

## THE UNITED STATES TELEGRAPH INDUSTRY

by

Aaron M. Honsowetz

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### Committee:

Director

Department Chairperson

Program Director

Dean, College of Humanities  
and Social Sciences

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1866 Post Roads Act:  
Federal Preemption and Deregulation of the United States Telegraph Industry

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By

Aaron Michael Honsowetz  
Master of Arts  
George Mason University 2010  
Bachelor of Science & Arts  
Michigan State University 2008

Director: John V. C. Nye  
Department of Economics

Summer Semester 2015  
George Mason University  
Fairfax, VA

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## **Dedication**

To the people who enabled me to study because studying is fun – be it my parents, my sister, my extended family, my friends, my teachers, my coaches, my professors, my wife or my son.

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## **Abstract**

### **1866 POST ROADS ACT: FEDERAL PREEMPTION AND DEREGULATION OF THE UNITED STATES TELEGRAPH INDUSTRY**

Aaron M. Honsowetz, Ph.D.

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Dissertation Director: John V. C. Nye

The 1866 Post Roads Act benefited United States consumers by using federal preemption to deregulate state and municipal telegraph regulations that increased the cost of entry and limited telegraph competition. State and municipal telegraph entry barriers undermined the common market and market-preserving federalism by restraining trade between states (Weingast 1995). A sufficient decline in the efficiency of the common market from local entry barriers economically justifies federal preemption (Hazlet 2003). The pro-market telegraph reforms enacted by the 1866 Post Roads Act were in stark contrast to telegraph reforms undertaken outside of North America where governments elected to nationalize their domestic telegraph systems.

Historical evidence indicates that the post-1866 United States telegraph market was contested and is consistent with the theory that the 1866 Post Roads Act contributed to increasing contestability and consumer welfare. Surprisingly, the pro-consumer act was enacted despite opposition from a concentrated interest who anticipated being

harmful by the act. Mancur Olson's (1965, 1982) theory on the cost of collective action predicts a concentrated interest should prevail over dispersed consumers. Supporters of the act succeeded in defeating opposition from a concentrated interest by taking advantage of a political disruption that excluded from the Senate and Congress Southern Democrats from former Confederate States. While the act benefited consumers, its passage was a result of support from politicians connected to economic and political elites who stood to profit from its implementation.

## **Chapter 1: Dissertation Introduction**

Outside of the United States, Canada, and a few select countries, telegraph companies were owned by their government (du Boff 1984, p. 572; Hochfelder 2012, p. 32). In other parts of the world, telegraph reform meant nationalizing the telegraph system and creating a government monopoly. In 1868 the United Kingdom, the only country in Europe with a private inland telegraph system, reformed its telegraph industry by nationalizing it and putting it under the management of the British Post Office (du Boff 1984, p. 572; Hochfelder 2012, p. 32; Wolff p. 5; Silberstein-Loeb 2014, pp. 88-99). The United States attempted a different type of reform. Instead of creating a government monopoly or outright regulating telegraph prices in 1866, United States politicians claimed they were attempting to improve telegraph services by reducing entry barriers with the 1866 Post Roads Act (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3428, pp. 3481-3489).<sup>1</sup>

States and municipalities used local franchises to erect telegraph entry barriers. Local franchises increased entry barriers by either granting exclusive franchises to a single telegraph company or by imposing franchise regulations that increased the sunk cost of entry. State and municipal telegraph entry barriers not only reduced local

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<sup>1</sup> In other sources the 1866 Post Roads Act is sometimes referred to as: Act of July 24, 1866; National Telegraph Act (of 1866); The Post Roads Act (of 1866).

competition, they also reduced competition in neighboring states and municipalities.

Local entry barriers hindered the network benefits of competition by reducing the number of competitive destinations served by preexisting telegraph offices (Liebowitz and Margolis 1994, p. 142; Katz and Shapiro 1985, pp 424-425; Shy 2011 p. 119, 121).

Local entry barriers increased the sunk cost of connecting neighboring states and municipalities to the larger telegraph network when the telegraph lines needed to cross a location with high entry barriers or sink additional capital in order to construct telegraph lines around locations with high entry barriers. Negative spillovers from local telegraph entry barriers upon neighboring states and municipalities were a restraint on trade, and impeded the economic efficiency of a common market which undermined market-preserving federalism (Weingast 1995). If the loss in economic efficiency from local entry barriers was sufficiently large then federal preemption to remove the entry barriers is justifiable on the grounds of improving economic efficacy (Hazlett 2003).

The preemption of state and municipal franchising laws by the 1866 Post Roads Act protected market-preserving federalism and the economic efficacy of a common telegraph market. The act granted a telegraph company who acceded to the terms of the act the right to “construct, maintain, and operate” along any post road in the United States (14 USC 221, 1863-1867). In practical terms, the grant provided de facto franchise rights to operate a telegraph company. Prior to the act, telegraph companies had to secure multiple local franchises from states and municipalities in order to operate a telegraph business. After the act, a telegraph company needed only to secure one franchise and

then use the privileges from the act to operate as a foreign company across the United States.

The de facto franchise rights granted by the act enabled telegraph companies to evade local franchise entry barriers. If a local government granted an exclusive franchise to a single telegraph company, a competitor could enter by evoking the federal privileges in the 1866 Post Roads Act. Since the act granted telegraph companies a de facto national franchise, companies no longer had to consent to local franchise regulations in order to serve specific geographical areas.

Despite the passage of the 1866 Post Roads Act, the contestability of the telegraph market was uncertain after 1866. During the debate over the 1866 Post Roads Act, politicians questioned if it would succeed in increasing telegraph competition with Western Union (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3077, 3428, 3484; Wolff 2013, pp. 103-109). In 1866 the three largest telegraph companies merged under the management of Western Union. From that point on Western Union dominated American telegraph infrastructure, controlling over 80% of all telegraph wires in the United States (See Table 3.1). After the merger the media dubbed Western Union “The Great Monopoly” (Wolff 2008, p. 17, 135, 176, pp. 218-219). Fears over Western Union’s monopolistic behavior motivated nineteenth century economists Richard Ely and Henry Adams to endorse additional government interventions beyond the privileges granted in the 1866 Post Roads Act in order to rein in Western Union (John 2010, pp. 194-198).

I present the first empirical evidence that the post-1866 market was contested. All previous work on the topic has relied on historical narratives. My evidence is consistent with the 1866 Post Roads Act improving market efficiency and market-preserving federalism by contributing to the contestability of the post-1866 telegraph market. After 1866 Western Union contended with various competitors who benefited from the 1866 Post Roads Act. Pressure from competitors significantly altered Western Union stock returns, led to adjustments in Western Union telegraph prices, and affected Western Union revenue.

While the positive economic effect of removing entry barriers is not surprising, what is surprising was that the pro-consumer 1866 Post Roads Act was enacted at the expense of Western Union. Western Union was a concentrated interest with a history of lobbying for and receiving government favors. The company controlled an overwhelming percentage of the United States telegraph infrastructure and was one of the largest companies in the United States. Concentrated interests such as Western Union have lower lobbying costs than consumers because consumers are more numerous and the benefits received from government lobbying are dispersed (Olson 1982, p. 37). Mancur Olson's theory on the cost of collective action predicts Western Union's lower lobbying costs should have enabled it to subvert the interest of consumers. Yet, somehow Western Union failed to avert the passage of the pro-consumer anti-Western Union 1866 Post Roads Act.

Mancur Olson theorized in order to defeat an established elite something needs to destabilize the old power structure (Olson 1982; Mokyr and Nye 2007 p. 53). The

departure of Southern Democrats after the end of the Civil War empowered a coalition within the Republican Party to impose the legislation over the objections of Western Union and other Republicans. Southern states, which historically supported Democrats, were barred from sitting representatives as a repercussion of supporting the Confederacy. The remaining Democrats from states that did not secede from the Union were unsupportive of the act. Out of the 49 Democrats in the House and Senate, only 1 voted for the act. If the South had remained with the Union it likely would have provided enough Democratic opposition to defeat the act, which only passed in the Senate by 3 votes and in the House by 11 votes (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3747, 3490).

The exodus of Southern Democrats provided an opportunity for Republican politicians connected to a coalition of elites composed of politicians, businessmen, and newspapermen who expected to benefit from the act to push the 1866 Post Roads Act through the legislature. Every Republican senator and congressmen from Ohio voted for the 1866 Post Roads Act, providing 25% of the votes for the act (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3747). Ohio Republicans' strong support for the act was not likely motivated by concern for the plight of consumers. The National Telegraph Company was connected to Ohio Republicans and expected the privileges granted by the act to lower its telegraph network construction costs (National Telegraph Company n.d., p. 5). The adamant support by Ohio Republicans for the act was not typical of the entire Republican caucus. Not a single Republican House member from New York State, where Western Union was headquartered, voted for the act. Without the support of

politicians, such as the Ohio Republicans, who were connected to elites positioned to benefit from the act, the pro-consumer 1866 Post Roads Act would have failed to pass the legislature.

## **Chapter 2:**

### **Lowering Entry Barriers Created by State and Municipal Regulations With Federal Preemption**

The 1866 Post Roads Act used the authority of the United States central government to preempt state and municipal telegraph regulations. Pre-1866 state and municipal telegraph laws were barriers of both entry and trade between states. Trade barriers reduced the benefits of a common market and undermined market-preserving federalism (Weingast 1995). Chapter 2 documents what laws were preempted by the 1866 Post Roads Act, explains how these laws increased entry barriers, provides evidence that preemption was enforced, and uses two counterfactuals to calculate rough estimates of the decrease in entry costs from enforcement of the act.

#### **2.1 Introduction**

With the enactment of the 1866 Post Roads Act, Republicans in the 39<sup>th</sup> Congress asserted the authority of the central government by preempting local telegraph entry barriers erected by states and municipalities. Entry barriers effectively reduce the ability of competition to improve overall economic efficiency, but political entry barriers result in even larger inefficiencies from political rent seeking (Baumol, Panzar, and Willig 1982; Tullock 1967). American states have been regulating telegraph companies since

the founding of the first telegraph company in 1845 (Nonnenmacher 2001B). Some regulations, such as laws punishing vandals caught damaging telegraph poles and wires, lowered entry costs of a telegraph company. Others, such as franchise requirements to conduct telegraph business, increased the entry cost of operating a telegraph company.

Like other forms of telecommunication, the telegraph was susceptible to state and municipal governments using franchise requirements to erect political entry barriers.<sup>2</sup> Construction of conduits, poles, and wires used to provide telecommunication services are irrecoverable investments that leave telecommunication companies vulnerable to political rent extraction (Troesken 1996, p. 8). After wires are built and investment sunk, local governments face strong incentives to extract quasi-rents from telecommunication companies. Entry barriers that explicitly grant a monopoly or de facto monopoly create a telecommunication company earning monopoly profits with larger rents for local government to extract (Lyons 2010, pp. 407-409). Since entry barriers benefit the company protected by the barriers, a company is more likely to cooperate in sharing the rents with politicians and government in exchange for earning extraordinary profits (Nye p. 71, 114). Politicians historically have used monopoly grants to extract rents at opportune times. Queen Elizabeth of England sold monopoly grants to cover expenses from the Irish Wars and earn royal revenue when she could not impose taxes (Hume 1778A, p. 344, 360). King Charles I reinstated the sale of monopolies, after King James

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<sup>2</sup> For examples see: Telegraph: (This paper); Telephone Companies: David Gabel (1994) and Richard Gabel (1969); Cable TV Companies: Hazlett (1985-1986, 1986, 2007), Posner (1972), and Samon (2004); Cellular Companies: Hazlett (2003) and Shonafelt (2012).

abolished the practice, to increase royal revenue without assembling a new Parliament (Hume 1778B, p. 231).

Franchises were used to explicitly bar telegraph competition by granting to a single telegraph company an exclusive right to operate in a state or municipality. Requirements to acquire a franchise and to comply with franchise regulations also deterred entry by increasing the sunk cost of constructing a telegraph network. Local telegraph entry barriers reduced network benefits of competition to consumers. An additional location connected to the telegraph network increases competition at the new location and also increases competition by adding another competitive route for telegrams at all of the locations already connected to the competitor's system (Liebowitz and Margolis 1994, p. 142; Katz and Shapiro 1985, pp. 424-425; Shy 2011, p. 119, 121).<sup>3</sup> As the telegraph system expands there are more locations connected to the system so each additional location increases competition at a growing number of locations. Because of network benefits from competition, the entry barriers within a state or municipality had negative spillover effects on neighboring states and municipalities. Without federal preemption to remove the entry barriers, negative spillovers were a barrier to state-to-state trade that hindered economic activity and undermined market-preserving federalism (Hazlett 2003, Weingast 1995).

The 1866 Post Roads Act dismantled local entry barriers by conveying federal privileges to existing and future telegraph companies, empowering them to circumnavigate state and municipal telegraph laws. The act granted the right to

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<sup>3</sup> Network industries' economic efficiency improved when it faced competition in the late twentieth century (Shy 2001, pp. 7-8).

“construct, maintain, and operate” a telegraph line along any post road in the United States to all telegraph companies who acceded to the terms of the act (14 USC 221, 1863-1867). The federal right to operate deregulated the industry by freeing telegraph companies from the burden of securing local franchises and the local regulations attached to the franchises. To calculate the impact of the act I construct two rough estimates of the potential costs imposed on telegraph companies if local entry barriers were allowed to prevail. One projects the additional pole miles of telegraph lines required to physically go around states with costly regulations. A second estimates the potential revenue losses for a competing telegraph company when it forgoes serving a city because of local entry barriers.

This is the first paper dedicated to studying how the 1866 Post Roads Act reduced entry barriers by deregulating state and municipal telegraph regulations. Works on the 1866 Post Roads Act by telegraph historians Lester G. Lindley (1971), Richard John (2010), and Joshua Wolff (2013) discuss the political history of the act and present theories on the act’s effect on competition as part of their larger histories of the United States telegraph system. Economists working on state and municipal regulations of the telecommunication industry during this time period studied laws that were not preempted by the 1866 Post Roads Act. Tomas Nonnenmacher examined the development of state regulations of the pre-1866 telegraph industry to discern the motivation of state telegraph regulations in the antebellum period (1996, 2001B). David Gabel (1994) researched the effect municipal franchise regulations had on competition in the telephone industry, which was not preempted by the 1866 Post Roads Act since federal courts determined the

1866 Post Roads Act only applied to telegraph companies (City of Richmond v. Southern Bell 1899; John 2010, p. 278).<sup>4</sup> Other economic research on American nineteenth century and early twentieth century municipal franchising has explored what government conditions drive public or private provision of services in industries such as gas, sewer, and water (Troesken 1997, Troesken and Geddes 2003; Troesken 2006; Masten 2010).

The chapter is organized as follows. Section 2.2 presents state and municipal laws that were local entry barriers and entry barriers for neighboring states and municipalities. Section 2.3 describes how the act evolved and the types of laws the 1866 Post Roads Act preempted. Section 2.4 calculates back-of-the-envelope estimates of the potential cost telegraph entry barriers would have imposed on telegraph entrants without the enactment of the 1866 Post Roads Act. Section 2.5 concludes the paper.

### **2.2.1 State and Municipal Entry Barriers for Telegraph Companies**

Various state and municipal regulation reduce entry and contestability by increasing the costs of telegraph companies entering the marketplace.<sup>5</sup> Not every state and municipal law increase entry costs. State laws making it a crime to purposefully destroy a telegraph line lowered the cost of maintaining telegraph networks (Nonnenmacher 2001B). But state and municipal franchising laws that imposed onerous regulations, explicitly blocked competition, and provided opportunities for politicians to extract political rents increased entry costs for telegraph companies.

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<sup>4</sup> Jayakar (1999) and Gabel (1994) credit telephone competition in favorable regulatory locations for the spread of the telephone network across the United States.

<sup>5</sup> See Baumol, Panzar, and Willig's Contestable Markets and the Theory of Industry Structure (1982).

States repeatedly used franchising laws to explicitly block new entrants from competing with established telegraph companies. The franchise grant to John Watson in 1864 to construct a telegraph system in the state of Nevada forbid any other telegraph company from operating between two cities served by Watson's company (Laws of the Territory of Nevada Passed at the Third Regular Session of the Legislative Assembly Chap. LXXII 1864). In essence, the state of Nevada outlawed competition with Watson's company. Until the passage of the 1866 Post Roads Act, the only way a different telegraph company could conduct business in a city served by Watson's company was to connect that city to locations not currently served by Watson.

Nevada was not the only state trying to use franchises to block competition in the telegraph industry. The state of Florida attempted to grant a monopoly franchise to the Pensacola Telegraph Company to provide telegraph services to the city of Pensacola, Florida (Pensacola Telegraph Company v. Western Union Telegraph Company, 1877). The state of Maine awarded the American Telegraph Company the exclusive franchise to land cables upon its shores that connected Europe (Blondheim 1994, p. 114;;Wolff 2013, p. 40).

Even when states and municipalities did not award an exclusive franchise, regulations imposed as a condition of receiving a franchise were potential entry barriers for telegraph companies. The danger franchise regulations posed to the contestability of telegraph companies can be observed in the telephone industry where they were used as entry barriers (Gabel 1994). State laws governing the telephone industry paralleled the telegraph industry since courts regularly interpreted state and municipal laws created for

telegraph companies to also apply to telephone companies (Joyce and Joyce 1907, p. 14). The exception was that the telephone industry was not granted any privileges by the 1866 Post Roads Act, so any entry barriers experienced by telephone companies would have likely also been applied to telegraph companies if the act was not enacted (City of Richmond v. Southern Bell Telephone & Telegraph Co. 1899).<sup>6</sup> Telegraph companies were not the only industry that dealt with the cost of acquiring a franchise in order to operate.<sup>7</sup> Street railways, railroads, bridges, public ferries, water companies, gas companies, electric companies, toll roads, wharf operators, log boom companies, and banks existed in states or cities where they were required to have a franchise to operate (Myers 1900; Joyce 1914, pp. 41-58).

Municipal franchises to telephone companies were not used initially to highly regulate the industry (Gabel 1994). After some large municipalities observed the success of telephone companies, they imposed additional stipulations on new entrants as a condition of receiving their franchise. The stipulations might include additional fees paid to the municipality; service requirements, such as free telephone services to the government; and an agreement that all rate changes were approved by a municipal-controlled board (Gabel 1994). In these large municipalities, the telephone company owning the franchise with less stringent regulations drove out new entrants (Gabel 1994).

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<sup>6</sup> The United States Supreme Court ruled that the 1866 Post Roads Act applied only to telegraph companies and the transmission of telegrams.

<sup>7</sup> Troesken wrote that the franchise bidding process in the water industry from 1850 to 1899 was susceptible to political corruption (2006, pp. 263-264). Milo Maltbie, an advocate for reforming New York City's franchise process, was concerned that all franchises were susceptible to political corruption (1900, pp. 197-201).

Smaller municipalities did not place such stipulations on the franchise of new entrants and saw longer periods of intense competition (Gabel 1994).<sup>8</sup>

Lobbying politicians for a franchise to operate a telegraph company further increased entry costs. States without a general franchising law awarded franchises through special acts of the legislature, while states with a general franchising law granted anyone a franchise after filing the proper paperwork (John 2010, pp. 89-90). If a company required a domestic franchise to operate within a state without a general franchise law, then it had to invest time and effort to get the political support needed to pass the act. After the passage of the 1866 Post Roads Act, telegraph companies could avoid the cost of lobbying for a franchise by incorporating in a state with a general telegraph law and using the privileges granted in the 1866 Post Roads Act to operate across the country.

### **2.2.2 Spillover of State and Municipal Entry Barriers on Neighboring Jurisdictions**

Neighboring state and municipal regulations were additional entry barriers for a locality. The costs of neighboring state and municipal franchises deterred entry by artificially increasing the sunk cost to connect a locality to the larger telegraph network. To send messages across distances, telegraph networks required the construction of telegraph lines between the sending and receiving destinations. If that journey required

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<sup>8</sup> In comparison, the large municipalities that were rendered less competitive in the telephone industry from franchise regulations were at the same time highly contested markets in the telegraph industry where franchise regulations was made ineffective by the 1866 Post Roads Act (Reid 1879, 1886; Gabel 1994; Hochfelder 2012, p.39).

the telegraph line to cross multiple political jurisdictions, then the cost of entry barriers within those jurisdictions directly impacted the cost of entering the market to provide messages between the destinations.

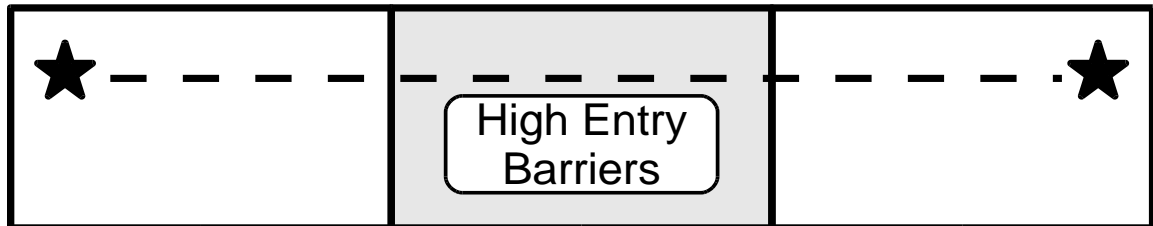


Figure 2.1: Telegraph Entry Barriers Created by Neighboring Jurisdictions

Note: Stars represent destinations sending and receiving telegrams. The dotted line connecting the stars is a route a telegraph company could use to construct its telegraph wires. The boxes represent a political jurisdiction, be it a U.S. state or municipality. The shaded box contains high political entry barriers that increase a telegraph entrant's costs within it. The high entry barriers in the shaded box also serve as entry barriers for the starred destinations in the non-shaded boxes since a telegraph company must cross the shaded box to connect them.

Figure 2.1 illustrates how high entry barriers in a political jurisdiction can spillover and increase entry barriers for entrants in neighboring jurisdictions. In Figure 2.1 the boxes represent different state or municipal governments and the two stars represent two locations that have demand to send and receive telegraph messages. To do this, the message has to travel across land shaded in the gray box. Assume the gray box has imposed an entry barrier, say a franchise requirement. For a new entrant to enter the marketplace to connect the destinations, it must earn a rate of return that justifies the costs of physically constructing the network plus the costs of acquiring a franchise in the shaded gray area.

The government represented by the gray box can erect entry barriers in one of three ways. First, it can outright prevent the construction of a telegraph network by refusing to grant a franchise. Second, the government can undertake regulations that increase the cost of constructing the network itself. For example, if a telegraph company is required to connect every post office by telegraph within the gray box as a condition for its franchise, it will increase the overall sunk cost of connecting the star destinations. Third, it can impose regulations that reduce the revenue earned within the gray box to offset the sunk cost of constructing the telegraph network between the destinations. Hypothetically, the government represented by the gray box can reduce the revenue used to cover part of the sunk costs of construction by granting a franchise to cross the territory with no right to handle any messages destined or originating from within the territory. Or, political lobbying costs and government fees for a franchise could reduce net revenue that offset the sunk cost of constructing the telegraph network.

The costs of high entry barriers from neighboring municipal and state governments were potentially worse than the situation described in Figure 2.1. The decentralized nature of the United States meant there could be multiple neighboring political jurisdictions between destinations with high entry barriers. Each additional jurisdiction with entry barriers increases the overall number of entry barriers for provision of telegraph service between the destinations. Each additional jurisdiction containing politicians who, either to acquire rents or benevolently transfer resources to their constituents, possessed an incentive to extract network benefits from the destinations connected to the network. In some theoretical cases this increase in the

number of jurisdictions who can extract tolls results in prices between the destinations exceeding the monopoly price.<sup>9</sup>

### **2.3.1 Federal Preemption through the 1866 Post Roads Act**

When the 1866 Post Roads Act was first proposed it was not a foregone conclusion that the bill would reduce entry barriers for all telegraph companies. Originally the act was designed to bestow federal privileges to “construct, maintain, and operate” a telegraph line along any post road in the United States upon a single telegraph company, the National Telegraph Company (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3075, 14 USC 221, 1863-1867, Wolff 2013, p. 106). In Senate debates, Ohio Senator John Sherman, chair of the Senate committee that wrote the bill, expressed his belief that making the bill a general bill that applied to all telegraph companies would undermine the ability of the National Telegraph Company to raise the capital needed to successfully compete with the incumbent telegraph company, Western Union (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3075, 3428). Senator Sherman’s stated concerns about altering the bill may have had more to do with how it would affect his own personal interests. In a letter to financier Jay Cooke, he expressed his desire to invest in the National Telegraph Company with Cooke (John 2010, p. 118). Furthermore,

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<sup>9</sup> If the entry barriers in the political jurisdiction resulted in a telegraph network that required multiple telegraph companies to handle a telegram between destinations then prices should exceed the monopoly price and quality should be less than a monopolist (Economides and Lehr 1994; Nonnenmacher 2006). A similar outcome can be observed in models on the political economic literature on government tolling of trade routes, be it collected along rivers (Gardner, Gaston, and Masson 2002) or along roads (Karni and Chakrabarti 1997).

