the increase in access by those who formerly didn't have it. In this case, it is the wrong solution. The problem exists, but it is the wrong solution.

Mrs. BLACKBURN. Thank you, I yield back.

Mr. WALDEN. The gentlelady yields back.

The Chair recognizes the gentleman from New Jersey, Mr. Pallone.

Mr. PALLONE. Thank you, Mr. Chairman. I support strong net neutrality rules because they will protect consumers, and consumers now have guaranteed access to the content that they want without intervention from the provider.

My questions are for Dr. Economides. Can you please elaborate on the other benefits that these rules will provide the consumer?

Dr. ECONOMIDES. Yes. The network neutrality rules have allowed the Internet to grow. It allowed companies to innovate at the edge of the network with great examples such as Google and Skype. They created a vigorous growth in the high-technology sector in the United States, which helps everybody and, of course, helps the consumers. It gives them choice. And network neutrality has created an equal playing field. It allows innovative companies that are competent and have good products to make it, to be there.

I am afraid that if we start violating network neutrality, then the innovation will dwindle. It won't be easy for small companies. It wouldn't be a matter of Google, but it will be the matter of the new Google, a new company, a small company will not be able to pay the fees to the ISPs that are going to be levied. And we are going to see a slowdown of innovation. And, really, innovation the one of the few things we have going well in this country. It is very important to preserve it, to expand it, to make it very, very, very important—to grow it.

Mr. PALLONE. Well, thank you. You mentioned small businesses, and one of the reasons I support net—strong net neutrality is because I want to ensure that small businesses have an equal playing field. So, Doctor, could you tell us again, how will the net neutrality rules benefit small businesses in particular?

Dr. ECONOMIDES. Well, if I have a small business and innovative company and I want to access the Web, right now I can do it without having a special contract with the network operator or the ISP. I can just go and post my news or my whatever it is, trying to get customers through the Internet. And I don't have to have any special relationship with the ISP. If we abolish network neutrality, we allow the ISP to have special relationships with the clients, to have special relationships with anybody who has content out there. And the big companies that have the money and the ability to pay the ISPs are going to squeeze out the smaller companies, and that is going to be a serious problem in the area of innovation, where it creates a lot of growth, but it will be a problem also in small companies across the board who do not have the ability to pay.

Mr. PALLONE. All right, thanks. You know, with all of these great benefits, I am troubled by the assertions from critics of the rules that allege that the FCC net neutrality or even healthcare regulations will harm investment, given that there is very little data that proves that point.

So, Doctor, you have provide at least five different reasons why it is incorrect to assume there is a systematic decrease in investment based merely on a comparison of two data points. Can you elaborate why you believe this is to be the case?

Dr. ECONOMIDES. Well, sure. First of all, it seems like some people believe automatically, without really proof, that the economic models would say that, under net neutrality, they would be less investment. And that is not really true. I have written models myself, but I also quote in my written submission models of others that say that investment might go up in net neutrality or might go down. So there is no clear-cut conclusion there.

Second, there is a multiyear path in investment for any company. It won't change overnight just because the regulation has changed. And that is why this discussion of looking at the two quarters of 2015 and trying to draw conclusions from that doesn't really make sense, besides the problem of AT&T really having revised its story and now saying something different than they were saying before and now saying they are going to invest in 2015 as much in 2014. I think that it is too early to say whether the rule is going to create more investment or less investment. And the economic theory supports that. And I believe that if you are looking at the whole Internet ecosystem, there is no doubt that there is a huge benefit from network neutrality, even if, even if it is true that there is going to be less investment in one particular sector in the ISP sector. Still, the huge amount of extra benefits and growth and investment in the other sector in the rest of the ecosystem would more than balance that.

Mr. PALLONE. Thank you very much.

Mr. WALDEN. The gentleman's time is expired.

The Chair recognizes the vice chair of the subcommittee, Mr. Latta, for 5 minutes.

Mr. LATTA. I appreciate the chairman for recognizing me at this time.

And, Mr. Shapiro, if I could start my questions with you, and following up with what the gentlelady from Tennessee was speaking about her district and being rural and the question about the broadband service in her area, and what it could affect. I am one of the co-chairs of the Rural Telecommunications Working Group, and I am also concerned about the negative implications of Title II regulations on our rural regions of our country. And to follow up with her line of questions, do you think the reclassification will redirect industry resources away from network upgrades and broadband development, particularly in these rural communities, due to the already high-cost nature of the regions?

Dr. SHAPIRO. Well, we know that, or we have every reason to believe that the regulation will reduce investment. It will reduce investment in particular in areas which produce relatively lower returns. And that, yes, is likely to include a lot of rural buildout. If I could make one other point. Dr. Economides has described the great benefits of the development of the Internet infrastructure and the Internet ecosystem. All of that occurred without Title II regulation. It occurred under the existing nondiscriminatory rules, which all of us support. That is not the issue here. The issue here is a new regulatory structure and what impact it would have. And I certainly agree that all of those benefits are extensive and very important, and as I said, all developed in the absence of Title II regulation.

Mr. LATTA. Well, thank you.

And, Mr. Louthan, if I could go on to you. Again, as I mentioned in my opening statement, I have got an Internet service provider in my district that serves about 5,500 customers. And they are concerned about the reclassification. The company is worried about losing temporary exemption to enhance transparency rules for smaller providers because if the exemption expires, they will incur additional legal costs and network monitoring costs they cannot afford. This is one example of how Title II regulations are creating unnecessary burdens on these small businesses and, in turn, will have the potential to negatively impact the economy and harm the customers out there.

And I guess my first question to you is, Will stories like this soon be all too common across the country?

Mr. LOUTHAN. Absolutely. There are hundreds of small phone companies and cable companies out there that don't have a tremendous amount of access to capital. They work very hard to provide services in districts such as yours, and they do a very good job—generally, small family-run businesses. But the additional regulatory burdens that are placed on them, where they built a business model based on one set of rules, and now when that changes and adds additional costs, that is going to be very difficult for them. It is probably going to force many of them to consider mergers and to be selling to larger companies and to consolidate in order to remove costs because they won't be—they will have a very difficult time operating.

Mr. LATTA. Let me ask you, it is kind of interesting you just mentioned because in a lot of our areas in our more rural communities, it is tough to get folks out there that want to make those investments. When you say that they might be forced to either merge or have somebody else buy them out, you know, how typical would that be, though, for somebody else to want to come into an area that is being served by a very small community that, you know, that they have to run things out for long distances before they can get to certain folks in some cases—if that is going to really happen all the time, or do you think that some companies, larger companies are just going to say, it is not worth even looking at or even buying them out or merging with them?

