

“Regulatory Revival” and Employment in Telecommunications

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Introduction

In February of 1996, President Bill Clinton signed into law the Telecommunications Act of 1996, codifying the directive for the Federal Communications Commission to “promote competition” and “reduce regulation.”¹ Deregulation is not the strong suit of a regulator, but nonetheless the Commission managed to implement a number of major deregulatory policies throughout the Clinton and Bush years, often with strong bipartisan support.

As the telecommunications industry transitioned from telephone to Internet services, however, new sources of significant profits emerged in the broadband ecosystem. A struggle over these newfound rents would reignite the desire to employ regulation for special interest purposes.² The regulatory battle between the Internet’s core—broadband service providers (“BSPs”) like AT&T and Comcast—and the Internet’s edge—the new and powerful players like Google, Amazon, and Netflix—was on.

Edge providers moved quickly and decisively, developing a remarkably (and, as argued by some, inappropriately) close relationship with the Obama Administration.³ The early signals of this regulatory capture were unmistakable, beginning with the near immediate proposal of heavy-handed Net Neutrality regulation;⁴ followed by the determination that broadband was not being deployed on a “reasonable and timely basis”⁵ to justify wide-ranging interventions using Section 706 as legal

authority; and then moving on the rejection of precedent in refusing to conclude that the U.S. mobile market was “effectively competitive.”⁶ With this start, the FCC, led by Julius Genachowski and later Tom Wheeler, initiated a deliberate and sustained series of policies specifically designed to shift the ecosystem’s profits away from the core and—either directly or indirectly—towards the edge.⁷

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For BSPs, the Obama Administration turned out to be an eight-year reign of terror. The breadth of the Obama Administration’s attack on BSPs started immediately and ran wide, including, but was in no way limited to: (a) reclassifying broadband Internet access as a common carrier “telecommunications” service under Title II of the Communications Act;⁸ (b) imposing an asymmetrical privacy regime on the Internet ecosystem;⁹ (c) attempting to force Multichannel Delivered Video Providers to provide third parties access to their programming through set-top box regulation;¹⁰ (d) preempting state municipal broadband laws to facilitate

government competition against the private sector (a decision later overturned by the courts);¹¹ (e) requiring mandatory mobile data roaming, thus relieving any incentive for new entrants to build their own facilities;¹² (f) establishing an unsurmountable hurdle for forbearance from unbundling obligations;¹³ and (g) attempting to impose a massive rate cut for Business Data Services (formally known as “special access” services) based on flimsy evidence.¹⁴

Empirical evidence shows that the regulatory revival in the telecommunications industry has reduced investment between \$20 and \$40 billion annually, robbing the nation of a boom in network expansion the public wants and Section 706 of the Telecommunications Act mandates.

As firms are not passive recipients of regulation, it should come as no surprise that this “regulatory revival” at the FCC slowed the flow of capital into telecommunications networks.¹⁵ Empirical research reveals sizable declines in broadband network investment after President Obama took office, averaging a stunning \$20 to \$40 billion a year. While historical trends portended a boom in telecommunications investment after 2010, instead the U.S. saw its communications networks barely tread water in terms of capital spending.¹⁶

The effects of this reduced investment are expected to impact labor markets. Empirical research indicates there is a strong relationship between investment in telecommunications and jobs.¹⁷ If investment rises, then employment is increased; conversely, if investment declines, then employment is reduced. With the investment effects already quantified, the

purpose of this PERSPECTIVE is to examine how this reduced investment affected the labor market. Using the Bureau of Labor Statistics’ (“BLS”) data on industry employment, I quantify the effect on telecommunications jobs of the Obama Administration’s regulatory revival using the difference-in-differences (“DiD”) estimator. I find that over the period 2010-2016, the telecommunications sector lost approximately 100,000 jobs per year—many of them high-paying union jobs. This loss is the pay-equivalent of about 130,000 “average” U.S. jobs.