Senator Sherman's oldest brother Charles was a director of the company (Wolff 2013, p. 104).

It took pressure from senators like Iowa Senator James Grimes and Senator John Conness of California to get Senator Sherman to reword the bill as a general grant of federal privileges to any telegraph company organized under the laws of any state (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3428, 3481). This change was spurred by arguments that a federal charter to a single telegraph company posed little risk to Western Union since Western Union could buy out the competitor before it constructed a single mile of telegraph line (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3481-3489). The benefit of granting federal privileges to all telegraph companies, from Nevada Senator William Stewart's perspective, was that as long as Western Union was earning large profits it could not buy out all competitors and expect competition to end (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3484). Senator Stewart foresaw that investors would continue starting new telegraph companies as long as existing companies were earning high profits. Facing the possibility the bill might fail to pass in the Senate, Senator Sherman relented and modified the bill to be a general grant to all telegraph companies, including the National Telegraph Company.<sup>10</sup>

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<sup>10</sup> The bill passed with 16 votes for, and 13 votes against, with 20 votes absent. The bill would have failed if two senators had elected to vote against the 1866 Post Roads Act instead of for the act (Congressional Globe 39<sup>th</sup> Congress, p. 3490).

### **2.3.2 Court Interpretation of the 1866 Post Roads Act**

A series of court cases clarified the reach and power of the 1866 Post Roads Act. In debate legislators expressed concern that they were uncertain how many privileges they were actually granting to the telegraph companies. Senator Sherman argued the bill gave the right to run telegraph wires along any “post route” within the United States (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3485). Congressman William E. Finck of Ohio interpreted the bill as a federal grant to use eminent domain to acquire land for telegraph lines (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3745). Senator Thomas Hendricks of Indiana described the bill as the federal government authorizing a telegraph company organized in one state to operate within a different state and criticized how it presumed some sort of federal power because a road happened to be designated a “post road” (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, pp. 3488-3489).

What did the bill actually mean? An early question addressed in the Supreme Court of Nevada was if a telegraph company had to formally accede to the terms of the act to receive its benefits (Western Union Telegraph Co. Appellant v. Atlantic and Pacific State Telegraph Co., Respondent, 1869).<sup>11</sup> The court ruled a company cannot benefit from any of the privileges of the act without written proof it had properly filed its accession to the terms.

The courts also resolved whether or not the act granted free access to right of way along post roads. An 1874 federal circuit court ruled that the act did not convey

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<sup>11</sup> The court based its ruling on Sec. 4. of the act “And be it further enacted, That before any telegraph company shall exercise any of the powers or privileges conferred by this act, such company shall file their written acceptance with the Postmaster-General of the restrictions and obligations required by this act.” (14 U.S. Statute at Large 221 1863-1867).

telegraph companies the right to condemn private property to use as telegraph right of ways without compensation (*Atlantic and Pacific Telegraph Company v. Chicago Rock Island & Pacific Railroad Company*, 1874; Lindley 1971, p. 217). Land owners had to be compensated either directly through purchase or by condemnation procedures “in accordance with” state laws.<sup>12</sup> Nor was the act a federal grant for foreign telegraph companies to use state condemnation proceedings to acquire telegraph right of ways (*Western Union Telegraph Company v. Pennsylvania Railroad Company*, 1904).<sup>13</sup>

The act did grant telegraph companies, as revealed from court cases, the ability to “construct, maintain, and operate” a telegraph network along any post road on land a company acquired (14 USC 221, 1863-1867). This grant, ruled the Nevada State Supreme Court, empowered telegraph companies to operate within a state without a franchise granted from a state, even if the state had granted an exclusive franchise to a different telegraph company (*Western Union Telegraph Co. Appellant v. Atlantic and Pacific State Telegraph Co., Respondent*, 1869). The United States Supreme Court concurred with this interpretation of the 1866 Post Roads Act when it ruled on *Pensacola Telegraph Company v. Western Union Telegraph Company* in 1878 (1877).

The precedent from *Pensacola Telegraph Company v. Western Union Telegraph Company* inspired courts to grant landholders the right to breach exclusive contracts with a telegraph company. An exclusive contract with a telegraph company is a promise by the landholder to not permit any other telegraph company to construct a telegraph line

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<sup>12</sup> This interpretation of the act was later upheld in 1878 by the United States Supreme Court (*Pensacola Telegraph Company v. Western Union Telegraph Company*, 1877).

<sup>13</sup> The exception being the state of California where state courts ruled a foreign telegraph company that acceded to the 1866 Post Roads Act could condemn right of way under California state laws (Cooke 1920, p. 34, 47).

upon the landholder's land. The Federal Circuit Court of Indiana ruled *Pensacola Telegraph Company v. Western Union Telegraph Company* implies that any contract, be it private or public (government franchise), could not be used to prevent someone who acceded to the terms of the 1866 Post Roads Act from constructing, maintaining, and operating a telegraph line (*Western Union Telegraph Company v. American Union Telegraph Company, et al.*, 1879). The practical result was that courts refused to uphold an exclusive contract when a land owner breached it by authorizing a different telegraph company that had acceded to the 1866 Post Roads Act to erect telegraph facilities upon the land owner's property.

### **2.3.3 Constraint of State and Municipal Entry Barriers by Federal Preemption**

The courts' interpretation of the 1866 Post Roads Act destroyed the ability of municipalities and states to exclude telegraph companies from operating within their territory. A requirement to hold a corporate charter from the state to operate within it, or a requirement to secure a franchise from a state or a municipality to operate within their territory enabled states and municipalities to exclude telegraph companies (Scott and Jarnagin 1868, pp. 7-8).<sup>14</sup> In some cases, government franchises explicitly granted an exclusive right to provide particular telegraph services or the exclusive right to provide all telegraph services in particular geographical areas.<sup>15</sup>

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<sup>14</sup> A franchise is permission to operate a business, such as a telegraph company, within a geographical area, possibly for a limited period of time.

<sup>15</sup> Examples: The state of California granted an exclusive right to the California Telegraph Company to serve a series of cities, including San Francisco and Sacramento, along a specific route (California State

The 1866 Post Roads Act did not grant a federal franchise per se, the act protected telegraph companies from costly franchises by allowing telegraph companies to select the most favorable state franchise (Joyce and Joyce 1907, p. 53).<sup>16</sup> The act provided privileges to a telegraph company registered in any state of the United States. This meant a telegraph company still had to incorporate in a state and acquire a state franchise. But once a company had acquired a state franchise, the company did not need any additional franchises to operate anywhere else within the United States.

Losing the ability to require a local telegraph franchise limited the ability of states and municipalities to regulate the telegraph industry. Prior to the 1866 Post Roads Act states and municipalities were able to implement regulations as a condition of being awarded a telegraph franchise. If a telegraph company violated regulations that were conditional for it to accept to receive its franchise then the franchise could potentially be revoked and the company forced to halt operations (Joyce and Joyce 1907, p. 379).

States and municipalities could use franchise regulations to impose different costs on different telegraph companies, and were not required to have a general law granting a telegraph franchise to all companies that met its conditions. Franchises could be

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Telegraph Co. v. Alta Telegraph Co. 1863; Scott and Jarnagin 1868, pp. 10-11). The state of Nevada granted a franchise to John Watson that stated no other competitor within Nevada could operate between two cities Watson served as long as Watson's telegraph company connected Humboldt County to San Francisco (Laws of the Territory of Nevada Passed at the Third Regular Session of the Legislative Assembly Chap. LXXII 1864; Western Union Telegraph Co. Appellant v. Atlantic and Pacific State Telegraph Co., Respondent 1869). The state of Maine granted the American Telegraph Company an exclusive franchise to land cables to handle telegraph messages destined to and from Europe (Blondheim 1994, p. 114; Wolff 2013, p. 40). Note that by 1866 Western Union had acquired the franchises owned by the California Telegraph Company, John Watson, and the American Telegraph Company (Reid 1886, p. 209, 503).

<sup>16</sup> Although Simon G. Croswell considered the 1866 Post Roads Act a grant of a federal franchise in his book, A Treatise on the Law Relating to Electricity (1895), as did Archibald H. McMillian in his book, Telephone Law (1908, p. 47).

negotiated on a case by case basis, with each case containing its own set of regulations. Theoretically, one company might be able to only operate in six counties with no price regulations while another company may operate statewide and be required to have its prices approved by a local price board.<sup>17</sup> With the federal grant to operate from the 1866 Post Roads Act, telegraph companies no longer needed to consent to local regulations in order to acquire a franchise from every state or municipality where they operated.

The 1866 Post Roads Act did not exempt telegraph companies from all state and municipal regulations. States and municipalities could use their police powers to impose regulations (Jones 1916, p. 63; Cook 1920, p. 77). Police powers enabled states and municipalities to enforce regulations on the height of telegraph poles, the placement of telegraph poles, the removal of poles/wires deemed to be a nuisance, and the requirements that telegraph lines be laid underground (Jones 1916, pp. 63-64). Unlike franchise regulations, police powers were always general regulations that applied to all telegraph companies operating in a municipality or a state. The 1866 Post Roads Act did not prevent states from conveying some privileges that were only received by domestic telegraph companies. Many states only allowed domestic telegraph companies to use eminent domain to acquire right of way (Jones 1916, p. 175).<sup>18</sup>

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<sup>17</sup> Examples of different requirements for different franchise holders can be found in the telephone industry, which faced similar state regulations as telegraph companies but did not qualify to benefit from any of the provisions in the 1866 Post Roads Act (*City of Richmond v. Southern Bell Telephone & Telegraph Co.* 1899; Cook 1920, p. 78; Gabel 1994).

<sup>18</sup> A few of the states in 1920 that only allowed domestic telegraph companies to use eminent domain to acquire land included: Colorado, Ohio, Illinois, Pennsylvania, and Vermont (*Union Pacific Railroad Company v. Colorado Postal Telegraph-Cable Company* 1902; *Western Union Telegraph Company v. Pennsylvania Railroad Company* 1904; *Western Union Telegraph Company of Illinois, Appellant, v. The Louisville and Nashville Railroad Company et al. Appellees* 1915; Cook 1920, pp. 34-46).

### **2.3.4 Evidence of Enforcement of the 1866 Post Roads Act**

Unlike recent attempts at preemption, local governments were highly unsuccessful at evading the 1866 Post Roads Act. Contemporary local governments continue to defy the federal government's efforts to use the 1996 Telecommunication Act and the 1992 Cable Act to preempt local telecommunication franchise entry barriers (Hazlett 2007). Local governments find technical ways to comply with the laws without complying with the spirit of the laws. These acts prohibited municipalities from granting an exclusive franchise to a cable company, but they did not state how long a municipality had to take to process a company's application for a franchise (Lyons 2010, pp. 408-409). Verizon reported that out of the 113 franchise applications waiting for approval in March 2005 only 10 were approved by March 2006 (Lyons 2010, p. 409). In response to municipal delay tactics, the FCC issued new guidelines in 2007 that capped the time municipalities had to approve a new franchise at 60 days for companies already holding right of way access and 6 months for companies yet to secure right of way access (Lyons 2010, p. 410).

State and municipal efforts to circumnavigate the 1866 Post Roads Act were hindered by the courts' ability to grant telegraph companies the right to operate a telegraph network. If a state or municipality tried to enforce either an exclusive franchise for a single company or the requirement to acquire a state or municipal franchise, courts would instruct telegraph companies to ignore these since they were granted the right to "construct, maintain, and operate" a telegraph network by the federal government (14 USC 221, 1863-1867, *Western Union Telegraph Company v. City of Richmond* 1909;

Joyce and Joyce 1907, pp. 126-127; Cook 1920, p. 67, 69, 76). Florida provided the Pensacola Telegraph Company an exclusive franchise within its corporate charter to serve the City of Pensacola, Florida (*Pensacola Telegraph Company v. Western Union Telegraph Company*, 1877). When Western Union, who had acceded to the terms of the 1866 Post Roads Act, began construction of its own telegraph line to Pensacola in 1874, the Pensacola Telegraph Company sought an injunction to prevent its completion and operation. Upon appeal to the United States Supreme Court, the court ruled Western Union had a federal right from the 1866 Post Roads Act to operate the telegraph line and refused to grant an injunction to prevent its construction and operation.

Courts granted telegraph companies permission to build and operate when states or municipalities used bureaucratic procedures or regulations to avoid complying with the 1866 Post Roads Act (Cook 1920, p. 69). The Town of Essex attempted to exclude the New England Telegraph company from continuing to operate within the town by refusing to grant the company a construction permit to repair its telegraph lines (*New England Telegraph Co. of Massachusetts v. Town of Essex* 1913; *Town of Essex v. New England Telegraph Co. of Massachusetts* 1916; Cook 1920, p. 69). Federal courts ruled that the attempt to use the construction permitting process to exclude a telegraph company violated the right to “construct, maintain, and operate” a telegraph line granted in the 1866 Post Roads Act and permitted the company to repair their telegraph lines (14 USC 221, 1863-1867). A county in Georgia attempted to exclude Postal Telegraph-Commercial Cable from operating along a road by ordering the removal of its poles that were in the center of a road after the county widened it (*Carver v. The State* 1912). A

Georgia court of appeals ruled that the 1866 Post Roads Act protected the company's right to operate telegraph lines alongside the road and that it was within the company's rights to relocate its poles alongside the road when the county refused to designate a new location for the poles.

Telegraph company employees were protected from state laws that were declared in violation of the 1866 Post Roads Act. If states or municipalities arrested telegraph employees for breaking laws that courts ruled violated the 1866 Post Roads Act then courts would halt prosecution and secure their release from prison (Cook 1920, p. 67, 180). In 1891 a foreman of Postal Telegraph-Commercial Cable was arrested for constructing a telegraph line along a post road in Colleton County, South Carolina (*Ex parte Conway* 1891). A Federal Circuit Court ordered the county to drop charges and release the foreman because Postal Telegraph-Commercial Cable was granted the right to construct telegraph lines along post roads by the 1866 Post Roads Act. In a similar case, a county in Georgia was ordered by the Georgia Court of Appeals to release a Postal Telegraph-Commercial Cable employee who relocated a telegraph line the court deemed was protected by the 1866 Post Roads Act instead of removing it as demanded by the county (*Carver v. The State* 1912).

#### **2.4.1 Estimating Cost from Regulations**

As shown earlier in Figure 2.1, the cost of connecting two destinations by telegraph was affected by state and municipal entry barriers between the destinations. To put in context the potential cost created by the entry barriers preempted by the 1866 Post

Roads Act, I constructed two counterfactuals. Counterfactual one estimates how many additional pole miles it would take to geographically circumnavigate an area with high entry barriers in 1889 and 1911. Counterfactual two estimates the potential revenue lost to help offset the sunk cost of constructing a telegraph network between two destinations if a telegraph company was denied the opportunity to provide telegraph service to cities along the route in 1904 and 1908.

#### **2.4.2 Cost of Circumventing Geographically Onerous Regulations**

In this section I provide estimates in Tables 2.1 and 2.2 of how many additional miles of telegraph poles would be needed to circumnavigate a potential state with high entry barriers. Sometimes the lowest cost option to deal with an entry barrier is to go around the entry barrier. Figure 2.2 shows two routes to connect the star destinations. The direct route is the shortest route to construct. The direct route also crosses through the territory of a government with high entry barriers, indicated with a shaded box. The entry barriers in the shaded box may be high enough that the most economical route for a telegraph company is to construct a longer indirect route that avoids crossing the government indicated in the gray box.

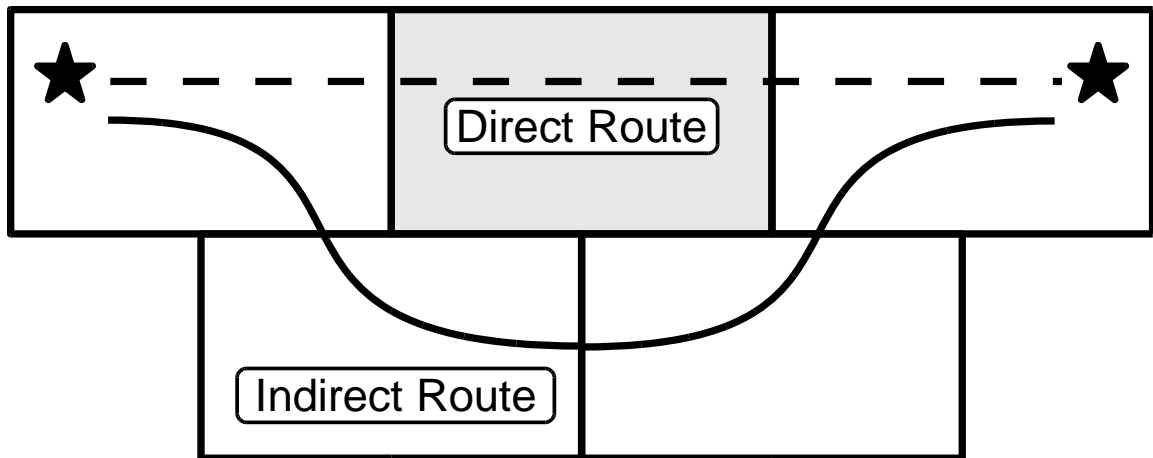


Figure 2.2: Circumnavigating Telegraph Entry Barriers

Note: Stars represent destinations sending and receiving telegrams. The dotted and solid lines are two different routes a telegraph company could use to construct its telegraph wires. The boxes represent a political jurisdiction, be it a U.S. state or municipality. If costs from franchising regulations within the shaded box were high enough, a telegraph company might elect to use an indirect route to connect destinations. An extreme example of cost for a telegraph company is when a political jurisdiction grants an exclusive franchise to a different telegraph company.

Circumnavigating regulation is not an unfathomable idea for the telegraph industry. States and municipalities have granted exclusive contracts to single telegraph companies. Atlantic and Pacific Telegraph desired to cross the state of Nevada to connect California (Western Union Telegraph Co., Appellant, v. Atlantic and Pacific State Telegraph Co., Respondent 1869). Their plan to cross the state was delayed because the state of Nevada had granted an exclusive franchise to Western Union to serve California.<sup>19</sup> Atlantic and Pacific Telegraph challenged the legality of the franchise in

<sup>19</sup> The state statute for the franchise Nevada awarded Western Union an exclusive franchise to connect the state to particular cities in California and once that was completed, further awarded Western Union an exclusive franchise on all cities it connected in Nevada (Laws of the Territory of Nevada Passed at the Third Regular Session of the Legislative Assembly Chap. LXXII 1864). The Nevada Supreme Court described the franchise as being exclusive for the entire state in its ruling in the case Western Union Telegraph Co., Appellant, v. Atlantic and Pacific State Telegraph Co., Respondent (1869).

the Nevada State Supreme Court. While the court ruled that a company who acceded to the terms of the 1866 Post Roads Act could operate anywhere within the state, it also ruled a telegraph company that did not accede to the terms of the act was barred from infringing on Western Union's exclusive franchise. This ruling implies that prior to the 1866 Post Roads Act the only way to reach California after the state granted an exclusive franchise was to secure a route around the state of Nevada.<sup>20</sup>

To estimate the cost of circumnavigating the state of Nevada, I estimate how many additional miles of telegraph poles are needed to connect San Francisco with Denver, Colorado and Omaha, Nebraska in 1911 and 1889. Alternative routes are constructed by finding the shortest route possible along the United States rail network using nineteenth century GIS rail maps assembled by Jeremy Atack (2014A, 2014B).<sup>21</sup> Along railroads were the lowest cost routes to construct a telegraph network (Griswold *et al.* 1930; Western Union 1934; Nonnenmacher 1996; Wolff 2013, p. 204, 247). Railroad contract costs were relatively low because a single contract acquired hundreds of miles of right of way. Shorter telegraph poles could be used along railroads versus along roads since there were fewer instances where people and vehicles needed to go underneath the

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<sup>20</sup> The United States Telegraph Company built a competing telegraph line across the state of Nevada prior to the 1866 Post Roads Act (Reid 1879, p. 521; Thompson 1947, p. 404; Wolff 2013, p. 86). It was able to cross Nevada in spite of Nevada's exclusive franchise granted to Western Union because the federal government granted the United States Telegraph Company a federal franchise to connect particular territories west of the Mississippi River in the "Idaho Act" (Statutes at Large, Chapter 220, 38<sup>th</sup> Congress 1<sup>st</sup> Session; Thompson 1947, p. 404; Wolff 2013, p. 76). The United States Telegraph Company merged with Western Union in 1866 (Reid 1879, p. 525).

<sup>21</sup> To learn more about Jeremy Atack's GIS maps of the United States railroad network see his article "On the Use of Geographic Information Systems in Economic History: The American Transportation Revolution Revisited" (2013).

wires. Transportation costs for telegraph construction were lower along railways because material could be rolled directly off railcars for construction.

Figure 2.3 below illustrates the shortest routes along railways between Denver, Colorado and San Francisco, California in 1889. Figure 2.4 below illustrates the shortest routes along railways between Omaha, Nebraska and San Francisco, California in 1911. In both cases, the route through Nevada was shorter than the routes around Nevada.

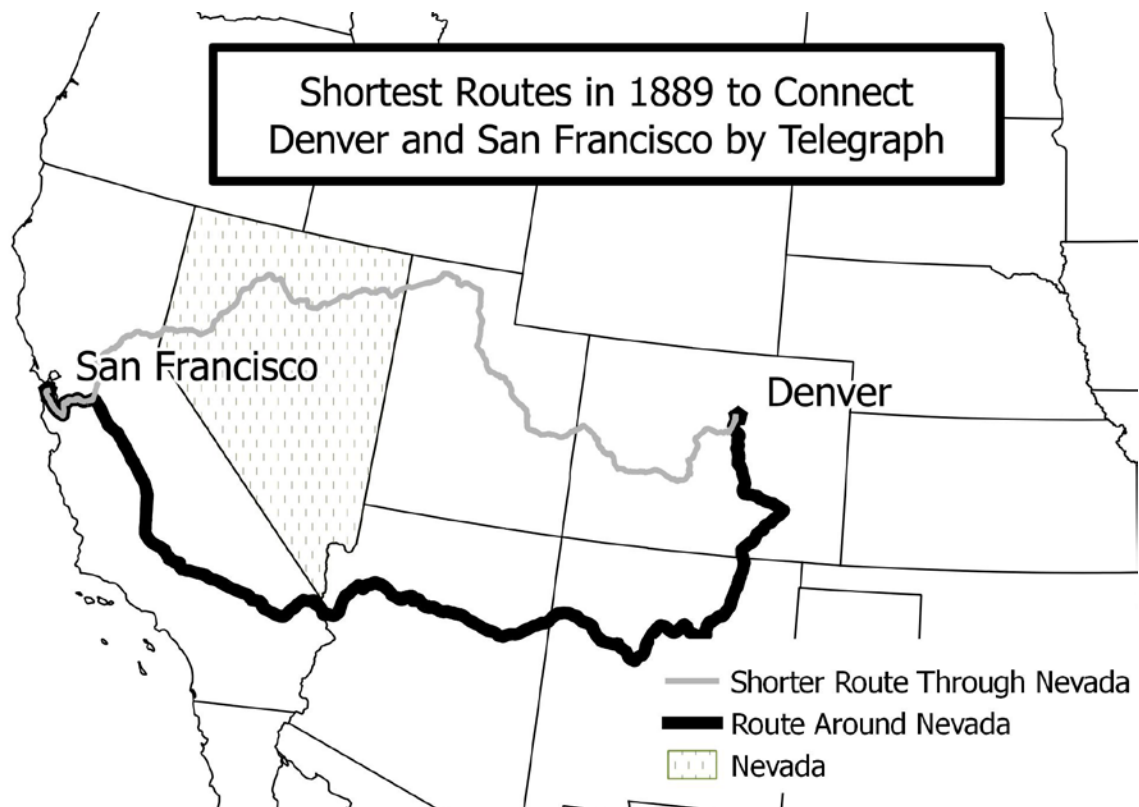


Figure 2.3: Shortest Routes in 1889 to Connect Denver and San Francisco by Telegraph

Note: Distances are calculated by using GIS maps of the United States railroad network assembled by Jeremy Atack (2014B). Telegraph lines are assumed to be built along railroads to take advantage of lower construction and maintenance costs. Map layer provided by Commission for Environmental Cooperation (2010).

Table 2.1: Miles of Pole Lines to Connect Telegraph Lines to San Francisco  
With and Without Permission to Cross Nevada

City	Year	Distance to San Francisco	Distance to San Francisco	Difference
		Crossing Nevada	Excluded from Nevada	
Denver	1911	1481	1655	174
	1889	1583	1739	156
Omaha	1911	1983	2082	99
	1889	2128	2190	62

Note: Distances are calculated by using GIS maps of the United States railroad network assembled by Jeremy Atack (2014A, 2014B). Telegraph lines are assumed to be built along railroads to take advantage of lower construction and maintenance costs. All distances are in miles.