Mr. LOUTHAN. They definitely would say that. I would argue that they would change their tune if they were different business models. One of the things, such as additional sources of revenue and one of the things that keeps being brought up is paid prioritization. And, unfortunately, there is always an assumption that if someone is paying for better access, someone else—you must be taking that away from someone else. It doesn't have to be a zero sum gain. But if there are additional revenue opportunities and additional ways that companies could make money, then they might be interested in investing. But, unfortunately, a small 5,500-customer company may have a difficult time finding a buyer. But I do think that people do want to serve a lot of those small communities. There are companies that would like to invest. But they need some more clarity. And with the clarity the way it is now, I think that is really going to restrict those kind of investments.

Mr. LATTA. Thank you very much, Mr. Chairman. I see my time is expired, and I yield back.

Mr. WALDEN. Thank you.

The Chair recognizes the gentleman from Pennsylvania, Mr. Doyle.

Mr. DOYLE. Thank you, Mr. Chairman.

I know this has been covered somewhat by some of my colleagues, but I think it is important that this is clear on the record. You know, a study by Hal Singer, a senior fellow at the Progressive Policy Institute, was published recently in Forbes this August which claimed that the major ISPs, that their expenditures were down this year as a result of the FCC's open Internet order. He cites AT&T specifically, saying that their capex is down 29 percent for the first half of 2015 and that there is an industry-wide average decline of 12 percent as a result of the FCC's open Internet order.

Professor Economides, first, are these numbers accurate, and second, are the changes in capex cited by Mr Singer related to the FCC's order?

Dr. ECONOMIDES. Well, depending on what numbers exactly we look, I mean, it might be—they might not be exactly the same. But the fact that the—that AT&T did have lower investment in the first quarter of 2015, is, in fact, correct.

But I should say, and I have a diagram in my written submission, where you can look clearly to see that these investment numbers, both for AT&T and for the whole industry, vary a lot quarter by quarter. So you cannot necessarily say, oh, this is because of this particular rule or this particular action. There is no such thing. They vary a lot.

The second thing is that we know now that AT&T had advised early that its investment program is going to end in 2014. And, therefore, necessarily, 2015 would be a bad year. But then later on in August from an article in Barron's, from August 15, we know that AT&T has reversed itself, and now it says, after the passage of the act, that we are going to invest in 2015 as much as we invested in 2014. And, in fact, we are going to expand investment tremendously during the last two quarters of 2015 to be able to make up that shortfall of the first two quarters.

Now, the more general question you are asking, could it be because of the passage of the act, it really doesn't make sense. These are long-term decisions of the companies. They wouldn't really stop investing immediately, even if they wanted to stop investing. They wouldn't do it immediately. It doesn't really make any sense. It is not reasonable.

Mr. DOYLE. Thank you. I want to talk a little bit about interconnection, too, Professor Economides. In the past, you yourself have argued that outside the traditional realm of blocking, throttling, and prioritizing data traffic, that interconnection agreements between networks play a critical role in facilitating a competitive environment for digital services. Certainly this past year, we saw that Netflix, a direct competitor with many MPVD saw its service degraded in a way that hurt consumers and competition as a result of interconnection. Do you believe that the FCC acted rightly in the order by including interconnection agreements as part of the open Internet order?

Dr. ECONOMIDES. Yes, I do. I believe that interconnection is a crucial issue in telecommunications. It is a long-term issue. It goes all the way back to the interconnection between MCI and AT&T in the 1970s. It is a big long-term issue. It is important that the regulatory rule sets up a level playing field so that there will be no abuse of the power of any Internet service provider because once you are a subscriber to Comcast, let's say, you are not so easily flexible to change to AT&T or Verizon or somebody else. So you are, to some extent, captured by Comcast. So it is important that you don't become a pawn at being sold to this company or the other. It is important to have a playing field where companies can interconnect in that way.

Mr. DOYLE. Thank you.

And, just finally, Mr. Louthan, I appreciate in your testimony that you have said that you have no business relationships with any of the carriers that we are discussing today. I appreciate that transparency.

Mr. LOUTHAN. I didn't say that I didn't have them. I said we disclosed if my firm does have any, there are in the disclosure.

Mr. DOYLE. Thank you, and I appreciate it because transparency has been a big topic of conversation in our subcommittee this year, whether it is ensuring transparency from the FCC or political ad disclosures.

Dr. Mandel, I was wondering, does your organization, the Progressive Policy Institute, receive any money from any of the carriers or the organizations linked to them?

Dr. MANDEL. Yes, so PPI gets funding from a wide variety of foundations, individuals, and companies, including telecoms and edge providers.

Mr. DOYLE. Can you, for example, what carriers are you getting funding from?

Dr. MANDEL. Without sort of naming names, I am not privy to the individual details, but when I say "wide variety." I mean wide variety.

Mr. DOYLE. Dr. Shapiro, you cofounded PPI. Can you provide any additional information on the funding sources for the organization?

Dr. SHAPIRO. Oh, I was a cofounder, but I have not been involved with PPI since I became Under Secretary of Commerce under President Clinton. So I can't give you any insight into PPI. But I am happy to say that the research that I conducted was supported by NDN, not by an Internet service provider, an organization that I know that Mrs. Eshoo is very familiar with.

Mr. DOYLE. Right, but I was referring to PPI.

Dr. SHAPIRO. Oh, I have no information.

Mr. DOYLE. So you say carriers fund you; you just don't want to name who they are?

Dr. MANDEL. Carriers fund us. Edge providers fund us. Foundations fund us. Individuals fund us.

Mr. DOYLE. Thank you, Mr. Chairman.

Mr. WALDEN. Well, we had one other witness we didn't hear from on this topic.

Mr. DOYLE. Yes, Dr. Economides.

Mr. WALDEN. So isn't it true Google also helps fund some of your research——

Dr. ECONOMIDES. No.

Mr. WALDEN [continuing]. As disclosed in the documents I have here, really?

Dr. ECONOMIDES. Disclosed that the only—the only research that is relevant in the disclosure is my grant from the National Science Foundation to study fifth-generation networks.

Mr. WALDEN. Well, we have got to show you some of these documents that would indicate something different at some point. This is on your, "Why Imposing New Tolls on Third-Party Content and Applications Threatens Innovation and Will Not Improve Broadband Providers Investment." Down at the bottom it says: The research reported herein was supported by Google Inc.; the views expressed in this paper are, of course, those of the author.

Dr. ECONOMIDES. Yes, this research was many, many years ago.

Mr. WALDEN. In 2010.

Mr. DOYLE. Well, Mr. Chairman, why don't you read the disclosures of all of these panelists?

Mr. WALDEN. I am happy to do it. I don't know that we have them all here. But they should be in the records of the committee.

