

The Economics of Network Neutrality

Are “prophylactic” remedies to nonproblems needed?

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Since “network neutrality” first appeared in policy debates, its meaning has been less than crystal clear. Some advocates have argued that net neutrality demands that broadband Internet service providers (ISPs) treat all bits equally: “a bit is a bit is a bit,” while others make exceptions for malware bits, spam bits, child pornography bits, etc. Some advocates have argued that net neutrality must apply not only to wired broadband ISPs, but to wireless broadband providers as well, while others recognize that wireless broadband has a unique technological structure that requires more stringent and flexible capacity management than is consistent with “a bit is a bit is a bit.”

The Federal Communications Commission has recently issued a Report and Order (R&O) promulgating its network neutrality rules. As might be expected, the R&O strikes a middle ground between purists on each side of the debate. (Curiously, the FCC itself seems to have foresworn the use of the term “network neutrality,” preferring to adopt phrases such as “preserving the Open Internet” and “Open Internet rules.” In this article, I continue to use the traditional terminology.)

In this article, I describe the FCC’s recently enacted regulation on network neutrality and then I ask three questions:

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- What economic problem is net neutrality designed to solve? What is the empirical evidence concerning this problem?
 - What can economic theory tell us about potential problems in the broadband ISP market?
 - What can empirical political economy tell us about likely outcomes of net neutrality policy interventions?
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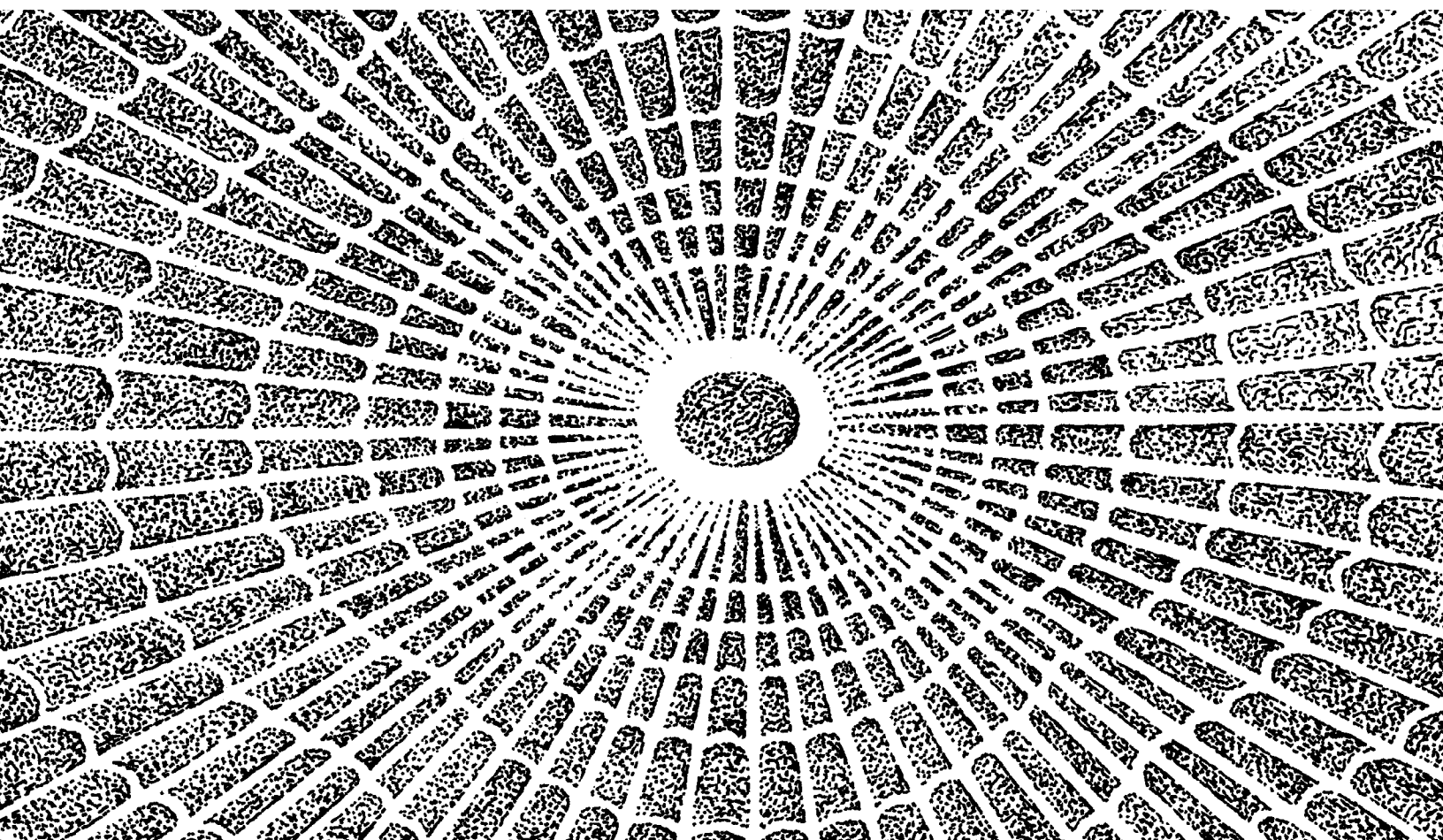
Current FCC Net Neutrality Regulations

