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HYBRID SHELTER SYSTEM

Sarah Gansley, Siena College
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ABSTRACT

Homelessness is a societal problem that the Stewart B. McKinney Homeless Assistance Act of 1987 defines as either a lack of regular or fixed sleeping accommodations or participation in a temporary supervised homeless shelter. Maslow's Hierarchy of Needs describes five levels of human needs in which a person must satisfy needs in a specific order. The first two levels of this theory are psychological needs of food and shelter and safety needs for financial, social justice, and physical stability.

I developed a homeless shelter system that combines providing living and working opportunities for those who are homeless with a profit seeking operational system that over time would generate income for the shelter to allow for a self-sufficient homeless shelter system. I met with social work faculty at Siena who confirmed that my concept had merit and encouraged further development of my idea to meet some of the theoretical concerns associated with homelessness.

The next step in my process led me to meet with a social work professional. In an interview with a director of a homeless shelter, the discussion focused on the classification of chronic homelessness. Chronic homelessness relates specifically to those who have been without proper residence for a combined or consecutive 12 months and have a disabling condition. An impactful characteristic of this group of people who are homeless is the desire for comradery of fellow people who are homeless yet an independent lifestyle. This seemingly contradictory aspect of chronic homelessness led the focus of my homeless shelter system to be on the self-esteem and belongingness needs in Maslow's Hierarchy. This is part of my differentiation strategy from other shelters that provide assistance to those who are homeless, particularly chronically homeless.

Faculty members from the School of Business at Siena suggested that I was, in essence, being an entrepreneur in the world of non-profits. It was suggested that a way to further develop my idea was to examine my shelter system through the Business Model Canvas by Osterwalder and Pigneur.

I am writing an honor's thesis as part of Siena College's Honors Program. I would like to discuss with the Ted Winnowski Student Conference in Business a portion of this thesis where I use sections of the Business Model Canvas to refine:

- *the problem I am trying to address,*
- *the customers I am trying to reach,*
- *and the channels for delivering my service,*

My conclusions include that entrepreneurs in developing an effective non-profit that efficiently utilizes resources can use the tools and skills developed through business ideas.

INTANGIBLE ASSETS: ACCOUNTING, DISCLOSURE, THEORY AND EMPIRICAL EVIDENCE

Eric Armstrong, College at Brockport
Sandeep Singh, College at Brockport

ABSTRACT

Over the past thirty years or so, there has been a significant shift in the manner in which corporations derive value for their shareholders. Previously the organization of physical assets provided the primary source of value to owners. More recently as noted by Goldfinger (1999), "Dematerilization – the shift away from material products – is revolutionizing all aspects of work – its nature, its organization and of the firm and its relationship with other activities. Its function is no longer just the manufacturing of physical objects but the handling of data, images and symbols."(p. 34)

Companies are increasingly relying on intangible assets in the value creation process. Intangible assets are assets without a physical existence that are used, or likely to be used, by the holder to create a good or provide a service. In the discussion on International Accounting Standard 38 (IAS 38), the International Financial Reporting Standards Foundation (IFRS) defines an intangible asset as "an identifiable non-monetary asset without physical substance."

It is often asserted that accounting statements have not been able to successfully capture this ability of companies to use this "handling of data, images and symbols," to create value. A growing disparity in the market-to- book (MB) ratio of firms has been noted by Lev and Zarowin (1999). For U.S. companies they note that MB ratios have risen from 0.81 to 1.69 over the period 1973 to 1992. In late February 2017, the mean MB ratio for SP 500 stocks stood at 3.03 down from 5.06 in March 2000 (multipl.com).

In the last 15 years no article in our knowledge has presented a consolidated discussion on the accounting and disclosure of intangible assets under different accounting regimes. It seems that the bursting of the dot.com bubble has pushed the discussion on intangibles and their accounting to the periphery.

This article is divided into four sections. The first section provides a comparative analysis and the accounting and disclosure of intangible assets under FASB and IAS. In the second, a comprehensive discussion of the three competing theoretical constructs underlying the recognition of intangible assets is undertaken. In the third section, empirical evidence on the motivations for recognizing intangible assets is presented. In the final section, concluding remarks and suggestions for future research are provided.

According to IAS 38 intangibles are to be recognized when "it is probable that the future economic benefits that are attributable to the asset will flow to the entity; and the cost of the asset can be measured reliably." If these assets cannot be recognized under these criteria they are to be recognized as an expense.

In house development: charge all research cost to expense. Development costs are capitalized only after technical and commercial feasibility of the asset for sale or use have been established. This means that the entity must intend and be able to complete the intangible asset and either use it or sell it and be able to demonstrate how the asset will generate future economic benefits.

R&D from business combination, and development acquired in business operation are to be recognized at cost. Computer software: Purchased- at cost; software for hardware- include in hardware cost; internally developed- charge to expense until technological feasibility, probable future benefits, intent and ability to use or sell the software, resources to complete the software, and ability to measure cost; Amortization- over useful life, based on pattern of benefits.

Under IAS Firms have two choices for recognition: Cost approach and revaluation approach. Cost approach: cost less accumulated amortization and impairment losses. Revaluation model: Intangible assets may be carried at a revalued amount (based on fair value) less any subsequent amortization and impairment losses only if fair value can be determined by reference to an active market. The cost less residual value of an intangible asset with a finite useful life should be amortized on a systematic basis over that life.

The amortization method should reflect the pattern of benefits. If the pattern cannot be determined reliably, amortize by the straight-line method. The amortization charge is recognized in profit or loss unless another IFRS requires that it be included in the cost of another asset. The amortization period should be reviewed at least annually.

Under FAS the rules, as would be expected, are different. All intangibles acquired individual or with a group of other assets are recognized and measured according to their fair value. Internally developed intangibles are recognized as an expense as they occur. Assets are to be amortized over the duration of its useful life. The amortization should reflect the "pattern of economic benefits" derived from the asset. The amount should be the original cost less any residual value. Residual value for intangibles is very rare. At each reporting period, all intangibles are to be reevaluated to determine if they warrant a revision. An impairment loss may be recognized if the future cash flows are less than the carrying cost of the asset. The impairment loss is measured as the amount by which the carrying cost of an asset exceeds the fair value of the asset.

In this article a comprehensive discussion around the recognition and accounting of intangible assets is provided. A comparative analysis of accounting standards indicates that IAS provides much clearer guidance on recognition and post-recognition treatment of intangible assets. Three competing frameworks for explaining the incentives for recognizing intangible assets are discussed; contracting, signaling, strength and time cycle of the intangible. A review of empirical research on the topic indicates that providing wider discretion to management on recognition provide better conveyance of information and creates a better link between market value and accounting information. Not a significant amount of research effort has been directed on intangibles in the last ten years. Some industry specific research questions, especially in biotechnology and information industries still remain unanswered. Much research work still remains.

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NET NEUTRALITY: POLICY AND STOCK MARKET IMPLICATIONS

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ABSTRACT

From 2011 to 2015, the Telecommunications Industry faced changing FCC regulations that impacted daily business operations and stock price changes due to Net Neutrality. These changing regulations stemmed from rapidly morphing technology. The three types of firms in this study are Internet Service Providers (ISP's), Content Providers (CP's) who provide video streaming services and those who do not (ISP's, CP's streaming and CP's not streaming). During this era, the FCC went through two different regulation regimes of the Preserving the Open Internet order and the Open Internet – Bright Line Rules with two key court hearings in between. These key events were analyzed based off how the announcement of the news impacted stock prices for the thirty-nine firms in the study. The Preserving the Open Internet order impacted the firms across our study with the most relevance. Date 1 resulted in a 0.836% excess returns for the stock prices while all other variables were held constant for our firms. Date 2 resulted in a 1.6% excess returns for the stock price while all other variables were held constant for our firms. Date 3 did not result in any significant results for our firms daily. Date 4, while impacting the firms at different sample levels, did not result in any significant results for our firms daily at an entire sample level. With consumer preferences changing and firms changing business operations regularly, it is important to understand how policies, whether economically efficient or not, impact the stock market.

LITERATURE REVIEW

The Telecommunications Industry is one of the oldest industries with some of the most profitable firms in the world. Varying business strategies are paramount to the decisions these firms make with the most detailed research going into them.

Bryne aims to study the post-deregulation dynamics of the Canadian Cable Television Industry. Bryne uses data from 1990-1996 on national regulator's license ownership decision files (showing acquisition decisions, subscribership and subscription profits). The estimation is done twofold, the first being an estimation of the firms' profit functions based on their licenses' and then the estimation for the parameters of fixed, merger and entry cost functions by Simulated Maximum Likelihood (Byrne, 2010). Byrne focuses on two economic principles in the Telecommunications Industry: economies of scale (this graph can be found at: http://www.investopedia.com/terms/e/economiesofscale.asp) and economies of density (this graph can be found at: http://www.unige.ch/cyberdocuments/theses2001/HuberH/these_body.html) with profit for these firms in mind.

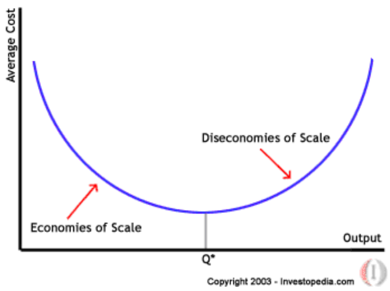

Fig. 1 – Economies of Scale

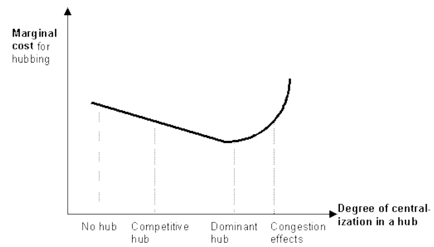

Fig. 2 – Economies of Density

The acquisition and entry model is based on an economic game written by Farrell and Scotchmer in 1988. (Farrell, J., and S. Scotchmer (1988): "Partnerships," Quarterly Journal of Economics, 103, 279–297.) The licenses are bought and sold this period, based off the acquisition behavior of the firms last period. The surplus created by the firm is based off three main things, the size of the buying and selling firms, an acquisition effect that impacts fixed costs per license and firm heterogeneity.

Bryne uses two data sets. The first deals with number of subscribers, revenue, channel counts and affiliation payments while the other deals with new license applications, license renewals and license buyouts.

The licensing method by the Canadian Government allows for revenue and decisions to be tracked year by year with data on the firm's decisions each year. Byrne finds that large cable companies earn more profits per subscriber than small ones and that this scale effect drives mergers and acquisitions (Byrner, 2010). Economies of density seems not to influence a firm's merger activity. The 1994 deregulation of the Cable Industry increases the economies scale effect on firms profits which creates a pattern of large firms buying out smaller firms. This points to deregulation being an effect in an increase in merging and acquiring business strategy. With the research that has been done on decisions and regulation regimes, the market also needs to be analyzed.

The Telecommunications has been impacted by several key news announcements including the ones in this study and the events included in the study done by Cundith. Cundith aims to look at the impact of two events in 2014 and 2015 respectively.

The first event takes place in June 2014, when John Oliver from *Last Week Tonight* gave his opinion on Net Neutrality and the Open Internet – Bright Line Rules, although not specifically stated (Cundith, 2016). In his event study, Cundith takes seven firms from the Telecommunications Industry to study with varying time lengths from ten days, two months and six months.

Cundith uses three different estimation methods in his study: Means Adjusted Returns, Market Adjusted Returns and a OLS Market Model (Cundith, 2016). The formulas for his three models are stated below. $A_{i,t}$ denotes abnormal return of the event period, $R_{i,t}$ denotes return at day t, R_{iavg} denotes a simple average of daily returns in the event period, $R_{m,t}$ denotes return on the S&P500 at day t and α_i denotes the excess returns a stock has to the market. With these different models, Cundith discusses the faults of each model focusing around the stock's simple average not expressing the previous returns of the stock, length of the estimation period not capturing the full impact of the event and the stocks not being impact by the market by the same amount (Cundith, 2016).

1) $A_{i,t} = R_{i,t} - R_{iavg}$
2) $A_{i,t} = R_{i,t} - R_{m,t}$
3) $A_{i,t} = R_{i,t} - \alpha_i - B^* R_{m,t}$

Cundith takes the results of the firms he used to create a ten-day picture if he were to have invested $100 on the day of the event. With this, he breaks up the firms into CP's, ISP's and the S&P500. Cundith found no significant results of the events and the abnormal returns of the CP's and ISP's (Cundith, 2016).

Cundith's approach to an event study is valid in many ways, but the sample size used in his study is too small to capture the full effect of the Net Neutrality news. Similarly, his first event is a talk show opinion which does not directly impact the regulation of Net Neutrality, but informs people of the debate; it is more impactful to use regulation regime changes to capture the full impact of Net Neutrality news.

TIMELINE

Net Neutrality burst onto the scene in the early 2010's. A few companies took note to Net Neutrality and took advantage of it. Before we can tell the story of Net Neutrality, we must understand the roots of the issue. The Telecommunications Act of 1996 changed the structure of the Telecommunication Industry. The act removed barriers to entry and allotted certain regulations from preventing any one company to have sole market power in a single area. This allowed local providers an opportunity to enter the market and compete (Telecommunications Act of 1996, 1996). The Telecommunications Act of 1996 created an opportunity for the market to be perfectly competitive. The market will never be perfectly competitive, but it will also never be monopolistic or oligopolistic.

In the late 2000's and early 2010's, consumers' preferences for goods have demanded increasing speed and quality; video has been the good with the most attention. From 2012 to 2016 there was an increase of 24.24% video viewers in the United States, these video viewership statistics can be found at:

https://www.statista.com/statistics/271611/digital-video-viewers-in-the-united-states/. These videos require bandwidth to stream which is provided though an Internet Service Providers' (ISP) lines to the consumer. Imagine the line being a tunnel in which the video is sent through and the early 2010's being 5 o'clock traffic. The tunnel will be too flooded with traffic. The appropriate response to this dilemma would be to allow people who do not want to sit in traffic to pay a fee to ride along a less congested highway in the tunnel. In the consumer entertainment industry, this would be to allow certain players to pay for faster connection and preferential treatment in their ISP lines. This is where we pick up on Netflix and Comcast.

Netflix had blown up with their subscriptions. To show this and the change in consumer preferences, 2010 became the first year that Netflix had more users watch their content online via streaming than receive a DVD in the mail (Federal Communications Commission, 2015). With more people were watching their content on the Internet with no slowdown in sight. The competition for bandwidth on the Internet was increasing. With more people using the Internet, any ISP line's connection would be slowed due to an increasing number of users using the Internet. Netflix experienced the problem of a public good being in the middle of their private good. Consumers needed the ISP line (that was already paid for in your Internet subscription) to not only access Netflix, but you needed the line to have a fast connection for a quality video. During this time, Netflix experimented by with paying small ISP's a fee for their video content to have preferential treatment in their lines (Ramachandran, 2014). They wanted the bandwidth of streaming Netflix to be available at all times and the quality in the line to be fast and speedy for their payment to them. Instead of attempting to find a solution to lower the bandwidth needed to stream Netflix, they went to the market to classify their content as a higher priority in some ISP lines than other content such as email or web searching.

While Netflix attempted to "pay for better play", ISP's were feeling the burden of their lines becoming public goods once a subscription was bought. Their lines became clogged. While using ISP lines, some of the sites on the Internet had become lagged because video services had become such a large part of content watched online. The more they had people stream video while using their lines, the more other sites became lagged. A lag in time to open a website, that was not video streaming, would not be burdensome to the user because the content will load and then all the content will be there. However, a lag in time to stream a video would be burdensome because the video will stream then stop to load and repeat. This is leaving the market in a place where it had not been before.

In the realm of communication and bandwidth industry, voice and text are not bandwidth intensive to provide, but video is dense and uses much more bandwidth. With the change of preferences, Internet Service Providers (ISP's) have become highly profitable, due to an increase in users. Net Neutrality became an issue for them. Should ISP's allow access to all content available on the Internet, no matter the Content Provider (CP)? Can a single ISP provide preferential treatment of content over others or block access to content? The Internet Service Provider (ISP) lines had become full of traffic causing this problem. Comcast took this to court in what is known as Comcast v. FCC (Reicher, 2011). The decision came down to the economics of what was economically efficient for the market. The court found that ISP's could slow access to specific sites or charge access for faster service of their content (Kang, 2010). This was announced April 6, 2010.

On September 23, 2011, the FCC released Preserving the Open Internet to tackle this issue. The three points stemming from this document are that all communication businesses had to be transparent in performance characteristics and terms and conditions of broadband services. They may not block lawful content, applications, services or non-harmful devices. They also may not block lawful websites or applications that compete with their voice or video communication services. They may not unreasonable discriminate in providing lawful network traffic (Preserving the Open Internet, 2011).

Verizon took on the FCC in what is known as Verizon v. FCC on July 2, 2012. Verizon argued that the FCC regulations were unconstitutional by stripping the providers of control over the transmission of speech on their networks and takes network owners property without compensation. Verizon argued that FCC was arbitrary because they enacted Preserving the Open Internet without any evidence of a systematic problem in need of a solution, recognizing that the Internet was already open and working well for consumers (Wilhem, 2012). Verizon argued the FCC was arbitrary in how they singled out broadband providers for burdensome new regulation even though other key providers in the internet economy have the same theoretical incentive and ability to engage in the conduct that concerned the FCC. Lastly, Verizon argued the FCC was outside of its authority because rather than proceeding with caution (Wilhem, 2012).

On May 9, 2012, the FCC released the Small Entity Compliance Guide:
Preserving the Open Internet; Broadband Industry Practices. The FCC discussed Transparency as: Network Practices, Performance Characteristics and Commercial Terms. With the Network Practices the broadband providers

must provide links or display congestion management, application-specific behavior, device attachment rules and security. With Performance Characteristics, the broadband providers must provide links or display service description and impact of specialized services as discussed in the document. With Commercial Terms the broadband providers must provide links or display pricing, privacy policies and redress options (Small Entity Compliance Guide Preserving the Open Internet; Broadband Industry Practices, 2012). The FCC continued to discuss No Blocking as defined that does not allow broadband providers from impairing or degrading content, applications, services or non-harmful devices to make them effectively unusable. The FCC discussed that there is not a distinction between blocking and degrading, i.e. traffic is not different. They continued to discuss that any service provider could not require content providers to pay a fee to avoid being blocked (Small Entity Compliance Guide Preserving the Open Internet; Broadband Industry Practices, 2012). The FCC discussed Unreasonable Discrimination as prioritizing traffic. The users must be allowed to choose their own bandwidth rates and reliability on their own connections for traffic. The key part of this document discussed paying for prioritization of traffic (Small Entity Compliance Guide Preserving the Open Internet; Broadband Industry Practices, 2012).

The US Court of Appeals in DC ruled that the FCC's Preserving the Open Internet rules on anti-blocking and nondiscrimination of content were overreaching on January 14, 2014 (Verizon v. Federal Communications Commission, 2014). This would ISP's to give video priority in their lines.

Comcast officially bought Time Warner Cable on February 13, 2014. Time Warner Cable would still provide their services, but under the ownership of Comcast (Stelter, 2014).

On February 23, 2014, the Wall Street Journal reported that Netflix had paid Comcast to provide faster service and prioritization of their content traffic over others (Ramachandran, 2014). This move gained much attention.

The FCC's responded with the Open Internet – Bright Line Rules which was adopted on February 26, 2015. These regulations stipulated that broadband Internet access providers could not block content, they could not throttle the content (impair or degrade the service) and they could not be paid for prioritization of content over others (Protecting and Promoting the Open Internet, 2015).

DEBATE OVER NET NEUTRALITY

The performance of the Telecommunications Industry was impacted by Net Neutrality during the early 2010's. Net Neutrality has changed business strategies of ISP's and CP's. ISP's are required to treat all content on the internet the same despite the bandwidth requirement. ISP's now offer different bandwidth levels for a consumer to choose from. ISP's cannot block content and must allow access to any application available. CP's, from social media sites to video streaming sites, cannot pay to receive faster speeds for their site. Consumers reaped the benefits of this. They can pay for the level of bandwidth speed they prefer and their CP's price would not increase. This brings the argument to competition and the many ways Michael Ciarlo, who is pro NN, sees the debate.

Ciarlo takes a free market stance on the debate over NN. He believes the internet cannot be under the control by corporations and that a free and open internet stimulates ISP competition, prevents unfair pricing practices, promotes innovation, the spread of idea, drives entrepreneurship and protects the freedom of speech (Ciarlo, 2016). The FCC has similar ideas to Ciarlo's on defending their regulations in the Bright Line Rules. The FCC cites the fact that in the three years after the Open Internet – Bright Line Rules were enacted to protect and promote innovation and investment, broadband providers invested $212 billion to enhance innovation in the Telecommunications Industry. This is more in any three-year time frame since 2002 (Federal Communications Commission, 2015). They cite the fact that in 2010 there were 70,000 devices in the U.S. connect to LTE and in 2015 there was over 127 million (Federal Communications Commission, 2015).

The argument is different from the Telecommunications firms' point of view which can be seen in Verizon v. FCC. As talked about earlier, Verizon argued that the FCC was overreaching in the fact that the market was already in an open state for users and that broadband providers were being singled out amongst other key players in the Internet business (Wilhem, 2012).

It is difficult to say that these regulations caused this growth, but these regulations were in place during the growth. The Telecommunications Industry could have performed even better without these regulations in place, but we cannot rewrite history to see what would have happened.

THEORY

There is an inefficiency in the United States Government policy towards the Telecommunications Industry and the idea of how it should be regulated. The Telecommunications Act of 1996 removed barriers to entry and allotted certain regulations from preventing any one company to have sole market power in a single area (Telecommunications Act of 1996, 1996). The local providers could provide their own cables and services to the area without the need to expand. This would lead to vast competition in local markets for the power of the fastest services.

The dynamics of streaming video on the Internet is complex. To access the internet, consumers need an Internet Service Provider (ISP) line. These are your basic companies such as: Comcast, Verizon FiOS, Time Warner Cable and Xfinity. After you have bought access into the line it becomes a congestible public good because how often you use the line does not correlate to the price. A congestible public good is a public good which is typically non-rival, but as it becomes heavily used, becomes rival

Continuing the discussion of the Economics of Net Neutrality, let us look at price discrimination. Price discrimination is when a firm sells the same product at different prices to different people so they can maximize profits. In the realm of the Internet, price discrimination would be directly charging CP's for higher quality access to an ISP's lines. This was not illegal at one point in the early 2010's, but currently is illegal. This does not prevent the ISP's from preforming secondary price discrimination. This form of price discrimination is being forced upon consumers. There are 286,942,362 internet users as of 2016, these internet statistics can be found at: http://www.internetlivestats.com/internet-users/us/. These users are facing different prices for the bandwidth speed they want. Users can sign a contract with an ISP for a different speeds and different prices. The ISP market is condensed with few ISP's controlling most of the market as shown by Fig. 3 (Leichtman Research Group, 2017).

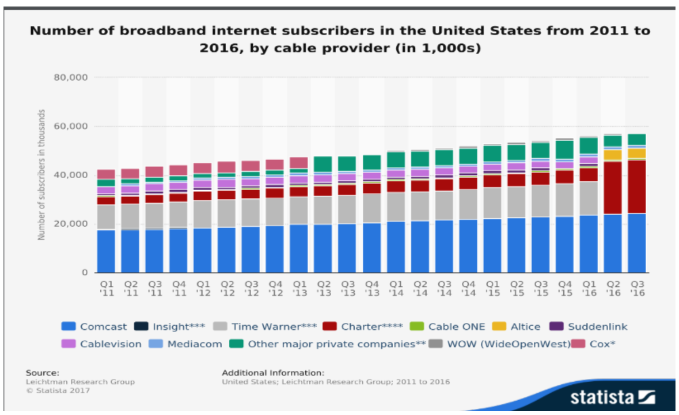

Fig. 3

When demand increases in this model, prices become higher for the users who see bandwidth as inelastic. These firms are segmenting users into different ranges. The users who view bandwidth as inelastic are sold bandwidth at a higher cost and those who view bandwidth as elastic are sold bandwidth at a lower cost. In Fig. 4, which can be found at: http://www.economicsonline.co.uk/Business_economics/Price_discrimination.html, different elasticities are combine to show how a firm can use the fact that their users treat their good differently with respect to price.

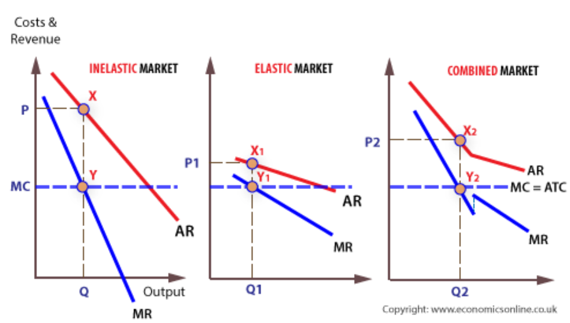

Fig. 4

The firms do not know who is in what segment, but it knows by providing different prices, they will sell more. The change in profit from secondary price discrimination is shown below in the Fig. 5 with the loss of consumer and producer surplus when the market is not perfectly competitive in Fig. 6. The ISP's offer different levels of contracts that allow you to opt into services with higher bandwidth. There are basic plans and premium plans, with a multitude of plans in between.

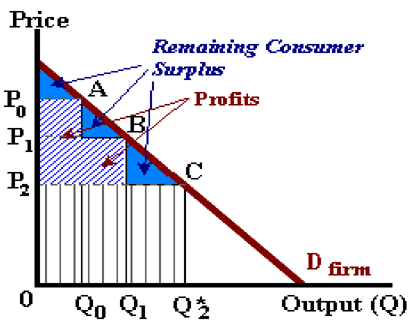

Fig. 5

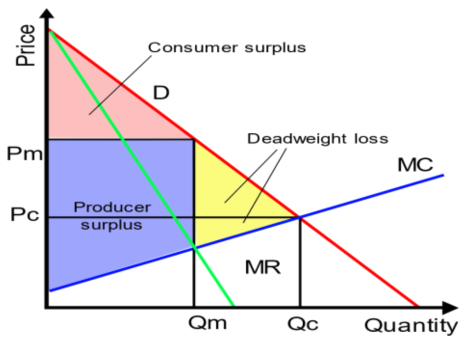

Fig. 6

The regulations during this time caused many issues for CP's and ISPs. The Bright Line Rules state that the ISP's could not block any access to content (an ISP could not deny access to any particular CP), they could not throttle the content (ISP's could not slow access or degrade the quality of content) and that the ISP's could not receive payment for prioritization of content over others. From this, CP's cannot gain faster access for their content, even if they wanted to. Their content is treated the same as any other video on the market, no matter how much it is watched. ISP's can now price discriminate to users which causes surplus problems in the market. Consumers are now put into tiers based off of how much bandwidth they want with no ability to increase their bandwidth speed without increasing their costs.

These regulations caused wins and losses for many players. The ISP's finally received policy aid in their practices. ISP's went from making a choice on what content to lag, to not being able to lag anything, to being paid for better quality to not being able to be paid for better quality to the Bright Line Rules. The content providers had a bit of different story, they were growing and saw an opportunity to prevent any reductions in the growth by paying ISP's. They then paid the ISP' and now cannot be paid for prioritization. Their content is now under the Bright Line Rules which safely guards the quality. Where does this leave the market and the consumers in it?

Content Providers and ISP's cannot pay for better play, but consumers have to pay for better quality. If the consumer's care enough about the quality of their video or if their video is being lagged that much, they can upgrade their services with the ISP's by opting into a more expensive, better quality internet connection. This will not be the last place the market stops since technology is growing too fast and companies are becoming hungrier to provide content you have access to "anytime, anywhere, any device".

The main battle today is bandwidth. In 2010 in the United States there were 222,150,226 internet users and in 2016 there are 286,942,362 internet users; that is a growth of nearly 29.2% which can be found at:

http://www.internetlivestats.com/internet-users/us/. From 2012 to 2016 in the United States, the number of video viewers has grown from 171.6 million to 213.2 million; that is a growth of 24.24% which can be found at: https://www.statista.com/statistics/271611/digital-video-viewers-in-the-united-states/.

The main good of consumption outside of text is video. Consumers want to watch the content they have paid for on any device. This requires data. Cisco Visual Network Index has tracked and predicted IP traffic globally and found that we will be using nearly 200 Exabytes by 2020, which can be found at: http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html. Figure 7 below tracks and predicts usage. Data is becoming more expensive and video is data dense. With more and more content providers becoming mobile friendly, we are witnessing a change in the goals of ISP's and CP's. This brings our discussion to surplus.

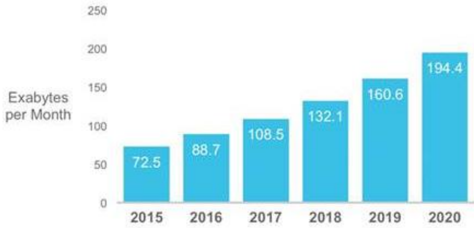

Fig. 7

The surplus gained and lost during the early 2010's changed quite frequently due to different regulation regimes. Due to NN, consumers faced a time where prices often changed and the surplus they gained changed with it. Before NN, consumers faced a time where they could use the Internet as much as they wanted with slowing speeds when faced with traffic. Consumers were gaining surplus from Internet usage up to the point where the speeds were not slowed. Currently, the surplus is split based off price discrimination. Each consumer is facing a choice to how much bandwidth they are using. They aim themselves to the level of bandwidth they require and the usage of the bandwidth is matched with the surplus you aim to gain. This is different from the division of surplus of ISP's and CP's.

In the beginning, ISP lines were abused. They gained surplus from their consumers and CP's for their payments. However, the usage was unlimited once the consumers gained access to the lines and the CP's paid for their content being streamed. Currently, the ISPs are gaining surplus from aligning the different consumers who want different levels of bandwidth correctly. The ISP's could require CP's to pay them for better access to bandwidth and form this the ISP's were gaining surplus from every payment.

The CP's are different. They experienced surplus gains from their content being allowed to be streamed endlessly originally, but before the Bright Line Rules and after Preserving the Open Internet, they were losing surplus every day. Their payments for better access was a loss of surplus that they could have had, but they needed to prioritize their content within ISP lines. Currently, the CP's are gaining from the secondary price discrimination. They are not required to make payments to ISP. They do lose out on consumers who do not have access to enough bandwidth to stream their content under the secondary price discrimination, but this is minimal because those consumers were not originally opting into their service. They are gaining every day from more consumers being able to stream their content at a high quality.

Today, the focus is being able to consolidate all telecommunications services into one company. Is it beneficial for wireless phone, data and video streaming capabilities to be under the same roof? These internal economies of scale will allow an overarching company to cut costs on all their services making the consumption of the good relatively cheaper and pushing technological innovation forward. The table below depicts the predicted impact of each event studied from 2010 to 2015 with the key dates in bold.

Telecommunications Act of 1996	1996-Present	Effect on ISP Profit	Effect on CPstreaming Profit	Effect on CPnon Profit
Comcast v. FCC	April 6, 2010	+	-	-
Preserving the Open Internet	September 23, 2011 – July 2, 2012	-	+	+
Small Entity Compliance Guide: Preserving the Open Internet; Broadband Industry Practices	May 9, 2012	+	-	-
Verizon v. FCC	July 2, 2012	+	+	+
Netflix beings Pay for Play	2013	+	+	-
US Court of Appeals in DC – Preserving the Open Internet Revoked	January 14, 2014	+	+	+
Comcast buys Time Warner Cable	February 13, 2014	+	+	-

Netflix pays Comcast	February 23, 2014	+	+	-
The Open Internet – Bright Line Rules	February 26, 2015	+	+	+

With this table, goes the hypothesis testing of how an increase or decrease in Net Neutrality and Transparency will impact future profits for each type of firm. This table depicts how each type of firm is expected to be impacted due to the strengthen or weakening of Net Neutrality and Transparency.

Impact on Future Profits				
Day 1 – Preserving the Open Internet	Increased or Decreased	ISP	CP's Streaming	CP's Non
	Net Neutrality Increased	+	+	+
	Transparency Increased	-	+	+
	Net Impact	?	+	+
Day 2 – Verizon v. FCC	Net Neutrality Decreased	+	+	-
	Transparency Decreased	+	+	-
	Net Impact	+	+	-
Day 3 – US Court of Appeals in DC – Preserving the Open Internet Revoked	Net Neutrality Decreased	+	+	-
	Transparency Decreased	+	+	-
	Net Impact	+	+	-
Day 4 – Open Internet – Bright Line Rules	Net Neutrality Increased	+	+	+
	Transparency Increased	+	+	+
	Net Impact	+	+	+

DATA

In this section, the data is discussed based off each key date and the variable associated with the study. Information on the data such as sources and descriptions of the variables used can be found in Appendix A. Following event study structure, four key dates are studied to understand their impact on the market and firms in the Telecommunications Industry. Thirty-nine firms in the Telecom Industry along with the S&P500 and the NASDAQTELE Index were included in this study for 100 business days before and after the key date in question (for a complete list of firms and indices see Appendix B). The categories divide our observations into either an Internet Service Provider, a Video Streaming Content Provider, a Content Provider who does not stream videos. The stock price event study methodology requires a control to compare the firms used in the Telecom Industry to the rest of the market. In this analysis, the S&P500 and NASDAQ Telecommunications Index were used. The S&P500 was used in the regression analysis to allow the firms of the Telecommunication Industry to be impacted by the announcement of each regime to be compared to how the rest of the market performed. The NASDAQ Telecommunications Index was used to allow the firms used in this analysis in the Telecom Industry to be compared against how the rest of the Telecom Industry performed.

These firms were chosen at regional and nationwide level to help capture the geographical effect of Net Neutrality. Along with this, different types of firms in the Telecommunications Industry were chosen, such as: ISP types for business and residential, CP's that provide streaming and those who do not. Each firm has 100 business days plus or minus for stock prices for each key date. The key dates for this event study are September 23, 2011, July 2, 2012, January 14, 2014 and February 26, 2015. These dates coincide with the FCC Regulatory regimes and changes of Preserving the Open Internet, Verizon v. FCC, US Court of Appeals in DC – Preserving the Open Internet revoked and The Open Internet – Bright Line Rules respectively. These dates are studied to understand the effect on that day of the announcement of the news. The key dates are broken into dummy variables for each firm.

These firms range from historic companies such as Walt Disney and AT&T to relatively new firms such as Etsy and Twitter. Because of this, a few of the firms do not have values for the key dates due to the firm not being on the stock market. The stock prices for each firms are normalized by using the natural log function for each stock price; this allows the data to fit our model and for the data to be normally distributed. The key variables for the regressions stem from this calculation as the daily and weekly return for each stock can be calculated for each firm. The daily return & weekly return for each stock is measured by the below equations:

1) $dlnP_1 = lnP_1 - lnP_{1,t-1}$
2) $dlnP_{1,week} = lnP_{1,t-1} - lnP_{1,t+6}$

using the day's end natural log of the stock price and t_{-1} natural log of the stock price. The weekly return is measured by using the difference between the day before the news came out on and six days after that. To help with this calculation, a day of the week dummy variable was created to help depict this. For example, the Preserving the Open Internet order was released on a Friday so for that date, the week is from that Thursday to the next Thursday to capture the impact of the news. These calculations were also performed for the S&P500 and the NASDAQ Telecommunications Index.

Table 1 in Appendix 1 presents the summary statistics for the thirty-nine firms and two indices used. The dates range from May, 2011 to July 2015 with gaps in between the 100 days plus or minus around each date. The stock prices range from a low of $1.22 to $1220.17. The stock price difference ranges from a low of -1.96849 to a high of 2.70158. This helps show us that the stocks had many different prices from day to day; bouncing from positive returns to negative returns. The mean for this change is positive at 0.00097, showing us these firms had an average of positive returns over these periods.

ECONOMETRIC MODEL

The four keys dates regarding Net Neutrality will be used along with indices. We expect to find that the S&P500 will not be greatly impacted by Net Neutrality regulations, but the NASDAQ Telecommunications Index to be impacted due to the volume of the firms in this study being in the index itself.
The firms will be analyzed in two ways. The first will be an analysis of the magnitude of the impact on the firm and the second will be a derivative function to allow us to see direction the stock price is going after Net Neutrality has been announced. With the functions, we will use the natural log of each stock price to normalize the prices to each other. The first and second equations are represented below:

1) $lnP_{firm,t} = \alpha_t + \beta_{t,1} lnS\&P50 + \gamma_t NN + \varepsilon.$
2) $\delta lnP_{firm,t} = \alpha_t + \beta_{t,1} \delta lnS\&P500 + \gamma_t \delta NN + \varepsilon$

The first form of our model uses the natural log of the firm's stock price as the dependent variable and the natural log of the S&P500 and other indices as the independent variables. This will show us the movement of the firm's stock prices relative to the S&P500 and other indices due to Net Neutrality. To capture a broader sense of the market with a control, the S&P500 will be replaced at times with the NASDAQTELE index. The second form of our model, the key function, uses the natural log of the firm's stock price as the dependent variable and the natural log of the S&P500 and other indices as the independent variables, but we are focusing on the change in the stock price for the firms. Using derivatives of both the firm's stock price and the S&P500 and other indices will allow us to help explain the change in the stock price of firms to capture excess returns due to Net Neutrality.

We expect to find abnormal returns from Net Neutrality announcements. The abnormal returns are calculated as the realized (actual) returns minus the expected returns. The realized return is the return from the impact of the event and the expected returns is the return on the price if the event had not happened. The expected return is conditional on the fact that the event in question (Net Neutrality) did not occur. The simple form of the equation is:

1) $AR_{t,i} = R_{t,i} - E(R_{i,t}).$

To take a view at what the stock price would look like before and after Net Neutrality happens, see the graph below. The announcement date that impacts firms stock prices in the graph below is date 28. The graph is an illustration of what we expect to see.

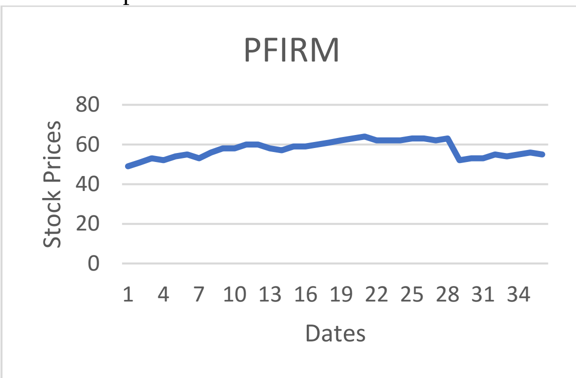

Fig. 8

RESULTS

To begin the testing on the impact of the FCC regulatory regimes of Net Neutrality on the stock market, a set of different tests were looked at for each date. To begin the testing, each date received the same treatment of changing the sample used for the regression to 1) the entire sample; 2) if CPstream equals 1, 3) if CPnon equals 1, 4) if ISP equals 1, 5) the robustness test using the weekly return if the day of the week dummy variable equals 1, 6) the robustness test using the weekly return with the NASDAQ Telecommunications Index and if the day of the week dummy variable equals 1. This testing allows us to control the sample size and to capture the full effect the announcement of a new FCC regulatory regime on the market. This will show the effect of news on the market and the market belief on how each regime will impact the market and the firms in it.

These variations are necessary for the analysis of each of the four key dates due to the announcements impacting some firms and not others. The entire sample is run to capture the impact of the news at a baseline level. This gives us a general impact of each key date. Limiting the sample to if CPstream equals 1 allows us to capture the impact of each key date on this type of firm. Changing the sample to if CPnon equals 1 shows the impact on the firms who are text rich sites and do not require a lot of bandwidth to access them. Limiting the sample to if ISP equals 1 shows the impact on companies who provide the bandwidth to access any CP site. Regulations during this time shaped the horizon for how these firms could operate and had direct impact on their decision making. There are many pitfalls when using the baseline regression due to the varying types of firms in the Telecommunications Industry. The variance allows us to see how different types of firms were impacted due to a certain news announcement; for example, ISP's were certainly not in favor of the Open Internet – Bright Line Rules due to fact that paying for prioritization of content by CP's is illegal.

In Table 2, Date 1 (located in Appendix D) – Preserving the Open Internet (September 23, 2011), is tested to see how the announcement of the new FCC regulatory regime impacted the market and the firms tested in it. The data collected is from May 6, 2011 to February 22, 2012 for the thirty-nine firms and two indices. Columns 1) - 6) are the different sample variations for each test. The different variations in the sample allow for the regressions to tell different stories on how Preserving the Open Internet impacted the firms. In columns 2) – 4), the sample is modified for the regressions to only regress the firms that are Content Providers that stream video, firms that are Content Providers and do not stream video and firms that are Internet Service Providers. Columns 5) and 6) show us the Robustness Tests on the sample to see a larger picture of what is going on.

The results are mixed with the predictions on how firms would be impacted by Preserving the Open Internet. For Date 1, ISP's were predicted to take a negative impact on their profit due to the nature of the order and both CP groups were predicted to experience a positive impact on profit due to the order. This document was the first order to attempt to make the Economics of Internet efficient. It aimed to make all business transparent, unlawful for the firms to block any content and unable to discriminate in network traffic. In columns 1), 2) and 4), Date 1 is positively and significantly related at the 1% significance level excess returns of the stock price. This reveals that the Preserving the Open Internet order impacted the firms at an entire sample level, but when the sample was restricted based on Content Providers that do not provide video streaming, our dependent variable was not significant. It is noteworthy to say that this sample for Date 1 yields a negative impact on non-video streaming Content Providers. From this it can be said that Date 1 results in a 0.836% change in the difference in the excess returns of the stock prices while all other variables were held constant. Continuing with columns 1) – 4), the independent variable of the daily difference of the S&P500 is positively and significantly related at the 1% significance level to our dependent variable. These regressions yield extremely high t-statistics leading to the belief that the Preserving the Open Internet order led the market to believe that this order would be beneficial for the market or from simple growth of the market. From this, using column 1, it can be said that a one percent change in the excess returns of the S&P500 results in a 1.063% change in the expected value of excess returns of the stock prices while all other variables were held constant.

For the discussion of Date 1, columns 5) and 6) are not significant for Date 1. Conversely, columns 5) and 6) show a different story of how the Preserving the Open Internet order impacted the indices. These columns show a positive and significant at the 1% significant level relationship between the weekly return of the S&P500 and the NASDAQ Telecom Index to the firms' weekly returns.

In Table 3, Date 2 (located in Appendix D) – Verizon v. FCC (July 2, 2012) is tested to see how the announcement of the overreaching authority of the Preserving the Open Internet impacted the market and the firms tested in it. The data collected is from February 13, 2012 to November 29, 2012 for the thirty-nine firms and two indices.

The predictions were correct on how firms would be impacted by Verizon v. FCC. For Date 2, ISP's and both CP groups were predicted to experience a positive impact on future profit. This ruling stated that Verizon was correct in their statement that the FCC was out of their authority. In columns 1) and 4), Date 2 is positively and significantly related at the 1% significance level to the excess returns of the stock price. This reveals that Verizon v. FCC impacted the firms at an entire sample level, but when the sample was restricted to either type of CP, our dependent variable was not significant. It is noteworthy to state that the sample restriction to only ISP's is positively significant at the 1% significant level. From the entire sample, it can be said that Date 2 results in a 1.6% change in the excess returns of the stock prices while all other variables were held constant. At the ISP level, it can be said that Date 2 results in a 2.39% change in the excess returns of the stock prices while all other variables were held constant. In columns 1) – 4), the independent variable of the difference between days of the S&P500 is positively and significantly related at the 1% significance level to our dependent variable. These regressions also yield extremely high t-statistics leading to the belief that Verizon v. FCC led to the market belief that this would be beneficial for the market or the market experienced simple growth. From column 1, it can be said that a one percent change in the difference in the natural log of the S&P500 results in a 1.63% change in the expected value of the excess returns of the stock prices while all other variables were held constant.[1]

For Date 2, the key regression is in column 6), the Robustness Test with the Monday dummy variable & using the NASDAQ Telecommunications index. This regression is positive and significant at the 5% significance level. This reveals that the test captured Verizon v. FCC as a positive impact on the market at a weekly basis. From this it can be said that Date 2 results in a 1.43% change in the weekly difference in the excess returns on the stock prices while all other variables were held constant. Columns 5) and 6) confirm the results about the positive impact of Verizon v. FCC on the market. These columns show a positive and significant at the 1% significance level relationship between the weekly return of the S&P500 and the NASDAQ Telecom Index to the firms' weekly returns. These high t-statistics show a strong relationship between how the stock market was performing and the weekly return of the firms during these dates.[2]

In Table 4, Date 3 (located in Appendix D) - US Court of Appeals in DC – Preserving the Open Internet Revoked (January 14, 2014), is tested to see how the announcement of an FCC regulatory regime being revoked impacts the market and the firms tested in it. The data is collected from August 8, 2013 to June 13, 2014 for the thirty-nine firms and the two indices.