Mr. DOYLE. Well, I mean——

Dr. ECONOMIDES. I fully disclosed it. There is no doubt about it, but this was 2010. It is not—the disclosure that I just filed with the committee said to disclose everything from 2013. And I was perfectly OK with that. I mean, let's make sure.

Mr. WALDEN. Perfect. Got it. All right, we will go now to Mr. Lance for 5 minutes.

Mr. LANCE. Thank you, and good morning to the distinguished panel. As I understand it, the case is currently pending before the United States Court of Appeals for the District of Columbia Circuit regarding Title II, and I would like the views of every member of the panel as to how this will have an impact moving forward, beginning with you, sir, Dr. Mandel.

Dr. MANDEL. I am an economist and not a lawyer.

Mr. LANCE. I won't hold that against you.

Dr. MANDEL. I appreciate that. So I have a hard time predicting what the courts will do. I do think that, you know, what I worry about, and what other people have mentioned, is whether or not the Title II regulations will end up being extended and not just simply touch the ISPs but actually get applied indirectly to the edge providers.

Mr. LANCE. I realize you are an economist. I would presume that this would eventually reach the Supreme Court. It is likely to take certiorari, and then we will have a final decision from the Supreme Court.

Dr. MANDEL. Well, and so, like I said, I am not in the business of predicting that. So what that means right now there is a lot of uncertainty in the market about what is going to happen in terms of decisions, and so forth.

Mr. LANCE. Dr. Economides, do you have an opinion on that, on the legal aspect of all of this?

Dr. ECONOMIDES. On the what?

Mr. LANCE. The legal aspect, the fact that it is now before the DC Circuit and may ultimately reach the Supreme Court?

Dr. ECONOMIDES. I am not a lawyer. I think that these regulations tend to be very much challenged. I wouldn't be surprised if it reached the Supreme Court. But this is a layman's point of view. I mean, it is not my expertise.

Mr. LANCE. Thank you, sir.

Dr. SHAPIRO.

Dr. SHAPIRO. Certainly with so much at stake, I would be surprised if it did not proceed to the Supreme Court.

Mr. LANCE. We will have a decision from the United States Court of Appeals for the District of Columbia Circuit, I presume, within the next year or so. And whichever side loses will petition the Supreme Court for a grant of certiorari, and it is your best judgment that the Supreme Court of this country is likely, eventually, to take the case?

Dr. SHAPIRO. Yes, but I, again, I have no insight into what the court, either the court of appeals or the Supreme Court will say. I have—I have been on the other side of these cases as a Government official and have been assured by the Office of the Solicitor General what the result was going to be, and it turned out to be something quite different.

Mr. LANCE. Would it be fair to say that there is uncertainty as a result of the fact that this is now under major litigation, as some of us predicted several months ago or perhaps even a year ago as this matter was bubbling up?

Dr. SHAPIRO. I think it is absolutely accurate that this process, this judicial process increases uncertainty and, again, if I could mention the uncertainty is particularly acute for the kind of fixed capital investment which ISPs undertake because most of them are what is called irreversible capital, which is to say capital which cannot be resold. And, consequently, the incentives to wait until you are certain about what the conditions are going to be for your rate of return on that capital investment are very large.

Mr. LANCE. And to follow up on that, irreversible capital, this is the fact that this and this alone is where the investment is being made, and it would be very difficult to get your investments back easily. Do I understand that accurately?

Dr. SHAPIRO. Yes, correct. That is, you know, if you are investing in a kind of standard machine tool and for a particular project, and the project doesn't go forward, you can resell that machine tool.

Mr. LANCE. Yes.

Dr. SHAPIRO. That is reversible capital. Irreversible capital is capital in which it is very difficult to resell, and that characterizes much of the fixed capital——

Mr. LANCE. This is the type of investment that is occurring in this field.

Dr. SHAPIRO. Yes.

Mr. LANCE. Mr. Louthan, your opinion.

Mr. LOUTHAN. Well, I am also not a lawyer. I am a much better stock picker than a predictor of what the courts would do. But the Wall Street assumption is that it is going to go all the way to the Supreme Court.

Mr. LANCE. Yes, that is my understanding.

Mr. LOUTHAN. I believe that it is possible that the District Court could affirm in part and either——

Mr. LANCE. It would be the court of appeals.

Mr. LOUTHAN. The court of appeals, yes, I apologize. But I definitely think somewhere all of this ends up in the Supreme Court, and the simple thing would be for a swift legislative solution for the basic tenets of net neutrality, very simple, and all of this could go away.

Mr. LANCE. And from your perspective as a stock picker, would that be better for the economy of this country and for moving forward in the investment area regarding this field?

Mr. LOUTHAN. There absolutely will be more spending and more investment by the—my industry. They would provide more services, more jobs, and so forth if you had more clarity under these rules rather than the large risk of the what if from what is left now with Title II.

Mr. LANCE. Thank you. And I tend to share that opinion.

Mr. Chairman, I yield back 30 seconds.

Mr. WALDEN. The gentleman yields back the balance of his time. I turn now to Mr. Loebsack for 5 minutes.

Mr. LOEBSACK. Thank you, Mr. Chair. I do thank the subcommittee for holding this hearing today as always. My first hearing on this subcommittee earlier this year was about net neutrality. It is an important topic. As I said then, I absolutely support an open Internet. And I am glad that we are talking today about ways to encourage investment of broadband. I, too, am from a rural area as so many folks on this subcommittee are and on the larger committee. I have 24 counties in my district, in southeast Iowa. I have heard I don't know how many times from my constituents their concerns about the need to invest in rural broadband. I did a 24-county tour earlier this year around my entire district talking to folks about the concerns they had about the provision of rural broadband. We know how important it is for the local economy, for the schools, for hospitals, for agriculture, and so, for me, you know, to think about this—and Dr. Shapiro, I have a question for you in a second—but to hear folks, you know, I used to teach at a small college. I am a former academic. And, you know, people would say: Why don't you get down into the real world, talk about what is really happening with folks and all the rest? Being on this committee and being in Congress, I am sort of out in the real world all the time in these different counties. And it is a little distressing for me to hear, for example, that, you know, there is 94 percent of America covered by broadband. But that says nothing about the quality of the broadband, says nothing about the speed of the broadband. It says nothing at all, really, about the real access that folks in these rural areas have to broadband.

And when I go to schools throughout my district, as I did recently, I went to 18 different schools in 18 different counties during the district work period to talk to them about issues having to do with education, and inevitably broadband comes up because it is great if students can be on the Iowa Communications Network at school, but then if they are in a rural area and they go home and they don't have sufficient bandwidth to complete their homework, it is a problem. It is a real problem.