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Quantification of Employment Effect

Employment effects of the regulatory revival at the FCC are quantified using the difference-in-differences (“DiD”) regression,

$$y_{it} = \delta D_{it} + \lambda_t + \mu_i + \varepsilon_{it} , \quad (1)$$

where y_{it} is the (natural log of) the employment level for economic sector i at time t , D_{it} is a dummy variable that equals 1 for the period for which the broadband providers faced the possibility of reclassification (0 otherwise), μ_i is fixed effect for each economic sector in the sample i , λ_t is a time fixed effect common to all observations in time t , and ε_{it} is the econometric disturbance term that is assumed to be distributed independently of all μ and λ .¹⁸

Employment data (y) is provided by the BLS.¹⁹ I construct a panel dataset of monthly employment data for multiple sectors of the economy (both major and minor) over the years 2000 through 2016. My task is to look for employment effects in the treated “Telecommunications” sector, a subset of the “Information” sector. As in prior studies on the reclassification of broadband and the regulatory revival in telecommunications, the treatment date is set at year 2010.²⁰

For the DiD method, the control group must be selected with the parallel paths assumption in mind. That is, trends for the control group must be very similar to the treated group prior to the treatment. Based on correlation coefficients, visual inspection, and a preference for multiple minor over a single major sector, a control pool of six units was chosen: Primary Metals [C1]; Computer and Electronic Products [C2]; Electrical Equipment and Appliances [C3]; Paper and Paper Products [C4]; Plastics and Rubber Products [C5]; and Travel Arrangement and Reservation Services [C6]. The choice of control units was based solely on statistical considerations and not industry similarities.

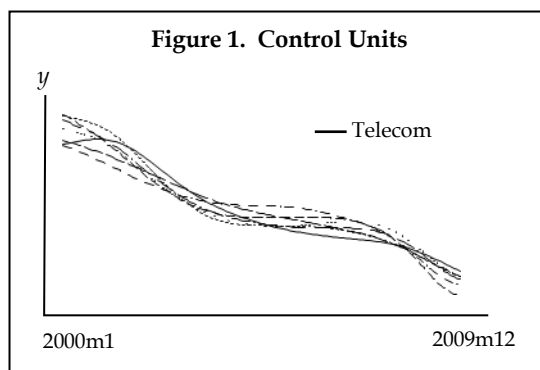


Figure 1 shows the pre-treatment employment trends for telecommunications and the control units. All the series are in natural log form and have been smoothed and centered on zero for graphical purposes.²¹ The control units follow telecommunications employment closely. Though the parallel paths assumption is untestable, researchers often conduct a test to

ensure the pre-treatment growth rates of the control group and the telecommunications employment trend are statistically equal. I conduct such an analysis and find no evidence to indicate that the growth rates are not statistically equal (t -statistic = -1.13), a result which lends some credibility to the suitability of the control group.²²

Given the difficulty measuring the edge of a dark cloud and because modifying business plans takes time, it is reasonable to permit some delay in the realization of employment changes. Consequently, I exclude both years 2010 and 2011 from the sample as treatment years, and also exclude 2012 in an auxiliary regression. There are seven sectors in the sample including telecommunications and the six control sectors. With 180 monthly observations for each sample member, there are a total of 1,260 observations in the full sample. The F -statistic of the model is significant at better than the 1% level and the R^2 is 0.997, so almost all the variation in the dependent variable is explained by the model.

Since all but one of the estimated coefficients of Equation (1) is a fixed effect (and of no particular import), the results are easily summarized. The DiD estimator is -0.105, implying the regulatory revival caused an 10% reduction in telecommunications employment.²³ The estimated coefficient is statistically significant at better than the 1% level ($t = -17.13$).

The employment effects are very large. Average employment in the telecommunications sector over the treatment period (2010-2016) is 847,145 jobs. The DiD estimator indicates the average number of jobs would have been 941,394 absent the treatment. Thus, the Obama Administration’s aggressive regulatory agenda at the FCC resulted in an average loss of 94,249 jobs annually in the telecommunications from 2010 through 2016. The 95% confidence interval of employment reductions caused by the more aggressive regulatory agenda at the FCC is 82,940 to 105,695 jobs.