The R&O specifies four “principles,” each of which is discussed below.

Transparency | Under the new regulation, “broadband Internet access service shall publicly disclose accurate information regarding the network management practices, performance, and commercial terms of its broadband Internet access services sufficient for consumers to make informed choices.” This means that broadband ISPs are required to disclose publicly the following:

- **Network practices**, such as congestion management, application-specific behavior, device attachment rules, and security.
- **Performance characteristics**, such as technology, speed, usefulness for certain applications, and what other specialized services are available.
- **Commercial terms**, such as pricing, privacy policy, and redress options should disputes arise.

The transparency rules are relatively flexible; some advocates



had argued for much more specific and detailed disclosures and are now disappointed in the flexibility of the adopted rules. But generally, this principle of disclosure is rather close to best practice in the broadband ISP industry today and the principle is strongly supported by scholarly work. The transparency principle is the least controversial of the FCC's network neutrality rules.

No blocking and no unreasonable discrimination | Under the new regulation, a “broadband Internet access service [provider] ... shall not block lawful content, applications, services, or non-harmful devices, subject to reasonable network management.” This rule is also interpreted to prohibit broadband ISPs from degrading service (e.g., slowing it down) for a specific application. Broadband ISPs are also prohibited from charging a fee in order to carry an application (i.e., blocking the application unless a fee is paid).

Also under the regulation, a “broadband Internet access service [provider] ... shall not unreasonably discriminate in transmitting lawful network traffic over a consumer's broadband Internet access service. Reasonable network management shall not constitute unreasonable discrimination.” This rule contains a blockbuster clause: broadband ISPs are not permitted to charge application and content providers for access to their customers. I discuss this more below, in a discussion of two-sided markets.

While this rule seems a bit vague (note the use of the terms

“unreasonable” and “reasonable”), the R&O does specify ISP behaviors that help them become “reasonable”: transparency, end-user (i.e., customer) control, use-agnostic discrimination, and adoption of industry best-practice standards.

The FCC suggests that any attempt by broadband ISPs to offer application and content provider services over and above plain-vanilla Internet (i.e., pay for priority service, such as quality of service), while not *per se* forbidden, would be looked upon quite negatively by the FCC.

Reasonable network management | Under the new rule, a “network management practice is reasonable if it is appropriate and tailored to achieving a legitimate network management purpose, taking into account the particular network architecture and technology of the broadband Internet access service.”

Network management is a core function for any network operator, be it voice telephony or Internet data. This is poorly understood by the public and, indeed, by many advocates for net neutrality. The FCC specifies the principles of transparency, end-user control, and use-agnostic methods as determinative of reasonableness. They also specify network management functions relating to network security, congestion management, and (customer-) unwanted traffic as the appropriate scope for network management.

