

NET NEUTRALITY: THE POTENTIAL WINNERS AND LOSERS IN THE
DIGITAL MEDIA SPACE THROUGH AN EVENT STUDY

by

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ABSTRACT

Throughout my entire education, I have witnessed the internet develop into a powerful tool. My thesis evolves around the direction the internet is taking, as it deals with video distribution. Coming to Texas Christian University as a FTDM major, I have always been interested in the digital media space, so to have the opportunity to connect my interests of finance and film into one thesis has been a blessing. Sometimes we take for granted how media is delivered to us, and my thesis peels back the layers to see exactly how this works in the digital media space.

I would like to thank Dr. Mann for his support throughout my research. He continued to direct me in the next steps to further my research. He always stressed the importance of learning throughout the process, and not only learning from the results. I also would like to thank Dr. Owczarski for welcoming me into her Digital Distribution class in the fall of 2015. From this class, I learned how quickly all of our media consumption is moving to the digital platform. Finally, I would like to thank my parents, Annette and Tyler Cundith. Without them, I would not have the persistence to go through the honors program and complete a senior thesis.

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1. Introduction

Back in the spring of 2000, the CEO of Netflix, Reed Hastings, flew down to Dallas, Texas, to meet with one of the largest video-renting companies of the time, Blockbuster. During the meeting, Reed pitched to Blockbuster the advantages of buying Netflix to help run Blockbuster's online services. Blockbuster and Netflix never did reach a deal, and Reed flew back home to California. Blockbuster and Netflix did not see eye-to-eye and felt a split in the road; Netflix took the route less traveled. In 2014, there were over 195 million digital video users (Statista, 2015), supporting the new emerging distribution channel for viewers to watch and rent movies online. In addition to motion pictures, video content in its entirety has shifted to the digital world to distribute content more effectively.

Media has evolved from print, to radio, to television, and most recently, digitally. As the Federal Communication Committee (FCC) states in the opening of its Title II submission, "The open Internet drives the American economy and serves, every day, as a critical tool for America's citizens to conduct commerce, communicate, educate, entertain, and engage in the world around them. The benefits of an open Internet are undisputed" (FCC, 2015). US Legal, Inc. (2015) defines digital distribution as "a distribution method in which content is delivered without the use of physical media, normally by downloading from the internet straight to a consumer's home." The consumption of content continues to grow, and, "by 2015, it is estimated that Americans will consume both traditional and digital media for over 1.7 trillion hours, an average of approximately 15 and a half hours per person per day." (Short, 2013).

Not only are Americans consuming more content daily, but they are shifting their attention away from television and more towards their laptops, tablets and mobile devices. One

newly coined term, “cord cutting,” refers to homes cutting ties with their pay TV providers and replacing them with online distribution channels. “Factoring in new household formation in the period — the fastest growth in 10 years, according to the U.S. Census Bureau — roughly 1.4 million American households either canceled pay-TV over the trailing 12 months or never subscribed” (Spangler, 2015). Cord cutting numbers have consistently increased, and another term, “cord shaving”, referring to reducing cable or satellite TV service, has increased as well. The large cable and satellite producers have recognized the digital shift and have attempted to offer more appealing plans to keep subscriptions. At the beginning of 2015, Dish launched Sling TV, a TV subscription with around a dozen channels for \$20 a month (Spangler, 2015).

In a study done by the Pew Research Center, “87% of U.S. adults say they use the internet – at least occasionally – the highest percentage captured since the Pew Research Center began measuring it in 1995” (Pew Research Center, 2014). US wireless customers consume an average of 1.8 GB of cellular data a month, not including Wi-Fi data or data consumed on other devices. With the large amount of wireless data consumption occurring, many consumers forget to acknowledge what is occurring behind the scenes with the service providers. Internet access and watching media online seems flawless, but behind the scenes there are conflicts still to be resolved. These conflicts affect the viewers tremendously, in the potential of what consumers can watch and how much they would have to pay to watch.

Online distribution is controlled by only a handful of companies called internet service providers (ISPs). Some of the top names may sound familiar: AT&T, Verizon and Comcast. These ISP’s have been regulated by the Federal Communication’s Committee (FCC) since the founding of the internet. Over the years, the FCC has lost some of its control due to the weakening of regulations on the ISPs. It is from this lack of regulation that produces the

opportunity of research. In the past decade, the ISPs and content providers (CPs) have debated how the internet should be regulated, involving the concept net neutrality. Net neutrality is now becoming more relevant term to internet users, “as more media content, usage, and sites of engagement shift to the digital space, these issues of diversity, access, and media control are the current regulatory stakes for connected viewing initiatives and, by extension, the future democratic qualities of the Internet and the accessibility of the ‘cloud.’” (Holt, 2014).

My research begins by asking the question, “is the market aware of the impact of net neutrality?” This question can potentially be answered through an extensive analysis on the internet service providers’ and content producers’ abnormal returns related to important events on the net neutrality timeline. Through this event study, I plan to also answer the question, “who has more to win?” or, “who has more to lose?”

My hypothesis is that the content producers will have greater abnormal returns related to specific net neutrality events than the internet service providers because the content producers have more to lose in the net neutrality debate. The content producers need the internet service providers to effectively deliver content. In addition, the ISPs also are older, more established companies, making it hard to influence their stock price. If the content producers lose the net neutrality debate and the internet is not regulated, then the internet service providers could charge content producers more, directly affecting the content producer’s bottom line.