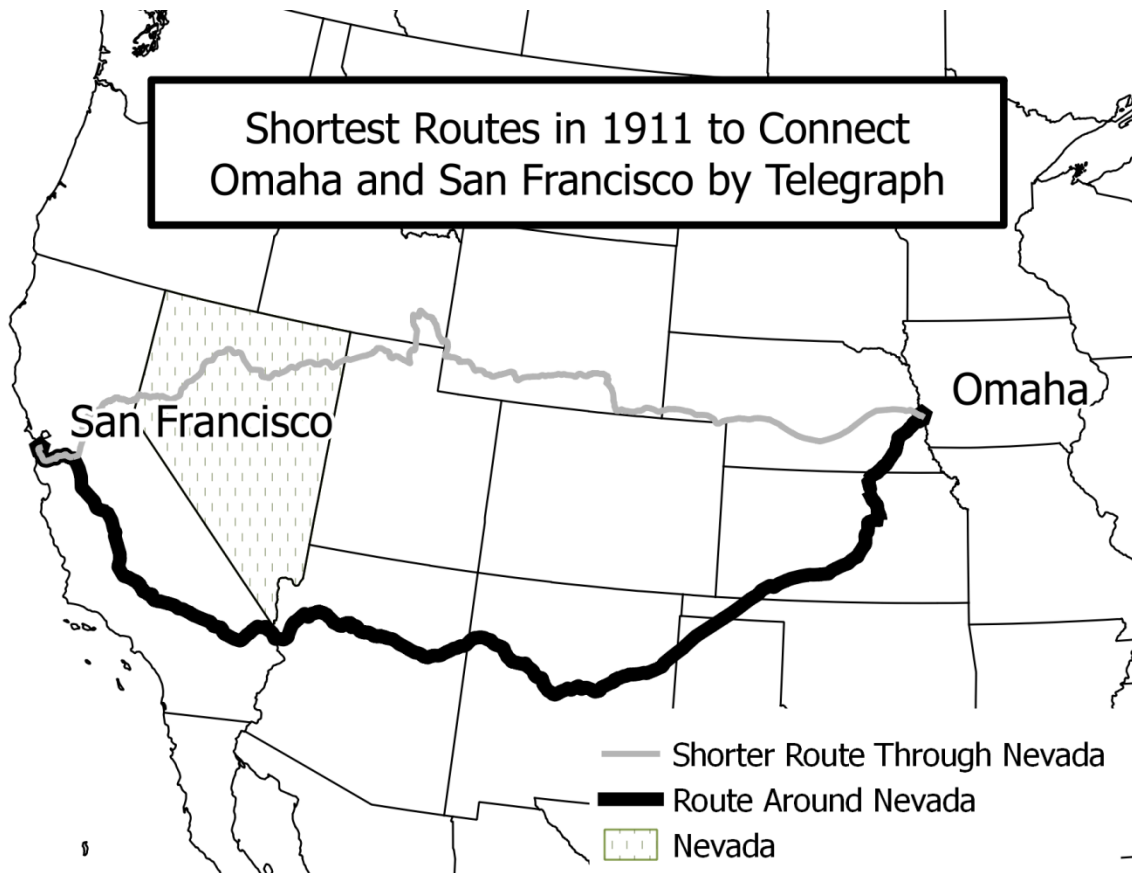


Figure 2.4: Shortest Routes in 1911 to Connect Omaha and San Francisco by Telegraph

Note: Distances are calculated by using GIS maps of the United States railroad network assembled by Jeremy Atack (2014A, 2014B). Telegraph lines are assumed to be built along railroads to take advantage of lower construction and maintenance costs. Map layer provided by Commission for Environmental Cooperation (2010).

Table 2.1 estimates the pole mileage increase incurred by telegraph companies connecting Denver and Omaha to San Francisco if they were excluded from Nevada. As the rail network expanded between 1889 and 1911, the difference in mileage for circumnavigating Nevada increased from Denver and Omaha. The results in Table 2.1 understate the severity of a telegraph company being excluded from operating across Nevada in the 1860's and 1870's. The first American transcontinental railroad connected San Francisco with the Eastern portion of the United States in 1869 by traversing through Nevada. An alternative route was not available for telegraph companies until the completion of the second transcontinental railroad that bypassed Nevada in 1881. That meant without the 1866 Post Roads Act, an exclusive franchise from the state of Nevada was in essence an exclusive franchise to connect the West Coast to the rest of the United States until 1881.

Without the 1866 Post Roads Act other states, such as Maryland, might have emulated Nevada and erected similar entry barriers. Using the same information and assumptions used to construct Figure 2.3 and Figure 2.4, I estimate how many additional pole miles it would take to connect Washington, D.C. to Chicago and New York City if the state of Maryland barred a telegraph company from crossing it. Figures 2.5 and 2.6 trace the routes a telegraph company would transverse to connect Washington to Chicago and New York in 1911. Table 2.2 contains the total miles to construct each route.

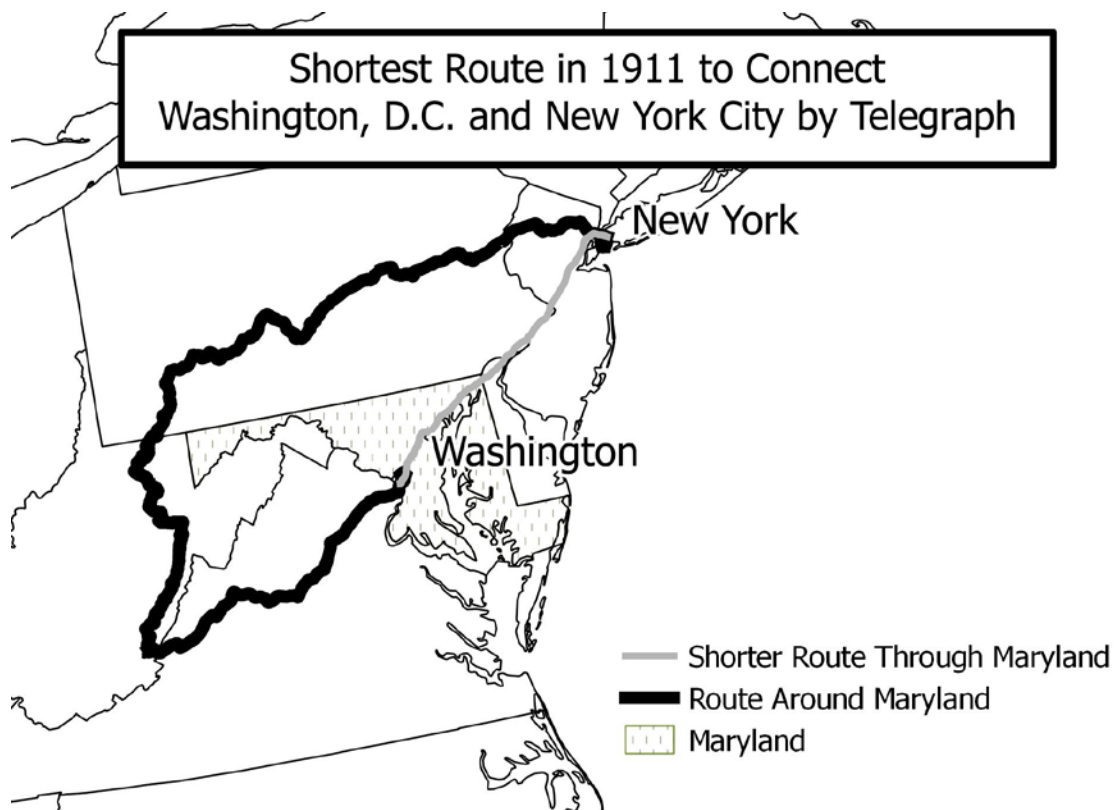


Figure 2.5: Shortest Route in 1911 to Connect Washington, D.C. and New York City by Telegraph

Note: Distances are calculated by using GIS maps of the United States railroad network assembled by Jeremy Attack (2014A). Telegraph lines are assumed to be built along railroads to take advantage of lower construction and maintenance costs. Map layer provided by Commission for Environmental Cooperation (2010).

Table 2.2:  
Miles of Pole Lines to Connect Telegraph Lines to Washington, D.C.  
With and Without Permission to Cross Maryland

City	Year	Distance to Washington, D.C. Crossing Maryland	Distance to Washington, D.C. Excluded from Maryland	Difference
New York	1911	230	961	731
Chicago	1911	744	844	100

Note: Distances are calculated by using GIS maps of the United States railroad network assembled by Jeremy Attack (2014A). Telegraph lines are assumed to be built along railroads to take advantage of lower construction and maintenance costs. All distances are in miles.



Figure 2.6: Shortest Route in 1911 to Connect Washington, D.C. and Chicago

Note: Distances are calculated by using GIS maps of the United States railroad network assembled by Jeremy Attack (2014A). Telegraph lines are assumed to be built along railroads to take advantage of lower construction and maintenance costs. Map layer provided by Commission for Environmental Cooperation (2010).

In both cases, the route around Maryland is longer than the route through Maryland. Exclusion from Maryland would be ominous for any telegraph company desiring to compete on routes connecting Washington to the Northeast. Any route to the Northeast would head southwest to West Virginia to get around Maryland before backtracking north towards the Northeast. In the case of connecting New York City to Washington, this would require 700 additional pole miles, an increase of over 3 times the pole miles needed to reach New York City by way of Maryland.

### 2.4.3 Potential Revenue Lost from Exclusion by Municipalities

In this section I provide estimates on the potential revenue lost from municipalities erecting entry barriers. One way a telegraph company can offset part of the sunk cost of constructing a telegraph network between two destinations is to serve other locations along the route that will earn positive net earnings.

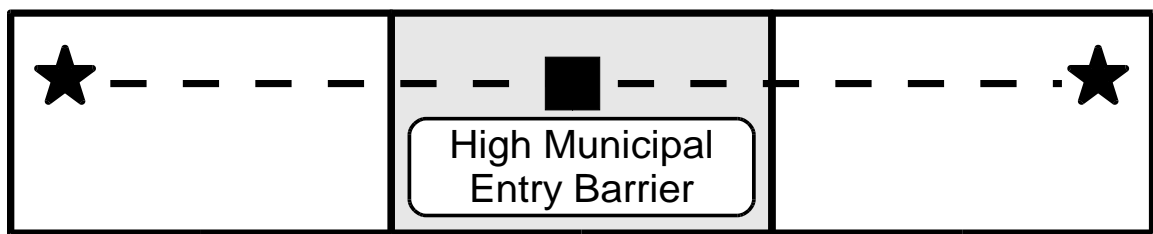


Figure 2.7: High Municipal Telegraph Entry Barrier

Note: Stars represent destinations sending and receiving telegrams. The dotted line is a route a telegraph company could use to construct its telegraph wires. The solid black square in the gray box represents a municipality a telegraph company is barred from serving while connecting to the star destinations. The inability to provide service to the square municipality prevents the telegraph company from using the net earnings from the square municipality to contribute to covering the sunk cost of constructing the telegraph line serving the star destinations.

In Figure 2.7 a telegraph company desires to connect the two destinations indicated by the stars. Between the two destinations in the gray rectangle is a square municipality that has erected high entry barriers, such as an exclusive franchise to a different telegraph company, making it uneconomical for an entrant to provide telegraph services to the square municipality. Since this municipal entry barrier decreases the potential revenue to cover the sunk cost of connecting the star destinations, it also is as an entry barrier for connecting the star destinations.

Granting exclusive municipal franchises was not unheard of in the telegraph industry. The state of Florida attempted to grant an exclusive franchise to a single company to serve the city of Pensacola (*Pensacola Telegraph Company v. Western Union Telegraph Company*, 1877).<sup>22</sup> The state of California granted the California State Telegraph Company an exclusive franchise to operate a telegraph line between a series of cities (*California State Telegraph Co. v. Alta Telegraph Co.* 1863; Reid 1879, p. 500). The Alta Telegraph Company violated this franchise by paralleling the California State Telegraph Company's network. The California State Supreme court imposed an injunction that ordered the Alta Telegraph Company to cease operating its telegraph offices paralleling the California State Telegraph Company's telegraph lines.

Using internal Western Union data from the early twentieth century, I construct estimates presented in Tables 2.3 through 2.6 on the total potential receipts Postal Telegraph, Western Union's largest competitor starting in the late nineteenth century, would have forgone if it was excluded from serving some of the cities along its network. Western Union maintained a series of statistical notebooks to provide information to Western Union executives. Some of the statistical notebooks are preserved in the Western Union Archive at the Smithsonian's Lemelson Center for the Study of Invention & Innovation (Western Union 1909).

One notebook contains the receipts Western Union earned at its 17 highest earning offices for the year 1904 and its 45 highest earning offices for October 1908.<sup>23</sup>

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<sup>22</sup> This was an attempt because Florida granted the exclusive franchise after the passage of the 1866 Post Roads Act, so Western Union used the 1866 Post Roads Act to enter the market.

<sup>23</sup> The complete list of offices and their earnings can be found in Appendix 1 and Appendix 2.

The 17 highest receipt grossing offices accounted for 42% of Western Union's receipts in 1904 and the 45 highest receipt grossing offices accounted for roughly 59% of Western Union's receipts in October 1908.<sup>24</sup> In the same notebook, Western Union calculated that 68.9% of their receipts from New York City and Chicago were from messages destined to locations also served by Postal Telegraph-Commercial Cable (Western Union 1909). My Postal Telegraph-Commercial Cable receipt estimates assume this percentage is true for all cities served by Postal Telegraph-Commercial Cable and Western Union.

I calculate two estimates for the potential receipts lost if excluded from each marketplace: one assuming Postal Telegraph-Commercial Cable captured 15% revenue in the market place and another assuming it captured 25%.<sup>25</sup> The United States Census estimated that Postal Telegraph-Commercial Cable captured at most throughout its history 25% of the telegraph market revenue (United States Census Bureau 1975, p. 779). Supporting the possibility that Postal Telegraph-Commercial Cable might have earned 25% of all telegraph revenue is a United States Senate report that noted Postal Telegraph-Commercial Cable handled around 26% of all messages and Western Union the remaining 84% in 1908 (Senate Document 1909, p. 55).<sup>26</sup> The more conservative figure of 15% comes from an Interstate Commerce Committee case where it was reported Postal

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<sup>24</sup> To estimate total monthly receipts for Western Union in October 1908, I divide the total 1908 fiscal year revenue for messages by 12.

<sup>25</sup> Appendix 3 formally documents the steps I use to estimate Postal Telegraph-Commercial Cable's revenue in each city in which it competes with Western Union. Appendix 4 and Appendix 5 contain the estimates of revenue earned in each city by Postal Telegraph-Commercial Cable.

<sup>26</sup> The report stated that Postal Telegraph-Commercial Cable handled 22,130,000 messages in 1908 and Western Union handled 62,371,287. This excludes messages sent on leased wires and messages handled for railroad companies.

Telegraph-Commercial Cable earned 15% of telegraph revenue in 1918 (Interstate Commerce Commission 1918, p. 735, Hochfelder 2012, p.165).

Tables 2.3 through 2.6 identify two destinations served by Postal Telegraph-Commercial Cable and some of the cities along the routes between them. The cities and routes were identified from the Postal Telegraph-Commercial Cable 1904 and 1906 tariff books held at the New York Public Library. Each book contains a list of all locations served by Postal Telegraph-Commercial Cable and a map of the company's telegraph network.

Table 2.3: Postal Telegraph-Commercial Cable Estimated 1904 Receipts  
New York City to San Francisco-Northern Route

Terminus of Route	Estimate of Postal Telegraph Receipts at Terminus	Cities Along Route	Estimated Receipts of Cities Along Route	Estimated Receipts of Cities Along Route Relative to Aggregate Terminus Cities
New York City	\$286,234.27	Buffalo	\$22,794.88	6.6%
To		Cleveland	\$23,203.78	6.8%
San Francisco	\$57,043.73	Chicago	\$192,957.73	56.2%
Aggregated	\$343,278.00		\$238,956.40	69.6%

Note: Route is based on route used by Postal Telegraph-Commercial Cable from its 1904 Tariff Book. Postal Telegraph had two routes between New York and San Francisco. This table is based on the northern route. Receipts for Postal Telegraph-Commercial Cable are estimated from Western Union receipts in Appendix 1 using the assumption it captured 15% of receipts in the telegraph market. See Appendix 3 for full details of how the table was calculated and Appendix 4 for complete list of projected Postal Telegraph-Commercial Cable city receipts.

Table 2.3 and Table 2.4 are constructed from annual receipts for 1904. Table 2.3 uses the 15% estimates to calculate receipts along the northern route between New York

City and San Francisco.<sup>27</sup> If Postal Telegraph-Commercial Cable was excluded from Buffalo, Cleveland, and Chicago, it would be equivalent to losing almost 70% of the receipts earned in New York City and San Francisco. Table 2.4 uses the 25% estimate to calculate the receipts along the route between New York City and Washington D.C. If Postal Telegraph-Commercial Cable was barred from serving Philadelphia and Baltimore, the loss in receipts would equal almost 25% of the receipts collected in New York City and Washington, D.C.

Table 2.4: Postal Telegraph-Commercial Cable Estimated 1904 Receipts  
New York City to Washington D.C.

Terminus of Route	Estimate of Postal Telegraph Receipts at Terminus	Cities Along Route	Estimated Receipts of Cities Along Route	Estimated Receipts of Cities Along Route Relative to Aggregate Terminus Cities
New York City	\$540,664.73	Philadelphia	\$100,068.29	17.1%
To		Baltimore	\$45,968.70	7.8%
Washington, D.C.	\$45,937.93			
Aggregated	\$586,602.66		\$146,036.99	24.9%

Note: Route is based on route used by Postal Telegraph-Commercial Cable from its 1904 Tariff Book. Receipts for Postal Telegraph-Commercial Cable are estimated from Western Union receipts in Appendix 1 using the assumption it captured 25% of receipts in the telegraph market. See Appendix 3 for full details of how the table was calculated and Appendix 4 for complete list of projected Postal Telegraph-Commercial Cable city receipts.

<sup>27</sup> Postal Telegraph-Commercial Cable also had a southern route that connected the two cities.

Table 2.5: Postal Telegraph-Commercial Cable Estimated October 1908 Receipts  
Cincinnati to New Orleans

Terminus of Route	Estimate of Postal Telegraph Receipts at Terminus	Cities Along Route	Estimated Receipts of Cities Along Route	Estimated Receipts of Cities Along Route Relative to Aggregate Terminus Cities
Cincinnati	\$8,881.67	Louisville	\$4,124.67	23.5%
To		Nashville	\$1,928.33	10.9%
New Orleans	\$8,741.67			
Aggregated	\$17,623.33		\$6,071.00	34.4%

Note: Route is based on route used by Postal Telegraph-Commercial Cable from its 1906 Tariff Book. Receipts for Postal Telegraph-Commercial Cable are estimated from Western Union receipts in Appendix 2 using the assumption it captured 25% of receipts in the telegraph market. See Appendix 3 for full details of how the table was calculated and Appendix 5 for complete list of projected Postal Telegraph-Commercial Cable city receipts.

Table 2.5 and Table 2.6 are constructed with receipts for the month of October in 1908.

Table 2.5 uses the 25% estimates to calculate receipts along the route between Cincinnati and New Orleans. Losing the receipts from Louisville and Nashville would be the equivalent of losing 34% of the receipts earned from Cincinnati and New Orleans. Table 2.6 uses the 15% estimates to calculate receipts along the southern route between New York City and San Francisco.<sup>28</sup> Pittsburgh, Indianapolis, St. Louis, and Kansas City were adjacent to the route. If Postal Telegraph-Commercial Cable was prevented from serving these cities the decline in receipts would be almost 40% of the total receipts from New York City and San Francisco.

<sup>28</sup> Postal Telegraph-Commercial Cable also had a northern route that connected the two cities.

Table 2.6: Postal Telegraph-Commercial Cable Estimated October 1908 Receipts  
New York City to San Francisco-Southern Route

Terminus of Route	Estimate of Postal Telegraph Receipts at Terminus	Cities along Route	Estimated Receipts of Cities Along Route	Estimated Receipts of Cities Along Route Relative to Aggregate Terminus Cities
New York City	\$40,091.82	Pittsburg	\$4,078.24	8.6%
To		Indianapolis	\$2,116.94	4.5%
San Francisco	\$7,313.65	St. Louis	\$7,329.71	15.5%
		Kansas City	\$5,242.76	11.1%
Aggregated	\$47,405.47		\$18,767.65	39.6%

Note: Route is based on route used by Postal Telegraph-Commercial Cable from its 1906 Tariff Book. Postal Telegraph had two routes between New York and San Francisco. This table is based on the northern route. Receipts for Postal Telegraph-Commercial Cable are estimated from Western Union receipts in Appendix 2 using the assumption it captured 15% of receipts in the telegraph market. See Appendix 3 for full details of how the table was calculated and Appendix 5 for complete list of projected Postal Telegraph-Commercial Cable city receipts.

The estimates underestimate the damage Postal Telegraph-Commercial Cable would suffer if municipal franchising excluded it from particular cities. The estimates presented in Tables 2.3 through 2.6 and Appendix 4 and 5 likely underestimate the share of revenue Postal Telegraph-Commercial Cable earned in large cities. For much of its history Postal Telegraph-Commercial Cable did not compete for the entire United States telegraph market, instead, it concentrated its network to serve the larger commercial cities (Hochfelder 2012, p. 39). So for Postal Telegraph-Commercial Cable to have captured 15% to 25% of the overall revenue for the United States telegraph market it needed to capture an even larger percentage of the revenue earned in large commercial cities. Total reductions in receipts in Tables 2.3 through 2.6 are further underestimated because the estimates do not account for the expected decline of messages sent on Postal Telegraph-Commercial Cable telegraph lines from cities it continued to serve. Customers could not

use Postal Telegraph-Commercial Cable's network to send a telegram if it did not service the final destination.

## **2.5 Conclusion**

The 1866 Post Roads Act exemplifies politicians' use of the central government to eliminate entry barriers erected by local governments. Telegraph entry barriers enacted by states and municipalities not only affected entry into their local markets, but were also trade barriers that increased entry barriers for neighboring markets. Trade barriers by local governments reduce the economic gains of a common market and undermine market-preserving federalism (Hazlett 2003; Weingast 1995).

The 1866 Post Roads Act was resilient to efforts by states and municipalities to evade preemption by the central authority. Unlike federal preemption of the cable industry in the late twentieth century, courts were empowered by the act to remove entry obstructions erected by local governments, ensuring telegraph companies were able to operate. Without the protection of the 1866 Post Roads Act, new telegraph companies would have been deterred by higher sunk costs. Estimates assembled using early twentieth century records specify the potential reduction in revenue caused by municipal entry barriers that would have been available to offset the sunk cost of telegraph construction. Projections of alternative telegraph routes to circumnavigate state entry barriers reveal the additional pole miles it would take to circumnavigate odious state entry barriers.

Devoid of central government protection, telecommunication companies will face local entry barriers. States and municipalities erected telegraph entry barriers prior to the 1866 Post Roads Act. They attempted to erect telegraph entry barriers after the passage of the act and imposed entry barriers upon early telephone companies not protected by the act (Gabel 1994; John 2010, pp. 278-279). State and municipalities continue to impose entry barriers on telephone, cable, and broadband companies in the late twentieth century into the twenty-first century (Hazlett 2007; Lyons 2010). The 1866 Post Roads Act is a successful model on how the central government can safeguard the benefits of telecommunication competition from local governments.

### **Chapter 3:**

## **Federal Preemption and Competition in the Post-1866 United States Telegraph Market**

The United States federal government preempted anti-competitive state and municipal telegraph regulations when the 1866 Post Roads Act was enacted. The act granted a de facto national franchise to build and operate a telegraph system anywhere in the United States to any telegraph company organized within any state. The act also outlawed certain types of contracts that had prohibited other companies from acquiring telegraph right of way access. Rival companies took advantage of the dismantling of local entry barriers to enter the telegraph market and compete with Western Union. Chapter 3 presents the first empirical evidence indicating the post-1866 United States telegraph market was contested. The evidence is consistent with the theory that the 1866 Post Roads Act contributed to increasing contestability and consumer welfare.

### **3.1 Introduction**

After the 1866 merger of the three largest telegraph companies in the United States, American politicians questioned if regulation by the federal government would successfully increase competition in the United States telegraph market (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3077, 3428, 3484; Wolff 2013, p. 103-109). Telegraph consolidation meant that an overwhelming majority of locations in the United

States were served by a single company, Western Union. After debating different regulatory responses, the American government settled on a bill, the 1866 Post Roads Act, that imposed a federal regulation that deregulated state telegraph law. States had regulated the United States telegraph industry from around the 1840's (Nonnenmacher 2001B). Legislative supporters hoped the preemption of state telegraph laws would result in an increase in competition by lowering the entry costs to construct a competing telegraph company.

Was the United States telegraph market contestable after the enactment of the 1866 Post Roads Act, a federal regulation that preempted state telegraph laws?<sup>29</sup> I provide new evidence that the post-1866 telegraph market was contested. This evidence is consistent with the claim that the 1866 Post Roads Act increased contestability and is an example of economically efficient preemption.