While some net neutrality advocates believe network manage-

ment is a thinly disguised cover for bad action on the part of broadband ISPs, the FCC has chosen an approach that recognizes the need for network management while seeking to ensure it is not misused for nefarious ends. Broadly speaking, the rule as written appears close to today's best practice by broadband ISPs.

Mobile broadband | The FCC rules apply only the transparency rule and the no-blocking rule to mobile broadband, relaxing the rules on discrimination and network management. This relaxation of rules for mobile reflects a view that mobile broadband is a different technology with different (and more significant) constraints than wired broadband. I do not discuss this topic in this article, but readers interested in the topic should see my paper with David Farber, "Innovation in the Wireless Ecosystem: A Customer-Centric Approach," that appeared in the 2010 *International Journal of Communications*.

To What Problem Is Net Neutrality the Solution?

Given the level of interest in network neutrality, one could be forgiven for thinking that the Internet is being violated by rapacious broadband ISPs and there is not a moment to lose in protecting its openness. Since we have had broadband ISPs in the United States for over a decade, one might think that the practices of blocking, discrimination, and disadvantaging competitors would be rife and such practices well-documented, but one would be wrong.

The R&O (§§21–32) cites chapter-and-verse all the incentives and opportunities that broadband ISPs have to abuse their position to enhance their profits at the expense of application and content providers and the ISPs' own customers. The expressed concerns, which echo those outlined by Barbara van Schewick in a 2007 *Journal on Telecommunications and High Technology Law* paper, are concerns about the economics of broadband ISPs, but nowhere in the R&O can we find anything approaching an economic analysis of these hypotheses (or allegations). In fact, one has to read the R&O very closely to find any empirical evidence that any of the suspect behaviors the FCC seeks to prevent have actually occurred. The R&O (§35) offers only four examples:

- In 2005, Madison River Communications, in its role as a broadband ISP in North Carolina, blocked its customers from using Vonage, a VoIP phone provider that competed with Madison River's main telephone business. After complaints to the FCC, Madison River paid a \$15,000 fine and stopped the practice.
- In 2007–2008, Comcast interfered with BitTorrent traffic (a peer-to-peer file-sharing application often used to share large video files) that it claimed was congesting its network. The FCC issued an order prohibiting Comcast's network management practices. Comcast duly changed its practices, but took the FCC to court, claiming the agency lacked jurisdiction. The D.C. District Court agreed with Comcast and the issue was remanded to the FCC.

- The American Civil Liberties Union, in a letter to the FCC, alleged that a mobile service provider had blocked the use of an application because the provider had a competing application. This issue apparently never made it to the formal complaint stage.
- In 2009, Apple and AT&T blocked the use of WiFi connectivity rather than AT&T's own 2G and 3G services on their successful mobile iPhone. The issue was resolved by the FCC.

So, in over a decade, there were only four examples of purported misconduct (one that was denied by the courts and another that didn't even rise to the level of a formal complaint) for the entire broadband ISP industry. By any standard, four complaints about an entire industry in over a decade would seem to be cause for a commendation rather than restrictive regulation.

The FCC acknowledges the lack of evidence of actual wrongdoing by referring in the R&O to the proposed rules as "prophylactic" or preventive. Their purpose is to prevent things from happening that haven't actually happened thus far. Further, the R&O (§4) acknowledges explicitly that the rules "incorporate longstanding openness principles that are generally in line with current practices and with norms endorsed by many broadband providers." If the rules are indeed aligned with current practices and norms, then why do we need them?

Several justifications for promulgating the rules have been offered. Some offer the opinion that broadband ISPs have not engaged in bad behavior because they know that regulators and legislators are watching and will enact punitive regulations should the ISPs engage in bad practices. Of course, this actually argues against regulation; if the mere threat of regulation is sufficient to deter bad behavior, then perhaps we should stick with mere threats.

Others have suggested that broadband ISPs formerly were subject to common carrier obligations, which are tantamount to network neutrality. This suggestion is false historically. In fact, cable firms have never been subject to common carrier obligations and telephone companies' digital subscriber line (DSL) service, while temporarily subject to mandated line-sharing, was never formally designated as a common carriage service.