Average wages in the telecommunications sector are nearly 30% above average private sector wages, so the employment effects are even more economically meaningful than the very large reduction in jobs suggests being the equivalent of about 122,000 “average” private sector jobs annually, with a confidence interval of 108,000 to about 137,000 jobs.²⁴

Excluding years 2010, 2011, and 2012 from the estimation as treatment years (N = 1,176), the estimated DiD coefficient is -0.115 (t = -17.01), with a marginal effect of -10.9%.²⁵ Annual losses are now 103,190 jobs, with a confidence interval of 90,670 to 115,877. This auxiliary model indicates that job losses during the Obama Administration averaged close to 100,000 jobs per year. Like the investment effects, the employment effects of the regulatory revival are massive.

How one feels about regulating monopolies aside, heavy-handed interventions in workably competitive markets is certainly fraught with peril. The Obama Administration's “reign of terror” on telecommunications providers is a prime example.

Influence of Control Units

In order to assess the possibility of an outsized impact on the DiD estimator of a particular control unit, Table 1 summarizes the regulation-induced job losses by excluding one control unit from the control group using a three-year treatment window. The table shows that the DiD estimator varies from the elimination of a control unit, but not by much. All the DiD estimators indicate large and statistically-significant jobs losses in the telecommunications sector.

Table 1. Influence of Control Units

Control Excluded	Δ	Jobs Lost (Annual)	AIC
None	-0.115***	103,190	-4,215
C1	-0.1113***	101,268	-3,501
C2	-0.128***	115,448	-3,620
C3	-0.111***	99,583	-3,416
C4	-0.130***	117,366	-3,640
C5	-0.104***	93,025	-3,673
C6	-0.104***	92,755	-3,610

Sig. Levels: * 10%, ** 5% *** 1%

The DiD estimator (Δ) is not terribly sensitive to the control group, and job losses are in the range of about 93,000 to 117,000. Plainly, these are all large employment effects, indicating roughly a 10% reduction in sector employment.

Table 1 also includes the Compensated Akaike Information Criterion (“AIC”).²⁶ The AIC, listed in the final column of the table, frequently is used to choose the best model across alternatives, with lower values being preferred.²⁷ A full complement of control units has the smallest AIC.

Conclusion

Government involvement in a market economy has its place, such as the defining and enforcing of property rights. Economic research and practical experience casts doubt, however, on the benefits of price regulation, and other efforts to control market activity, even under conditions of monopoly supply. As is often said, the only thing worse than an unregulated monopoly is a regulated one. More bluntly, and perhaps more apropos in this instance, Ayres and Braithwaite observe, “the only thing worse than letting market power coalesce in private hands is giving a corrupt Leviathan the power to define the parameters of market transactions.”²⁸

How one feels about regulating monopolies aside, heavy-handed interventions in workably

competitive markets is certainly fraught with peril. The Obama Administration's "reign of terror" on telecommunications providers is a prime example. Empirical evidence shows that the regulatory revival in the telecommunications industry has reduced investment between \$20 and \$40 billion annually, robbing the nation of a boom in network expansion the public wants and Section 706 of the Telecommunications Act mandates.²⁹ In turn, the reduction in capital spending reduced jobs. In this PERSPECTIVE, I offer empirical evidence showing that the Obama Administration's aggressive regulatory approach reduced employment in the telecommunications sector by about 10% or about 100,000 jobs each year.

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¹ According to the preamble of the Telecommunications Act of 1996, the Act is intended “to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced information technologies and services to all Americans by opening all telecommunications markets to competition.” Conference Report, Telecommunications Act of 1996, House of Representatives, 104th Congress, 2d Session, H. Rpt. 104-458, at p. 1.