In the late nineteenth century and early twentieth century, politicians used the federal government to experiment with intrusive national regulations with the stated goal of helping consumers. Before the implementation of these intrusive regulations, politicians experimented with a different type of policy solution to protect consumers from monopolies. The 1866 Post Roads Act deregulated the United States telegraph industry by preempting state regulations. Despite the large sunk costs needed to enter the telegraph market to compete with Western Union, I argue the market was contested after 1866. Competitor pressure reduced Western Union revenue, negatively affected Western Union stock value, and led Western Union to change its telegraph prices.

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<sup>29</sup> For more on the theory of contestable markets see Baumol, Panzar, and Willig's Contestable Markets and the Theory of Industry Structure (1982).

Prior research on the contestability of the post-1866 telegraph market has been limited to historical narratives (Reid 1886; du Boff 1984; John 2010; Hochfelder 2012; Wolff 2013). This paper presents the first empirical evidence that telegraph companies who benefited from the 1866 Post Roads Act exerted competitive pressure on Western Union, the dominant telegraph company in the United States after 1866. To provide empirical evidence I constructed new data sets on Western Union prices, revenues, and locations from rare documents and books located in archives, libraries, antique book dealers, and Google Books.<sup>30</sup>

My findings indicate the 1866 Post Roads Act contributed to the expansion of the United States telegraph network and economic growth by lowering entry barriers. The proliferation of the electric telegraph, like other communication technology, is associated with growth and development of the economy (Field 1992).<sup>31</sup> Telegraph expansion contributed to economic growth by improving coordination over long distances.<sup>32</sup> Lew and Cater (2006) estimated using a gravity model that expansion of the world electric telegraph network doubled international trade in 1910 relative to 1870. The lowering of the cost of entry by the 1866 Post Roads Act increased the threat of new entrants and encouraged the construction of new telegraph capacity by rival telegraph companies. This is consistent with research that suggests the threat of competition historically

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<sup>30</sup> Archives: Western Union Archive at the Smithsonian's Lemelson Center and the United States National Archives, Washington D.C.. Libraries: Library of Congress and New York Public Library.

<sup>31</sup> For examples see Koutroumpis (2009); Gruber and Koutroumpis (2011); and Vu (2011).

<sup>32</sup> The telegraph enabled prices to converge significantly faster between financial markets (Hoag 2006, Sylla *et al.*, 2006). Management used the telegraph to have more direct control over distant company assets (Yates 1989). Coordination of boats and trains by the telegraph increased the utilization of transportation infrastructure (Field 1992; Lew and Cater 2006). Telegraph communication led to better management of inventory and warehouse space (Field 1998). It increased trade by lowering the cost of matching buyers and sellers across distance (Steinwender 2014).

motivated United States telegraph companies to expand their networks and improve service quality to counter potential competitors (Nonnenmacher 1996, 2006).

The chapter is organized as follows. Section 3.2 provides background on the 1866 Post Roads Act and explains why the effect of competition on Western Union is a good proxy for contestability for the entire telegraph industry. Section 3.3 presents a case where Western Union revenue and prices declined when it faced competition from a telegraph company that utilized the 1866 Post Roads Act. Section 3.4 contains an event study that reveals Western Union stock prices significantly declined when American Union Telegraph Company, a competitor who utilized the act, entered the market and significantly increased when they exited the market. Section 3.5 provides evidence that Western Union changed its telegraph pricing strategy nationwide to remain competitive with competing telegraph lines constructed after the enactment of the 1866 Post Roads Act. Section 3.6 concludes the paper.

### **3.2.1 Increased Competition through the 1866 Post Roads Act**

Theoretically, the 1866 Post Roads Act could have increased competition by lowering the cost of new entrance into the telegraph industry. Sidak (2012, p. 11) observes from Hazlett's (2006) work on the regulatory effects of the Telecommunications Act of 1996 that competition in telecommunication comes from "nurturing the development of rival infrastructure." The 1866 Post Roads Act, like parts of The 1996 Telecommunications Act, theoretically lowered the cost of constructing rival

infrastructure by deregulating laws that increased the cost of building, maintaining, and operating a telecommunication network.

The 1866 Post Roads Act granted telegraph firms that acceded to its terms the right to “construct, maintain, and operate” telegraph lines along any “military or post roads” (Field 2001; 14 Stat. 221 1863-1867). Prior to the 1866 Post Roads Act, states had the power to require telegraph companies to acquire a franchise. The act freed telegraph companies from the costly process of acquiring a franchise and protected foreign telegraph companies’ ability to operate across state lines. A telegraph company that accepted the terms of the act and was registered as a telegraph company in a single state was granted the ability to operate across the United States without acquiring a franchise (Joyce and Joyce 1907, p. 111).

The 1866 Post Roads Act was designed to undercut tactics Western Union employed to insulate itself from competition. Senator Sherman of Ohio, a sponsor of the act, was aware of Western Union’s tactics to forestall competition (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3428). Western Union and other large regional telegraph companies, founded prior to the 1866 Post Roads Act, sought ways to increase the cost of entrance by new telegraph companies beyond just the cost of acquiring telegraph patent rights (John 2010, p. 95; Nonnenmacher 1996, p. 134). Tactics embraced by Western Union and other pre-1866 telegraph companies included securing special privileges granted to companies by state legislatures and municipalities, and securing exclusive control over the best telegraph routes (Nonnenmacher 1996, p. 134; John 2010, p. 95).

The 1866 Post Roads Act reduced the ability of telegraph companies with exclusive privileges from blocking new entrance. Courts interpreted the right to “construct, maintain, and operate” telegraph lines to forbid regulations and contracts granting exclusive privileges to a single telegraph company from applying to companies that acceded to the terms of the act (14 USC 221, 1863-1867). For state and municipal governments that meant courts refused to grant injunctions to prevent telegraph companies from competing in areas where state and municipal governments granted an exclusive franchise to a different company (*Pensacola Telegraph Company v. Western Union Telegraph Company*, 1877). For private contracts that meant that courts refused to uphold clauses granting exclusive access to a single telegraph company when a landowner breached the clause by allowing another telegraph company access to their land (*Western Union Telegraph Co v. American Union Telegraph Co. et al.*, 1879; Cook 1920, p. 55; Wolff 2008, p. 521; Reid 1886, p. 584).

### **3.2.2 Economically Efficient Preemption through the 1866 Post Roads Act**

Federal preemption is economically efficient when state laws become trade barriers that produce negative externalities for neighboring states (Hazlett 2003; Weingast 1995). A company’s telegraph system within a state cannot interconnect with other states without passing through neighboring states.<sup>33</sup> Prior to the 1866 Post Roads Act, laws of neighboring states that required telegraph firms to acquire a franchise and

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<sup>33</sup> Nor can state residents receive the increasing benefits of a telegraph system’s network effects from interconnecting with the greater United States without passing through neighboring states (Farrell and Klemperer 2007).

register as a foreign company increased the cost of constructing a telegraph network across neighboring states. In extreme cases, states such as Florida, Maine, Nevada, and California granted types of exclusive franchises that forced competing telegraph companies to find longer, more costly alternative routes to connect neighboring states to their greater United States telegraph network. These higher entry costs created by neighboring states' regulations reduce the contestability of the telegraph market within a state by deterring competing telegraph companies from entering a state to compete.<sup>34</sup> If the 1866 Post Roads Act lowered costs by reducing the negative spillover effects of neighboring state regulations then the act should lower the barriers for new telegraph entry and increase contestability.

### **3.2.3 Indicators of Contestability in Telegraph Market after 1866**

If the 1866 Post Roads Act increased competitive pressure in the telegraph industry then it must increase competitive pressure on Western Union's profits or prices. Due to its national coverage and large share of the telegraph market, any change in the competitive environment of the United States' telegraph industry must be reflected in Western Union. Western Union was the dominant telegraph firm in the United States since at least 1866 (Nonnenmacher 2001B; Hochfelder 2012; Wolff 2013). Western Union handled 92% of all telegraph messages in the United States in 1880 and 73% of all messages in 1907 (United States Census Bureau 1883, 1917; Western Union Telegraph Company 1909).

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<sup>34</sup> The degree of the deterrence of entry from government telegraph regulation was likely higher than just an increase in entrant's total sunk construction costs. David Gabel (1994) provides evidence in "Competition in a Network Industry: The Telephone Industry, 1894-1910," that government entry barriers that hinder entrant construction increased entrants vulnerabilities to predatory pricing by incumbent companies.

From 1866 on it served more locations at any one time than all of its competitors added together. Table 3.1 shows that from the mid-nineteenth century to the early twentieth century Western Union dominated its competitors in terms of physical infrastructure. It had more telegraph offices, covered more miles of land with its telegraph network, and ran more wires than all of its competitors.

Table 3.1: Western Union Infrastructure Compared to Competitors

Year	Telegraph Company	Telegraph Offices	Percent of Telegraph Offices	Miles of Wire	Percent of Miles of Wire	Miles of Poles	Percent of Miles of Poles
1852	Western Union					1,500	8.23%
	All Other Telegraph Companies			23,281		16,735	91.77%
1869	Western Union	3,607	71.72%	104,584	80.00%	73,036	71.34%
	All Other Telegraph Companies	1,422	28.28%	26,111	20.00%	20,937	28.67%
1880	Western Union	9,077	72.56%	233,534	80.19%	110,726	77.45%
	All Other Telegraph Companies	3,433	27.44%	57,678	19.81%	25,081	22.65%
1907	Western Union	24,760	85.21%	1,321,199	83.73%	205,646	85.81%
	All Other Telegraph Companies	4,298	14.79%	256,762	16.27%	34,000	14.19%

Note: Data for 1852 comes from 1853 United State Census. At the time of writing the census report Western Union's line was not operational, but was shortly afterwards. The report contains the poll mile length of the soon to open Western Union route. Data for 1869 comes from 1869 and 1873 Western Union Annual Reports and includes United States and Canada. Data for 1880 comes from 1880 United States Census and is only United States infrastructure. Data for 1907 comes from 1917 United States Census "Census on Electric Industries" (1919) and from the 1907 Western Union Annual Report. Western Union percent of miles of polls may be an overestimate in 1907 and all other companies may be an underestimate by about 1% point.

### 3.2.4 Studying Specific Cases of Post-1866 Competition

This paper highlights specific cases when new competitors challenged Western Union to better identify if the market was contested. Focusing on specific instances of competitors attempting to compete with Western Union reduces the chance of the results being driven by an unidentified variable. Most aggregate data on the United States telegraph industry is too noisy and aggregated to identify the effect of competition.

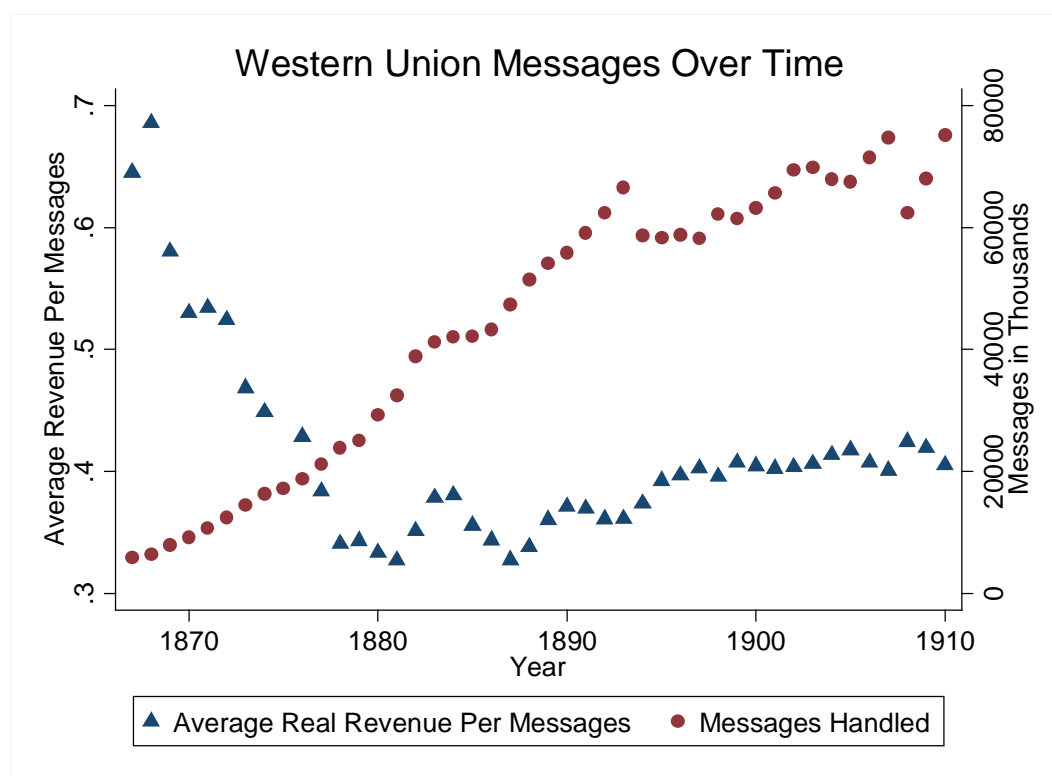


Figure 3.1: Western Union Messages Over Time

Note: Data in Figure 3.1 was collected by the United States Census Department from Western Union's Annual Reports (1975). CPI to convert into 1887 real dollars is from Officer and Williamson (2014). Figure 3.1 does not include messages handled by competitors of Western Union and real revenue per message earned by competitors of Western Union.

For example, the rough estimate of the average Western Union telegraph prices for a message over time as shown in Figure 3.1 cannot be used to pinpoint what drove the changes in prices. The estimate is the average revenue earned per message sent during Western Union's fiscal year from 1867 to 1910. The decline in prices from 1867 to 1880 might be caused by telegraph competition, but it could also be from improvements in telegraph technology. The rise after 1880 is possibly triggered by changes in input costs, or by losses of market share for lower priced local messages to local telephone companies.

The benefit of studying specific cases of competition is that more frequent and disaggregated data sets can be constructed to observe if the post-1866 telegraph market was contestable. Internal revenue by service type, stock prices, and geographically precise telegraph prices paint a more detailed picture of Western Union's operations and of competitor's threats to Western Union. These data sets more precisely connect observations to actions taken by Western Union and its competitors.

### **3.3.1 Competition between Western Union and Postal Telegraph-Commercial Cable**

I provide evidence that competition with Postal Telegraph-Commercial Cable reduced telegraph prices and reduced Western Union revenue. Postal Telegraph incorporated in 1881 (Reid 1886). It was a minor competitor of Western Union until it was transformed into Western Union's largest rival in the late nineteenth and early twentieth century by John Mackay after he acquired it in 1883 (Wolff 2013;

Nonnenmacher 2001A, Reid 1886). Mackay expanded Postal Telegraph's network and combined it with Commercial Cable, a new transatlantic cable company he co-founded with James Gordon Bennett (Wolff 2013). Postal Telegraph-Commercial Cable competed with Western Union in two markets. The Postal Telegraph division fought for domestic telegraph business. Commercial Cable competed with Western Union and its transatlantic cable partners for messages sent between North America and Europe. Commercial Cable operated its main office out of New York City and relied on Postal Telegraph to distribute messages going to and from other American cities across its Atlantic cable.

### **3.3.2 The 1866 Post Roads Act Benefited Postal Telegraph-Commercial Cable**

The 1866 Post Roads Act protected Postal Telegraph-Commercial Cable from costly state regulations that would have increased its costs of entering the telegraph market. The act prevented states, like Nevada in the 1860's, from granting an exclusive franchise for the entire state and blocking Postal Telegraph-Commercial Cable's entrance into the marketplace (Western Union Telegraph Co. Appellant v. Atlantic and Pacific State Telegraph Co., Respondent, 1869). Nor did the company have to worry about states granting monopoly franchises for routes between specific cities that limited the locations its system could serve, such as California's grant to the California Telegraph Company (California State Telegraph Company v. Alta Telegraph Company & others, 1863). Postal Telegraph-Commercial Cable could handle international telegraph messages

without being concerned that it was violating another telegraph company's monopoly franchise to land cables in a state to handle international telegrams, like the state of Maine bestowed upon the American Telegraph Company in the 1850's (Blondheim 1994, p.114; Wolff 2013, p. 40). It could trust that when states, like Florida, passed a law that violated the act after its passage, the Supreme Court of the United States would enforce the 1866 Post Roads Act (*Pensacola Telegraph Company v. Western Union Telegraph Company*, 1877).

### **3.3.3 Reduction of Western Union Revenue and Telegraph Prices Post-1866**

Shortly after Postal Telegraph-Commercial Cable completed its transatlantic cable in 1884, the company announced it was going to offer to send a cable from New York to London at 40¢ a word, 10¢ a word less than Western Union and its partners' competing cables (Coggeshall 1934, 1984, p. 111; Reid 1886). This sparked a price war where each company countered each other with a lower rate till the price of sending a telegraph message from New York City to London declined to 12¢ a word. Table 3.2 documents the decline in the cable price between New York City and London. Prices to send messages from cities other than New York City to London declined as well. Table 3.3 highlights a few other places in the United States that also saw a decline in the price to send a message to London.

Table 3.2:  
Price to Send a Telegram from New York City to London—1884 to 1888

Company	Date Price Changed	New Price Per Word
Western Union and Partners	May 20, 1882	50¢
Postal Telegraph-Commercial Cable	1884	40¢
Western Union and Partners	February 1, 1885	40¢
Western Union and Partners	May 5, 1886	12¢
Postal Telegraph-Commercial Cable	After May 5, 1886	25¢
Postal Telegraph-Commercial Cable	1887	12¢
(Price Fixing Agreement)	July 31, 1888	25¢
Western Union and Partners and Postal Telegraph-Commercial Cable		

Note: Prices and dates in Table 3.2 are from: Lansing's Official Tariff Book of the Western Union Telegraph (1883); Western Union Revised Tariff (1884); "Tariff Bureau Monthly Circular" (1882); Coggeshall (1934, 1984, p. 111); "Tariff Bureau Monthly Circular" (1885); "Tariff Bureau Monthly Circular" (1886); and Postal Telegraph-Cable Company Board & Executive Committee: 1886-1898 No. 1, pp. 82-85.

Table 3.3:  
Western Union Price per Word to Send a Telegram to  
London from Select States—1884 to 1888

Date	Sending State			
	Alabama	California	Pennsylvania	Wisconsin
Jan 1884	60¢	70¢	53¢	55¢
Feb 1, 1885	50¢	52¢	43¢	45¢
May 5, 1886	12¢	24¢	12¢	12¢
July 31, 1888 (Price Fixing Agreement)	31¢	37¢	28¢	31¢

Note: Prices and dates in Table 3.3 are from: Lansing's Official Tariff Book of the Western Union Telegraph (1883); Western Union Revised Tariff (1884); "Tariff Bureau Monthly Circular" (1882); Coggeshall (1934, 1984, p. 111); "Tariff Bureau Monthly Circular" (1885); "Tariff Bureau Monthly Circular" (1886); and Postal Telegraph-Cable Company Board & Executive Committee: 1886-1898 No. 1, pp. 82-85.

A drop in telegram prices is not sufficient evidence that competition reduced Western Union's profits. Depending on the elasticity of demand, a decrease in price could result in an increase in economic profit. Internal Western Union documents on revenue collected by it and its cable partners and preserved in the Western Union Archive

reveal that Postal Telegraph-Commercial Cable competitively pressured Western Union (Western Union 1901-1908 Statistical Notebook, 1901-1908).

Figure 3.2 plots annual revenue in terms of what percentage it equates, corrected for inflation, of revenue in 1884. The blue line is real revenue collected by Western Union to send a telegram from one of its offices in the United States to one of its cable company partners in New York City to be forwarded on to Europe or vice versa. The red line is real revenue collected by the cable companies to send the message from New York City to Europe.

Figure 3.2 shows Western Union's and its cable partners' revenue collapses after they entered into a price war with Postal Telegraph-Commercial Cable. A rough estimate using the telegraph price from New York City and total nominal revenue suggests total transatlantic telegrams handled by Western Union and its partners in 1887 was double the number sent in 1884. Revenue does not make a sizable recovery for Western Union and its cable partners until after they entered a price fixing agreement with Postal Telegraph-Commercial Cable on July 31, 1888 (Postal Telegraph-Commercial Cable, 1886-1898). The companies agreed to raise the price on a message from New York City to London from 12¢ a word to 25¢ a word. They also agreed on price increases to send a telegram from locations outside of New York City. The price increases from the agreement are also shown in Table 3.2 and Table 3.3.

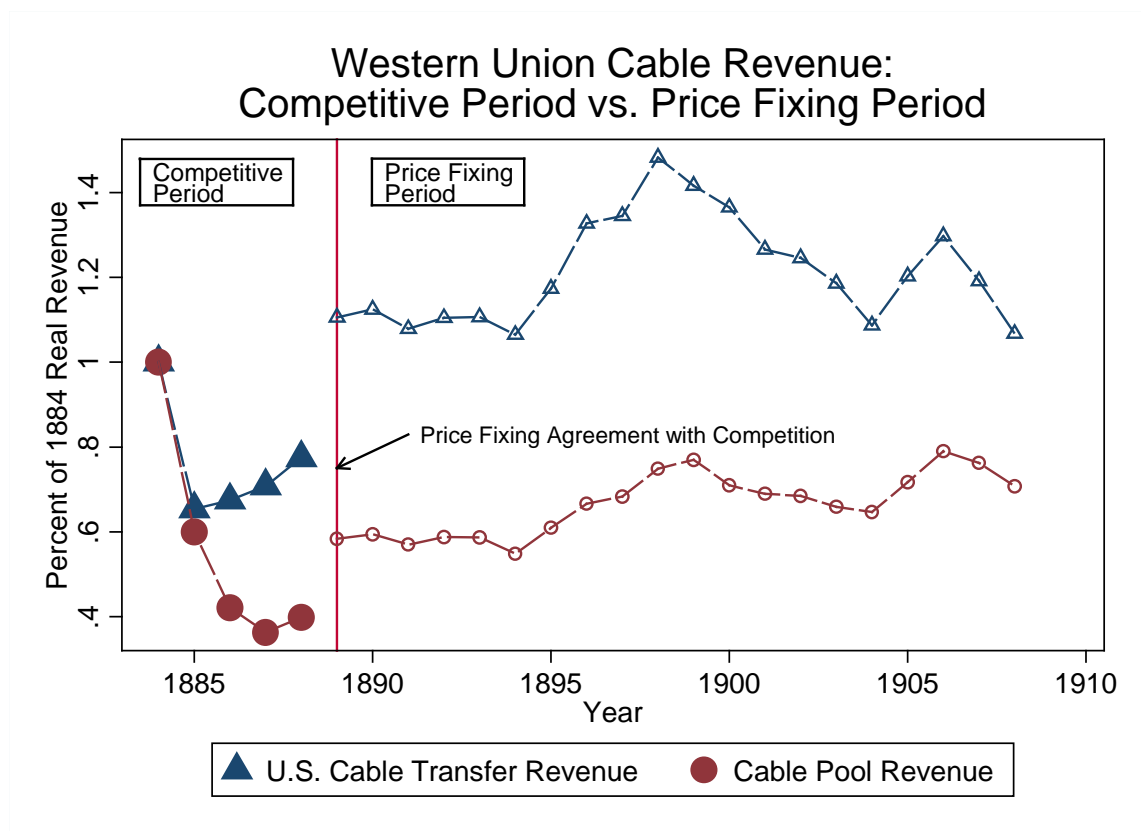


Figure 3.2: Western Union Cable Revenue: Competitive Period vs. Price Fixing Period

Note: Revenue figures are from Western Union “Statistical Notebook 1901-1908” held in the Western Union Archive at the Smithsonian Lemelson Center. Cable pool revenue includes revenue earned by all members of the cable pool. Members divided total cable revenue with each other on pre-agreed upon percentages. Members of the pool included Western Union, American Telegraph Company, Anglo-American Telegraph Company, Direct United States, and La Compagnie Française du Télégraphe de Paris à New York. A copy of the price fixing agreement between the cable pool and Postal Telegraph-Commercial Cable is contained in the Postal Telegraph-Commercial Cable Company Board & Executive Committee: 1886-1898 No. 1, pp. 82-85. Officer and Williamson (2013, 2014) and Clark (2015) provided data needed to convert nominal revenue into real revenue.

Price and revenue data after Postal Telegraph-Commercial Cable’s entrance into the telegraph marketplace suggests the telegraph market in the late 1880’s was competitive. Telegraph prices declined and Western Union revenue declined after Postal Telegraph-Commercial Cable entered the marketplace. Telegraph prices did not increase

and Western Union revenue did not recover until after Western Union entered into a price fixing agreement with Postal Telegraph-Commercial Cable. Even with the price fixing agreement, prices on international telegraph messages dropped about 50% for most of the United States. The negative effect Western Union experienced from a competing telegraph company who benefited from the 1866 Post Roads Act suggests the act contributed to the contestability of the post-1866 telegraph market and was plausibly an economically efficient preemption of state telegraph laws.

