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**What Do Economists Know About Net Neutrality Regulation?  
Quite a Lot, and the FCC Should Pay Attention**

by

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The initial and reply comments from interested parties are in, the arguments have been made, and now the Federal Communications Commission will decide whether to move beyond its 2015 order that placed the Internet under public-utility regulation designed during the Great Depression. There have been many parties on both sides of the issue who have embraced the devolution of the discussion into sloganeering – Net Neutrality! Discrimination is bad! Or: Internet Freedom! Freedom is good!

Millions of comments have been filed with the FCC, albeit most with little understanding of the issues involved other than that many celebrities and the “cool” tech companies say that the FCC wants to “kill net neutrality.” Nevertheless, there are serious policy debates to be had about the open Internet, and reasoned arguments to be made. I want to focus here on the economic analysis of key net neutrality rules such as bans on paid prioritization of Internet traffic, blocking or throttling traffic, or disallowance of fees to deliver traffic to the “edge” of the network. While economic analysis is less headline-grabbing than the slogans, and no academic discipline can perfectly predict the evolution of such a rapidly changing technology such as the Internet, it is important to look at what we already have learned as the FCC crafts its policy.

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What do economists know about the issues surrounding net neutrality and Internet regulation? I joined an ad hoc group of academic economists headed up by Mark Jamison from the University of Florida in putting together an objective compilation of known results about net neutrality issues from the economic literature.<sup>1</sup> Our goal was to set forth whether the economic literature supports net-neutrality-type restrictions on Internet service providers. To be transparent about which studies we would discuss, we limited the pool to articles published in the top 300<sup>2</sup> peer-reviewed economics journals. The restriction to top journals is important, because not all peer-reviewed journals have uniformly high standards for publication. We didn't feel that a paper slipped into The Lower Slobobian Journal of Economics (to make up a title to avoid offending any researchers) should be treated with the same respect or weight as research that appeared in American Economic Review or even Information Economics and Policy.

The restriction to peer-reviewed journals is also highly important, because (as the old saying goes) "figures don't lie but liars figure." Since we reviewed theoretical rather than empirical papers,<sup>3</sup> perhaps a more germane recasting of the saying would be that "theorems follow logically from axioms and assumptions, but people with varying motives and interests make the assumptions." The record of the contentious FCC proceedings touching on net neutrality is filled with references to unpublished studies of highly varying quality and white papers that did not undergo peer review. Such studies can be useful to fill gaps in the literature, but sometimes their choice of data, assumptions, modeling, and analysis are guided by narrow self-interest.<sup>4</sup> Before beginning a review of what we found, it is also important to note that I do not claim in this essay to speak for any of the other co-signers of our summary.

So, what did we find? Of surprise to none of us, we found that (as in most other areas of economic analysis of complex issues) most models predict a variety of possible outcomes. This

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<sup>1</sup> Mark A. Jamison, Michelle P. Connolly, Gerald Faulhaber, Janice Hauge, and James Prieger, Economic Scholars' Summary of Economic Literature Regarding Title II Regulation of the Internet, comments filed Before the Federal Communications Commission in the Matter of Restoring Internet Freedom (WC Docket No. 17-108), 2017. The Summary is available at: [http://warrington.ufl.edu/centers/purc/purcdocs/papers/1703\\_Jamison\\_Review\\_EconLit\\_TitleIIRegulation\\_ofInternet.pdf](http://warrington.ufl.edu/centers/purc/purcdocs/papers/1703_Jamison_Review_EconLit_TitleIIRegulation_ofInternet.pdf). No author received any compensation from any entity for this work.

<sup>2</sup> As ascertained from the IDEAS/RePEc Aggregate Rankings for Journals, available at: <https://ideas.repec.org/top/top.journals.all.html>.

<sup>3</sup> Despite the many numbers that have emerged from the various studies performed by interested parties in the record of the FCC proceedings over the last several years, peer-reviewed published empirical work that speaks directly to net neutrality issues is virtually nonexistent. I expect this state of affairs to change greatly during the coming decade as more data from varied experiences and practices becomes available for study.