Our predictions were mixed on how firms would be impacted by the Preserving the Open Internet being revoked by the US Court of Appeals in DC, but these results are not significant. For Date 3, ISP's were predicted to experience a positive impact on their profits due to an order that limited their practices being revoked, both CP groups were also predicted to experience a positive impact on profit due to an opening up of more practices they can perform in their business. The predictions for ISP and CP's who do not provide video streaming were both correct, but CP's who provide video streaming experienced a negative impact on their profits[3]. This can be explained by the

[1] These figures are roughly the same throughout each Date and will not be mentioned again.
[2] These figures are roughly the same throughout each Date and will be mentioned as concept points.
[3] These results are depicted the sign of the coefficient and are not significant.

fact that the market was in a state of question; since the order was revoked, the market belief must have been unclear on how the market would react to this news. Columns 1) – 4), the difference between days of the S&P500 is positively and significantly related at the 1% level to our dependent variable.

The Robustness Test for Date 3 contain significant answers with column 5) and 6) significant at the 1% significance level to the weekly excess returns of the stock price. It is noteworthy that the signs on our coefficients in columns 5) and 6) are negative which is opposite of columns 1), 3) and 4) and what was predicted for this date.

This could possibly be explained in the same fashion as above: the market was in a state of question and was unsure how the order being revoked would impact the Telecommunications Industry or the market experienced simple contraction. With the US Court of Appeals in DC revoking the Preserving the Open Internet order, the next regime of the FCC over the Telecommunications Industry is the Open Internet – Bright Line Rules.

In Table 5, Date 4 (located in Appendix D) - The Open Internet – Bright Line Rules (February 26, 2015) is tested to see how the announcement of a new FCC regulatory regime impacted the market and the firms tested in it. The data is collected from October 9, 2014 to July 28, 2015 for the thirty-nine firms and the two indices.

The predictions were partially correct on how firms would be impacted by the new regime of the Open Internet – Bright Line Rules, with two significant results. For Date 4, ISP's and both CP groups were predicted to experience positive impacts to their profits. This was not the case; both CP groups experienced positive returns (video streaming CP's was not significant), but ISP's experienced a negative impact on profit. The two significant regressions are columns 3) and 4); these regressions contain the samples for CP's who do not provide video streaming and ISP's respectively. This document aimed to fix the inefficiencies that CP's and ISP's had fought over in court. Stemming from this document the new regulations stated ISP's could not block content, degrade their service or be paid for prioritization of content over others. In column 3), Date 4 is positively and significantly related at the 1% significance level respectively to excess returns of the stock price. In column 4), Date 4 is negatively and significantly related at the 10% significance level respectively to the excess returns of the stock price. From this it can be said that Date 4 results in a 1.18% change in excess returns of the stock prices while all other variables were held constant. Also, it can be said that Date 4 results in a -0.734% change in the excess returns of the stock prices were held constant. Column 3) tells an interesting story that CP's who do not provide video streaming services benefited from these rules. This can be from the fact that their sites cannot be impaired, blocked or put lower in a priority level in bandwidth traffic for other sites that are CP's who provide video streaming services. Column 4) also tells an interesting story that was not expected: ISP's were hurt from these new regulations. ISP's could no longer receive payments for prioritization of content over others, they could not impact the Internet in a way that was most profitable for them. The Robustness Test for Date 4, the Open Internet – Bright Line Rules revealed significant results in column 5). This regression is negative and significant at the 1% significance level. This reveals that the test captured the Open Internet – Bright Line Rules as a negative impact on the market at a weekly basis. From this it can be said that Date 4 results in a -1.10% change in the weekly difference in the excess returns on the stock prices while all other variables were held constant. The Robustness Test also confirmed our results from the previous 3 dates about index level data that the weekly returns for the index level showed either simple growth/contraction over time or that there was a market belief that these regulations would be good or bad for the market.

CONCLUSION

The Telecommunications Industry has been rapidly changing since the early 2010's. This has allowed for consumer preferences to change with it. Net Neutrality has been on the forefront of debate since. Different firms have different views on Net Neutrality depending on the type of firm you are. ISP's are against strong Net Neutrality due to the belief that it will slow their technological progress on their networks. CP's who stream videos on their site believe that without strong Net Neutrality, they will be put under monopolistic circumstances. CP's who do not stream videos on their site believe that they will be marginalized due to the lack of bandwidth needed to load their site.

While few studies have been done on Net Neutrality, Cundith aims to study specific impacts of key dates on stock prices of firms in the Telecommunications Industry from 2011 to 2015. Cundith aims to use three different estimation methods: Means Adjusted Returns, Market Adjusted Returns and a OLS Market Model. These methods allow him to control for the weight that the market has on a stock to capture the excess returns (Cundith, 2016). While Cundith explored the impact of news announcements on stock prices, Bryne aimed to look at the post-deregulation dynamics of the Canadian Cable Television Industry from 1990 to 1996. Bryne looked at the firms' profit functions based on the licenses they hold while using Simulated Maximum Likelihood estimation on fixed, merger and entry cost functions (Bryne, 2010). Bryne's research looked at economies of scale and economies of density and how that impacted firms merging with other firms.

The FCC came out with two different regulation regimes for Net Neutrality. The Preserving the Open Internet order stated all businesses must be transparent and ISP's cannot unlawfully block or impair network traffic at their will. ISP's took this matter to court with the result that the FCC was out of their authority with their regulations. In 2014, the US Court of Appeals in DC ruled that the FCC's Preserving the Open Internet order were overreaching when discussing anti-blocking and nondiscrimination of content. The Open Internet – Bright Line Rules were released in 2015 with the main points stemming from ISP's could not block or impair content and ISP's could not be paid for prioritization. These regulations helped keep the Telecommunications Industry away from any monopolistic circumstances.

Under the Bright Line Rules, ISP's can now second degree price discriminate against consumers. Consumers can choose and pay for bandwidth they plan on using per month allowing for firms to segment consumers into categories of bandwidth. This strategy allows for surplus to be gained by consumers because they can choose exactly how much bandwidth they require. ISP's lose out on surplus due to this because they can no longer charge a single price across segments, but they do gain surplus from second degree price discriminating. After collecting data from 2011 to 2015 on thirty-nine firms in the Telecommunications Industry based, the firms were split into three categories of ISP's, CP's who stream video and CP's who do not. The daily and weekly returns were calculated for these firms to allow for testing on excess daily and weekly returns. The event study model allowed the tests to capture the impact of news of Net Neutrality while controlling for the S&P500 and the NASDAQ Telecommunications index.

The first date, Preserving the Open Internet, confirms our hypothesis on how the firms would be impacted and reveals how ISP's would be impacted. This date results in a 1.05% change in the excess returns for the stock prices for ISP's while all other variables were held constant. This reveals that the impact of regulation on ISP's was beneficial for them at the time; ISP's now understood what regulation to abide by and could operate business per that. This date also resulted in a 0.95% change in the excess returns for stock prices for CP's who provide video streaming services while all other variables were held constant. Content Providers who provide video streaming services were helped by these regulations because ISP's had to abide by them. The second date, Verizon v. FCC, confirmed our hypothesis on how the firms would be impacted. This date resulted in a 2.39% change in the excess returns for the stock prices for ISP's while all other variables were held constant. This date was predicted to cause a positive impact to ISP's since the FCC was ruled to be out of their authority with their regulations. This led to more freedom for the ISP's to operate. The third date, US Court of Appeals in DC – Preserving the Open Internet Revoked, did not provide any significant results. This could be from a lack of knowledge of how the Telecommunications Industry was going to shape after deregulation. The fourth date, the Open Internet – Bright Line Rules, depicted conflicting results to our hypothesis on how firms would be impacted. This date resulted in a -1.10% change in the excess returns for the stock prices for ISP's while all other variables were held constant. This date was predicted to cause a positive impact to ISP's, but provided a negative impact since the strong Net Neutrality regulations caused more difficulties for ISP's to operate. Date 4 confirmed our predictions on how these regulations would impact CP's who do not provide video streaming services. This date resulted in a 1.18% change in the excess returns for the stock prices for ISP's while all other variables were held constant. These firms' content would no longer be put on a lower prioritization by ISP's.

Furthermore, research on the entirety of the market should be done. Market structure is one component that should be included in further research. During the early 2010's several firms began to align themselves horizontally with firms to provide specific services to each other, but this has changed as of late. With new regulations in place, firms are beginning to vertically align themselves in the Telecommunications Industry to cost effectively provide their product. Firms such as Comcast have been vertically merging with NBC to provide their content seamlessly. Comcast is an ISP who provides the internet, so you can watch any show that NBC produces on their channel. This is one case of vertical alignment and it may not be the last.

Research on market structure is not the way to understand Net Neutrality; growth of technology is a key factor that will shape how the Telecommunications Industry looks in years to come. With the change of consumer preference to "anywhere, anytime" media, there will need to be an increase in the technology supporting that. Download speed of content and advertising over the Internet is bound to increase due to Moore's Law. This competition for the best supporting technology to changing consumer preferences will help propel the Telecommunications Industry in the future.

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APPENDIX

A – Data description

Dependent Variable	Description	Source
price	Stock price of a firm.	Yahoo Finance
lnprice	Natural log of the stock price of a firm.	Yahoo Finance
dlnprice	Daily difference in the natural log of the stock price of a firm.	Yahoo Finance
rtn7	The weekly return of the natural log of the firms stock price from a given day.	Yahoo Finance
Independent Variables		
date	The date starting from May 6, 2011 to July 28, 2015.	Authors Calculation

days	The number of days since May 6, 2011.	Authors Calculation
fridaydum	A dummy variable Given to a day of the week if it is a Friday; coded 0 or 1.	Authors Calculation
thursdaydum	A dummy variable given to a day of the week if it is a Thursday; coded 0 or 1.	Authors Calculation
tuesdaydum	A dummy variable given to a day of the week if it is a Tuesday; coded 0 or 1.	Authors Calculation
mondaydum	A dummy variable given to a day of the week if it is Monday; coded 0 or 1.	Authors Calculation
firm	The name of the firms involved in the study.	Yahoo Finance
firmnum	The number given to each firm ranging from one to thirty-nine.	Authors Calculation
date1poi	A dummy variable given to the date in which the Preserving the Open Internet Order was released on; coded 0 or 1.	Authors Calculation
date2vvfcc	A dummy variable given to the date in which Verizon v. FCC was released on; coded 0 or 1.	Authors Calculation
date3poir	A dummy variable given to the date in which the Preserving the Open Internet Order was revoked on; coded 0 or 1.	Authors Calculation
date4blr	A dummy variable given to the date in which the Open Internet - Bright Line Rules was released on; coded 0 or 1.	Authors Calculation
isp	A dummy variable for the type service provided by a Telecommunications Firm; coded 0 or 1.	Authors Calculation
cpstream	A dummy variable for the type service provided by a Telecommunications Firm; coded 0 or 1.	Authors Calculation
cpnon	A dummy variable for the type service provided by a Telecommunications Firm; coded 0 or 1.	Authors Calculation
sp500	The S&P500 Index price.	Yahoo Finance
lnsp500	The natural log of the S&P500 Index price.	Yahoo Finance
dlnsp500	Daily difference in the natural log of the S&P500 Index price.	Yahoo Finance
nasdaqtele	The NASDAQ Telecommunications Index price.	Yahoo Finance
lnnasdaqtele	The natural log of the NASDAQ Telecommunications Index price.	Yahoo Finance

dlnnasdaqtele	Daily difference in the natural log of the S&P500 Index price.	Yahoo Finance
rtn7_sp	The weekly return of the natural log of the S&P500 Index price from a given day.	Yahoo Finance
rtn7_nastele	The weekly return of the natural log of the NASDAQ Telecommunications Index price from a given day.	Yahoo Finance

B – Firm description

Firm	ISP	CPSTREAM	CPNON
AMC Networks	0	1	0
ATT	1	0	0
Alaska Communications System Group	1	0	0
CBS	0	1	0
Century Link	1	0	0
Charter Communications	1	0	0
Cincinnati Bell	1	0	0
Comcast	1	0	0
Discovery Communications	0	1	0
Dish	1	0	0
Ebay	0	0	1
Etsy	0	0	1
Fox	0	1	0
Fronteir Commununications Corp	1	0	0
General Communication	1	0	0
Google	0	0	1
IDT	1	0	0
IMAX	0	1	0
Level 3 Communications	1	0	0
Linkdin	0	0	1
Lions Gate Entertainment	0	1	0
MSG Networks	0	1	0
Microsoft	0	0	1
NY Times	0	0	1
Netflix	0	1	0
Pandora	0	1	0
Scripps Network Interactive	0	1	0
Sony	0	1	0
Starz	0	1	0
Telephone and Data Systems	1	0	0
Time Warner Cable	1	0	0

Tmobile	1	0	0
Twitter	0	0	1
United States Cellular Corporation	1	0	0
Verizon	1	0	0
Viacom	1	0	0
WWE	0	1	0
Walt Disney	0	1	0
Windstream Communications	1	0	0

C – Table 1 Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
date	0				
days	31,083	743.8758	494.2163	0	1544
friday	31,083	.5151461	.2958587	0	.8571429
fridaydum	31,083	.2032622	.4024325	0	1
thursday	31,083	.4572504	.3326719	0	.8571429
thursdaydum	31,083	.2007528	.40057	0	1
tuesday	31,083	.3326761	.2891874	0	.8571429
tuesdaydum	31,083	.2070263	.4051811	0	1
monday	31,083	.2898369	.2001451	0	.5714286
mondaydum	31,083	.1856964	.3888677	0	1
lnprice	29,848	3.423352	1.104732	.198851	7.10675
firm	0				
firmnum	31,083	20	11.25481	1	39
price	29,848	61.46545	119.8572	1.22	1220.17
dlnprice	29,734	.000097	.0312651	-1.96849	2.70158
date1poi	31,083	.0012547	.0354002	0	1
date2vvfcc	31,083	.0012547	.0354002	0	1
date3poir	31,083	.0012547	.0354002	0	1
date4blr	31,083	.0012547	.0354002	0	1
isp	31,083	.4615385	.4985265	0	1
cpstream	31,083	.3589744	.4797074	0	1
cpnon	31,083	.1794872	.3837659	0	1
sp500	31,083	1631.33	329.8737	1099.23	2130.82
lnsp500	31,083	7.376507	.203642	7.00237	7.66426
dlnsp500	30,966	.0003891	.01037	-.068958	.046317
nasdaqtele	31,083	228.5574	33.14281	170.15	289.45
lnnasdaqtele	31,083	5.421154	.1462899	5.13668	5.66798
dlnnasdaqt~e	30,966	.0000512	.0131329	-.078689	.078227
rtn7	28,266	.0003512	.0686461	-1.89766	2.812895
rtn7_sp	29,445	.0018002	.0218591	-.13942	.0834403
rtn7_nastele	29,445	.0001526	.0284973	-.1496501	.1122799

D – Regression Results

Table 2: Date 1
Preserving the Open Internet

	(1)	(2)	(3)	(4)	(5)	(6)
SAMPLE	ALL	CP=1	CPNON=1	ISP=1	ROBUST TEST, TUESDAY=1	ROBUST TEST, TUESDAY=1 & NASDAQTELE
VARIABLES	dlnprice	dlnprice	dlnprice	dlnprice	rtn7	rtn7
dlnprice						
date1poi	0.00836***	0.00965**	-0.00278	0.0105***		
	(3.109)	(1.995)	(-0.806)	(2.871)		
dlnsp500	1.063***	1.040***	1.168***	1.051***		
	(66.48)	(40.99)	(30.05)	(43.87)		
rtn7						
F3.date1poi[4]					-0.0230	0.00512
					(-1.543)	(0.343)
rtn7_sp					1.087***	
					(34.74)	
rtn7_nastele						0.736***
						(27.44)
Constant	-0.000332*	-0.000292	-0.000631	-0.000273	-0.00109	0.000535
	(-1.957)	(-1.056)	(-1.505)	(-1.091)	(-1.300)	(0.623)
Observations	29,734	11,061	4,381	14,292	5,800	5,800
R-squared	0.124	0.122	0.154	0.117	0.119	0.095

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Notes: Robust t-statistics are in parentheses. Asterisks indicate statistical significance

[4] F3 was used in Stata to help the day dummy variable control for start of the weekly return.

Table 3: Date 2
Verizon v. FCC

	(1)	(2)	(3)	(4)	(5)	(6)
SAMPLE	ALL	CP=1	CPNON=1	ISP=1	ROBUST TEST, THURSDAY=1	ROBUST TEST, THURSDAY=1 & NASDAQTELE
VARIABLES	dlnprice	dlnprice	dlnprice	dlnprice	rtn7	rtn7
dlnprice						
date2vvfcc	0.0160***	0.0115	0.000516	0.0239***		
	(3.246)	(1.587)	(0.0858)	(3.068)		
dlnsp500	1.063***	1.040***	1.167***	1.051***		
	(66.52)	(41.02)	(30.05)	(43.90)		
rtn7						
F4.date2vvfcc[5]					0.00616	0.0143**
					(1.068)	(2.465)
rtn7_sp					1.090***	
					(20.43)	
rtn7_nastele						0.678***
						(17.34)
Constant	-0.000342**	-0.000295	-0.000634	-0.000289	-0.00217**	-0.000402
	(-2.015)	(-1.065)	(-1.514)	(-1.159)	(-2.394)	(-0.432)
Observations	29,734	11,061	4,381	14,292	5,057	5,057
R-squared	0.124	0.122	0.154	0.118	0.099	0.067

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Notes: Robust t-statistics are in parentheses. Asterisks indicate statistical significance

[5] F4 was used in Stata to help the day dummy variable control for start of the weekly return.

Table 4: Date 3
US Court of Appeals in DC – Preserving the Open Internet Revoked

	(1)	(2)	(3)	(4)	(5)	(6)
SAMPLE	ALL	CP=1	CPNON=1	ISP=1	ROBUST TEST, FRIDAY=1	ROBUST TEST, FRIDAY=1 & NASDAQTELE
VARIABLES	dlnprice	dlnprice	dlnprice	dlnprice	rtn7	rtn7
dlnprice						
date3poir	0.000211	-0.000859	0.00260	0.000209		
	(0.102)	(-0.192)	(0.963)	(0.0866)		
dlnsp500	1.064***	1.041***	1.167***	1.051***		
	(66.46)	(41.00)	(30.00)	(43.86)		
rtn7						
F4.date3poir[6]					-0.00866	-0.00835
					(-0.951)	(-0.918)
rtn7_sp					1.052***	
					(27.85)	
rtn7_nastele						0.691***
						(21.14)
Constant	-0.000323*	-0.000279	-0.000637	-0.000260	-0.00116	0.000372
	(-1.898)	(-1.009)	(-1.520)	(-1.040)	(-1.390)	(0.427)
Observations	29,734	11,061	4,381	14,292	5,724	5,724
R-squared	0.124	0.122	0.154	0.117	0.112	0.076

Robust t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Notes: Robust t-statistics are in parentheses. Asterisks indicate statistical significance.

[6] F4 was used in Stata to help the day dummy variable control for start of the weekly return.

Table 5: Date 4

The Open Internet – Bright Line Rules

	(1)	(2)	(3)	(4)	(5)	(6)
SAMPLE	ALL	CP=1	CPNON=1	ISP=1	ROBUST TEST, THURSDAY=1	ROBUST TEST, THURSDAY=1 & NASDAQTELE
VARIABLES	dlnprice	dlnprice	dlnprice	dlnprice	rtn7	rtn7
dlnprice						
date4blr	-0.000662	0.00261	0.0118***	-0.00734*		
	(-0.222)	(0.539)	(3.908)	(-1.692)		
dlnsp500	1.064***	1.040***	1.168***	1.051***		
	(66.54)	(41.03)	(30.06)	(43.91)		
rtn7						
F6.date4blr[7]					-0.0110***	-0.00804
					(-3.263)	(-0.751)
rtn7_sp					1.045***	
					(25.98)	
rtn7_nastele						0.678***
						(20.28)
Constant	-0.000321*	-0.000284	-0.000650	-0.000250	-0.000799	0.00126
	(-1.892)	(-1.025)	(-1.551)	(-1.002)	(-0.917)	(1.390)
Observations	29,734	11,061	4,381	14,292	5,308	5,308
R-squared	0.124	0.122	0.154	0.117	0.105	0.072

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Robust t-statistics are in parentheses. Asterisks indicate statistical significance.

[7] F6 was used in Stata to help the day dummy variable control for start of the weekly return.

BOTTLED WATTER: AN ECONOMIC ASSET OR PITFALL?

Heather Ryan, Siena College
Dr. Jim Booker, Siena College

ABSTRACT

Bottled water plants are often constructed in communities local to the areas that the plant will be serving. Sometimes these bottling plants are good additions to the local economy, and other times they are not. Cost-benefit analyses are performed on proposed bottling plants to show how different types of communities and water resources change the way adding a bottling plant to a town could affect the local economy. This paper shows that in Phoenix, there are clear economic benefits to the bottling plant, as the costs are relatively small compared to the revenue the plant would generate. In Cascade Locks, the story looks different. While there are still clear economic benefits, there are many more costs associated with the Cascade Locks plant than with the Phoenix plant. These additional costs are due to the structure of a water exchange that would need to take place, the city's tourist economy, and the consideration of the local Warm Springs Tribe. The Cascade Locks plant additional costs are difficult to quantify and are therefore compared using a modified version of a cost-benefit analysis. Looking at this modified analysis, the Nestle bottling plant shows a negative total effect and, therefore, is probably not a good addition to the city of Cascade Locks. This result contrasts greatly with the results in Phoenix where the overall economic benefit tops the economic costs by almost 280 times.

INTRODUCTION

Bottled water has been an increasingly controversial consumer product in recent years. Many consumers feel that bottled water companies don't responsibly source water and are concerned about the amount of plastic that is disposed of due to bottled water consumption. Bottled water companies bottle water in communities and try to sell their bottled water as locally to where it was produced as possible. To do this, bottled water companies are constantly scouting new areas for their bottling plants. Bottled water plants are not always a welcome addition to these communities, but if it is an economically smart decision for the communities, the bottling plants are usually built. Bottling plants are helpful to local economies in some cases, and are not in other cases. This makes it extremely important for these communities to perform cost-benefit analyses on proposed bottling plants, making sure to include all relevant costs, before making a decision on whether or not to allow their local water sources to be bottled. In the case-study performed in this paper, Cascade Locks has many additional costs to be analyzed than Phoenix, such as considerations to sacred land, increased traffic costs, and effects on tourism.

BACKGROUND

Nestle Waters is a branch of the well-known, global food brand Nestle. Nestle Waters is the number one bottled water company worldwide and prides itself on creating shared value in the communities it bottles in, as well as sourcing its water responsibly. It claims that one of its top priorities is ensuring their plants use water sustainably and that they are dedicated to managing the environmental impacts of bottled water effectively. Nestle Waters also asserts that they are committed to creating shared value in society and in all 93 communities that they bottle in. Their "shared value" mission commits them to identifying environmental and social challenges that the communities they are in face—specifically those which arise from the intersection of their business and the communities— and finding a way that their business can help address these issues (Nestle Waters).

CASE STUDY

Case A: Phoenix, Arizona

In Phoenix, Arizona, Nestle has proposed to refurbish an unused warehouse on the west side of Phoenix in exchange for the rights to bottle and manufacture its bottled water under their PureLife brand. The remodel is estimated to be a $35 million project. Nestle projects that they would bottle 35 million gallons of water in the first year, and then expand to two or three more production lines in later years. Nestle estimates that the new plant should generate between 40-50 jobs in the first year. While it all sounds good, residents have raised some serious concerns (Loomis). Their primary concern is that Arizona is a desert state prone to drought. In recent years, Phoenix residents have been implementing conservation techniques in an effort to conserve water. This is a primary reason residents oppose the plant. They feel that they have been conserving water for their future, and that now all that water is going to be bottled up and sold at a significant markup. While residents' feelings are justified, Mayor Greg Stanton has made the assertion that Phoenix is well prepared for a drought, as the city has been pumping water into aquifers to conserve for any future need (Loomis).

While there are some qualitative issues with the bottling plant in Phoenix, such as the residents' mistrust, there are important economic figures to be looked at to come to a final decision. It is important to analyze qualitative factors, but one must also take careful note of the quantitative factors as well. In a case such as this, a traditional cost-benefit analysis is fitting because the relevant costs and benefits can be easily and accurately quantified.

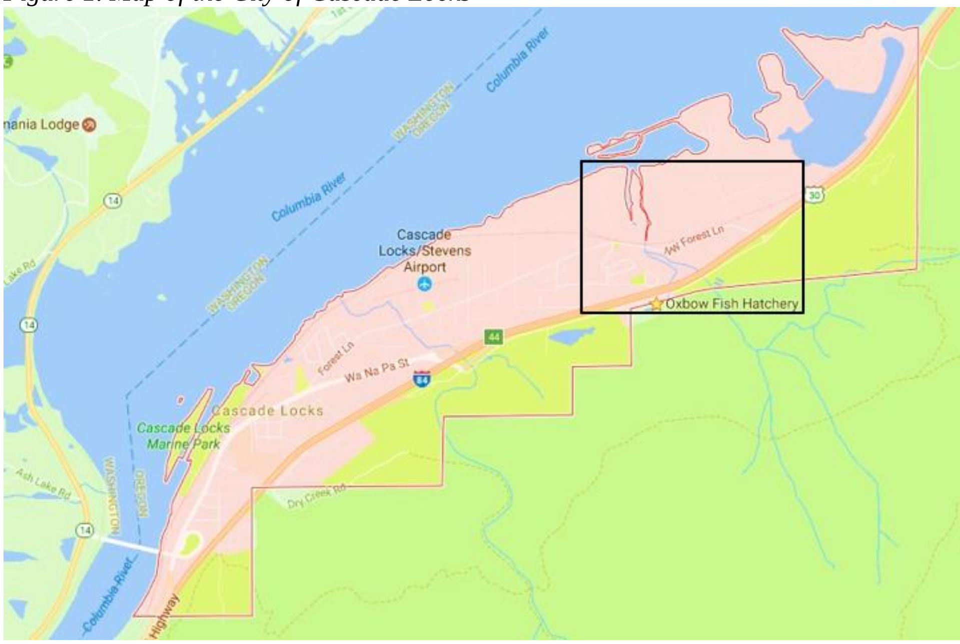
Case B: Cascade Locks, Oregon

The situation in Cascade Locks, Oregon is a very different scenario from the one we see in Phoenix. The city of Cascade Locks typically has a tourist economy (Lee). Cascade Locks is home to the Warm Springs Native American Tribe (CRITFC). The Warm Springs Tribe lives on a reservation surrounding Oxbow Springs and Little Herman Creek. Cascade Locks is a less populous city than Phoenix, but has a pretty steady and large supply of water resources. Nestle's bottling plant proposal in this town gets a bit messier. The plant has been voted on across Hood River County. The results of the vote are mixed. The county as a whole voted no for the bottling plant, but in the city of Cascade Locks, the majority vote was yes.

Nestle' proposal in Cascade Locks in theory looks very similar to their proposal in Phoenix. The construction of the plant is estimated to cost $50 million and the finished plant will bottle approximately 100 million gallons per year (Flatt). As mentioned before, the Cascade Locks case is very different than the Phoenix case. Most of the concerns raised by residents of Cascade Locks and Hood River County are concerns that are hard to quantify, but are very important in the consideration and analysis of the bottling plant proposal. The first concern, and perhaps one of the core issues with the Cascade Locks plant, is the way in which the water would need to be sourced. Incorporated into the plan for the new bottling plant is a water rights exchange between Nestle, The Oregon Department of Fish and Wildlife (ODFW), and the Cascade Locks Municipality. Nestle is requesting water rights to .5 cubic feet per second out of Herman Creek—a creek that runs through Cascade Locks and is fed by Oxbow—from ODFW (House). To replenish the water that the fish hatchery would be signing over to Nestle, water from the Cascade Locks municipal wells would be trucked to the hatchery (House). Figures 1 and 2 depict the layout of Cascade Locks for use as a point of reference when examining the water exchange.

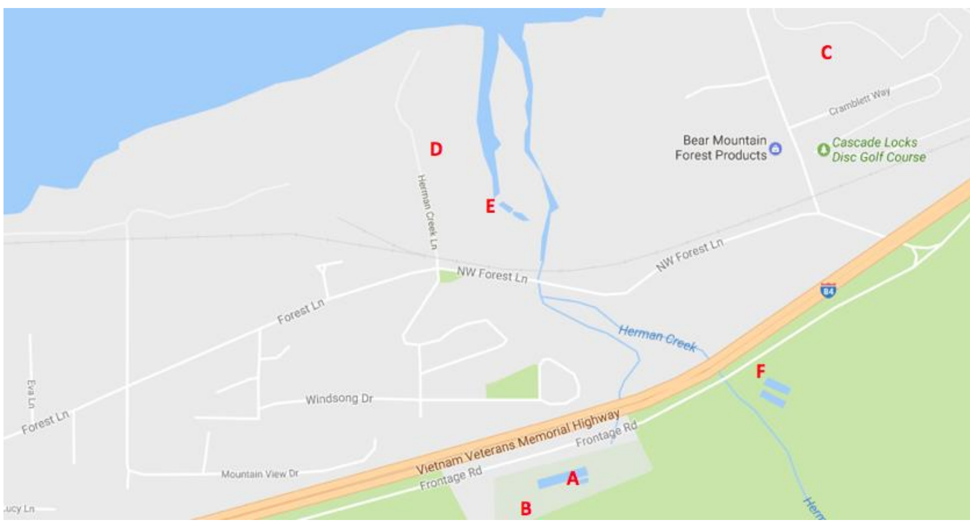
Cascade Locks has an interesting mixture of quantitative and qualitative costs and benefits. Since some of the factors are difficult to accurately quantify and for comparison purposes, the bottling plant in Cascade Locks can be analyzed using a modified version of a cost-benefit analysis. In this modified version, costs and benefits are compared strictly by a positive or negative impact. Some caution should be exercised as there is no way to distinguish high benefits from relatively smaller benefits in this version of a cost-benefit analysis. This holds true with cost as well.

Figure 1. Map of the City of Cascade Locks



**The area in the black box depicts the area within Cascade Locks that is the primary focus of the plan for the bottling plant.*
**Map from Google Maps*

Figure 2. Map of Relevant Places to the Nestle Proposal



A: Oxbow Fish Hatchery, B: East Oxbow Springs, C: Proposed Nestle Site, D: City Wells, E: Satellite Hatchery, F: Satellite Hatchery
**Map from Google Maps*

ANALYSIS

Case A: Phoenix, Arizona

In Phoenix, Nestle's bottling proposal has a mix of benefits and costs that are easily quantifiable and can be interpreted using a cost-benefit analysis. Unaccounted for is residents' discontent. As depicted in Table 1, all benefits and costs examined can be listed, quantified, and combined in order to come up with the total net benefits of the bottling plant.

Nestle estimates they will bottle 35 million gallons of water in Phoenix. The following values are represented as per year values. Converting the 35 million gallons to ounces, and using a standard 16 oz. bottle priced at $1, Nestle's revenue will total to $280 million (Loomis). This works out to be approximately $2.5 million per acre foot. If not allocated to Nestle, that water would most likely be allocated to agriculture where it would produce an economic value of $27.67/acre foot (Vaux). Going forward, this will be referred to as the "reduced use" value. 35 million gallons is approximately 197.41107 acre feet. Using this estimate, the reduced use value for the year is $0.0029 million. The average production costs associated with bottling water is $0.11 per gallon (Soechtig & Lindsey). This makes Nestle's production cost $3.85 million per year. Nestle also estimates 40-50 jobs created through the new manufacturing plant (Loomis). If you assume that the workers filling those jobs would be paid Arizona's minimum wage of $10.00/hour (Industrial Commission of Arizona) and work a standard 8-hour work day, the opportunity cost associated with these jobs totals to $4,000 a day before taxes, making the total value per year $1.048 million (based off the average number of days worked in a year or 262 days). Nestle also proposed estimated costs of the facility to be $35 million (Loomis). Assuming the factory will depreciate in 15 years, these costs on an annual basis become $2.33 million per year.

In the case of the Phoenix plant, adding a bottled water plant to the city appears to be an overall positive addition, as far as the economic values are concerned. The revenue of $35 million outweighs the opportunity costs of the jobs ($1.048 million), the costs of the facility ($2.33 million), production costs ($3.85 million) and the reduced use in agriculture ($0.0029 million). Based on the total net benefit of $272.77 million, the Nestle bottling plant would be an asset to the Phoenix community and plans to construct the plant should be moved forward.

Table 1. Phoenix Plant Cost-Benefit Analysis: Annual Impacts

	Benefit ($ million)	**Cost ($ million)**	**Net Benefit ($ million)**	**Source**
Revenue	280		280	Loomis
Facility		2.33	-2.33	Loomis
Production Costs		3.85	-3.85	Loomis; Soechtig & Lindsey
Reduced Use		0.0029	-0.0029	Vaux; Loomis
Labor Costs		1.05	-1.048	Loomis; Industrial Commission of Arizona
		Total Net Benefit	272.77	

Case B: Cascade Locks, Oregon

In Cascade Locks, it was much harder to quantify some of the necessary pieces for a cost benefit analysis. Using a modified version, costs and benefits of the Nestle bottling plant are compared two ways. Costs and benefits that can be quantified are examined in Table 2a. To make sure all relevant costs and benefits are accounted for, a second cost-benefit analysis is shown in Table 2b and modified using pluses for benefits and minuses for costs.

Nestle estimated that the Cascade Locks plant would bottle $100 million gallons of water per year in a bottling facility that costs $50 million (Flatt). At 100 million gallons per year, Nestle's revenue is $800 million, which was calculated by converting the expected gallons to ounces, then assuming a standard 16 oz. bottle sold at $1 per bottle. Production costs would total to $11 million, using the same average production cost of $0.11 per gallon. Assuming the same 15-year depreciation used in Phoenix's analysis, the per year cost of the plant is $3.33 million. Like in Phoenix, the Cascade Locks Plant is expected to create approximately 50 jobs (Flatt). Based off the same assumptions as used in Phoenix, apart from Oregon's $9.75 minimum wage (Bureau of Labor and Industries), the value of those jobs is $1.0218 million per year. However, this is the extent of costs and benefits that are quantifiable.

As previously mentioned, in order for the Nestle plant to operate in Cascade Locks without leaving the fish hatchery short on water, a water exchange between Nestle, Cascade Locks Municipality, and ODFW must occur. A few problems sprout from this water exchange. The first comes in the form of infrastructure. To pump the water from the hatchery to the plant, Nestle would be funding the installation of commercial grade pipes to link the two together. This, of course, comes at a cost. The pipes that Nestle would use to pump water from Little Herman Creek to the bottling facility would be a separate project, and would not make use of the city's existing water pipes. These pipes would be funded through Nestle (City of Cascade Locks). Nestle has not released an estimate for the cost of the pipes they would install. Secondly, andesitic lava flows in the geological history of Cascade Locks have caused the groundwater wells to be relatively small wells with low permeability (Wheeler & Sceva). The groundwater supply is estimated to be 2.6 million gallons daily. Estimates show that the city uses, on average .267 million gallons per day (City of Cascade Locks). The water that Nestle would require from the city wells to fulfill the terms of the water exchange would be .322 million gallons (City of Cascade Locks). The combined use of Cascade Locks and the exchanged water totals to only .589 million gallons daily. This makes it seem like there is plenty of water for the exchange to take place. However, due to the low permeability, not all the groundwater is easily or efficiently accessible. To fulfill the needs of the water exchange, a new well would have to be drilled in Cascade Locks (City of Cascade Locks), adding another cost.

Another result of the exchange is the transportation of the water. Water would be trucked from the Cascade Locks municipal wells to the fish hatchery. It is estimated that this would mean one truck every eight minutes (Lee). The increase in trucking traffic would come at a cost to homeowner's and businesses in the Cascade Locks area. The increased number of trucks would increase air pollution, increase noise pollution, and increase traffic costs associated with the roads they are trucking on. The city of Cascade Locks claims that the traffic increase will not be drastic as it would barely be noticeable on the interstate highway that runs through the town because it is already a high traffic section of the interstate (City of Cascade Locks). However, this does not account for the effects it would have on the roads in between the wells, hatchery, and the roads on route to the highway.

A final result of the water exchange is the effect it would have on fish. Oxbow is home to a large population of salmon and steelhead and both are bred at the hatchery. The water exchange would mean removing a large quantity of the spring water the fish are adapted to and replacing it with ground water. There have been multiple studies done, and the results vary. However, the ODFW has conducted a controlled study in the Cascade Locks hatchery in which they have successfully substituted spring water for ground water in the fish habitats, and the fish have continued to thrive, regardless of the difference in water type (City of Cascade Locks). In addition, the ODFW states that the water exchange will increase fish populations. Sockeye Salmon cannot typically be raised in the latter half of the summer due to low water flows in Little Herman Creek. With the water exchange, the amount of water would remain consistent throughout the summer, unlike it would without the exchange, giving the hatchery the opportunity to raise Sockeye Salmon longer (City of Cascade Locks).

Another important consideration in Cascade Locks is that the local economy is a tourist economy (Lee). People travel to Cascade Locks for the pristine springs and mountain views. Residents of Hood River County fear that the Nestle plant would deter tourists because it would ruin some of the natural beauty and views, as well as increase air and noise pollution between the plant and the trucks that are transporting water.

Lastly, there is a human rights concern that needs to be addressed. Oxbow Springs and Little Herman Creek are a part of a Native American Reservation that is home to the Warm Springs Tribe (CRITFC). Oxbow Springs is one of the Warm Springs Tribe's sacred sites and that would be nullified by a bottling plant (Lee). Also, the tribe has an exclusive portion of treatied fishing rights in Little Herman Creek and there is concern that those fishing rights could be decreased or lost if the bottling plant does come in (CRITFC).

According to the results, the net benefit of the revenue combined with the job value is not enough to outweigh the net costs of facility construction, treatied land, net effect on fish, net effect on tourism, and increased traffic. Table 2a shows that, of the quantifiable benefits and costs, costs do not outweigh the benefits of the plant. However, it is important to take into consideration the costs that are not included in the cost-benefit analysis depicted in Table 2a. While it is possible that the added costs that aren't quantifiable still do not outweigh the benefits, further analysis would need to be done to quantify these additional costs and prove that. It is important also to note that the "Facility" costs that are quantified in Table 2a are not the total costs of the facility as they do not consider the new well that needs to be drilled, the new pipes that need to be installed, and the trucks that must be purchased. Even though it lacks numeric values, Table 2b shows a negative total effect because it takes the additional facility costs into consideration and assumes them to be a significantly large value relative to the revenue produced in the first year. As depicted in Table 2a and 2b, the bottling plant in Cascade Locks produces a different total effect based on which factors are included. When you include all the costs that are mentioned in the concerns of Hood River County residents, there is a negative total effect which may be indicative that the bottling plant would not be a good addition to the city of

Cascade Locks. However, it is important to remember the caution that must be exercised due to the modified cost-benefit analysis. Since there is no way to tell whether the costs or benefits are relatively large or small using this modified method, there is a higher margin of error than seen with a standard quantitative cost-benefit analysis.

Table 2a. Cascade Locks Cost-Benefit Analysis of Quantifiable Costs and Benefit: Annual Impacts

	Benefit ($ million)	**Cost ($ million)**	**Source**
Revenue	800		Flatt
Facility		3.3333	Flatt
Production Costs		11	Flatt; Soechtig & Lindsey
Labor Costs		1.0218	Flatt; Bureau of Labor and Industries
	Quantified Net Benefit	784.6452	

Table 2b. Cascade Locks Cost-Benefit Analysis Using "+" and "-" in Place of Quantitative Values

	Benefit	**Cost**	**Net Effect**	**Source**
Revenue	+		+	Flatt
Facility		-	-	Flatt
Production Costs		-	-	Flatt; Soechtig
Sacred Land		-	-	CRITFC
Effect on Fish	+		+	City of Cascade Locks
Tourism		-	-	City of Cascade Locks
Traffic		-	-	City of Cascade Locks
Labor Costs		-	-	Flatt; Bureau of Labor and Industries
		Total Effect	-	

CONCLUSIONS

When determining whether a water bottling plant is a worthwhile addition to a community, there are several different factors that need to be considered. This study shows that each plant in each city must be analyzed on a case by case basis. There is no standard model for which cities would be a good fit for the bottling plants. When considering a potential area for a bottling plant, water resources is only one of many factors that must be considered. It is important for the city to have enough water to sustain the plant, but a city that has a large excess supply is not necessarily a better site for a bottling plant than a city that has enough water resources in the present but is prone to drought also.

It is likely that a bottling plant would be a good addition to a community if the cost-benefit analysis shows a positive total effect (total benefits-total costs). If the total effect is relatively small, however, it may not be a worthwhile addition, or further analysis may need to be performed. If the cost-benefit analysis shows a negative total effect, it is likely that the bottling plant should not be constructed in that community. Again, if the total effect is a relatively small negative value, further analysis should be performed.

In the case study presented in this paper, the importance of cost-benefit analysis is emphasized. Nestle's proposed bottling plants in Phoenix and Cascade Locks look like similar proposals when you look at the cost of facilities, the type of water requested for bottling (spring water), and the number of jobs. A larger amount of water would be bottled in Cascade Locks, but that could be attributed to the drought factor present in Phoenix but not present in Cascade Locks. However, even though the two proposals are similar in theory, the cities are very different, causing the difference in the cost-benefit results. Phoenix had large total net benefit, making the city a good candidate for the bottling plant. Cascade Locks, on the other hand, had many relevant costs to consider that Phoenix did not. Because of the nature of some of these costs, they could not all be quantified, leaving no numerical total net benefit. By modifying the structure of the cost-benefit analysis, though, along with estimating the impact of the costs on the net benefit (whether they are big or small in theory, relative to the benefits), there is conclusive evidence of a possibility that a bottling plant would not be a good addition to Cascade Locks.

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THE ECONOMICS OF CLIMATE CHANGE: A LOOK AT THE ECONOMIC EFFECTS OF ENVIRONMENTAL POLICY

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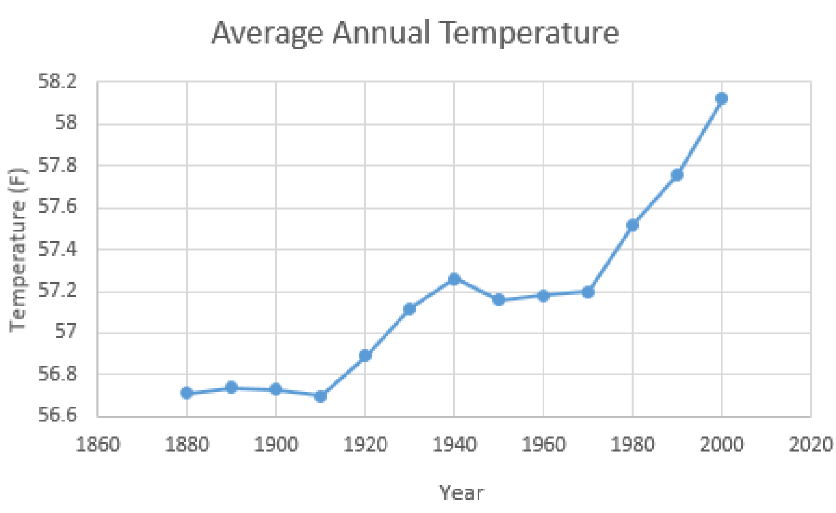
ABSTRACT

There is an urgent need for a change directed at benefiting the environment. It is well accepted that climate change is due primarily to human emissions of greenhouse gases, and that limiting those emissions would reduce the impact of global warming. Focus on policy changes that favor cleaner energy resources is absolutely vital. Undoubtedly, these sorts of changes would see environmental benefits. However, it is equally important to discuss economic effects of such policies. The changes that will mutually benefit the economy and the environment are an introduction of a carbon tax, heavy investment in the solar energy sector, and reduction of red meat demand. Implications of similar environmental policies on several foreign country's economies are analyzed.