2. Net Neutrality

To understand the weight net neutrality has on the ISPs and the CPs, it is important to first start at the beginning of the net neutrality timeline to see how the debate originated.

a. Brand X

In the *Brand X* case on June 27, 2005 the Supreme Court determined cable internet providers are classified as information services rather than telecommunication services, which liberated the ISPs from any common carriage requirements (Powell, 2002). Internet Service Providers (ISPs) are no longer bound by the non-discrimination policies in place for the telecommunications industry (Njoroge, 2012). *Brand X* created a limitation on the Federal Communications Committee in its power to regulate the broadband distribution space. This act put the power in the hands of the internet service providers (ISPs), and introduced the first step towards the ISPs attempt to control the internet distribution space without limitations. With *Brand X*, the FCC lost its ability to properly regulate the ISPs and have attempted to regain this ability ever since.

b. Tim Wu

Before the verdict of the *Brand X* case, the term net neutrality had not yet been coined. In January 2003, Tim Wu, a law professor at Columbia University, introduces net neutrality by first stating, “Communications regulators over the next decade will spend time on conflicts between the private interest of broadband providers and the public’s interest in a competitive innovation environment centered on the Internet” (Wu, 2003, 141). Wu’s twelve-year-old forecast of developing conflicts held true between the FCC and the ISPs: the two sides have met in front of the Supreme Court many times since. The reasoning for the conflicts between the ISPs and FCC derive from Wu’s newly introduced term: net neutrality (originally called network neutrality). Net neutrality is the belief that ISPs should distribute content fairly across all end users, without any throttling, favoring or blocking. In short, the ISPs’ responsibility is to deliver the content to the end user without any preferences.

Wu's (2003) research attempts to prove the ISPs are against net neutrality by introducing certain occasions when "operators showed an unfortunate tendency to want to ban new or emerging applications or network attachments...perhaps out of suspicion or an (often futile) interest in price-discrimination" (Wu, 2003). Wu's introduction to the ISPs greedy incentives while under little regulation is strong reasoning for why stricter regulations are needed to preserve net neutrality. Wu's statements also created more attention and produced some inquiry from the consumers on the ISPs and their operations.

Wu concludes by explaining the newness of net neutrality creates an issue in determining who decides how to define net neutrality for the ISPs and FCC. "Should neutrality be defined by IETF standards? The intuitions of network theorists? Government definition?" (Wu, 2003, 175). This question is at the stem of the decade long debate, and it becomes a deciding factor in how net neutrality will play out in the future. Net neutrality's definition is still not set in stone, and it will be an important factor to address in the research of this paper.

c. Potential Outcomes from Net Neutrality

Jennifer Holt (2014) explains how internet viewing tends to be overlooked, saying, "The ability to continually connect audiences to content cannot be taken for granted". Content providers and end users are at risk in terms of efficiency and fair pricing due to the regulatory policies in place. Holt (2014) goes on to say, "In the United States, broadband has been so deregulated that customers currently have no protections against Internet service providers (ISPs) that decide to restrict traffic emanating from various websites, or to specific users". Net Neutrality's existence is critical in terms of connecting viewers to producers in a fairly accessible infrastructure.

Holt goes on to state content providers and audiences have often had opposing viewpoints on the monetization of entertainment, where the content providers want to make an income from the entertainment produced and the audiences want to consume the media at the lowest cost possible. But around the topic of net neutrality and connected viewing, many of the interests between the audiences and content providers are well aligned; they are on the same side of the debate. “These audiences are united by their common struggle against the largely unregulated control of Internet and mobile service providers that have power over many dimensions of access in the digital spaces of connected viewing.” (Holt, 2014).

As mentioned from previous works, on one side of the debate are the ISPs, who are against net neutrality and therefore having no regulations against them and their business operations. The other side of the debate tends to be the content providers, as they are the companies that are attempting to provide their media to the end users. Paul Njoroge, Asuman Ozdaglar, Nicolás E. Stier-Moses and Gabriel Y. Weintraub conducted a game-theory research on the two-sided debate, titled “Investment in Two-Sided Markets and the Net Neutrality Debate”. The authors mention the incentives for each side, stating, “CPs argue that departing from net neutrality will allow a pricing flexibility for ISPs that will threaten content innovation...access fees and price discrimination would deter entry, reduc[ing] CP surplus.” (Njoroge, 2012, 399). Within the same article, the authors state the incentives for the ISPs, which are mentioned in the table below.

Internet Service Providers vs Content Providers view on Net Neutrality

Internet Service Providers	Content Providers
Against net Neutrality regulations	For net neutrality regulations
Net neutrality regulations would Hinder ability to recoup investment costs on broadband networks	Without regulations ISPs can threaten nascent content providers with charging providers access fees for premium distribution
No incentive to upgrade infrastructure	ISPs will threaten content innovation due to the ISP’s pricing flexibility

Through “Investment in Two-Sided Markets and the Net Neutrality Debate”, it becomes clear who the two subjects in the specific area of study are: the ISPs and CPs. Through this work and introduction, it is determined that the two subjects can be isolated to understand how the two markets work with, and against, one another. These two subjects become the primary players in the hypothesis of this paper.

The research done by Njoroge and his colleagues is a developed model to capture the potential profits and surplus from both the content providers and internet service providers. There are two versions of the model, neutral and non-neutral. The research is done on an isolated model, with no real world ISP or CP subjects. The research was not to determine the value of the companies depending on the outcome of the net neutrality debate, but rather the investment incentives for both parties.

From the findings, the authors did not agree with one of Wu’s points in his original article on the effects of access fees. “Our results suggest that access fees (payments by off-net CPs to ISPs in order to access consumers) and priority lanes could positively impact investment incentives leading to upgrades of existing network infrastructure” (Njoroge, 2012, p 399). On the other hand, part of the findings show that if the ISPs had no regulation, there would be less innovation and entry by the content providers, agreeing to Wu’s statements.

In conclusion, the research shows there is a lack of investment incentive for the ISPs in a regulated environment, but the authors also suggest areas to study further from their research. The group explains that their research is simplified and it becomes difficult to analyze the information if more factors were to be incorporated. This provides an opportunity to take a deeper look at all the different areas that would be affected by the ISPs and CPs when the

internet regulations sway one way or another. Also, the mentioning of what type of content providers are not included, where my research examines the media providers, specifically Netflix and Google.