<sup>4</sup> Having participated in such research myself, I do not mean to suggest that self-interest alone or being compensated to perform research necessarily invalidates the findings. Far from it. But it takes much more time than we had, however, to sift through the dozens of white papers in the record. Consider this: when I peer-review a paper that has been submitted to a journal, I may spend anywhere from several hours to a few weeks going over the methodology, thinking about whether best-practice was followed and good research decisions were made, and whether the conclusions follow solidly and logically from the premises or data. Multiply that time by the two to four scholars reviewing any one paper for a journal. That doesn't even include the additional time spent by the editor of the journal assigned to the paper. The total burden of time invested in checking the quality of articles published in a peer-reviewed journal quickly adds up.

is not to say that “anything can happen” or to throw up our hands and conclude that economic theory is useless. When a model predicts several outcomes, it is usually because the modeler admitted a range of assumptions about consumer behavior or the nature of competition among Internet providers. Therefore, it becomes important to examine which assumptions lead to which outcomes, rather than merely counting the number of articles that lead to one’s desired conclusion.

The first question we looked at was the economic impact of prohibitions on Internet service providers offering enhanced features (such as “fast lanes”) to content providers like Netflix or YouTube. The twelve articles we found that addressed this issue generally concluded that such prohibitions decrease economic welfare (the total benefits created by a market, whether accruing to consumers, content providers, or ISPs). Models yielding the opposite conclusion usually seemed to have unrealistic assumptions hard-wired into them, such as assuming that ISPs have fixed instead of varying bandwidth – a very short-term assumption – or assuming away content providers who might value lower-quality, lower-cost (or higher-quality, higher-cost) service. This result is not surprising; whether net neutrality proponents admit it or not, the Internet is already built upon fast lanes for content providers valuing high-quality higher cost arrangements in the form of “peering connections” and “content delivery servers” – because that is what these edge providers want.

The second question is whether those sorts of net neutrality prohibitions on ISPs’ offerings hinder the ISPs’ investment in networks. At first the answer seems like it should be obvious: the more freedom the ISPs have to design services that content providers want, the more profit they can make from the network, and therefore the more incentive they would have to invest in its maintenance and expansion. Indeed, several of the five papers we found demonstrate that logic: prohibitions lead to less investment. Other outcomes are theoretically possible, however, if (for example) fast lanes do not stimulate enough additional content by remaining content providers to make up for small content providers who might leave the network. The real-world relevance of such results appears to be limited, though, since the freedom to tailor offerings to content providers also gives freedom to find ways to keep such small providers profitably on the network. Keep these results in mind when the FCC Chairman says that to change his thinking about net neutrality, it would take credible economic analysis that shows that the 2015 regulations increased infrastructure investment. Given the expectations from the literature, the burden when turning to data is properly placed on those who wish to claim that onerous regulation does not harm investment.

Third, what do we know about how prohibitions on ISPs’ enhanced features affect the variety of content and investment in its creation? Again there were a variety of answers in the seven articles we found, but many models concluded that the prohibitions lowered the value of some content, and therefore investment in content and its variety. This is a natural result: with the freedom to design fast lanes and other offerings that provide value to content providers, some types of content become more valuable to create and sell to Internet users. Would the Amazons, Netflixes, and Hulus of the Internet world invest millions in developing new original series if they could only be delivered over congested “slow lanes”? And not all the action happens on the “large and fast” side of the market, where the established content providers reside. Some newer, smaller content providers might prefer low-cost, relatively slow service. For example, a personal

calendar organizer app may not require the same speed or quality guarantees as full-motion video would. Without higher-priced fast lanes, there are no lower-priced slower lanes, and content providers desiring slower service may be priced out of the market.

Fourth, do regulations that prevent ISPs from charging to deliver traffic to the edge increase economic welfare? This question has to do with whether an ISP can charge an edge provider to terminate traffic to it, the same way the local phone company on the receiving end of a cross-country call has to pay the originating phone company. The 2015 net neutrality regulations prohibited such payments. Not many papers look at this issue, but we found three. Interestingly, the answers are nuanced. One might think that such charges are necessarily bad for content providers. After all, how could paying to receive traffic be better than getting it delivered for free? In some cases, however, the answer is that paying to receive traffic gives more incentive to the network providers to invest in network quality. With higher quality networks, the edge providers receive more traffic – more clicks – and make more money on advertising, which can outweigh the disadvantage of having to pay the ISP to terminate the traffic. This is just one more example of a common theme to many of the varied results in the literature: the option to pay more to receive higher quality is valued by some content providers. This is not a general result, but each paper we found identified circumstances plausible to at least some settings under which allowing termination charges would increase economic welfare.