Still others have argued that new technology for "deep packet inspection" (which permits an ISP to inspect data packets that transit its servers to determine source, destination, content, and other data associated with that packet) permits ISPs to discriminate among data being delivered from application and content providers to their customers and therefore discriminate against competitive services. But this ability is hardly new; providers of Internet servers such as Cisco have sold ISPs servers with the capability of detailed tracking of their data traffic since at least 1999. Packet inspection is an old technology, dating to the earliest days of broadband ISPs. It does not pose a new threat that might upset long-established behaviors in this market.

No problem actually exists for which network neutrality is a solution. The litany of evils imagined that might occur have almost never occurred in the past, and there is no evidence that the market environment of broadband ISPs is undergoing a

change that might justify concerns about as-yet-unrealized threats.

Are the problems that net neutrality purports to solve purely imaginary? Are “prophylactic” remedies to nonproblems needed? I leave it to the reader to decide.

What Does Economic Research Tell Us about Broadband Service?

In the previous section, I established that no problem exists that needs to be improved through regulation. If there is no problem to be fixed, then there are no possible benefits to be obtained from net neutrality regulation and, therefore, costs of such regulation will always exceed benefits. End of story.

Is there any way a prophylactic policy could be justified in light of this lack of evidence? It is possible that the Internet environment is changing so that the past is not a good guide to future performance. Two possible changes could have an impact on broadband ISP behavior, at least in theory.

First, future application trends, such as streaming video, could use far more bandwidth (i.e., broadband ISP capacity) on average than current uses. If Internet protocol (IP) video becomes very popular, then the difference in costs between IP video services and plain-and-simple e-mail and web browsing services will become huge. One obvious method to accommodate large discrepancies

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in usage is to charge customers according to their data usage, or charge for different “buckets” of data usage as is done for cell phones. If ISPs adopt differential charges for cumulative data use, they will have no incentive to take action against application and content providers that, in turn, would prompt demands for regulatory intervention.

Second, new services could be offered by application and content providers that compete effectively against offerings by ISPs; again, IP video is a good example. This problem was faced when VoIP services gained traction on the Internet, and it does not seem to be a problem. However, perhaps something is different about IP video that could lead to bad behavior by broadband ISPs that we have not seen before.

Can economics help? | Economists use both theory and empirical work in tandem. The theory attempts to model the incentives of all players in the market and determine market equilibrium outcomes. Usually, theory is insufficient to predict behavior because such predictions depend upon the actual val-

ues of the model parameters, such as demand elasticities, cost functions, market interactions, etc. Empirical work is necessary to determine the actual values of these parameters and thus provide answers.

Because no current problems exist in broadband service that need regulatory remedies, there cannot be any empirical evidence of such problems. Anyone who argues broadband regulation is required must, at a minimum, demonstrate how the Internet is changing and how regulation would help. Conclusions about bad behavior that are not based on alleged changing Internet characteristics are not credible simply because there has been almost no bad behavior under current conditions. But any economic model that predicts bad behavior by broadband ISPs based on projected changes in the Internet environment cannot be verified empirically, by definition, simply because those changes have yet to occur. Such results are not a good basis for policymaking.

To reiterate: economic models that predict bad behavior by ISPs are disconfirmed by the lack of any supporting evidence in the record thus far. With these caveats in mind, let’s seek insight about some specific economic questions.

Economics of vertical relationships | In the (relevant) field of industrial economics, antitrust analysis suggests two sources of suspect behavior: *horizontal* actions, such as mergers of firms within the same market or exclusionary practices within a market in order to drive direct competitors out of the market; and *vertical* actions, such as acquisition of a supplier or distributor or actions to foreclose competitive suppliers in downstream markets.

In the post-war era, U.S. antitrust actions targeted both horizontal and vertical cases.

However, in the 1980s, the ascendant Chicago School held that vertical cases were largely without merit. The basic argument was the “one monopoly rent” hypothesis, which holds that there is only one monopoly rent in the downstream market and vertical integration or other actions can at best redistribute those rents but cannot increase them. Therefore, the story goes, vertical actions can cause no (additional) harm to customers.

