

# Network Policy and Economic Doctrines

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BY ROBERT D. ATKINSON | OCTOBER 2010

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## INTRODUCTION

For many years, debates over telecommunications network policy were marked by a relative lack of partisan and ideological conflict. In the last decade, this has changed markedly. Today, debates over a whole set of issues, including broadband competition, net neutrality, copyright, privacy, and others, have become more contentious.<sup>1</sup> These disagreements don't stem just from politics, in the sense of conflicts between interests. They also reflect differences over doctrine – differences in deeply held views about appropriate kinds of network policy. Based on these views, different people stress different goals and values and work under different assumptions about how networks and economies work.

While many network policy issues have an engineering basis, with disagreements revolving around technical matters, much of network policy is based in economics. And despite what many economists claim, economic approaches to the Internet differ substantially. These approaches reflect differences of economic doctrine among economists, policy makers and others. This paper postulates and describes four competing economic doctrines: conservative neoclassical, liberal neoclassical, neo-Keynesian, and innovation economics. It explains how each doctrine leads to different views of appropriate network policy and explores the influence of doctrine on four controversial network policy issues: broadband competition, net neutrality, copyright, and privacy.

Understanding this doctrine based source of differences over network policy should help policy makers better understand core issues and hopefully make more informed decisions.

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## ROLE OF ECONOMIC DOCTRINES

Many economists like to portray their field as a science and themselves as the sole arbiters of economic truth. In fact, it is more akin to philosophy, and different people have different economic philosophies. As Schumpeter once stated regarding ideology, “the majority of economists... are ready enough to admit its presence, but like Marx, they find it only in others and never in themselves. They do not admit that it is an inescapable curse and vitiates economics to its core.”<sup>2</sup>

When considering economic issues it is important to realize that much of what appears to be objective theorizing and unbiased analysis is in fact deeply shaped by the doctrine of the economist. Economists’ and policy makers’ beliefs about what policy works best for the economy, including their beliefs about the appropriate types and roles of network policy, are not simply independent constructs applied to new contexts; rather such beliefs constitute an area reflection of coherent world views or doctrines. Such doctrines profoundly shape how proponents view the economy, what they consider important, and most importantly, what they believe to be correct vs. misguided public policy. These economic doctrines guide thinking and help individuals make sense of a complex, rapidly evolving economy.

Moreover, it is not only Ph.D. economists working at the FCC, on Congressional committees or in think tanks that are influenced by doctrine. Virtually all policymakers involved in economic policy, knowingly or not adhere to a particular economics doctrine, even if they cannot describe or name it.<sup>3</sup> Indeed, as Keynes once stated, “Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.” As Mueller argues, using the term “ideology” in place of doctrine:

The term ideology has a negative connotation, sometimes justifiably so. It can mean a dogmatic or religious adherence to a set of precepts and predictions regardless of their pragmatic utility or correspondence to reality. While it is true that ideologies bring those risks, it is also true that any good-faith effort to understand and cope with unprecedented societal developments requires something akin to what I mean by ideology. One’s ideas and analysis must strive to make sense of the world in a way that facilitates both private and collective action. People will, in fact, link their perceptions and ideas into relatively consistent, comprehensible principles that can be communicated and understood by a broader public so as to coordinate their response.<sup>4</sup>

### Competing Economic Doctrines

In order to make sense of the vigorous, ongoing debates over network policy, it is important to understand the doctrines underlying different positions. Since much of network policy is about economics, it is important to understand that different and competing economic views stem from differences among economic doctrines.<sup>5</sup> Until quite recently, three economic doctrines prevailed: conservative neoclassical (often called “supply-side economics”); liberal neoclassical (sometimes called “Rubinomics,” referring to the policies and views of President Bill Clinton’s Secretary of the Treasury Robert Rubin;

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and neo-Keynesian. In the last decade, however, a small but growing share of economists began arguing that the conventional doctrines are fundamentally limited and that a new economic doctrine – what is termed here “innovation economics” – is a better guide to policy.

To be sure, these doctrines are not straightjackets. Not everyone is firmly in one camp or the other. Moreover, an individual’s economic views evolve. However, even with these limitations, approaching economic policy issues through the lens of doctrines does help explain many differences in policy positions. As such, understanding the goals and principles undergirding each doctrine will help explain divergent approaches to network policy.