What about restrictions on blocking certain types of content? If the ISP is also the “phone company” (to use a dated term), it may wish to block competing services such as VoIP offered by edge providers. Is that always detrimental to economic welfare? Since such actions would appear mainly to stifle competition to the advantage of the incumbent, it is not surprising that the three papers we found conclude that blocking harms welfare under at least some circumstances. Even in this case, however, it remains to be emphasized that anything that lowers the profit from the network to the ISP necessarily lowers incentives to invest in its maintenance, improvement, and extension. It is also worth noting that the antitrust authorities in the U.S. outside the FCC already take a dim view of the legality of such “foreclosure” of essential inputs to rivals, leaving open a viable recourse to the courts should an ISP attempt such behavior.

So with what do these various results leave us? First, with the knowledge that a lot of serious work by scholars is available to help isolate the impact of the various practices prohibited by net neutrality rules. Second, with the impression that – my earlier cautions against “counting results” notwithstanding – the economic rationale against many net neutrality prohibitions is quite strong (with the important potential exception of blocking). Third, with the hope that the FCC will make use of this knowledge this time around...because last time it did not.

It is highly disappointing to recognize that this accumulated body of knowledge was largely ignored in the FCC’s 2015 Open Internet Order. Some of the studies we reviewed were published after that time, but most were not. How many of these papers did the FCC cite in its order? Exactly zero. In fact, Michelle Connolly, a former two-time chief economist at the FCC (and with whom I worked there, briefly) and a co-signer of our summary, noted recently that the

2015 Order apparently cited only four peer-reviewed, published papers.<sup>5</sup> None of them were specifically on net neutrality. Three were from a single author – another former chief economist at the FCC, Michael Katz (professor at UC Berkeley and former advisor of mine from my graduate school days) – who has since noted that his papers have results that are the “opposite of the pro-net neutrality narrative” and that he suspects his papers were cited as an “inside joke” by the FCC staffers.<sup>6</sup>

Much has been written about the lowly status of economics at the FCC during the previous administration, and I will not rehearse those arguments. Suffice it to mention two salient points: lawyers at the FCC should not be in charge of picking and choosing which “results” from the economic literature to cite; and policymaking should proceed from analysis of facts, including economic analysis, to regulatory conclusions, not the other way around. Given the faulty reasoning in the 2015 Order, at least concerning the economic issues, I find it either amusing at best and disingenuous at worst that certain “pro net neut” parties claimed in the final round of comments in the FCC’s proceedings that the current Commission is relying on “bad analysis,” having pre-judged the issue on the basis of “feeble evidence.” This, about the FCC Chairman who I heard a few months ago (after wading through the rent-a-protester moblet outside the venue) discuss plans for a new internal Office of Economics and Data to empower economists at the Commission to perform analysis and research to improve policies<sup>7</sup> and who has spoken elsewhere on the importance of economic analysis at the FCC.<sup>8</sup>

I hope and expect, along with many of my fellow economists, that this time around more than lip service will be paid to economic analysis. Politics, administrative feasibility, less-quantifiable social goals such as the “public welfare” – these will always have a place and play a role in policymaking. The solid foundation, however, should be provided by the underlying economics. And on balance, economic analysis gives many reasons to be suspicious of several aspects of the 2015 net neutrality regulations.

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The Free State Foundation, an independent, nonpartisan free market-oriented think tank located in Rockville, Maryland.

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<sup>5</sup> “Bringing Economics Back into the Net Neutrality Debate”, July 12, 2017, Forbes.com, available at <https://www.forbes.com/sites/washingtonbytes/2017/07/12/bringing-economics-back-into-the-net-neutrality-debate/#62e32c3769da>.

<sup>6</sup> *Ibid.*

<sup>7</sup> Ajit Pai, speech given at the American Enterprise Institute in Washington, DC, May 5, 2017, transcription available at <https://www.aei.org/wp-content/uploads/2017/04/170505-AEI-A-New-Course-for-the-FCC-Ajit-Pai.pdf>.

<sup>8</sup> Ajit Pai, “The Importance of Economic Analysis at the FCC,” speech given at the Hudson Institute in Washington, DC, April 5, 2017, available at [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-344248A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-344248A1.pdf).