So, Dr. Shapiro, I do want to ask you, you said that in your testimony you called efforts to ensure universal access to broadband, quote, "A solution in search of a problem," unquote. However, according to the Council of Economic Advisors, what we consider really to be sufficient broadband speeds are available to only 47 percent of rural households. So how can you explain, if you can, your assertion that there is not a problem, if you will, with regard to universal access to broadband?

Dr. SHAPIRO. I didn't say there isn't a problem. I said the Title II regulation is not the solution to this problem. The fact is that, I mean, some form of broadband access is now available, according to the White House, to the Office of Science and Technology as well as the National Economic Council, to 94 percent of American households. That is not sufficient. But the fact is that has risen at a really extraordinarily rapid rate through competition, innovation, and falling prices. And if, in fact, we believe—if, in fact, Congress believes that this process is not proceeding at the rate that it should, then Congress has many ways of addressing that specifically as opposed to imposing this very large, antiquated regulatory regime on a market-driven innovative sector.

Mr. LOEBSACK. Yes. I just want folks to keep in mind and I think there is probably agreement across the aisle here that when we talk about rural broadband, that 94 percent figure sounds really good, but in reality, when we talk about the bandwidth that is available, that doesn't cover at all, you know, the reality. That doesn't tell us about the reality.

Dr. SHAPIRO. Yes.

Mr. LOEBSACK. You wanted to say something Mr. Louthan?

Mr. LOUTHAN. Well, I was going to point out, I have spent a fair amount of time covering rural broadband, particularly the 100 and something companies in your State.

Mr. LOEBSACK. Right.

Mr. LOUTHAN. The issue, I don't disagree that while you could see more broadband, you have to be able to see a return on the money spent. There is a tremendous amount of money it takes to provide that broadband.

Mr. LOEBSACK. And I am sorry, I am running out of time. I really do apologize for interrupting, but one of the players that has not been mentioned here at all is those local Internet service providers who started out years ago as telephone companies, and they have really stepped up to the plate, and they understand it is a bottom-line issue. But they have been willing to take on that capital expenditure. They have been willing to invest because they really do think that they owe it to their folks in the rural areas to provide them with that service. And I think that is an important factor in all of this that gets overlooked by the traditional economic studies. So thank you so much.

Mr. LOUTHAN. I completely agree with that. The issue is, if you put price regulation and things like that from Title II, their ability to continue to invest in those networks will not be there. They will not be able to raise the money.

Mr. LOEBSACK. And I haven't heard from them about that yet, just so you know. Thank you.

Mr. WALDEN. The gentleman's time is expired.

The Chair recognizes the gentleman from Kentucky, Mr. Guthrie, 5 minutes.

Mr. GUTHRIE. Thank you, Mr. Chairman, and I thank all the panelists, the witnesses, for being here today. My first question is for Dr. Mandel. Mandel, or Mandel?

Dr. MANDEL. Mandel.

Mr. GUTHRIE. OK, do you think communications companies are going to continue to be among PPI's investment, quote, "heroes" if the courts do not overturn the imposition of common carrier regulations of broadband?

Dr. MANDEL. That is an excellent question. I have to say that when we first started doing this list, it was a surprise to everyone that they were on the top of the list because no one would have thought, everyone would have thought that maybe an industrial company or maybe somebody else would have been the top investor in the U.S., and this turned out that consistently that the telecom companies and the ISPs in general have been up at the top. This is under the previous light-touch regulatory regime.

Mr. GUTHRIE. Right.

Dr. MANDEL. And so we don't know what is going to happen as things change, evolve over the next several years, because I tend to agree with the other panelists that this is not a short-term thing. These are long-term issues that evolve over time.

Mr. GUTHRIE. But we know under the current regulatory regime, they are the top investors in the country.

Dr. MANDEL. They are the top investors, have continued to be so. And when we first came out with this list, we actually asked people who they thought were the top investors in this country and basically nobody got it right.

Mr. GUTHRIE. And so now we are moving into an unknown?

Dr. MANDEL. Yes.

Mr. GUTHRIE. At best, people say we don't know the effect.

Dr. MANDEL. We don't know.

Mr. GUTHRIE. Yes, so would you assert Title II regulation might have perverse effects on reducing investment and increasing consumer cost? Given that you have listed telecom companies among the largest contributors to investment in our country, won't that that have a significant negative impact?

Dr. MANDEL. Here is the thing. Why mess with something that is working? Under the light-touch regulatory regime, these folks were big investors and innovation has proceeded forward very rapidly. What I don't understand, what I have trouble is, why if your car is working, why replace the engine? In this case, we have a system which has produced lots of investment. We have a system that has produced lots of innovation, both in the networks and on the edge, and there has been a decision to change a regulatory system that has been working for everyone and producing innovation and investment in this industry. So I see this as creating uncertainty and problems where they did not exist before.

Mr. GUTHRIE. OK, thank you. Thank you for your testimony.

Dr. Shapiro, one of the elements that you consider in your analysis of regulatory impact is the investment climate in Europe. Can you elaborate on some of what you observed in the relationship between heavy regulation and in decrease investment deployment in Europe?

Dr. SHAPIRO. Yes. There are very useful OEC data on investment rates in—by Internet service providers in the major economies of Europe, and as well as the United States. And the regulatory regime in Germany and France, for example, the leading markets in Europe, it is not identical to Title II, but it is a much more—a much heavier form of regulation than the United States has had.

And in certain respects, it does mirror Title II. And so, again, it looked to us to be something which could tell us, suggest what are the dimensions of the effect of heavy regulation of Internet service providers? And the fact is that the capital investment rates in Europe have run about half what they run in the United States. And there are other differences between Europe and the United States. We do not attribute all of that to the regulatory change. What we say is this, again, suggests that the dimensions of the effect are likely to be large rather than small.

Mr. GUTHRIE. OK. Dr. Mandel, so you said we have had the light touch—robust investment growth; we lead the world—versus we don't know where we are going. So this is obviously a hypothetical, but what do you think if we had started the Internet revolution under Title II? Where do you think we would be now?

Dr. MANDEL. Oh, it would have proceeded much more slowly. It would have proceeded much more slowly. And, you know, I am a real fan of the app economy. I think I did the first study ever that measured the number of jobs generated by the app economy. I think we would have had a much slower introduction of the smartphone if we had Title II. We would have had a much slower ramp-up of investment in fast broadband. It just would have unfolded a lot more slowly. If you sort of look at the way it happened, you can sort of imagine that Title II, which has more permissioned innovation, would have required hearings for a lot of things that happened that have turned out to be very positive. So I think that Title II would have definitely have slowed down the Internet revolution. It would have slowed down the app revolution.