² See, e.g., S. Peltzman, *The Economic Theory of Regulation After a Decade of Deregulation*, BROOKINGS PAPERS: MICROECONOMICS: SPECIAL ISSUE (1989) (available at: https://www.brookings.edu/wp-content/uploads/1989/01/1989_bpeamicro_peltzman.pdf).

³ See, e.g., B. Mullins, *Google Makes Most of Close Ties to White House: Search Giant Averages a White House Meeting a Week During Obama Administration*, WALL STREET JOURNAL (March 24, 2015) (available at: <https://www.wsj.com/articles/google-makes-most-of-close-ties-to-white-house-1427242076>); J. Kampis, *Google Employees Have Enjoyed Revolving Door During Obama Administration*, WATCHDOG.ORG (August 8, 2016) (reporting that more than 250 people have moved from Google and related firms to the federal government or vice versa since President Barack Obama took office) (available at: <http://watchdog.org/265844/google-obama-revolving-door>); G. Nagesh & B. Mullins, *Net Neutrality: How White House Thwarted FCC Chief*, WALL STREET JOURNAL (February 4, 2015) (available at: <https://www.wsj.com/articles/how-white-house-thwarted-fcc-chief-on-internet-rules-1423097522>).

⁴ Speech, Federal Communications Commission, *Preserving a Free and Open Internet: A Platform for Innovation, Opportunity, and Prosperity*, Prepared Remarks of Chairman Julius Genachowski at The Brookings Institution (September 21, 2009) (available at: https://apps.fcc.gov/edocs_public/attachmatch/DOC-293568A1.pdf); Press Release, Federal Communications Commission, *The Third Way: A Narrowly Tailored Broadband Framework*, Statement of Chairman Julius Genachowski (May 6, 2010) at pp. 4-5 (available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-297944A1.pdf).

⁵ *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, SIXTH REPORT, FCC 10-129, 25 FCC Rcd 9556 (rel. July 20, 2010) (available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-129A1.pdf). As was typical, in making this decision, the Commission ignored its own evidence in making this determination. See G.S. Ford and L.J. Spiwak, *Justifying the Ends: Section 706 and the Regulation of Broadband*, 16 JOURNAL OF INTERNET LAW 1 (January 2013) (available at: <http://www.phoenix-center.org/papers/JournalofInternetLawSection706.pdf>).

⁶ *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, FOURTEENTH REPORT, 25 FCC Rcd 11407 (2010) (available at: https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-81A1.pdf). The Commission continued to refuse that the U.S. wireless market was effectively competitive for the duration of the Obama Administration. See <https://www.fcc.gov/reports-research/reports/commercial-mobile-radio-services-competition-reports>.

⁷ See, e.g., T.R. Beard, G.S. Ford, T.M. Koutsky and L.J. Spiwak, *Network Neutrality and Industry Structure*, 29 HASTINGS COMMUNICATIONS & ENTERTAINMENT LAW JOURNAL 149 (2007) (available at: <http://www.phoenix-center.org/papers/CommEntNetworkNeutrality.pdf>); L. Spiwak, *Professor Susan Crawford and the Looming “Cable Monopoly”*, @LAWANDECONOMICS BLOG (November 16, 2016) (available at: <http://www.phoenix-center.org/blog/archives/899>); L.J. Spiwak, *Privacy, Profits and Broadband Investment*, THE HILL (June 8, 2016) (available at: <http://thehill.com/blogs/pundits-blog/technology/282647-privacy-profits-and-broadband-investment>).