#### **3.4.1 Competition between Western Union and American Union Telegraph**

Competition with American Union Telegraph adversely affected Western Union's stock value. American Union Telegraph competed with Western Union from 1879 to 1881. American Union Telegraph was founded by wealthy financier Jay Gould (Reid 1886, p. 577; John 2010, p. 166; Wolff 2013, p. 254). Jay Gould controlled stocks in numerous railroads and had dabbled in the telegraph industry when he previously financed another Western Union competitor, the Atlantic & Pacific Telegraph company, from 1874 to 1877 (Reid 1879, p. 580; John 2010, p. 158; Wolff 2013, p. 207). Under Jay Gould's control, American Union Telegraph rapidly constructed a network that stretched from the Eastern seaboard to Salt Lake City in less than a year (American Union Telegraph 1879-1881; Reid 1886, p. 579).

### **3.4.2 The 1866 Post Roads Act Benefited American Union Telegraph**

American Union Telegraph received the same benefits from the 1866 Post Roads Act as Postal Telegraph-Commercial Cable. American Union Telegraph could enter into any city, any state, and operate a telegraph network protected from costly state and local regulations. American Union Telegraph also benefited from an 1879 court precedent involving the 1866 Post Roads Act that freed landowners from exclusive clauses in contracts with telegraph companies.

Prior to the 1866 Post Roads Act exclusive clauses with a telegraph company granted that company exclusive use of the landowner's land. Exclusive clauses prevented landowners from entering into a contract with another telegraph company that granted it the right to also string telegraph wires on their property. Telegraph executives believed controlling access to the best routes deterred competition by increasing the cost of entrance (Reid 1886, p. 584; Nonnenmacher 1996, pp.134-135, 137-138). In 1879 Western Union had exclusive clauses for an overwhelming majority of United States railroads mileage, the lowest cost routes to operate and build a telegraph network during the nineteenth and early twentieth centuries (Griswold *et al.*, 1930; Western Union 1934; Nonnenmacher 1996; Wolff 2013, p. 204, 247). Railroad contract costs were relatively low because a single contract acquired hundreds of miles of right of way. Shorter telegraph poles could be used along railroads versus along roads since there were fewer instances where people and vehicles needed to go underneath the wires. Transportation costs for telegraph construction were lower along railways because material could be rolled directly off railcars for construction.

In 1879 a new court precedent involving the 1866 Post Roads Act enabled American Union to acquire access to railroad right of ways that were previously blocked by exclusive clauses. The courts ruled that owners could legally breach exclusive clauses by entering into contracts with telegraph companies that acceded to the terms of the 1866 Post Roads Act (Western Union Telegraph Co. v. American Union Telegraph Co. *et al.*, 1879; Cook 1920, p. 55). When, for example, the Wabash railroad breached its exclusive clause with Western Union the court refused to grant Western Union an injunction to prevent Wabash from allowing American Union Telegraph to construct a telegraph line alongside Wabash's right of way. The railroads that breached their exclusive contracts with Western Union contributed to a large portion of American Union Telegraph's network mileage (Reid 1886, p.584; Wolff 2008, p. 521; John 2010, p. 167; Wolff 2013, p. 253).

### **3.4.3 Reduction of Western Union Stock Price Post-1866**

American Union Telegraph completed most of its network by the middle of 1880 (Reid 1886, pp. 579-581). Around the same time, wrote former Western Union executive James Reid, American Union started a price war with Western Union by reducing all of its prices. Since internal Western Union revenue figures are not available for when American Union entered the marketplace, this paper uses daily Western Union stock prices to conduct an event study to observe if American Union's post-1866 entrance increased competitive pressure on Western Union.

The assumption of the event study is that investors adjusted their value of Western Union based on their assessment of the effect of competition. If an event significantly changed the value of a company then it should appear as a significant abnormal rate of return on the company's stock around the day of the event. Event studies require events whose dates can be pinpointed before conducting the test. Reid identifies two moments in the competition with American Union Telegraph that altered the public perception of Western Union. One was the release of a discouraging Western Union's quarterly revenue report containing the first complete quarter Western Union was engaged in a the price war with American Union Telegraph (Reid 1886, pp. 580-581). The other was the merger agreement made by the largest stockholders of Western Union and American Union telegraph that signaled the end of the "ruinous" price war with American Union (Reid 1886, p. 581).<sup>35</sup>

Stock price data spans from December 31, 1878 to April 1, 1881. The daily high and low of the stock was collected from The New York Times for each day the stock was traded. Descriptive statistics of the stock can be found in Table 3.4 below. Figure 3.3 charts Western Union stock prices from before the existence of American Union till after the merger announcement. The figure also notes the dates when specific events occurred.

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<sup>35</sup> Dates of the events were also confirmed in the New York Times ("Stock Quote," December 9, 1880; "Financial Affairs," January 21, 1881).

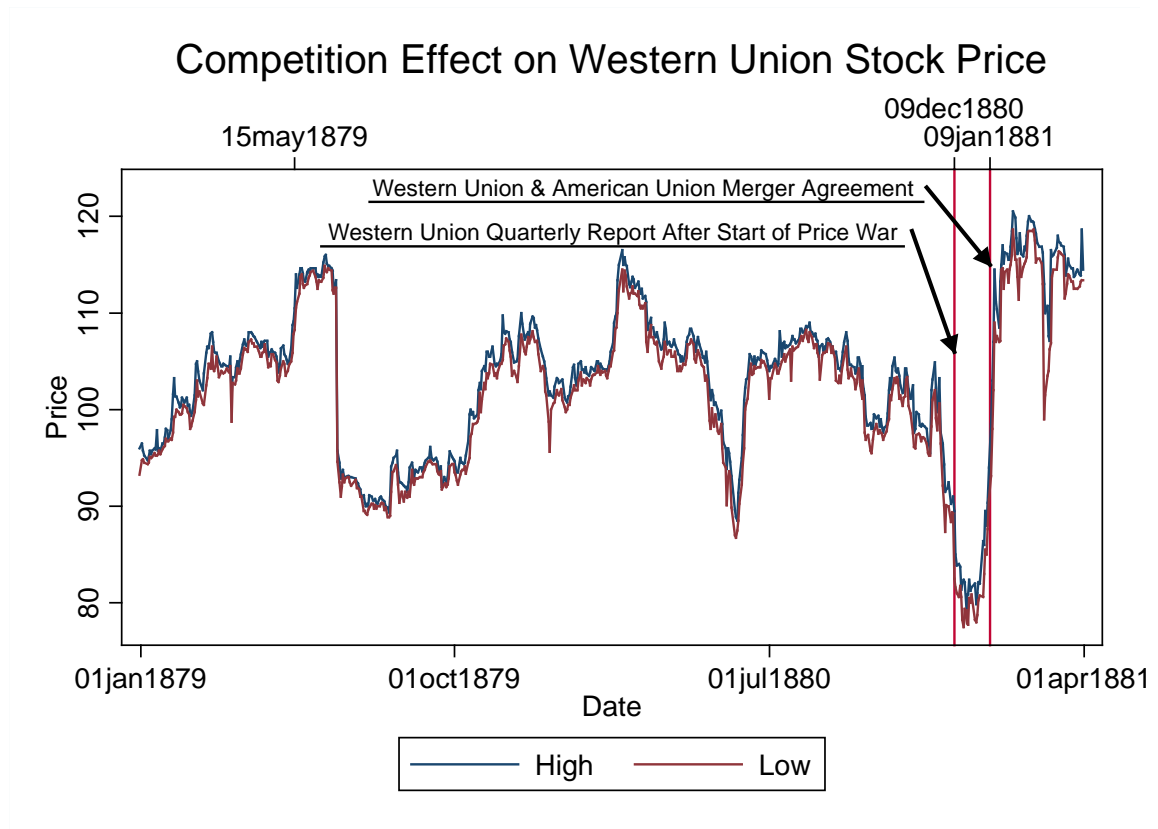


Figure 3.3: Competition Effect on Western Union Stock Price

Note: Western Union daily stock highs and lows were collected from the New York Times “Stock Quote” section. Reid (1886) and the New York Times provided the information needed to identify the date of the Western Union quarterly report and the merger announcement of Western Union with American Union.

Table 3.4: Western Union Stock Prices Descriptive Statistics—1878 to 1881

	Stock Price Listed	Mean	SD	Max	Min	N
Stock	High	103.2625	8.050692	120.5	79.875	681
	Low	101.7483	8.080911	118.625	77.5	681
Ln(Stock)	High	4.634154	0.0796711	4.79165	4.380463	681
	Low	4.619244	0.0815378	4.775967	4.350278	681
$\Delta S_t$	High	0.0002592	0.014332	0.0838947	-0.1689606	680
	Low	0.0002874	0.0156933	0.0665784	-0.1741424	680

Note: Western Union daily stock highs and lows used in Table 3.4 were collected from the New York Times “Stock Quote” section.

### 3.4.4 Estimating Abnormal Returns of Western Union Stock Price Post-1866

The use of daily stock data for conducting an event study stems from the work of Brown and Warner (1985). Event studies use a model that predicts stock prices and sees if the difference between the actual return is significantly different than the predicted return. Equation 1 defines how to measure the daily return of a stock of  $\Delta S_t$ .  $\Delta \hat{S}_t$  is the predicted model for daily log stock returns. Let  $T=\{t_0, \dots, t_n\}$  denote the day. Let the total number of days sampled be  $N=\{1+t_0+t_n\}$ . Assume  $t=0$  is the event day and the event window is from  $(t_0+x) \leq 0 \leq (t_n-y)$ . Let the total length of the event be  $Q=\{1+(t_0+x) + (t_n-y)\}$ . The predicted return is subtracted from the actual daily log returns to equal  $A_t$  in equation 2. The test statistic for significant abnormal returns on the day of an event,  $t=0$ , is calculated in equation 5 by dividing the abnormal return by the sample standard error in equation 3 of abnormal returns on non-event days.

1)  $\Delta S = \ln(S_t) - \ln(S_{t-1})$  for each party  $t \in T$  = daily log return

2)  $A_t = \Delta S_t - \Delta \hat{S}_t$  for each party  $t \in T$  = abnormal returns

3)  $\widehat{SE}(A) = \sqrt{\left( \sum_{t_0}^{t_0+x} (A_t - (\bar{A})) + \sum_{t_n-y}^{t_n} (A_t - (\bar{A})) \right)^2 / (N - Q)}$  for each party  $t \in T$

where

4)  $\bar{A} = \left( \frac{1}{N-q} \right) \left( \sum_{t_0}^{t_0+x} A_t + \sum_{t_n-y}^{t_n} A_t \right)$  for each party  $t \in T$

5)  $A_t / \widehat{SE}(A)$  for each party  $t \in T$  = test statistic

A model must be selected to predict the expected return of the stock on a non-event day (MacKinlay 1997). This event study uses two different statistical models instead of the more popular market model because a daily market index for the time

period does not currently exist. One model used to predict Western Union's daily stock returns is equation 6, a constant mean return model. Let N stand for the total number of days in the stock sample. Let q represent the length of the event window. MacKinlay (1997) writes in his survey of event models that the mean constant return model is the second most common model used in event studies. He also points out that a constant mean return model is less likely to produce a statistically significant result than the more popular market model.

$$6) \Delta \hat{S}_t = \frac{1}{N-Q} (\sum_{t_0}^{t_0+x} S_t + \sum_{t_n-y}^{t_n} S_t) \text{ for each party } t \in T$$

To check the robustness of the results following Mestel and Gurgul (2003), I also calculate with the Box-Jenkins technique abnormal returns using a first difference ARIMA(1,1,0) model for  $\Delta \hat{S}_t$  as expressed in equation 7.

$$7) \Delta \hat{S}_t = \alpha + B_1(\Delta S_{t-1}) + u_t \text{ for each party } t \in T$$

where t does not contain any element from the even window  $(t_0+x) \leq 0 \leq (t_n-y)$

An augmented Dickey-Fuller test indicates the empirical result generated from the model in equation 7 is stationary.

Table 3.5: Constant Mean Model Predicted Daily Rate of Return

	Event	
	Negative Western Union Quarterly Report	Merger With American Union Telegraph
Stock Price	0.0002593	0.0002587
Daily High		
Stock Price	0.0002875	0.000287
Daily Low		
	N=680	N=677

Note: Western Union daily stock highs and lows used in Table 3.5 were collected from the New York Times "Stock Quote" section.

The results from the constant mean model (Table 3.5 above) and the ARIMA model (Table 3.6 below) predict that the expected daily change in stock price is around or near zero. The result is not a surprise. If the efficient market hypothesis is true then the price of a stock today should reflect all relevantly available information. If there was new information that value of the stock was going to change then the market should quickly adjust and remain at the new price until other information becomes available.

Table 3.6: ARIMA Model Predicted Daily Rate of Return

Stock Price Listed	Negative Western Union Quarterly Report		Merger With American Union Telegraph	
	High	Low	High	Low
$\Delta S_{t-1}$	0.09183 (0.0486764)	0.0831453 (0.0530322)	0.041099 (0.0420762)	0.0444777 (0.0500136)
Constant	0.0002974	0.0003565	0.000533	$-8.76 \times 10^{-06}$
N	678	678	675	675
$R^2$	0.0085	0.0072	0.0017	0.0020

Note: Western Union daily stock highs and lows used in Table 3.6 were collected from the New York Times "Stock Quote" section. Estimates use robust standard errors.

Western Union's stock price was depressed when the quarterly results after the price war with American Union started became public. Below, Table 3.7 contains the data results on the tests for abnormal returns. Western Union experienced a significant negative abnormal return the day the quarterly earnings report came out. Both the constant mean model and the ARIMA model observed a 5% - 7% abnormal decline in Western Union's stock value.

Western Union's stock surged after it became public it was merging with its largest competitor, America Union. The abnormal return significantly increased over 4% for the constant mean model and the ARIMA model on the day of the event for the high

stock price. While the initial event to arrange the merger of Western Union and American Union occurred on January 9, 1881, Reid's (1886) timeline of the merger discussions suggest the agreement to merge may not have been finalized until January 10, 1881.

Table 3.7: Changes in Western Union Stock Abnormal Returns

Model Type	Negative Western Union Quarterly Report				Merger With American Union Telegraph			
	Constant Mean		ARIMA		Constant Mean		ARIMA	
	High	Low	High	Low	High	Low	High	Low
Mean of $A_t$	-0.0000764	-0.0001162	-0.0000742	0.0001162	0.0002903	0.0002694	0.0002806	0.00026
SE of Mean of $A_t$	0.0142035	0.0154092	0.0141522	0.0153534	0.0138399	0.0152997	0.0138369	0.0152832
$A_t$ of Event	<b>-0.0519231</b>	<b>-0.07940465</b>	<b>-0.0503587</b>	<b>-0.078883</b>	<b>0.046793</b>	<b>0.025816</b>	<b>0.0451867</b>	<b>0.024284</b>
T-Score Of Event	-3.65566	-5.15307	-3.55837	-5.13782	3.05843	1.86533	2.95662	1.75502
CAR (4 Days After Merger News)					<b>0.19741</b>	<b>0.18317</b>	<b>0.19051</b>	<b>0.17652</b>
CAR SE					0.05536	0.061199	0.0553476	0.0611328
T-Score CAR					3.56586	2.993	3.44199	2.88743

Note:  $A_t$  denotes abnormal returns; CAR denotes cumulative abnormal returns. Western Union daily stock highs and lows were collected from the New York Times. Dates of the events are from Reid (1886, p. 581) and were also confirmed in the New York Times ("Stock Quote," December 9, 1880; "Financial Affairs," January 21, 1881).

To capture a potential lag response, cumulative abnormal returns are calculated over a four day period starting on January 10, 1881—the stock market was closed on January 9—the model should capture any lag in the upswing in Western Union's price caused by uncertainty about the merger agreement. Cumulative abnormal returns varied between 17% - 20% and were highly significant for both the high stock price and the low.

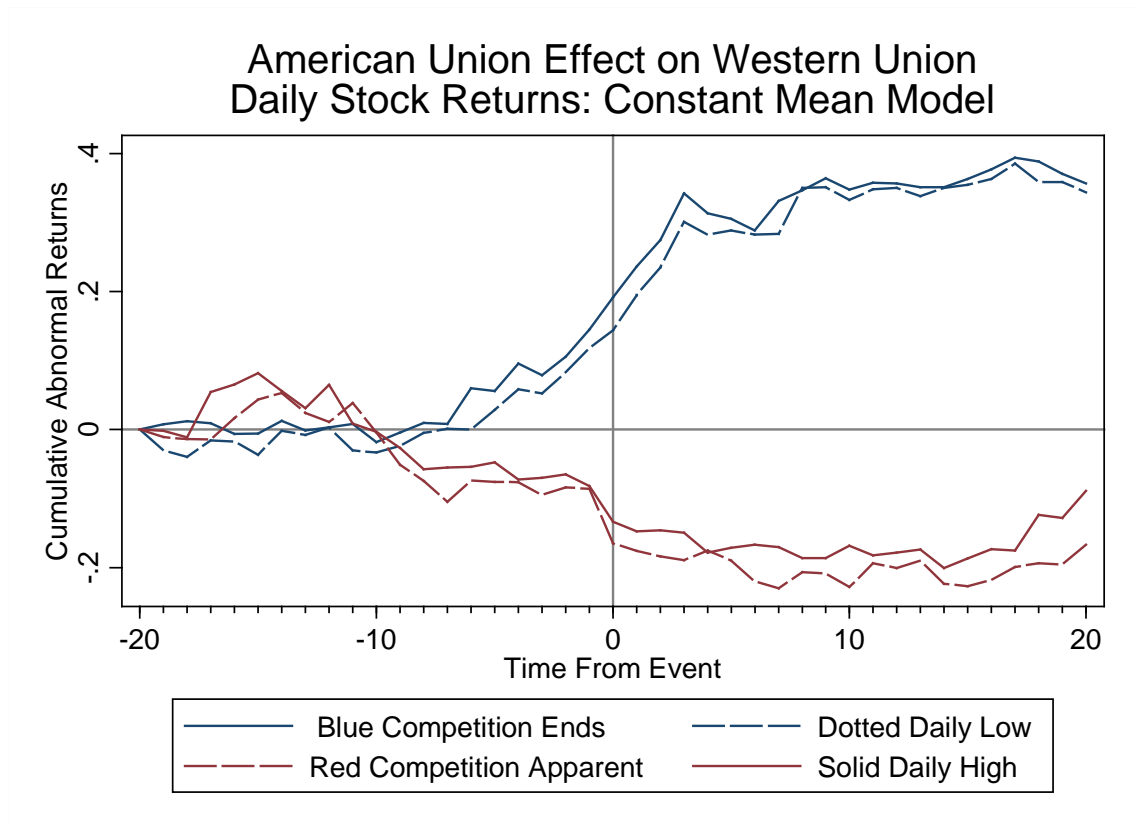


Figure 3.4: American Union Effect on Western Union Daily Stock Returns: Constant Mean Model

Note: Western Union daily stock highs and lows were collected from the New York Times. Dates of the events are from Reid (1886, p. 581) and were also confirmed in the New York Times (“Stock Quote,” December 9, 1880; “Financial Affairs,” January 21, 1881).

Cumulative abnormal returns (CAR) were calculated and graphed to ensure the change in Western Union’s stock value was not a random fluctuation corrected by the market shortly afterwards. Figure 3.4 contains the results for the constant mean model and Figure 3.5 shows the results for the ARIMA model. The graphs illustrate the changes were persistent before and after the events. The stability of the abnormal returns at least 20 days after the events displayed in Figure 3.4 and Figure 3.5 reveals the market assessed the events as altering the long term value of Western Union.

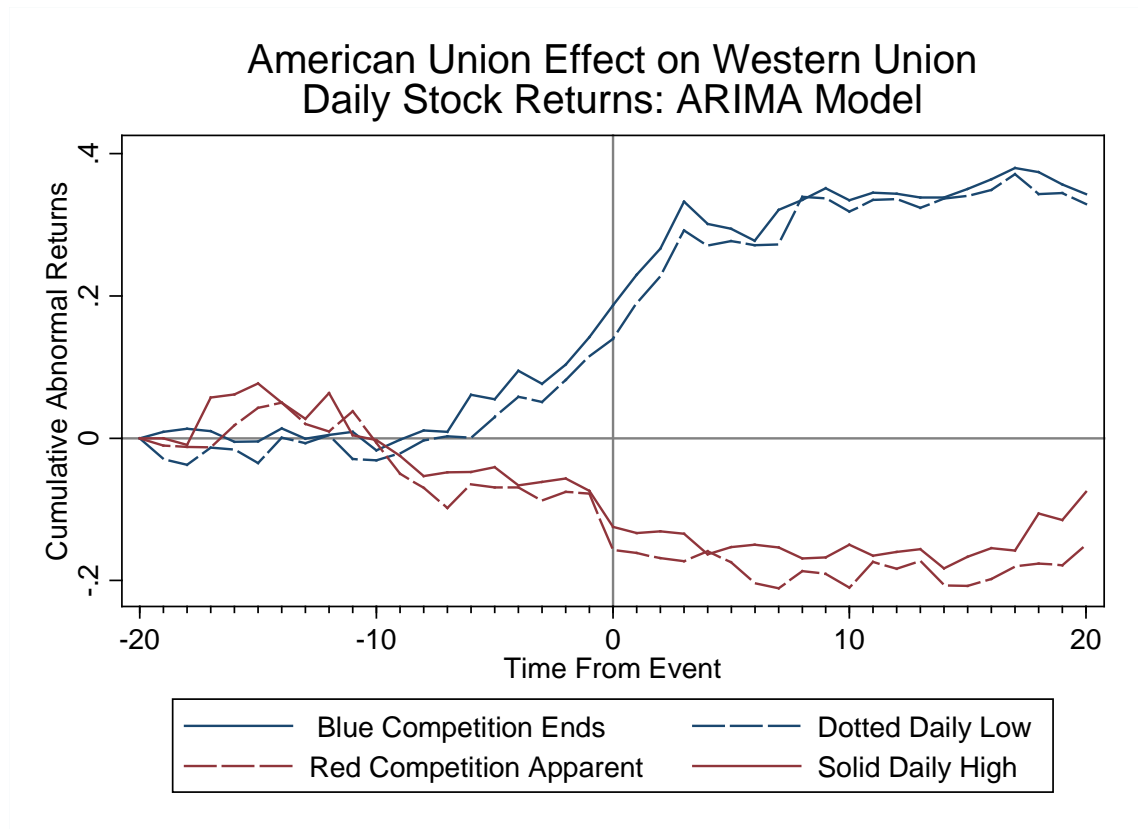


Figure 3.5: American Union Effect on Western Union Daily Stock Returns: ARIMA Model

Note: Western Union daily stock highs and lows were collected from the New York Times. Dates of the events are from Reid (1886, p. 581) and were also confirmed in the New York Times (“Stock Quote,” December 9, 1880; “Financial Affairs,” January 21, 1881).

Figure 3.4 and Figure 3.5 provide evidence that cumulative abnormal returns in Table 3.8 possibly underestimate the effect of the event on Western Union’s stock price. The market appears to be reacting 6 to 8 days prior to the event becoming public. Movement before an event is expected when there is insider trading (Seyhun 1986, Ke, Huddart, and Petroni 2003; Khan and Lu 2013). Insider trading was legal during this time period. Jay Gould of American Union Telegraph was known to engage in insider trading (Klein 1986, pp. 278-282; Wolff 2013, pp. 257-258) and William Henry

Vanderbilt of Western Union had worked for others in the past that were known to engage in insider trading (Stiles 2009).

The competitive pressure placed upon Western Union by American Union is evidence the post-1866 telegraph market was contestable. American Union's price war and exit from the telegraph marketplace generated significant abnormal returns in Western Union stock. American Union's challenge was so triumphant that Jay Gould, American Union's largest shareholder, was the largest shareholder of Western Union stock after they merged (Klein 1986, p. 280; John 2010, p. 171, Wolff 2013; pp. 257-259). American Union's success of using the 1866 Post Roads Act to help build its network and success of exerting competitive pressure upon Western Union further supports the premise that the act contributed to the contestability of the post-1866 telegraph market and was plausibly an economically efficient preemption of state telegraph laws.

### **3.5.1 Effects of Competition on Western Union's Telegraph Prices**

Western Union adjusted its prices in response to competing telegraph lines that were constructed after the passage of the 1866 Post Roads Act. Following telegraph consolidation in 1866 and prior to the passage of the act only Western Union connected New York City to a number of hub cities, including Chicago, Atlanta, Buffalo, Cleveland, and New Orleans. After the passage of the act, two different competitors constructed telegraph lines between New York City and Chicago along two different

routes (Reid 1879, p. 444, p. 580).<sup>36</sup> At the same time two other competing companies started constructing wires to connect New York City to New Orleans (Reid 1879, p. 445, p. 451).<sup>37</sup> Western Union telegraph prices from 1869 and 1874 reveal Western Union adjusted its prices to destinations around hub cities in response to these new competitors.

Knowing the available choices to telegraph consumers in a contestable market versus an uncontestable market is vital to understanding Western Union's strategic response to competition. Western Union stopped offering competitive telegraph prices for a contestable market in select locations around hub cities prior to 1873. This section explains why these prices were uncompetitive for consumers and demonstrates how Western Union adjusted its prices to remain competitive after 1873.

What is the difference for consumers between a contested market and an uncontested market? In an uncontested market Western Union announces its price for a telegram and either a consumer pays it or they do not send a message. In a contested market Western Union sets the price and if its competitor can match it or undercut it Western Union risks losing customers to the competitor. Western Union can regain some of these customers by matching or undercutting its competitor's new prices.