Mr. GUTHRIE. Thank you very much. I appreciate that. I yield back.

Mr. WALDEN. The gentleman's time is expired.

We now go to the gentleman from California, Mr. McNerney.

Mr. DOYLE. I am from California.

Mr. WALDEN. No, next on the list. I was making sure I didn't——

Mr. MCNERNEY. Dr. Mandel, I was intrigued by your comments on the Affordable Care Act if you don't mind. You said that is an example of the success of the Obama administration. Would you characterize that for us a little bit?

Dr. MANDEL. Oh, absolutely. If, you know, I have been doing policy for years, and it used to be that when people sort of talk about the ineffectuality of Washington, they would talk about the inability to do healthcare reform. Now, whether or not you agree with particular details of the ACA or not, it is clear that it is healthcare reform that has substantially changed the system and broadened coverage, which I consider to be the single most important thing that can be done in terms of health care. So PPI, speaking for PPI and speaking for myself, we strongly support the ACA and believe that it has been a real positive for the country.

Mr. MCNERNEY. Well, and part of the reason for the success, I think you said, is the overregulation of the healthcare system before the ACA?

Dr. MANDEL. So I, you know, I am not sure whether you had overregulation before the ACA. I think that we have had regulation of the healthcare system for many, many years under both Republican and Democratic administrations. And one of the things that has been a surprise for me as I have done this analysis is understanding that measures that were put in in health care that had really good intentions in terms of controlling costs, have ended up having perverse effects on productivity and costs going forward. And I am drawing the analogy in my testimony that you can almost think about our previous broadband regulation system and healthcare regulation as two poles. One, we had permissionless innovation, and the other one we have very permissioned innovation for many good reasons. And the investment growth has been far faster on the broadband side than on the healthcare side. And I just find it interesting and disturbing that we seem to be moving toward more regulation in broadband for good intentions without understanding that there is consequences for that. And the reason why I tried to draw the analogy with health care——

Mr. MCNERNEY. Thank you. I need to move on to some other questions. Thank you.

Mr. Economides, you commented that investment decisions require long-term planning, and we are talking about investment decisions like the ones in the Internet service providers and so on. What kind of timeframes are we talking about here?

Dr. ECONOMIDES. Well, most companies look a number of years ahead, 3 to 5 years, I would say.

Mr. MCNERNEY. Three to 5 years?

Dr. ECONOMIDES. Yes.

Mr. MCNERNEY. How do changes in the regulation or otherwise changes in the market impact this planning, investment planning process?

Dr. ECONOMIDES. Well, the demands for Internet services is growing. It is growing fast. So I expect that the telecom and cable companies will keep investing at a fast rate over time. Yes.

Mr. MCNERNEY. Thank you. One other thing. Does the investment in other sectors, you mentioned that investment in other sectors of the Internet makes could make up for the lack or low investment in the ISPs. Could you expand on that a little bit?

Dr. ECONOMIDES. Yes, sure. I think that what is going on under network neutrality is that we facilitate investment by applications and content companies, and we facilitate their operation. Their operation might not have a tremendous amount of investment, but it still has a lot of income generated and a lot of growth.

For example, if you take Facebook, the investment of Facebook is nothing to do, very small compared to AT&T's. But on the other hand, the amount of money it generates and the amount of people, the number of people it employees, and the impact on the economy, is huge. And it is crucial that we preserve the new Facebooks, the new Googles, to make sure that they get founded, they manage to operate, they manage to grow, and they manage to be successful. That is very, very important.

Mr. MCNERNEY. Thank you.

Dr. Shapiro, you mentioned that without market failures, regulations can dampen growth. Is that right?

Dr. SHAPIRO. In the absence of market failures, regulation tends to increase costs, and consequently reduce investment, yes.

Mr. MCNERNEY. But with 4 million individuals commenting on the net neutrality ruling, doesn't that indicate either a market failure or a fear of a market failure, which is almost the same thing as a market failure? I mean, that is one of the largest public inputs of any rulemaking process.

Dr. SHAPIRO. Well, there are lots of issues that people feel very strongly about, Congressman, and enough to write in about and to comment about. And the Internet is integrated into all of our lives. I also think there is probably—well, this issue as on most issues, a lot of misinformation out. So, no, I can't say that I think the public response is evidence of a market failure. A market failure has a particular meaning in economics, which is a set of conditions which induces companies to underinvest relative to a kind of optimal level of investment.

Mr. MCNERNEY. But if 4 million people chime in on this and businesses mostly in favor of Title II regulation, that is a fear. That shows a lot of fear in my mind, which is a precursor to sort of a market failure.

So at any rate, Mr. Chairman, I yield back.

Mr. LATTA [presiding]. The gentleman yields back, and the Chair now recognizes the gentleman from Missouri for 5 minutes.

Mr. LONG. Thank you, Mr. Chairman.

Mr. Louthan, in your testimony, you assert: "We believe the move by the FCC to impose Title II regulation on the Internet is a mistake that ultimately harms consumers, restricts investment, and adds unnecessary cost and burdens to the industry."

So I say welcome to Washington. And to paraphrase Ronald Reagan: "We are from the Government. We are here to help."

Could you elaborate on how the imposition of Title II regulation harms consumers?

Mr. LOUTHAN. It basically gets down to an opportunity cost. We have been living under this opportunity cost for a while with the net neutrality provisions in general. But when companies look at the potential say, OK, if I make an investment, what kind of revenue am I going to be able to generate from that and what kind of return am I going to get for that capital that I have gone out and asked small and large investors both to give to me to go out and invest? If you don't see a revenue opportunity, you are not going to make that investment.

One of the things that has had a tremendously positive impact on the industry is Google Fiber. Google Fiber came in, and that spurred additional competition. It showed where you could reduce regulation. The cities of Kansas City and Austin both reduced regulations substantially in order to incent that network build to be made, and then you saw the competitors step up and everybody has benefitted. I would argue that—and you specifically saw within that Google take specific steps for the products they sold to avoid

Title II regulation, particularly with their voice product that they had.

I would argue that with Title II, you would not have seen that. Look at the success from the wireless auctions last year which were done, by the way, before Title II came out, and most industry assumed that they would not impose Title II. All of these things are benefiting consumers in the absence of this regulation. You put more regulation on, more restrictions, and then the potential for a tremendous number of regulations that complicate things, reduce the costs and returns on investment, that is a recipe for the phone companies and the cable companies just to do less.

And just because you see them doing the same amount they did last year, doesn't mean they could have been doing more in the first place and could have gotten even better, all of which would be new products and new services for consumers.

Mr. LONG. OK, and staying with you, Mr. Louthan, in your testimony, you indicate the overhang from Title II regulations as well as the lighter net neutrality rules that preceded it have already been a drag on investment.