3. The Key Players

The entertainment industry is filled with hundreds of companies, which all seem to funnel into one of the six parent companies: Paramount, Warner Brothers, Sony, Disney, Universal and Twentieth Century Fox. Holt (2014) brings up an important variable to note in my research: some of the companies who are ISPs are also related to content providers. “Comcast-NBCUniversal of course being a notable exception, as it is an integrated studio/content provider and the companies largest ISP” (Holt, 2014). The company has two subsidiaries with different incentives: the ISPs with the incentive to deregulate net neutrality, and the content providers who want net neutrality enforced. With most of the research showing ISPs have the ability to throttle, or favor, specific content they distribute, my research will assume Universal, parent company of Comcast, is not lobbying for net neutrality. With a deregulated digital distribution infrastructure, Comcast has the ability to potentially promote any of Universal’s content and block competitor’s content. Holt (2014) mentions this by stating, “There is a lingering, widespread concern that service providers aligned with/owned by content providers will begin privileging their own content at any moment, or disadvantaging that of their competitors and perpetuating their ‘ongoing shortcomings.’” This strategy will be discussed further in how it plays into the significance of the net neutrality act and its effect on the community.

In another study by Robert Chang and Jih-Hua Jhang-Li, a game theory model is used to examine if there is incentive for both ISPs and CPs to work together. The study acknowledges

the advancements in the internet streaming market, saying, “ISPs have started offering on-demand video streaming to compete with pure-play content providers. These developments have intensified the competition in both content delivery and media-streaming markets” (Chang, 2014). The two authors go on to also define internet service providers (ISPs), content delivery networks (CDNs), and content providers (CPs). The definitions map out the complexity of the internet and the needed server space to be in place for the internet to run effectively. The definition of a CP is, “simply put, streaming CPs offer on-demand media-streaming services over the Internet. Streaming CPs normally delegate the content delivery side of their business to CDNs. Major pure-play streaming CPs include Netflix and Hulu” (Chang, 2014). From this, we understand Netflix is considered a content provider and can represent the content providers whenever mentioned throughout my research. Chang (2014) also mentions some names of ISPs: Comcast, AT&T, Time Warner Cable, and Verizon.

The economic research ends with the acknowledgment of net neutrality, stating, “Beyond the various technical and economic factors analyzed in this study, the FCC’s ruling on net neutrality will continue to have far-reaching implications for the future of the streaming media market. For example, are innovations such as data plans with dynamic and tiered quality of service considered a permissible practice (with regard to net neutrality) for mobile streaming? Are data capping and bandwidth throttling necessary to rein in runaway infrastructure cost, or are they mere signs of abuse from service providers? We expect the competition landscape will continue to evolve deep inside the core of the Internet, given the intertwined regulatory, technological, and economic forces” (Chang 2014). The conclusion ends right where my research begins, as my primary focus is understanding how the market reacts to the net neutrality.

To continue, it is best to introduce the CPs and ISPs that will be used in the study. The ISPs include Verizon (VZ), AT&T (T), and Comcast (CMCSA). The CPs generate the acronym “FANG”: Facebook (FB), Amazon (AMZN), Netflix (NFLX) Google (GOOG). Having a four-versus-three debate will help create a clear two sided debate.

a. Internet Service Providers

Comcast is a large media conglomerate that offers a variety of products and services. As mentioned, Hulu is one of the subsidiaries of Comcast, which could make Comcast look to be unopposed to either side of the debate, but the largest Internet provider is against net neutrality. There was a deceiving statement from Comcast looking to possibly be supportive of net neutrality, but when read closely the company “says the Internet should fall under Section 706 of the Telecommunications Act, which gives the government far less authority to regulate Comcast’s business” (Fitzpatrick, 2014)

Verizon Communications is an American broadband and telecommunications service provider. As an internet service provider, the company has publically stated its stance on net neutrality several times throughout the timeline of the net neutrality debate. After the FCC’s ruling on Title II, Verizon released a public statement on how it feels about the committee’s decision. Michael E. Glover, Verizon senior vice president, said, “Today’s decision by the FCC to encumber broadband Internet services with badly antiquated regulations is a radical step that presages a time of uncertainty for consumers, innovators and investors. Over the past two decades a bipartisan, light- touch policy approach unleashed unprecedented investment and enabled the broadband Internet age consumers now enjoy” (Glover, 2015). Again, we see one of the companies involved in the net neutrality debate clearly pick a side.

AT&T is also a broadband and telecommunications service provider in America. The company has had the approach that the FCC won't get in AT&T's way. The CEO, Randall Stephenson interviewed with CNBC in May 2015, and "Stephenson said AT&T wasn't worried about the FCC's net neutrality rules hurting its ability to make major investments because those rules are likely to get overturned by the courts anyway" (Reed, 2015). Aside from this, AT&T and its employees were disappointed in the Title II rules. Jim Cicconi wrote in a statement, "Instead of a clear set of rules moving forward, with a broad set of agreement behind them, we once again face the uncertainty of litigation, and the very real potential of having to start over – again – in the future." (Cicconi, 2015).

In June 2015, AT&T was the first to be fined for breaking the Title II net neutrality regulations. The potential \$100 million fine comes from:

"AT&T misled consumers by limiting "unlimited" data plans, the FCC claimed Wednesday. Under AT&T's "Maximum Bit Rate" policy, it reduces the data speeds of customers paying for unlimited data plans after they use a certain amount of a data in a billing period. According to the FCC, the speeds were so slow that consumers were unable to use common applications like videos or GPS maps." (Sasso, 2015).

The fine marks an important date in the net neutrality timeline, as it is the first time we see the FCC take action to keep an open and fair internet. This action has turned the tables and made AT&T think twice about investments and the direction of digital distribution.

b. Content Producers "FANG"

Netflix introduced video streaming to its services in 2007. Today, around ten billion hours of video are watched in a quarter by Netflix users (Netflix, 2015). Within its letter the

shareholders in April 2015, Netflix mentions its stance for net neutrality. “We support strong net neutrality across the globe, allowing all consumers to enjoy the Internet access they pay for, without ISPs blocking, throttling, or influencing content in the last mile or at interconnection points. In the US, we have been vocal advocates for, and are pleased with, recent action by the FCC to assure an open and neutral Internet under its Title II authority” (Netflix, 2015). The strong support of net neutrality within Netflix’s letter to the shareholders is direct evidence of the stance the company is taking in the net neutrality debate. To have mentioned net neutrality in the letter to the shareholders also provides the weight net neutrality has on Netflix.