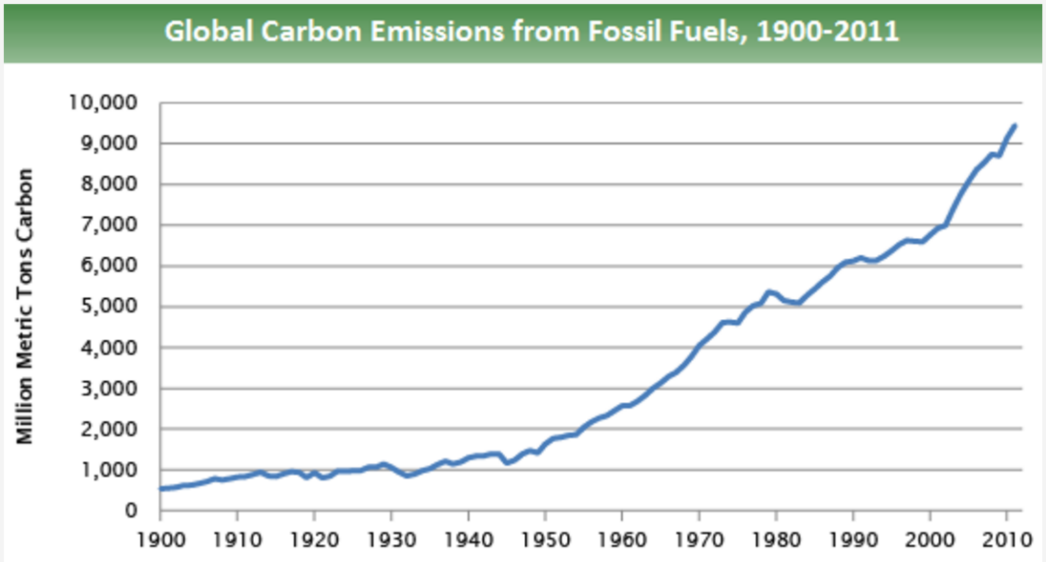
INTRODUCTION

Climate change is the most significant threat to our modern world. Our lifestyle and economy is based on the climate patterns humanity has consistently observed. Short term fluctuations are normal and not of large concern. Long term changes, however, prove that the overall climate is changing, it is facilitated by human activities, and it affects every part of the world. Initially, climate change was solely referred to as global warming. Scientists began noticing a rise in global temperatures circa 1970 when certain parts of the world had started to see a one degree Fahrenheit rise in average temperature. By 2015, average temperature in some areas has increased four degrees Fahrenheit, with most of the warming happening after 2000 ("Climate Change").



This temperature change is now known to have much more detrimental effects than simply warming the Earth. Melting glaciers lead to rising sea levels, which threatens major cities that are based near ocean ports. Extreme weather events have become more frequent, which destroys cities and adds enormous financial burden to the counties that must then rebuild them. Oceans are warmed and polluted, which changes the life they are able to support. Global warming is now understood to affect every area of the climate, not just temperature.

Linked with the change in climate is an increase in atmospheric levels of carbon dioxide (CO2). For more than 400,000 years, CO2 has never exceeded 300 parts per million. Since the early 1900s, that level has been growing quickly to its current 400ppm ("Climate Change"). Scientific evidence leaves the existence of climate change indisputable. It is of urgent concern in order to sustain our human and animal population.



Source: Boden, T.A., Marland, G., and Andres R.J. (2015). Global, Regional, and National Fossil-Fuel CO_2 Emissions. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, doi 10.3334/CDIAC/00001_V2015.

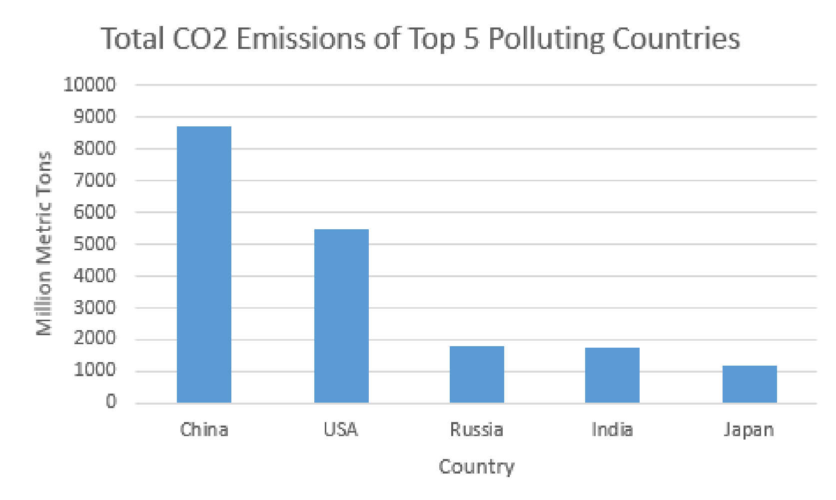
Our global economy is based on environmentally damaging activities - most notably oil and gas consumption and animal agriculture. Climate change, therefore, is not only an environmental problem; it is also an economic one and requires, in part, an economic solution.

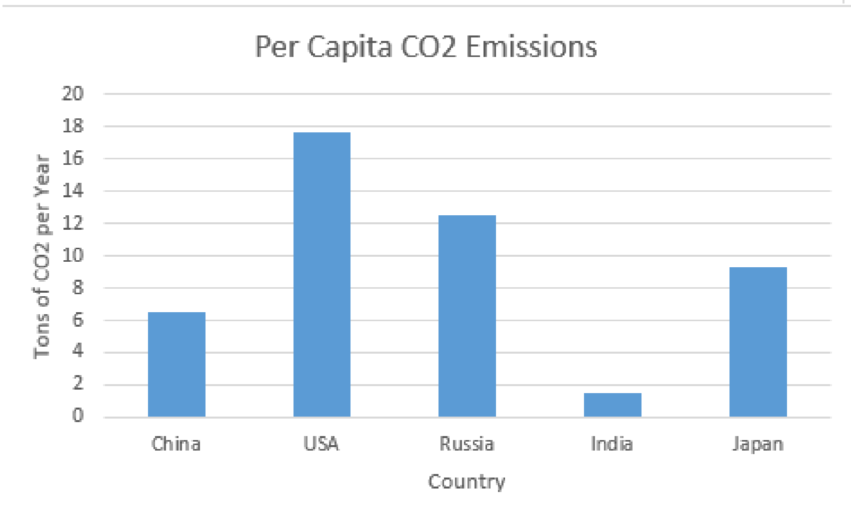
DEFINING THE PROBLEM: GREENHOUSE GAS EMISSIONS

CO2 emissions are dominated by the United States and China. Both countries are international manufacturing giants, with the population and financial means to support such large scale production. China is responsible for twenty seven percent of the total worldwide CO2 emissions from energy consumption at 8715.31 million metric tons ("Each Country's"). Their economic model has been focused on the reliance on the availability of cheap coal and oil to reduce income gaps, which is proving to be massively unsustainable (Duggan). Apart from this pollution damaging the climate, the health of China's people has been declining steadily. Air, water, and food pollution present a serious danger to those living in China and "contributes to an estimated 1.6 million deaths per year" (Duggan), which in turn leads to an estimated ten percent loss of total GDP.

With the recent attention on climate change and pollutant emissions, China has been put in the spotlight for its astronomical contribution. By 2030, renewable energies (such as wind and solar power) have been pledged to make up twenty percent of China's energy consumption (Duggan). In 2014, the country did see a 2.6% drop in coal consumption (Duggan), which is a promising start to the pledges the Chinese have made to decrease their environmental impact.

However, because of China's population size, the consumption of energy per capita is only 6.52 metric tons of CO2 annually ("Each Country's"). Considering this, the United States (at 17.62 metric tons of CO2 emissions per capita) ("Each Country's") promotes the most environmentally unfriendly lifestyle per person in regards to consumption of energy, even though it is below China in total emissions.





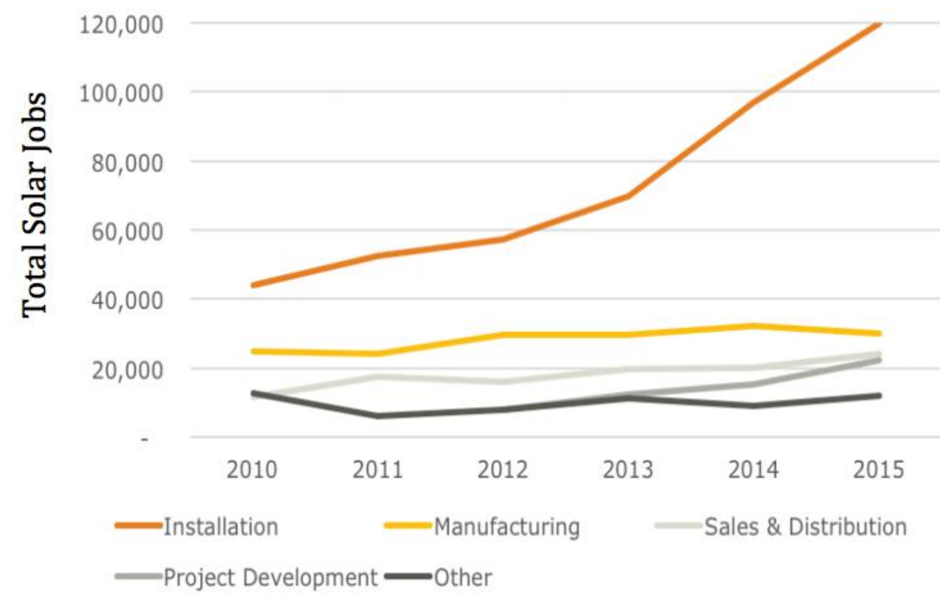
Data Source: Energy Information Agency (Department of Energy)

Despite the evidence of climate change, resistance against the need to move to more renewable and sustainable energy is strong and especially present in the United States Congress. In 2016, it was confirmed that one third (182 members) of Congress deny the existence of climate change and global warming (Herzog). It's important to note that congressional funding to these members has amounted to over $60 million directly from the fossil fuel industry. Alabama representative Gary Palmer argues against the consensus and data of 98% of scientists, instead believing that "we haven't had a temperature increase in 17 or 18 years" (Germain). His statement ignores the fact that we have seen consecutively warmer record temperatures, accompanied by a 1.53 degree Fahrenheit rise in temperature. In the 2016 presidential election, oil, gas, and coal industries poured $1,208,934 into the Republican candidates (Cruz, Kasich, and Trump), and $364,021 into the Democratic nominees (Clinton and Sanders) (Coleman). The industry has a powerful place in our government, which makes a call for legislative change beginning in Congress difficult. In the short term, investment into these oil and gas giants is economically beneficial. We are able to increase production cheaply and keep existing jobs. However, the long term effects, both economic and environmental, are detrimental. The current resources we are basing a significant portion of our global economy on are not infinite. Eventually, they will run out. As supply begins to decrease, potential for large spikes in prices, loss of jobs, and war over limited resources grows. It is not economically efficient to continue investing in these industries - the future must be renewable.

RESULTS OF SOLAR ENERGY INVESTMENT

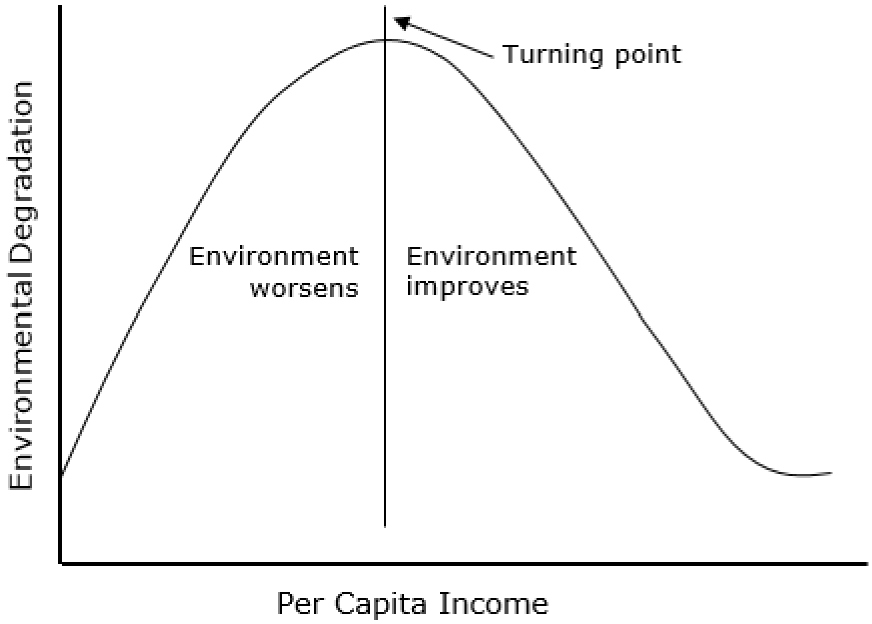
Right now, over half of electricity in the United States is powered by burning coal - it takes one hundred train cars of coal to power a fossil fuel burning power plant for a single day. However, a single hour of sunlight is equal to the total amount of energy that every person on the planet consumes in an entire year (*Catching the Sun*). The growth of the solar power sector provides the opportunity for increased energy equality worldwide - everyone has equal access to the sun. Countries that have been unable to provide the necessary oil and coal for their poorest citizens to have access to heat and electricity do not have to be economically competitive to have the same level of sunlight as a financial giant like China or the United States.

Investment in solar powered energy is not just an environmentally necessary change, it also can be a means to solve the economic divide of American income levels and bring jobs back to the United States. There is enormous investment and employment opportunity in growing the field of renewable energy. There has been stress and division in low income areas of the United States whose community members do not have access to higher education and instead take "blue collar" employment opportunities. These jobs, however, have increasingly been outsourced to lower cost countries. This is where the opportunity for advancement of solar technologies offers its largest economic benefit to the United States - job creation in what is being called the "green collar" field (*Catching the Sun*). Solar energy accounts for less than one percent of the United States' electricity supply, but already employs 120,000 people (*Catching the Sun*).



Source: http://www.thesolarfoundation.org/wp-content/uploads/2016/10/2015-Census-Factsheet-FINAL.pdf

Job creation has the potential to bring families out of poverty and raise community-wide income. According to the Environmental Kuznets Curve, at a certain point in income growth, environmental quality begins to improve (less pollution, better water access/quality, etc.). Therefore, working to improve economic quality of life for low income communities by introducing job opportunities could help the environment in the long run without any further implementation of policy.

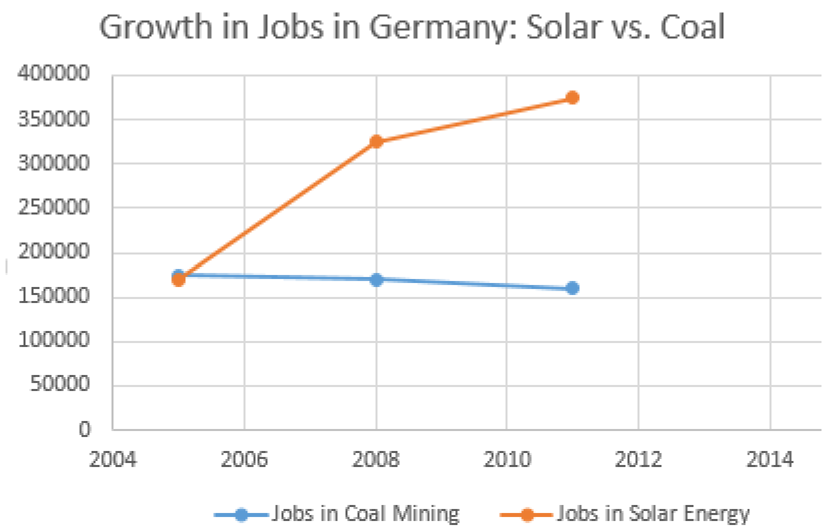


The cost of solar power has dropped 40% in the past five years - in areas with heavy sun coverage, solar is now “shoulder to shoulder with the cost of coal and gas” (Allen). Countries around the world are seeing the opportunity for growth via solar power investment, including the United States’ competitor for the largest economic power, China. The country that is the first to become a renewable energy powered nation will see benefits of job creation and foreign investment opportunity, since they will become a more affordable place to do business. Already China is implicating environmentally friendly policies and investing in solar businesses. The United States does not lack the financial means or technology to meet China’s accomplishments, or even surpass them. Rather, there is a substantial lack of political will in the American government to admit the dangerous effects of fossil fuels and change how energy is produced. Reliance on oil and coal has made America such a significant power because of its level of imports - solar technology offers the opportunity to the American economy to become the world’s most important producer of energy resources. Dependence on oil also leads to severe price fluctuations, leaving the market volatile to dramatic changes - solar energy offers the option of consistency.

China now produces 42.2 GW of solar energy compared to the United States’ 27.8. By 2020, China plans to reach 140 GW, triple their current amount. This rapid growth should be very attainable, the potential for solar energy collection in China is equal to 4.9 trillion tons of coal (Allen). A solar based energy sector offers improved living conditions for China’s population (due to decreased air pollution), so the well-being of community drives social support of the change. The Chinese government also offers successful subsidies for switching to solar powered energy. Feed-in-tariffs pay sixteen US cents per hour of energy produced, even if you end up using that energy yourself (Topf). These factors have contributed to China’s consistent 16% growth in the renewable energy sector (Allen).

Germany, as well, has been driven by both public opinion and economic benefits to be the European leader of renewable energy. Oil is not as accessible to Germans, due mainly to foreign relation policies, so prices are double what is seen in the United States (Everett). Furthermore, 90% of the public believes that climate change is an issue of first priority, and therefore is willing to comply with the government’s regulations and reforms towards green energy sources (Everett).

The job creation Germany has seen stemming from the transition is tremendous. There have been approximately 170,000 start-up businesses from 2006-2013 that have related directly to renewable and efficient energy. These businesses have created 848,000 jobs so far (Hockenos). Growth seen in Germany’s renewable energy sector is tremendously larger than what is being seen in coal mining (which is beginning to decline). Current estimations of the renewable energy sector’s contribution to GDP exceed thirty billion euros (Hockenos). Solar and wind energy are responsible for over fifteen billion euros of investment in Germany. On the macro level, Germany’s push to transition to renewable has so far been successful.



Data Source: Key Findings of German Energiewende

However, large companies are not concerned with implementing environmentally friendly practices, even there is strong potential for job creation. Since burning fossil fuels increases their profit margin significantly by decreasing production costs, reduction of emissions would increase costs and decrease profit, and is therefore adamantly opposed by large corporations. Gregory Mankiw, former economic advisor to Mitt Romney, chairman on the Council of Economic Advisors, and professor at Harvard University believes that "appealing to social responsibility is impossible." (*Before the Flood*).

RESULTS OF A CARBON TAX

Currently, the government is subsidizing carbon emissions by heavy investment and tax cuts and credits, but CO2 emissions are a negative externality. The most effective way to combat a negative externally is to introduce a tax, which would in turn decrease supply. No company will decrease CO2 emissions simply because it is the right thing to do for the environment. However, introducing a tax based on the amount of CO2 a company releases forces them to consider their pollution and work to decrease it, otherwise they will acquire larger production costs (Mankiw). Furthermore, it forces consumers to pay a higher price for carbon emissions. A company who does not change their production to decrease pollution will be forced to raise their prices. The consumer then, who wants to continue purchasing the same product, will have to pay the higher price for it. Many consumers, however, will instead choose to substitute a similar product for a less expensive price - likely one that has decreased their price by decreasing carbon emissions.

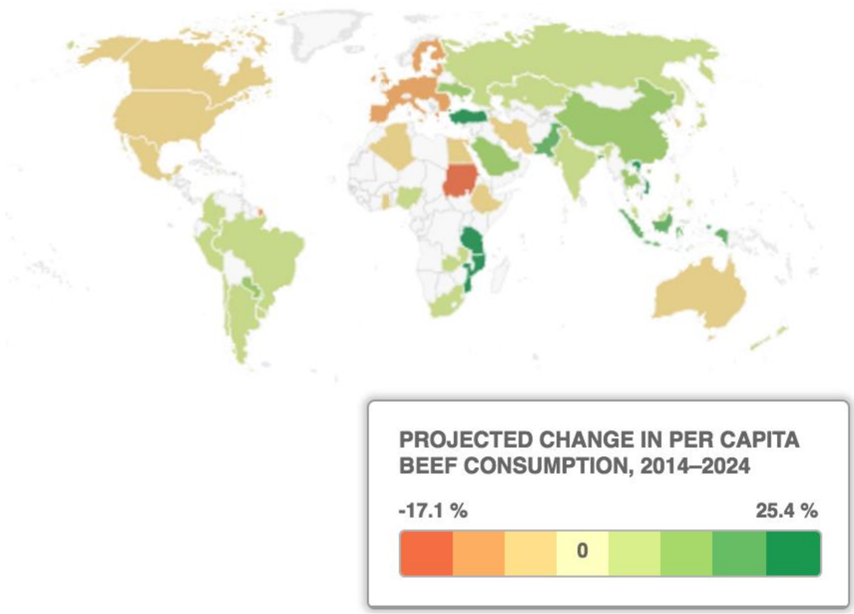
Initiative 732 was proposed in Washington State, but was rejected by voters on November 8th, 2016. The bill aimed to limit the amount of carbon emission by both households and firms by adding a $25 tax to every ton of CO2 emitted (Villasenor). Although it is seemingly simple, the proposal has received sharp critique from economists, environmental groups, and political figures. Public opinion generally reacted poorly to the proposition - it is hard to convince working families that voting in favor of a tax would be beneficial. However, Initiative 732 is a revenue neutral plan, meaning that all the revenue generated from the collection of the tax would be used to lower an alternate tax. It has been estimated that the tax plan would decrease sales tax by a full percentage point (Villasenor).

The hitch in the proposal is that Washington State has no income tax. Therefore, sales tax is the only tax paid by households that would be able to be lowered. The rest of the revenue would be invested into Washington's "Working Families Rebate," which is a welfare program (Villasenor). This does add an element of welfare spending to the tax plan, as noted extensively by critics. Increased cost to business may result in a loss of jobs, and will certainly increase the price of products. Initiative 732 is perhaps better suited for a state with more tax relief potential, but nonetheless, it is not meant as an economic plan to decrease taxes or increase jobs. The core goal of the proposal is to fight climate change by reducing the emissions of fossil fuels. It is not a plan that would be brought to the table if climate change was not a severe concern. Voting against the initiative put short term saving ahead of analyzing the long term costs and effects. The costs of climate change will continue to rise if carbon emissions are not immediately reduced, and they will be significantly higher than $25 per ton. Introducing the tax in a revenue-neutral format, however, would provide opportunity for tax reform when state governments decide which taxes to decrease using the carbon tax revenue.

Sweden has already had a carbon tax since 1991. The price per ton of carbon is $105, significantly higher than Washington State's proposal. However, Sweden does cut this rate by half for the industry sector, and even further for agricultural businesses (Realmelo). It also is a pure government revenue program - the tax money does not go directly back to the consumers as it would in Washington. Therefore, it does have a negative effect on the lower income population of Sweden. Despite these factors, the tax has seen success in its main goal - decreasing carbon emissions. Since its implementation, Sweden's emissions have fallen forty percent (Realmelo). It is certainly possible for the United States (and other countries) to reform Sweden's tax and apply it to their own policies successfully to reduce their fossil fuel emissions.

ADDITIONAL SOURCES OF CLIMATE CHANGE

There is, however, more to climate change than factory fossil fuel emissions. Raising livestock on the scale that we do today emits 32000 million tons of carbon dioxide annually. This is twenty percent of all greenhouse gas emissions, greater than the total emissions of the transportation sector (cars, planes, boats, trains, etc.) (Anderson). CO_2, of course, isn't the only gas responsible for the global temperature change. Methane has a global warming potential that is twenty three times higher than that of CO_2, and is released by livestock at the rate of 150 billion gallons per day (Anderson). Thirty seven percent of all human facilitated release of methane is directly caused by animal agriculture. Animal agriculture is also responsible for sixty five percent of human caused nitrous oxide (N_2O) release into the atmosphere (4.5 million tons per year), where it stays for about 150 years. N_2O has a global warming potential 296 times greater than CO_2 (Akhtar). With the current demand for animal products expected to double by 2020, these emissions are expected to increase eighty percent by 2050 (Anderson). This level would be unsustainable for the environment to continue functioning in its current state.



Source: https://ensia.com/articles/these-maps-show-changes-in-global-meat-consumption-by-2024-heres-why-that-matters/

Furthermore, the release of these gases doesn't only affect our atmosphere and global temperatures. The nitrogen runoff from animal agriculture farms is the primary cause for ocean dead zones (Anderson), where the oxygen in the water has become so depleted it is no longer able to sustain any life. Consumption of animal products has mass effects on all water sources as well, not just the oceans. Growing the crops used to feed livestock accounts for fifty six percent of all water usage in the United States. If the amount of water livestock drink in order to survive is included, animal agriculture becomes responsible for seventy percent of water consumption in America. To put this in perspective, all U.S. household water usage accounts for only five percent (Anderson). The practice of fracking, which has recently become a topic sparking controversy for its environmentally damaging effects, uses 70-140 billion gallons of water annually. Animal agriculture dwarfs this number, consuming between 34-76 trillion gallons on any given year (Anderson).

Rainforest destruction is an enormously important topic in the conversation about climate change – the Amazon Rainforest alone is responsible for twenty percent of the oxygen production on the planet. Deforestation does not only contribute to the extinction of species, but also is responsible for massive CO_2 emissions. Vegetation, as part of the respiratory process, take in carbon dioxide from the atmosphere. When plant habitats are burned in large numbers, the release of the stored CO_2 and N_2O puts millions of tons of greenhouse gases back into the atmosphere, and of course further reduces the number of trees that can absorb future carbon dioxide. Deforestation further contributes to global warming by removing the solar energy that is absorbed by vegetation, and instead allows it to directly heat the planet (Shukla). To continue deforestation at the current rate would be to completely destroy the Amazon Rainforest in as early as fifty years, along with half the world's plant and animal species that live there. These changes are warned to be "irreversible…the disruption of complex plant animal relations will be so profound that once the tropical forests are destroyed they will not be able to reestablish themselves" (Shukla).

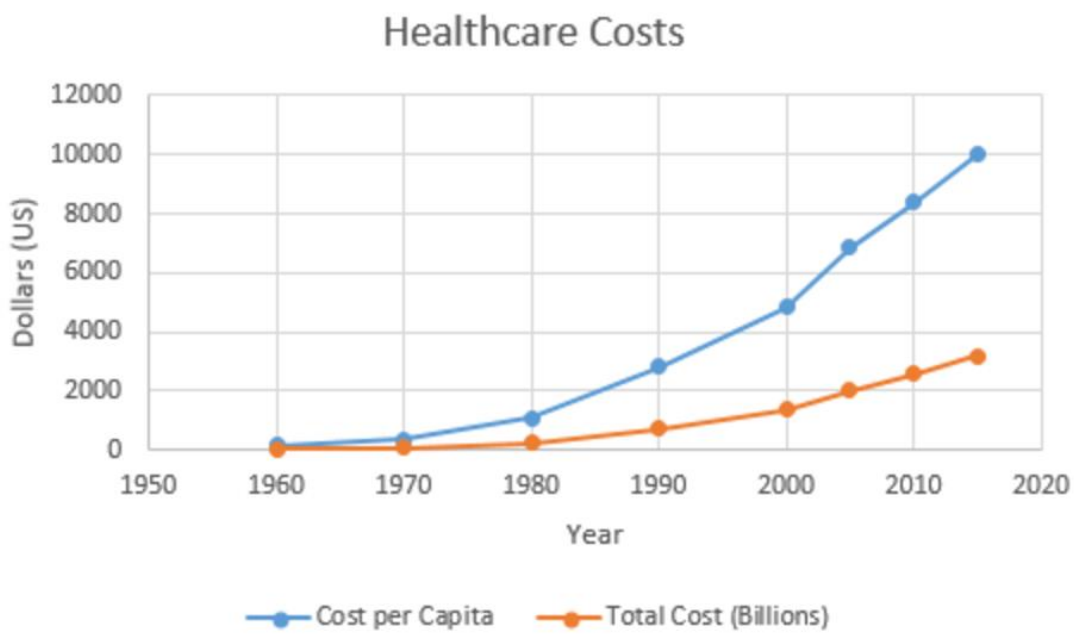
Palm oil production plays a large part in deforestation, having cleared 26 million acres of rainforest. It is especially dangerous in Indonesia, where corruption of the Indonesian government promotes the destruction by taking land belonging to communities and allowing large, private companies to extract the resources for palm oil production (Johnson).

The largest cause of deforestation, however, is animal agriculture. Ninety-one percent of deforestation of the Amazon Rainforest (136 million acres worldwide) is due either to clearing land to make space for large meat or dairy farms, or to grow crops – particularly corn and soy - to feed livestock (Anderson). "45 million tons of plant protein is used to produce 7.5 million tons of animal protein" (Akhtar). This plant protein is sufficient to feed ten billion people and virtually solve world hunger, but it instead goes to feed animals raised for consumption by a small percentage. The United States, for example, is home to only five percent of the world's population yet it produces fifteen percent of the world's meat supply (Akhtar). The land required to sustain a human following a plant based diet is one sixth of an acre, which is eighteen times less the amount of land necessary to sustain a person who follows the current trend of average meat consumption (between 200-300g per day). One and a half acres can grow 37,000 pounds of plants, but can only sustain 375 pounds of meat (the average American consumes about 209 pounds of meat per year) (Anderson).

RESULTS OF DECREASED RED MEAT CONSUMPTION

The United States federal government works as closely with subsidizing the meat industry as it does the energy sector - both products are in enormous demand and yield high profits. As seen with factory CO_2 emissions, the meat production process creates severe trouble for the future of the planet. While there is a profit yield from this industry in the short run, climate change has a negative effect on plant agriculture in the long run, which will continue to contribute to rising prices and gap in standard of living between the rich and poor. Increasing temperatures cause a decline in staple crops such as rice, corn, and soy, which then raises prices of those commodities. Since corn and soy are used extensively in meat production, the cost and therefore retail price of meat will be increased as well (McMichael). If the American government stopped subsidizing meat production there would still be an increase in meat prices, which would discourage consumers from relying heavily on meat products, which would decrease the effects of climate change without having to affect the vegetation sector of agriculture. This option, however, is unlikely to be seen in time to prevent permanent climate damage. In the meantime, personal decisions to consume less meat will still have positive effects. Global meat consumption per person should be below 90g per day in order to stop the extreme climate damage currently being observed (McMichael). This limitation does not only appeal to the environmental aspect - limiting meat consumption shows tremendous improvements in overall health.

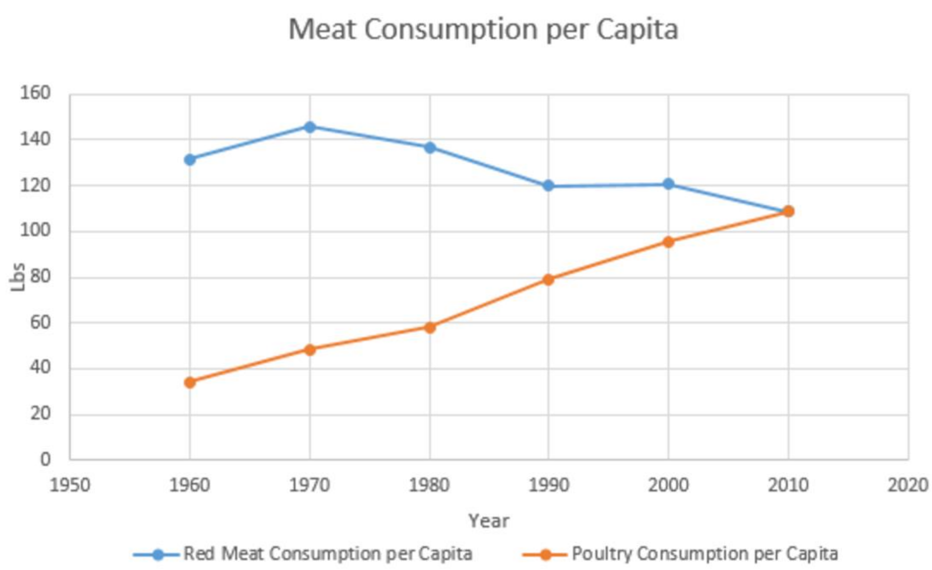
As economies grow from rural lifestyles into more urbanized and higher income societies, there is a shift from plant based diets to the inclusion of more meat and dairy. There are certain diseases that are also associated with higher consumption of meat products. Animal products are the primary sources of saturated fats, which have been proven to promote heart disease, a leading fatal condition in the United States (Ahktar). Furthermore, "an estimated one in six United States healthcare dollars are spent on cardiovascular disease" (Greenwell). This comes down to nearly one billion dollars spent each day on diagnosing and treating heart disease. Losses due to productivity are expected to reach $275 billion by 2030, and direct medical costs will exceed $818 billion (Greenwell). Animal products are the singular source of cholesterol, again a condition the United States sees frequently and spends considerable money to regulate. Furthermore, those who commit to a diet based on plant food sources are less likely to be obese than those who do not. Obesity is a rapidly growing health concern of westernized nations as it leads to chronic disease such as diabetes, hypertension, and extreme cholesterol levels (Ahktar). Similarly to heart conditions, diabetes is responsible for a large portion of the healthcare financial burden as well. Direct medical costs amount to $176 billion in direct medical costs, including diagnoses and treatment, while $69 billion is the price of decreased productivity ("The Cost of Diabetes"). Healthcare costs are rising quickly, and most of these costs are largely preventable.



Data Source: US Department of Commerce

Changing the way we eat has the potential to decrease healthcare costs dramatically. If the global population followed the nutritional recommendations for meat consumption (less than 90g per day), there would be savings of $795 billion every year (Springmann). This was calculated by a "cost-of-illness" approach, which considered "direct healthcare costs, indirect costs of informal care, and loss of workdays due to premature workforce exit" (Springmann). Two thirds of this result came directly from immediate savings in healthcare, and the last third is a result of informal care and increased economic productivity (since many that are affected by these conditions often prematurely leave the workforce) (Springmann).

Similarly to the Environmental Kuznets Curve, there is a certain point in income level that is associated with decreased meat consumption. The United States, for example, saw a drop in red meat consumption by about ten pounds consumed yearly from 2000 to 2010.



Data Source: USDA

Narrowing the worldwide income gap between the poor and malnourished and the wealthy elite has been an important economic debate motivated by social welfare, but this trend shows that promoting equality can have great environmental impact as well.

There is often public concern when the topic of plant based dietary patterns is introduced, primarily in regards to nutritional content. However, protein from animal sources is no different from plant sourced protein found in nuts, beans, and legumes (Walker). According to a study that focused on health implications of meat production and consumption, United States consumers get “67% of their protein from animal sources, compared to a global average of 34%” (Walker). There is a significant lack of fiber in the average American diet, which increased plant consumption will reconcile. Zinc is the main nutrient that is derived primarily from animal sources, but the recommended numbers can be achieved easily with only a very small inclusion of meat in one’s diet.

CONCLUSION

The current means of sustaining the global population will not be effective in the long run. The global economy is based on limited resources - supply is decreasing, while demand is continually increasing. It is vital that there is a shift in dependence on energy sources and a change in dietary habits in order to level out gaps between the rich and poor (on a global scale) and to minimize the effects of climate change. Investing in renewable energy combined with a carbon emissions tax is the most effective government policy to combat environmental damage. However, limiting meat consumption is the fastest way for the mass population to contribute to a healthier planet.

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THE QUALITY OF INSTITUTIONS AND GENDER INEQUALITY

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ABSTRACT

In this paper, I investigate the relationship between the quality of institutions and gender inequality. The previous literature made a causal connection between institutions and inequality but there is lack of information on the effect of institutions on the inequity between genders. Current literature talks about the lack of schooling for girls leading to the gap between genders in the workforce and inequality for women. A lot of the research focuses on how gender inequality is hurtful to the economy and society would benefit economically from an increase of women in the labor force. Other sources say that if the government implemented different policies, inequality would decrease. My argument is that if the current institutions improve then the gender inequality would decrease.

INTRODUCTION

In current times, our societies are so advanced with technology and other improvements in different industries. However, it is astounding that problems concerning gender inequality still exist. Women are still treated differently and this is prevalent in the workplace. Becky Pettit and Jennifer Hook of "The Gendered Tradeoffs" state that, "Research in the United States and other advanced industrialized countries consistently finds that women are less likely to be employed than men, continue to be underrepresented in the most highly paid occupations, and still earn between 50 and 90 percent of men's wages"8. Women are still discriminated against while men receive employment over women and there are different, unequal wages between genders for the same job. The gender wage gap is only one component of gender inequality that exists but I will be using the gap as a tool to measure the inequality. I want to use the gender wage gap to correlate with different measures of institutions to make a connection between institutional quality and inequality between genders. I see gender inequality as a major problem especially in advanced countries that are supposedly world leaders. Developing countries look to developed countries to set precedence for how a country should be run. This raises the question of how countries are priding themselves in being world leaders when they have significant problems at the very core of their economy. About half of the population are female and currently being discriminated against on the basis of gender. There are some laws and policies in place against discrimination and to promote equality but the fact that there has not been a solution, which makes me question the effectiveness of our current legislation. This is the purpose of my research. I hope to establish the connection between institutions and gender inequality because I hope to make the point that there needs to be an institutional change in order to have equality between genders. I will use the gender wage gap and different measures of institutions like government effectiveness, regulatory control, corruption perception and the percentage of women in parliament to make the connection. Using the literature that is already in the field, I will add on to what has already been established and try to make a point that has not yet been confirmed. I agree with the idea that different policies need to be implemented and that the inequality is hurting our economy9. It would be in the overall best interests of society to improve the quality of institutions in order to decrease the inequality of between genders.

[1] Pettit, Becky, and Jennifer L. Hook. "The Institutional Underpinnings of Gender Inequality." Gendered Tradeoffs: Women, Family, and Workplace Inequality in Twenty-One Countries, Russell Sage Foundation, 2009, pp. 21–44, www.jstor.org/stable/10.7758/9781610446785.6.

[2] Braunstein, Elissa. "The Feminist Political Economy of the Rent-Seeking Society: An Investigation of Gender Inequality and Economic Growth." Journal of Economic Issues, vol. 42, no. 4, 2008, pp. 959–979. www.jstor.org/stable/25511381[10]

LITERATURE REVIEW

The past literature looks into the connections between economic growth and gender inequality. An article by Elissa Braunstein "The Feminist Political Economy of the Rent-Seeking Society: An Investigation of Gender Inequality and Economic Growth" looks into the cause of gender inequality in the economy and the effects it has. Braunstein tries to explain why "gender hierarchies persist despite their obvious economic cost" and looks into "gender in neoclassical growth theory, moving from traditional theories of factor accumulation to the new growth theory literature which contends that institutions like gender matter for growth"[10]. Braunstein makes the point, using the Solow model, that women are an underutilized labor source for market growth10. Using the neoclassical institutionalist approach, Braunstein makes the point that "gender inequity and discrimination are inefficient because they do not maximize productive capacity"10. The article is making the argument that women are underutilized in our economy as they present a huge supply of labor and the discrimination that exists in our society is hurting our economy. Braunstein states, "When women are segregated from certain occupations or industries based solely on sex, the best worker will not be matched with the most appropriate job"10. The discrimination in the workforce that is present is not maximizing the resources that are available and is not an equal utilization either. Braunstein also looks into how rent seeking behavior is a result as well and how "rent-seeking can also influence the organization of nonmarket institutions, as when patriarchal property rights create male advantage in capital markets, or when norms of violence against women maintain male dominance and privileged access to resources"10. Braunstein is making the argument that men are benefiting from unequal treatment in markets by receiving sources that are typically available in their favor. Men are more likely to have easier access to property rights and access to credit markets. Braunstein concludes that inequality is inefficient for our economy and it is due to unequal treatment between genders. Men have easier access to resources aren't typically discriminated against. If women had the opportunity to the same jobs as men, this would produce more economic growth. The ideas that Brausntein brings up of patriarchal property rights and women's access to markets are part of the responsibilities of the different institutions that are supposed to be in place. Market creating institutions are supposed to provide property rights, minimize corruption and generally support the rule of law11. Without these different indexes, markets may not exist or perform poorly[11]. These responsibilities of market creating institutions are not being effectively implemented in the economy. This is what I will be investigating in my research, the quality of institutions and gender inequality. Braunstein eludes to the idea that institutions are a cause of the inequality in the economy but never establishes a definite connection.

Another article that I reviewed in my researched is "The Institutional Underpinnings of Gender Inequality" from Gendered Tradeoffs: Women, Family, and Workplace Inequality in Twenty-One Countries. The authors make the argument that "gender inequality is institutionalized through households and within the labor market. There are two general types of institutional effects: those that foster women's labor market inclusion and those that influence inequality among workers"12. They argue that there are institutions that can help female participation in the market or can be counterproductive to achieving equity between genders (Table 2.1, Appendix). The authors believe it is the institutions that are responsible for influencing norms and expectations in the market by impacting the allocation of jobs and wages12. The authors looks into women's economic outcomes while taking into account individual investments in family, education, and domestic obligations. Women who are mothers have poorer conditions in the labor markets than childless women. States are influencing the gender roles and division of labor to put the domestic responsibilities on childbearing female individuals. The authors bring up the point that a demand side explanation of gender inequality in the workforce is a result of employers discriminating against mothers. There is an attitude towards women who are mothers that they are seen as distracted while men who are fathers are motivated. The authors state, "Women's gains in the labor market have been tied to several factors: legal changes that protects the rights of women as workers; worldwide increases in women's educational attainment; declines and delays in childbearing; and growing preferences for gender equality in work and family, articulated in attitudinal surveys"12. Gains in equality that have already been established are due to institutional influences. The authors are looking into why institutions, that are capable of promoting equity in certain areas, cannot make equity gains in economic

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3 Braunstein, Elissa. "The Feminist Political Economy of the Rent-Seeking Society: An Investigation of Gender Inequality and Economic Growth." Journal of Economic Issues, vol. 42, no. 4, 2008, pp. 959–979. www.jstor.org/stable/25511381[10]

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5 Gendered Tradeoffs: Women, Family, and Workplace Inequality in Twenty-One Countries, Russell Sage Foundation, 2009, pp. 21–
44, www.jstor.org/stable/10.7758/9781610446785.6.

sectors. They attribute these norms and attitudes in the workplace as the reason why there is occupational segregation and unequal pay between genders. The supply side explanation is that women look for jobs that offer "nonmonetary benefits for discontinuous employment"12, perhaps for maternity leave, and therefore limit the available supply of jobs that fit with their needs. This also contributes to the segregation and unequal pay. The authors also look into the tradeoff between inclusion and equality and how the more female workers that are included, the more inequality there could be because if women take more part time jobs then this would increase inequality as it would develop men's skills relative to women's. The authors suggest look into how "national levels of publicly provided child care, parental leave, part-time work, and unionization"12, and how these determinants affect inequality. They suggest that state policies "relieve or concentrate caregiving with households" and this is similar to what I am suggesting in my proposal. I am looking into the connection between the quality of institutions and gender inequality and how stronger institutions would promote equality. The authors have stated, "public child care is likely to reduce within-market inequalities, both by enabling women to maintain continuous attachment to the paid labor force while having young children and by signaling the social acceptance of working mothers"12. They have proposed that more involvement from institutions would decrease inequality but I am going further and making the connection between institutions and inequity. Stronger institutions will decrease the inequality between genders.

Another article that I looked into was "Low Schooling for Girls, Slower Growth for All? Cross-Country Evidence on the Effect of Gender Inequality in Education on Economic Development". The article is arguing that improved schooling for females would improve the quality of human capital and promote growth. Using cross-country regressions, the authors look into the effects of inequality in education on growth in countries in South Asia, the Middle East, and Africa where gender inequality in education is holding back the economies. The authors state that gender inequality is hurting these countries because it gender inequality "could also reduce the investment rate and thus indirectly reduce growth, because countries with lower human capital have smaller returns on investment"13. With education for girls being very low in these countries, a portion of the population isn't receiving the education they need to be a part of the work force. The article asserts that, "simulation studies have shown that a more equal allocation of male and female labor among industries would boost economic growth"13. If there was an equal education system in place, countries would benefit from the increased labor and therefore boost economic growth. Currently the institutions in these countries have allowed there to be significant bias in education between genders. It would be to these countries advantage to improve the institutions that are currently in place to focus more on equity between genders as this would actually benefit their overall economic wellbeing.

Another article I looked at "Development, Dependence, and Gender Inequality in the Third World" which aims to compare data of the condition of women between countries, to make a connection between the societal development and female status and to offer a reason between class and gender. The author hypothesizes that economic dependence "varies positively with numbers of women employed in the agricultural and service sectors and with the ratio of women to men participating in these sectors" and "varies negatively with female employment in the industrial sector with the equality of education opportunity, given that crises in capital accumulation constrain family and government resources, thus favoring the education of males over females"14. The author tests her hypothesis with a regression analysis of 60 less developed countries using 10 dependent variables. The article questions the development of the institutions in these countries which is what I will be investigating in my research, how the quality of institutions affects the inequality between genders.