This wisdom was soon challenged, using the then-new tools of game theory to demonstrate that indeed harms could occur from vertical relationships, even though there were clearly efficiency gains to (for example) vertical mergers. Unfortunately, the conclusions of the literature on vertical issues are largely, “It depends.” Various models and theories produced results in which vertical actions are harmful while other models of vertical actions showed enhanced efficiency. It all depended upon the model and the values of the parameters, which were often difficult or impossible to measure.

Antitrust opinion in the United States has moved away from vertical cases. The most recent (1984) version of the Non-Hori-

zontal Merger Guidelines established rather strict guidelines for bringing vertical cases because almost all such cases may have both efficiency rationales as well as potential harms, and the balance will be very difficult to sort out empirically. In fact, the last big vertical case brought by the U.S. Department of Justice was *U.S. v. AT&T* in 1974. (*U.S. v. Microsoft* had some vertical elements, but it was largely decided on horizontal issues.)

One of the main concerns of network neutrality advocates is the relationship between broadband ISPs and application and content providers. Google, Yahoo, and eBay do not compete in the same market as Verizon, Comcast, and AT&T. The former firms use the latter firms as distribution channels for their product to reach customers; their relationship with ISPs is therefore vertical, not horizontal. Economic theory will have a tough time providing guidance on this issue. We can expect lots of papers on the topic (because it is interesting and important), but we can also expect very different answers, depending upon the form of the models and the values of parameters used. Pure modeling without empirical verification is unlikely to lead to a definitive answer to the underlying policy question.

Unsurprisingly (but unfortunately), my review of the recent economic modeling literature on network neutrality finds papers to support whichever position you may favor. And it is unlikely that we may expect a definitive answer from this research. Bruce Owen found much the same in his 2010 review of the economics of net neutrality, and his summary is worth quoting:

While there is no shortage of theoretical models in which vertical integration may be harmful, most such models have restrictive assumptions and ambiguous welfare predictions—even when market power is assumed to be present. Empirical evidence that vertical integration or vertical restraints are harmful is weak, compared to evidence that vertical integration is beneficial—again, even in cases where market power appears to be present. Thus, it is reasonable to conclude that prophylactic regulation is not necessary, and may well reduce welfare. Sound policy is to wait for ex post evidence of harm to justify interventions in specific cases.

The role of competition | Central to the issue of “bad behavior” on the part of broadband ISPs, at least for economists, is the questionable level of competition in the provision of wired broadband. Almost no markets have more than two providers, cable and DSL, and many markets have only one (or none). While there is clearly rivalrous behavior in this market, competition could be substantially improved, although the current advent of 4G wireless (true high-speed wireless broadband) will significantly increase the number of broadband ISPs and, therefore, the competitiveness of this market. Indeed, the inclination of economists is to see this problem as imbued with market power problems, and that network neutrality is a tool, albeit an imperfect one, for addressing these market power issues. There may well be other market imperfections (such as externalities associated with two-sided markets), but market power and the ability to behave anticompetitively is how many economists see

the issue of net neutrality.

For the economist, then, competition in a market (absent externalities) will give customers what they demand; not because firms are generous, but because competition forces them to best satisfy customers’ demand. Only in the presence of a serious market failure such as monopoly might firms get away with bad behavior. In a competitive market, then, if customers want net neutrality, firms will (eventually) be driven by market forces to supply it. If customers want some parts of net neutrality but not others, that’s what they will get. But is competition enough to give customers those aspects of net neutrality they want?

In fact, evidence from the U.S. wireless market very strongly shows that customers will get the net neutrality they want. In a 2010 *International Journal of Communication* paper entitled “The Open Internet: A Customer-Centric Approach,” Farber and I wrote:

The wireless broadband market itself provides strong recent evidence of how competition drives the market to serve the needs of customers: while advocates demanded that wireless carriers should accept any devices and applications (that met standards) the customer brings, it has been the competitive market in wireless that has delivered what customers want, not advocates. Since the introduction of the iPhone and Apple’s app store, virtually all carriers and all device manufacturers have followed suit, opening up their networks to third-party applications. Independently, they are now permitting outside devices to be brought to their networks. These steps were not the result of regulation. However, other practices advocated by network neutrality pundits have not been adopted, as customers have not demanded them. Customers have had their say, and firms in this competitive market were forced to listen.