⁸ *Protecting and Promoting the Open Internet*, REPORT AND ORDER ON REMAND, DECLARATORY RULING, AND ORDER, GN Docket No. 14-28, FCC 15-24, 80 Fed. Reg. 19738 (rel. Mar. 12, 2015) (hereinafter “2015 Open Internet Order”); see also G.S. Ford and L.J. Spiwak, *Tariffing Internet Termination: Pricing Implications of Classifying Broadband as a Title II Telecommunications Service*, 67 FEDERAL COMMUNICATIONS LAW JOURNAL 1 (2015) (available at: <http://www.fclj.org/wp-content/uploads/2015/02/Tariffing-Internet-Termination.pdf>); *Network Neutrality and Industry Structure*, *id.*

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- ⁹ See, e.g., L.J. Spiwak, *Privacy, Profits and Broadband Investment*, THE HILL (June 8, 2016) (available at: <http://thehill.com/blogs/pundits-blog/technology/282647-privacy-profits-and-broadband-investment>); L.J. Spiwak, *FCC's in Quite the Privacy Predicament*, THE HILL (February 3, 2017) (available at: <http://thehill.com/blogs/pundits-blog/technology/317658-fccs-in-quite-the-privacy-predicament>).
- ¹⁰ See, e.g., G.S. Ford, *The FCC's Cynical Set-Top Box Play*, THE HILL (February 3, 2016) (available at: <http://thehill.com/blogs/pundits-blog/technology/268004-the-fccs-cynical-set-top-box-play>); G.S. Ford, *Are Government-Owned Networks Abusing Market Power in the Set-Top Box Market? A Review of Rates*, PHOENIX CENTER POLICY PERSPECTIVE NO. 16-03 (April 14, 2016) (available at: <http://www.phoenix-center.org/perspectives/Perspective16-03Final.pdf>); G.S. Ford, *The Obama Administration is Misleading Consumers on Set-Top Box Prices*, THE HILL (April 22, 2016) (available at: <http://thehill.com/blogs/pundits-blog/technology/276969-the-obama-administration-is-misleading-consumers-on-set-top-box>); G.S. Ford, *What is the True Cost of a Set-Top Box?* BLOOMBERG BNA (May 31, 2016) (available at: <http://www.phoenix-center.org/oped/BloomberBNAMWhatistheCostofaSet-TopBox-31May2016.pdf>); L.J. Spiwak, *Set-Top Box Shenanigans at the FCC*, THE HILL (September 19, 2016) (available at: <http://thehill.com/blogs/pundits-blog/technology/296565-set-top-box-shenanigans-at-the-fcc>); see also T.R. Beard, G.S. Ford, L.J. Spiwak and M. Stern, *Wobbling Back to the Fire: Economic Efficiency and the Creation of a Retail Market for Set-Top Boxes*, 21 COMM'LAW CONSPECTUS 1-58 (2012) (available at: <http://www.phoenix-center.org/papers/CommLawConspectusSection629.pdf>).
- ¹¹ See, e.g., G.S. Ford, *The Impact of Government-Owned Broadband Networks on Private Investment and Consumer Welfare*, State Government Leadership Foundation (April 6, 2016) (available at: <http://sglf.org/wp-content/uploads/sites/2/2016/04/SGLF-Muni-Broadband-Paper.pdf>); L.J. Spiwak, *The FCC's New Municipal Broadband Preemption Order Is Too Clever by Half*, BLOOMBERG BNA (April 10, 2015) (<http://www.phoenix-center.org/oped/BloombergBNATennesseePreemptionOrder10April2015.pdf>); L.J. Spiwak, *How