The final paper I looked at regarding gender inequality was "Women Empowerment and Economic Development" by Esther Duflo which discussed the relationship between empowerment and development between genders and how to improve women's empowerment through several channels. The article states that, "There is a bidirectional relationship between economic development defined as improving the ability of women to access the constituents of development-in particular health, education, earning opportunities, rights and political participation"15. Through these different channels, equality can be established. The United Nations released a report that called for "policies to address gender imbalance in 'rights, resources and voices". The article is stating that there needs to be an improvement in economic development and policies need to be implemented to establish equality between males and females15. The article suggests several ways to improve equality: decreasing constraints poor households face, decreasing maternal mortality and increasing opportunities, decreasing domestic

[6] Klasen, Stephan. "Low Schooling for Girls, Slower Growth for All? Cross-Country Evidence on the Effect of Gender Inequality in Education on Economic Development." The World Bank Economic Review, vol. 16, no. 3, 2002, pp. 345–373.www.jstor.org/stable/3990191

[7] Marshall, Susan E. "Development, Dependence, and Gender Inequality in the Third World." International Studies Quarterly, vol. 29, no. 2, 1985, pp. 217–240. www.jstor.org/stable/2600507.

[8] Duflo, Esther. (2012). Journal of Economic Literature, Vol. L, 1051-1079. Retrieved December 11, 2016.

obligations for females, and improving women's rights. The proposal to improve rights for women entails "women's legal rights, access to land, access to bank loans, violence against women, abortion policy, etc"15. The author makes the point that if these rights were established, then the gap between genders would decrease. This is relevant to what I am looking into as institutions are responsible for protecting property rights, decreasing corruption and supporting the rule of law. However, there are weak institutions in place as Duflo states, "In legal rights: women in many countries still lack independent rights to own land, manage property, conduct business, or even travel without their husband's consent"15. Institutions are not fulfilling their responsibilities as there is lack of rights for women. Duflo proposes different policies regarding women's rights to decrease the inequality. For example, increasing the number of women in government will better equity because female leaders will have women's best interests in mind when voting and designing policies. This is similar to what I will be proposing and investing in my research.

STATEMENT OF MAJOR CONTRIBUTION

In my research, I hope to establish a connection between the quality of institutions and gender inequality. Part of the literature implies that there is a connection, however, there has not been an actual correlations between the two. I am proposing gender inequality cannot be addressed until institutions are improved. Using different variables, I will establish what institutions are and the responsibilities of institutions and use these factors to judge the institutional quality. The different indexes I used to measure institutions are: corruption perception index, women in parliament, government effectiveness, and regulatory quality. Then, I will use the gender wage gap to assess the inequality between genders in different countries. Finally, I used a correlation analysis to assess the relationship between the quality of institutions and gender inequality.

There were a variety of different variables I looked at when looking at how to measure the quality of institutions. There are several different types of institutions including market creating, market regulating, market stabilizing, market legitimizing, and political institutions. I specifically looked at market creating institutions as the responsibility is to protect property rights, minimize corruption and support rule of law. In the article, "New Comparative Economics", the author states economists have agreed that good economic institutions must secure property rights, enabling people to keep the returns on their investment, make contracts, and resolve disputes"[16]. This asserts that strong institutions fulfill their responsibilities. Using the corruption perception index, women in parliament, government effectiveness, and regulatory quality, I hope to analyze how strong and effective the institutions are between countries.

The corruption index is based on expert opinion and measures the "perceived levels of public sector corruption worldwide"[17]. Countries that have higher levels on a scale of 0 to 100 are considered "clean", while countries that have lower levels are considered "highly corrupt". I used this variable as it reflects some aspects of a market creating institutions that would be an appropriate determinant of the strength of the institutions in a country.

I then looked at government effectiveness as it "captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies"[18]. I used this index to measure the effectiveness of the government and the policies that are in place. The scale ranges from -2.5 (weak) to 2.5 (strong). This will allow me to analyze how effective the current policies are regarding gender inequality.

The next index I used was the regulatory quality where the index ranged from -2.5 (weak) to 2.5 (strong). This variable "captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development"[19]. This variable is appropriate as I will be looking at if the government has the correct policies in place.

Another variable I used was women in parliament to measure the "percentage of parliamentary seats in a single or lower chamber held by women"[20]. I used this as Duflo previously stated that women in government are more likely to have women's best interests in mind when voting and proposing policies. This will allow me to analyze if female participation in government has an effect on gender inequality.

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[9] Djankov, S., Glaeser, E., Lopez-de-S, F., & Shleifer, A. (2003). "The new comparative Economics". *Journal of Comparative Economics*, 595-619. Retrieved December 11, 2016.

[10] http://www.transparency.org/cpi2015#results-table

[11] http://www.theglobaleconomy.com/rankings/wb_government_effectiveness/

[12] http://www.theglobaleconomy.com/rankings/wb_regulatory_quality/

[13] http://www.theglobaleconomy.com/rankings/Women_in_parliament/

The final variable I used was the gender wage gap index[21] which is calculated as the difference between median earnings of men and women relative to median earning of men. The higher the gap, the more inequality there is in that particular country. The data is a good measurement of gender inequality in the workforce as women are less likely to "work full-time, more likely to be employed in lower-paid occupations and less likely to progress in their careers". This index is a good evaluation of the rights of women in a country and how much of a priority equality is in a certain country.

DESCRIPTIVE STATISTICS

Using 13 countries, I have analyzed the 5 different variables using a correlation analysis and descriptive statistics. Table 1 (Appendices) depicts all of the countries and the different variables used. Countries like Portugal, Germany, Finland, and Norway have higher percentages of women in parliament. Finland, Switzerland, and Japan have higher government effectiveness. While countries like Finland, Switzerland, and the United Kingdom have high regulatory quality. There is less corruption in countries like Finland, Norway, and Switzerland. In addition, there is less of a gender wage gap in Belgium, Norway, France, and Italy.

Table 2	
Corruption Index	
Mean	73.38462
Standard Error	3.427899
Median	76
Mode	76
Standard Deviati	12.35947
Sample Variance	152.7564
Kurtosis	1.978707
Skewness	-1.20086
Range	46
Minimum	43
Maximum	89
Sum	954
Count	13

In Table 2, I used descriptive statistics for the corruption index to analyze the mean in order to see the average corruption perceived across the 13 countries. The mean turned out to be 73.384 out of 100, meaning that corruption is still for the most part perceived to be fairly high. The data is skewed to the left as it is negatively skewed. I analyzed this as the majority of the countries having more corruption.

Table 3	
Government Effectiveness	
Mean	1.476923
Standard Error	0.136689
Median	1.6
Mode	1.4
Standard Deviation	0.492838
Sample Variance	0.24289
Kurtosis	0.703546
Skewness	-0.96178
Range	1.75
Minimum	0.38
Maximum	2.13
Sum	19.2
Count	13

[14] http://stats.oecd.org/Index.aspx?DataSetCode=GID2

In addition, in table 3, I analyzed the government effectiveness descriptive statistics. The mean turned out to be 1.4769 on a scale of -2.5-2.5. I perceived this as the countries I analyzed to have strong government control. The sample I used was only for 13 countries which leaves room for error as it is a small sample size, however, I used this sample to show that even in developed countries there are problems of corruption and gender inequality even when the government effectiveness is high.

Table 4	
Regulatory Quality	
Mean	1.369231
Standard Error	0.117743
Median	1.27
Mode	#N/A
Standard Deviatio	0.424528
Sample Variance	0.180224
Kurtosis	-1.35611
Skewness	-0.24972
Range	1.24
Minimum	0.66
Maximum	1.9
Sum	17.8
Count	13

The regulatory quality (table 4) is supposed to assess effectiveness of the policies that are in place. The mean of the countries I selected is 1.369 which is less than government effectiveness but still is a strong result. This tells me that the policies that are in effect are effective in what they are supposed to be doing.

Table 5	*Women in Parliament*	*Government Effectiveness*	*Regulatory Quality*	*Corruption Index*	*Gender Wage Gap*
Women in Parliament	1				
Government Effectiveness	0.03003	1			
Regulatory Quality	0.171543	0.832469	1		
Corruption Index	0.198302	0.963345	0.845791	1	
Rule of Law index	0.441476	0.727554	0.563305	0.780508	
Gender Wage Gap	-0.37217	0.420921	0.307228	0.328756	1

In addition to descriptive statistics, I did a correlation analysis (table 5). I wanted to analyze the institutional variables and the gender wage gap. In my results, I found that the gender wage gap is negatively correlated with women in parliament. In addition, I found that government effectiveness, regulatory quality, and corruption index are positively correlated with the gender wage gap.

DISCUSSION/ANALYSIS

In my analysis, I assessed the negative correlation as the more women involved in the government, the less inequality there is. This is similar to what I found in the previous literature. Female representatives and officials are going to be more likely to keep in the mind female interests when voting or favoring different policies. The past literature implied the connection but the data I found showed a correlation. In the past government has been male dominated but has slowly integrated more female representatives. The gender inequity in government has presented itself has a norm which has worked against the female population. The more female involvement there is, the less of a gender wag gap. The government as an institution and the norm as an institution are weak as they are working against a large portion of the population and actually hindering the economy as a whole. The previous literature repeatedly talks about how gender inequality decreases economic growth. The current institutions are not beneficial to the economy and I have evaluated these institutions as weak.

The next variable I analyzed is government effectiveness, which is positively correlated with the gender wage gap at a correlation of .4209. I evaluated the countries as having high effectiveness, which meant the government is doing what they are supposed to be doing. The fact that it is positively correlated with the wage gap tells me that the government does not have the correct policies or laws in place to decrease the inequality in the workplace. The article by Esther Duflo mentions this idea and states that there needs to be an increase in economic development and policies to establish equity between genders. This result I think establishes the needs for different policies. The current institutions are working against the female population and I perceive this as very low quality institutions exist. Also, regulatory control and the wage gap were positively correlated which I analyzed similarly to government effectiveness. Regulatory control is the measure of how effective the current policies are perceived. This means that the current policies are working against gender equity as well. The final variable, the corruption index, was used to measure the quality of the institutions as market creating institutions are supposed to protect property rights and reduce corruption. In countries that I have evaluated, corruption is supposedly low but the inequity is still present. Women are paid significantly less in some countries which tells me that the quality of institutions are not as high as what people would expect. In table 1 (Appendix), Finland has the highest corruption index which means it is perceived as a very clean country, however, the gender wage gap is also the highest out of the 13 countries. I think this presents a huge problem for these countries as they are supposed to be developed countries but still manage to ignore a significant segment of the population. The question that comes to mind is, how an advanced country can really call itself developed and a world leader when they have not addressed significant discrimination that is still very much prevalent in the economy. The previous literature states different reasons as to why gender inequality and attributes the reasoning to be a lack of schooling and policies but I think that the main reason is the quality of institutions that exist. My major proposal is that if we improve our institutions then the gender inequality will decrease. I think that the data shows that the government has an effect on the inequity but has not done anything to change. I agree with the previous literature in that there needs to be a change in the policies to promote equality.

CONCLUSION

In the beginning, I was aiming to make a connection between institutions and inequality. The results show that there is a correlation that exists in the 13 developed countries that I chose to analyze. I think this information is a good indication that the current conditions need to be adjusted in that the policies and legislation needs to be improved. The literature that I reviewed mentioned childcare for working mothers so that there wasn't as much of a domestic obligation for them as the historical norm is for women to stay home over men. I think the link between informal and formal institutions need to be examined carefully as our society is advancing but we as a people are not as a huge percentage of our population is still at a disadvantage. This all stems from the fact that our institutions are not as strong as what we would like to see and by improving our institutions we can work towards decreasing inequality and improving society and economy as whole.

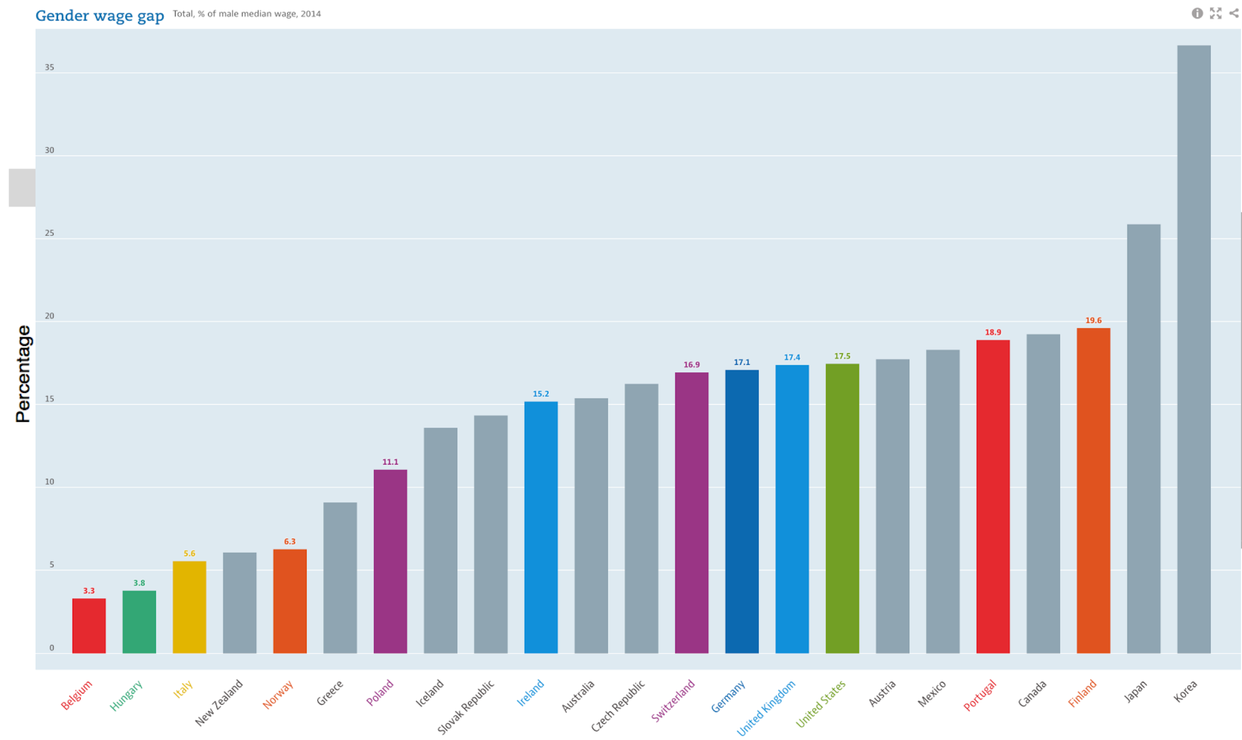
APPENDICES

Table 1

Counties	Women in Parliament	Government Effectiveness	Regulatory Quality	Corruption Index	Gender Wage Gap
Belgium	39.3	1.4	1.17	76	3.299
Finland	41.5	2.02	1.9	89	19.60908
Germany	36.5	1.73	1.7	79	17.079531
Ireland	16.3	1.6	1.75	74	15.173429
Italy	31	0.38	0.66	43	5.5555553
Norway	39.6	1.81	1.64	86	6.2827225
Poland	27.4	0.82	1.06	61	11.072863
Portugal	34.8	1.01	0.77	63	18.879688
Switzerland	32	2.13	1.82	86	16.94
United Kingdom	29.4	1.62	1.83	78	17.382742
United States	19.4	1.46	1.27	74	17.451206
Japan	9.5	1.82	1.14	76	26.6
France	26.2	1.4	1.09	69	0.6498

Table 2.1 The Theoretical Framework

	Inclusion	Exclusion
Equality	Conditions foster high levels of female employment by relieving women of the demands of child-rearing. Reduced domestic demands foster equality in hours worked, occupation, and pay among the employed.	Conditions foster low levels of female employment by establishing ideal-worker norms inconsistent with the demands of child-rearing. Gender-neutral employment protections, however, foster equality in hours worked, occupation, and pay among the employed.
Inequality	Conditions foster high levels of female employment by promoting flexible working arrangements that allow women to combine employment with disproportionate responsibility for child-rearing. Expectations of gender specialization at home and at work foster inequality in hours worked, occupation, and pay among the employed.	Conditions foster low levels of female employment by concentrating the demands of child-rearing within the home. Expectations of gender specialization at home and at work foster inequality in hours worked, occupation, and pay among the employed.



A chart of the gender wage gap in the countries I analyzed.

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EXECUTIVE SUMMARY OF AFTERLIFE

Nick Grammatica, Siena College
Matt Nooney, Siena College

ABSTRACT

Furniture is becoming costly and made from cheap material and generally does not last long. The average piece of furniture costs around $1,700 and may only last 2 years causing the consumer to make frequent purchases. This adds up. We have estimated that the average consumer will purchase around four sets of furniture throughout their lives making it a very costly expense. Furniture is not only valuable, but it is essential to offices, homes, and anywhere else indoors. This is where Afterlife Re-Construction comes into play.

At Afterlife Re-Construction, we value your money. We value your decor. We value you; the customer. We will provide high valued, customizable furniture that is made from recycled material that will be on average 10-15% lower in cost than our competitors. This will save our customers both money and time because our furniture will last 2x as long. We will create our first base product line within 12 months and have 180 sales within the first year of business.

Sounds do-able? We agreed on a yes. Afterlife Re-Construction will have many competitors in the entire recyclable furniture industry, but we offer many competitive advantages. We will be priced similar to our competitors, but we will offer customization as well as negotiations. We want our customers to see that we really do care about all aspects of them and our business.

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EXECUTIVE SUMMARY OF CARMODE

Ryan Parshall, Siena College
Javion Ogunyemi, Siena College
Koushik Pernati, Siena College
Aidan Trees, Siena College

ABSTRACT

There is a major problem happening that currently affects almost all Americans. That problem is distracted driving and the issues it can and does cause. Distracted driving cannot only cause expensive car accidents and injuries, but it can lead to death. In 2015 there were over 3,000 deaths as a result of distracted driving. Data has also shown that 6 out of every 10 teen car crashes is a result of distracted driving as well. Car Mode is the solution to this major problem as we will not only limit, but put an end to distracted driving.

Many parents of young new teen drivers are very worried about letting their children drive by themselves or with peers because of distracted driving and the use of phones with teens. Car Mode will be the easy fix to these parents. We have created a mobile app that can be downloaded to any smartphone for use. Our app will have three different options of functionality that the user, or the user's parent, can select from. Through Car Mode we can monitor app usage, block app usage, and block specific apps while user is driving while our app is on because we can constantly monitor the speed the phone is traveling at.

We can keep track of exactly how fast phones are traveling, where the phone is through GPS, notifications we've blocked when Car Mode is on and many other important features that will put an end to distracted driving. Because of these features we feel confident that car insurance companies will want to pair up with Car Mode to offer our features to their drivers they insure.

There are many reasons why people will download and use Car Mode on their smart phones. The consumer will have the ability to ensure in their own safe driving practices. Teenagers will be able to let their parents or guardians monitor their safe driving and build trust together.

Car Mode will generate revenues through fees to insurance companies and individual users who download the app. We will also be able to generate and store metadata that can be sold to companies from a marketing standpoint. Lastly, we will partner with companies to offer gift cards and a rewards system for safe driving through our app. Car Mode isn't just ensuring safe driving, it's keeping our future generations safe.
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EXECUTIVE SUMMARY OF COOLBANDZ

Joshua Daly, Siena College
Joe DeMarco, Siena College
Anthony Chapones , Siena College

ABSTRACT

CoolBandz is a startup dedicated to improving the lives and safety of outdoor employees. We are dedicated to developing methods and systems to prevent overheating for employees, while lowering risk for companies. Our three main propositions to our customers are, safety, convenience, and comfort. CoolBandz started at Siena College in 2016. CoolBandz was founded by, Joshua Daly, Anthony Chapones, and Joe DeMarco (Pictured Below). During the Fall, CoolBandz worked through their customer discovery and found a customer segment with a problem. We found common ground in the summer heat. Working outside in the most intense heat is miserable and there is little refuge from the sun. Workers in certain industries, paving or landscaping for example, are often at the highest risk and have the fewest resources. While conducting our interviews, we met landscapers, construction workers, farmers, loggers, etc. that have all experienced overheating. Many knew someone personally that had succumbed to the heat. This customer segment must vulnerable to overheating are outdoor workers. The main issue with overheating is that there is no modern solution for workers. The current protocols are:

- *Water*
- *Shade*
- *Breaks*

The current solutions and protocols alone have not been effective with over 100 deaths occurring over the past six summers (OSHA heat fatality map). There is a need in the Personal Protective Equipment (PPE) industry for a simple system to implement these protocols. Workers in the agricultural industry are paid Piece-rate, and will sometimes be dishonest about breaks to earn more money. Employees who are not proficient in English may not be able to communicate how they feel.

CoolBandz's "ColorBandz" system will make sure that everyone is following the heat safety protocols. When we realized these major problems, we knew we had to develop a solution. The ColorBandz system integrates removable visual indicators to an employee's uniform. The ColorBandz system will be sold to companies with more than twenty employees who work outdoors. Colorbandz will assign a color or visual indicator to a grouping of 10 or more employees, the color will be changed after every break or check. If you are supervising 65 employees on a farm, it will take a thirty-second look to see who has been following the safety protocols.

Our goal this summer is to test our first system. We would like to get one to five Minimum Viable Products out for testing in Florida and Texas. We believe once we prove our product is effective, it will be ready for market. At Siena College, there are many Alumni and Faculty with connections to the plastics industry, so we will make our prototype product at minimal costs. Once we are done with the initial testing, we will deploy a sales force to companies at high risk for overheating. Our long-term goal is to be known as a company with common sense solutions for all problems faced for outdoor employees, and look forward to improving the lives of outdoor employees over the coming years.

EXECUTIVE SUMMARY OF FINEST TIDE OYSTERS

Robert Ewing, Siena College
Michaella Barracato, Siena College

OUR COMPANY

Finest Tide plans on selling the freshest, top quality oysters on the east end of Long Island, New York. Our company is currently a team of two. Since high school, Robert has been passionate about oyster farming. For the past two summers, he has been working at an oyster farm gaining the knowledge and insight of running an oyster farm. Michaella has extensive knowledge about marketing, sales, and financial planning. She gained experience working in a professional environment by interning as an accountant at Louis Berger during the summer of 2016.

OUR PRODUCT

Finest Tide Oysters will be growing oysters in stack cages on a bay lease site acquired from the Suffolk County shellfish aquaculture lease program. We have come up with a structure that will let us store thousands of market size oysters in a space where they can continue to grow in certified clean water right up until we sell them. This unique structure is something we like to call wet storage and will be attached to a dock at our onshore headquarters. With the help of our wet storage structure, we will be able to sell oysters with short notice for our customers seven days a week. Finest Tide Oysters will be solving a problem that many seafood restaurants and fish markets currently have. When a restaurant or fish market runs out of oysters during a shift, they have a hard time finding a way to get more fresh oysters in short notice. This often happens during the summer months in a high tourist density area. Most oyster farms cannot fill orders without a notice a couple days prior. If one of their customers run out of oysters they will be losing out on potential sales until the farm can resupply them. Since we will have access to market size oysters right off our dock, we will be able to guarantee that we can have oysters ready for pick up or delivery in less than an hour seven days a week during our business hours. This is important to note because this is something most oyster farms are still trying to figure out how to solve.

EXECUTIVE SUMMARY OF INKY

George Santoire, Siena College
Simon Bruno, Siena College
Mikayla Lansing, Siena College
Hamza Memon, Siena College
Tristan Canova, Siena College

ABSTRACT

Writers young and old are constantly intimidated by posting their content online. Sharing work online is a vulnerable process, especially for those who do not have a large audience to support them. Inky is a platform designed to give these writers a voice and one that takes away the social pressures that come with sharing creative written expressions online. Social pressure is defined as the perpetual feeling of needing to impress your audience. This feeling is measured in a variety of ways in current platforms—likes, retweets, comments, up-votes, shares, etc. Our customer's pain point is the common way of measuring successful content. To solve this problem Inky ceases to use any of these tools. Numbers do not define the success of the content on Inky. Successful content is defined by what lies within the content itself, not how many likes it has. Our customer is the person who keeps a list of poems, short stories, or quotes on the notes app in their phone and is too afraid to share them with world. Our customer is creative, yet weary of risks. Common social media platforms scare our customer. Inky replaces that notes app and enables them to share their creative genius with the world. Our customer is drawn to our product because it is inviting, open, and receptive. We monetize our application by giving publishers the opportunity to find diamonds in the rough. Publishing businesses can recruit talent off of our platform and give them the ultimate voice, all made possible by Inky. Inky will then take a royalty on the published material, along with being able to capitalize on our extensive user base. Our competition is broad, there are a vast amount of other platforms that allow users to post content. Blogger, anonymous Instagram accounts, Tumblr, Twitter, and Myspace are some examples of our competition. What sets us apart is our ability to solely focus on literary content at its core. Similar to how Visual Supply Company (VSCO) focuses on the core elements of photography, our focus is on literature. What VSCO has done for photographers, and what SoundCloud has done for music artists, we'll do for writers. Inky will act as a microphone for those with a voice too soft to be heard.

CAN BITCOIN BECOME A VIABLE ALTERNATIVE TO FIAT CURRENCIES?

Vavrinec Cermak, Skidmore College
Monica Das, Skidmore College

ABSTRACT

My study will examine whether Bitcoin, a digital decentralized currency, can become a viable alternative to other fiat currencies. The theoretical roots of Bitcoin can be found in the Austrian school of economics but not all Austrian economists support Bitcoin because it is not backed by a commodity. The Keynesian economists are also critical of Bitcoin because the cost of creating a Bitcoin clone is virtually zero, because it is not backed by a "too-big-to-fail entity" that could buy it back if necessary and because it does not serve as a reliable store of value. According to the previous literature and my own analysis, Bitcoin currently does not fulfill the criteria of being a currency. A currency must function as a medium of exchange, a unit of account and a store of value. Bitcoin's biggest obstacle from fulfilling these functions is the price volatility. In the practical part, I will use the GARCH models to forecast Bitcoin's volatility and determine whether it can reach the volatility levels of other fiat currencies and therefore fulfill the criteria of being a functioning currency.

ACRONYMS AND TERMS

Blockchain - a decentralized public ledger
Bitcoin Wallet - a place (could be both hardware and online) where bitcoins (more specifically private keys) are stored
Altcoins - alternative cryptocurrencies
Bitcoin Exchange - a place where a person can exchange fiat currencies to bitcoin and vice versa. A Bitcoin Exchange usually also functions as a Bitcoin Wallet
FinCEN - Financial Crimes Enforcement Network
PBoC - People's Bank of China
MSB - Money Service Business
EIA - U.S. Energy Information Administration
IRS - Internal Revenue Service
GH/s - Gigahash per second
BTC - bitcoin (a unit of currency)
USD - U.S. Dollar
CNY - Chinese Yuan

THEORETICAL PART

<u>Origin of Bitcoin</u>

Bitcoin[22] was firstly mentioned in 2008 in a self-published white paper written by an anonymous person (or people) who went under the pseudonym of Satoshi Nakamoto (Nakamoto, 2008). In the paper, Satoshi described Bitcoin as a payment system, which uses a decentralized peer-to-peer cryptocurrency with a finite monetary supply. There is a theory that Nakamoto created Bitcoin as a response to the global financial crisis in 2008 (New York Times, 2013). Before the introduction of Bitcoin, online payments relied exclusively on financial institutions that act as trusted third parties to process electronic payments (Nakamoto, 2008). Satoshi Nakamoto was the first developer who solved the problem of replacing the trust model with cryptographic proof, which ultimately eliminated the need of an intermediary and replaced it with a peer-to-peer network. He also solved the problem of double spending by recording all transactions on a decentralized public ledger called a blockchain (Nakamoto, 2008). All transactions

[1] In the remainder of this paper, I will use Bitcoin with a capital "B" when talking about the protocol and payment system. I will use lower-case "b" when talking about the denomination of the currency

that happen on Bitcoin are verified by network nodes, which are essentially computers that are connected to the Bitcoin network. These network nodes are called the “miners” because they get compensated in bitcoin for verifying transactions. Bitcoin compensation is an incentive that keeps Bitcoin running. Therefore, the nodes are “mining” bitcoin in exchange for their computing power. One year after publishing the white paper, Nakamoto released Bitcoin as an open-source software and made it available for anyone to use[23].

Brief History

Even before Bitcoin, the idea of a digital currency was nothing new. David Chaum, a pioneer for cryptographic protocols, wrote the first paper that outlined an anonymous payment system by using blind signatures (Chaum, 1982). Since then, cryptographers published several academic papers attempting to improve the security and efficiency of the hypothetical digital currencies (Barber et. al, 2012). Some of these ideas came to life in forms of independent digital currencies - Digicash, E-Gold, Flooz and Beenz. However, the lack of decentralization, transparency and security ultimately led to extinction of all of these.

After the release of the open-source code, the first 50 BTC were mined by Nakamoto himself in order to demonstrate the method to online observers (Yermack, 2013). The first Bitcoin real word transaction took place in May of 2010 when Laszlo Hanyecz, a programmer living in Florida, sent 10,000 BTC to a volunteer in the United Kingdom, who then ordered two pizzas for Hanyecz, which cost him 25 USD (Yermack, 2013). Today, 10,000 BTC have value of over 10 million USD. The interest interest for Bitcoin, especially among computer enthusiasts, led to the creation of Mt. Gox, the first Bitcoin exchange. Before that, users could only “mine” their own bitcoins but the introduction of a Bitcoin exchange meant that they could buy bitcoins in exchange for fiat currencies (Yermack, 2013). On the first day of trading, Mt. Gox sold 20 BTC and offered one bitcoin for the rate of 4.96 cents (Yermack, 2013). A first and only vulnerability was discovered in the Bitcoin verification mechanism in 2010, which allowed hackers to extract large amounts of bitcoin. However, the code has been patched quickly and the falsely mined bitcoins had been deleted from the blockchain. Ever since then, there has not been a single vulnerability in the Bitcoin verifying mechanism or Bitcoin blockchain. Moreover, the Bitcoin blockchain has never been hacked according to a former White House communicator Jamie Smith (Golumbia, 2016) and it is thought to be virtually unhackable.

In the year 2011, Bitcoin started getting more widely used. Its popularity was sparked because Bitcoin is global, anonymous, has low transaction costs, accounts cannot be frozen and there are no prerequisites or arbitrary limits (Grinberg, 2011). Controversial organizations such as Wikileaks started accepting bitcoins as anonymous donations (Grinberg, 2011). Financial institutions such as PayPal, Visa, Mastercard, which were susceptible to government pressure, cut off its services to Wikileaks because of its controversial political affiliations. This made Bitcoin a perfect option to use as a donation system. However, its anonymity also started attracting illegal activities including black markets that sold illegal goods online. The operation of a darknet marketplace called “Silk Road” was discovered, which created a nightmare for the FBI because it was impossible to track the illegal transactions. Even though “Silk Road” was shut down by the FBI in 2014, there are now several replacements, which still use Bitcoin as a payment system. On February 9, 2011, Bitcoin briefly reached parity with USD on Mt. Gox (Miller, 2014). The interest in Bitcoin skyrocketed after the Time magazine wrote one the first mainstream article describing the digital currency in April of 2011. Later in 2011, the first conferences about Bitcoin took place in New York City and the first european conference was held in Prague, Czech Republic (Miller, 2014).

In 2012, several startups such as Coinbase started forming, which aimed to let the nontechnical users get started with Bitcoin (Stross, 2012). Coinbase created an online technologically friendly bitcoin wallet, which let users buy bitcoins in exchange for USD and then store the bitcoins online. Moreover, by the end of 2012, a French company called Bitcoin-Central became the first Bitcoin exchange to be licensed to operate as a bank (Santon, 2012). Bitcoin-Central also functioned within the framework of the European Union, which meant that customers' funds were held under their name rather than that of the exchange.

In 2013, FinCEN established regulatory guidelines for “decentralized virtual currencies”, which classified Bitcoin “miners” and exchanges as MSB (Miller, 2014). All MSB's are required to be registered and are subject to legal requirements such as disclosing large transactions or suspicious activities. As a result, Mt. Gox started dealing with serious legal issues. In May of 2013, the U.S. Department of Homeland Security seized more than 5 million USD from its U.S. accounts because Mt. Gox had not registered as a MSB with FinCEN (Miller, 2014). Mt. Gox received a MSB license in June of 2013 but ever since then, its users started experiencing long delays of their USD withdrawals (Miller, 2014). Mt. Gox, was handling 70% of all Bitcoin trading (Vigna, 2014), which means that even a slight issue with Mt. Gox resulted in price fluctuations of bitcoin. When the difficulties with Mt. Gox started

[2] https://github.com/bitcoin/bitcoin

becoming apparent, more and more people tried to withdraw their funds. Nearly one million customers lost trust in Mt. Gox, which had caused a digital bank run. There were speculations that these issues were caused by a system of fractional reserves and that Mt. Gox simply did not have enough reserves to satisfy all withdrawals (Howden, 2014). Towards the end of February, Mt. Gox announced that the company filed for bankruptcy protection. The company claimed that an error allowed hackers to steal more than 850,000 bitcoins, worth around 480 million USD (Williams-Grut, 2014). Mt. Gox had 127,000 creditors, debt of 6.5 billion CNY (63.67 million USD) and assets of 3.84 billion yen (Sidel et al., 2014). Because Mt. Gox was located in Tokyo where Bitcoin exchanges were unregulated, customers had no legal protection, moreover, digital currencies are not backed by the central banks. This event had crippled the faith in Bitcoin for many investors and the price plummeted.

On the other hand, the first Bitcoin ATM was launched in Vancouver in 2013 (Liljas, 2013). The ATM let customers withdraw their Bitcoins in canadian dollars and it also let them deposit canadian dollars, which were quickly converted to their Bitcoin wallets. Currently, there are 956 Bitcoin ATMs in 55 countries[24]. Moreover, several retailers began accepting Bitcoin as a means of payment; notably Overstock.com, Reddit, OKCupid, Wordpress, Microsoft, Expedia and Virgin Atlantic (Acharya and Dunn, 2014). By the end of 2014, IRS announced that it will be treating Bitcoin as an asset rather than a currency, which means that any capital gains from selling or "mining" bitcoin are treated the same way as selling shares (IRS, 2014).

Bitcoin's Supply

In a centralized economy, fiat currency has, theoretically, an infinite supply. It is at a central bank's discretion to inject or withdraw money into the banking system in order to match the growth of the economy. The central banks have distinct instruments of monetary policy, by which they control the monetary base. The most common methods are the open market operations, modifying the reserve requirements and changing the short term interest rates.

In a decentralized monetary system, no central authority can regulate the monetary base therefore monetary policy would be ineffective. Bitcoins are created by the "miners" around the world as opposed to the central bank. The Bitcoin's algorithm defines, in advance, at what rate the currency will be created and how it will be created (Nakamoto, 2008). A new Bitcoin is created when a "miner" discovers a new block. He does this by solving cryptographic mathematical problems. Every year, the number of blocks discovered is constant at 52,500[25]. However, the number of bitcoins generated per one block does not stay constant. In fact, it decreases geometrically every 210,000 blocks (roughly four years). This decreasing-supply algorithm is supposed to replicate the rate at

[24] https://coinatmradar.com/

[25] Keep in mind that it is not exactly one year. On average, it is 343 days. The length varies depending on the mining power and network difficulty. In the future, it could take significantly less time.

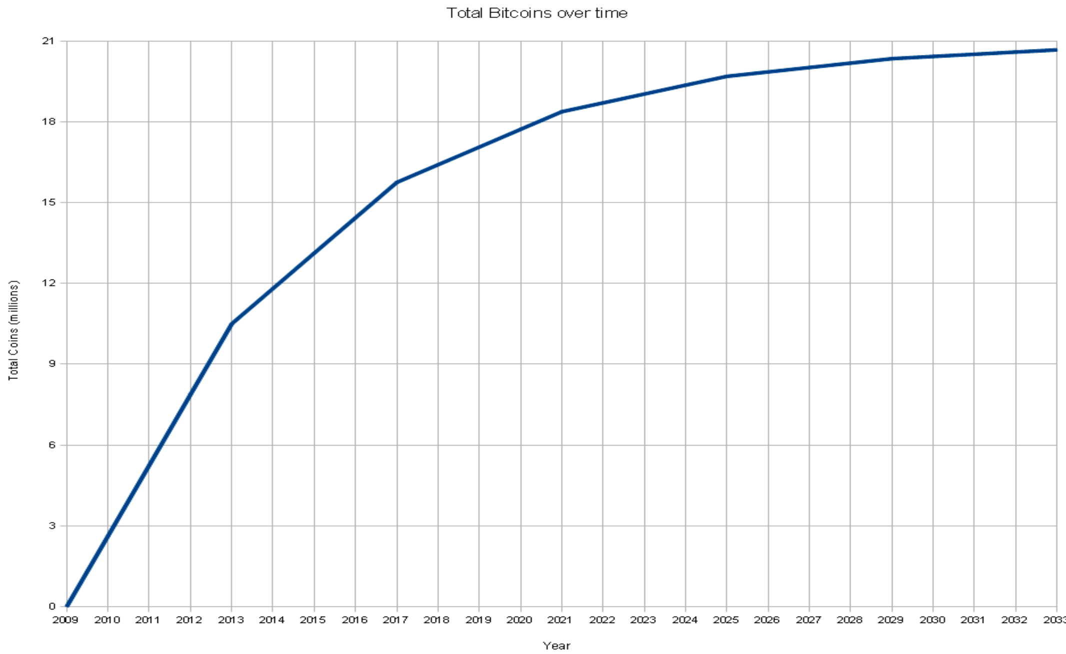
which commodities such as gold are mined (Bitcoin.it, 2017). Because of the reward halving every four years, the maximum amount of bitcoins that can ever exist is 21,000,000. As of the time of writing, there were 16,400,000 bitcoins in circulation. This final amount of Bitcoin can be calculated by the following formula:

$$\frac{\sum_{i=0}^{32} 210000 \lfloor \frac{50.10^8}{2^i} \rfloor}{10^8}$$

The chart below shows the number of bitcoins in the short term:

Yr	Date	Blocks	BTC/block	BTC Added	BTC
1	2009	0	50	2,625,000	2,625,000
2	2010	52500	50	2,625,000	5,250,000
3	2011	105000	50	2,625,000	7,875,000
4	2012	157500	50	2,625,000	10,500,000
5	2013	210000	25	1,312,500	11,812,500
6	2014	262500	25	1,312,500	13,125,000
7	2015	315000	25	1,312,500	14,437,500
8	2016	367500	25	1,312,500	15,750,000
9	2017	420000	12.5	656,250	16,406,250

Currently, it is estimated that 99% of all bitcoins will be mined by 2040 and the remaining 1% will be mined in the next 100 years (Yermack, 2013). The graph below shows how many bitcoins will be added to the circulation over time.



However, it is impossible to predict the exact year without knowing the future advances in the mining power and network difficulty. As the number of bitcoins that are available decreases, the difficulty of solving the cryptographic problems increases. In 2009, a person with a personal laptop could mine 200 bitcoins in a few days but in 2014, it would take about 98 years to mine just one bitcoin on a personal computer (Beigel, 2016). The increase in difficulty is caused by an increase in mining competition. Thus most of the mining right now happens in specialized mining pools with power efficient supercomputers situated in a place with cheap electricity. Because of these reasons, over 70% of Bitcoin mining pools are located in China (Popper, 2016). Therefore this poses an issue for the "miners" in the future because they will need to use more powerful computers, which will be more expensive and consume more electricity and the rewards will be getting smaller. This is one of the big potential problems of Bitcoin. The Bitcoin community hopes that because of its deflationary pressures, the value of Bitcoin will increase until the next halving and keep mining profitable. The profitability of new miners entering the market decreases because of the reward halving and the lack of economies of scale, which creates a barrier to entry that could lead to a further centralization of Bitcoin (Valfells and Egilsson, 2016). Valfells and Egilsson found a break-even point, at which it makes economic sense for independent miners to enter the market. For the current reward (12.5 BTC/block), which will be in effect for at least the next three years, the breakeven point is 600 USD/BTC (Valfells and Egilsson, 2016). New York Times reported in 2016 that three Chinese mining companies process over half of the Bitcoin's computing power, which technically gives them an ability to veto over any changes to the Bitcoin software and technology (Popper, 2016). If the leading mining companies decided to cooperate[26], they could theoretically alter the original code and make macroeconomic decisions similar to the central banks. However, such cooperation is unlikely to be formed because Bitcoin's users would stop using the altered version of Bitcoin but instead they would use the older version and these miners would lose all the profits. Any alteration of Bitcoin's code would result in a fork, which means that the network would split in two separate Bitcoin networks. That has not happened yet at the time of writing but it is a possibility in the future.

Because there is a finite amount of Bitcoins with a decreasing supply, rational people will expect the value to increase in the future, which means that they will tend to hold the bitcoins rather than spending it. Bitcoin is theoretically disinflationary, which means that the inflation rate is slowing down every four years until all the remaining bitcoins are mined and then it becomes deflationary. Deflation in fiat currencies causes economic activity to slow down because people do not spend enough of it. In my opinion, this is valid only in currencies, in which transactions are made in. For example, if I want to buy a laptop in the United States, I have several options. I can either pay in cash, with a debit card, credit card, PayPal, bank wire or even Bitcoin. However, all of these transaction will be denominated in USD whether I like it or not. The website that sells the laptop will show the price in Bitcoin but the price will fluctuate based on the current price of bitcoin. So if I decide to pay in bitcoin, I send the

[3] assuming that they would have more than 51% of Bitcoin's mining power combined

money to the website's Bitcoin wallet and as soon as the store receives them, they will most likely convert them to USD as soon as possible. As long as Bitcoin is not widely used on a global level, deflation, or maybe more accurately appreciation, is not a problem but a positive for everyone involved.

Schools of Economic Thought

In order to determine whether bitcoin can become a viable alternative to other fiat currencies, I will look at two schools of economic thought - Austrian and Keynesian. I will analyze how these frameworks view Bitcoin in theory.

Austrian School

In 2012, the European Central Bank (ECB) published a study of the decentralized cryptographic money, in which they say: *"the theoretical roots of Bitcoin can be found in the Austrian school of economics"* (ECB, 2012).

One of the cornerstones of the Austrian School is the Austrian business cycle theory, which originated from economists Friedrich Hayek and Ludwig von Mises. The theory suggests that the occurrence of business cycles in the economy is not a natural phenomenon but rather that it is caused by the central banks and fractional reserve banking. According to the theory, the business cycle is the consequence of government manipulation of the money supply and the interest rates. The idea behind it is that when the central banks keep the interest rates artificially below where the free market rate would have been, it sends a false signal to the productive segments of the economy. According to Ludwig von Mises, the false signals result in in badly allocated business investments or malinvestments (Mises, 1966). According to Mises and Hayek, the only way the interest rates would decrease in a free economy is if there was an increase in savings. This would cause businesses to have more money available to finance capital investments for the long term purposes. However, they believed that if a central bank starts stimulating the economy and artificially lowers the interest rates, it creates an incentive for businesses to finance capital investments for the long term purposes even if there was not an increase in savings. This causes malinvestment and overconsumption in the economy, which results in an economic boom, which is followed by a crisis, in which the economy tries to correct itself.

In 19th and the beginning of the 20th century, the world's most successful currencies were easily exchangeable for a fixed amount of gold or a precious metal. Mises formulated an argument as "the regression theorem" of money, which says:

"People will only accept a medium of exchange if they observe that it has value, and can actually be exchanged for things. The only way to observe that is by looking at whether it was so used in a preceding time period. Thus, this chain of observations can be followed back until the first instance in which a particular type of money was used as a medium of exchange, and in order for those first adopters to accept it, it must have had value independent of its use as a medium of exchange, or in other words, be a commodity. Paper money, especially that with no commodity backing, is only adopted when governments force it upon people." (Mises, 1912)

However, the gold standard collapsed in most economies between 1920's and 1970's because the economic growth outpaced the production of gold and the governments could not keep their promise to exchange the currency for the fixed amount of gold. Therefore, the vast majority of currencies in the world today are fiat, which means that they are not backed by a physical commodity. The value of fiat currencies relies directly on the public belief that the central bank will not increase the supply too rapidly and therefore overinflate the value of the currency to worthlessness (Yermack, 2013). The Austrian school claims that currency is only possible if governments monopolize the issuance of a fiat currency (Clegg, 2014).

In 1976, Hayek published an essay, in which he described his vision of competition in currency markets, not just competition between the countries but also within the countries (Hayek, 1976). He believed people should be free to choose any currency they wish to use. Hayek argued that a free-market monetary system would provide a check against inflation. His reasoning was that the government would have to keep the inflation low otherwise people would just switch to a different currency.