The only problem Netflix sees in net neutrality is the potential connection the service would have to its users. With a regulated internet that enforces equal distribution across all websites, Netflix could lose its potential streaming power. Netflix still would support a regulated and fair internet so they would not have to pay a premium for any sort of fast lane to the end users. The company’s IPO was in May 2002 (Netflix, 2002). Since then, the company has continued to be frequently traded on Nasdaq.

In October 2006, Google acquired YouTube for \$1.65 billion (Sorkin, 2006). The subsidiary of Google produces over 4 billion views on YouTube per day (Winkler, 2015). With Google’s success as an internet database and being the parent of YouTube, the company is involved with digital distribution and the net neutrality debate.

Google had been relatively quiet about the net neutrality debate until September 2014. The company created a website that read, “We stand together. Support a #freeandopen Internet” (Google, 2014). The public support from Google makes it evident the company is a CP wanting an open internet. Google emphasizes the ‘fast lanes’ argument and says, “We believe that consumers should continue to enjoy open on-ramps to the Internet. That means no Internet access

provider should block or degrade Internet traffic, nor should they sell ‘fast lanes’ that prioritize particular Internet services over others” (Google, 2014).

4. The Research

a. Background

Since net neutrality has been debated in federal court and is one of the several topics the presidential candidates have touched on, the past studies of how stocks are affected from political sway is important to address before any further research. One study has coined the relationship as the Jeffords effect. “In May 2001 Senator Jim Jeffords left the Republican Party and tipped control of the U.S. Senate to the Democrats. This paper uses the surprise event to demonstrate what I term the "Jeffords effect": changes in the political landscape have large effects on the market value of firms” (Jayachandran, 2004). Jayachandran predicts how companies will be influenced by political actions based on the companies’ soft money donations (unregulated contributions to political parties). The soft money donations are similar to the ISP and CP’s public statements on which outcome of the net neutrality act they support. Both the soft money donations and public statements help determine the potential direction of the companies’ market value, based on their support of a certain political side.

Jayachandran uses the firm’s abnormal return, the company’s return cancelling out the overall market return, to determine how a company has performed systematically. The method of research references one of the most famous articles over event studies, “Using Daily Stock Returns: The Case of Event Studies”, by Stephen Brown, a professor at Yale University and Jerold Warner, a professor at the University of Rochester. Brown and Warner’s method on event studies make up the framework for my method of research.

I applied the same experimental design to my study with net neutrality that is used in Brown and Warner’s work in “Using Daily Stock Returns: The Case of Event Studies”. Brown and Warner explain how there are two sections on a timeline when dealing with event studies. The first section is the estimation period, the time period before the specific event occurs. The estimation period is the time period used to calculate what a normal return for the subject should be. The second section is the event period, the time after the event has occurred. This section uses the calculations from the estimation period to see if there was a significant change in returns during the event period.



In Brown and Warner’s study, the estimation period reached up to 239 days, while the event period was the proceeding 11 days. They also go on to say, “For a security to be included in a sample, it must have at least 30 daily returns in the estimation period and no missing return data in the last 20 days” (Brown and Warner, 1985). Brown and Warner provide three different methods to measuring abnormal returns:

1. Means Adjusted Returns

$A_{i,t} = R_{i,t} - R_{iavg}$	$A_{i,t}$	abnormal return (event period)
	$R_{i,t}$	return at day t (event period)
	R_{iavg}	simple average of daily returns in estimation period

The means adjusted returns approach focuses solely on the stock price of the subject and does not include and market adjusted returns. The formula solves for the abnormal return in the event period by taking the difference of the normal return at day ‘t’ in the event period from the simple average of daily returns in the estimation period (R_{iavg}).

Immediately looking at the means adjusted returns formula, I noticed three weaknesses. First, there is no part of the equation that factors in the status of the market. Secondly, a simple average does not weigh the returns of the stock as it gets closer to the event period. This means a stock's simple average return in the estimation period does not clearly show what the most recent returns of the stock have been days, or weeks, before the event. Lastly, the simple average of daily returns is highly dependent on the size of the estimation period, which is under the researcher's discretion on how long the estimation period should be.

2. Market Adjusted Returns

$A_{i,t} = R_{i,t} - R_{m,t}$	$A_{i,t}$	abnormal return (event period)
	$R_{i,t}$	return at day t (event period)
	$R_{m,t}$	return on S&P 500 at day T

The market adjusted returns method takes into account the direction of the market to calculate a stock price's abnormal return. The S&P 500 is designed to be a leading indicator of the market's status and each stock within the index is weighted to by its market value. The interesting aspect of the means adjusted returns model is that there is no use of the estimation period within the formula. The abnormal returns are found by calculating the difference between the return of a stock at day t ($R_{i,t}$) and the return of the S&P 500 on the same day ($R_{m,t}$). This approach assumes every stock is affected by the market in the same amount, which could affect the results enough to where it would be helpful to use a formula that uses a beta for each of the stocks.

3. OLS Market Model

$A_{i,t} = R_{i,t} - \alpha_i - \beta_i R_{m,t}$	$A_{i,t}$	abnormal return
	α_i	alpha of estimation period

B_i	beta of estimation period
$R_{m,t}$	return on S&P 500 at day T
$R_{i,t}$	return at day t

The OLS market model uses a regression on the stock and the S&P 500 to calculate the alpha and beta of the stock during the historical period. Therefore, this model takes into account the weight that the market has on a stock to truly see what the abnormal return could be. The alpha is considered excess returns a stock has in relation to the market, and in this case the alpha subtracted out from the return at day 't' in attempt to find the abnormal return that an outside force might have helped create. A flaw within this approach is again the fact that the beta and alpha are highly dependent on the number of days the estimation period is. Due to the means adjusted returns and OLS market model both being dependent on the estimation period size, I ran two different estimation periods in my research. I chose to use a 2-month estimation period and a 6-month estimation period. I wanted to have data relatively close to the event date to be sure the returns of the stock reflected what was currently happening.