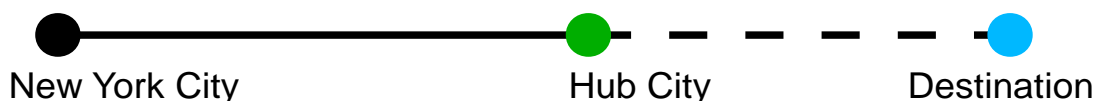


Figure 3.6: Message Route

<sup>36</sup> Atlantic & Pacific Telegraph Company and Pacific & Atlantic Telegraph Company.

<sup>37</sup> Southern Telegraph Company and Southern & Atlantic Telegraph Company.

Assume Western Union charges 50¢ more in an uncontested market to send a telegram from a city to a destination than from one of its neighboring hub cities. To send a telegram a consumer either has to pay the higher price in their city or incur the cost of a non-telegraph way to get their message to a hub city with a lower Western Union price. This changes once the market becomes contested. In a contested market a competing telegraph company that operates a network between a city and a neighboring hub city with a lower Western Union rate can transmit the message to the neighboring hub city and then forward the message to its final destination on Western Union's telegraph lines. A competing telegraph company will arbitrage the price difference to a designation between a city and a neighboring city if the difference is large enough to earn a reasonable return.

### **3.5.2 Western Union's Uncompetitive Prices**

Western Union reported in its 1873 Annual Report that competitors were arbitraging price differences within Western Union's network. Western Union illustrated the problem created by competitors to its shareholders by describing the pricing situation of messages sent from New York City to destinations around the hub city of Chicago. Messages from New York City to some destinations around Chicago were charged \$2 for the first 10 words in a message. The Western Union rate for a message from New York City to Chicago was \$1 and the rate to send a message from Chicago to these destinations ranged from 35¢ to 65¢ (Western Union 1872, 1873). Western Union realized that competitors could supply messages to these locations for 45¢ to 65¢ less than Western

Union by sending messages to Chicago and forwarding them on Western Union's own lines.

Estimates of 1872 Western Union telegraph prices indicate the arbitrage opportunity around Chicago for Western Union's competitors was not a geographically unique case. Figure 3.7 presents estimates of the potential arbitrage opportunities for Western Union's competitors. The estimates are constructed using Western Union telegraph prices from 1869, 1872, and 1874. Direct rates between New York City and destinations around Chicago listed in Western Union's 1873 annual report to stockholders match rates from 1869. These rates are used to estimate direct rates for all destinations other than hub cities in 1872. Forwarding rates are calculated by adding local rates from hub cities with estimates of the special rate from New York to hub cities. Local rates from 1872 are listed by region in the 1872 Western Union tariff book. Regions are identified from Western Union's 1886-1887 and 1896-1897 Statistical Notebook. Chicago's 1872 special rate from New York City listed in Western Union's annual stockholder's report matched its rate in 1874. So the 1874 rates are used as an estimate for rates to other hub cities in 1872. Large hub cities served by Western Union's competition are identified from competitor's tariff books, newspaper, Almanacs, and Reid's *Telegraph in America* (1879, 1886).<sup>38</sup>

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<sup>38</sup>Tariff Books: Atlantic & Pacific & Franklin and Southern & Atlantic Telegraph Companies (1873); Atlantic and Pacific and Franklin (1876). Newspaper: "The Atlantic and Pacific Telegraph" (1875). Almanacs: Holloway (1870); Miller (1881).

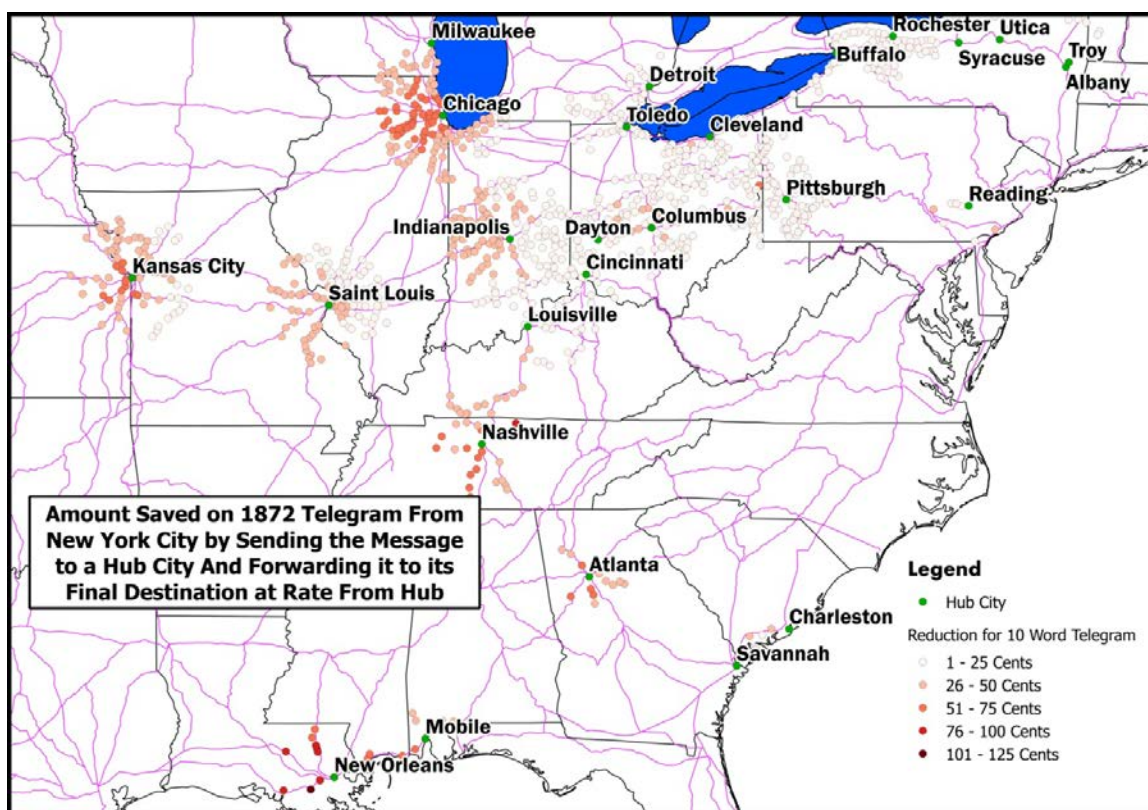


Figure 3.7: Arbitrage Opportunities for Western Union's Competitors

Note: See paragraph above to find how price estimates and differences were calculated. Offices used in Figure 3.7 are locations listed as operational in the 1874 Western Union tariff books (1874a, 1874b). Some locations are missing because I was unable to locate their geographical coordinates. Map layer provided by Commission for Environmental Cooperation (2010).

Figure 3.7 contains estimates on the difference between Western Union's direct rates to destinations and Western Union's rates to hub cities served by its competitors plus Western Union's rate to forward the message from the hub city to its final destination. Each non-green dot represents the difference between the direct rate and the forwarding rate to the final destination. The non-green dots indicate where competitor's had an opportunity to undercut Western Union's price from New York City to that destination. Numerically there are more destinations around hub cities in the North than

in the South because there was a higher density of telegraph stations in the north and because local rates in northern hubs applied to destinations up to 75 miles away versus only up to 50 miles away for southern cities.

### **3.5.3 Western Union Adjustment to Competitive Prices**

Western Union changed its telegraph prices in a manner that was consistent with responding to competition. If Western Union competitors were arbitraging price differences within Western Union's network, Western Union had two options. One, it could keep the price structure and potentially receive reduced revenue on messages between the city and the destination. Or two, Western Union could adjust its own rates to reduce the competitor's profit opportunity from arbitraging Western Union's differences in prices.

Western Union claimed in its 1873 Annual Report that it chose to alter its telegraph prices to be competitive with the "opposition lines." Western Union's 1874 telegraph prices from a New York City tariff book confirmed that Western Union adjusted its prices. Take the case of destinations around Chicago. All areas within 50 miles of Chicago were able to send and receive a message from New York City for \$1.25 for 10 words in 1874. The rate between New York City and Chicago remained \$1 for 10 words. The Western Union local rates were 25¢ for places within 25 miles of Chicago and 35¢ for places between 25 and 50 miles from the city. This meant the new direct price to locations neighboring Chicago was equal to or less than 10¢ if the message was first sent to Chicago and then forwarded on to these cities.

Similar price changes were applied across Western Union's network. Every arbitrage opportunity in Figure 3.7 disappeared. The rate for direct messages from New York City in 1874 were lowered to the point that sending a message to a hub and then forwarding it on at the local rate was equal to or more than sending the message directly from New York to its final destination.

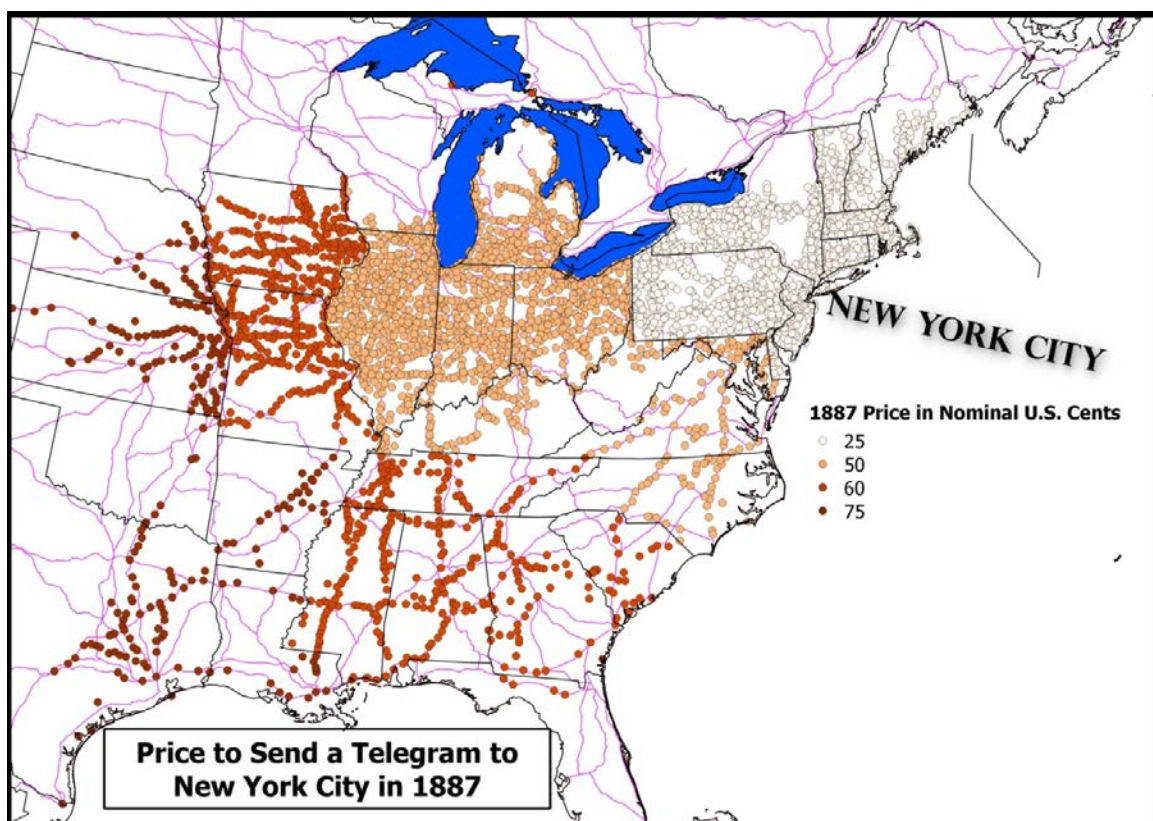


Figure 3.8: Price to Send and Receive a Telegram to New York City in 1887

Note: Offices shown in Figure 3.8 are locations listed as operational in the 1874 Western Union tariff books (1874a, 1874b). Some locations are missing because I was unable to locate their geographical coordinates. Price data was hand collected from the records of the Western Union (1887-1907) tariff department held in the Western Union Archive at the Lemelson Center at the Smithsonian. Map layer provided by Commission for Environmental Cooperation (2010).

Western Union maintained a competitive price strategy that limited arbitrage opportunities well after 1874. Figure 3.8 illustrates Western Union continued to limit arbitrage opportunities in 1887. Figure 3.8 plots the location of eastern Western Union telegraph offices in 1874 and the prices charged to send a message to and from New York City in 1887. The price lists were preserved in the Western Union Archive. There are only four prices charged from just west of the Mississippi and the East. The uniformity of the prices reduces opportunity for arbitrage to locations along each zone's price border. The border of each price zone has a maximum difference in price of 25¢. The lowest rate Western Union charged for a telegram of 10 words in 1887 was 20¢. So the largest arbitrage opportunity possible was 5¢, assuming if any cities along the price borders had a square rate price to a neighboring city of 20¢. Similar lack of opportunities for competitors to arbitrage price differences is also found when checking the rates between other locations within the United States in 1887.

### **3.6. Conclusion**

This paper has argued that deregulation and preemption of state laws by the 1866 Post Roads Act intensified the contestability of the post-1866 telegraph market. The act lowered entry barriers by removing costly state government regulations. Preemption of these regulations improved economic efficiency by protecting consumers sending telegrams across state lines from the negative spillovers of neighboring state regulations. This had the extra benefit of promoting Weingast's (1995) market-preserving federalism by hindering states from interfering in the common market.

While Western Union controlled an increasing percentage of the United States telegraph infrastructure after 1866, empirical evidence indicates the post-1866 telegraph market was highly contested. New telegraph companies who benefited from the 1866 Post Roads Act encroached on Western Union's territory. Competitors pressured Western Union to adjust its pricing strategy to counter competitors arbitraging price differences within Western Union's network. They engaged in price wars that drove down Western Union's stock and revenue. Their constant threat to Western Union, the dominant telegraph company of the United States, pressured Western Union to provide telegraph services at competitive rates and quality. This threat was magnified by the federal government's removal of governmental barriers to entrance with the 1866 Post Roads Act.

## **Chapter 4**

### **Pro-Consumer Legislation Supported by Elites: The Curious Case of the 1866 Post Roads Act**

Politicians connected to economic and political elites who anticipated benefiting from the 1866 Post Roads Act overcame the problem of collective action and passed pro-consumer legislation over the objections of a concentrated economic interest. Mancur Olson's (1965, 1982) theory on the cost of collective action predicts a concentrated interest should prevail over dispersed consumers. Republican supporters of the act took advantage of the exclusion of Southern Democrats from states that supported the Confederacy to push the act through over the vigorous objections of Western Union. Without the support of Republican politicians connected to economic and political elites who stood to benefit from the act, the pro-consumer 1866 Post Roads Act would have failed to pass in the United States Congress or Senate.

#### **4.1. Introduction**

Mancur Olson wrote in The Logic of Collective Action (1965) that consumer interest will likely be subverted by the government lobbying efforts of concentrated interests. Consumers are numerous and benefits often disperse, so coordinating their actions to overcome the free riding problem is prohibitively expensive (Olson 1982, p. 37). Concentrated interests on the other hand are smaller, so the cost to organize is lower

and the benefits to each participant often larger. When the 1866 Post Roads Act was passed Western Union was an economic elite and concentrated interest. Western Union controlled an overwhelming percentage of United States telegraph infrastructure. The company had a history of successfully lobbying for political favors. Yet somehow Western Union, one of the largest companies in the United States, failed to prevent the passage of the pro-consumer anti-Western Union 1866 Post Roads Act.

I provide evidence the 1866 Post Roads Act was secured by Republican politicians connected to a coalition of elites composed of politicians, businessmen, and newspapermen who expected to benefit from the act. Republicans were not unified in their support for the 1866 Post Roads Act. In the Senate 41% of Republicans voted for the act (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3490). Different Republican state delegations provided varying degrees of support for the act. House Republicans from New York State where Western Union was headquartered overwhelmingly voted against the 1866 Post Roads Act while every Ohio House Republican voted for the act, providing 25% of the votes for the act (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3747). Ohio Republicans' strong support for the 1866 Post Roads Act was not likely motivated by the network benefits of competition the act bestowed upon American consumers.<sup>39</sup> Ohio House and Senate Republicans were connected to the National Telegraph Company who expected the privileges granted by the act to lower its telegraph network construction costs (National Telegraph Company n.d., p. 5).

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<sup>39</sup> Each new location serviced by a competing telegraph company increased competition at the new location and all of its preexisting offices by providing another competitive route for telegrams.

Ohioans active in the Ohio Republican party were directors of the National Telegraph Company. The National Telegraph Company was also associated with businessmen Ben Holladay and Jay Cooke, who had a history of profiting from government contracts. Ohio Republican Senator John Sherman, whose brother was a director of the National Telegraph Company, expressed interest in investing in the National Telegraph Company in order to reap the company's profits from utilizing the 1866 Post Roads Act (Sherman to Cooke 1866; John 2010, p. 118).

Ohio Republicans were not the only Republican politicians with connections to an interest who stood to benefit from the 1866 Post Roads Act. Senator John Conness of California was personally involved in advocating for non-New York Associated Press papers in California (Chandler 1976, p. 470). Non-New York Associated Press papers hoped a more competitive telegraph marketplace would produce a telegraphic partner to help them challenge the New York Associated Press who was partnered with Western Union (Chandler 1976, p. 475).

John Nye theorizes elites sometimes underestimate the impact of a policy change or one generation of elites supports a policy, while good for them, may not be good for their descendants (Nye 2009, p. 56, 59). This was not the case for Western Union. Western Union actively opposed the act, correctly anticipating it would empower future competitors to better challenge the company. The act hurt Western Union while benefiting consumers and telegraph entrants by reducing entry barriers to telegraph companies erected by state and municipal governments. After 1866 Western Union contended with numerous companies who were protected from local entry barriers by the

act. Competition with post-1866 entrants pressured Western Union to change its telegraph prices, negatively affected Western Union stock prices, and reduced Western Union telegraph revenue.

Mancur Olson argues established elites are defeated when something destabilizes the old power structure, providing an opportunity for new coalitions to impose a different social order (Olson 1982; Mokyr and Nye 2007, p. 53). During the enactment of the 1866 Post Roads Act, the political order of the United States was in flux. Historically Democratic-voting Southern states were barred from seating federal government representatives as a repercussion for supporting the Confederacy in the Civil War. Was the passage of the 1866 Post Roads Act the byproduct of ideological pro-central government Republicans taking advantage of the large number of states' rights Democrats being excluded from the federal government? Out of the 49 remaining Democrats in the House and Senate, only 1 voted for the 1866 Post Roads Act (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3747, 3490). The act passed the Senate by 3 votes and the house by just 11 votes. Additional Democratic opposition would have blocked the enactment of the 1866 Post Roads Act.

Historian Lindley argues reformers attempted to improve the telegraph market with the 1866 Post Roads Act but were unwilling to establish strong enough governmental powers for effective regulation to succeed (1971, p. 13).<sup>40</sup> Lindley credits the act's passage to the legislative skills of Senator Sherman and his insights on what types of provisions the legislature was willing to enact (1971, p. 56). Historians Richard

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<sup>40</sup> Lindley criticized the 1866 Post Roads Act as ineffective and an outdated approach to regulation based on "pre-Civil War" thinking (1971, p. 76, 215).

John and Joshua Wolff suggest after the telegraph sector consolidated in 1866 pressure mounted upon the federal legislatures to enact something to counter the power of Western Union (John 2010, p.119; Wolff 2014, p. 108). They also observed that Senator Sherman, who wrote the bill, was probably motivated by financial connections to the National Telegraph Company who stood to benefit from the act (John 2010, p. 118; Wolff 2014, p. 110).

Economists examining nineteenth century and early twentieth century American telecommunication regulations have yet to study the 1866 Post Roads Act. Tomas Nonnenmacher examined the development of state regulations of the pre-1866 telegraph industry to discern the motivation for state telegraph regulations in the antebellum period (1996, 2001). David Gabel observed municipalities discouraged competition by imposing more odious franchise regulations on telephone company entrants challenging incumbent companies (1994). Unlike the telegraph industry, state and municipal telephone franchise regulations were not preempted by the 1866 Post Roads Act (*City of Richmond v. Southern Bell* 1899; John 2010, p. 278).

The 1866 Post Roads Act is not the first case where pro-consumer legislation was enacted at the behest of self-interested individuals. Pressure from eighteenth century rent seekers contributed to a more open domestic “market-oriented economy” in Great Britain (Mokyr and Nye 2007, p. 58; Nye 2007, Nye 2009, p. 56). Prior to reforms, the market in Great Britain was filled with local monopolies created by regulations and transportation costs (Mokyr and Nye 2007, p. 53). The strengthening of Parliament enabled businessmen and merchants who profited from open market access to form a

political coalition with large land holding elites (Mokyr and Nye 2007, p. 54). Both partners supported the coalition since they each received part of the surplus generated from the more open domestic market.

Other papers have also explored Olson's insights on the role of concentrated interests in lobbying. Case studies, such as Anne Krueger on the American sugar industry, ask if the cost of collective action results in more successful lobbying by concentrated interests (1988, p. 8, 45). Empiricists construct measurements of concentration to test if concentrated interests are more likely to succeed at political lobbying (Bernhagen and Mitchell 2009, p. 160). Some researchers are inspired by Olson to discover the different ways interests, concentrated and non-concentrated, organize to overcome the costs of collective action (Pacheco *et al.* 2010, p. 989).<sup>41</sup>

The chapter is organized as follows. Section 4.2 establishes Western Union was a concentrated interest that believed it would be harmed by the act. Section 4.3 describes how the act benefited consumers and highlights empirical research demonstrating the act succeeded in benefiting consumers. Section 4.4 introduces some of the economic and political elites who expected to benefit from the act. Section 4.5 provides evidence that politicians connected with these elites were critical to the passage of the 1866 Post Roads Act. Section 4.6 concludes the paper.

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<sup>41</sup> Examples include: Collective Institutional Entrepreneurship-Wijen and Ansari (2007); Behavioral Approach-Ostrom (1990, 1998, 2000)

#### 4.2.1 Western Union as a Concentrated Interest

In 1866 Western Union was a concentrated interest. It was a large corporation built around dominating a single industry, the telegraph. After its merger with the American Telegraph Company and United States Telegraph Company in 1866, Western Union controlled an overwhelming percentage of the United States telegraph infrastructure. Table 4.1 contains information on Western Union's and its competitors' physical infrastructure in 1869. Western Union owned over 70% of the infrastructure in every category. This is likely an underestimate of the percentage it controlled in 1866 since a flurry of new telegraph companies entered the market after the passage of the 1866 Post Roads Act.<sup>42</sup>

Table 4.1: Western Union Infrastructure Compared to Competitors in 1869

Year	Telegraph Company	Telegraph Offices	Percent of Telegraph Offices	Miles of Wire	Percent of Miles of Wire	Miles of Poles	Percent of Miles of Poles
1869	Western Union	3,607	71.72%	104,584	80.00%	73,036	71.34%
	All Other Telegraph Companies	1,422	28.28%	26,111	20.00%	20,937	28.67%

Note: Data for 1869 comes from 1869 and 1873 Western Union Annual Reports and includes United States and Canada. Table summarizes subset of data in Table 3.1.

Following the 1866 telegraph consolidation there were only a handful of states not served by Western Union. One way to visualize this is to identify the states that had the option to send a message to New York City without having to ever transverse on Western

<sup>42</sup> Companies that either entered or expanded after the implementation of the 1866 Post Roads Act include: Atlantic and Pacific Telegraph Company, Pacific & Atlantic Telegraph Company, Southern Telegraph Company, and Southern & Atlantic Telegraph Company (Reid 1879, p. 444, 445, 451, 580).

Union's network in June of 1866. Those states are shaded in Figure 4.1. A few states along the Atlantic coast were able to avoid using Western Union to send a telegram.

Figure 4.1 overstates the extent of locations with a Western Union alternative to send a message to New York City in June of 1866. Only a handful of cities in each of the shaded states were serviced by a Western Union competitor. Also, while Reid records that these states were serviced by Western Union competitors around 1866, he is unclear if these companies completed their networks by June of 1866 (1879, pp. 447, 590-595).