Municipal Broadband Railroads Due Process*, BLOOMBERG BNA (May 18, 2016) (available at: <http://www.phoenix-center.org/oped/BloombergBNAMuniBBRailroadsDueProcess18May2016.pdf>); L.J. Spiwak, *FCC Chairman Doubles Down on Political Hubris After Court Decision*, THE HILL (August 22, 2016) (available at: <http://thehill.com/blogs/pundits-blog/technology/292174-fcc-chairman-doubles-down-on-political-hubris-after-court>).
- ¹² *In re Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, FCC 11-52, SECOND REPORT AND ORDER, 26 FCC Rcd 5411 (rel. April 7, 2011), *aff'd* *Cellco Partnership v. Verizon*, 700 F.3d 534 (D.C. Cir. 2012).
- ¹³ *In the Matter of Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Phoenix, Arizona Metropolitan Statistical Area*, FCC 10-113, MEMORANDUM OPINION AND ORDER, 25 FCC Rcd 8622 (rel. June 22, 2010); G.S. Ford and L.J. Spiwak, *Section 10 Forbearance: Asking The Right Questions To Get The Right Answers*, 23 COMM'LAW CONSPECTUS 126 (2014) (available at: <http://scholarship.law.edu/commlaw/vol23/iss1/5>).
- ¹⁴ G.S. Ford, *How (and How Not) to Measure Market Power Over Business Data Services*, PHOENIX CENTER POLICY PAPER NO. 50 (September 2016) (<http://www.phoenix-center.org/pcpp/PCPP50Final.pdf>). Indeed, with their incompetence caught by the Commission's own external peer review, the agency attempted to limit the damage by releasing the external peer review on the same day public comments were due, raising significant due process concerns. See L.J. Spiwak, *The FCC's Lack of Respect for Due Process - Part II*, THE HILL (July 7, 2016) (available at: <http://thehill.com/blogs/pundits-blog/technology/286789-the-fccs-lack-of-respect-for-due-process-part-ii>).
- ¹⁵ See G.S. Ford, *Is the FCC's Regulatory Revival Deterring Infrastructure Investment?* BLOOMBERG BNA (November 13, 2015) (<http://www.phoenix-center.org/BloombergBNAINvestmentCounterfactual13Nov2015.pdf>).
- ¹⁶ G.S. Ford, *Net Neutrality, Reclassification and Investment: A Counterfactual Analysis*, PHOENIX CENTER POLICY PERSPECTIVE NO. 17-02 (April 25, 2017) (available at: <http://phoenix-center.org/perspectives/Perspective17-02Final.pdf>); G.S. Ford, *Net Neutrality, Reclassification and Investment: A Further Analysis*, PHOENIX CENTER POLICY PERSPECTIVE NO. 17-03 (May 16, 2017) (available at: <http://phoenix-center.org/perspectives/Perspective17-03Final.pdf>).
- ¹⁷ T.R. Beard, G.S. Ford, and H. Kim, *Capital Investment and Employment in the Information Sector*, 38 TELECOMMUNICATIONS POLICY 371-382 (2014) (available at: <http://www.sciencedirect.com/science/article/pii/S0308596113002000>). An earlier version was published as *Jobs, Jobs, Jobs: Communications Policy and Employment Effects in the Information Sector*, PHOENIX CENTER POLICY BULLETIN NO. 25 (October 2010) (available at: <http://phoenix-center.org/PolicyBulletin/PCPB25Final.pdf>).