b. Events

With my research, two events were chosen to capture the affects the net neutrality debate has on both the internet service providers and content producers. The first event occurred in June of 2014 when John Oliver spoke to the public about net neutrality on his show *Last Week, Tonight*. The second event occurred in February 2015 when the FCC passed a ruling that would protect the content producers and limit the internet service provider's ability to throttle, favor or block content. It is important to note both events result in an outcome that favors the content producers.

i. *Last Week, Tonight* (Event 1)

Initially, the group that had not given too much attention to the debate were the ones that could be the most affected by net neutrality, the end users. In June of 2014 *Last Week, Tonight* host John Oliver delivered a motivating monologue to raise awareness of the potential threat an unregulated internet could have on consumers. He insisted the viewers to post their thoughts on the FCC's open comments section on the matter. "By Monday, the FCC's commenting system had stopped working, thanks to more than 45,000 new comments on net neutrality likely sparked by Oliver" (McDonald, 2014). Today, the segment has over ten million views on YouTube. John Oliver delivered a memorable speech on the timeline of net neutrality "that not only created significant buzz for his show but gave a bump to a political movement that will score its biggest victory to date on Thursday when the Federal Communications Commission is expected to buck cable companies, the GOP, and its own previous stance, to ensure protections for Oliver's beloved open-access Internet for millions of Americans" (Brody, 2015). With the end users attention developing, the net neutrality debate's weight and importance began to grow.

"The networked public sphere played a central, arguably decisive, role in turning around the Federal Communications Commission policy on net neutrality. The digitally-mediated social mobilization efforts by Internet policy advocates and coverage of net neutrality by non-traditional media sources combined to produce a large public response that was overwhelmingly in favor of strong net neutrality regulations" (Faris, 2015, 4).

ii. Title II Ruling (Event 2)

After many visits to the D.C. Circuit, and volatile movement between eliminating net neutrality and preserving net neutrality, the FCC passed open internet rules called Title II on

February 26, 2015, applying to both wired and wireless distributors. “Today, the Commission – once and for all – enacts, strong, sustainable rules, grounded in multiple sources of legal authority, to ensure that Americans reap the economic, social, and civic benefits of an Open Internet today and into the future. These new rules are guided by three principles: America’s broadband networks must be fast, fair and open—principles shared by the overwhelming majority of the nearly 4 million commenters who participated in the FCC’s Open Internet proceeding” (FCC, 2015). The primary rules are no blocking, throttling, or paid prioritization from the ISPs. Also, the FCC now has the ability to enforce these regulations, thanks to Title II.

“This day would not have happened without the support of the millions of Americans who commented with the FCC, called Congress, and wrote to the White House.” (Weinberg, 2015) This event is a strong indicator on the direction net neutrality is heading. Since the 3-2 vote passing of Title II is relatively new, there are not many academic works on the effects Title II has had, or could potentially have, on the ISPs and CPs. ISPs have already acted to overturn the FCC’s ruling and net neutrality still is a moving target it seems no one can tackle down. It is from these studies and movements of net neutrality that provide a window of opportunity to determine who the potential winners and losers of net neutrality are, as well as determining how much is to win or lose for the two competing sides.

b. Results

Exhibit A shows the results of all three models on the seven subjects in relation to both events. I decided to take a closer look at the OLS market model, since it involves a regression on the stock and the market to determine the abnormal returns. After running the OLS model on all seven companies, I created two portfolios from the abnormal returns: one consisting of content producers, and one consisting of internet service providers.

Before going any further, I wanted to see how the stocks performed ten days following the events, just to see how the performance was in both the content producers and internet service providers. Therefore, with the two portfolios I created a graph of how the stocks performed if I were to have invested \$100 on the event day.

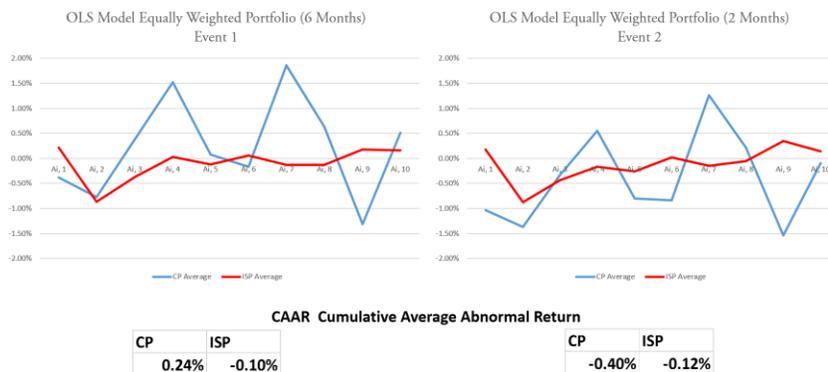
Big Picture



At first glance, the graph shows the content producers outperformed the internet service providers for event 1, and that both the content producers and internet service providers simply followed the market for event 2. I believe seeing these graphs helps show the skewedness of measuring abnormal returns.

Below are the graphs of the abnormal returns for both portfolios after the *Last Week, Tonight* event. The cumulative average abnormal return (CAAR) was calculated by a simple average of the abnormal returns during the event period, which was ten days long in my study.

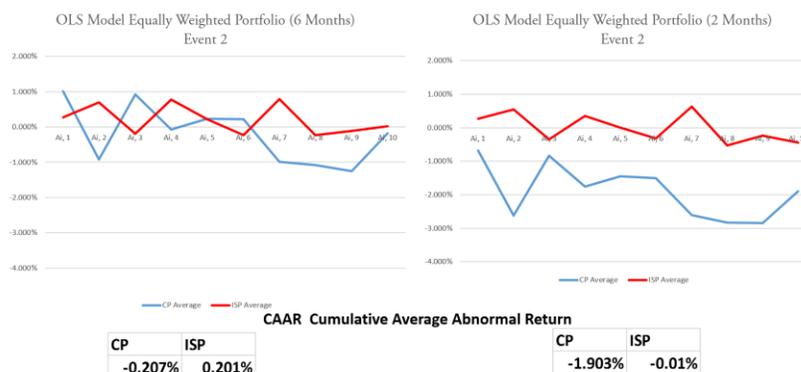
Last Week Tonight (Event 1) Results



As you can see, there is a significant difference in the CAARs depending on how large the estimation period is. The 6 month estimation period shows the content producers have a larger abnormal return, where the 2 month shows the internet service providers have a larger abnormal return.