If there is a problem in the wired broadband ISP market, then it is a problem of insufficient competition, which could lead to anticompetitive behavior. Some economists have argued that if anticompetitive behavior is observed, it is the responsibility of antitrust authorities (Department of Justice or Federal Trade Commission) to seek remedies. In fact, FTC chair Deborah Majoras made this crystal clear in an August 21, 2006 address to the Progress and Freedom Foundation’s Aspen Summit:

Let me make clear that if broadband providers engage in anticompetitive conduct, we will not hesitate to act using our existing authority. But I have to say, thus far, proponents of net neutrality regulation have not come to us to explain where the market is failing or what anticompetitive conduct we should challenge; we are open to hearing from them.

Is the FCC still pro-competitive? One might expect that the agency, with its track record of promoting competition over the last decade, would be in full agreement with the view of its sister agency. One might expect the FCC to view the problem of wireline broadband ISP market as one of increasing competition, not enacting net neutrality rules.

One might expect, but one would be wrong. Apparently the FCC does not believe that protecting markets against anticom-

petitive behavior is enough. According to §78 of the R&O:

We also reject the argument that only “anticompetitive” discrimination yielding “substantial consumer harm” should be prohibited by our rules. We are persuaded those proposed limiting terms are unduly narrow and could allow discriminatory conduct that is contrary to the public interest.

So if competition is what gives customers what they want, then what else is in the “public interest”? Are we to conclude that the FCC does not trust customers to make informed choices of “social, cultural, and political potential” (R&O, fn. 243, quoting van Schewick)? Is the FCC backing away from reliance on competitive markets and customer choice to fulfill its mission?

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In competitive markets, customers will get the net neutrality they want; the FCC need only encourage competition in markets to achieve the appropriate level and structure of openness, based on what customers want.

Further evidence that the FCC has abandoned its traditional reliance on competition to ensure good market performance comes from the R&O’s treatment of mobile service. The FCC exempts the wireless broadband market from much of the network neutrality regulation it imposes on wireline broadband ISPs, but its rationale for doing so is that this market is still new and evolving. Surprisingly, no mention is made in the R&O of the competitiveness of this market. Most economists would conclude that a competitive market (such as wireless) will yield outcomes that customers want, and therefore customers would get just the net neutrality that they demanded. A competitive market would solve whatever problems that might occur without need of regulation. And yet the FCC chose not to make this argument, even though the evidence that the wireless market is competitive is quite compelling.

It is also surprising that the FCC did not make the argument that competition in the wireless market has not only driven innovation generally, but innovation in areas of net neutrality. Tim Wu’s 2007 paper on wireless network neutrality laid out a number of issues in which wireless carriers were not network neutral, and he suggested regulation to solve this problem. Re-reading Wu’s paper today shows that most of the openness policies he recommended have in fact been adopted by the competitive wireless industry as a result of pressures from the competitive market. I take this as very strong evidence that in competitive markets, customers will get the net neutrality they want (and no more); the FCC need only to encourage (and recognize) competition in markets to achieve the appropriate level and structure of openness, based on what customers want. Unfortunately, the FCC appears to be abandoning its decades-

old policy of encouraging and relying on competitive markets to achieve its policy ends.

The economics of two-sided markets | Fundamental to understanding the economics of Internet markets, and the broadband ISP market in particular, is understanding two-sided markets. The idea of two-sided markets is simple: an intermediary offers interconnection services to two (or more) distinct groups of customers, the function of which is to connect the groups together for purposes of communication and transaction. Examples include a cable TV operator that connects network providers (such as ABC, Animal Planet, ESPN) to retail viewers; eBay, which connects buyers and sellers online; credit card networks, which connect retail establishments to customers’ banks; dating services, which connect men and women seeking companionship; and newspapers (and websites), which connect advertisers with readers. Broadband ISPs are intermediaries that connect application and content providers to retail customers, and retail customers with each other via e-mail and social networking.