Does less investment being mean that broadband networks are being build out more slowly or that consumers in less populated areas are experiencing slower broadband speeds as a result of these regulations?

Mr. LOUTHAN. The current, I would say the impact from the current Title II regulations are really yet to be felt. The rate of change is very slow. However, over time, if you put more regulation and more burdens on companies, it is definitely more difficult for them to justify building out services. What can they provide? Can they provide video? Can they provide more data services? Could they provide different tiers of data services in order to attract different levels of consumers? All of these things would really play a difference. But I would argue that in general, the $60 billion to $65 billion that the industry spends today is already restricted because of the net neutrality provisions and the fear of the future provisions from Title II. It could have been a lot higher. With the difference, we won't really know unless we have I would say either a legislative solution to get rid of the up certainty.

Mr. LONG. A lot of us represent a lot of rural areas in our districts. I represent 751,000 people. Can you elaborate on how you think consumer choice is being impacted by Title II regulation of the broadband services?

Mr. LOUTHAN. To the extent that there are—those services are difficult and costly to provide. That is why we have services like Universal Service Fund and the new Connect America Fund, that should be very beneficial providing services to constituents such as yours, I would assume. If you take those, if you take additional costs from regulatory burdens, whether it is just a legal cost and the accounting cost—some of the large providers have 40- or 50-person staffs just to maintain the additional accounting costs for Title II—or you bring in price regulation or you limit how much that they can charge or resale of facilities—so a rural provider spends a lot of money to run facilities to a customer, and someone else can come in and undercut them and resell it—none of those are recipes for investment. And all of that would imply, you would see investors would be less likely to commit capital to provide those services.

Mr. LONG. I was going to ask you about a legislative solution, but you have already said that you think that would be a better approach to Title II regulation. If "the broadband industry is not as attractive to capital as it had been in the past," quote-unquote, will the industry be able to generate the money it needs to increase broadband network speeds and reach?

Mr. LOUTHAN. It will eventually. Technology itself will eventually increase the speeds because the cost of the equipment will come down over time. But I would argue it would not go up at the rate that we have seen in the past as some of the other witnesses have discussed. The rate of innovation and the rate of that is going to slow dramatically and that doesn't help consumers or businesses or governments.

Mr. LONG. Thank you. My clock has run out, and I yield back.

Mr. LATTA. The gentleman yields back.

And the Chair now recognizes the gentlelady from New York for 5 minutes.

Ms. CLARKE. Thank you, Mr. Chairman.

I thank our ranking member.

Mr. Louthan, I want to pick up on the line of questioning that my colleague just presented to you, but it takes a little bit of a different turn here.

You have emphasized uncertainty as one of the overriding concerns as we examine the investment impacts of net neutrality and Title II regs. Given the climate of uncertainty that you have highlighted, are you advising your clients that common carriers in this current climate are an unwise investment?

Mr. LOUTHAN. No, I am not because my mandate is generally about a 12- to 18-month view in the future. So in the next 12 to 18 months, I don't see a whole lot changing. I do believe it eventually goes to the Supreme Court. I am hopeful that some of the decisions to be made at the district court level the Supreme Court level that would clarify these rules and possibly throw out the Title II ruling either on procedural grounds or other reasons—for that manner, for the investment time horizon that I am mandated with, I don't really see a whole lot that changes.

And then, even if you leave, then if you go back to, well, what if it doesn't get thrown out and they leave Title II with heavy forbearance? OK, well, then we sort of know what the rules are. But what I can tell you is a discount will be put on the returns that investors will expect on this industry. The amount of risk that they will assign to it will go higher because of the potential for let's say down the road some of the things that the FCC is at least forbearing from now——

Ms. CLARKE. And at that point, you think it would be an unwise investment?

Mr. LOUTHAN. I can't say that at this point.

Ms. CLARKE. OK. Some of the testimony we have heard today mentions the harms that can come from regulation, but the fact remains that three out of four Americans do not have a choice in high-speed broadband provider. That means these consumers have nowhere to go if they are not satisfied with their broadband service. Ultimately, this is a consumer issue, not just an investment issue.

So, Dr. Economides, do you agree that the FCC has a role to play to ensure robust broadband competition?

Dr. ECONOMIDES. Yes, of course. The FCC is there to represent every part of the U.S. economy, including the consumers, and including the rest of the ecosystem, not just the telecom and cable companies. And it is important to create a level playing field in that respect.

Ms. CLARKE. We have heard a lot today about the system working fine. Would you drill down a little bit more on the ecosystem because I think that that is a point that is missing in the conversation.

Dr. ECONOMIDES. Sure. Well, I mean, the—let's think of this problem, as I said in the very beginning, of paid prioritization. The whole problem which created in the end these rules started when AT&T said that we want to kill network neutrality. And they said we want to introduce paid prioritization. So this didn't come out of nothing. It came from a move by AT&T. And paid prioritization means that if you pay, your information comes in first, and if you don't pay, it comes last. And if this gap between first and last is long, then the company that is first has a big advantage and is willing to pay a lot of money to AT&T or Verizon or a cable company to make this happen.

So, in a way, this is a way for the cable companies and the telephone companies to squeeze the sector which is the most innovative sector of the economy, which is the companies that live on the edge of the network, companies like the new Google, the new Facebook, the new whatever, that are right now given the advantage of relatively low prices, an equal playing field, and not having to deal specifically with a cable company or a telephone company before they actually provide the product.

Ms. CLARKE. Very well. Some critics of net neutrality have equated the FCC's new rules with repressive government attempts to censor information online. Dr. Economides, what is your response to these claims?

Dr. ECONOMIDES. I find it hard to believe that the FCC will start censoring our information online. I think, in fact, the lack of net neutrality rules could have that effect because if the Wall Street Journal, for example, pays for prioritization but the New York Times doesn't, then there is a skewing of the way the information comes through. So this is one of the concerns that has been expressed very extensively, a concern about the information not reaching everybody at the same time, a level playing field in political views, in newspaper distribution, and so on.

Ms. CLARKE. Very well. Thank you very much for your responses. I yield back.

Mr. LATTA. The gentlelady yields back.

The Chair now recognizes the gentlelady from North Carolina for 5 minutes.

Mrs. ELLMERS. Thank you, Mr. Chairman.

And thank you to our panel today. This has been a very, very interesting discussion.

Dr. Mandel, I would like to ask you a question. I know we were just talking about the economic ecosystem, and I have one for you as well. While much of the discussion is focused on investment of ISPs, it seems to me that there is also a logical connection to the investment decisions of the industries that touch providers. For example, I have a letter here from TIA, the trade association for equipment manufacturers, that was submitted to the committee that outlines their serious concerns with Title II approach. Can you walk us through how investment and business decisions by ISPs ripple through the economic ecosystem?