Event 2 provided similar results compared to Event 1, in the fact that both did not provide significant evidence that shows either the content producers or internet service providers generating significant abnormal returns.

Title II Ruling (Event 2) Results



c. Conclusion

Due to significant impact the determined estimation period size has on the results, I cannot reject the null hypothesis. The events and abnormal returns of both the content producers and internet service providers provided no significant correlation. I noticed the content producers and internet service providers are more correlated with one another than I had first thought. The correlation of the content producers and internet service providers related to the net neutrality debate might not make sense, because they both are fighting on opposite sides. But, the content producers need the internet service providers to deliver their content and the internet service providers need content to be delivered to conduct their operations, therefore it makes sense as to why the two parties are positively correlated.

From this research, I have learned how difficult it is to conduct an event study and find significant evidence an event had an effect on a stock price. Concurring events during the event period can play a large role in the event study, as there might have been other events occurring in the event period window that would have affected the stock price as well. Again, it is difficult to isolate one event to determine its effect on a stock price, but Brown and Warner's method is a good starting point to see if there are any significant results.

I would have preferred to analyze more events, especially events that favored the internet service providers, like the Brand-X case. One of the problems of attempting to analyze the Brand-X case is that the public stock data for some of these companies was not around when the Brand-X case occurred. I also would have preferred to use several estimation periods, and to look more closely on how the results are affected when the estimation period is too large, or too small.

Overall, this study has helped me see how continually evolving the digital distribution space is. The net neutrality debate continues on today, as internet service providers have attempted to sue the FCC since the Title II ruling. In addition to my further knowledge on net neutrality, I have learned how skewed financial models can be, and with the overwhelming amount of factors that can affect a stock price, it is difficult to isolate one of those factors and attribute it to the returns on a stock.