In theory, Austrian School of economic thought should find Bitcoin an intriguing currency because it introduces a possibility of disrupting the monopolisation of the issuance of a fiat currency and because it threatens the existence of central banks. If Bitcoin keeps attracting more interest and if it becomes more widely used, it could introduce a viable alternative to regular people, which could switch to Bitcoin if the inflation of their domestic currency was too high. In fact, we already see this phenomenon but on a much smaller scale. The predetermined issuance of new bitcoins and their finite monetary base is also attractive to Austrian economists because it presents certainty of the monetary supply, which they prefer over the uncertainty of central banks' manipulation of the interest rates. However, bitcoin exchanges (such as Mt. Gox) could sell more bitcoins than they actually have and hope there will not be a digital bank run. This could theoretically increase the Bitcoin money supply but not the amount of bitcoins in the blockchain because it is impossible increase the supply of Bitcoin from the "miners" because the supply is predetermined. It is important to note, however, that people would rather keep their bitcoins in the private wallets because of Bitcoin's disinflationary nature, which fuels expectation of increasing value. Mt. Gox was able to sell more bitcoins than they had because their customers were not aware of this. All of the efforts to create a transparent service of fractional lending failed because the Bitcoin community is skeptical of fractional reserve banking without the oversight of an authority.

Despite these factors, the majority of Austrian Economists are very critical to Bitcoin and other cryptocurrencies (Gertchev, 2013; Korda, 2013; Shostak, 2013). The criticism stems from the belief that Bitcoin violates Mise's regression theorem of money because it is not backed by a commodity. However, there are some Austrian economists who are pro-Bitcoin such as Konrad Graf (2014) and Peter Surda (2014). Surda and Graf have a different interpretation of the regression theorem. They believe that even though Bitcoin is not backed by a tangible commodity, it is a scarce intangible good, which satisfies the same requirements as a commodity. Therefore according to Surda and Graf, Bitcoin satisfies the Austrian definition of a currency because it functions as a medium of exchange. I will examine whether Bitcoin satisfies criteria of being a currency in the next chapter. It is interesting to note that most of the Bitcoin enthusiasts are supporters of Austrian economics while the majority of Austrian Economists are critical of Bitcoin.

Keynesian economics

Central banks around the world use the Keynesian models in order to set appropriate interest rates. Essentially, the Keynesian view of the business cycles is that the fluctuations are caused by the changes in the aggregate demand. When aggregate demand decreases, producers are not able to produce as much as previously and they must adjust in the short run. However, adjusting by cutting the production costs is difficult because wages are said to be sticky-down, which means that they can move up easily but it is harder to move them down. The producers are therefore forced to fire their workers rather than to decrease their wages, which translates to higher levels of unemployment. If less people are working, the spending also decreases and aggregate demand is pushed down even further. Keynesian model says that when the unemployment rate is higher than the natural unemployment rate, change in fiscal and monetary policies can help reduce the economic fluctuations. The natural unemployment rate is the lowest unemployment rate attainable in the economy. The relationship between the unemployment and inflation in the short run is described by the Phillips curve, which indicates that there is an inverse relationship between unemployment rates and inflation.

In his book The General Theory of Employment, Interest and Money, John Maynard Keynes first developed the concept of liquidity preference. He argued that individuals value money for, *"the transaction of current business and its use as a store of wealth"* (Keynes, 1936). Keynes also suggested that individuals give up their interest in order to spend the money in the present but also as a precautionary measure. Moreover, he saw interest as more of a reward for giving up liquidity rather than as a reward for saving. The three motives, which affect the demand for liquidity are: the transaction motive, the precautionary motive and the speculative motive. Because of these motives, the demand for money fluctuates based on the current interest rate.

It is mutually accepted by the economists that the majority of users treat their bitcoins as a speculative asset rather than as a means of payment (Glaser et al., 2014; Ron and Shamir, 2013; Baek and Elbeck, 2015) In a study that looked at blockchain data from 2009 to 2012, Ron and Shamir found that only about a half of bitcoins were spent within the first three months after having been received. The same finding was accomplished by Baek and Elbeck who report strong evidence that Bitcoin volatility is internally (buyer and seller) driven leading to the conclusion that the Bitcoin market is highly speculative at present. The interest rates of USD, EUR and GBP are at the historic lows, which incentivizes riskier investments, which have higher potential returns. Therefore, we can assume that when the interest rates are lower, risk-tolerant investors will invest more in Bitcoin. When the value of Bitcoin starts to decrease, the speculative investors will try to minimize their losses and sell their Bitcoin, which causes the value to drop even lower. When the value is low, other speculative investors will enter the Bitcoin market, which snowballs the value back up. A large Bitcoin infrastructure is needed where more businesses will accept bitcoin and individuals will use it as a payment system rather than just as an investment to hedge their currencies' inflation. As I mentioned before, Bitcoin is decentralized with a predetermined finite supply, which makes it impossible to be affected by a monetary policy and therefore affect its inflation. Thus we can assume that Bitcoin's demand for liquidity is largely driven by the speculative motive.

Most of the modern Keynesian economists are skeptical of Bitcoin but there is not a unanimous opinion. Bitcoin is such a new concept, which economists are just starting to think about now. Nobel memorial prize laureate Paul Krugman famously wrote a blog post titled "Bitcoin is Evil", in which he questioned Bitcoin's ability to be a reliable store of value (Krugman, 2013). Other economists such as Brad DeLong and Tyler Cowen question whether Bitcoin can survive when the cost of producing a Bitcoin clone is virtually zero (DeLong, 2013; Cowen, 2013). DeLong is also skeptical because Bitcoin is not backed by a "too-big-to-fail entity" that could buy it back if necessary. Tyler Cowen and other Keynesian economists are concerned about the eventual deflationary nature of Bitcoin, which I talked about in the previous chapter.

Currency Criteria

A currency is generally considered by economists to be an instrument that serves as a medium of exchange, a unit of account and a store of value. In the next three subchapters, I will discuss whether Bitcoin satisfies these criteria.

Medium of Exchange

A medium of exchange is an instrument to facilitate sale, purchase or trade of goods between multiple parties to avoid the inconvenience of a barter system. For a currency to function as a medium of exchange, it must represent a standard of value accepted by all parties. The most essential function of a medium of exchange is to measure a value. A medium of exchange should have a constant intrinsic value and a stable purchasing power.

Bitcoin is definitely an instrument that achieves facilitating sale, purchase or trade of goods between multiple parties. I would even argue that Bitcoin facilitates transactions more elegantly without an intermediary that often charges unreasonable fees. However, in order to become an effective medium of exchange, bitcoins would have to be accepted by a sufficient amount of merchants. The merchants have several reasons motivating them to accept bitcoin. The biggest reason is avoiding to pay the expensive, 2%-3%, credit card fees for each transaction. This had been especially useful for microtransactions that cost a minimum of 30 cents, which could end up being 30% on a 1 USD transaction (Varriale, 2013). However, the transaction fees have been recently increasing because of the blocksize limit, which makes microtransaction completely unfeasible. I will discuss the blocksize limit issue further in the "Bitcoin's Weaknesses and Altcoins" chapter. Moreover, a big disadvantage of accepting Bitcoin payments is a minimum 10 minute waiting time until one confirmation is cleared. This means that a merchant is technically taking on a risk that in 10 minutes, the transaction will not clear. The customer can therefore double spend the same bitcoin again and the transaction would not clear before 10 minutes. Furthermore, the transactions have been getting delayed recently as a result of the blocksize limit, which I will discuss further later. Böhme et al. (2015) found that the transactions could be delayed up to an hour, which diminishes the liquidity possibilities and increases risk associated with accepting bitcoins. However, there are now services such as BitGo instant[27], which allow merchants to basically insure every transaction for a 0.1% fee and get the payment instantly. Another disadvantage of accepting bitcoin is the extreme volatility of bitcoin's price. Just in 10 minutes that it takes to clear the transaction (without service such as BitGo), the value of Bitcoin could potentially fall by more than the fee that is normally paid to the credit card companies. It is important to note that most of the merchants that accept bitcoins will only show prices at the register or checkout and exchange them for a fiat currency immediately after the transaction is cleared in order to minimize the volatility risk. Another difficulty that merchants have to deal with are the returns. Bitcoin transactions cannot be reversed and all of the revenue is immediately converted to USD. The merchants solve this by offering in-store credit denominated in USD. However, even with all of these disadvantages, some merchants offer a discount for paying with bitcoin, which indicates that transactions in bitcoin are on average more profitable than credit card transactions (Lo and Wang, 2015).

As more businesses realize the smaller transaction costs that Bitcoin offers as opposed to credit cards, the number of merchants accepting Bitcoin increases. In 2015, 160,000 of merchants accepted it (Laffer, 2015). Several big companies such as Overstock.com, DISH, Microsoft, Dell, Expedia, Newegg, Zynga, TigerDirect and Virgin Galactic accept Bitcoin in 2017. Nonetheless, all of these companies do not accept Bitcoin themselves but instead they partner with a middleman (usually either BitPay or Coinbase), which takes customers' bitcoin, immediately converts it to cash and deposits the cash to the company's bank account (Davidson, 2015).

Bitcoin can also be used for remittances especially because of the low fees associated with sending bitcoins across different countries. A report by Goldman Sachs from 2014 measured a cost of sending remittances using

[4] https://www.bitgo.com/instant

Bitcoin, which ended up being 1% on average. The average cost of sending remittances using traditional ways is notoriously high, 7.7% on average in 2015 (Goldman Sachs, 2014).

Overall, Bitcoin works the best as a medium of exchange when both of the parties are willing to negotiate in Bitcoin rather than just using bitcoin as a intermediary to convert their fiat currencies from and then immediately afterwards. The reason why there not many parties are willing to do that is because of Bitcoin's volatility, which makes trading ineffective and risky. However, the infrastructure had certainly been improving, which motivates more merchants to start accepting Bitcoin as a payment. When more merchants accept Bitcoin as an alternative payment, it has the potential to disrupt a very profitable monopoly on payments. Even if that means that payments in bitcoin will be immediately converted to a fiat currency until Bitcoin's volatility stabilizes. Bitcoin transactions are cheap, reliable and transparent, which makes it attractive for both the merchants and the customers. When bitcoin becomes less volatile, it could become a very effective medium of exchange.

Unit of Account

A unit of account is a numerical monetary unit of measurement of the market value of goods, services, and other transactions. In other words, it is something that can be used to value goods, services, and other transactions and make calculations. Unit of account must be divisible, countable and fungible.

Bitcoin's use as a unit of account is so far entirely dependant on its medium of exchange function. Bitcoin's biggest obstacle in becoming a useful unit of account is its extreme volatility, which I will talk about in the next chapter. As discussed before, merchants who accept bitcoin will either use a middleman or convert bitcoin to a fiat currency immediately after the transaction clears. Merchants will also post their prices in a fiat currencies and only show the price in bitcoins at a register or checkout. These are clear indications that Bitcoin is not sufficient as a unit of account yet. But that does not necessarily mean that it will never be. If Bitcoin's volatility ever reaches the levels of other fiat currencies, it would be entirely possible for an economy to use bitcoin as a unit of account.

Bitcoin is perfectly divisible and countable. In fact, some refer to Bitcoin as having an "infinite" divisibility because the level, at which Bitcoin can be divided can be adjusted as time goes on. The current level selected in the code is 8 decimal places. The smallest unit is thus 0.00000001 BTC. However, one of the issues is that Bitcoin's price is relatively high when compared to goods and services. If I were to buy a Big Mac, which costs 3.99 USD, it would be 0.00379 BTC in today's prices. This creates a confusion for a consumer and makes price comparisons fairly complicated. One of the possible solutions in the future is to start using smaller units such as milli-bitcoins (mBTC) or micro-bitcoins (μBTC). Moreover, Bitcoins are not fully fungible. Any two bitcoins have the same exact value. But because all transactions are publicly available, it is common for bitcoin exchanges to discriminate between bitcoins based on the owner or their history. For example, some exchanges will attempt to block bitcoins which have been confirmed as stolen or obtained illegally. This becomes an issue because when not every exchange accepts the so called "dirty" bitcoins, the "dirty" bitcoins become less valuable. Vorick, a Bitcoin Core developer, is worried that if "dirty" bitcoins become more common, the only way to know if bitcoins are clean is to go to a centralized service and ask for a background check. Suddenly the value of bitcoins would be decided by a centralized party, which would go directly against Bitcoin's core values (Vorick, 2016).

Another aspect that is important to discuss is an occurrence of price fragmentation across different bitcoin exchanges. On February 7 2017, the bitcoin price of two leading bitcoin exchanges BitStamp and BTC-E differed by 19 USD. The ask price at BitStamp 1048 USD and the bid price at BTC-E is 1029 USD. This creates a clear violation of the law of one price. The price disparities technically create an opportunity for arbitrage. However because of slow bitcoin verification process and fees (exchange, deposit and withdraw), arbitrage is rarely profitable. The prices between exchanges vary greatly because of the reliability of exchanges, different fee policies, different cashout methods and different standards of accepting "dirty" bitcoins. Since Bitcoin does not serve as a unit of account yet for the reasons above, most of the regular users will need to convert back and forth from a fiat currency. These price fragmentations and uncertainties also hinder bitcoin as a store of value.

Store of Value

A store of value can be any asset that is not perishable or subject to depreciation over time. Essentially, a store of value must retain purchasing power into the future. The most liquid assets are the best store of value because they can easily be exchanged for other goods and services.

Bitcoin's utility as a store of value is dependant on its utility as a medium of exchange. That means that in order for Bitcoin to maintain its store of value, it has to rely on an expectation of others' willingness to accept it in the future. Bitcoin has no intrinsic value[28], which means that its value lies in people's willingness to keep using it. Similarly to gold, bitcoin is limited in quantity, easily transportable, easily divisible, impossible to counterfeit and people accept it for Barter. However, if network effect gives bitcoin its only real value and the network is still relatively small, it remains a question whether a new cryptocurrency similar but better than Bitcoin could replace it completely. Bitcoin has a first mover advantage along with popularity, network effect, investment and trust but so did Yahoo and MySpace. On the other hand, hundreds of alternative cryptocurrencies exist and none of them were successful at replacing or even threatening bitcoin so far. I will talk about the largest alternative cryptocurrencies in more detail in the latter chapter. Bitcoin enthusiasts claim that Bitcoin's invention is comparable to the invention of the Internet and that if there was a cryptocurrency that was threatening Bitcoin with superior features, Bitcoin could possibly implement those features in its own protocol as well. However, this assumption has been very questionable lately as Bitcoin is being threatened by its block size limit and a solution has not been implemented yet.

Bitcoin can serve as the best store of value for individuals who are looking for an unregulated and relatively anonymous store of wealth. However, if an individual is not necessarily looking for non-regulation and anonymity, he must be averse that a Bitcoin clone will emerge and diminish Bitcoin's biggest value maker, which is its network effect. Those individuals should also believe that Bitcoin's volatility will decrease in the long run. To summarize, if an individual has a positive outlook for Bitcoin in the future, it could serve as a store of value. But generally, Bitcoin is not established enough to function as a store of value.

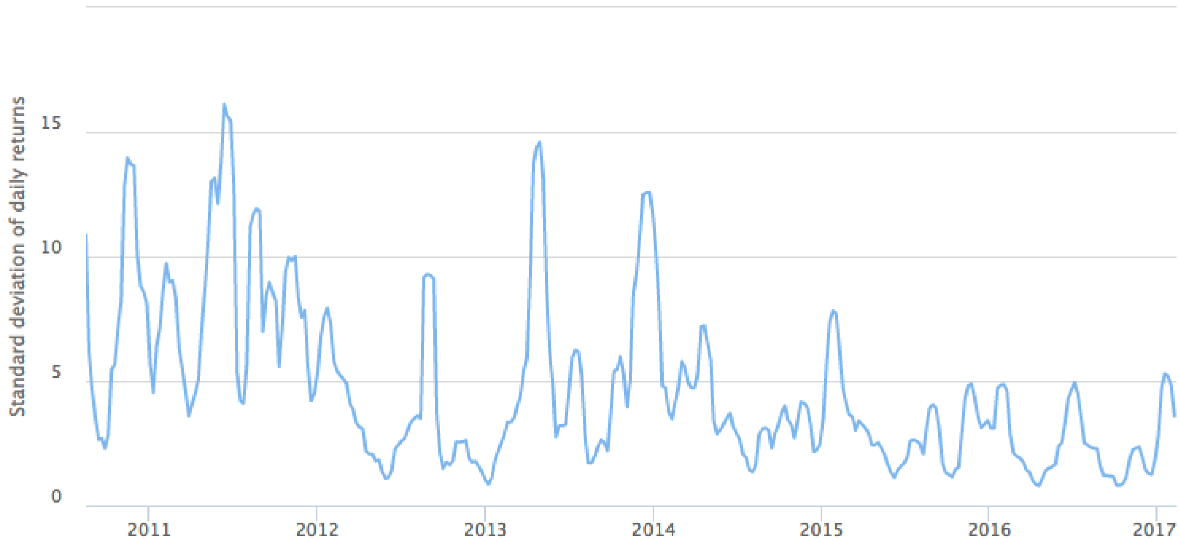
Overview of Bitcoin as a Currency

As of now, based on the reasons above, Bitcoin is not suitable as a currency. Currently, it could be categorized as a scarce digital commodity. Bitcoin acts more as a payment system to avoid high credit card fees rather than a medium of exchange. Businesses are not willing to hold bitcoin and, as a result, they immediately convert it to fiat currencies. This should change when volatility decreases. Bitcoin doesn't serve as a unit of account for many reasons but biggest one is its volatility again. Cheah and Fry (2015) argued that if Bitcoin were to functioned as a unit of account and a store of value, it would would not display such volatility expressed by bubbles and crashes. Other reasons include Bitcoin not being fungible and in violation of law of one price. Lastly, Bitcoin doesn't serve as store of value because of its volatility and uncertainty whether Bitcoin will be able to hold its value without having any intrinsic value. The biggest obstacle that comes up while evaluating whether Bitcoin can act as a medium of exchange, unit of account and store of value, is its volatility. If bitcoin's volatility reaches the levels of other fiat currencies, there is not much stopping it from becoming a fully functional currency.

Bitcoin's Volatility

As described in the previous chapter, price volatility is bitcoin's Achilles heel. As of the time of writing, there were 16,400,000 in circulation with one valued at about 1,000 USD. That means that Bitcoin's market cap is currently approximately 16.4 billion USD, which is still relatively low when compared to other fiat currencies. For example, even a small currency such as New Zealand Dollar had an M1 money supply of 36.4 billion USD in December 2016. Due to bitcoin's small market cap, it is easy to affect the price with large orders. Because Bitcoin has a finite supply, its price is strictly determined by supply and demand. In combination with bitcoin's speculative nature, its price volatility is mostly affected by external events. Investors react to these events either positively or negatively, which often causes a panic selling or panic buying. The large price fluctuations are caused mainly by the sudden government regulations, security breaches of the 3rd party wallets or exchanges and depreciation of fiat currencies. There is one internal event that affects volatility, which is the reward halving that I talked about in the previous chapter. The 30-Day BTC/USD volatility measured as a standard deviation of daily returns can be seen in the chart below.

[5] Economists agree that bitcoin has no intrinsic value but Bitcoin enthusiasts claim that its intrinsic value is the invention of eliminating trust from the payment system.



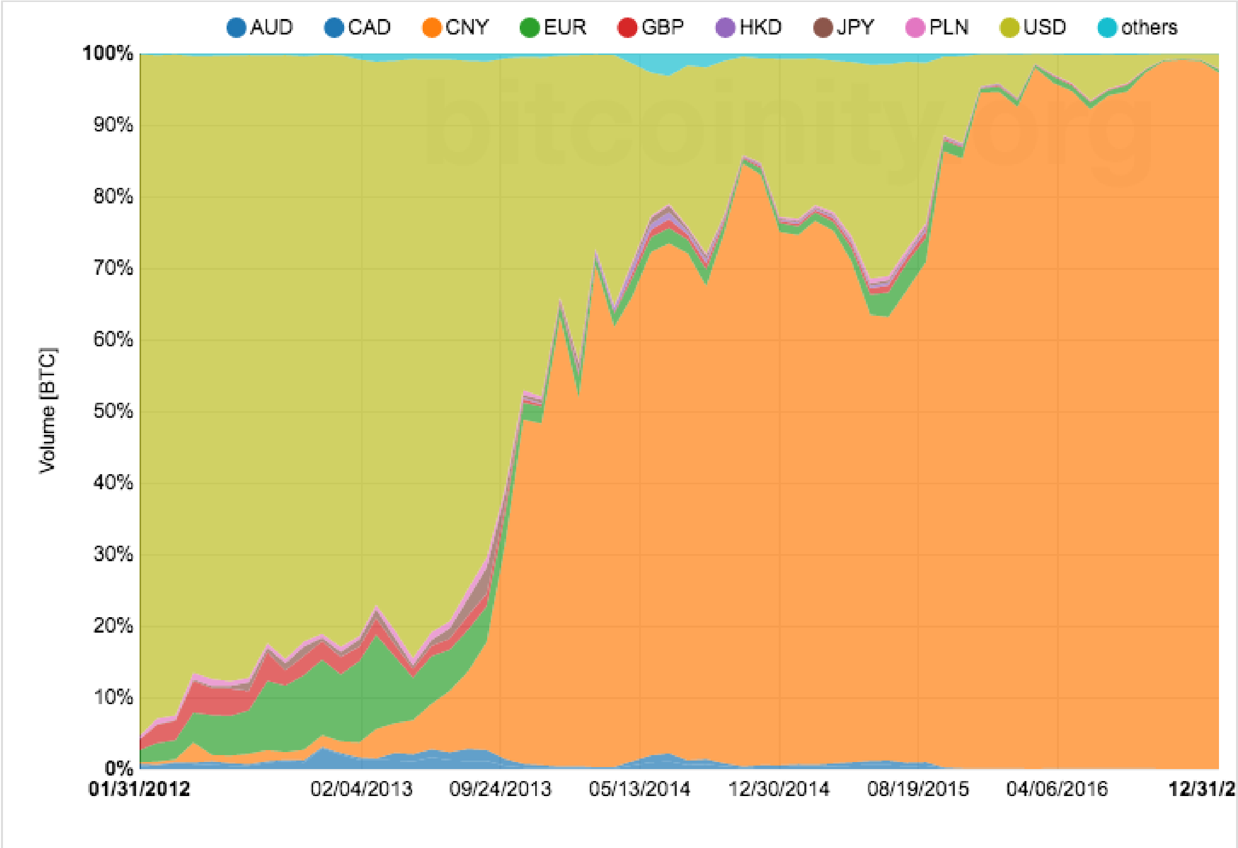
It is apparent that the volatility has been trending downwards as the volume of bitcoins in circulation increases. Another factor that helps limit bitcoin's volatility is an emergence of bitcoin derivatives exchanges[29] where customers can hedge or short sell their positions by using futures contracts. Another service Bitfinex offers peer-to-peer lending and marginal trading, which allows customers to short sell. As the infrastructure improves and the volume increases, the volatility will decrease.

Government Regulations

In December of 2013, People's Bank of China (PBoC) banned Chinese banks from handling Bitcoin transactions citing risks of money laundering and protecting financial stability (Mullany, 2013). The PBoC stated that individuals were free to buy and sell bitcoins at their own risk. This warning had triggered the bitcoin bubble to burst and introduced volatility levels of more than 13%. Nonetheless, these factors did not stop the existence of Chinese bitcoin exchanges. According to Bitcoinity.org[30] and as displayed in the chart below, in 2016, over 90% of Bitcoin's volume was traded in China. On top of that, over 70% of Bitcoin mining pools are located in China (Popper, 2016).

[6] Deribit and BitMEX (BitMEX does not work in the United States as of now)

[7] https://data.bitcoinity.org/



One of the reasons why China had taken over Bitcoin is because it is not controlled and regulated by the PBoC. Therefore, we can assume that external events affecting trading in China will be the most detrimental to price fluctuations. Indeed, in January and February of 2017, Bitcoin has experienced the highest levels of volatility since February of 2015. This sudden spike in volatility has been attributed to the attempts of the Chinese government to limit the outflow of the CNY. In early January, the PBoC announced that all financial institutions will be required to notify the PBoC of any transactions over 50,000 CNY (7,100 USD), down from a ceiling of 200,000 CNY (Smith, 2017). The foreign exchange reserves have hit at a 5-year low (Wildau, 2017). In February, China banned the users of the two largest bitcoin exchanges from withdrawing any bitcoins amid concerns that the cryptocurrency is being used to facilitate capital flight (Wildau, 2017). In the following month, the PBoC is going to inspect the exchanges and if serious violations are discovered, the platforms would be shut down. The users of these two exchanges are still allowed to sell their bitcoins and withdraw CNY. These actions by the PBoC resulted in a huge selloff of Bitcoin, which increased the volatility greatly.

Security Concerns

Even though Bitcoin itself is unhackable according to security experts, the 3rd party wallets and exchanges are prone to hacks or even scams. The bitcoin platforms are attractive to hackers because of bitcoin's high price, anonymity and lack of involvement from the government authorities. This has been an issue especially in early days of Bitcoin as these 3rd party platforms were not as transparent and as secure as they are now. Security was a major concern in the early days and the perceived trust of investors reflected the price movements quite accurately. Whenever a security breach was announced and a large amount of Bitcoins were stolen, the volatility increased. The most famous scam was Bitcoin Savings and Trust, which ran a Ponzi scheme and achieved to steal 700,000 bitcoins from its investors.The most notorious hack was Mt. Gox, which was handling over 70% of all bitcoin transactions at the time. It went bankrupt in 2014 and claimed that 850,000 bitcoins worth around 480 million USD were stolen by hackers. Mt. Gox customers lost their savings and were left with no recourse. Not only did people lose their savings but they lost their trust in Bitcoin, which drove the price down significantly. Since the insolvency of Mt. Gox in early 2014, there were two more hacks, which resulted in a theft of over 19,000 bitcoins from Bitstamp in 2015 and 120,000 bitcoins from Bitfinex in 2016. The price has dropped by more than 10% in both of these instances but it has recovered fairly quickly. Nonetheless, these breaches resulted in spikes of volatility. Because it is so difficult to avoid getting hacked, the most of the widely used exchanges store their virtual currency in offline storage and keep only a small percentage of funds online. The funds that are stored online are often insured, which means that their customers are not risking anything.

Depreciations of Fiat Currencies

The price of Bitcoin grew by 130% in 2016 (435 USD to 998 USD) outperforming all of the fiat currencies and commodities. Drastic booms and crashes are nothing new for bitcoin but what is interesting is that it grew relatively organically for the first time in its history with volatility levels of under 5%. This steady growth is largely attributed to the economic uncertainties in the world such as devaluation of CNY, hyperinflation in Venezuela, Indian banknote demonetisation, depreciation of the GBP caused by the BREXIT and others. Investors rely on bitcoin when they want to minimize the effects of inflation and economic uncertainty, which indicates that Bitcoin could qualify as a safe-haven asset. However, even though bitcoin is often called the "digital gold", there is actually a very little correlation between the two when the geopolitical events are factored out (Bovaird, 2016). Gold is much larger and more mature asset - the demand needed to boost the gold prices is much larger than the demand needed to boost bitcoin.

As mentioned before, China has the largest effect on driving the bitcoin prices. In fact, there was an apparent inverse correlation in 2016 between CNY and USD as seen in the graph below (Wildau, 2017).

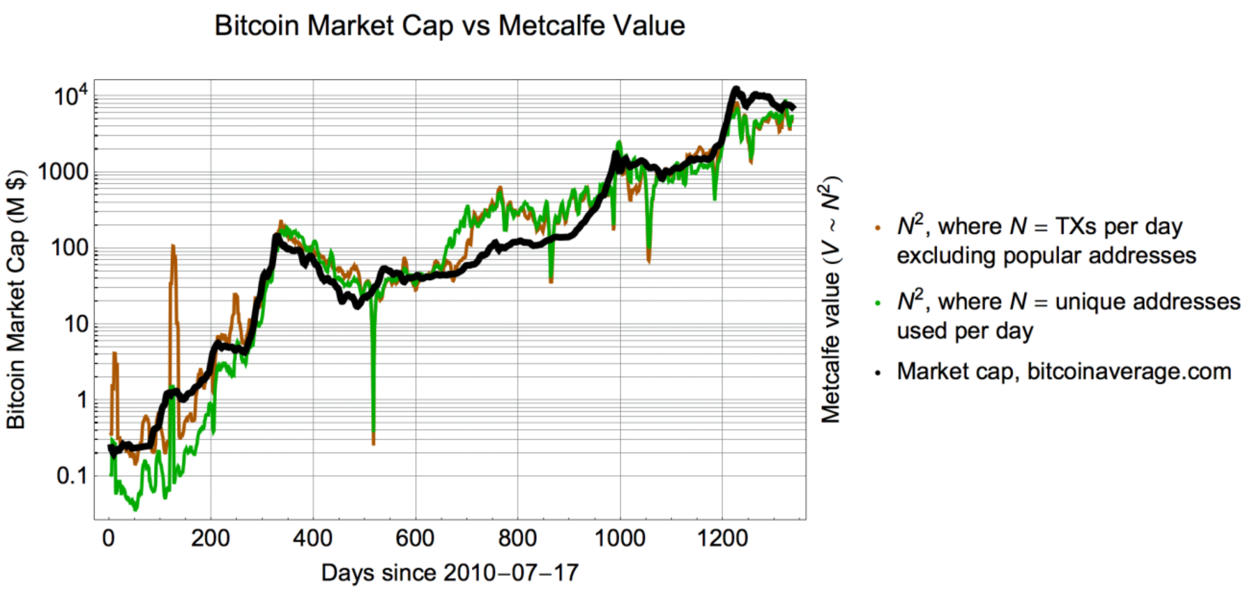
<u>Bitcoin's Weaknesses and Altcoins</u>

It is relevant to talk about Bitcoin's weaknesses because with the lack of intrinsic value, its sole value is based on trust and people's willingness to keep using it. There are currently hundreds of alternative cryptocurrencies (called Altcoins in the Bitcoin community) which try to capitalize on Bitcoin's weaknesses as well as innovate by adding new functions. Bitcoin's weaknesses currently include long verification times, relatively high fees, power inefficiency, non fungibility and centralization. Nonetheless, the majority of these Altcoins are rarely used on a regular basis. At the time of writing, there were two cryptocurrencies that had a market capitalization larger than 1 billion USD - Bitcoin and Ethereum. But there are other four with a market cap of over 100,000 USD. The table below shows these cryptocurrencies with the market cap of over 100,000 USD:

Name	Available Supply	Price (USD)	Market Cap (USD)
Bitcoin	16,172,212	$1,048	$16,948,478,176
Ethereum	89,028,059	$12.8	$1,138,668,875
Ripple	37,044,621,729	$0.005818	$215,525,609
Litecoin	49,856,482	$3.760	$187,460,372

Monero	13,948,472	$13.12	$183,003,953
Dash	7,110,430	$22.57	$160,482,405

Bitcoin's biggest asset over Altcoins is its network effect. At the time of writing, the total number of unique addresses used on the Bitcoin blockchain was 450,000 and the number of daily confirmed Bitcoin transactions was 350,000 (Blockchain.info, 2017). In fact, Bitcoin's market cap appears to be obeying Metcalfe's Law, which states that that the value of a network is proportional to the square of the number of connected users of the system. Because the number of users in the Bitcoin network is not measured since it is anonymous, a proxy of unique addresses used daily can be used. The result of the correlation can be seen in the chart below:



Currently, Bitcoin is threatened mainly by the imperfections in its code, which was written nine years ago and is becoming outdated. Since then, Bitcoin has evolved into a widely used network, which now requires different approaches to some problems. Currently, the biggest weakness is the block size limit of 1MB. The block size limit was designed in 2009 in order to protect the network from attacks. This means that Bitcoin can only tolerate 7 transactions per second (Bitcoin.it, 2017), which is a drop in the ocean when compared to payment processors such as Visa. Visa handles 1,750 transactions per second on average but is capable of processing up to 24,000 transactions per second[31]. Bitcoin users have the freedom to decide if they want to pay a fee and how much meaning that whoever pays the highest fee gets prioritized in the verification process. Because there are currently more than 7 transactions per second at any given time, the transactions start getting delayed, which causes the average transaction fee to increase. Before the network was as widely used, most of the transactions were verified for free but now, the average fee in order to avoid delays is 0.37 USD[32], which hinders one of the key attributes of Bitcoin. Even the most prominent Bitcoin developers are convinced that scalability is an urgent problem that is threatening the existence of the platform because of the inconvenience of waiting times and larger fees (Simonite, 2015). In order to overcome a scaling problem like this, the code needs to be modified, which has been the source of controversy in the community. As I have mentioned before, any alteration in Bitcoin's code results in a fork and Bitcoin miners are hesitant about this potentially risky step. Opponents of increasing the block size argue that it could damage decentralization by driving up the amount of resources needed for mining. However, if the scalability is not figured out soon, users will migrate to other Altcoins such as Ethereum with lower fees and shorter verification times.

Another critical issue is Bitcoin's power inefficiency. At the time of writing, the miners were performing approximately 3,286,700,000 GH/s[33]. On average, mining companies use 0.352 watt of power for every Gigahash

[8]https://usa.visa.com/run-your-business/small-business-tools/retail.html

[9]https://bitcoinfees.info/

[10] https://blockchain.info/charts/hash-rate

per second of computing power[34]. Following that assumption, the bitcoin network runs at 1,156,918,400 watts or roughly 1,156 Megawatts. According to EIA, that's enough to power 930,000 average American households' daily electricity usage. With about 345,000 Bitcoin transactions per day at the time of writing, that works out to 2.7 households' daily usage of electricity per one Bitcoin transaction. The power inefficiency is caused by the extremely demanding cryptographic calculations that the miners have to compute on top of verifying the transactions. The transaction costs are thus subsidized by the Bitcoin rewards in exchange for Bitcoin's inflation. As the bitcoin rewards get smaller, the power consumption will decrease. Another, more immediate, solution would be increasing the block size as discussed in the previous paragraph, which would increase the amount of transactions and therefore result in a more energy efficient system. On top of long verification times, relatively high fees and power inefficiency, Bitcoin is also not fully fungible and not as decentralized as before.

LITERATURE REVIEW

On top of the technical issues such as scalability, power inefficiency and non fungibility, which could destroy Bitcoin alone, economists remain skeptical of Bitcoin because of its lack of attributes of a useful currency (Yermack, 2014; Krugman, 2013), operation in a legally gray area (Grinberg, 2011), threat of a superior Bitcoin clone (DeLong, 2013; Cowen, 2013), lack of no government backing and oversight (Grinberg, 2011; Brezo and Bringas, 2012; DeLong, 2013; Van Alstyne, 2014), eventual deflationary nature (Grinberg, 2011; Cowen, 2013) and vulnerability to speculation (Brezo and Bringas, 2012; Baek and Elbeck, 2015).

The focus of this study is to determine whether Bitcoin can become a viable alternative to other fiat currencies. I will evaluate the economic feasibility of Bitcoin without considering the risks of the technical issues in the code as described in the last chapter. From my research and analysis in the previous chapters, I have found that Bitcoin's biggest obstacle from fulfilling the functions of a currency is its price volatility. In the past decade, Bitcoin has proven that it can effectively operate in the legally gray area, that it can function efficiently without the government backing and that the currently disinflationary nature has not been a problem. In the following practical part, I will examine the dynamics and driving factors of Bitcoin's volatility by using GARCH and HAR models.

Gronwald (2014) used an autoregressive jump-intensity GARCH model and concluded that Bitcoin prices are strongly characterized by extreme price movements, which is an indication of an immature market. Dyhrberg (2015) explored the financial asset capabilities of bitcoin using GARCH models. By using the asymmetric GARCH model, she found evidence that bitcoin may be useful in risk management and ideal for risk averse investors in anticipation of negative shocks to the market. She also showed that Bitcoin has similar hedging capabilities as gold and the USD. Bouri et al. found that Bitcoin can serve as an effective diversifier but it does not function as a hedging instrument. Urquhart (2017) examined Bitcoin's volatility and the forecasting ability of GARCH and HAR models in the Bitcoin market. He found that the realized volatility is quite high in the first half of the sample but has decreased in the recent years and he also concluded that there is no evidence of the leverage effect.

PRACTICAL PART

Methodology

GARCH models are used in the literature to exhibit time-varying volatility clustering, which is when time series data show periods of high volatility and periods of low volatility. GARCH models are not only used for modeling the historical process of volatility but also in forecasting multi-period volatility. In my study, I will use GARCH models precisely because of their ability to forecast volatility. GARCH models are mostly used in the literature to analyze and forecast the volatility of stock returns, interest rates and foreign exchange data, which is helpful application in portfolio allocation, dynamic optimization and option pricing (Bollerslev et al., 1992). The first and most widely used GARCH model in the literature is the symmetric GARCH (1,1), which was defined by Bollerslev (1986).

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FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: EVIDENCE FROM 1996 TO 2011

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INTRODUCTION

Today, there is a divide between the wealthy and the poor. In fact, "the United States exhibits wider disparities of wealth between rich and poor than any other major developed nation" (Inequality.org). So even in a developed country like United States, economic growth is an important topic worthwhile studying; even a small change in the very long-run economic growth rate can have a significant effect on living standards. Because financial markets "help to efficiently direct the flow of savings and investment in the economy in ways that facilitate the accumulation of capital and the production of goods and services," they can benefit borrowers and lenders and contribute to the growth of the entire economy (Federal Reserve Bank of San Francisco, 2005). As a result, the financial market is expected to positively impact the growth of the economy and help narrow the wealth gap in the United States.

Does development of the financial sector, then, really have a positive relationship to economic growth? The answer to this question is essential in studying and understanding the financial market, and moreover, an essential part of studying the economic growth and success of a nation. To answer this question, the current study analyzes a panel data set from 41 countries over the period from 1996 to 2011. While there has been a plethora of panel data studies done on this topic, the current study contributes by analyzing on 41 countries of diverse geographic locations and income level and by using more recent data set.

LITERATURE REVIEW

King and Levine (1993) study how financial development relates to economic growth in the long run using data from eighty countries over the 1960-1989 period to do a cross-country empirical analysis. Four indicators of financial development are used instead of a single measure to provide a richer picture of financial development: the size of the formal financial intermediary sector relative to GDP, the importance of banks relative to the central bank, the percentage of credit allocate to private firms, and the ratio of credit issued to private firms to GDP. The result shows that all of the four indicators of the level of financial development have a strong and robust association with economic growth. As in the study by King and Levine (1993), the current study uses multiple indicators of financial development.

Private credit and liquid liabilities are commonly used indicators of financial development. Not only were they used in older literature like Goldsmith (1969) but also they were implemented in more recent studies like Madsen and Ang (2016), Beck et al. (2000), and Bittencourt (2012). Madsen and Ang (2016) and Bittencourt (2012) also use stock market capitalization as a financial development indicator. All three recent articles conclude that financial development has significant positive effect on economic growth. Rioja and Valev (2004) also use private credit and liquid liabilities to measure financial development to study the relationship between finance and the sources of growth, specifically focusing on the relationship at various stages of economic development.

Rashti et al. (2014) study the impact of the recent financial crisis on economic growth with emphasis on the indicators of financial development. The study concludes that indexes of financial development related to money market, which are the ratio of private credit to GDP and bank credits relative to GDP, have negative influence on all supposed countries, while the variable related to capital market, which is the ratio of stock exchange relative to GDP, demonstrates positive effect on economic growth. The result here on private credit contradicts with results from the previous three studies that used private credit as an indicator for financial development.

On top of the financial development indicators, Beck et al. (2000) and Bittencourt (2012) use other independent variables out of the financial sector that explain economic growth to construct the model. Both studies use an indicator for education, openness of economy, and government size. Bittencourt (2012) also uses indicators for political stability and economic stability, to take into account the specific economic and political situation in Latin America during 1980s. In Beck et al. (2000), inflation is used as an independent variable as well as the other three used by Bittencourt (2012). These independent variables outside of financial sector capture effect of other non-financial factors on economic growth. The variables used in these two studies are also used to construct the model in the current study in order to non-financial influences on economic growth.

While many previous studies have used cross-country data, Coccorese and Silipo (2015) argue that because many factors other than financial development can affect economic growth, in any given country, multiple factors could be impacting growth. As a result, according to the authors, studies that use cross-country data can be limited and subject to misspecifications, omitted variables, reverse causality, and multi-collinearity when running regressions. Because most countries do not have the same uniform institutional, legal, and political framework, to overcome the limitations of previous financial development and growth literature, Coccorese and Silipo (2015) study time series data on a single country: Italy from 1960-2010. They conclude that financial development is important, although it is only one of the many variables that effect economic development.

On the other hand, Christopoulos and Tsionas (2004) say that both cross-sectional or time series approaches have drawback. Cross-sectional data leaves open the question of false correlation arising from non-stationarity, as undetected country specific factor may exist, and does not allow for an examination of the direction of causality. However, the results from time series data may be unreliable due to short time spans of typical data sets. Thus, Christopoulos and Tsionas (2004) use panel data to analyze the relationship between financial development and economic growth. Based on their argument for panel data, the current study will also use a panel data model in order to analyze the relationship.

Several studies that use panel data compare neighboring countries or countries under similar development stage over time. Bittencourt does a panel time-series analysis on four Latin American countries, which are Argentina, Bolivia, Brazia and Peru, from 1980 to 2007. Madsen and Ang (2016) analyzes panel data on OECD countries. Kouki (2014) studies the relationship between financial development and economic growth in four different countries in the North African region: Morocco, Tunisia, Egypt, and Algeria. While many studies conclude that the general relationship between financial development and economic growth is expected to be positive, some studies, like Rashti et al. (2014) and Kouki (2014), conclude that the relation depends on the type of indicators of financial development—again, indicators related to money market or capital market. The two studies conclude that indicators of financial development related to money market have negative relationship to economic growth, while the variable related to capital market show positive relationship. To investigate a more general relationship and examine relationship between the indicators of money market development and growth on which the previous literature had disagreement on, the current study includes all countries for which the data is available in the recent years and both the indicators of capital market and money market development.

DATA AND VARIABLES

A panel data from 41 countries over the period from 1996 to 2011 is used for the current study. The dependent variable is *Ggdp*, which is the annual growth of GDP. There are three independent variables used as indicators of financial development: *StockCap*, *Credit*, and *BM*. As in King and Levine (1993), multiple indicators are used for a richer picture of financial development. Based on the analysis by Rashti et al. (2014), indicators of financial market related to capital market and those related to money market are both included in the analysis for comparison. *StockCap* is stock market capitalization to GDP, which is related to capital market. *Credit*, or private credit to GDP, and *BM*, or liquid liabilities to GDP, are both indicators related to money market. The three indicators of financial development are the independent variables of interest. The other four independent variables are *Inf*, *Edu*, *Open*, and *Gov*. The four non-financial independent variables capture the effect of non-financial factors on GDP growth. *Inf* is independent variable for inflation. *Edu* is years of secondary schooling, capturing the impact of education on GDP growth. *Open* is trade openness, measured by the sum of import and export of goods and services to GDP. *Gov* is the proxy for size of government, measured by general government final consumption expenditure to GDP. Table 1 demonstrates the summary of the data, showing the mean, variance, and sample size for the variables used in the model.

There is an interesting trend observed between *Ggdp* and *StockCap*. Graph 1 shows the change in average *Ggdp* and average *StockCap* of the 41 countries over time. From the graph, the two variables look relevant—while *StockCap* fluctuates more than *Ggdp* in general, *StockCap* seem to move in a similar direction to *Ggdp* when *Ggdp* also fluctuates. On the other hand, the relationship between *Ggdp* and the other two indicators of financial development, *Credit* and *BM*, seem unclear just by observing Graph 2. So we will have to see the OLS estimate result to see if there is any significant relationship. While the relationship of the two financial indicators to *Ggdp* seem unclear, the two indicators seem to be related to each other, as they are both increasing and tend to show similar phase of change. So there is a concern for multicollinearity among the two variables, which will be tested for robustness of the model using Variance Inflation Factors (VIF).

The data for the financial depth indicators, which are *StockCap*, *Credit*, and *BM*, come from Federal Reserve Economic Data (FRED). Data for Edu comes from Barro-Lee Educational Attainment Dataset. Since the data was available in 5-year interval, years without data were assigned values for the beginning of the period. Year 2006 was assigned the value for 2005, for example. All other data come from World Bank Data. The data set includes all countries and all of the more recent years for which the data for all variables were available.

THE POPULATION REGRESSION FUNCTION

The population regression function for the current study is as follows:

$$Ggdp_{it} = \beta_0 + \beta_1 StockCap_{it} + \beta_2 Credit_{it} + \beta_3 BM_{it} + \beta_4 Inf_{it} + \beta_5 Edu_{it} + \beta_6 Open_{it} + \beta_7 Gov_{it} + \epsilon_{\mathrm{it}}$$

The function is constructed by using three proxy variables for financial development. One variable related to capital market, *StockCap*, and the other two variables related to money market, *Credit* and *BM*, are chosen based on several previous literatures—these are commonly used proxy for financial development in other studies. As in Bittencourt (2012) and Beck et al. (2000), the function is constructed in linear form. The functional form is obtained based on previous studies as well as significance of OLS estimates—estimates were the most statistically significant when the model is linear. β_1 is expected to be positive, since the general conclusion drawn from the previous studies expect a positive relationship between financial development and economic growth when the indicator is related to capital market. The expected signs of β_2 and β_3, however, are unclear, because while the general expectation drawn from previous studies expect that financial development is positively related to growth, the opposite results showed in Rashti et al. (2014) and Kouki (2014) for indicators related to money market. Based on the results from Bittencourt (2012) and Beck et al. (2000), inflation and the size of the government are expected to have negative impact on growth, so β_4 and β_7 are expected to be negative; moreover, education and openness of economy are expected to have positive impact on economic growth, so β_5 and β_6 are expected to be positive.