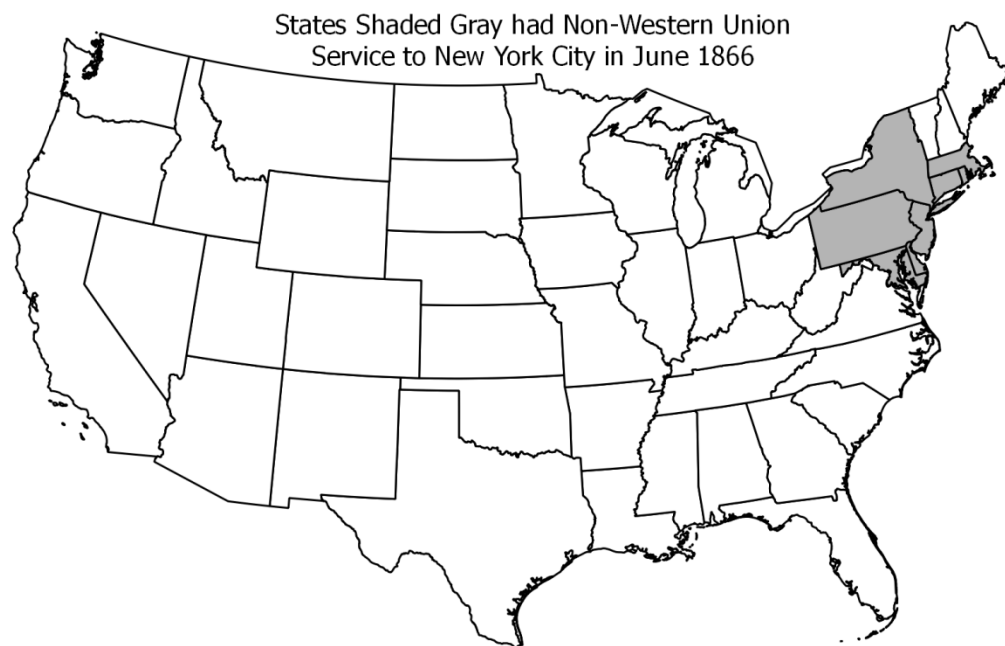


Figure 4.1: States with Non-Western Union Service to New York City June 1866

Note: Gray area represents states where the Franklin Telegraph Company, The Eastern Telegraph Company, and the Insulated Telegraph Company operated (Reid 1879, pp. 447, 590-595). The figure might overestimate the extent of the completion of these companies' networks in June of 1866. Map layer provided by Commission for Environmental Cooperation (2010).

Western Union was one of the largest corporations in the United States. Table 4.2 compares Western Union to two of the three largest railroads in the United States. Its market capitalization was between the market capitalizations of both the railroads. Western Union gross earnings were a few million dollars less than the Erie Railroad and the New York Central Railroad in 1866. That said, Western Union net earnings were slightly less than the New York Central Railroad and almost a million dollars more than the Erie Railroad.

Table 4.2:  
Comparison of Western Union to Two of the  
Three Largest U.S. Railroads 1866-1867

Company	Fiscal Year	Gross Earnings	Net Revenue	Net Earnings	Market Capitalization
Western Union	July 1866 – June 1867	\$6,568,925	\$2,624,920	\$1,520,198 to 1,694,198	\$21,939,708
Erie Railroad	Oct. 1866 – Sept. 1867	\$14,596,785	\$3,743,273	\$607,630	\$18,840,900
New York Central Railroad	Oct. 1866 – Sept. 1867	\$13,979,514	\$3,325,821	\$1,962,126	\$25,542,990

Note: Gross earnings, net revenue, net earnings, and total capital stock for 1866 are from Poor's Manual of the Railroads of the United States for 1868-69 (1868). The information is further supplemented by Western Union's 1869 Annual Report to Stock Holders. Western Union Net Earnings include an underestimate and overestimate due to imprecise records on a bond payment. July 10, 1866 stock prices are used to calculate market capitalization. Stock prices are provided by The Commercial & Financial Chronicle ("Sale-Price at the New York Stock Exchange," July 14, 1866).

#### 4.2.2 Government Favors Received by Western Union

Western Union behaved like a concentrated interest; the company built its status as the dominant telegraph company in part by seeking and receiving government favors. Western Union opposed having to interconnect with competing telegraph companies at all of its offices (Nonnenmacher 1996, p. 79). In the 1850's it successfully lobbied for a

New York state bill that limited telegraph interconnections to the first station where its route paralleled a competitors' route (Nonnenmacher 1996, p. 79). Western Union wanted to prevent revenue loss from competitors forwarding a telegram as far as possible before handing the telegram over to Western Union for distribution to its final destination (Nonnenmacher 1996, p. 79).

The 1866 Post Roads Act was not the first time Western Union engaged in federal lobbying. Hiram Sibley organized a lobbying campaign to secure Western Union a federal franchise to construct a telegraph line from the East Coast to California and a ten year \$50,000 a year government subsidy (Wolff 2014, pp. 52-54).<sup>43</sup> After debate, Congress enacted the Pacific Telegraph Act in 1860. The act provided permission to a single telegraph company to build with a maximum subsidy of \$40,000 a year (Wolff 2014, p. 55). The final subsidy amount would be settled by companies bidding for the franchise and subsidy, with the lowest subsidy bid being granted the franchise and subsidy. A company controlled by Western Union bid \$40,000 a year and was the only company to complete the bidding process (Wolff 2014, p. 57).<sup>44</sup>

Western Union also obtained preferential government treatment by acquiring companies who were granted government favors. The California State Telegraph Company owned a franchise in Nevada that granted it the exclusive right to connect Nevada with a series of cities in California. Other telegraph companies were forbidden from providing services between any two cities in Nevada also served by the California

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<sup>43</sup> The act would grant permission to build through United States territories and navigable waterways.

<sup>44</sup> There were other companies who submitted bids, but they all withdrew before the franchise was awarded (Wolff 2014, p. 57).

State Telegraph Company (Laws of the Territory of Nevada Passed at the Third Regular Session of the Legislative Assembly Chap. LXXII 1864; See 2.2.1). Western Union took control of the California State Telegraph Company no later than June of 1866 (Reid 1879, p. 497; Thompson 1947, p. 401). Western Union valued the government favor and it defended it when the Atlantic and Pacific Telegraph Company challenged the legality of the Nevada franchise in court (Western Union Telegraph Co. Appellant v. Atlantic and Pacific State Telegraph Co., Respondent, 1869).

#### **4.3.1 1866 Post Roads Act as Pro-Consumer Legislation**

The 1866 Post Roads Act benefited consumers by increasing the contestability of the United States telegraph market.<sup>45</sup> The act granted telegraph companies who acceded to its terms the right to “construct, maintain, and operate” a telegraph line along any post roads (14 USC 221, 1863-1867). This right preempted various municipal and state telegraph regulations that were entry barriers. Prior to the act, it was legal for states and municipalities to exclude telegraph entrants by enforcing exclusive franchises granted to incumbent telegraph companies (Scott and Jarnagin 1868, pp. 9-18).<sup>46</sup> After passage of the act, telegraph companies used the privileges from the act as a de facto franchise to

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<sup>45</sup> For more on the theory of contestable markets see Baumol, Panzar, and Willig’s Contestable Markets and the Theory of Industry Structure (1982).

<sup>46</sup> Examples: The state of California granted an exclusive right to the California Telegraph Company to serve a series of cities, including San Francisco and Sacramento, along a specific route (California State Telegraph Co. v. Alta Telegraph Co. 1863; Scott and Jarnagin 1868, pp. 10-11). The state of Nevada granted a franchise to John Watson that stated no other competitor within Nevada could operate between two cities Watson served as long as Watson’s telegraph company connected Humboldt County to San Francisco (Laws of the Territory of Nevada Passed at the Third Regular Session of the Legislative Assembly Chap. LXXII 1864; Western Union Telegraph Co. Appellant v. Atlantic and Pacific State Telegraph Co., Respondent 1869). The state of Maine granted the American Telegraph Company an exclusive franchise to land cables to handle telegraph messages destined to and from Europe (Blondheim 1994, p. 114; Wolff 2013, p. 40).

operate anywhere within the United States. Even if franchises were not exclusive, costs and regulations associated with acquiring a state or municipal franchise were potential entry barriers. Franchise regulations are regulations a telegraph company accepts as a condition for being granted a franchise to operate.<sup>47</sup> With the advent of the 1866 Post Roads Act, states and municipalities lost the ability to require a local franchise to operate, which destroyed their leverage to force franchise regulations upon telegraph companies.

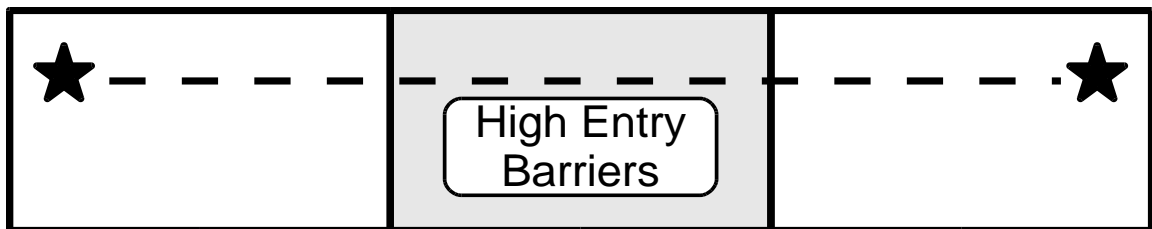


Figure 4.2: Telegraph Entry Barriers Created by Neighboring Jurisdictions

Note: Stars represent destinations sending and receiving telegrams. The dotted line is a route a telegraph company could use to construct its telegraph wires. The solid boxes represent a political jurisdiction, be it a U.S. state or municipality. The shaded box contains high political entry barriers that increase a telegraph entrant's costs within it. The high entry barriers in the shaded box also serve as entry barriers for the starred destinations in the non-shaded boxes since a telegraph company must cross the shaded box to connect them. Diagram and notes are duplicates of Figure 2.1.

These entry barriers deterred local competition and competition in neighboring states and municipalities. Figure 4.2 demonstrates why high entry barriers in a political jurisdiction can spillover and increase entry barriers in neighboring jurisdictions (See

<sup>47</sup> Franchise regulations were popular entry barriers imposed by municipalities on telephone companies because unlike telegraph companies, telephone companies were not granted any privileges by the 1866 Post Roads Act (*City of Richmond v. Southern Bell Telephone & Telegraph Co.* 1899; Gabel 1994). The laws governing the telephone industry in most locations were the same laws that would have applied to the telegraph industry without the 1866 Post Roads Act since courts regularly interpreted state and municipal laws created for telegraph companies to also apply to telephone companies (Joyce and Joyce 1907, p. 14).

2.2.2). The boxes in Figure 4.2 represent different state or municipal governments. The two stars represent two locations desiring to send and receive telegraph messages. To trade messages, the message must travel across the land controlled by the government in the shaded gray box. If the gray box has imposed an entry barrier, say a franchise requirement, a new entrant must earn a rate of return high enough to cover construction costs and franchise costs to consider connecting the destinations.

#### **4.3.2 Telegraph Market Contestability after 1866**

Competitor pressure after 1866 reduced Western Union revenue, negatively affected Western Union stock value, and led Western Union to change its telegraph prices. A change in the contestability of the United States' telegraph industry is reflected in Western Union because of its large share of the market. Western Union dominated American telegraph infrastructure into the twentieth century, never controlling less than 80% of the total miles of telegraph wire in the United States after 1866 (Nonnenmacher 2005; Hochfelder 2012; Wolff 2013; See Table 4.1).

Western Union adjusted its telegram prices to remain competitive with its post-1866 competitors. In 1873 Western Union discovered that competitors were arbitraging price differences within its network (Western Union 1873). Competitors were sending messages to hub cities and then forwarding the messages to destinations around the hub cities on Western Union's telegraph lines. Competitors realized that the local price to the hub city plus the cost to send the message to the hub city was less than the price Western Union charged to directly send the message to its destination. To prevent competitors

from continuing to arbitrage Western Union's price differences, it adjusted its direct prices to destinations around hub cities to be equal to or less than sending the telegram to the hub city and then forwarding it to its destination (Western Union 1873; See: 3.5.3).

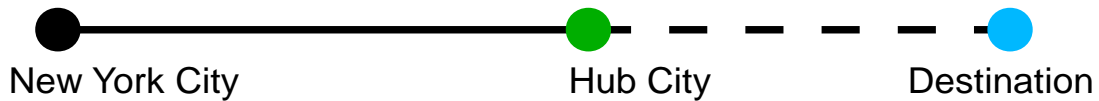


Figure 4.3: Message Route

Note: Figure is a duplicate of Figure 3.6 from section 3.5.1.

Western Union's stock price saw a significant decline when it faced competitive pressures from American Union Telegraph. American Union Telegraph challenged Western Union from 1879 to 1881 with a telegraph network constructed from the East Coast to Salt Lake City (American Union Telegraph 1879-1881; Reid 1886, pp. 579-581). After the first quarterly report where Western Union competed with American Union Telegraph for the entire quarter was released, Western Union stock suffered a significant decline of over 5% in its daily abnormal returns (See: 3.4.4). Investors were so pleased when competition with American Union Telegraph ended that the cumulative abnormal return of Western Union stock significantly increased by over 17% after it was made public that Western Union was merging with American Union Telegraph (See: 3.4.4).

Western Union suffered a reduction in revenue while charging lower prices in response to a challenge from Postal Telegraph-Commercial Cable. Postal Telegraph-Commercial Cable announced in 1884 it would send a cable from New York to London

at 40¢ a word, 10¢ a less than Western Union (Coggeshall 1934, 1984, p. 111; Reid 1886). A price war ensued where each company kept lowering their rate till a telegraph message from New York City to London declined to 12¢ a word. Revenue earned by Western Union and its cable allies collapsed during the price war. Figure 4.4 tracks the decline in revenue earned for sending the cable between New York City and London and the revenue transporting the cable between the cable office in New York City to other American cities. The price war resulted with Western Union and its partners roughly handling in 1887 double the number of messages sent in 1884 (See: 3.3.3). Revenue started to recover after Western Union and Postal Telegraph agreed to fix prices in July 1888 (Postal Telegraph-Cable Company 1888). The price fixing agreement set the price of a cable message in 1889 to half the price it was before the price war in 1884 (See Table 3.2).

#### **4.4.1 Concentrated Interests Benefited from 1866 Post Roads Act**

Concentrated interests expected to benefit from the 1866 Post Roads Act. Non-Associated Press newspapers predicted non-Western Union telegraph companies would assist in combating the Western Union New York Associated Press partnership. Politicians were connected to expanding telegraph companies anticipating to profit from the act. Businessmen investing in new telegraph companies foresaw higher returns on their investments.

#### **4.4.2 Non-New York Associated Press Newspapers Benefited from 1866 Post Roads Act**

By June of 1866 non-New York Associated Press newspapers would benefit from an increase in telegraph competition. The New York Associated Press used its partnerships with telegraph companies to hinder the development of competing press associations and non-New York Associated Press newspapers (Blondheim 2004). Among those contracts was an agreement with Western Union granting the New York Associated Press protection from competition and secured special privileges for the New York Associated Press in exchange for all of the New York Associated Press telegraphic news business (Blondheim 1994, p. 108).

The New York Associated Press repeatedly entered into contracts that secured it special privileges to counter potential rivals (Reid 1879, p. 348; Blondheim 1994, pp. 106-108). From 1856 until 1859 the New York Associated Press held a contract with the Nova Scotia Telegraph Company that granted the company exclusive privileges to send the first telegram after the arrival of a steamer (Reid 1879, p. 348).<sup>48</sup> This was part of an effort by the New York Associated Press to be the first news organization to disseminate foreign news from Europe. The arrangement allowed for the news on transatlantic liners to be dropped off in Nova Scotia, Canada and forwarded to New York City faster than the speed of a ship sailing to New York City.

This arrangement was challenged by the United States Associated Press, a rival news association owned by George W. L. Johnson and Michael A. Zabriskie (Blondheim

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<sup>48</sup> At the time the Nova Scotia Telegraph Company was the only company that connected Nova Scotia to the rest of the North American telegraph network.

1994, pp. 119-120). The United States Associated Press sought to provide foreign news to newspapers faster than the New York Associated Press. It secured a contract in 1859 with the Nova Scotia Telegraph Company to send foreign news from international ocean steamers before any other press customers, including the New York Associated Press (Reid 1879, p. 370; Blondheim 1994, p. 120).

The New York Associated Press worked with one of its American telegraph partners, the American Telegraph Company, to thwart the speed advantage of the United States Associated Press. They knew that a message destined for the rest of North America had to transverse a choke point in New Brunswick controlled by the American Telegraph Company (Blondheim 1994, p. 121). At this choke point they arranged for one of the wires to be occupied by a New York Associated Press agent and the other to conveniently be out of service when the United States Press Association's telegram arrived.

The 1866 consolidation of the telegraph industry reduced the number of telegraph companies for non-New York-Associated Press newspapers to partner with to challenge the New York Associated Press. In California the non-New York Associated Press papers were relishing the idea of the United States Telegraph Company providing a counter to the New York Associated Press papers ally Western Union (Chandler 1976, p. 475). At this time Western Union controlled the only telegraph line connecting California with the rest of the United States. Alas, this hope was dashed when Western Union merged with the United States Telegraph Company in 1866.

#### **4.4.3 Ohio Republicans who Benefited from the 1866 Post Roads Act**

Ohio Republicans were strongly connected to a telegraph company planning on using the 1866 Post Roads Act to expand its business. The original bill was designed to only grant special federal telegraph privileges to the National Telegraph Company, a company incorporated in part by members of the Ohio Republican Party (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3075; 14 USC 221, 1863-1867; Wolff 2013, p. 106).<sup>49</sup> The board of directors of the young National Telegraph Company was filled with individuals connected to Ohio. At least five people, almost half the board members for the National Telegraph Company, were from Ohio (“Directors National Telegraph Company,” n.d.; National Telegraph Company, n.d.).

Three of those members were connected to the Ohio Republican Party. John Coon, a lawyer from Cleveland, participated in the first Ohio Republican Party nominating convention and remained an active participant in Republican state conventions at least up to 1869 (Smith 1898, p. 21, 274, 276). Outside of his law practice he had a history of working government jobs: including City Clerk, City Solicitor, and as a Paymaster officer with a rank of Major in the Union Army (Early Settlers’ Association of Cuyahoga County, Ohio, 1904, p. 608). Republican George B. Senter, President of the National Telegraph Company, served two terms as the mayor of Cleveland and served as a trustee on the city council (Vail and Snyder 1890, pp. 968-969; Smith 1898, p. 98, 126, 174). Senter also benefited from other 1866 federal legislation when the Atlantic and Pacific Railroad Company, where he was an incorporator, received a federal land grant

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<sup>49</sup> The legislation was modified to be a general bill that granted privileges to all telegraph companies, including the National Telegraph Company, to secure passage in the Senate.

(14 Stat 202 July, 27, 1866). Charles T. Sherman was the older brother to Ohio Senator John Sherman and they were partners in a law office before John Sherman ran for Senate office (Katz and Vencill 1996, p. 315, Troesken 2002, p. 277).

Ohio Republican legislator Senator Sherman looked to personally profit from the 1866 Post Road Act. In a letter to Jay Cooke, Senator Sherman expressed an interest to invest in the National Telegraph Company (Sherman to Cooke 1866; John 2010, p. 118). He wrote that he believed the federal “franchise” in the 1866 Post Roads Act would help the telegraph company construct and expand its network.

#### **4.4.4 Businessmen who Benefited from the 1866 Post Roads Act**

Businessmen connected to the National Telegraph Company stood to benefit from the government grant. While it was unclear how the act was going to be enforced until after it was interpreted by the courts, it was perceived to bestow some sort of cost savings for new telegraph companies. Senator Sherman argued the bill gave the right to run telegraph wires along any “post route” within the United States (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3485). Congressman Fink interpreted the bill as a federal grant to use eminent domain to acquire land for telegraph lines (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3745). Senator Hendricks described the bill as the federal government authorizing a telegraph company organized in one state to operate within a different state (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, pp. 3488-3489). Any of these government grants would have assisted an expanding telegraph company.

Wealthy individuals with experience in government lobbying were poised to benefit from the 1866 Post Roads Act. One board member of the National Telegraph Company was Ben Holladay, who was about to receive \$1.5 million from selling his stagecoach express business to Wells Fargo in November of 1866 (Frederick 1940, p. 260).<sup>50</sup> Ben Holliday was an experienced government lobbyist from his experience in the stagecoach business. He acquired a house on K Street in Washington D.C. in order to ingratiate himself with the President, congressmen, and the post office department who controlled the distribution of stagecoach mail contracts (Frederick 1940, p. 269). Over the four years he operated stagecoaches he earned a total of \$1.9 million in revenue from government mail contracts (Frederick 1940, pp. 302-303).

Jay Cooke, the largest banker in the United States, appeared to consider investing in the National Telegraph Company. In a letter to Senator Sherman he expressed his belief that the telegraph companies were poorly managed (Wolff 204 p. 100). Senator Sherman wrote to Cooke shortly after the passage of the 1866 Post Roads Act to say he would be honored to go into the telegraph business with him (Sherman to Cooke 1866; John 2010, p. 118). Jay Cooke's papers preserved at the Historical Society of Pennsylvania further support that Jay Cooke was mulling investing into the National Telegraph Company. In these papers are handwritten notes with details about the board of the company, the paperwork to formally purchase National Telegraph Company Stock, and a note from the secretary of the company informing Cooke they had set aside 15% of the company's stock for him ("Directors National Telegraph Company" n.d.; National Telegraph

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<sup>50</sup> To put that in perspective the National Telegraph Company initially sought a capital stock of \$10 million (National Telegraph Company, n.d.).

Company n.d.; Prentice n.d.; National Telegraph Company (1866), Geo. B. Walter to Jay Cooke 1866).<sup>51</sup>

Jay Cooke had a history of engaging in government businesses. Cooke sold more United States government bonds than anyone else during the Civil War (Lubetkin 2006, pp. 9-11). He handled over 25% of all of the bonds sold during the war, and used his brother Harry Cooke's connection with Treasury Secretary Salmon P. Chase to make his initial connections to sell United States government bonds (Lubetkin 2006, p. 7). He hired Benjamin B. French, a well known Washington insider and Lincoln appointee, to help him manage his governmental affairs (Lubetkin 2006, p. 7).

#### **4.5.1 Elite's Connections to Politicians who voted on 1866 Post Roads Act**

The 1866 Post Roads Act relied on the support of politicians connected to concentrated interests to pass the bill over Western Union's objections in the United States House and the Senate. The act narrowly passed in both chambers. Table 4.3 and Table 4.4 track House and Senate votes on the 1866 Post Roads Act. The act passed the House by 11 votes and passed the Senate by 3 votes.

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<sup>51</sup> Nothing in the archive confirmed Jay Cooke sought to invest in the company. It cannot be ruled out that Senator Sherman wrote his letter to entice Cooke to invest. Nor is it clear if Cooke requested the documents for the National Telegraph Company or if the documents were sent to solicit his investment.

Table 4.3: House Votes on the 1866 Post Roads Act

Party	Yeas	Nays	Did Not Vote
Republican	66	33	34
Democrat	1	25	13
Unconditional Unionist	5	3	1
Aggregate	72	61	48

Note: Votes were recorded in the Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3747. Party affiliation was provided by Wikipedia (“39<sup>th</sup> United States Congress,” 2015).

Table 4.4: Senate Votes on the 1866 Post Roads Act

Party	Yeas	Nays	Did Not Vote
Republican	15	9	12
Democrat	0	3	7
Other	1	1	1
Aggregate	16	13	20

Note: Votes were recorded in the Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3490. Party affiliation was provided by Wikipedia (“39<sup>th</sup> United States Congress,” 2015).

#### 4.5.2 Western Union’s Opposition to the 1866 Post Roads Act

Western Union fought against the act because it feared it would undermine its efforts to deter competitors. Western Union and other large pre-1866 Post Roads Act companies attempted to deter competition by increasing the cost of entrance beyond the cost of acquiring telegraph patent rights (John 2010, p. 95; Nonnenmacher 1996, p. 134). Tactics employed to deter entry included acquiring special privileges from state and municipal governments, and obtaining “exclusive control over the best telegraph routes” (Nonnenmacher 1996, p. 134; John 2010, p. 95; See 2.2.1). The fear, as expressed in a letter by William Orton, the president of Western Union in 1866, was that the 1866 Post Roads Act would be used to remove privileges “it had acquired by ‘years of effort and at great expense’” (Orton 1866; Wolff 2014, p. 105).

Western Union lobbied to block or amend the 1866 Post Roads Act. William Orton, the president of Western Union, wrote to New York Senator Morgan to express

his opposition to the bill (Wolff 2014, p. 105). Orton provided the senator with suggested amendments to reduce the negative impact of the bill upon Western Union. Orton also reached out to private citizens to seek their support to oppose the act. In a letter to Jay Cooke, the largest banker in the United States at the time, Orton urged him to refrain from using “his ‘money, influence, or business’” to advance the act (Wolff 2014, pp. 104-105).

#### **4.5.3 Senator John Conness of California Vote for the 1866 Post Roads Act**

Non-New York Associated Press newspapers likely contributed to California Senator John Conness’ vote for the 1866 Post Roads Act in the United States Senate. Newspapers were valued beyond the money they earned in newspaper sales; they were also valued as a tool to drum up political support. Some newspapers were connected to a political party or a faction within a political party. All the papers with a New York Associated Press franchise in California were supporters of the slightly pro-Republican “People’s Party” (Chandler 1976, p. 460). These papers opposed Union Republican Senator Conness who was a Northern Democrat before the Civil War. In response, Senator Conness attempted to attract a pro-Conness paper to San Francisco (Chandler 1976, p. 470). Senator Conness possibly voted for the 1866 Post Roads Act to assist in the establishment of a pro-Conness newspaper in his home state of California (Chandler 1976, p. 470).