Exhibit A

Facebook							Amazon							Netflix							Google							ISP Average	CP Average
Last Week, Tonight							Last Week, Tonight							Last Week, Tonight							Last Week, Tonight								
Mean Adjusted		Market Adjusted		OLS Model		Average	Mean Adjusted		Market Adjusted		OLS Model		Average	Mean Adjusted		Market Adjusted		OLS Model		Average	Mean Adjusted		Market Adjusted		OLS Model		Average		
6 month	2 month	6 month	2 month	6 month	2 month		6 month	2 month	6 month	2 month	6 month	2 month		6 month	2 month	6 month	2 month	6 month	2 month		6 month	2 month	6 month	2 month	6 month	2 month			
A _{1,1}	-0.55%	-0.50%	-0.42%	-1.06%	-1.68%	-0.64%	A _{1,1}	-0.98%	-1.04%	-1.28%	0.05%	-0.26%	-0.70%	A _{1,1}	0.05%	0.56%	0.94%	0.36%	-1.07%	0.26%	A _{1,1}	-3.08%	-1.05%	-1.14%	-0.74%	-1.32%	-1.03%		
A _{1,2}	-0.52%	-0.49%	-0.25%	-0.96%	-1.63%	-0.77%	A _{1,2}	-0.52%	-0.39%	-0.50%	0.67%	0.57%	0.05%	A _{1,2}	-1.25%	-1.52%	-1.03%	-1.67%	-2.66%	-1.70%	A _{1,2}	-3.64%	-1.62%	-1.59%	-1.37%	-1.55%	-1.52%		
A _{1,3}	0.56%	0.59%	0.56%	-0.05%	-0.62%	0.23%	A _{1,3}	0.08%	0.03%	-0.32%	0.99%	0.57%	0.27%	A _{1,3}	1.37%	0.89%	1.16%	0.46%	-1.03%	0.59%	A _{1,3}	-0.07%	-0.08%	-0.24%	0.15%	-0.24%	-0.10%		
A _{1,4}	-0.42%	-0.39%	-0.83%	-1.43%	-1.75%	-0.98%	A _{1,4}	5.68%	5.62%	4.82%	6.03%	5.35%	5.50%	A _{1,4}	1.03%	0.76%	0.56%	0.34%	-2.37%	0.02%	A _{1,4}	1.68%	1.67%	1.04%	1.37%	0.92%	1.35%		
A _{1,5}	-1.26%	-1.25%	-1.52%	-2.32%	-2.55%	-1.75%	A _{1,5}	2.10%	2.03%	1.42%	2.68%	2.30%	2.06%	A _{1,5}	0.23%	-0.04%	-0.05%	-0.59%	-2.68%	-0.62%	A _{1,5}	0.42%	0.42%	-0.02%	0.32%	-0.03%	0.23%		
A _{1,6}	0.42%	0.45%	0.52%	-0.31%	-0.73%	0.13%	A _{1,6}	-0.42%	-0.53%	-0.75%	0.58%	0.21%	-0.18%	A _{1,6}	-1.62%	-2.05%	-1.73%	-2.49%	-3.77%	-2.36%	A _{1,6}	1.02%	1.02%	0.92%	1.35%	0.92%	1.06%		
A _{1,7}	4.40%	4.44%	4.62%	3.98%	3.29%	4.15%	A _{1,7}	1.73%	1.64%	1.52%	2.89%	2.58%	2.07%	A _{1,7}	1.05%	0.77%	1.25%	0.42%	-0.60%	0.58%	A _{1,7}	-0.58%	-0.37%	-0.25%	0.36%	-0.22%	-0.18%		
A _{1,8}	-0.17%	-0.14%	0.57%	-0.32%	-1.19%	-0.25%	A _{1,8}	1.05%	0.98%	1.15%	2.67%	2.51%	1.67%	A _{1,8}	0.22%	-0.06%	0.75%	-0.26%	-0.58%	0.01%	A _{1,8}	-0.52%	-0.33%	0.05%	0.51%	0.33%	0.03%		
A _{1,9}	-2.42%	-2.42%	-1.56%	-2.30%	-3.36%	-2.42%	A _{1,9}	-2.56%	-2.63%	-2.06%	-0.55%	-0.47%	-1.63%	A _{1,9}	-1.94%	-2.23%	-1.05%	-2.30%	-1.87%	-1.82%	A _{1,9}	-3.36%	-1.37%	-1.63%	-0.32%	-0.50%	-0.80%		
A _{1,10}	0.34%	0.37%	0.02%	-0.31%	-0.99%	-0.13%	A _{1,10}	0.52%	0.25%	-0.21%	1.47%	1.25%	0.68%	A _{1,10}	1.02%	0.75%	0.92%	0.49%	-0.65%	0.51%	A _{1,10}	0.06%	0.02%	-0.24%	0.49%	0.11%	0.05%		
FCC Title II Billing							FCC Title II Billing							FCC Title II Billing							FCC Title II Billing								
A _{2,1}	0.686%	0.913%	1.216%	0.5262%	1.397%	1.067%	A _{2,1}	0.06%	0.06%	0.06%	-0.69%	-3.08%	-0.754%	A _{2,1}	0.07%	0.53%	1.13%	1.37%	-3.27%	0.072%	A _{2,1}	2.12%	2.13%	2.28%	2.67%	2.17%	2.268%		
A _{2,2}	-1.975%	-1.968%	-1.493%	-1.864%	-1.341%	-1.725%	A _{2,2}	-1.08%	-1.03%	-0.93%	-3.72%	-4.31%	-1.763%	A _{2,2}	-1.66%	-2.14%	-1.59%	-1.89%	-5.67%	-2.476%	A _{2,2}	0.51%	0.50%	0.62%	1.20%	0.62%	0.758%		
A _{2,3}	0.804%	0.833%	0.373%	0.488%	0.699%	0.693%	A _{2,3}	1.63%	1.58%	0.83%	0.77%	-1.35%	0.693%	A _{2,3}	0.94%	0.67%	0.52%	0.30%	-4.47%	-0.400%	A _{2,3}	2.30%	2.29%	1.70%	2.37%	1.82%	2.088%		
A _{2,4}	-0.572%	-0.362%	0.263%	-0.187%	0.380%	-0.050%	A _{2,4}	-0.68%	-0.13%	0.18%	-0.76%	-3.29%	-0.752%	A _{2,4}	-1.34%	-1.63%	-0.70%	-0.55%	-4.66%	-1.832%	A _{2,4}	0.38%	0.37%	0.86%	1.23%	0.65%	0.698%		
A _{2,5}	1.446%	1.476%	2.072%	1.673%	2.399%	1.762%	A _{2,5}	-0.62%	-0.75%	-0.08%	-0.98%	-3.41%	-1.014%	A _{2,5}	-1.22%	-1.50%	-0.60%	-0.46%	-4.78%	-1.732%	A _{2,5}	-0.07%	-0.08%	0.39%	0.77%	0.39%	0.243%		
A _{2,6}	0.193%	0.268%	0.264%	0.135%	0.495%	0.260%	A _{2,6}	1.53%	1.48%	1.22%	0.75%	-1.54%	0.690%	A _{2,6}	-0.67%	-0.93%	-0.57%	-0.62%	-5.18%	-1.581%	A _{2,6}	0.52%	0.32%	0.22%	0.62%	0.39%	0.354%		
A _{2,7}	-1.662%	-1.652%	-0.036%	-0.025%	-0.116%	-0.900%	A _{2,7}	-1.78%	-1.82%	-0.58%	-2.31%	-4.95%	-2.303%	A _{2,7}	-3.08%	-3.35%	-1.46%	-1.01%	-4.89%	-2.749%	A _{2,7}	-3.35%	-1.36%	0.05%	0.10%	-0.41%	-0.523%		
A _{2,8}	-0.826%	-0.801%	-1.077%	-1.039%	-0.824%	-0.963%	A _{2,8}	-0.19%	-0.21%	-0.80%	-1.04%	-3.26%	-1.388%	A _{2,8}	-2.05%	-2.33%	-2.26%	-2.40%	-7.08%	-3.225%	A _{2,8}	0.19%	0.18%	-0.19%	0.25%	-0.54%	-0.052%		