A panel data model is used to construct the population regression function. The advantage of using a panel data model is a much larger data set with more variability and less collinearity among the variables than in cross-section or time-series data. With a larger set of more informative data, estimates can be more reliable. Another advantage of panel data model is that it can control for individual specific effects in the relationship, which can potentially make the result biased. Panel data model can thus better estimate effects that are not as much detectable in cross-section data model or time-series data model.

ROBUSTNESS CHECK

According to Gauss Markov theorem, all OLS estimates are best, linear, and unbiased estimates (BLUE) if and only if all classical assumptions are satisfied. Based on the classical assumption that there should be no perfect or imperfect multicollinearity, or linear relationship among the independent variables, VIF is used for robustness check. Table 2 shows the results of VIF for each independent variable in the model. Since all independent variables have VIF value lower than 5, the result indicates that there is no significant multicollinearity between independent variables.

Since panel data is used for the study, Hausman test is also conducted to test if a fixed effects (FE) model is better or a random effects (RE) model is better. The results from Hausman test is demonstrated in Table 3. From the result, since the p value is smaller than 5 percent, the null hypothesis that the FE and RE coefficients are similar is rejected, and therefore FE model is used. FE model is beneficial in that it can control for potential time-invariant characteristics, thereby eliminating potentially large sources of bias. This characteristic greatly reduces the chance that a relationship is driven by an omitted variable.

THE SAMPLE REGRESSION RESULTS

The OLS estimates from the data generally match the expectations made from previous studies. Table 4 demonstrate the OLS estimate results from the data. The slope coefficient for *StockCap* is positive as expected, and is statistically significant at 5% level. While the magnitude of the slope coefficient is very small, we do not expect a large slope coefficient for the relationship with GDP growth rate, for a small change in GDP growth, as in many other economic indexes, is still a meaningful change in the real economy. Therefore, the result is still economically significant. The expectations on the signs of the slope coefficients for the two indicators of financial development related to money market, *Credit* and *BM*, was unclear. From the sample regression function, the slope coefficients for the two variables are both negative. That is, the result from this model agrees with the results from Rashti et al. (2014) and Kouki (2014) but disagrees with King and Levine (1993), Madsen and Ang (2016), Beck et al. (2000), and Bittencourt (2012), where these variables showed positive relationship with economic growth. The slope coefficients for these two indicators related to money market are both significant at 1% level.

The signs for other slope coefficients all match the expectations; the slope coefficients for *Edu* and *Open* are both positive, while those for *Inf* and *Gov* are negative. The estimates for *Inf*, *Edu*, *Gov* are statistically significant at 1% level and the estimate for *Open* is statistically significant at 10% level. R^2 of the model suggests that 13% variability in the data is accounted for by the model.

Graphs 3, 4, and 5 show the relationship between the predicted Y_i and independent variables of interest, which are *StockCap*, *Credit*, and *BM*. To leave out the influence on *Ggdp* by other independent variables and observe the relationship of the three independent variables of interest to *Ggdp*, new $\widehat{Y_i}$'s are generated. That is,

$$\widehat{Y_{i1}} = 18.11 + 0.006 * StockCap$$
$$\widehat{Y_{i2}} = 18.11 - 0.03 * Credit$$
$$\widehat{Y_{i3}} = 18.11 - 0.03 * BM$$

The graphs that show the relationship between $\widehat{Y_{i1}}$ and *StockCap*, $\widehat{Y_{i2}}$ and *Credit*, and $\widehat{Y_{i3}}$ and *BM* are Graphs 3, 4, and 5, respectively. These graphs show the relationship of the three independent variables of interest to the dependent variable *Ggdp*. Graph 3 shows that *StockCap* has a positive linear relationship to *Ggdp*, whereas Graph 4 and Graph 5 each show that *Credit* and *BM* have a negative linear relationship to *Ggdp*.

CONCLUSION

In this study, a panel data from 41 countries over the period from 1996 to 2011 is used to examine if development of the financial sector has positive relationship to economic growth. While there had been plethora of panel data studies done on this topic, the current study contributes by analyzing on 41 countries of diverse geographic locations and income level, and by using more recent data set. Also, the current study examines and draws a statistically significant result on an existing debate over the relationship between financial development indicator related to money market and economic growth.

The result shows that the indicator for financial development related to capital market, which is stock market capitalization to GDP in this model, is positively correlated to economic growth. On the other hand, the indicators for financial development related to money market, which are private credit to GDP and liquid liabilities to GDP in this model, are negatively correlated to economic growth. As the relationship differs depending on the type of proxy variable for financial development, the conclusion about the general relationship between financial development and growth is not clear from the result of the current study. The previous studies had disagreement over how financial development indicator related to money market correlates to economic growth—some studies concluded that the correlation was positive while others concluded it was negative. The result from the current study agrees with the latter, Rashti et al. (2014) and Kouki (2014), for example. However, the previous studies mostly agreed on the positive relationship between financial development indicator related to capital market and economic growth, as in the result of the current study. This implies that economic growth can be promoted by concentrating more on pro-financial markets development policies, which promote the development of the market based segment of the financial sector.

The disagreement of result between the types of financial development indicators suggests that the correlation between economic growth and development of different subsectors of the financial sector could be different, and moreover, that differences in financial structure could be correlated to differences in economic growth. Further research on the correlation could be done in the future. Rioja and Valev (2004) and Rashti et al. (2014) both suggest that the relationship differ depending on various stages of economic development. In relations to these previous studies, additional further research directions are on financial development and structure in relation to economic growth at various stages of economic development.

LIST OF TABLES

Table 1: Descriptive Statistics, 1996-2011, 41 countries

Variables	*Ggdp*	*StockCap*	*Credit*	*BM*	*Inf*	*Edu*	*Open*	*Gov*
Obs	656	656	656	656	656	656	656	656
Mean	3.25	83.12	119.31	80.44	4.59	3.47	85.96	17.38
Std. Dev.	3.45	103.24	61.65	47.23	8.89	1.21	71.67	4.70
Min	-13.12	3.95	15.40	2.88	4.48	0.75	15.64	5.69
Max	15.24	1086.48	323.40	313.78	85.74	6.90	447.06	28.39

Table 2: Variance Inflation Factors

Variable	VIF	1/VIF
StockCap	2.09	0.48
Credit	2.39	0.42
BM	2.26	0.44
Inf	1.22	0.82
Edu	1.82	0.55
Open	1.69	0.59
Gov	1.52	0.66
Mean VIF	1.85	

Table 3: Hausman Test

	Coefficients			
	(b) Fixed	(B) Random	(b-B) Difference	Standard Error
StockCap	0.006	0.008	-0.002	0.002
Credit	-0.03	-0.021	-0.008	0.002
BM	-0.028	-0.022	-0.006	0.008
Inf	-0.074	-0.065	-0.009	0.003
Edu	0.962	0.496	0.467	0.243
Open	0.018	0.003	0.015	0.009
Gov	-0.813	-0.327	-0.486	0.083
chi2(7)	83.38			
Prob>chi2	0.0000			

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

Table 4: OLS Estimates—Dependent Variable *Ggdp*

Constant	18.11
StockCap	.006** (.003)
Credit	-.03*** (.005)
BM	-.03*** (.01)
Inf	-.07*** (.016)
Edu	.96*** (.325)
Open	.02* (.01)
Gov	-.81*** (1.791)
$\mathbf{R^2}$	13%
N	656

All standard errors are in parentheses
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

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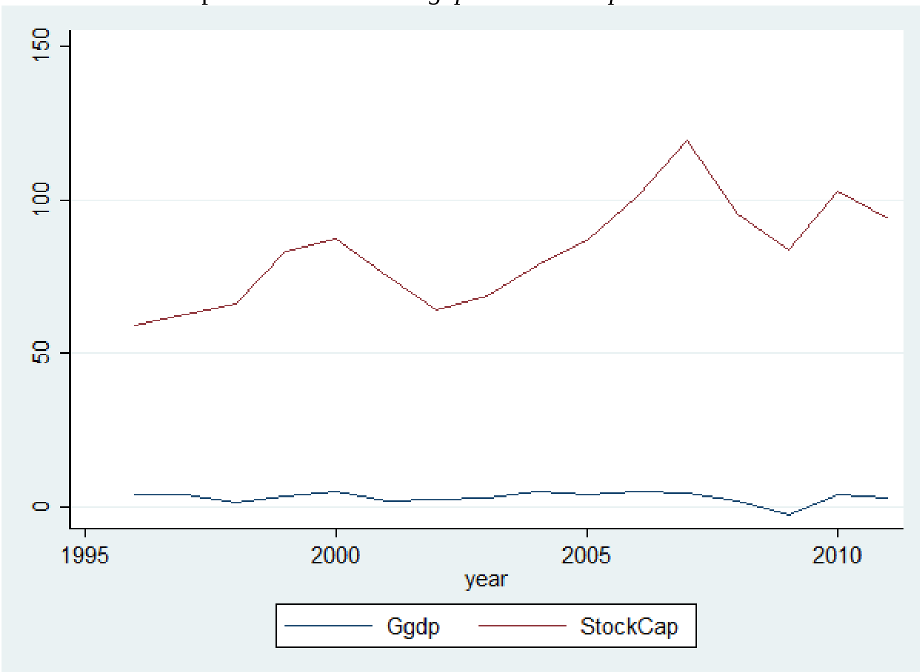
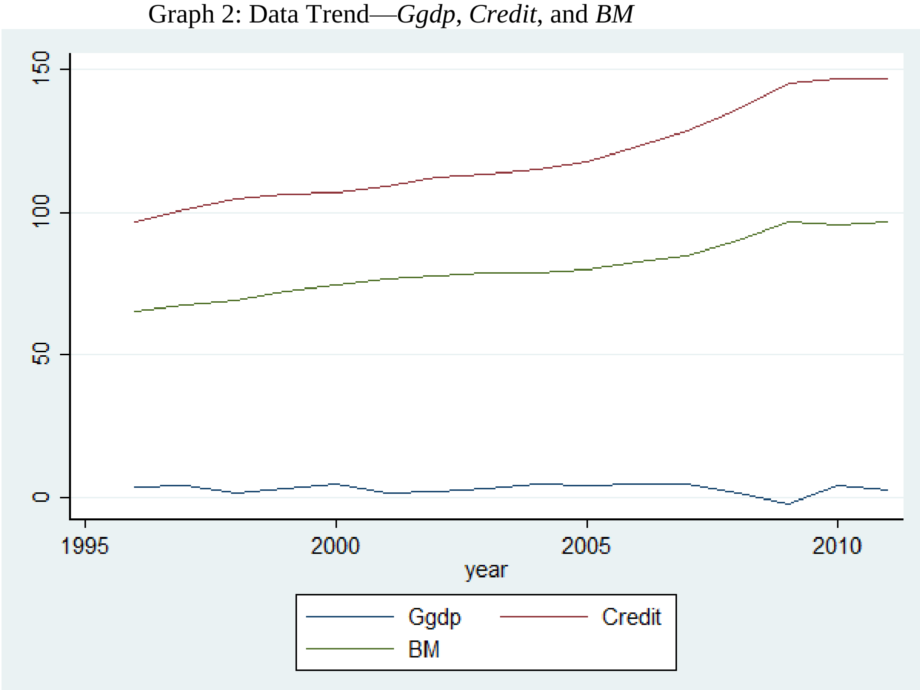
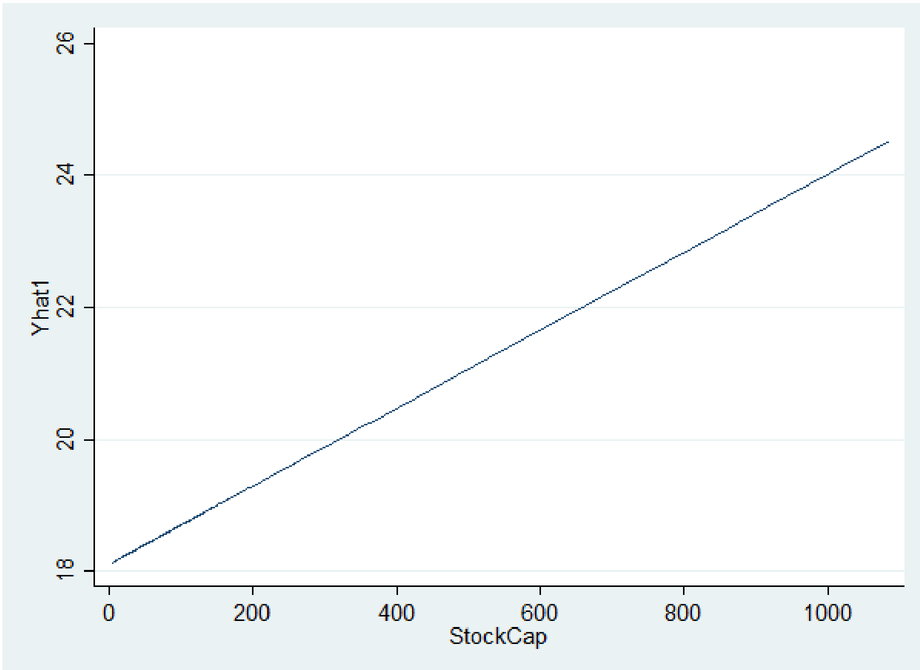
Graph 1: Data Trend—*Ggdp* and *StockCap*



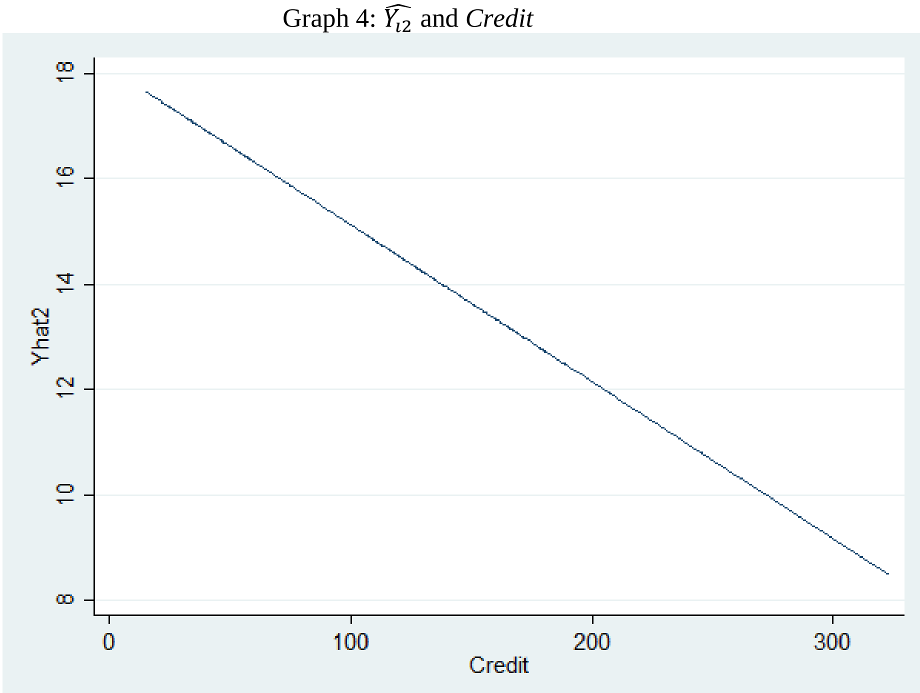
Graph 2: Data Trend—*Ggdp*, *Credit*, and *BM*



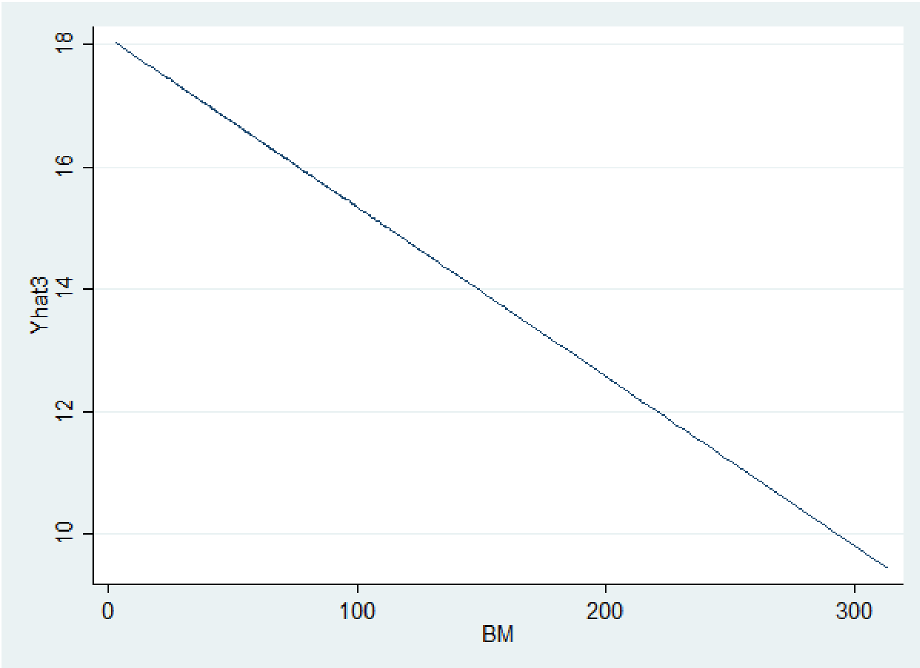
Graph 3: $\widehat{Y_{t1}}$ and *StockCap*



Graph 4: $\widehat{Y_{i2}}$ and *Credit*



Graph 5: $\widehat{Y_{i3}}$ and *BM*



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COMMODIFICATION OF THE BODY IN BUSINESS: CHILD SEX LABOR IN CAMBODIA

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ABSTRACT

This paper is aimed to portray the life of a young child caught up in the incredible misfortune of Human Sex Trafficking. This type of business is common around the world, and most specifically in Cambodia. For many years, the Government and law enforcement were corrupt, and hindered, rather than helped to stop this activity. Her life shows the progress that has been made with help from uncorrupted Government and law enforcement in addition to multiple non-profit social advocacy organizations. There is hope for the future to finally put a stop to this degrading, yet profitable form of commerce.

A VIRGIN PAYS THE PRICE

No matter how hard you try, there are some things that you will never forget. I will never forget the day my mother sold me to a brothel. I had known that we owed a 'loan shark' a sum of money because my father had a heart attack. We had no choice but to borrow money in order to help save his life. When my mother told me I was going to work for a man, I did not know what to expect. Five years ago this happened to me. I was just a young naive little girl. I was only ten. My mother had sent me to the hospital a few days prior to my departure. I was given a "Certificate of Virginity;" this meant that the man would pay my mother more money (Hume, 2013).

I was sent to a military-run brothel. I only knew this because of the uniforms the men were wearing. The man's wife came in to give me a pair of short shorts and a skimpy top. She told me that he would be right in. A man came in and I denied him until he finally gave up. I should've just let him rape me (Hume, 2013) because I was made to pay the price for my refusal. I was electrocuted and starved for three days. I learned my lesson and did as I was told for the remainder of the week. I had no choice but to surrender. I felt broken and sad (Vitagliano, 2004). I was raped by 8-10 men a day. How could she do this to me? My own mother.

$900 later I was sent back to where I lived in Phnom Penh, Cambodia. I knew everyone struggled in Penh, but what I did not know was that it is infamous for exploitation of children. If only I had known. Svay Pak is the name of the village I lived in. One of my clients (that's what we call them) asked me if I was from K-11. This was what many people called Svay Pak. My sister was only two years younger than me. I always feared that my mother would sell her to a brothel too. For me, I felt like I had been gone for years. For my family, it had been just the same as any other week. Nothing changed when I returned home except for the $900 my mom had gained so she could finally pay back her debt, or so I thought. At least it was all over now I had thought. The 'loan sharks' came to pick up the money my mother had, and threatened her for not having the total.

I could not understand how something as horrible as what happened to me could be so tolerated. There were at least a half dozen of us in the brothel. Why wasn't anybody doing anything to stop them I had thought. I see police officers walking around so often, why can't they stop the men from doing these things to us. I thought that police officers were supposed to help us. A few days later my mom informed me that the brothel had been raided by the police and shut down. A weight fell off my shoulders. The police intervened. There was no way that I could be sent back to that place. I was wrong, because two weeks later, I learned that the brothel my mother had sold me to had reopened again. Evidently, the police didn't seem to care about the presence of prostitution rings in the country, rather they were more focused on the foreigners who come in and take part in this. Cambodia's government would rather Cambodia look good to others, thus not giving as much attention to the local brothels.

I couldn't believe it. My mother had sent me back to the brothel. I wish the government did their job and shut down the brothel. This time I was there for two weeks. I talked with other girls and heard their stories. I had met a girl named Chariya, she was twelve years old. Her mother didn't send her to the brothel, rather she was tricked into coming. Her family did not make much money, so when a woman approached her on the street and offered her a job she thought it would be in her best interest to say yes. Ironically, the man my mother sold me to, it was his wife who tricked her. That first night I returned, I was raped by seven men. No one wore condoms. I had heard stories of girls becoming pregnant, and then having abortions (*Half The Sky, 2012*). I did not want that. I was scared.

Usually when the girls were able to talk to each other, we did not talk about our clients. However, Chariya told me that one client the brothel owner brought in was a police officer. We all wanted to leave. Sometimes I thought to myself, ‘What is stopping me?’ Was I scared that no one would want me on the outside? Or was I scared that they might kill me.

We were locked in a room from the outside with padlocks. There were five of us in a room with three beds. From the condom wrappers to the used condoms found on the floor, the room was far from clean (*Fighting Back*, 2011). The next night Chariya denied a client because she did not feel well. The brothel owner stabbed her in the eye as punishment and forced her to continue working. ‘This is absurd,’ I can remember thinking to myself. When I declined a client, I also had repercussions, but nothing like this. If only I had known Chariya was going to deny the client, I could have stopped her. After that, I did not see her for two days and I was very worried. She had returned to the brothel with only one eye. During another attempted raid, the police had found Chariya with a serious wound and brought her to the hospital. The doctors decided the best choice was to remove her eyeball entirely (*Half the Sky*, 2012).

I don’t know why exactly this happened to me, but it did. I was waiting for my last client of the night when another raid took place. It was the anti-trafficking police along with a young woman. This woman saved not only my life, but all of our lives. The past was finally behind me. I would never have to step foot in a brothel again. It was a very scary experience because I did not know if I could trust the people who came in. Somaly Mon is the woman who saved me. She runs an organization called Voices of Change. This organization had maintained contact with me upon my return to the military brothel. When Voices of Change decided to conduct the raid, it had much to risk but it was worth it for both the organization and the girls in the brothel. In no time, seven soldiers showed up to shut down the raid. I think that the brothel owner must have called back-up. The soldiers demanded that the police officers and prosecutors release the brothel owner. The police officers backed down eventually, and I watched the woman walk off in handcuffs, while the man who owned the brothel was left behind (Kristoff, 2011). But, I was saved.

Some girls went home, some went with Somaly back to Voices of Change. Chariya went home briefly. When she returned her mother did not want her. Nobody loved her anymore she had told me. She was called a whore more often than not when she left the brothel. Life was different for many of us. Some were lucky enough to go home and live with their families, while others were no longer accepted after leaving a brothel. You are looked down upon in Cambodian society (*Half The Sky, 2012)*. Chariya came to Voices of Change with the rest of us, and has been here ever since.

SHE PERSISTED: HOPE FOR THE FUTURE

It is now 2012 as I write this and I could not be in a better place. It has been four years since I have been with Somaly and she is a great inspiration. She knows what these girls go through because she had been through the cycle herself. Her incredible character has inspired all of us to follow in her footsteps. We rescue girls from brothels and bring them here to give them education and love. We want to empower these girls, the way Somaly empowered all of us. I have met girls at this organization who have gone through things unimaginable. We rescued a two year old girl who had been raped by a man. More and more girls come each week for hope. There is not someone in this organization who has not been through what the others have to an extent. It makes it easier for the girls who come in to look at us, and see that everything will be better.

Since I have been rescued, I have not seen my mother. However, I do continue to keep in contact with my younger sister. I learned a few things now that I did not know then. Sex trafficking is something that is very prominent and serious in Cambodia, and especially in Phnom Penh. Solamy rescued me from a brothel in the Town of Anlong Veng. It is in northern Cambodia, near the Thai border. I was sent there by my mother because the town had a strong military presence, and that meant the clients paid more (Kristoff, 2011). Mau, my sister, has told me that our mother said everyone sells their daughters if they need money. I did not know then that was the case. She said the ‘virginity selling’ was widespread in our community (Hume, 2013). I’ve learned that it is a cultural obligation for children to financially support their parents and siblings. I wish our culture was not like this (Sunshine Cambodia, 2000). However, in rare cases, girls volunteer themselves to go work at brothels. It is a semi-cultural norm. These young girls would go to the brothels hoping to earn money to buy their parents a house or maybe even marry someone (ADST, 2015). This happened to many of the young girls involved in Voices of Change. As the country's most famous child exploitation center is also an extremely poor location, poverty plays a role in this “business” as well.

Things are getting much better in Cambodia. A few years back, in February of 2008, *The Comprehensive Law on Suppression of Human Trafficking and Sexual Exploitation* was enacted by the Cambodian Government. This helped to decrease police corruption (ICRC, 2008). We even raided a brothel in K-11 in the past week with Don Brewster and his AIM (Agape International Missions) Group. There are a handful of different organizations, like AIM, that hope to help victims of sex trafficking. We have made a great deal of progress in decreasing the sex trafficking with organizations like AIM. In Svay Pak, AIM led a rehabilitation home for formerly trafficked children called, “Rahab’s House.” Brewster could not stand the thought of girls being free from the brothels, and returning to the same cycle again and again. ‘AIM Restoration Home’ is another place that the organization has created as a safe haven for girls. AIM also offers interest free loans to refinance families out of the debt trap they often find themselves (Brewster, 2016). This was the main problem for me, so this is helpful. I would not like to see another ten year old little girl trapped in a brothel because the debt her family had. Factory jobs are also made available for rescued daughters and their mothers.

Someone had contacted AIM, and said that her friend was in a brothel and needed help. AIM asked Voices of Change if we had heard anything about the brothel in K-11. We were familiar with it, and were more than happy to help. It is difficult to arrange for raids on these brothels because we are not the police. We don’t have adequate equipment or expertise. We had tried and failed to conduct our first raid. With help from the police, we received the warrant to conduct the raid, but because police corruption still exists, the brothel was warned of our arrival. Later in the week, we were able to free the children, and arrest the brothel owners. The two were found guilty and sentenced to three years in jail.

There is hope for the future. We have made tremendous progress during the course of the past few years. The United States government told Cambodia that if it did not ‘clean up its act,’ it would stop providing foreign aid payments. The International Justice Mission has now trained over 500 officers in anti-trafficking police units. The Cambodian government now welcomes groups and organizations like ours. The United States Agency for International Development has helped us enormously by providing millions of dollars to improve anti-trafficking police efforts and care for victims (Burkhalter, 2015). We hope that all corrupt officers will be removed within the next year or two. These girls I work with have big hearts and strong minds. I know that they are capable of accomplishing anything they can after going through what they have had to. If we continue to shut down brothels, rescue young girls, provide care and loan refinancing for Cambodian residents, this immoral work practice will come to an end. I now know what I need to do. The future is bright for Cambodia.

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WHAT ARE STUDENTS THINKING? EXAMINING THE CONSTRUCT VALIDITY OF TEAMMATE EVALUATIONS

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ABSTRACT

According to the National Association for Colleges and Employers 2016 Job Outlook survey, the ability to work on a team is what employers are looking for in today's college graduates (NACE, 2015). These workplace trends have prompted a movement in colleges and universities toward small-group and team-based teaching methods. While research on team effectiveness has grown over the past 40 years, one area that has received less attention is the challenge associated with obtaining unbiased peer feedback about team member performance. The current research finds that students provide biased teammate evaluations, focusing on non-performance related factors (for instance, whether the teammate is a friend) much more than focusing on performance-related factors (for instance, whether the teammate contributed to team success). Further, the current research finds that teammate evaluations neither correlate with current project grades nor predict future project grades. The combined evidence calls into question the construct validity of teammate evaluations. Implications for future research and practice are discussed.

INTRODUCTION

The use of teams in organizations has drastically changed over the last thirty years as teams are becoming a more important part of organization success (Weiss & Hoegl, 2015). Working in teams provides many advantages to the organization such as enhanced performance, cost savings, higher safety levels, and more positive employee attitudes. A particularly important advantage is that teams promote the exchange of ideas. When people work together to come to a solution for a problem, they each bring different views and opinions to the table which initiates more diverse solutions to the problem at hand. This can be a very important component in organization success (Aube, Rousseau, & Trembloy, 2011). As teams are becoming more and more prevalent in businesses, many colleges and universities are making it important for students to engage in team projects. They require this because working in teams in undergraduate or graduate school exposes students to the challenges and difficulties that teams may present. If students do not have the preparation or practice of working together with other people, their workplace teams may offer many challenges. Team projects allow for students to be exposed to working with others.

Interestingly, working in teams brings many challenges. One of the major challenges that many students face while working in teams is dealing with team members who do not participate in team activities, also known as freeriders. In the end, freeriders usually end up just getting the same group grade as other team members and this might aggravate the team members who actually did the work diligently. Another challenge that students face is that they tend to work on planning and organizing the project rather than getting actual work done. Many teams face the challenge of not knowing where exactly to start. They tend to hold off doing any major work towards the goal. This can create a time constraint at the end of the project when the team still has not made progress on the project. Another major challenge is if the group members do not get along. This can create an awkward situation for everyone in the group, which can contribute to the manner in which people get work done.

While there are clearly many challenges in team projects, the focus of the current research is on the challenge of the grading component. Team projects with a single, team-deliverable do not allow a way to measure how much work each individual actually did and what grade they really deserved. However, in recent years, many instructors have used teammate evaluations to get a better idea of how much work each person on the team actually did. Teammate evaluations are used to measure a student's performance in the group, and they are usually given to students at the end of team project. Most teammate evaluations ask a student to evaluate their peers in terms of how "good" a teammate they are and how much they participated in the project. Unfortunately, many students subconsciously let other factors influence the evaluation of their peers. For instance, a student might give a friend a good teammate evaluation not because they are a good teammate but because they are a good friend. If these non-performance based factors influence the evaluation, then the evaluation might not provide an honest and appropriate representation of how each student contributed to the project. This reduces the construct validity of teammate evaluations.

LITERATURE REVIEW

In recent years there has been a shift from classroom learning being a "spectator sport in which faculty dominates" and students listen and learn (Tinto, 2003, p.1) to being replaced with learning communities, team based pedagogies and collaborative learning (Davidson, Major, and Michaelsen, 2014). As these new ideas about learning grow, professors must learn how to adapt to them and they do this by looking at scholars to enhance learning in the classroom.

Team research has grown as teams have become more prevalent in business. Professors try to incorporate teams in their everyday classroom activity so that students become more used to being in that setting. Since the idea of working in teams is still fairly new, universities are still learning about the process. There are many things to take into consideration and learn, such as how to form efficient teams, how to motivate students to work in those teams, and how to measure a student's team performance.

There is a great deal of research around teams regarding how to create teams, design assignments, and support students in their group work (e.g., Cooper & Robinson, 2011; MIchaelsen, Knight, & Fink, 2004; MIllis,2010). However, there isn't much research on how to provide feedback to students who work on teams. Many professors are using teammate evaluations at the end of the project to see how much work each person on the team actually did. The main goal of this research is to see how well these teammate evaluations actually measure the performance of the student. There is a lot of background research on teams and how they are used in various settings, knowing this is important before evaluating the construct validity of teammate evaluations.

Some objectives of tertiary education are deep learning, promoting intellectual curiosity, intellectual and personal development and benefits to society (Chan, 2016, Keniston, 1960; Sandoval-Lucero, 2014). Another major goal of higher education is to prepare students for their career path (Chan, 2016, Keniston, 1960; Sandoval-Lucero, 2014; White House, n.d.). A part of preparing students for their career path is getting them used to the kinds of environments they will need to work in. This will ensure that students are fully ready for the workplace, and they have experience in that setting. Since teams are becoming more prevalent, the skill of working with people is very important. According to the National Association for Colleges and Employers' *2016 job outlook* survey, the skill of working in teams is a major component that employers look for in college graduates. According to Bolman and Deal the early perspective of the workplace was actually the do-it yourself style of projects was being shifted to teamwork related projects. (1992, p.34).

There are many challenges that come from having students work in teams. One of the major challenges is the teammate evaluation process. Faculty hope for honest feedback on team member performance. However, students may allow non-performance factors to influence their teammate evaluations. For instance, a team member may evaluate a "friend" more leniently than is deserved. Research has found that friends being on the same team can lead to competing priorities when evaluating each other where peers can put the maintenance of their relationship or they tend to take revenge on their teammates above honesty in their assessments which can result in inaccurate ratings (Burton, 2005; Loughry et al., 2007; Ohland et al., 2012). Another criticism for teammate evaluations is that they can be evaluative rather than being developmental. Students need to use them to learn and better themselves in the team, but the way faculty often implement teammate evaluations at the end of the project allows no time for development. Many researchers agree that peer feedback should be provided continuously throughout the project and it should be frequent, immediate and tied to accountability to the student team (Michaelsen, Davidson, & Major, 2014). Lastly, the forms of teammate evaluations should assess each teammates' feelings about how the team performed, how their peers helped each other, and how the teammates contribute to the learning aspect (e.g., Michaelsen & Fink, 2004; Opatrny, McCord, & Michaelsen, 2014). Maybe the scales on which students evaluate each other should be a bit more comprehensive than the simple five-point scale. An important thing to note is that, high performers have been shown to provide more variable and distinguishing peer ratings while low performers on the team distinguish less between good and bad teammates (Davison, Mishra, Bing, & Frink, 2014; Ohland et al., 2012).

In 1983 Hock noted that teamwork happens "in the symphony, in a ballet, in a theater, in sports, and equally in business" (as cited in Schlesinger, Eccles, & Gabbaro, 1983). Meaning that you need harmony in a team in order to work to the fullest extent and be the most productive. Since the discovery that Hock made the "teaming" trend became more accepted in the workplace (Edmonson, 2012). Many of today's big companies are actually team based, such as Coca-Cola, Nokia and Ford. Teams can also very prevalent in hospital operating rooms or research labs, museums, and engineering quality teams; addressing crime, environmental disasters, or political strategy (American Society for Quality, 2014; Ashmos & Nathan, 2002; Buljac-Samardzic, Dekker-van Doorn, van

Wijngaarden, & van Wijk, 2010; DeChurch & Mesmer-Magnus, 2010; Decuyper, Dochy, & Van den Bossche, 2010; DeDreu & Weingart, 2003; Jordan, Field, & Armenakis, 2002; Lashinsky, 2006; London, 2013; London & Sessa, 2006; Mankins, Bird, & Root, 2013; Mesmer-Magnus & DeChurch, 2009; Museum of Modern Art, 2011; Peeters et al., 2006; Prokesch, 2009; Tata & Prasad, 2004; Werner & Lester, 2001; Zaccaro, Ely, & Shuffler, 2008). Since teams are used in all different kinds of contexts in society, so getting used to working in them efficiently is very important.

Team feedback is a very important part of this process. As Kozlowski and Ilgen say team feedback is a, “key leverage point and a pressing research need” (2006, p. 112). Receiving feedback is not only good for a student’s performance on teams they may also be good for their future careers. As noted by Michaelson, Davidson, and Major note, peer evaluations can help students, “develop the interpersonal and teamwork skills that are so important for their future success” (2014, p. 68). Group performance feedback, peer evaluations, and 360-degree feedback are all terms that are used to describe techniques that are used to measure performance level (Anson & Goodman, 2014; Dominick, Reilly, & McGourty, 1997; El-Mowafy, 2014; Pellecchia et al., 2011; Penny, 2003). Student teammate evaluations can lead to much enhanced learning experiences, students participating more on teams, much better experiences as a whole, and it allows for more collective versus team orientation (e.g., collaboration, cohesion; Anson & Goodman, 2014; Brutus & Donia, 2010; El-Mowafy, 2014; Gabelica, Van den Bossche, Segers, & Gijselaers, 2012; Loughry, Ohland, & Moore, 2007; Michaelsen, Davidson, & Major, 2014; Pellecchia et al., 2011; Van der Vegt, de Jong, Bunderson, & Molleman, 2010). According to that study students are more likely to get more out of their experience in a team if they know they will have to do teammate evaluations.

The benefits of peer feedback are far reaching. Student team assessments can lead to enhanced learning, enhanced retention, less freeriding, better student experiences, and improved team behavior (Anson & Goodman, 2014). And, certainly, obtaining feedback for teammates makes sense from the faculty perspective as team members have access to performance data on their teammates that the faculty member is not privy to (Brutus & Donia, 2010). Overall, though, scholars are aware that the value of feedback depends on the quality of that feedback (Gabelica et al., 2014). There are many challenges with the typical teammate evaluation and understanding that they might lack construct validity and focus on non-performance based factors is crucial. Therefore, the current research explored the following hypotheses:

H1: Students will consider non-performance factors when completing teammate evaluations.

H2: Teammate evaluations will not be correlated with current project grades.

H3: Teammate evaluations will not predict future project grades.

METHODS

Two methodologies were utilized to gather information for the current study. First, a student survey of factors influencing teammate evaluations was conducted to determine if students were influenced by other, non-performance factors when providing teammate evaluations. This survey focused on the content validity of teammate evaluations. Second, a review of faculty grading was conducted to explore the concurrent and predictive validity of teammate evaluations. Taken together, these two methodologies should provide valuable insight into the construct validity of teammate evaluations. The methodologies are described in greater detail below.

Student Survey of Factors Influencing Teammate Evaluations

A survey of factors influencing teammate evaluations was developed. As an initial step, the researchers conducted qualitative research to determine the survey content. Researchers conducted a focus group with students exploring the factors that they take into consideration when completing a teammate evaluation. It was clear from this focus group that, while faculty hope that students focus solely on performance-related teammate factors, students take a variety of other factors (e.g., whether they are friends with the teammate) into consideration when completing a teammate evaluation.

Based on this focus group, an initial survey was developed and beta tested with a group of 7 students. The researchers gathered feedback from this beta test and modified survey accordingly.

A final survey was developed to explore the factors that students consider when completing a teammate evaluation. The survey was distributed as an online survey. The researchers asked students to complete the survey and then asked students to share the survey with their friends. A total sample of 103 student surveys was eventually gathered.

First, students were asked to rank order the top 11 factors that were identified in the focus group and beta testing. While the focus group identified a total of 21 potential factors, it was determined that subjects could rank order no more than 11 items effectively. The 11 items selected for this portion of the survey included one performance-related item (e.g., The teammate contributed to the team success by doing quality work) and 10 non-performance-related factors (e.g., I do not want to be a snitch).

Next, students were asked to rate the extent to which various factors might influence their teammate evaluations (on a likert-type scale where 1=definitely not an influence and 5=definitely yes an influence). Students rated a longer list of 16 potential factors (e.g., I'm friends with the person and I want to avoid arguments).

Subjects

Subjects were 103 undergraduate students from a small, private liberal arts college in the Northeast. 56% were male and 44% were female. The average age was 20 and students were from a variety of college departments including biology, psychology, marketing, management, accounting, finance, and economics. Subjects were primarily white (87%) and 13% reported other race identities (i.e., hispanic, asian pacific and african american).

Review of Faculty Grading

To examine the concurrent and predictive validity of teammate evaluations, faculty grading in a senior capstone experience was gathered. This class utilizes case-based methodology and in this particular class, teammate evaluations are conducted four times throughout the semester, once after each case is completed. Researchers explored whether teammate evaluations were correlated with the current case grade (concurrent validity) and whether teammate evaluations predicted future case grades (predictive validity). A total of 192 students, 40 teams, and 768 grades were examined.

RESULTS

The current research explored the construct validity of teammate evaluations. To do so, two different methodologies were employed. First, a student survey of factors that influence teammate evaluations was distributed to assess the content validity of teammate evaluations. Second, an examination of faculty grading was conducted to assess the concurrent and predictive validity of teammate evaluations. Results from these analyses are examined below.

Student Survey of Factors Influencing Teammate Evaluations (content validity)

Students were first asked to think generally about any teammate evaluation they have completed and rank order a list of 11 potential factors that might influence the score given on a teammate evaluation with 1 being the most important factor considered and 11 being the least important factor. Once the ranking survey was completed, researchers analyzed the results of the ranking and calculated the average rank of each factor. Results are shown below

Table 1. Ranking of Factors Influencing Teammate Evaluation

Factor Influencing Teammate Evaluation	Average Rank	Min. Rank	Max. Rank
I'm friends with the person I'm evaluating	2.63	1	11
I want to stick with group consensus	5.33	1	11
I don't like the person I'm evaluating	5.59	1	11
I do not want to hurt their feelings	5.69	1	11
The team member contributed to the team success by doing quality work	6.00	1	11
I'm too lazy to take the time to truthfully evaluate them	6.07	1	11
I feel bad for people who have busy schedules and probably would have performed well if they had the opportunity to do so	6.40	2	11
I do not want to be a snitch	6.84	1	11
I was just looking out for other students	6.83	1	11
I want to avoid arguments	7.76	1	11

I had a preconceived notion of whether they are a good teammate or not	7.88	1	11

NOTE: A lower number indicates a higher ranking and, therefore, a more important factor in teammate evaluation.

Results of the ranking suggest that students consider a variety of factors other than actual teammate performance when completing teammate evaluations. In fact, four factors (friends, group consensus, don't like the person, and don't want to hurt feelings) are taken into consideration more often than the performance-based factors (i.e., the team member contributed to the team success by doing quality work). Further, all factors were ranked "1" by at least one person, indicating that all of these factors are taken into consideration by students when completing teammate evaluations.

Next, students were asked to review a more complete list of 16 potential factors and rate the extent to which each factor might influence their teammate evaluation (1=definitely not influence and 5=definitely yes influence). Results suggest that students consider a variety of non-performance related factors when completing a teammate evaluation.

Table 2. Rating of Factors Influencing Teammate Evaluation

Factor Influencing Teammate Evaluation	Average Rating	Min. Rating	Max. Rating
I'm friends with the person I'm evaluating	3.49	1	5
I was just looking out for other students	3.49	1	5
It's not my job to give grades, it's the teacher's job to give grades	3.44	1	5
I want to avoid arguments	3.28	1	5
I do not want to be a snitch	3.25	1	5
I want to stick with group consensus	3.23	1	5
Because they gave me a bad grade	3.21	1	5
I do not want to hurt their feelings	3.17	1	5
I think they were too controlling	3.14	1	5
I don't want to be the person who gives someone a bad grade	3.07	1	5
I had a preconceived notion of whether they are a good teammate or not	3.02	1	5
I feel bad for people who have busy schedules and probably would have performed well if they had the opportunity to do so	3.00	1	5
I've gotten into an argument with them before	2.88	1	5
I do not care about the grade I give them	2.75	1	5

I don't like the person I'm evaluating	2.73	1	5
I'm too lazy to take the time to truthfully evaluate them	2.44	1	5

NOTE: A higher number indicates a higher rating and, therefore, a more important factor in teammate evaluation.

Overall, these results suggest poor content validity for teammate evaluations. Clearly, faculty expect students to assess the team member contribution to the project when conducting a teammate evaluation. Strong content validity would be demonstrated by students ranking or rating team member contribution to project the highest. However, this research demonstrates that students consider other factors more important than team member contribution to the project (e.g., whether the student is a friend, whether the student wants to avoid arguments). These results demonstrate poor construct validity of teammate evaluations.

Review of Faculty Grading (concurrent and predictive validity)

A set of 192 students within 40 teams over the course of 5 semesters were examined to determine the concurrent and predictive validity of teammate evaluations. Strong concurrent validity would be demonstrated by a positive correlation between teammate evaluations and grades on the current case. Strong predictive validity would be demonstrated by a positive correlation between teammate evaluations and grades on a future case. Unfortunately, results suggest poor concurrent and predictive validity. As shown in the table below, the four teammate evaluations were neither correlated with the current case grade (e.g., teammate evaluation 1 is not correlated with case grade 1) nor were they correlated with future case grades (e.g., teammate evaluation 1 is not correlated with case grade 2, 3, or 4). These results demonstrate poor construct validity of teammate evaluations.