Dr. MANDEL. Absolutely. We have a situation where the edge providers need investment in the networks in order to make their applications work right. And, actually, what has been happening over the last few years, applications have been needing more and more access to data. So you can think of these things as synergistic. And this is why I am very worried about the Title II because the degree to which it sort of slows investments as regulation to the networks, that ripples out in a negative effect to the app economy, which, you know, I am as big a supporter as anybody else is. So I see this all as one big ecosystem where if you sort of impose regulations on one part or you suppress innovation there, it actually has negative effects on the rest of the ecosystem rather than positive.

Mrs. ELLMERS. So, basically, if I am understanding what you are saying, you know, we love innovation, and we love the fact that our technology universe is just expanding greatly, but at the same time, it can be its own enemy when it comes to the ability of investment and looking into the future. And we don't want to hold any of those things back, correct?

Dr. MANDEL. That is right. I also think what is important here when we talk about consumers is that consumers have done very well under the current system, which is the share of their spending going to communication services has barely risen over the last 15 years, barely risen, despite all of the increase in data that they have been using. So, you know, it has worked for consumers. It has worked for the edge providers. It has worked for the ISPs. And it is a surprise to me that we are engaging in this prospective regulation to deal with a problem that doesn't exist.

Mrs. ELLMERS. I see. Thank you, sir.

And, Mr. Shapiro, I believe you have already addressed this issue, but one more time, if you could please describe for us with the actions that the FCC has taken with the open Internet orders release, what you believe the effect is going to be on broadband and the effect of regulation on broadband investment.

Dr. SHAPIRO. Right. All of our analysis leads us to conclude that, first of all, the effect will be negative. We know the direction of the effect. There will be less rather than more investment by ISPs. And, second, that the dimensions of that are very likely to be substantial, whether it is a reduction of 5 percent, or 10 percent, or 15, or 20, we don't know. We will have to see. And that will be an unfolding process.

I think it is very important to recognize, however, that the innovations which we all value so greatly that have come out of the Internet are all ultimately based on robust, fast-rising levels of investment in Internet infrastructure. These investments, these innovations more and more are a result of the ability to tap into very large bandwidth and, you know, leading to telemedicine and tele-education as well as all of the video applications, et cetera. All of that depends on the infrastructure investment. That is, it all comes after the infrastructure investment because it is not possible without it. And so, in taking steps, which all of the evidence should lead us to conclude will have a substantial adverse effect. We have to recognize that this is not—this is harming, in effect, the engine of innovation, which is the expansion of the infrastructure.

Mrs. ELLMERS. So, I am just going to assume then that the comments that Dr. Mandel have made, that you agree with his assessment?

Dr. SHAPIRO. Yes, I do.

Mrs. ELLMERS. OK, great. Thank you, sir.

And, Mr. Louthan, to you, just touching again on this same subject of how it affects the ecosystem, I believe from your testimony already, that you also believe that it will have a negative effect on investment and also the broadband network and speed of research and innovation. Is this correct?

Mr. LOUTHAN. Yes, investment is already suppressed because of these things. And without the ability for companies to have new products and generate new revenue from the investment, they are just not going to spend more money to either—whether it is increasing speeds, extending the reach of the network, accelerating the pace of new technology invested in the network—none of these things will happen at quite the same pace that we have seen in the past when we had none of these rules and regulations and we saw no real harms.

Mrs. ELLMERS. Thank you, sir, and I yield back the remainder of my time.

Mr. LATTA. The gentlelady yields back her time.

And the Chair recognizes for 30 seconds the gentlelady from California.

Ms. ESHOO. I appreciate that, Mr. Chairman.

There's been much said about certainty, uncertainty today, and where we would find certainty would be in legislation; we have uncertainty because of what the FCC did about net neutrality.

But I would ask you to consider the following and that is: it is the ISPs that went to court that created the uncertainty. So for those of you that have restated all of this uncertainty because of net neutrality, I would ask you to consider the facts that I just placed on the table.

So thank you, Mr. Chairman.

And thank you to all the witnesses. I think it has been an excellent hearing.

Mr. LATTA. Thank you very much. The gentlelady yields back.

And the Chair would ask unanimous consent to enter the letter that the gentlelady from North Carolina referenced.

Without objection, we will enter that into the record,

[The information appears at the conclusion of the hearing.]

Mr. LATTA. And also I would also like to thank our panelists for being with us today. We really appreciate your testimony.

And on behalf of the gentleman from Oregon, the chairman of the subcommittee, and also the gentlelady from California, the ranking member of the subcommittee, and myself, I would like to thank you for being here today.

And, without any further questions, the committee stands adjourned.

[Whereupon, at 12:14 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. G.K. BUTTERFIELD

Thank you, Chairman Walden for convening today's hearing on common carrier regulation of the Internet. I understand and respect the FCC's decision to regulate wired and wireless broadband Internet services under Title II. Unfortunately, in doing so, the FCC is now having to defend that decision in court.

I knew that any move to regulate the Internet under Title II would be met with swift opposition. And that has proven to be true.

So that's why I have long advocated for a legislative solution that codifies the principles that Republicans and Democrats support without moving to more onerous Title II regulation. The two aren't mutually exclusive. There is a path forward here.

My position on Net Neutrality remains the same as it always has—I strongly support an open Internet where blocking, throttling, and paid prioritization are banned.

I do believe that a legislative solution is the most prudent and practical way forward. Absent Congressional action, I worry about the perpetual uncertainty for investors and consumers alike.

So, Mr. Chairman, I hope to work with you and our colleagues on both sides of the aisle to shape a bill that I, Ranking Member Eshoo, and others can support.

When then-Chairman Henry Waxman put forward a legislative proposal dealing with an open Internet 5 years ago, he said that we must "break the deadlock on net neutrality so that we can focus on building the most open and robust Internet possible." That statement remains very much true today.

Thank you very much, Mr. Chairman. I will submit my questions for the record.

ADVANCING GLOBAL COMMUNICATIONS
TIAONLINE.ORG

October 26, 2015

The Honorable Greg Walden
U.S. House of Representatives
2185 Rayburn House Office Building
Washington, DC 20515

The Honorable Anna Eshoo
U.S. House of Representatives
241 Cannon House Office Building
Washington, DC 20515

Dear Chairman Walden and Ranking Member Eshoo:

The Telecommunications Industry Association (TIA), the leading trade association for global manufacturers, vendors, and suppliers of information and communications technology (ICT), applauds you for holding a hearing on, "Common Carrier Regulation of the Internet: Investment Impacts." As you consider this important topic, we urge you to focus on the following areas during the hearing:

In the five years since the adoption of National Broadband Plan, significant investment has taken place. As a result the average connection speed for the U.S. as a whole in the second quarter of 2010 was 4.6 Mbps. Fast forward to 2015 – the U.S. has an average connection speed at 11.9 Mbps.[1] Even the definition of what actually constitutes broadband is becoming increasingly complex. Earlier this year the Commission effectively moved the "goalposts" for broadband earlier this year by adopting a new 25 Mbps definition.