A _{2,9}	-2.563%	-2.536%	-0.663%	-0.792%	-0.791%	-1.674%	A _{2,9}	-2.18%	-2.22%	-0.69%	-2.65%	-5.41%	-2.698%	A _{2,9}	-2.55%	-2.83%	-0.68%	-0.31%	-3.88%	-2.002%	A _{2,9}	-2.45%	-2.46%	-0.74%	-0.32%	-1.49%	-1.65%		
A _{2,10}	-0.138%	-0.133%	0.218%	-0.182%	0.235%	-0.002%	A _{2,10}	-0.64%	-0.73%	-0.66%	-1.42%	-3.75%	-1.493%	A _{2,10}	0.02%	0.72%	1.57%	1.37%	-3.33%	-0.013%	A _{2,10}	-0.71%	-0.72%	-0.50%	-0.29%	-0.76%	-0.51%		
Comcast							Verizon							AT&T															
Last Week, Tonight							Last Week, Tonight							Last Week, Tonight															
Mean Adjusted		Market Adjusted		OLS Model		Average	Mean Adjusted		Market Adjusted		OLS Model		Average	Mean Adjusted		Market Adjusted		OLS Model		Average									
6 month	2 month	6 month	2 month	6 month	2 month		6 month	2 month	6 month	2 month	6 month	2 month		6 month	2 month	6 month	2 month	6 month	2 month										
A _{3,1}	0.67%	0.58%	0.62%	0.69%	0.60%	0.63%	A _{3,1}	0.16%	0.06%	0.13%	0.09%	-0.32%	0.06%	A _{3,1}	-0.30%	-0.32%	-0.16%	-0.35%	0.06%	-0.09%									
A _{3,2}	-0.46%	-0.56%	-0.42%	-0.36%	-0.39%	-0.44%	A _{3,2}	-1.54%	-1.64%	-1.46%	-1.56%	-1.74%	-1.59%	A _{3,2}	-0.70%	-0.73%	-0.64%	-0.68%	-0.46%	-0.64%									
A _{3,3}	-0.08%	-0.10%	-0.23%	-0.25%	-0.30%	-0.19%	A _{3,3}	-0.33%	-0.40%	-0.47%	-0.42%	-0.62%	-0.46%	A _{3,3}	-0.47%	-0.46%	-0.62%	-0.59%	-0.34%	-0.46%									
A _{3,4}	0.76%	0.70%	0.15%	0.35%	-0.08%	0.57%	A _{3,4}	0.24%	0.14%	-0.38%	-0.08%	-0.42%	-0.10%	A _{3,4}	0.32%	0.13%	-0.50%	-0.36%	0.09%	-0.09%									
A _{3,5}	0.36%	0.27%	-0.08%	0.02%	-0.24%	0.07%	A _{3,5}	0.26%	0.16%	-0.18%	0.02%	-0.27%	0.00%	A _{3,5}	-0.25%	-0.26%	-0.68%	-0.45%	-0.27%	-0.38%									
A _{3,6}	0.05%	-0.03%	-0.02%	0.02%	-0.04%	0.00%	A _{3,6}	0.28%	0.18%	0.23%	0.21%	-0.01%	0.17%	A _{3,6}	-0.05%	-0.06%	-0.12%	-0.09%	0.13%	-0.04%									
A _{3,7}	-0.75%	-0.24%	-0.13%	-0.05%	-0.09%	-0.13%	A _{3,7}	-0.32%	-0.22%	-0.08%	-0.14%	-0.33%	-0.18%	A _{3,7}	-0.22%	-0.23%	-0.18%	-0.20%	-0.03%	-0.17%									
A _{3,8}	-0.34%	-0.43%	0.03%	0.03%	0.18%	-0.13%	A _{3,8}	-0.33%	-0.42%	0.05%	-0.20%	-0.32%	-0.24%	A _{3,8}	-0.39%	-0.40%	-0.02%	-0.25%	-0.02%	-0.21%									
A _{3,9}	-0.30%	-0.18%	0.62%	0.57%	0.91%	0.57%	A _{3,9}	-0.69%	-0.75%	0.04%	-0.41%	-0.49%	-0.46%	A _{3,9}	0.04%	0.03%	0.77%	0.36%	0.57%	0.35%									
A _{3,10}	-0.40%	-0.49%	-0.68%	-0.52%	-0.57%	-0.45%	A _{3,10}	0.26%	0.17%	-0.03%	0.23%	0.00%	0.13%	A _{3,10}	0.55%	0.54%	0.26%	0.96%	0.75%	0.53%									
FCC Title II Billing							FCC Title II Billing							FCC Title II Billing															
A _{4,1}	-0.61%	-0.90%	-0.64%	-0.62%	-0.39%	-0.68%	A _{4,1}	0.52%	0.23%	0.48%	0.74%	0.75%	0.39%	A _{4,1}	0.65%	0.62%	1.03%	1.21%	1.04%	0.576%									
A _{4,2}	0.37%	0.28%	0.68%	0.69%	1.03%	0.63%	A _{4,2}	0.14%	0.04%	0.46%	0.70%	0.32%	0.29%	A _{4,2}	0.55%	0.14%	0.47%	0.65%	0.47%	0.576%									
A _{4,3}	0.00%	0.72%	0.22%	0.05%	-0.05%	0.53%	A _{4,3}	0.62%	-0.08%	-0.57%	-0.31%	-0.93%	-0.57%	A _{4,3}	0.21%	0.20%	-0.38%	0.01%	-0.07%	-0.062%									
A _{4,4}	0.15%	0.04%	0.60%	0.64%	1.06%	0.49%	A _{4,4}	0.14%	0.04%	0.62%	0.65%	0.26%	0.39%	A _{4,4}	-0.68%	-0.70%	-2.23%	-0.09%	-0.27%	-0.567%									
A _{4,5}	0.76%	0.68%	1.22%	1.25%	1.66%	1.12%	A _{4,5}	-0.99%	-1.03%	-0.58%	-0.29%	-0.80%	-0.75%	A _{4,5}	-1.21%	-1.22%	-0.75%	-0.61%	-0.87%	-0.508%									
A _{4,6}	-0.39%	-0.27%	-0.25%	-0.36%	-0.22%	-0.26%	A _{4,6}	-0.33%	-0.43%	-0.43%	-0.57%	-0.77%	-0.43%	A _{4,6}	-0.02%	-0.03%	-0.12%	0.15%	0.02%	0.001%									
A _{4,7}	0.00%	-0.04%	1.48%	1.69%	2.58%	1.15%	A _{4,7}	-1.32%	-1.43%	0.13%	0.34%	-0.38%	-0.49%	A _{4,7}	-1.55%	-1.56%	-0.13%	-0.39%	-0.53%	-0.749%									
A _{4,8}	0.31%	0.22%	-0.06%	-0.39%	-0.18%	0.02%	A _{4,8}	-0.15%	-0.24%	-0.52%	-0.26%	-0.87%	-0.42%	A _{4,8}	-0.41%	-0.42%	-0.78%	-0.46%	-0.54%	-0.500%									
A _{4,9}	-3.11%	-3.19%	-1.39%	-1.35%	-1.13%	-1.75%	A _{4,9}	-1.52%	-1.63%	0.00%	0.46%	-0.52%	-0.62%	A _{4,9}	-1.75%	-1.74%	-0.03%	-0.75%	-0.50%	-0.668%									
A _{4,10}	-1.11%	-1.20%	-0.90%	-1.14%	-0.94%	-1.06%	A _{4,10}	0.33%	0.24%	0.55%	0.61%	0.02%	0.35%	A _{4,10}	-0.51%	-0.52%	-0.30%	-0.24%	-0.39%	-0.391%									

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