Table 3. Correlation Matrix of Teammate Evaluations and Case Grades

	Teammate Evaluation #1	Teammate Evaluation #2	Teammate Evaluation #3	Teammate Evaluation #4	Case Grade #1	Case Grade #2	Case Grade #3	Case Grade #4
Teammate Evaluation #1	1							
Teammate Evaluation #2	.75*	1						
Teammate Evaluation #3	.67*	.83*	1					
Teammate Evaluation #4	.68*	.68*	.83*	1				
Case Grade #1	.20	.17	.19	.17	1			
Case Grade #2	.18	.14	.19	.16	.52*	1		
Case Grade #3	.10	.08	.10	.11	.25*	.38*	1	
Case Grade #4	.09	.06	.10	.04	.17	.21	.35*	1

NOTES: Some case grades were oral presentations, others were written presentations
N=192
- = p<.01

DISCUSSION

Findings from the current research demonstrate that students consider a variety of factors when completing teammate evaluations (e.g., whether the student is a friend, whether the student wants to avoid arguments). Interestingly, many of these factors are not performance-related factors. This presents a problem for faculty. Faculty expect that students are providing an honest assessment of team member contribution to the team project. Instead, other factors contaminate this assessment. Clearly, this contamination of the survey process lessens the construct validity of the teammate evaluation process.

Further, findings suggest that teammate evaluations demonstrate neither concurrent nor predictive validity. Results of this study find that teammate evaluations are not correlated with grades on the current project and do not predict grades on future projects. These results further demonstrate a lack of construct validity.

Taken together, results from this study suggest that faculty should be cautious when conducting teammate evaluations. While faculty expect to be receiving an honest assessment of team member contribution to team performance, the teammate evaluation process often provides more biased, contaminated information.

Implications for Teammate Evaluation Processes

How can we enhance the construct validity of teammate evaluations? It is clear that students allow biases (e.g., if the team member is a friend) to influence team member evaluations and therefore provide an inaccurate assessment of the team member's contribution to team performance. Perhaps we can learn from other areas of management research to overcome this bias problem.

Findings in the literature on new employee selection processes find that managers often allow biases to interfere with their selection process. For instance, managers may suffer from the "first impression" bias where the first impression of a candidate inappropriately influences the final hiring decision. Further, findings in the literature on performance management processes suggest that managers allow biases to interfere with performance management decisions. For instance, managers may suffer from a "halo effect" bias where an employee will receive inappropriately inflated performance ratings on several specific factors simply by performing well on a single factor. As another example, managers may suffer from a "recency effect" bias where an employee will receive inappropriately inflated performance ratings simply because the employee performed well recently, even if that employee performed poorly earlier in the evaluation period.

Research suggests that training may help minimize biases. In selection and performance management situations, educating managers about these biases and how they impact judgement has been shown to be an effective measure in minimizing the bias. Perhaps we can apply these findings to teammate evaluation. If faculty took some time to educate students on the rationale for the teammate evaluation and the potential biases that might influence the evaluation process, this training might minimize student biases in the evaluation process. Simply put, removing these biases reduces construct contamination and increases the construct validity of the teammate evaluation process. Future research should explore the effectiveness of this methodology.

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ATHLETES: YOUR SCANDALS ARE AFFECTING CONSUMERS

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ABSTRACT

This study explores the impact that a personal scandal has on an athlete, their team, as well as the league they play in. More specifically, we measure the impact that these scandals have on consumer perception of the player, team, and league. Our data was collected via an online questionnaire, and yielded a random sample of 263 respondents. Results indicate that an athlete's actions that are viewed as inappropriate by consumers drive a negative view of that athlete as an individual, as well as the team they are associated with. However, consumer perceptions of the league remains unaffected. Additionally discovered, if a consumer is a fan of an athlete or the team in which the athlete is on, transgressions do not have as significant of an impact on the consumer. Consumers who find transgressors' behavior inappropriate and develop a negative view of an athlete post-scandal are less likely to watch an athletic event starring the particular athlete and purchase a product endorsed by the athlete. In conclusion, athlete scandals generally drive negative perceptions of consumers and it is recommended that brands carefully consider how relationships with transgressors subsequently impact team and brand image.

INTRODUCTION

Advertisements featuring athletes are the most common segment of celebrity endorsements, making up 60 percent of total celebrity endorsed advertisements. Large corporations spend over $12 billion a year on celebrity endorsements, and it usually pays off (Carlson). By matching an athlete's image with a brand image, companies can strike good endorsement deals that will target consumers with similar values. Athlete endorsements can also show the power of a brand, by providing the idea that the athlete's performance is a result of using a certain product. These attributes can make more money for a brand, making the investment worthwhile for the company. However, it is relatively often that one can find a scandal where an athlete endorser is involved. Therefore, there is an obvious risk that comes along with spending massive amounts of money on seemingly volatile athletes.

The reason for conducting this study is to discover to what extent athlete scandals have on consumer perception of that player, their team, their league, as well as any brand they may endorse. After gathering this data, companies will be easily able to analyze whether or not an athlete who has been subject to a scandal is worth the risk based on our recommendations. Our research will be beneficial to brands that use athletes as endorsers to promote their products. Teams and leagues can also use this research to assess the damage done to their marketability after a supported athlete commits a scandal.

This paper will present the perceived change in a typical consumer's mind after an athlete's scandal. We employed a survey to gather data about the marketability of three certain athletes and their accompanied scandals. By reading this report you will find out if, and to what degree, athlete scandals will affect their own marketability, as well as the marketability of their team, their league and any products they may endorse.

Some research questions we analyzed include:

- How does an athlete scandal affect how a fan perceives that athlete?
- How does an athlete scandal affect how a non-fan perceives that athlete?
- How does an athlete scandal affect the marketability of the team he/she plays on?
- How does an athlete scandal affect the perception and marketability of the league?
- Does the type of scandal have an impact on consumer perceptions?

LITERATURE REVIEW

Athletes today are customarily used as endorsers of brands in order to promote a product. As endorsers of brands, if an athlete engages in a negative activity, not only is the brand that the athlete promotes affected, but so are competing brands in the same industry (Carrillat 2014). If an athlete commits a wrongdoing consumers may consequently gain a negative perception of the athlete and their affiliates, as natural ties can be drawn between a brand that an ill-acting athlete represents and the team and league they represent. However, even though a consumer may feel negatively about a professional athlete's transgression, it does not necessarily mean the consumer feels negatively about the athlete. Consumers support for a brand endorsed by a transgressor is a direct function of moral reasoning choice as the type of transgression often affects this reasoning (Lee 2016). This means that perception is often tied to consumer morals. Researcher, A. Sassenberg built a conceptual model to fully analyze the degree of consumer emotional response to an endorsed brand in relation to the type of transgression that occurred. By comparing brand benefits with athlete actions, the model concluded that the type of transgression did indeed affect consumer's perceptions, if the athlete was an endorser of a brand (Sassenberg 2015).

Athletes comprise over half of all celebrity endorsers (Lake 2010). Evidence has shown that negative publicity about an athlete may be discounted because of fans' commitment to a player, team, or sport. Less committed fans tend to recall more negative facts about an athlete whereas committed fans tend to counter-argue with more favorable thoughts (Funk and Pritchard 2006). Consequently, marketing funds spent on athlete endorsers rather than those spent on other celebrities may be less risky due to sports fans' commitment to their favorite athlete and teams. Studies have shown that stock returns and sales do increase with an athlete endorser especially with each major achievement of the athlete (Elberse 2012). However, negative information is often given greater weight than equally strong positive information (Einwiller et al. 2006). This means that negative information surrounding an athlete endorser can largely threaten a brand image, sales, and consumers' trust.

Aspects of athlete scandals have been studied in order to anticipate the negative repercussions regarding consumer attitudes. Results have found that scandals such as drug abuse have had a long-term negative impact as opposed to scandals involving an athlete's home life (Hughes 2016). Many form a negative relationship between athletes and the use of performance enhancing drugs. Nonetheless, results have revealed that athlete's brand image mediates the relationship between drug abuse and purchase intentions of sports consumers (Butt 2016). The Endorser Sexpertise Continuum supports this notion as they developed a scale to validate athlete's marketability using anchor points such as "likeability" and "acquirable expertise." It has verified the theory that athletes are actually considered brands themselves (Simmers 2009). This research will play an integral role when analyzing how a scandal affects fans' and non-fans' perceptions of athletes engaging in negative behaviors. Based on these secondary sources we plan to further these findings and explore new implications in the sports industry and athletes as brands.

METHODOLOGY

To obtain data the study was conducted using descriptive research. We collected a convenience-based random sample using the snowball method. This allowed for a like-minded group of individuals to participate in the questionnaire, as well as encouraged participants to share with more people.

RESEARCH INSTRUMENT

Scales and Validation

The scale we used for this survey was a seven-point Likert Scale. Our survey asked how a consumer feels about each athlete transgressor we selected prior to their scandal as well as after. We chose this scale because it allowed our respondents to provide answers based on their extent of agreeability. This is a valid scale to use for our research because it allowed us to measure fans' perceptions of an athlete, team, and league following an athlete's transgression. Additionally, we ran a Chronbach's Alpha test and it found all our scales to be internally reliable. For questions regarding respondents' negative view of an athlete post scandal, the Chronbach's Alpha is 0.764. For questions regarding whether respondents are a fan of an athlete transgressor the Chronbach's Alpha is 0.708. For questions regarding respondents decreased likelihood to act, the Chronbach's Alpha is 0.817.

Survey Design and Implementation

Our survey began with a cover letter to obtain the respondent's cooperation and to inform respondents of the purpose of the study. Our survey was designed to be split into 5 sections. First, psychographics, followed by a section for each of our three athletes and their respective transgression, and lastly demographics. Our survey questions were presented as a seven-point Likert scale. The negative anchors were on the left and the positive anchors were on the right. There were no labeled middle descriptors, but each question had an identifiable midpoint. The question format and layout made it easy for respondents to read and follow the instructions. The first scandal introduced was Colin Kaepernick, of the San Francisco 49ers, and his kneeling during the National Anthem before games. The second is Hope Solo, U.S Women's National Soccer, and her vicious words towards Sweden's National Team post-game. The third scandal was Maria Sharapova, of the International Tennis Federation, and her accusation of drug use. We obtained approval, pretested the survey, revised and sent out the survey.

Sample Profile

Almost two-thirds of our sample was comprised of respondents between the age range of 18 and 24. The second most representative age range within our sample were respondents between the ages of 45 and 54 as they comprised roughly one-sixth of our sample. More than half of respondents identified themselves as students, with the second greatest occupation identifier being employed for a combine total of 97 percent of respondents identifying with one of the two. The majority of respondents identified as white with only 8 percent of the sample classifying as other races. Respondents with a household income equal to $100,000 or more were four times more present within our sample than the next greatest represented income range, less than $19,999. These two income ranges made up about 50 percent of the total sample population and 16 percent of respondents preferred not to answer.

	Frequency	Percent
Gender		
Male	91	38.2
Female	144	60.5
Age		
18-24	155	65.1
25-34	14	5.9
35-44	13	5.5
45-54	40	16.8
55-64	10	4.2
65 or older	4	1.7
Occupation		
Student	134	56.3
Employed	98	41.2
Unemployed	1	0.4
Ethnicity		
White	219	92
Non-White	19	8
Income		
Less than $19,999	24	10.1

$20,000 to $39,999	12	5
$40,000 to $59,999	21	8.8
$60,000 to $79,999	21	8.8
$80,000 to $99,999	23	9.7
$100,000 or more	98	41.2
Prefer not to answer	39	16.4

DATA ANALYSIS AND FINDINGS

When exploring each hypothesis, we split our conceptual relationships into three sections relating to consumers' perception of: the individual athlete, their team, and the league they play in. We conducted data using three different athlete scandals. We were not only interested in the significance levels ($p \leq 0.10$), but also the direction of the relationship. The results are presented below in Table 2 and Table 3.

Table 2

Construct:	Being a fan of X	Drives a negative view of X:	
	X	F	R-Square%
Individual	Overall	27.664***	10.5%
	Colin Kaepernick	72.133***	23.4%
	Hope Solo	33.670***	12.5%
	Maria Sharapova	16.647***	6.6%
Team	Overall	18.686***	7.3%
	The San Francisco 49ers	4.44***	5.4%
	US Women's National Soccer Team	11.633***	5.7%

***Significance level at 1% level

Table 3

	Drives a negative view of:		
Actions viewed as inappropriate by consumer:	The individual	His/Her team	His/Her league**
Hope Solo	P-value: .001; F=176.450; R-square: 42.8%	P-value: .001; F= 14.234; R-Square= 5.7%	P-value: .051; F=3.845; R-square= 1.6%
Colin Kaepernick	P-value: .001; F= 166.740; R-square=41.4%	P-value : .001; F= 87.391; R-square= 27.0%	P-value; .000; F=40.835; R-square= 14.8%
Maria Sharapova	P-value: .001; F= 161.533; R-square= 40.6%	*	P-value: .801; F= .064; R-Square= 0%

*Tennis is an individual sport; therefore, team perception is not applicable to Sharapova
**Data is not significant

Results indicated that an athlete's actions, which are viewed as inappropriate by the consumer, inspire a negative view of that athlete, as well as the team they play on, but does not significantly affect the view of the league. It can also be drawn that if the consumer is a fan of the athlete that performed the transgression, the transgression did not affect their view of the athlete. Similarly, if the consumer is a fan of the team the athlete plays on, the scandal did not diminish their view of the team. Again, fandom did not have a critical effect on the league of the player.

We then conducted analysis based on consumers' intention to watch a game, and buy a product, subsequent to the scandal. It can be concluded that both, having a negative view of the athlete post-scandal (F=69.035 ;p: .0001; R square =22.6%), and viewing it as inappropriate (F= 59.933;p: .0001; R square =20.3%), discourages individuals from watching a game that the athlete was participating in. Likewise, having a negative view of the athlete post-scandal (F=161.297 ;p: .0001; R square =40.6%), and viewing it as inappropriate (F=114.713 ;p: .0001; R square =32.7%) would discourage them from buying a product endorsed by that athlete.

CONCLUSIONS, AND MARKETING IMPLICATIONS

After conducting our survey and analyzing our data, we have come to the conclusion that scandals have a negative effect on both the individual athlete and the teams that they play for. In the case of the league, there is no information that suggests a negative effect. We also noticed the data correlating between being a fan of a certain athlete and viewing their scandal as negative. It showed that if the person is a fan of the athlete then they are less likely to view the scandal as negative as someone else who is not a fan of the athlete or has no bias towards them.

Based on our conclusions, this data can be a valuable decision making element for professional sport organizations, as well as for brands that use athlete endorsers. Athlete scandals have an effect on the actual individual, the team in which they are affiliated, but not the league in which they identify with. Going forward we can confidently suggest that brands who use athlete endorsers should carefully evaluate whether or not they want to continue relations with transgressors as consumers are likely to develop a negative perception of the brand. Brands need to decide whether their image will be damaged if they are associated with an ill-acting athlete, and if their brand's message and or ethics will be compromised if they continue relations with a particular athlete. As for marketability in the sport, it is recommended that the team take on a majority of the burden when handling a negative transgression. By issuing a press release, or a degree of damage control in a timely manner the team may be able to neutralize some of the negativity that arises by showing their fans that they do not support the athlete's actions, as that is not what they stand for. The fans need to see that the team has taken action against the player in order to give the perception that the team and the fan are of the same mindset and as a result the fans perception of the team will not be as negatively impacted. By gathering a general consensus of how consumers and fans feel about the transgression, teams can decide to take action that most closely aligns with the majority view of consumers. In regards to the league, individual athlete's transgressions are not a major concern, as shown by our data.

LIMITATIONS AND FUTURE RESEARCH

We believe future research can build on our work. Due to our survey containing polarizing arguments such as Colin Kaepernick's civil rights protest, we were hoping to receive responses from an ethnically diverse sampling pool. Ninety percent of our respondents were Caucasian. This limitation prevents us from receiving the opinions of respondents who have strong emotional ties to the protest through their ethnicity. As an extension of our research, we would like to take a more comprehensive look at how the type of scandal may affect consumers' perceptions. Additionally, we would like to obtain a more diverse sample population. This would give us the appropriate data to make more concrete conclusions as to whether or not certain demographics drive consumers' perceptions.

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A CONNECTION BETWEEN MARY SHELLEY'S VIEWS AND THE CONSUMER'S ACCEPTANCE OF GENETICALLY MODIFIED FOODS

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ABSTRACT

As the 200th anniversary of Frankenstein's publication from Mary Shelley approaches, the main objective of this research was to interpret the author's ideas and connect them with the consumer acceptance of genetically modified foods, also know as Frankenfoods. In order to fully understand Mary Shelley's views, the novel "Frankenstein" was read and interpreted before researching the possible connections with Frankenfoods. A genetically modified food is defined as "Any organism the genetics of which have been altered through the use of modern biotechnology to create a novel combination of genetic material. GMOs may be the source of genetically modified food ingredients and are also widely used in scientific research and to produce goods other than food" (Monsanto). When GMOs were first introduced, consumers thought of such products as monstrosities made by scientists that could harm society's health and safety. Because of these monstrous qualities, consumers started referring to genetically modified food as Frankenfoods(Mirchandani). In order to connect GMOs with Frankenstein, we also researched how consumer's acceptance of genetically modified food has changed over the years.

Our findings show that Frankenfoods were neglected at firsts by consumers, but as time passed, consumers started purchasing them because they were cheaper than non-GM foods. Education also plays a big factor on the consumer's acceptance of these products, in which we noted that as education and knowledge of GMOs increased, the acceptance increased as well. Currently, genetically modified crops have been taking over the entire agricultural market in the U.S.

Our findings can help marketers around the world understand these burdens and instruct consumers or use them as a marketing strategy to reach their target market Furthermore, our findings can help marketers develop pricing and promotion strategies when introducing genetically modified products into a certain market.

INTRODUCTION

As the 200th anniversary of Frankenstein's publication from Mary Shelley approaches, the main objective of this research was to interpret the author's ideas and connect them with the consumer acceptance of genetically modified foods, also know as Frankenfoods. Over the years, Genetically Modified Organisms, also known as GMOs, have been a sensitive subject for consumers. A Genetically Modified Organism is defined as any organism whose DNA has been altered in order to add or eliminate some genomes that ultimately enhance the DNA of the organism. Approximately two decades ago, governments and companies have decided to apply this knowledge into foods in order to make a profit from them. Genetically modified foods, were seen as monstrous invention by scientists, thus the term Frankenfoods was often used to describe such products(Mirchandani). Genetically modified foods, present a huge benefit for companies, since it can be grown faster and more effectively while not altercating its flavor, consistency or color. However, this presented a lot of doubts on the quality of the products and health safety issues that could arise with these new products. Eventually, marketers were able to instruct consumers about the benefits of genetically modified foods and the lack of harm that it presented to our bodies in addition to more affordable prices and the demand started increasing exponentially.

Frankenfoods, or genetically modified foods, were neglected by consumers at first due to the lack of knowledge of the benefits that it presented. The term Frankenfoods arose from the connection between the GM foods and the monster from Frankenstein. The monster was a creation from Victor Frankenstein, a young scientist that was obsessed with knowledge. Victor kept doing research until he found the secrets of life. Victor then starts gathering old bodily parts until one night he finished his experiments and the monster came to life. After realizing the consequences of his ambitions,Victor ran off and left the monster alone, who ended up taking the life of Frankenstein's family and best friends. In the end, we could draw the conclusion that the actual monster might have been Frankenstein after his ambitions led to his and the death of his loved ones. Consumers had a similar vision about genetically modified foods in that they thought that the ambition of scientists to keep progressing and increasing the human's quality of life had led them to create a monster that could harm consumers. For this reason, consumers heavily neglected the idea of introducing genetically modified foods.

EXAMPLES

Genetically Modified Foods, or Frankenfoods as consumers started referring to them, were getting very criticized by consumers because of their monstrous attributes. One of the first arguments against genetically modified foods was the attempt of making tomatoes by using genes from fishes. These fish-tomato claims were believed to be brought by opponents of genetically modified food to scare other consumers. However, because consumers did not have any evidence to support this argument, the whole criticism was considered a myth. After being considered a theory for some time, it was found that another line of tomatoes was actually modified using fish genes. This was the result of DNA Plant technology, scientists used winter flounder genes in order to create a tomato that was a frost tolerant tomato, but this fish-tomato never left the lab (Mirchandani). However, consumers used this in their favor and made campaigns against genetically modified food. On the other hand, as time passed consumers started accepting GM foods more, and marketers took advantage of this. Recently in Australia, a monstrous dessert was created by combining different desserts into one. This dessert, called Freakshakes was a mixture of milkshakes and any candies, chocolate and syrups you wished to add. These Freakshakes got popular very fast because all consumers who ordered these products automatically post a picture in Instagram. The marketers started using the name Freakshakes to commercialize them, and sold them as "monstrous desserts". The original Australian Freakshakes went international very quickly thanks to social media and started being produced in a lot of countries, but especially in Great Britain (Osborne).

PRIOR RESEARCH

Consumer acceptance of genetically modified foods internationally in early 2000s: In the early 2000s, European consumers from Germany, Denmark, Italy and Great Britain were surveyed in order to compare the acceptance of genetically modified foods between countries and why these attitudes towards GM foods were being formed. The researchers found that overall, German and Danish consumers had negative attitudes towards GM foods and did not accept them, Italian consumers did not care whether products were genetically modified and British were in between. Most of the consumers said that they perceived GM foods as unnatural and a threat to their health, but didn't have much knowledge of what the benefits and consequences of GM foods were.

False assumptions from American consumers about Genetically Modified Foods: On a study conducted by (Wansink, 2001) in the United States, he gathered information on different assumptions consumers had about genetically modified foods that were erroneous in an attempt to instruct both parties. Wansink states that people who reject GM foods want to learn about the products, but reality is that most American consumers are institutionalists and they rather have experts take decisions for them. Around 83 percent of Americans trust the Food and Drug Administration (FDA). Another fallacy is that consumers against these products believe that the unknown consequences are worse than the benefits it brings, but again this is not true in a risk- accepting country like the

Uited States. Consumers will try a new product as soon as the benefits of the innovative products have been presented in order to compare them to the old or natural product.

Consumer's education changes the perception of Genetically Modified Foods: In a study made by Noussair in 2003, he compared the attitudes of consumers from 1998 to 2002 to a more recent data collection trying to find new trends, changes or possible factor of why these attitudes are being made. After collecting the data, the same trend was still present, European had negative attitudes towards GM foods. However, American consumers started having positive attitudes towards GM foods. He found that in Europe they still did not trust such products because of the unknown benefits and consequences that could potentially threatened the consumers health and safety. However, Noussair found a trend within European and American consumers, the higher the level of education of consumers education and the knowledge of GM foods, the more likely they were to accept these innovative products.

Negative attitudes do not affect purchasing behavior:. In the most recent study analyzed, (Costa-Font, 2008) took a more marketing-oriented route and wanted to prove that even the consumers that still have negative attitudes towards genetically modified foods, it did not have a direct correlation with purchasing behavior and willingness to pay for GM foods if such products were cheaper. In his research he found that even though almost every consumer had negative attitudes towards GM foods, 35 percent of the consumers still refused to pay, but 65 percent were willing to buy them if they were cheaper than non- GMO products. Most of the consumers that said they would buy the products if they were less expensive than non-GM products, also porteyed that they were more concerned with the consequences that genetically modified food could cause in the environment, but would consume them.

GMO IMPLICATIONS IN THE MARKET

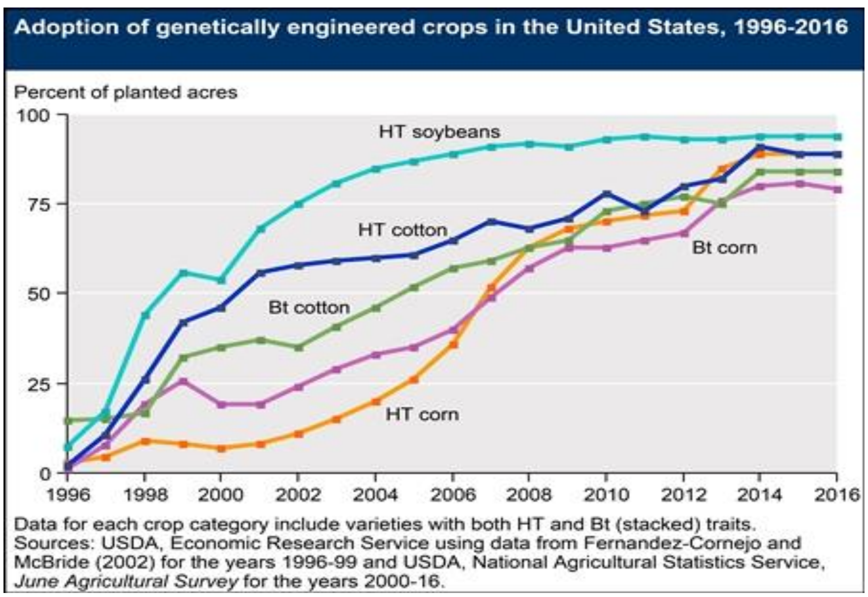

Figure 1. Percentage of acres of crops planted that are genetically modifed in the U.S. throughout the years. Over the past two decades, genetically modified crops have become more popular within U.S.farmers. Genetically modified crops have slowly taken over the whole aggriculture market.

Currently, crops are the most genetically modified products in the world, with corn and soybeans been the most produced ones. Corn started being modified in the late 1990s in order to be able to create agriculturally friendly features, such as resistance to pesticides and herbicides. This method was introduced as a consequence of the large amount of crops lost due to insects and viruses that were infecting large amounts of crops throughout Europe and U.S. At the beginning the modified corn was criticized by consumers, as every genetically modified product, but currently, corn is the second most produced genetically modified product. By 2012, 88 percent of the corn grown in the United States was genetically modified.(Dupont) Moreover, soybeans are the most genetically modified crop in the world. Up to 94 percent of the soybeans produced in the US are genetically modified, according to the US department of agriculture. In 2008, soybeans were produced in 98 million hectares worldwide, the biggest producers being, US, Bolivia, Brazil, Argentina, China, India Paraguay, and Canada according to GMO Compass.

CONCLUSIONS

After analyzing all these data, several conclusions can be drawn. From the research, it was concluded that as time passed and consumer were more knowledgeable of these products, the demand for such products increased. In the early 2000s consumers were almost entirely against these products, however, in less than a decade, consumers were already willing to pay for Frankenfoods as long as they were cheaper than organic foods. Genetically modified crops have been taking over the agricultural market because of their enhanced capabilities to resist herbicides, insecticides and other abnormalities that could potentially ruin crops. Currently the corn and soybean market is driven by an 88 and 93 percent genetically modified crops, respectively. Most recently, the monstrous Freakshakes are an innovative marketing strategy in which they used Frankenfoods for their own advantage and market their products. Marketers and companies changed the consumers attitudes and willingness to consume these products by lowering prices and instructing consumers about the benefits and consequences that GM foods brought to us and to the environments.These are examples of how marketing can have a drastic change on how society thinks and their attitudes towards a specific type of product.

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SHAME & GUILT TACTICS USED BY NON-PROFIT CAUSES MARKETING

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ABSTRACT

People are put into situations sometime throughout their life where they are asked, "Would you like to donate?". Cause related marketing requires often guilt and shame tactics to get people to perform desired behavior, which more often than not is donating to an organization. We wanted to find to what extent does guilt and shame drive the likelihood for someone to donate? Also, what demographics are more likely to donate than others? To figure out these questions as well as others, we conducted a quantitative research study . We gathered primary data through a convenience random sampling method to continue for our descriptive research using quantitative data, then used OLS Simple Linear Regression to process the data.

The following data that we found to be the most significant from our survey is focused on Age, Income, and Neuroticism. Showing that a person's age, Income, emotional stability all have some connection as to feelings guilt or shame as the statistical driver to donate to an non-profit organization. We also found that Gender, Ethnicity, Income, and Year of School do not have an affect on a person's likelihood to donate.

We have found significant data that nonprofit organizations may benefit from for their marketing strategies. They can save money by avoiding costly marketing campaigns that target a certain gender, because gender does not drive likelihood to donate and gender does not drive susceptibility to guilt and shame tactics. They can improve their bottom line by spending it on the right age groups. Organizations should spend their money targeting age groups 25-54 because they are more susceptible to guilt and shame tactics, eventually leading to donations.

INTRODUCTION

Guilt and shame tactics in advertising are tools often used by organizations promoting a social cause with benefits that are not directly related to the individual's personal behavioral motivations. For example, using a video of a severely malnourished child for an organization aimed at ending world hunger or expressing the negative environmental implications caused by not using a green company's product or service (Brennan & Binney, 2010). Ultimately organizations try to put the idea in consumers' minds that a donation or purchase can make these negative emotions go away. In terms of responses to guilt and shame tactics, it would be naive to believe that all consumers will respond similarly to the same tactics. Demographics will most likely affect the efficacy of certain guilt and shame tactics and how likely the individual is to believe an advertisement is manipulative or not. This research topic will look at the following questions:

- What is the relation of demographics/psychographics to the effectiveness of guilt and shame tactics?
- Does a certain demographic (ie age,gender,race)/psychographics (big five personality traits) have a stronger appeal to guilt and shame tactics?
- Which demographic/psychographic is most likely to shy away from guilt and shame tactics?
- To what extent do guilt and shame drive likelihood to donate?

This study will look at the use of shame and guilt tactics in non-profit marketing campaigns and see which demographics are more susceptible to these tactics. The research was conducted at a 10% ± standard error leaving a 90% confidence interval with a sample size of 238 participants. Through this paper the topics of how different age groups are affected by guilt and shame, How one's education level affects likelihood to donate, and shame being more influential than guilt when it comes to neuroticism.

LITERATURE REVIEW

The Difference Between Guilt and Shame

"Moral emotions provide the motivational force the power and energy to do good and avoid the bad"(Arli 2015) Though guilt and shame feel similar they are not the same emotion, the difference between the two is based off the perspective of the emotion. For example by " focusing attention on behavior (I have done something bad) which lead to the feeling of guilt" and by "concentrating on the self (I am a bad person) which would lead to feeling of shame."(Antonetti, 2015) Also while there is only one type of shame and there are three types of guilt used in cause related marketing, they are Existential guilt, Anticipatory guilt, and reactive guilt. Existential is the most common form of guilt used in cause related marketing because existential guilt is "the result of a comparison between one's own well-being and other's well-being. In the process there is an urge to bring the two closer together"(Lwin,2014) This paper is to continue "

Gender Differences

When it comes to gender there tends to be major differences between male and females in guilt marketing. Guilt appeals work on females but do the opposite when it comes to males. "... major gender differences in prosocial behavior: Average male donations in the control were 40% higher than female donations; whereas, this outcome is almost completely reversed in the guilt appeal treatment, there females donated over twice as much as males." (Van Rijn, 2016) Females donated more than males with average donations of $6.10 compared with $4.78. Although, males donate more times than women. The difference is that women may donate less times than males, but women donate more money (twice as large as male donations. Example: $6.50 vs. $3.91. Guilt and shame appeals tend not to work as well on men due to them having higher levels of aversion toward attempts of manipulation (Van Rijn, 2016).

Motivation to Donate

Many donors only have a certain amount that they put aside for charity, and therefore need marketing ad campaigns to help distinguish which cause is in need of the donors help. Donors also feel that they have strong sense of persuasion knowledge, so if an ad is deemed too extreme by donor then their persuasion knowledge tells them that the ad is too manipulative and are less likely to donate.(Hibbert, 2007) Research has also shown that donors are likely to donate big name causes when guilt and shame techniques are applied, and are not as likely to donate to lesser known causes when the same guilt and shame techniques are applied.(Hibbert,2007) Donors also need to be able to trust the organization that they are donating to. They trust organizations when they feel "The people in the video appear to be just like me and I sometimes need help." Having the initial sense of similarity positively influences donors. Findings indicate that similarity is indeed an important factor and people will donate more if they felt guilt and/or liked how people/things in the video are being portrayed. (Van Rijn, 2016)

METHODOLOGY

Research Design and Sampling

The conceptual model for our research(Please refer to Appendix 5) shows the main three hypotheses groups for our research that Demographics, Psychographics, or Guilt and Shame do not or do have a to drive one's likelihood to donate for the problem that the cause related marketing campaigning for. Primary data was gathered through a convenience random sampling using snowball method to continue for our descriptive research using quantitative data.

Scales and Validation

For the scales in our survey we were influenced by Jordan van Rijn, Bradford Barham and Reka Sundaram-Stukel from the University of Wisconsin-Madison(UW) and their paper *An experimental approach to comparing similarity- and guilt-based charitable appeals*. We choose to base our study off this scale based on similar design in the sense that both our surveys had the participants look at an advertisement and then answer questions based on the ad above. The main difference between our scales is the organizations that the participant was looking at and the type of advertisement the participant had to view (ours being a picture advertisement and theirs being video advertisements). The face validity of the scale used in the UW survey seemed appropriate for our type of research.

Survey Design and Implementation

Our research was conducted using primary data gathered through a convenience random sampling using snowball method to continue for our descriptive research using quantitative data, then using OLS Simple Linear Regression to process the data. Secondary data was collected through scholarly articles and past research similar to our topic. Target population was a single person and or family households with an age range of 18 to 55 years of age. The sample size is 238 people that are in the target population range, 238 leaves around a 10%± and must room for standard error in the population that is 18 and older at a 90% confidence interval.

The research was completed through scaled response survey questions to gain understanding of how familiar the person being questioned is with guilt and shame appeal in correlation with cause related marketing. We will also give our respondents the option to not respond to sensitive information. Examples of survey questions:

- How Familiar are you with big name causes such as Unicef or ASPCA (from Not Familiar to Very Familiar)
- How likely are you to donate to a big name causes such as Unicef or ASPCA(from Not Likely to Very Likely)
- How much television do you watch a day? (from 0-7 hours)
- How often do you see commercials that deal with charitable foundations? (from Not Often to Very Often)
- Why did you decide to donate? (Multiple Responses)
- Why did you decide not to donate? (Multiple Responses)
- Approximately how often do you donate to nonprofit, charitable, campus club, or religious organizations? (from Never to More than once a month)

Sample Profile

Sample Profile (n=238)

GENDER		**AGE**	
Male	32.8%	18-24	42.9%
Female	67.2%	25-34	14.7%
ETHNICITY		35-44	9.2%
Caucasian	60.9%	45-54	19.7%
African American	13%	55+ older	13%
American Indian	.4%	Prefer not to respond	.4%
Asian	5%	**EMPLOYMENT**	
Native Hawaiian or Pacific Islander	10.5%	Full time	49.6%
Other	7.6%	Part time	13.4%
Prefer not to respond	2.5%	Unemployed	3.4%

HIGHEST LEVEL OF EDUCATION		Retired	5.5%
Less than high school degree	.8%	Student	27.3%
High school graduate (GED)	10.5%	Prefer not to respond	.8%
Some college but no degree	29.8%	**YEAR OF SCHOOL**	
Associate degree	12.6%	Freshmen	3.8%
Bachelor's Degree	26.5%	Sophomore	4.6%
Master's degree	17.6%	Junior	7.1%
Doctoral degree	.8%	Senior	10.1%
Prefer not to respond	1.3%	Graduate	1.7%
INCOME			
Less than 25000	6.7	75001-100000	15.1
25001-50000	15.1	100000 or more	29.8
50001-75000	13.4	Prefer not to respond	19.7

Our sample consisted of 238 participants. Of these participants, 32.8% were male and 67.2% were female. Out of all our respondents majority (60.9%) are Caucasian; ~2.5% did not report. A majority of our participants are employed full time (49.6%). Also, majority of our participants (56.7%) have attained a degree from college. Because almost half of our respondents work full-time and more than half have a degree from a college, it is no surprise that our highest income percentage reported (29.8%) is $100,000 or more.

DATA ANALYSIS AND FINDINGS

Hypothesis	Result
H_1 : Guilt drives likelihood to donate.	**Confirmed** (p: .0001, F: 125.234, R^2: 34.7%)
H_2: Shame drives likelihood to donate.	**Confirmed** (p: .0001, F: 116.125, R^2: 33.0%)
H_3: An individual's gender drives how much guilt/shame they feel.	Results not significant
H_4: An individual's age drives how much guilt/shame they feel.	**Confirmed** Guilt: (p: .0001 , F: 15.521, R^2: 6.2%) Shame: (p: .001, F: 12.026, R^2: 4.8%)
H_5: An income drives how much guilt/shame they feel.	**Results not significant**
H_6:An individual's education level drives how much	**Confirmed**

guilt/shame they feel.	Guilt: (p: .033, F: 4.577, R^2:1.9%) Shame: (p: .052, F: 3.819, R^2:1.6%)
H_7:An individual's ethnicity drives how much guilt/shame they feel.	**Results not significant**
H_8: An individual's employment drives how much guilt/shame they feel.	**Results not significant**
H_9:An individual's Extrovertedness drives how much guilt/shame they feel.	**Results not significant**
H_{10}: An individual's Openness drives how much guilt/shame they feel.	**Results not significant**
H_{11}: An individual's Agreeableness drives how much guilt/shame they feel.	**Results not significant**
H_{12}: An individual's Neuroticism drives how much guilt/shame they feel.	**Confirmed** Guilt: (p: .0001, F: 13.021, R^2: 5.2%) Shame: (p: .004, F: 8.417, R^2: 3.4%)

In order to properly measure the relationships between Psychographics, Demographics, Guilt, Shame and likelihood to donate we ran several regression analyses. In our first set of regressions, which was a more general out looked, we were looking to assess how much guilt and shame drives likelihood to donate. To do so, we split the regressions by which advertisement the respondents were looking at. Then we used “likelihood to donate” as our dependent variable and used, guilt and shame as our independent variables in two regressions per advertisement. Our results indicate that Guilt is a statistically significant driver of likelihood to donate (p: .0001, F: 125.234, R^2: 34.7%). Our results also indicate that shame is also a statistically significant driver of likelihood to donate (p: .0001, F: 116.125, R^2: 33.0%).

After establishing that there is a strong relationship between guilt and shame on likelihood to donate, we shifted our focus to the relationship demographics and psychographics have with guilt and shame. Using each demographic/psychographic category as an independent variable. We chose to run multiple univariate analyses despite the fact that our overall research design contains multiple independent variables to avoid issues of multicollinearity. Overall the only significant relationships between demographics and guilt/shame were Age(Guilt: (p: .0001 , F: 15.521, R^2: 6.2%) Shame: (p: .001, F: 12.026, R^2: 4.8%)) and Education (Guilt: (p: .033, F: 4.577, R^2:1.9%) Shame: (p: .052, F: 3.819, R^2:1.6%)). Gender, Ethnicity, Income, and Year of School all produced insignificant results for both guilt and shame. Upon noticing the significant results for Age and Education, we then split the cases to run the regression by each specific age group and used guilt or shame as independent variables with likelihood to donate as the dependent variables. After running the regressions for Age, we found that in every age group, guilt is a statistically significant driver of likelihood to donate but there are substantial differences in the strength of this relationship shown in the R^2 values for each age group (**18-24** : p: .0001, F: 29.627, R^2: 22.6%, **25-34**: p: .0001, F: 35.472, R^2: 51.8%, 35-44, **35-44:** p: .051, F: 12.844, R^2: 39.1%, **45-54:** p: .0001, F: 40.002, R^2: 47.1%).

The only psychographic that returned significant results was the neuroticism trait in susceptibility to guilt and shame tactics (Guilt: (p: .0001, F: 13.021, R^2: 5.2%, Shame:p: .004, F: 8.417, R^2: 3.4%). Upon realizing these significant results, we ran guilt and shame vs likelihood to donate but this time using only respondents who either “agreed and strongly agreed” that they were a moody person (neurotic) and again with respondents who either “disagreed or strongly disagreed” that they were moody person(not neurotic). For those without the neurotic trait guilt and shame were statistically significant drivers of likelihood to donate (Guilt: p: .001, F: 23.170 R^2: 35%, Shame: p: .053, F: 9.181, R^2: 17.6%) For those with the neurotic trait, guilt and shame are still statistically significant values (Guilt: p: .001, F: 22.158, R^2: 28.3%, Shame; p: .001, F: 38.738, R^2: 40.9%). For those with the neurotic trait, the R2 value is almost twice as high for Shame as it is for guilt.

MANAGERIAL IMPLICATIONS, LIMITATIONS, AND FUTURE RESEARCH

Managerial Implications

Once we completed data collection we have found significant data that nonprofit organizations may benefit from for their marketing strategies. They can save money by not conducting costly marketing campaigns targeting a certain gender, because gender does not drive likelihood to donate and gender does not drive susceptibility to guilt and shame tactics. They can benefit and maximize their money by spending it on the right age groups. Organizations should spend their money targeting age groups 25-54 because they are more susceptible to guilt and shame tactics, eventually leading to donations.

Limitations

After we closed our survey and reviewed our data we found some limitations. Most of the limitations occurred in the demographic section because of our use of convenience sampling. Some limitations found in the demographic section were a majority female respondents (67.2%) and a high percentage of students (27.3%) due to the fact that all three researches are female undergraduate students. Another part in demographics that had a limitation is ethnicity. We did not put the ethnicity Hispanic/Latino as an option to be chosen for ethnicity. Therefore people who consider themselves at Hispanic/Latino had to identify themselves as Other (7.6%) or Prefer not to respond (2.5%). Another thing about ethnicity is that we were able to get a somewhat diverse pool of respondents. We say diverse because we were able to get 10.5% Native Hawaiian/Pacific Islander, when in reality according to the census bureau data Native Hawaiian/Pacific Islanders represent only 0.5% of the United States population. This high of a percentage for this ethnicity is not a representation of the U.S. population. This was also caused by convenience sampling, because one of the researchers are from Hawaii. Lastly, because we had so much data we did not run regressions on every data that was possible in our survey. We could have possibly missed some important data on the data we did not run.

Future Research

For future research should be conducted on the following questions: 1) How neuroticism has an effect on one's likelihood to donate to nonprofit organizations,2) How does one's age have an effect on likeness to donate, 3) How does one's education level affect one's likelihood to donate, and 4) Why is income not a factor in someone's likelihood to donate. First question requires more research because there is little research produced on the psychographics for guilt and shame tactics because probably like the results from our research there wasn't any significance except for the question looking into neuroticism. The second question will look into how a person age affects the donation process the conclusion from our data is that found that people around the ages of 25-34 and 45-54 are more likely to use guilt as a statistically significant driver to donate to nonprofit organizations. Research also needs to be done on why a person's education level is a statistically significant driver to donate but a person's income is not. This having do with a person's income and education level typically correlate with each other and also one would think that someone with a higher income would be more likely to donate due to the fact that they have more money to spend.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion there is a strong relationship between guilt and shame on likelihood to donate. We chose to run multiple univariate analyses despite the fact that our overall research design contains multiple independent variables to avoid issues of multicollinearity. Overall the only significant relationships between demographics and guilt/shame were Age and Education. While Gender, Ethnicity, Income, and Year of School all produced insignificant results for both guilt and shame. After running the regressions for Age, we found that in every age group, guilt is a statistically significant driver of likelihood to donate. The only psychographic that returned significant results was the neuroticism trait in susceptibility to guilt and shame tactics. We ran a regression on guilt and shame vs likelihood to donate but this time using only respondents who either"agreed and strongly agreed" that they were a moody person (neurotic) and again with respondents who either "disagreed or strongly disagreed" that they were moody person (not neurotic) to find that there was a statistically significant drivers for likelihood to donate. We found that those who identified with the neurotic trait were extremely susceptible to shame tactics.