Senator Conness arranged for a pro-Conness newspaper, the American Flag, to move to San Francisco in 1864 (Chandler 1976, p. 470). The American Flag attempted to

gained access to telegraph dispatches. First, with Senator Conness' assistance, the newspaper applied to receive dispatches from the New York Associated Press franchises in California and was rejected each time (Chandler 1976, p. 471). Then it went to the California State Telegraph, later bought by Western Union, to contract to receive newspaper dispatches. The company demanded the American Flag pay as much as the three New York Associated Press papers paid each year combined, more than what the American Flag could afford (Chandler 1976, p. 472).<sup>52</sup> Senator Conness responded to this setback by introducing federal legislation to force the telegraph company to provide service at a lower price to the American Flag (Chandler 1976, pp. 471-472). After submitting the legislation, he encouraged the American Flag to apply again for a New York Associated Press franchise, and again, the American Flag was denied. In December of 1865, the American Flag succeeded in acquiring a New York Associated Press franchise, but all of the other California members withdrew their New York Associated Press franchises (Chandler 1976, p. 474). Their withdrawal left the American Flag to cover a Western Union telegraph bill that was originally negotiated to be divided amongst three newspapers. After seven weeks the American Flag was insolvent and all the newspapers who withdrew their New York Associated Press their franchises reinstated (Chandler 1976, pp. 474-475).

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<sup>52</sup> In response to the California Telegraph Company even considering providing service to the American Flag, one of the New York Associated Press franchises helped Western Union acquire enough shares to take over its management (Chandler 1976, p. 472).

#### **4.5.4 Ohio Republicans Support for the 1866 Post Roads Act**

Ohio legislatures were critical to passing the bill in the United States House and Senate. As already mentioned, the 1866 Post Roads Act passed the Senate by only 3 votes. One of those votes belonged to Senator Conness from California, who had a history of clashing with telegraph companies partnered with the New York Associated Press (Chandler 1976). Two more votes came from the Republican senators of Ohio whose votes supported a company with political connections to the Ohio Republican Party and to the brother of one of the Ohio senators.

Highlighting the votes of these senators understates the importance Ohio played in the Senate passage of the 1866 Post Roads Act. Particularly, the work undertaken by Senator John Sherman to navigate the bill through the Senate and secure critical votes from non-Ohio Senators needed to pass the bill. Senator Sherman chaired the committee that wrote the 1866 Post Roads Act. To assert his control over the process Senator Sherman formed the Select Committee on the National Telegraph Company to work only on the 1866 Post Roads Act (Lindley 1971, pp. 55-56). Controlling the committee enabled him to guide the bill as it drifted in and out of Senate discussion. It also placed him in a position where he had tight control over the text of the bill.

Senator Sherman faced pressure from Senator Grimes and Senator Conness to reword the bill as a general grant of federal privileges to any telegraph company organized under the laws of any state (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3428, 3481). This change was spurred by arguments that a federal charter to a single telegraph company posed little risk to Western Union since Western Union could buy out

the competitor before it constructed a single mile of telegraph line (Congressional Globe 39<sup>th</sup> Congress, pp. 3481-3489). The benefit of granting federal privileges to all telegraph companies, from Senator Stewart's perspective, was that as long as Western Union was earning large profits, it could not buy out all competitors and expect competition to end. A new competitor would keep entering the market as long as profits remained high.

Likely because of his connections to the National Telegraph Company, Senator Sherman tried to convince Senator Grimes and Senator Conness that competition with Western Union was more probable if the government granted federal privileges to a single company (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3075, 3428). He argued granting federal privileges to a single company made it easier to raise the financial capital needed to challenge Western Union. With the bill facing a tight vote, Senator Sherman yielded on the point, amended the bill, and secured its passage in the Senate (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3481).

#### **4.5.5 Ohio House Republicans Vote for the 1866 Post Roads Act**

The 1866 Post Roads Act does not pass the United States House without the overwhelming support of Republican House members from the State of Ohio. It has already been established that the directors of the National Telegraph Company were well connected with the Ohio Republican Party. These connections were possibly needed since the bill passed by only 11 votes. The Ohio House Republican delegation was the largest provider of votes for the 1866 Post Roads Act. Table 4.5 records how many Republicans voted for the bill and what percentage of each Republican House delegation

supported it. All 17 Ohio Republicans voted for the bill. These 17 votes accounted for over 25% of the Republican support for the 1866 Post Roads Act. Only the Republican delegations from states with 2 or less seats also unanimously voted for the 1866 Post Roads Act. Some states' Republican House delegations outright opposed the bill. All but one Republican congressman from New York voted for the bill. Not a single Republican congressman from the states of Michigan or New Jersey supported the bill.

Table 4.5: Number of Republican House Members who Vote for 1866 Post Roads Act

State	Number of Elected Republicans	Number Voted For 1866 Post Roads Act	Percentage Voted For 1866 Post Roads Act
Ohio	17	17	100%
Minnesota	2	2	100%
Kansas	1	1	100%
Iowa	6	5	83%
California	3	2	67%
Vermont	3	2	67%
Missouri	8	5	63%
Maine	5	3	60%
Indiana	9	5	56%
Connecticut	4	2	50%
Rhode Island	2	1	50%
Pennsylvania	15	7	47%
Massachusetts	10	4	40%
Wisconsin	5	2	40%
Illinois	11	4	36%
New Hampshire	3	1	33%
New York	21	1	4.7%
Michigan	6	0	0%
New Jersey	2	0	0%
Nebraska	1	0	0%
Total	136	66	49%

Note: Votes were recorded in the Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3747. Party affiliation was provided by Wikipedia ("39<sup>th</sup> United States Congress," 2015). The total Republicans elected include those who voted for the bill, against the bill, and were not present to vote.

The calculations in Table 4.6 demonstrate the 1866 Post Roads Act would have failed to pass in the House if the Ohio House delegation matched the voting patterns of the rest of House Republican delegations. There was a total of 121 non-Ohio Republicans in the House during the 39<sup>th</sup> Congress. Out of that number, 45% voted for the bill, 28% against the bill, and 30% abstained. When similar percentages are imposed upon the Republican House delegation, the bill fails to pass by two votes. This is true, even though rounding was undertaken in a manner that favored the bill's passage. The projection is not definitive proof the bill would have failed to pass without the incorporators' political connections to the Ohio Republican Party, but it does show the passage of the 1866 Post Roads Act was tenuous without the strong support of the Ohio delegation.

Table 4.6:  
Projected Votes for 1866 Post Roads Act if Ohio Republican  
Congressmen Matched Level of Support by Other Republican Congressmen

	Yeas	Nays	Did Not Vote
Non-Ohio Republicans	55	33	34
Percent of Non-Ohio Republicans	45%	28%	30%
Projected Ohio Vote	7.65 (8)	4.59 (4)	4.76 (5)
Projected Bill Vote	63	65	53

Note: Votes were recorded in the Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session p. 3747. Party affiliation was provided by Wikipedia ("39<sup>th</sup> United States Congress," 2015). Projected Ohio Republican votes in parenthesis add up to 17, the size of the Ohio Republican delegation. Rounding of the projected Ohio Republican votes was done in a manner that favored the passage of the bill.

## 4.6 Conclusion

Western Union was unable to prevent the passage of the 1866 Post Roads Act in the legislature that was dramatically altered by the Civil War. Southern Democrats'

departure from the House and Senate changed the voting composition of the Congress. Their departure created opportunities for new coalitions to form and defeat established elites such as Western Union (Olson 1982; Mokyr and Nye 2007, p. 53). If Southern Democrats had remained part of the Union and matched the voting patterns of the remaining 49 Democrats in the legislature then the 1866 Post Roads Act would have failed to pass (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3747, 3490).

The absence of Southern Democrats enabled a wing of the Republican Party connected to politicians, businessmen, and newspapers who benefited from the act to form a coalition to impose the 1866 Post Roads Act over the objection of Western Union. Republicans in the Congress were divided over whether to support the 1866 Post Roads Act. The reduction in potential Democratic votes to oppose the act lowered the percentage of Republican legislators needed to enact the bill. The decline in Democrats enabled a wing of the Republican Party to enact the 1866 Post Roads Act with only 49% of Republicans in the House voting for the act (Congressional Globe 39<sup>th</sup> Congress 1<sup>st</sup> Session, p. 3490).

Without the support of connected politicians the pro-consumer 1866 Post Roads Act would have failed to be enacted. The act passed the Senate by 3 votes and the House by 11 votes. Ohio House Republicans who supported the act had connections to the National Telegraph Company who stood to benefit from the federal privileges granted in the act. Devoid of the Ohio House Republicans' unanimous support, the bill would have faltered in the House. Like the transformation of Great Britain to a more "market oriented economy" in the eighteenth century, the enactment of the 1866 Post Roads Act

demonstrates pro-market pro-consumer legislation can be a byproduct of politicians pursuing policy in the self-interest of economic and political elites (Mokyr and Nye 2007; Nye 2009, p. 56).

## **Chapter 5:**

### **Dissertation Conclusion**

Local franchises were costly entry barriers for telegraph companies prior to their preemption by the 1866 Post Roads Act. Local franchise entry barriers either increased the sunk cost of construction or outright excluded new entry. Devoid of the act's protection, telegraph entrants had to consider constructing additional miles of telegraph lines in order to circumvent localities with high entry barriers, which meant selecting routes that generated less revenue to cover the sunk cost of constructing the network.

Local telegraph entry barriers produced negative spillovers for neighboring states and municipalities, and reduced competition network benefits. Each time a new telegraph office for a competitor was blocked by entry barriers, every preexisting office operated by the competitor was prevented from serving an additional competitive route. An exclusive franchise granted by one state could also be in effect an exclusive franchise to connect neighboring states. Western Union owned an exclusive franchise granted by Nevada to connect Nevada to California (Western Union Telegraph Co., Appellant, v. Atlantic and Pacific State Telegraph Co., Respondent 1869). Nevada contained the only transcontinental railroad to the West Coast until the completion of the second transcontinental railroad in 1881. Telegraph construction costs along railroads were substantially less than any other alternative route (Griswold *et al.* 1930; Western Union

1934; Nonnenmacher 1996; Wolff 2013, p. 204, 247). So the exclusive franchise Western Union possessed from Nevada in effect was an exclusive franchise to connect the telegraph system of the Pacific States to the rest of North America until 1881, unless a competitor evoked the privilege from the 1866 Post Roads Act to operate across the United States.

Local franchise entry barriers do not need to be exclusive to negatively affect neighboring states and municipalities. As long as local entry barriers increase the sunk cost of connecting a neighboring state or municipality to the larger telegraph network it becomes an entry barrier for neighboring states and municipalities. The negative spillovers from local telegraph entry barriers were trade barriers to the common market of the United States. Local trade barriers undermined market-preserving federalism and the economic efficacy of the common market (Hazlett 2003; Weingast 1995).

The 1866 Post Roads Act overcame local franchise barriers by granting telegraph companies who acceded to the terms of the act the right to “construct, maintain, and operate” telegraph lines across the United States (14 USC 221, 1863-1867). What made the act effective at countering local entry barriers was that it granted federal privileges that required no consent from local governments to employ. While recent attempts at reforming telecommunication have outlawed exclusive franchisees, the reforms have been undercut by still allowing municipalities to enact franchise regulations and require a local franchise to operate (Hazlett 2007; Lyons 2010). To protect incumbent telecommunication companies, local governments used franchise regulations to increase

the sunk costs of entrants and delaying tactics to holdup awarding new entrants the franchise to operate.

Similar tactics from states and municipalities would fail against the 1866 Post Roads Act. Expensive local franchising laws would be unenforceable when a company could elect to operate with a de facto federal franchise right. Nor would a local government be able to exclude a telecommunication entrant by delaying or denying them a franchise because the entrant could invoke their federal right from the 1866 Post Roads Act to operate. The federal right to operate granted courts the leeway to invalidate creative attempts by local governments to circumvent the act and erect entry barriers. A county in Georgia tried to exclude a telegraph company by refusing to grant a new right of way after the county ordered the company's preexisting lines to be removed so the county could widen a road (*Carver v. The State* 1912). The court ruled that the county had violated the telegraph company's privileges from the 1866 Post Roads Act and gave it permission to shift the lines along the widened road.

The 1866 Post Roads Act exemplifies that even in an industry with large sunk costs, the reduction of political entry barriers can contribute to a more contested market. The operation of telegraph companies required sinking a substantial amount of capital in thousands of miles of poles and wires. Despite the large capital costs, Western Union was repeatedly challenged by telegraph entrants who benefited from the act. Competitor pressure resulted in changes in Western Union's telegraph prices, revenue, and stock value. Western Union's price war with Postal Telegraph-Commercial Cable saw the price of international telegrams decline by a factor of 3 (see Table 3.2). Consumers took

advantage of this price decline to send roughly double the number of international telegrams than prior to the price war (Western Union 1901-1908 Statistical Notebook, 1901-1908).

The success of the act, both the effective preemption of local entry barriers and its contribution to telegraph contestability, raises the question of how to establish a similar law for contemporary telecommunications. Like the telegraph industry in the mid nineteenth century, telecommunication in the United States is composed of large concentrated interests who benefit from local entry barriers. Mancur Olson's theory on cost of collective actions predicts consumers are unable to defeat a concentrated interest. The enactment of the 1866 Post Roads Act demonstrates that politicians connected to coalitions of economic and political elites who benefit from a reform can succeed in imposing pro-consumer reforms upon other concentrated interests. Republicans who provided critical votes to pass the 1866 Post Roads Act were connected to non-New York Associated Press newspapers and investors of a new telegraph company comprised of politicians and businessmen who all anticipated benefiting from the act. Today, a coalition of search engine providers, video streamers, and other web content producers are possible concentrated interests strong enough to push for a telecommunication reform act modeled on the 1866 Post Roads Act.

A coalition of concentrated interests who benefit from telecommunication reform may not be sufficient to enact the reform. Monopolistic elites erect political barriers to protect themselves from possible reformers (Nye 2009, p. 55). One solution to toppling established elites is the introduction of something that destabilizes the old power

structure, providing an opportunity for new coalitions to impose a different social order (Olson 1982; Mokyr and Nye 2007, p. 53). In the case of the 1866 Post Roads Act, the Civil War drastically altered the political landscape when Southern states were denied the right to seat federal legislators as a repercussion for seceding. Confederate states historically elected Democrats who were ideologically opposed to Republicans. Out of 49 remaining Democrats in the House and Senate after the end of the Civil War, only 1 voted for the 1866 Post Roads Act. The exclusion of Southern Democrats prevented the additional votes required to defeat the act and created an opportunity for other concentrated interests to form a coalition to enact the act.

Did competition spurred by the secure franchise rights granted in the 1866 Post Roads Act preserve private provision of telegraph services in the United States? Ominous government regulation in an industry with non-redeployable capital, such as the telegraph industry, can create unsecure property rights that make private provision uneconomical, resulting in public provision (Levy and Spiller 1994; Troesken 1997). After Great Britain nationalized its telegraph companies in 1868, Canada was the only country other than the United States with a privately owned and operated inland telegraph system (du Boff 1984, p. 572). Following the consolidation of the United States telegraph industry in 1866 some people believed that it was only a matter of time before the United States would nationalize its telegraph system (John 2010, p. 119). Despite repeated attempts to nationalize the United States telegraph system preceding 1866, the federal government failed to take control of the American telegraph system until the end of World War I (John 2010, pp. 395-406; Hochfelder 2012, p. 32-72). While officials in

the Wilson administration hoped to permanently operate the telegraph system under government management, control was returned to the original owners after consumer outcries about telegraph price hikes and employee complaints about poor government management. The negative experience of government control versus private control operating with the secure federal privileges granted from the 1866 Post Roads Act ended any future discussion of nationalizing the telegraph industry in the United States (Hochfelder 2012, p. 34).

## Appendix 1:

Table 6.1: Western Union 1904 Telegraph Receipts by City

City	Dollar Value	Percent of Total Receipts
Baltimore	\$200,154	1%
Boston	\$469,830	2.3%
Buffalo	\$187,476	0.9%
Chicago	\$1,586,977	7.9%
Cincinnati	\$304,084	1.5%
Cleveland	\$190,839	1%
Denver	\$181,572	0.9%
Kansas City	\$303,274	1.5%
Los Angeles	\$213,528	1.1%
Minneapolis	\$220,826	1.1%
New York City	\$296,983	1.5%
New Orleans	\$2,354,128	11.8%
Philadelphia	\$435,711	2.2%
Pittsburgh	\$261,896	1.3%
San Francisco	\$469,155	2.3%
St. Louis	\$604,603	3%
Washington D. C.	\$200,020	1%
Rest of Country	\$11,538,178	57.6%

Data is from the Western Union Telegraph Company "Statistical Notebook 1901-1908" (1909). The cities listed are the 17 largest Western Union offices in terms of receipts. Records are unclear if receipts are for the 1904 Western Union fiscal year or calendar year.

## Appendix 2:

Table 6.2: Forty-Five Largest Western Union Offices by October 1908 Office Receipts

Rank	City, State	Receipts	Rank	City, State	Receipts
1	New York, NY	\$227,187	24	Indianapolis, IN	\$11,996
2	Chicago, IL	\$149,809	25	Atlanta, GA	\$11,131
3	Boston, MA	\$44,098	26	St. Paul, MN	\$10,979
4	St. Louis, MO	\$41,535	27	Dallas, TX	\$9,725
5	San Francisco, CA	\$41,444	28	Duluth, MN	\$9,705
6	Philadelphia, PA	\$38,079	29	Memphis, TN	\$8,631
7	Kansas City, MO	\$29,709	30	Columbus, OH	\$7,920
8	Cincinnati, OH	\$26,645	31	Houston, TX	\$7,797
9	New Orleans, LA	\$26,225	32	Fort Worth, TX	\$7,416
10	Pittsburgh, PA	\$23,110	33	Spokane, WA	\$7,407
11	Minneapolis, MN	\$23,009	34	Salt Lake City, UT	\$7,080
12	Los Angeles, CA	\$21,343	35	Savannah, GA	\$6,910
13	Washington, DC	\$19,638	36	Rochester, NY	\$6,387
14	Cleveland, OH	\$17,585	37	Nashville, TN	\$5,785
15	Denver, CO	\$17,367	38	Toledo, OH	\$5,759
16	Buffalo, NY	\$17,103	39	Jacksonville, FL	\$5,730
17	Baltimore, MD	\$16,325	40	San Antonio, TX	\$5,529
18	Detroit, MI	\$15,631	41	Richmond, VA	\$5,455
19	Seattle, WA	\$15,298	42	Goldfield, NV	\$5,364
20	Milwaukee, WI	\$13,548	43	Galveston, TX	\$5,276
21	Omaha, NE	\$12,588	44	Birmingham, AL	\$5,044
22	Louisville, KY	\$12,428	45	Newark, NJ	\$5,042
23	Portland, OR	\$12,167			

Data is from the Western Union Telegraph Company "Statistical Notebook 1901-1908" (1909). Receipts listed in the table are for all telegraph offices earning \$5,000 or more in receipts for the month of October in 1908.

### **Appendix 3: Formula for Estimating Postal Telegraph-Commercial Cable City Receipts**

Let  $I = \{i_1, \dots, i_n\}$  denote different locations served by Postal Telegraph-Commercial Cable (Postal) and Western Union. Receipts used are listed in Appendix 1 and Appendix 2. Western Union estimated 68.9% of its receipts in cities served by Postal were to locations also served by Western Union is used in equation 2 (Western Union 1909).

- 1)  $W_i$  = Western Union receipts at location  $i$
- 2)  $C_i = W_i * 68.9\%$  = Western Union receipts at location  $i$  to location served by Postal

Let  $S_i$  denote the share of the total receipts earned by Western Union where  $S_i$  is  $0 \leq S_i \leq 1$ . Let  $1-S_i$  denote the share of the receipts earned by Postal.

- 3)  $T_i = C_i * \left(\frac{1}{S_i}\right)$  = Total estimated competitive receipts for Postal and Western Union
- 4)  $P_i = T_i * (1 - S_i)$  = Postal estimated receipts at location  $i$

## Appendix 4:

Table 6.3: Postal Telegraph-Commercial Cable Receipts Estimates by City in 1904

City	With 15% of Market	With 25% of Market
Baltimore	\$24,336.37	\$45,968.70
Boston	\$57,125.80	\$107,904.29
Buffalo	\$22,794.88	\$43,056.99
Chicago	\$192,957.73	\$364,475.72
Cincinnati	\$36,973.04	\$69,837.96
Cleveland	\$23,203.78	\$43,829.36
Denver	\$22,077.02	\$41,701.04
Kansas City	\$36,874.55	\$69,651.93
Los Angeles	\$25,962.49	\$49,040.26
Minneapolis	\$26,849.84	\$50,716.37
New Orleans	\$36,109.64	\$68,207.10
New York City	\$286,234.27	\$540,664.73
Philadelphia	\$52,977.33	\$100,068.29
Pittsburgh	\$31,843.47	\$60,148.78
San Francisco	\$57,043.73	\$107,749.27
St. Louis	\$73,512.61	\$138,857.16
Washington D. C.	\$24,320.08	\$45,937.93

Data is from the Western Union Telegraph Company "Statistical Notebook 1901-1908" (1909). The cities listed are the 17 largest Western Union offices in terms of receipts. Records are unclear if receipts are for the 1904 Western Union fiscal year or calendar year. Estimates are based on the methodology set forth in Appendix 3. With 15% of the market means 15% of the market Western Union estimated it competed with Postal Telegraph-Commercial Cable.

## Appendix 5:

Table 6.4:  
Postal Telegraph-Commercial Cable Receipts Estimates by City in October 1908

City, State	With 15% of Market	With 25% of Market
Atlanta, GA	\$1,964.29	\$3,710.33
Baltimore, MD	\$2,880.88	\$5,441.67
Birmingham, AL	\$890.12	\$1,681.33
Boston, MA	\$7,782.00	\$14,699.33
Buffalo, NY	\$3,018.18	\$5,701.00
Chicago, IL	\$26,436.88	\$49,936.33
Cincinnati, OH	\$4,702.06	\$8,881.67
Cleveland, OH	\$3,103.24	\$5,861.67
Columbus, OH	\$1,397.65	\$2,640.00
Denver, CO	\$3,064.76	\$3,241.67
Detroit, MI	\$2,758.41	\$5,210.33
Duluth, MN	\$1,712.65	\$3,235.00
Fort Worth, TX	\$1,308.71	\$2,472.00
Galveston, TX	\$931.06	\$1,758.67
Houston, TX	\$1,375.94	\$2,599.00
Indianapolis, IN	\$2,116.94	\$3,998.67
Jacksonville, FL	\$1,011.18	\$1,910.00
Kansas City, MO	\$5,242.76	\$9,903.00
Los Angeles, CA	\$3,766.41	\$7,114.33
Louisville, KY	\$2,193.18	\$4,142.67
Memphis, TN	\$1,523.12	\$2,877.00
Milwaukee, WI	\$2,390.82	\$4,516.00
Minneapolis, MN	\$4,060.41	\$7,669.67
Nashville, TN	\$1,020.88	\$1,928.33
New Orleans, LA	\$4,627.94	\$8,741.67
New York City, NY	\$40,091.82	\$75,729.00
Newark, NJ	\$889.76	\$1,680.67
Omaha, NE	\$2,221.41	\$4,196.00
Philadelphia, PA	\$6,719.82	\$12,693.00
Pittsburgh, PA	\$4,078.24	\$7,703.33
Portland, OR	\$2,147.12	\$4,055.67
Richmond, VA	\$962.65	\$1,181.33
Rochester, NY	\$1,127.12	\$2,219.00
Salt Lake City, UT	\$1,249.41	\$2,360.00
San Antonio, TX	\$975.71	\$1,843.00
San Francisco, CA	\$7,313.65	\$13,814.67
Savannah, GA	\$1,219.41	\$2,303.33
Seattle, WA	\$2,699.65	\$5,099.33
Spokane, WA	\$1,307.12	\$2,469.00
St. Louis, MO	\$7,329.71	\$13,659.67
St. Paul, MN	\$1,937.47	\$3,659.67
Toledo, OH	\$1,016.29	\$1,919.67
Washington, D. C.	\$3,465.53	\$6,546.00

Data is from the Western Union Telegraph Company "Statistical Notebook 1901-1908" (1909). Receipts listed in the table are for all telegraph offices earning \$5,000 or more in receipts for the month of October in 1908 that was also served by Postal Telegraph-Commercial Cable.

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Yates, JoAnne. (1989) Control through Communication: The Rise of System in American Management. Baltimore: John Hopkins Press.

## **Biography**

Aaron M. Honsowetz was born in Detroit, Michigan and grew up in Southeastern Michigan. He attended James Madison College at Michigan State University where he received his Bachelor of Arts in Political Theory Constitutional Democracy and International Relations with a specialization in Political Economy in 2008. He also received in 2008 his Bachelor of Science in Economics from the Department of Economics at Michigan State University. He went on to attend George Mason University where he received his Master of Arts in Economics in 2010 and his Doctorate in Economics in 2015. Starting in the Fall of 2015, he will work as an Assistant Professor of Economics at Bethany College in West Virginia.