Intermediaries in two-sided markets have an interest in attracting as many customers on each side of the network as possible. An online auction site wants as many buyers as possible in order to attract sellers, and as many sellers as possible in order to attract buyers. This is a classic “network effect,” by which the very size of the customer base(s) creates value for customers and for the intermediary firm(s). Generally, an intermediary has no interest in discouraging participation on either side of the market because such behavior would reduce the intermediary’s profit. The basic economics of two-sided markets was introduced by Jean-Charles Rochet and Jean Tirole and more recently elucidated by David Evans.

Discrimination An exception to this could possibly occur if the intermediary offered a service (such as VoIP telephony) that competed with some application and content providers that used this intermediary (such as, e.g., Vonage or another independent VoIP provider). Should the broadband ISP (intermediary) deny or degrade the ability of the application or content provider, the ISP could theoretically increase its own VoIP business. On the other hand, it would also reduce the value of its business to its own customers by reducing the applications available to them. It is just such discrimination that Madison River Communications attempted and was thwarted by the FCC.

This is a standard industrial organization problem of vertical relationships: Would a distributor that sells its own brand refuse to carry the competitive products of an independent manufacturer? For example, would Sears, Roebuck and Co., which sells its own Kenmore brand of refrigerator, refuse to

sell General Electric or Frigidaire refrigerators? In general, the answer is “no.” We seldom see such refusals to deal. The reason is simple: the distributor simply ensures that the prices of its product and the competitive products are priced so as to maximize its profits. Sales of both products then increase the distributor’s profits. Discrimination against a competitor’s product is equivalent to selling the competitor’s product at an infinite price. Only in rare circumstances would such a pricing strategy be profit-optimal.

Pricing In practice, an intermediary may set a price for each side of the market, and the price need not be positive. In the case of online auctions, eBay charges sellers a fee but not buyers. In the case of newspapers, both readers and advertisers are charged prices. In the case of cable TV, subscribers are charged a price, but the cable TV carrier pays the network provider a fee for its content

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(a negative “price”). Currently, in the case of broadband ISPs, subscribers are charged but content providers are not.

So how are prices determined in a two-sided market? As is usual in economics, the answer depends upon elasticities of demand. In this case, however, there are two relevant elasticities, for each of the two relevant customer groups:

- the elasticity of demand for each group with respect to price changes; and
- the elasticity of demand for each group with respect to changes in the size of the complementary group.

Clearly, the intermediary would like to do as much business as it can, and therefore have as many of each customer group as possible. If one side of the market is more price-elastic than the other, then *ceteris paribus* we would expect that the intermediary would charge the less elastic customer group more. But the intermediary needs to consider the impact of losing customers in the less elastic group on the demand for service by the complementary group. In the case of eBay, we expect that sellers are less price-elastic than buyers, so charging sellers (rather than buyers) discourages rather fewer sellers; and having rather fewer sellers apparently does not significantly reduce the number of buyers. If buyers were also charged, we might expect fewer buyers and therefore fewer sellers, resulting in lower profits to

eBay. More generally, the pricing on each side of the market depends upon the interaction of the two elasticities for each of the two groups.

What Does Political Economy Research Tell Us about Regulation?

Almost all of the economic analysis has focused on the actual net neutrality regulations themselves and their potential impact. It is likely, however, that the real costs of regulation will arise from the presence of a regulator positioned to intervene in the broadband ISP market, whatever the actual regulations are. The presence of a regulator in a market ensures that market participants (buyers, sellers, employees, special interest groups, and competitors) will petition the regulator for actions against others (e.g., competitors) that will give the petitioners market advantage (or otherwise forward the petitioner’s agenda). If the FCC shows itself as willing to wield government power in the broadband ISP market, there will be no shortage of supplicants demanding the FCC use its power to force others to serve their interests—claiming, of course, that their demands are in the “public interest.” Virtually all regulation has been suffused with

such “rent-seeking,” in which interest groups seek to create rents for themselves by suborning government power via the regulators on their own behalf.