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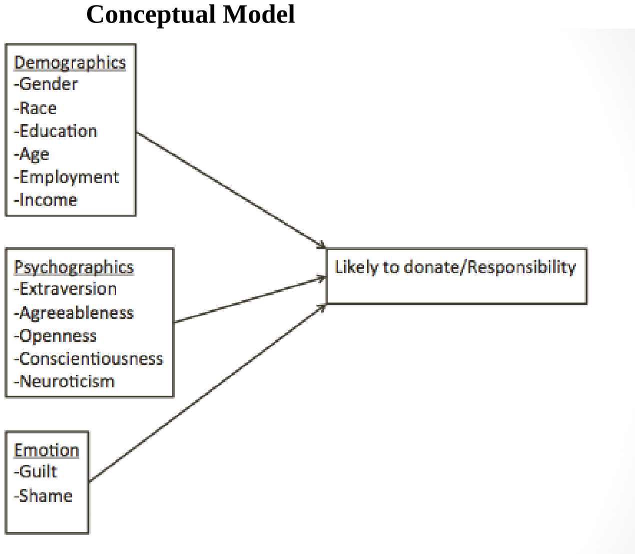
APPENDIX 1

Link: https://siena.qualtrics.com/jfe/form/SV_3qp9j2aXsqbb0Vf

Conceptual Model



APPEDNDIX 2

Dependent: Likely to donate

Construct (Composite)	Items	R2 (%)	Beta	F*
Guilt	Ad #1	34.7%	.582	125.234***
Guilt	Ad #2	35.5%	.559	129.682***
Shame	Ad #1	33.0%	.575	116.125***
Shame	Ad #2	25.7%	.470	81.577***
Demographic	Income	.3%	-.068	.626
Demographic	Education	3.3%	-.258	8.070**
Demographic	Age	5.1%	-.307	12.774***

Dependent: Guilt

Construct (Composite)	Items	R2 (%)	Beta	F*
Demographic	Gender	.2%	.177	.371
Demographic	Ethnicity	0%	-.021	.087
Demographic	Education	1.9%	-.198	4.577*
Demographic	Age	6.2%	-.341	15.521***
Demographic	Employment	.7%	.099	1.627
Demographic	Year of school	0%	-.004	.000
Demographic	Income	.3%	-.074	.721
Psychographic: Extraversion	Outgoing	0%	.006	.005
Psychographic: Extroversion	Need time alone	.9%	.124	2.094
Psychographic: Neuroticism	Moody	5.2%	.278	13.021***
Psychographic: Neuroticism	Easily Express Emotions	.2%	.058	.538
Psychographic: Conscientiousness	Responsible	.3%	.092	.761

Psychographic: Conscientiousness	Spontaneous	.4%	.089	1.010
Psychographic: Agreeableness	Cooperative	.1%	.051	.252
Psychographic: Openness	Adventurous	.8%	.124	2.008

Dependent: Shame

Construct (Composite)	Items	R2 (%)	Beta	F*
Demographic	Gender	0%	-.025	.085
Demographic	Ethnicity	.1%	.036	.298
Demographic	Education	1.5%	-.161	3.645*
Demographic	Age	4.6%	-.273	11.703***
Demographic	Employment	0%	.008	.011
Demographic	Year of school	2.6%	-.266	1.710
Demographic	Income	0%	-.025	.085
Psychographic: Extraversion	Outgoing	.2%	-.047	.379
Psychographic: Extroversion	Need time alone	.2%	.056	.456
Psychographic: Neuroticism	Moody	2.9%	.201	7.261**
Psychographic: Neuroticism	Easily Express Emotions	0%	-.008	.012
Psychographic: Conscientiousness	Responsible	.1%	.038	.139
Psychographic: Conscientiousness	Spontaneous	3.2%	.235	8.027**
Psychographic: Agreeableness	Cooperative	0%	-.029	.090
Psychographic: Openness	Adventurous	1.9%	.185	4.845**

Likely to donate: Animal Ad

Construct	Item	R2 (%)	Beta	F *
Guilt	Age 18-24	22.6	.487	29.267***
Guilt	Age 25-34	51.8	.623	35.472***
Guilt	Age 35-44	39.1	.598	12.844**

Guilt	Age 45-54	47.1	.704	40.002***
Guilt	Age 55 or older	19.9	.483	7.218*
Shame	Age 18-24	29.2	.544	41.322***
Shame	Age 25-34	37.4	.510	19.691***
Shame	Age 35-44	33.5	.547	10.068**
Shame	Age 45-54	36.0	.581	25.292***
Shame	Age 55 or older	19.4	.609	6.998
Guilt	1&2 MOODY (neurotic)	35.0	.578	23.170***
Guilt	6&7 MOODY (neurotic)	28.3	.579	22.158***
Shame	1&2 MOODY (neurotic)	17.6	.443	9.181**
Shame	6&7 MOODY (Neurotic)	40.9	.624	38.738***
Guilt	Education: High school graduate	18.9	.389	5.348**
Guilt	Education: Some college no degree	36.3	.641	39.321***
Guilt	Education:Associate degree in college (2year)	38.5	.625	17.557***
Guilt	Education: Bachelor's Degree	31.7	.519	28.319***
Guilt	Education: Masters Degree	34.4	.581	20.951***
Shame	Education: High school grad	13.3	.348	3.536*
Shame	Education: some college no degree	33.2	.553	34.335***
Shame	Education: Associate Degree	34.6	.627	14.794***
Shame	Education:Bachelor's Degree	34.1	.573	31.553***
Shame	Education: Masters	34.1	.615	20.690***

Likely to donate: Children Ad

Construct	Item	R2 (%)	Beta	F *
Guilt	Age 18-24	52.0	.698	108.445***
Guilt	Age 25-34	18.4	.353	7.442***
Guilt	Age 35-44	44.7	.654	16.163**
Guilt	Age 45-54	47.1	.704	40.002***
Guilt	Age 55 or older	19.9	.483	7.218*
Shame	Age 18-24	32.1	.506	47.287***
Shame	Age 25-34	5.3	.198	1.842
Shame	Age 35-44	42.5	.674	14.784**
Shame	Age 45-54	18.5	.437	10.198**
Shame	Age 55 or older	18.1	.439	6.393
Guilt	1&2 MOODY (Not neurotic)	23.0	.500	12.836***
Guilt	6&7 MOODY (neurotic)	44.4	.697	44.703***
Shame	1&2 MOODY (Not neurotic)	13.8	.394	6.902**
Shame	6&7 MOODY (Neurotic)	.367	.650	32.480***
Guilt	Education: High school graduate	33.9	.708	11.814**
Guilt	Education: Some college no degree	50.8	.769	71.160***
Guilt	Education:Associate degree in college (2year)	55.6	.846	35.085
Guilt	Education: Bachelor's Degree	27.6	.553	23.245***
Guilt	Education: Masters Degree	13.8	.352	6.428**
Shame	Education: High school grad	16.2	.442	4.434
Shame	Education: some college no degree	30.7	.635	30.509***
Shame	Education: Associate Degree	42.2	.732	20.426

Shame	Education:Bachelor's Degree	23.3	.488	18.532***
Shame	Education: Masters	12.8	.371	5.869**

BALLING WITH THE BOYS IN BLUE: HOW POLICE ATHLETIC LEAGUES AFFECT PERCEPTIONS OF THE POLICE

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ABSTRACT

Perceptions of police officers have become increasingly important to police forces in recent years. Community based policing (CBP) is one system of operations that a police force may use to build communal bonds between citizens and officers, thus, potentially fostering better perceptions and relationships between the two groups. Police athletic leagues (PALs) are one form of CBP that attempt to build positive relation-ships between officers and citizens through non-confrontational and enjoyable activities. The research in this paper examines an established PAL in Albany, NY and compares perceptions of police officers between both people who engage with the PAL and those who do not. The study utilized surveying and analysis of results to determine it engagement with a PAL leads to a person holding a more positive perception of police officers.

INTRODUCTION

In recent months and years, increased attention has been paid to public perceptions of police forces in the United States. The rise of social media and cell phones has made it easier than ever to record and share one's experiences with law enforcement officers. With this growing attention to negative interactions, it is to the advantage of police forces to engage in positive contact with citizens. Positive contact may help to increase respect and tolerance of a police force and, furthermore, enhance the legitimacy of the police force. On the other hand, negative contact may create feelings of oppression and ideas of \us versus them" between law enforcement and citizens, potentially decreasing the sense of legitimacy that people feel toward a police force (Hill 2016; Shafer, Huebner, and Bynum 2003).

Therefore, it is important to consider in what ways a police force may actively seek to engage positively with the citizens that they serves. One way that a police force may seek to initiate positive contact with citizens is through community-based policing (CBP). CBP may allow officers to regularly and predictably engage with a local population and community. CBP seeks to place officers in communities and have them provide positive services and programs to the people of that community (Shafer, Huebner, and Bynum 2003). One service that CBP programs may offer a community is police-sponsored athletic leagues. These leagues mingle officers and citizens via sports and seek to increase positive contact between citizens and police officers in a non-confrontational setting. However, it is important to ask, does engagement with a police athletic league (PAL) lead someone to hold a more positive perception of a local police force?

Though PALs are a relatively new institution in many cities, the rst one being founded in New York City in 1936, and many cities in the United States and globally have sought to implement similar programs (PAL of NYC 2015; Subhas and Chandra 2004). As a result, a fairly in-depth body of literature exists that explores how PALs influence the actions of individuals who engage participate in them. Studies have found that CBP and PAL programs may help to prevent an individual from committing crimes or engaging in socially unacceptable behavior (Hartmann 2006; Hartmann 2007; Kelly 2012; Putnam 2000). Likewise, the literature on CBP has explored how individuals perceive police forces that utilize CBP. However, little research exists that explores how engagement in PAL programs influences individuals' perceptions of a police force.

The following research will attempt to uncover what link exists between participation in a PAL and an individual's perceptions of a police force. The paper will, first, review the existing literature in the field and establish known relationships that have been found regarding citizens, police, PALs, and CBP. My research will then examine public perceptions of a police force in the Albany, New York area. Using surveys developed to determine one's opinions of police, I will examine if an individual who engages with a PAL perceives police more positively than those who do not participate in these leagues.

LITERATURE REVIEW

A fairly expansive body of research has been compiled regarding police interactions with citizens, community-based policing (CBP), and the role police-sponsored athletic leagues may play in facilitating these interactions. At the root of many of these studies are questions of the effects of social interactions between citizens and police. This study will examine CBP as a general policing strategy and the aspects of socializations that are involved in it. The analyses will then test the effects of these social interactions in the specific context of Police Athletic Leagues (PALs). The previous literature on PALs including their effect on preventing crime, influencing youth development, and promoting contact with police all suggest that these types of social interactions should have a myriad of positive impacts on a community.

CBP is a practice in policing that places police officers in communities and neighborhoods with the idea of increasing contact between officers and citizens. Due to increased police being more visible and engaged in neighborhoods, it is believed that casual, positive contact between citizens and police will increase. CBP may help to increase positive contact between police officers and citizens which may, in turn, lead to citizens perceiving a police force more favorably or more legitimately (Allport 1954; Gladwell 2013; Shafer, Huebner, and Bynum 2003). This theory derives from Gordon Allport's (1954) Contact Theory. Allport's Contact Theory submits that an individual's perceptions of a person or group of people are formed by the frequency and quality of contact that an individual has with another person.

The increased presence of police officers on the streets and sidewalks of a community may lead to the officers interacting with the people they serve more often and in less traumatic and confrontational ways, fitting themselves into each others' social networks (Weisburd and Eck 2004). Jane Jacobs (1992) suggested that the sidewalks of a city are the cores of a cities social life. On them, individuals engage in constructive, casual contact that increases feelings of community in a neighborhood. A greater level of presence of police officers and citizens in a community may allow for more contact between police officers and citizens, which can be good, as long as the contact and presence is positive. On the other hand, if the contact and presence is negative, the greater presence of police may not be a good thing.

CONTACT THEORY AND SOCIAL CAPITAL THEORY IN CBP

Digging deeper into this notion of the community connectedness that CBP officers, we can see the potential role that Social Capital Theory may play in citizen-police relationships. At the heart of Putnam's (2000) Social Capital Theory is the idea of maintaining and creating interpersonal relationships in order to get services from another person. Through CBP, officers and citizens may begin to t into each other's social networks and, as a result, seek to maintain good relationships with one another so as to tap into the services they can offer one another. Both officers and citizens have a stake in maintaining these relationships because each can provide valuable services to the other. On one hand, officers can benefit from good relationships with citizens by the citizens being more willing to cooperate with police. Likewise, citizens benefit from relationships with police because, if a citizen has a good relationship with the local police officers, he or she may be charged more lightly, should that person commit a crime, or be able to receive additional services from the police department.

Furthermore, Putnam (2000) also states that public perceptions of a strong community and civic bonds may help to deter crime. In a connected community, an individual may be less willing to commit crime due to fears of negative social repercussions. By including police officers in the social networks of a community, individuals may see additional social drawbacks to committing crime. If individuals feel that police officers are a part of their community and social network, they may feel an obligation to not wrong them by committing crime (Putnam 2000).

Allport's Contact Theory likely plays a major role in the idea of contact with officers through CBP, leading to more positive and legitimate perceptions of police. The idea that CBP may lead to increased positive contact with police, and thus, to more positive perceptions of a police force has been examined in the existing literature. A 2003 study found that individuals generally have a favorable opinion of their local police force (Shafer, Huebner, and Bynum 2003). These feelings of favorability may be improved if a person has frequent, positive contact with police. Additionally, people that live in neighborhoods with low police presence may have more negative perceptions of police, possibly a result of lower levels of contact between police and citizens (Shafer, Huebner, and Bynum 2003). CBP may help to increase positive and voluntary contact that people have with police officers. As an outcome of this more frequent, voluntary contact, a person may gain a more favorable opinion of a local police force (Shafer, Huebner, and Bynum 2003; Weisburd and Eck 2004).

Quantity and quality of contact are very important to a person when determining a perception of something. Viki et al. (2006), in a study assessing willingness to cooperate with police among people of different races, found that black citizens tend to be more wary of police and less willing to cooperate with them than white citizens. This wariness and lack of willingness to cooperate may stem from higher rates of negative, involuntary contact with police officers (Hinds 2007; Viki et al. 2006). Clearly, the relationship between level of contact and perceptions goes both ways. Similar to the effect of positive contact and positive perceptions, if a person has frequent, involuntary and/or negative contact with police, that persons perception of a police force will tend to be more negative (Shafer, Huebner, and Bynum 2003; Viki et al. 2006).

Contact with diverse demographics has been shown to influence a persons perceptions of the group that another person belongs to in areas outside of citizen and police interaction, as well. Islam and Hewstone (1993) found that negative contact between a Hindu person and Muslim person in Bangladesh might cause the individuals who engaged in the negative contact to avoid people of the group that they had negative contact with. A person may act this way in order to reduce their personal feelings of anxiety, due to the possibility that past negative contact with a person of a group caused them anxiety. Islam and Hewstone (1993) developed a useful scale to measure quality and quantity of contact that was adapted by Keith, Bennetto, and Rogge (2015). Using the scale, the researchers obtained similar findings to Islam and Hewstones in a study regarding contact with mentally or developmentally disabled individuals. The researchers found that people who have less contact with people who have mental or developmental disabilities may have more prejudice against such people than a person who has more frequent, positive contact with these individuals (Keith, Bennetto, and Rogge 2015). The link between contact and perception is one that has been substantiated time and again and certainly appears to apply to police and citizen interactions.

COMMUNITY-BASED POLICING

It is plausible that CBP may help to increase voluntary, positive contact with police through casual social contact, which may help to improve persons perceptions of police (Shafer, Huebner, and Bynum 2003; Weisburd and Eck 2004). Though contact with the members of a community is a cornerstone piece of CBP, it is equally as important to consider CBPs ability to deter crime. A greater positive presence of police in a community may help individuals to perceived police more favorably and encourage positive, voluntary contact, however, CBP also seeks to deter crime by having a greater police presence in an area (Weisburd and Eck 2004).

Unfortunately, past studies have found that CBP alone may not actually help to deter crime in a community. Interestingly though, CBP may increase a persons sense of security in a community, despite not actually living in a more secure community. This may be because an individual forges informal social bonds with officers and because a person may see officers in their community more often, leading them to believe that they are more safe than they may actually be. Therefore, though CBP may not actually decrease crime, it may increase an individuals feeling of security, which may cause them to perceive a police force more favorably and view a police force as more legitimate (Ren, Lovrich, and Gaffney 2005; Shafer, Huebner, and Bynum 2003).

POLICE ATHLETIC LEAGUES AND YOUTH DEVELOPMENT

A particular practice within CBP, the one that this paper examines, is the sponsorship of police athletic leagues (PALs). The model for PALs was originally formulated in New York City as early as 1936. New York City PAL sought to engage citizens and youth with police officers through a common interest that many people share sports. PALs also had the goal of providing youth and citizens with a fun, socially acceptable, well-supervised activity to prevent them from participating in undesirable behaviors (Hartmann 2007; Subhas and Chandra 2004). These programs have proved to be successful in some cities and have seen adoption in other cities throughout the United States.

As would be expected, based on past research, young people respond to negative contact with police in a predictable way. Hinds (2007) found, through surveys, that 14 through 16 year-olds who have negative contact with police tend to view police less favorably than those who have more positive contact. PALs may help to encourage positive contact between police and young people. Furthermore, PALs may lead to positive, voluntary contact between parents of youths participating in these leagues and police. PALs also may help parents in a community and police officers to engage in constructive projects together, since PALs may seek adult volunteers to help in running and supporting the league. Collaboration between officers and members of the community may very well allow for constructive, positive contact between citizens and police. This may be among the best forms of contact in creating positive perceptions of police officers and a police force among citizens because it allows citizens and police to work toward a shared interest (Allport 1954; Lutz 1981; Putnam 2000).

Whereas PALs and CBP may help people to perceive police more positively due to increased contact, PALs may also help to establish strong bonds of belonging in a community. PAL programs allow youth the opportunity to engage regularly with positive role models. This engagement with positive role models and feelings of communal bonds may make a young person less likely to commit a crime. This is due to both the young person feeling that the crime is not something that their positive role model would do, and because committing a crime may oppose community values (Andersen, Sabatelli, and Trachtenberg 2007; Putnam 2000).

An important cornerstone to community sports leagues supported by a local police department is the positive socialization and entertainment that these leagues allow. In many cities, PALs and midnight basketball leagues, a similar type of program, are implemented to provide young people with constructive, safe activities during a time when they may be likely to engage in unacceptable behaviors (Hartmann 2007). Hartmann and Depro (2006) found that, in areas of cities with local midnight basketball leagues, supported by a local police force, property crime rates tend to be slightly lower. After implementation of a midnight basketball league, some cities have seen a drop over 300 property crimes per 100,000 people. This may be due to the fact that young people who may have engaged in undesirable behavior are drawn to participate in the local community sports league for entertainment and socialization (Hartmann and Depro 2006).

Casting the presence and support that police may provide aside, on their own, sports may provide a valuable means of socialization for young people. The literature on sports engagement and positive youth development has been unable to definitively establish a link between participation in athletics and positive social development. Though results of studies are mixed, there is no evidence to suggest that a relationship definitely does not exist (Coakley 2011). Evidence does exist that participation in sports may lead a person to engage in socially or communally undesirable behavior, however. In a study of high school youth in New York State, Miller et al. (2006) found that students who self-reported in surveys as being \jocks" were more likely to engage in undesirable behaviors, including crime. This relationship may be caused by negative peer pressure placed on an individual who participates in a sports team. Similarly, Hartmann and Kwauk (2011) asserted that PALs may o er young people a means of socialization but, similar to Miller et al. (2006), held that sports participation alone may not contribute to a youth's positive development, in fact, the opposite may be true.

PALs that take a more all-encompassing approach to individual development, offering participants additional services beyond athletic participation, may be more successful in helping youths to develop into civil members of society (Hartmann and Kwauk 2011). In a sense, PALs and community sports leagues that do not include some kind of additional services for participants may be simply ineffective. This is because they allow participants a means of entertainment and socialization, but do nothing to facilitate the participants seeking personal moral, ethical, or civil improvement (Hartmann 2016).

IMPROVING POLICE ATHLETIC LEAGUE IMPACTS

Considering the conclusion that sports leagues may not, on their own, lead to the positive development of young people into proper citizens, it is important to consider what practices may help young people to develop into civil, law-abiding citizens and remain as such. Social inclusion and social capital may be good social psychological incentive for pro-social action; however, they are not magic bullets for solving the problem of youth delinquency and ensuring positive development (Putnam 2000; Kelly 2012). The provision of additional support beyond the social inclusion and entertainment that PALs offer by a program may fortify the efforts of a community, neighborhood, or city to raise productive, wholesome citizens.

Kelly (2012), researching PALs in England using interviews of people affliated with PAL programs, found that many PALs achieve greatest success in the positive development of youth when a PAL offers additional services. Additional services, such as mentoring, afterschool programs, and other paths for young people to stay out of trouble and form positive communal bonds, are, very possibly, more important than the entertainment and engagement that sports leagues o er. Whereas sports o er inclusion and entertainment, mentoring and afterschool programs that are linked to the sports programs help youth to develop in other pro-social ways, including academics, which may allow the young person a bright future (Kelly 2012).

This finding by Kelly (2012) is not an isolated observation. It has been found, in other cases, that programs that allow young people additional services may help them to develop more positively as individuals. Afterschool and mentoring programs, in particular, help to grow students socially and academically. In this growth, youths are able to gain transferable skills, beyond those, which athletics can teach, that can be helpful later in life. If young people are able to obtain good civic and social skills and academic success, they may be less likely to engage in a life of deviant behavior and, instead, lead a socially acceptable lifestyle (Reglin 1997).

Reviewing the past literature reveals several things. First, frequent, voluntary, positive contact may cause a person to have a more positive perception of police. Likewise, an individual who has reasonably often, negative, involuntary contact with police may perceive police more negatively. CBP, and PALs specifically, may increase voluntary, positive contact between citizens and police officers and allow for constructive relationships to be formed between officers and the people that they serve. These relationships may extend beyond participants and to volunteers and the family of participants, as well. Additionally, it has been established that PALs may help to reduce crime and deviant behavior of youth in a couple of different ways.

One way PALs may reduce crime is by allowing young people safe and acceptable forms of entertainment so that they do not engage in deviant behavior. PALs may also reduce crime by helping youths to develop meaningful and useful social skills that they can in their lives. Furthermore, linking PALs with some form of mentoring, life skills-building program, or academic success program may help to increase the benefits that a young person gets out of their participation in a PAL. Past literature has established that PALs may be a viable form of CBP for reducing crime and antisocial behavior among the young people of a community, when implemented and administered properly.

THEORIES

Based on the findings of past research, there is evidence to suggest some link may exist between quantity and quality of contact and perceptions of a person or group of people (Allport 1954; Islam and Hewstone 1993; Keith, Bennetto, and Rogge 2015). Therefore, it is apparent that quality and quantity of contact between police and citizens may have a great influence on how a person perceives police. PALs and CBP may offer citizens the opportunity to engage with police officers in positive ways. This hypothesized relationship is largely rooted in Allport's (1954) assertions regarding contact leading to the development of perceptions.

The main hypothesis of this paper is derived from Allport's (1954) Contact Theory. Allport suggests that quality and quantity of contact affect a person's perceptions of someone or a group of people. Past research (Hinds 2007; Schafer, Huebner, and Bynum 2003; Viki et al. 2006; Weisburd and Eck 2004) has substantiated this Theory with findings that support it, including the application of the Theory to police-citizen interactions. Since PALs provide citizens constructive and positive contact with police, it is possible that people who engage with PALs will perceive police more favorably than those who do not. Herein lies the rst hypothesis of this paper:

H1: People who engage with a PAL will have a more favorable opinion of police than people who do not.

It is important to note, however, that the rst hypothesis assumes that people who engage with a PAL will have more positive and frequent interactions with police. Therefore, it is important to examine the nature of the relationship between participation in a PAL and quality and quantity of contact that a person has with police. Though past literature has established the relationship between quality and quantity of contact helping a person to develop perceptions of a person or group of people, little research has been conducted specifically on PALs in regard to this phenomenon. It is important to understand if PALs make contact with police more frequent and more positive for people who engage with them in order to determine if a PAL is serving one of its core purposes. Based on this idea, two more hypotheses can be formulated:

H2: People who engage with a PAL will have a greater amount of contact with police.

H3: People who engage with a PAL will have more positive contact with police.

H2 and H3 are vital to beginning to understand H1 because Contact Theory states that quality and quantity of contact affect perceptions of a person or group. If it is established that people who engage with a PAL have more frequent and more positive contact with police, resulting in more positive perceptions, it can be inferred that a typical relationship between contact and perceptions that Allport theorized may exists. However, if contact does not behave as expected, there may be other factors that impact a person's perceptions of police. This is also a possibility as many other factors may contribute to a person's perceptions of police.

Table 1: Population Demographics of Selected Northeast Cities

City	Total Population	% White	% Non-white	% Male	% Female
Albany, NY	97,469	57.0%	43.0%	48.4%	51.6%
Rochester, NY	210,565	43.7%	52.3%	48.3%	51.7%
Bu alo, NY	261,325	50.4%	49.6%	47.9%	52.1%
Syracuse, NY	145,170	56.0%	44.0%	47.7%	52.3%

Spring eld, MA	153,060	51.8%	48.2%	47.4%	52.6%
New Haven, CT	129,799	42.6%	57.4%	48.2%	51.8%
Providence, RI	178,042	49.8%	50.2%	49.2%	51.8%

RESEARCH DESIGN

To study the effect of participation in a PAL on perceptions of police, I researched people in the Albany, New York area. I surveyed two groups of people, those who engage with Albany PAL and those who do not. Those who engage with Albany PAL represent my test group, while those who do not act as the control group. The responses of those who engage with Albany PAL will be compared against those who do not in a regression analysis in order to determine if engagement with a PAL increases a persons positive contact and positive perceptions of police.

Albany, New York was selected as the location of the study partially out of convenience and access to the population, but also due to the presence of an established PAL. Besides that, Albany is also a fairly typical Northeast city. The demographics of Albany are displayed in Table 1, compared to other Northeast cities of similar size, based on the 2010 United States Census.

To populate my test group, I partnered with Albany PAL and conducted both convenience sample electronic surveys at PAL events, as well as asked Albany PAL to circulate sign-up sheets for those who may be interested to leave their email addresses and receive the survey via email. Albany PAL is a fairly well established PAL, situated in Albany, NY, a city that has an existing dedication to CBP. Founded in 1988, Albany PAL serves the Albany area and provides sports and after school programming services to families and individuals the area. In 2016, Albany PAL served 1,533 participants, ranging in age from 1 through 19. Albany PAL participants represent a vast array of ethnicities, both male and female. These demographic allowed for the gathering of a diverse sample from a fairly large body of people.

The control group was populated through several methods. One method was snowball sampling, a question on the survey given to PAL participants asked them to provide the email addresses of up to three other people who they think may have been interested in taking the survey. The survey was then sent to those people electronically via email and completed online. Another method utilized was distributing a link to the survey via social media. The third method that was used was convenience sampling of people in the Albany area. The combined responses from these three forms of dissemination constituted the control sample for the study.

Respondents were asked typical demographics questions including age, race, level of education, and political ideology. These questions were included to create control variables for the regression analysis that was used. To observe the independent variable, engagement with a PAL, respondents were simply asked if they had a child or children who participate in Albany PAL.

In order to study the key dependent variables in my study: amount of contact with police, quality of contact with police, and attitudes toward police, three batteries of questions were developed. The four qualities and six quantities of contact questions were asked and derived from Islam and Hewstone's (1993) study on perceptions of people of conflicting religious groups. Additionally, five questions were asked in a battery designed to determine a respondents attitudes toward police, developed from Brick, Taylor, and Esbensen's (2009) study of juvenile attitudes toward police. With the answers to each battery of questions coded and summed, each respondent was given a score three different categories: quantity of contact, quality of contact, and attitude toward police. The full slate of questions can be found in Appendix A.

Quality of contact responses was coded 1-4 with 1 being indicative of responses showing more negative contact and 4 of more positive contact. These questions asked respondents to rate \When you interact with a police officer, do you feel like you are equal?," \When you interact with a police officer, is the interaction voluntary or involuntary?," \In general, how would you describe your typical interaction with a police officer?," \How often are your interactions with police officers pleasant in nature?," \Do your interactions with police officers tend to be [competitive or cooperative]?," and \In general, when you interact with a police officer, do you feel as though you are each representing different groups of people or interacting as individuals?" The coded results were then summed with higher values indicating more positive contact, and lower values indicating more negative contact. This summation created a quality of contact score for each respondent, which became a key independent variable in the regression.

Likewise, quantity of contact responses were coded 1-5, with 1 being \never" or \none at all" and 5 being \very often" or \a great deal." The coded responses were then summed to generate a quantity of contact score, with a lower score indicating less contact and a higher score indicating more contact. This variable was used as a main independent variable in the regression. The quantity of contact questions asked respondents to rate, \How much contact do you have with police officers as acquaintances?," \How much contact do you have with police officers as close friends?," \How often do you interact with police officers?," and \How often do you have voluntary, informal conversations with police officers?"

Finally, attitude questions were given in a series of statements that a respondent could either agree or disagree with. The answers were coded 1-5 with 1 being \strongly disagree" and 5 being \strongly agree" with the statement. These values were then summed to create an attitude toward police score for a respondent. The questions in this battery asked respondents to rate agreement with the statements that \Police officers are honest," \Police officers are hardworking," \Police officers are usually friendly," \Police officers are usually courteous," and \Police officers are respectful of people like me." The attitude score was used as the dependent variable in the regression analysis.

Once all variables were coded and scored appropriately, a regression analysis was run in order to test my previously stated hypotheses. If my hypotheses were to reject the null hypotheses, I expected to see parents who engage with Albany PAL to have more contact with police, greater positive contact with police, and more positive perceptions of police than those who do not engage with Albany PAL.

STATE OF RESEARCH

Currently, my research is not complete on this topic. The survey was closed on March 18, 2017 with 106 total responses. I have begun the data analysis portion and expect to have full results by the end of March 2017. The data will likely see selection bias in the results due to the high use of convenience sampling in this study, both in-person and electronic. Though convenience sampling is not an ideal method of data collection, it was the most practical method that I had available for this study due to limited time to conduct sampling and data collection.

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LIKELIHOOD OF RETAINING AN ACCOUNTING UNDERGRADUATE STUDENT TO THE MASTERS IN ACCOUNTING PROGRAM

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ABSTRACT

Student retention has become a prime focus and challenge for all colleges. Many small colleges have had difficulty in not only retaining students throughout their undergraduate career, but also had the obstacle of retaining these students into their master programs. By maintaining a greater retention rate, it will offer colleges a stable future. With a greater retention rate, this will result in a steady stream of revenue that can be predicted year over year and reveal to colleges the factors most responsible for why a student has been retained. This study was conducted with data from a small private Catholic College in upstate New York. A probit analysis was used to find the probability that a senior accounting student enrolled at this Catholic College will enter the Master's program offered by this school. The factors used to conduct this study were GPA, location, income, the number of accounting credits taken by an individual student, and the number of accounting credits a particular student received a B or higher. The results indicated that GPA and the accounting courses in which students took and received a letter grade of a B or higher were most significant in determining if a student would be retained into the Master's Program.

INTRODUCTION

Each year after graduation, undergraduate accounting students face the decision to enter graduate school in accounting. We conducted a study to determine what independent variables most likely attribute to a student being retained into the accounting master's program in a small private catholic college in upstate New York. We investigated if these factors contributed to the retention in the masters accounting program.[35] Chapman (1986) discussed the influence of the following variables; cost, academic quality, future career prospects and opportunities (upon graduation), quality of life while a student at the college, and related considerations that might be of interest to students in the ultimate college choice decision. We used this study as a guideline to introduce the regression process and introduce what independent variable were used to find a correlation between them and entrance into the program. This motivated us to explore the factors that may influence undergraduate accounting majors to join the masters program in accounting in the same upstate New York catholic college. Secondly, looking into "Improving Retention for Principles of Accounting Students: Ultra-Short Online Tutorials for Motivating Effort and Improving Performance", the study's results show that poor performance is based on family matters, work schedules, extracurricular activities, aptitude and lack of motivation of students. To improve retention rates, authors conclude that professors could breakdown instruction material into smaller units; explain examples to students so they

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[1]Randall G. Chapman (1986) ,"Toward a Theory of College Selection: a Model of College Search and Choice Behavior", in NA - Advances in Consumer Research Volume 13, eds. Richard J. Lutz, Provo, UT : Association for Consumer Research, Pages: 246-250.

have a better understanding of the material and point out common misunderstandings. [36] After analyzing these two studies we decided the steps needed to understanding, analyzing, and improving the retention rate at this school.

Improving the retention rate for the graduate accounting program required multiple steps. The first step was figuring out what factors affected a student's decision when deciding to continue their studies. The group found that many of these factors had been researched in larger studies. These studies would be our starting point; we would be able to try these factors in our regression in order to see which had the correct levels of significance. Through our research we found that retention into a graduate program was very dependent upon how the student did in the undergraduate program. We measured this by evaluating each student's overall GPA as well as accounting courses in which the student received a letter grade of B or higher. Another common factor that was found in the scholarly articles was financial problems, whether or not a student felt as though they could afford to go to the school. The third largest factor was how far the student lived from the school they would be attending. We used all of these 3 factors in our study.

DATA: SOURCE AND SUMMARY

Data collected for this study was obtained from the Office of Institutional Research at the four year school. Here, our group received statistics on the student's gender; undergraduate performance in school, whether or not the student lived in the capital region, financial information, and how many accounting credits the student took. The amount of accounting credits would show the students involvement in the school. One issue with our data was that we were not allowed to receive an income figure from the office because of a confidentiality conflict. To account for this, the group decided to use whether or not the student received the Pell Grant. The Federal Pell Grant is awarded to students who need exceptional financial aid, the amount ranges from $598 to $5,815 per full time student. Since the Pell Grant requires students under a certain maximum income to be eligible for it, our group would be able to discern what the student's maximum income was. Then, we could safely assume that anyone who did not receive this grant would have a higher income than those that did receive the Pell Grant. Through this association of Pell grant recipients versus non-Pell Grant recipients, we would be able to determine if there was a relationship between income and the student continuing to the graduate program at Siena College.

SUMMARY DATA

Out of a total of 523 students there were 244 females and 279 males. Out of 244 females 183 of them did not receive the Pell Grant along with 215 males that did not receive the grant.

Table: 1

	No Pell Grant	Pell Grant	Total
Female	183	61	244
Male	215	64	279
Total	398	125	523

Out of the total amount of students in our data collected, 120 of the 244 females resided outside the capital region, and 149 males out of 279 resided outside as well.

Table: 2

	Outside Cap Reg	Cap Region	Total

[2] "Improving Retention for Principles of Accounting Students: Ultra-Short Online Tutorials for Motivating Effort and Improving Performance."*American Accounting Association*. Web.04 Apr. 2016.

Female	120	124	244
Male	149	130	279
Total	269	254	523

Out of the female sample, 231 if the 244 students was accredited for between 7 and 10 accounting classes. Out of the male sample of 279, 259 were accredited for between 7 and 10 classes .

Table: 3

	No_acct_crs_taken			
	Less than equal to 6	7 to 11	12 or more	Total
Female	7	231	6	244
Male	5	259	15	279
Total	12	490	21	523

32 females received less than or equal to two B or higher, 118 females received a B or higher in 3 to 7 classes, and 94 females received 8 or more. 42 males received less than or equal to two B's or higher, 139 males received a B or higher in 3 to 7 classes, and 98 males received 8 or more.

Table: 4

	No_acct_crs_B_or_higher				
	Less than equal to 2	3 to 7	8 or more	Total	
Female	32	118	94	244	
Male	42	139	98	279	
Total	74	257	192	523	

109 female students joined the masters in accounting program out of 244 females and 111 out of 279 males joined the masters in accounting program.

Table: 5

	Non MACC	MACC	Total
Female	135	109	244
Male	168	111	279
Total	303	220	523

METHODOLOGY AND ANALYSIS

The literature survey in the introduction discussed the logic behind choosing independent variables. Those literatures also motivated us to test the following Hypothesis:

Hypothesis #1: Location of student's home influences student retention

Hypothesis #2: GPA of a student can affect a student joining master's program in accounting

Hypothesis #3: If a student had at least B GPA average in accounting can affect student retention

Hypothesis #4: If a Student receiving Pell Grant can affect his/her joining the program

Hypothesis #5: Gender affects joining the accounting program

Hypothesis #6: Number of accounting credits they took in undergraduate affect their decision to join the program

First we try to explore factors affecting retention in masters of accounting degree. Independent variables that we used are:

- Location (near capital region or not)
- Student's GPA
- Accounting credits with B or higher
- Number of accounting credits
- Gender
- Pell Grant: If a student had Pell Grant

Please note that the students from higher income families cannot qualify to receive the Pell Grant. We included this variable (dummy variable) to mimic income variable as income of the families of the students were not available.

Because our dependent variable is a binary variable (1 = if joined the accounting program, 0 = they did not) we carried out Probit regression to explore significant dependent variables to affect retention into the masters of accounting program.

Probit Analysis:

Underlying unobserved regression relationship is:

$$y_i^* = \beta' x_i + u_i \qquad (1)$$

How students make a decision to stay with the college or leave is unobserved. Some independent variables that may help make their decision to stay with the college after their freshman year or not are considered. In practice what we observe (student is retained or not) is a binary variable *y* defined by

$$\begin{aligned} y &= 1 \quad if\; y_i^* > 0 \\ y &= 0 \quad otherwise \end{aligned} \qquad (2)$$

$$If\; u_i \sim IN(0, \sigma^2)$$

$$\Pr ob(y_i = 1) = prob(u_i > -\beta' x_i) = 1 - F(-\beta' x_i)$$

$$= 1 - \int_{-\infty}^{-\beta' x_i / \sigma} \frac{1}{(\sqrt{2\pi})} e^{\left(-\frac{t^2}{2}\right)} dt \qquad (3)$$

Specifically, we used variables x_1, x_2, x_3, x_4, x_5 *and* x_6 in the Probit equation:

$$Y_i = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \beta_4 x_{4i} + \beta_5 x_{5i} + \beta_6 x_{6i} + u_i$$

Where:

Y_i = 1 or 0 based on if i th student is retained

x_{1i} = Location for i th student (0: Outside Capital Region, i.e. Not Local)
(1: Inside Capital Region, i.e. Local)

x_{2i} = GPA for the i th student

x_{3i} = If the i th student had B or higher in accounting
(0: do not have B or higher)
(1: has grade B or higher)

x_{4i} = If the i th student is a recipient of Pell Grant
(0: is not a recipient of Pell Grant)
(1: is a recipient of Pell Grant)

x_{5i} = Gender of the i th student
(0: Female)
(1: Male)

x_{6i} = Number of accounting credits of the i th student

u_i = Random Normal Error

In this program we analyzed our data using the probit model which is a type of regression where the dependent variable can only be determined by two values, in our case a 0 or 1.[37] In the article, "Factors Influencing Retention Of Developmental Education Students In Community Colleges," each variable that was used was given a number, in order to put it in the regression analysis. For example, one variable that was translated to "1=Never/Rarely, 2=Sometimes, and 3=Often." The "1's" represent "yes" and the "0's" represent "no."

Based on other published studies and information available to us, we analyzed specific data for students that graduated with a Bachelor's degree in Accounting between 2009 and 2014. Looking at the data on a macro level, the results concluded that 57.9% did not enter the program, and the college retained the remaining 42.1% categorized by gender. As a group we wanted to analyze specific variables in order to give the Master's program the feedback it needs to retain more students, earn more revenue from a business perspective, and offer students the education of a lifetime.

Table: 6

Students Retained			
	No	Yes	Total
Female	135	109	244
Male	168	111	279
Total	303	220	523

To get the most accurate results, we analyzed each x factor based on the level of statistical significance. We eliminated the factors with the least significance then ran the regression analysis again to get the most accurate results using only statistically significant factors regarding the retention rate (stepwise). To the extent that the variable in question shows that the retention rate is dependent upon that specific variable, the lower the significance level the greater the impact on the student's probability to join

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[3] Pruett, Pamela S., and Beverly Absher. "Factors Influencing Retention Of Developmental Education Students In Community Colleges." *Delta Kappa Gamma Bulletin* 81.4 (2015): 32-40. *Academic Search Premier*. Web. 7 Mar. 2016.

the program. Computing our results under a 95% confidence interval the probability of observing a value outside this area is 5%. In our original probit analysis, it is clear that the students gender, and if the student received the Pell grant were 2 insignificant variables. With such high significance levels, this means these variables had very little weight in determining whether or not students enrolled in the Master's Program. Four steps were taken in eliminating insignificant variables.

Table: 7 Stepwise Probit

	Step-1		Step-2		Step-3		Step-4	
	beta	p-val	beta	p-val	beta	p-val	beta	p-val
Constant	3.541	0.004	3.549	0.004	3.645	0.003	4.831	0.000
Gender	-0.066	0.620	-0.067	0.620				
PellGrant	-0.022	0.889						
CapRegion	0.179	0.199	0.179	0.198	0.183	0.187	0.199	0.148
UGGPA	0.522	0.113	0.522	0.114	0.544	0.096	0.756	0.006
No_acct_crs_taken	-0.082	0.223	-0.082	0.224	-0.082	0.226		
No_acct_crs_B_or_higher	0.359	0.000	0.359	0.000	0.356	0.000	0.320	0.000

After eliminating the weakest elements, GPA, the area in which the student resides, and grades in accounting classes were more significant. Originally these variables would be rejected based on their level of significance because they are greater than .05, or 5%. Instead we proceeded to re-run the probit without the insignificant variables. It became clear the number of accounting credits was insignificant with a significance level of .226 in the third step. To conclude as a group, we analyzed the data one more time with the most significant variables. Throughout the process the variable "Accounting Credits B+" was directly related to the acceptance rate within the master's program and had a significance level of .000 throughout all stages of the probit analysis. Lastly, GPA was the next most significant variable in the study.

Let us now investigate the hypotheses:

Hypothesis #1: Location of student's home influences student retention

At 10% level of significance this variable came to be insignificant. However, it came pretty close to be significant. So, it is not true that students nearer to the college are more likely to get into the masters in accounting program

Hypothesis #2: GPA of a student can affect a student joining master's program in accounting

GPA came significant: this says that higher the GPA, it is more likely that the students will be retained in masters in accounting program.

Hypothesis #3: If a student had at least B GPA average in accounting can affect student retention

This variable also came to be significant. This means that students with better grades in accounting class are more likely to be retained into the masters program in accounting.

Hypothesis #4: If a Student receiving Pell Grant can affect his/her joining the program

This came as insignificant variable. Please know that students with lower income families are eligible for Pell Grant. We can assume that students who do not receive Pell Grant usually come from higher income families. This variable not being significant shows that students' families' income is not a factor to influence the retention of the students into the masters in accounting program.

Hypothesis #5: Gender affects joining the accounting program

Gender is not a significant variable. That means no specific gender was retained into the masters' program more than the other.

Hypothesis #6: Number of accounting credits they took in undergraduate affect their decision to join the program

Surprisingly, if students took more credit hours in under-graduate accounting did not influence retention into the masters in accounting program. This is described below

Now we can use our results to compute the likelihood that a student with some specific characteristics will join the masters in accounting program. For example (first row in the table), if a student with the following characteristics:

Gender: Male (= 1), Pell Grant non recipient (=0), that student is from Capital Region (=1), that student's UG GPA = 3.7963, he took 9 of undergraduate classes and he received 9 of those classes B or higher, will have a probability of .85 of joining the masters in accounting program.
The observed MACC (=1, meaning he entered the program). This reaffirms the effectiveness of predictive probabilities via Probit analysis.

Table 8

Gender	Pell Grant	Capital Region	UGGPA	No_acct_ courses_taken	No_acct_crs_B_ or_higher	Macc	Prob(Macc)
1	0	1	3.7963	9	9	1	0.85
0	0	0	2.66495	10	5	0	0.12
0	0	0	2.40323	9	4	0	0.06
0	0	0	3.81765	9	9	1	0.83
1	0	1	2.64727	9	4	0	0.09
1	0	0	3.751	9	9	1	0.8
0	1	0	2.97826	11	4	0	0.07

CONCLUSION

We determined from the results that students with a "B" or higher in more accounting courses than others, excelled within the accounting program. These students believed they could have handled the workload and more advanced courses the graduation program brings. This is a powerful determinant in our studies compared to the number of accounting credits taken at Siena College because it is a variable and is measured, rather given a set "1" or "0", and it reflects on a student's overall GPA which is our next most significant variable in determining the retention rates of these students. Lastly, our next variable was if the student resides in the capital region. This factor is barely statistically insignificant in our study, but it is more significant than the other variables previously eliminated. We decided to keep this variable to add some diversification to our regression so that there were more than just two factors.

Our study concluded to be about 80% accurate with a cutoff point of a 50 percent probability. Any student that had a forecasted probability of .5 or higher and also had a "1" or "retained" is considered a success, and any student who had a forecasted probability of less than .5 and a "0" or "was also considered a success. To find our success rate of predictions, we summed our amount of successes and divided by our total number of cases.

To conclude, our suggestion to this private school as a result of our statistical analysis would be to focus heavily on the undergraduate program in order to increase their retention rate of accounting students into their Master’s program. Undergraduate GPA and accounting courses with a letter grade of B or higher proved to be the most influential factors in a student’s decision of whether or not to continue into the Master’s program. To further improve our study, we will present our study to the Director of Finance at this private school, in order to obtain more information including that which is confidential. With this new information we will improve our independent variables and, in turn, become even more accurate when predicting what factors influence a student’s decision and improve our prediction success rate. With this information, and our prediction success rate higher, colleges will use this data as a guide to market towards specific students they believe will enter their program. Furthermore, this study can be used as a universal tool for other schools with raw data provided, improving other schools retention rates, and ultimately helping them receive more revenue.

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