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As was typical of the Obama Administration, rather than offer up a meaningful critique of this paper, the FCC levied a vicious *ad hominem* attack on their official blog (a particularly odd strategy given that the Phoenix Center never even filed the paper with the Commission). See P. deSa, *Theory vs. Practice*, OFFICIAL BLOG OF THE FEDERAL COMMUNICATIONS COMMISSION (October 6, 2010) (available at: <http://reboot.fcc.gov/blog?authorId=88066>). Significantly, the Commission's response proved even too much for the cynical telecom trade press, who have seen more than their fair share of shenanigans in the net neutrality debate. See, e.g., *Editorial: Phoenix Center Gets Flamed*, MULTICHANNEL NEWS (October 6, 2010) ("If the Phoenix study equations are off, that is one thing, but just because they are equations doesn't make them *de facto* mockable. *** Bottom line is, I wonder, and have wondered before, at the wisdom of government officials taking aim at critics in blogs unless it is to rebut the arguments in the normal bureaucratic monotone that is less engaging but perhaps more appropriate to the venue (the FCC not a blog, for which almost anything seems to go). Just a thought.") (available at: <http://www.multichannel.com/blog/capital-letters/phoenix-center-gets-flamed/323613>).

¹⁸ See, e.g., B.D. Meyer, *Natural and Quasi-Experiments in Economics*, 13 JOURNAL OF BUSINESS & ECONOMIC STATISTICS 151-161 (1995); J.D. Angrist and J.S. Pischke, *MOSTLY HARMLESS ECONOMETRICS: AN EMPIRICIST'S COMPANION* (2008); J.D. Angrist and A.B. Krueger, *Empirical Strategies in Labor Economics*, in HANDBOOK OF LABOR ECONOMICS (Volume 3A)(1999) (O. Ashenfelter and D. Card, eds.) at Ch. 23; see also D. Card, *The Impact of the Mariel Boatlift on the Miami Labor Market*, 43 INDUSTRIAL AND LABOR RELATIONS REVIEW 245-257 (1990); S. Galiani, P. Gertler, and E. Scharfrodsky, *Water for Life: The Impact of the Privatization of Water Services on Child Mortality*, 113 JOURNAL OF POLITICAL ECONOMY 83-123 (2005) (available at: <http://sekhon.berkeley.edu/causalinf/papers/GalianiWater.pdf>).

¹⁹ United States Department of Labor, Bureau of Labor Statistics (available at: www.bls.gov/data).

²⁰ See *supra* n. 16.

²¹ Since the data is monthly and subject to cyclical variation, a smoothed series was used for some of this preliminary analysis. To create this series, I apply the Hodrick-Prescott Filter to the data. My goal is to smooth out the cyclical variation without introducing spurious trends, so a relatively low smoothing parameter is used considering the data is monthly ($\lambda = 2,500$).

²² The regression in the pre-treatment period is of the dependent variable on a time trend, an interaction term of the trend with a dummy for the telecommunications sector, and sector fixed effects.

²³ The marginal effect is $\exp(\Delta) - 1$.

²⁴ Wage data is available at www.bls.gov/data (comparing private sector wages to the telecommunications sector).

²⁵ Excluding only year 2010 as the treatment window, the DiD estimator indicates an average job of 84,154 jobs (with t-statistic -16.54).

²⁶ A compensated AIC is used to address the difference in sample sizes.

²⁷ H. Akaike, *A New Look at the Statistical Model Identification*, 19 IEEE TRANSACTIONS ON AUTOMATIC CONTROL, 716-723 (1974); H. Linhart and W. Zucchini, *MODEL SELECTION* (1986); K. P. Burnham and D. R. Anderson, *MODEL SELECTION AND MULTIMODEL INFERENCE: A PRACTICAL INFORMATION-THEORETIC APPROACH* (2002); J. E. Cavanaugh, *Unifying the Derivations for the Akaike and Corrected Akaike Information Criteria*, 33 STATISTICS & PROBABILITY LETTERS 201-208 (1997).

²⁸ I. Ayres and J. Brathwaite, *Partial Industry Regulation: A Monopsony Standard for Consumer Protection*, 80 CALIFORNIA LAW REVIEW 13-53 (1992), at p. 14 (available at: http://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=2533&context=fss_papers).

²⁹ 47 U.S.C. §1302. Section 706 is comprised of two relevant sections. Under Section 706(a),

The Commission and each State commission with regulatory jurisdiction over telecommunications services shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing, in a manner consistent with the public interest, convenience, and necessity, price cap regulation, regulatory forbearance, measures that promote competition in the local

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telecommunications market, or other regulating methods that remove barriers to infrastructure investment. 47 U.S.C. §1302(a).

Section 706(b), in turn, requires the Commission to conduct a regular inquiry “concerning the availability of advanced telecommunications capability.” 47 U.S.C. §1302(b). It further provides that should the Commission find that if “advanced telecommunications capability is [not] being deployed to all Americans in a reasonable and timely fashion,” then it “shall take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.” *Id.* The statute defines “advanced telecommunications capability” to include “broadband telecommunications capability.” 47 U.S.C. §1302(d)(1).