Your Committee's hearing appropriately raises the central question: As a result of the FCC's new Title II regulatory regime, will future broadband investment continue at its prior pace?

If speeds matters, then continued investment in next-generation broadband networks is essential to realize opportunities in education, healthcare, teleworking, e-commerce, public safety, and security. These capabilities can equip users with the tools that are necessary to compete in the 21st century, making them far more productive, increasing their standards of living, and enhancing economic and physical security.

Public policy can make a significant contribution to encouraging, as well as discouraging, continued investment at the pace experienced in recent years. Since the FCC's decision to extend Title II, the net capital investment has decreased across the six largest ISPs, amounting to $3.3 billion in capital flight.[2] For more information, please contact Mark Uncapher at 703-907-7733 or by email at muncapher@tiaonline.org.

[redacted]

Sr Vice President of Government Affairs
Telecommunications Industry Association

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[1] See, Akamai, The State of the Internet: Q1 2015 Reporthttps://www.akamai.com/us/en/our-thinking/state-of-the-internet-report/index.jsp

[2] See, Forbes, "Does The Tumble In Broadband Investment Spell Doom For The FCC's Open Internet Order?" Hal Singer; August 25, 2015

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

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December 1, 2015

Dr. Robert Shapiro
Co-founder and Chairman
Sonecon, LLC
325 7th Street, N.W.
Washington, DC 20004

Dear Dr. Shapiro:

Thank you for appearing before the Subcommittee on Communications and Technology on Tuesday, October 27, 2015, to testify at the hearing entitled "Common Carrier Regulation of the Internet: Investment Impacts."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on Tuesday, December 15. Your responses should be mailed to Greg Watson, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, DC 20515 and e-mailed in Word format to Greg.Watson@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Greg Walden

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna G. Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

December 8, 2015

Dr. Robert Shapiro
Chairman, Sonecon, LLC
325 7th Street, NW
Washington, D.C. 20004

In response to questions submitted for the record by the Honorable Gus Bilirakis:

1) "You indicate that "[i]n the absence of market failures, economic analysis has generally found that regulation reduces investment." Has the broadband industry experienced a market failure?"

Response: There is no apparent market failure in the broadband industry, with regard to the Internet Service Providers (ISPs) who build and sell access to broadband service or providers of broadband content. By contrast, for example, market failures can encourage producers to pollute, based on their ability to pass along the costs of polluting to those other than themselves or their customers. Regulations to reduce pollution, therefore, can raise investment by those producers and by others, since capturing the costs of pollution in the prices of those polluting makes the economy more efficient. There is no correlative to this dynamic in broadband.

2) "You estimate a range of 5.5% to 20.8% a year in a reduction of investment, as well as a reduction of investment to capital stock on a similar negative trend. How many years will this take to irreversibly cripple the industry as a while if factors remain the same?"

Response: If Title II regulation of ISPs has the impact I expect it to have on ISP capital investment, declining quality in broadband service and rising prices for broadband access should be apparent within three to five years.

3) "I appreciate your use of direct, analogous scenarios to paint a clear picture of the challenges that lie ahead. You indicate that consumer costs and fees are likely to increase as well. Are the end consumers, my constituents, likely to bear the initial brunt of this regulation in the form of increased cost and fees?"

Response: The initial brunt of Title II regulation of ISPs will likely be borne by consumers in the form of degraded broadband service, which in turn would likely dampen the scope and pace of broadband innovation and so ultimately reduce consumer choices in broadband content. Higher fees would follow if, as expected, Title II regulation of ISPs includes a universal service requirement on the model of Title II regulation of telephony. Such a requirement would be funded by a substantial fee on consumers, which ultimately would also reduce broadband uptake.

Sincerely,

/ signed /

Robert J. Shapiro

FRED UPTON, MICHIGAN
CHAIRMAN

FRANK PALLONE, JR., NEW JERSEY
RANKING MEMBER

ONE HUNDRED FOURTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115
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Minority (202) 225-3641

December 1, 2015

Mr. Frank Louthan
Managing Director, Equity Research
Raymond James Financial
3414 Peachtree Road, N.E.
Atlanta, GA 30326

Dear Mr. Louthan:

Thank you for appearing before the Subcommittee on Communications and Technology on Tuesday, October 27, 2015, to testify at the hearing entitled "Common Carrier Regulation of the Internet: Investment Impacts."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

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Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Greg Walden

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna G. Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

The Honorable Gus Bilirakis:

1) Can you elaborate on how you think consumer choice is being impacted by Title II regulation of broadband services?
The imposition of rules that limit the types and variety of business models that can be employed inherently decreases the availability and robustness of broadband networks. Consumers are forced to take a one-size fits all broadband product with minor differences in throughput speeds rather than having the choice of throughput or content desired. These choices could open access to content to a wider variety of mediums and is likely to increase competition for content and content delivery whereby it is stifled today under the current rules.

2) What do you feel is hurting the return on investment and investment metrics you use more, the looming threat of untested legal standards or the increase in industry wide compliance costs and reporting burdens?
The threat of the legal standards is the main culprit at this moment. The rules in effect and the forbearance being applied are keeping the impact of the Open Internet Order at the same industry dampening level of investment and innovation as it always has. Therefore, we believe that returns on investment have already been negatively impacted by net neutrality rules of the past and the Open Internet Order and Title II today. But there is a much more significant threat that the forbearance can be lifted, or forced to be lifted by the courts, and significantly more onerous regulations will be applied. Longer term, all carriers will face administrative burden and costs of complying with the regulations, which lowers margins and investment returns.

3) You describe regulation, when in an effort to prevent problems that have occurred, remains a significant restriction on the industry's ability to innovate. Can you elaborate on the chilling effect to innovation?
If the industry could offer paid prioritization or even allow non-profits or government entities to accept slower services for lower monthly costs, that innovation would bring new sources of revenue, thus new investment into the network. Over the long term, we believe that these products would make the carriers improve their networks and that does benefit all consumers whether they use the products or not. The network needs to be built before any new edge products or transport products will show up, but it will not be built or improved if carriers believe they cannot get a return on their investment. Therefore the restricted investment opportunity flows back to result in less robust networks and fewer edge and content opportunities for consumers.