Economists have known about these costs of regulation for decades. The definitive works on this issue are by Roger Noll and Dennis Carlton and Jeffrey Perloff. Christiaan Hogendorn and I describe the problem thus:

Regulation ... opens wide opportunities for regulatory rent-seeking, in which firms seek market advantage via regulation, rather than via serving customers well. When regulators are open for business, firms understand that pleasing/manipulating the regulators is far more important than innovating, investing, and pleasing customers. It is precisely because regulators have *not* been open for business on the Internet that it has been such an innovative and successful enterprise.

Advocates of regulation often ignore this seamy side of regulation, hoping that proposed network neutrality regulation will work perfectly, with no unintended consequences, implemented by an all-wise, lobby-proof, above-politics FCC. Those of us with actual experience with regulators (such as the author) find this Pollyanna attitude naive in the extreme.

In the short time that the FCC has announced its new net neutrality regulations, one would expect that there has not been sufficient time for rent-seeking to get under way. One would expect, but one would be wrong. Several attempts to press the

FCC to order changes in commercial arrangements have already occurred. A particularly egregious example involves Level 3 Communications, an Internet backbone provider that recently agreed to distribute movies for Netflix. That agreement makes Level 3 a content delivery network (CDN). Level 3 was notified by Comcast that it would no longer “peer” with Level 3 (in which traffic is exchanged between peer ISPs without charge), as the firm’s new CDN status made it a “transit” network (in which the transit network is charged a fee by the backbone). For the past 25 years, the basis of peering relationships has been rough equality of traffic flows. If traffic flows are unbalanced, as would occur with a CDN, the network generating the excess traffic is a transit network and is charged a fee, according to longstanding contracts and industry practice.

In this case (just after the FCC announced its new net neutrality rules), Level 3 complained to the FCC that Comcast was violating the net neutrality rules by charging the CDN to carry its content. Although these rules were explicitly to apply only to last-mile ISPs and not backbone networks, Level 3 asked for FCC intervention so the CDN could continue to get free carriage of its traffic even though its business model had changed. The issue was described eloquently in a December 2, 2010 post by Milton Mueller on the Internet Governance Project blog:

On Tuesday (November 30, 2010) Internet backbone provider Level 3 publicly accused cable-based ISP Comcast of trying to thwart competing video services delivered through the Internet. Comcast was, according to Level 3, suddenly choosing to charge it more because of its carriage of Netflix traffic. The accusation was consciously framed to raise net neutrality alarms. It appeared as if a cable TV giant was using its control of Internet access to make access to a competing, over-the-top video service more expensive.

Then the full story came out. This was a peering dispute. In peering agreements, two ISPs exchange traffic without paying each other, on the assumption that both parties have roughly balanced

traffic and benefit equally from the interconnection. When there is no balance— that is, when ISP A reaps more benefit from the interconnection than ISP B— it is common practice for ISP A to pay ISP B for the service.

The Level 3 maneuver is a good example of what can and will happen with an overregulated Internet: one business interest complains about another about a commercial negotiation and attempts to bring in the feds simply to get a better business deal. Opening up these contractual arrangements to political mediation is a slippery slope. The scope of regulation— and the costs of participating in the industry—steadily rise as more and more aspects of the industry are sucked into this vortex.

Regardless of the outcome of this particular issue, we can rest assured that, very soon, the FCC will be “sucked into this vortex.” And it is this ineluctable process that creates the true costs of regulation, not the actual regulations themselves. The ultimate tragedy of the FCC’s net neutrality regulation is that the FCC will slide down the slippery slope to the depths of rent-seeking whether it wishes to or not.

Conclusion

The conclusion of this review is clear: the economic evidence does not support prophylactic net neutrality regulation. In the absence of significant evidence of “bad behavior” by broadband ISPs over the past decade, the extensive literature is unable to support such regulation. Even articles specifically arguing for net neutrality regulation cannot make an unambiguous case for regulation, as this review demonstrates.

I again rely on Owen to state it best:

Thus, it is reasonable to conclude that prophylactic regulation is not necessary, and may well reduce welfare. Sound policy is to wait for ex post evidence of harm to justify interventions in specific cases. **R**

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