### Conservative and Liberal Neoclassical Economics

A core principle of both conservative and liberal neoclassical economists (CNCs and LNCs) is that allocative efficiency should be optimized. Allocative efficiency refers to the allocation of resources in such a way that maximizes the net benefit attained through their use, and that produces the quantity of goods that is most beneficial to society. A market economy characterized by allocative efficiency is one in which scarce goods and services are consumed on the basis of the prices consumers are willing to pay, and produced on the basis of equality between marginal costs and price. Neoclassical economists believe that economic welfare is almost always maximized if actors in competitive markets set prices that are not distorted by policy. They spend much of their professional lives defending this utopian balance, believing that any violation of allocative efficiency leads to “deadweight loss” – a loss of economic efficiency as people buy too much of a product that is priced lower than it costs to produce (due to preferential tax incentives for example) or buy too little of a product priced higher than cost and a market clearing profit.

Of course, no economy, market based or not, is ever characterized by perfect allocative efficiency. However, neoclassicalists see the economy as a large market of goods and services tending towards an equilibrium that at least approaches allocative efficiency, one that is usually best left to itself. Equilibrium occurs when a market price is established through competition such that the amount of goods or services sought by buyers is equal to the amount of goods or services produced by sellers. The main task of economic policy as neoclassicalists see it is simply to reduce artificial barriers and impediments to market equilibrium, particularly by ensuring that prices are aligned with costs.

Further, they hold that individuals act in response to incentives to rationally maximize their own self-interest and that individuals’ pursuit of their own self-interest generates the public interest. Indeed, according to Adam Smith, the individual who “intends only his own gain” will, in the course of maximizing his needs, be “led by an invisible hand to promote...the public interest.”<sup>6</sup>

Although conservative and liberal neoclassicalists agree on much, they differ in some important ways. In general, conservative neoclassicalists are less concerned with fairness, generally view markets as not prone to failure, and are less willing to assign intervening roles to government. Liberal neoclassicalists are generally more concerned with fairness, see market failures as more common (although not as compared to Keynesians and innovation

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economists), and are more willing to have the government intervene in the economy, even though they think government intervention usually harms efficiency.

These factions also differ with regard to the role of government spending and investment. Supply-siders (conservative neoclassicalists) view lower taxes as the key to growth and reduced government spending, even if taxes remain the same, as a stimulus to growth. They believe that many government expenditures, including both direct spending and tax expenditures, have a host of pernicious effects.<sup>7</sup> In contrast, liberal neoclassicalists worry about government spending not because they believe it is harmful but because of its purported effects on fiscal discipline and public savings. Liberal neoclassicalists also are more willing to support public spending if it is focused on helping economically disadvantaged individuals; they usually consider decisions about such spending to involve a tradeoff between growth and fairness.

### Keynesian Economics

The third major doctrine is neo-Keynesian economics. Neo-Keynesians (NKs) hold that demand for goods and services from business investment, government spending, and consumer spending drives growth. Because of their focus on aggregate demand, many neo-Keynesian economic policies prescriptions revolve around increased government spending to keep the economy at full employment.

Neo-Keynesians also place a high policy priority on an equitable distribution of wealth, which is viewed as essential to the sustainability of a market-based economy. Moreover, more equitable distributions of income and wealth lead, in the view of neo-Keynesians, to greater consumption, which in turn leads to greater economic growth. Neo-Keynesians see most economic issues as boiling down to a question of who benefits: working people or wealthy individuals and corporations. Thus, they devote less attention to issues of “growing the pie.” Moreover, they see little that government can do to directly spur more growth (and conversely there is little government can do to harm growth), other than ensure high levels of aggregate demand. Therefore, regulation does not so much distort allocation efficiency, as it provides framework conditions for economic benefits flowing to most people.

### Innovation Economics

In the last decade, a new economics doctrine has emerged through the work of a wide range of scholars. Unlike the three prevailing economics doctrines, innovation economics (IE) postulates that innovation (the development and adoption of new products, processes, and business models) drives growth. While referred to by a variety of terms, (structuralist-evolutionary, neo-Schumpeterian, evolutionary economics, etc.) the term used here is innovation economics. IEs makes an explicit effort to understand and model those forces and factors conducive to innovative activity. They see innovative advances to result from intentional activities by economic actors, including government. Thus, such advances are not exogenous to the process of exchange in price-mediated markets. If there is a “bible” for innovation economics it is perhaps Joseph Schumpeter’s classic 1942 book *Capitalism, Socialism and Democracy*, in which he explains:

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*If the focus in neoclassical economics is the study of how societies use scarce resources to produce valuable commodities and distribute them among different people, the focus in innovation economics is the study of how societies create new forms of production, products, and business models to expand wealth and quality of life.*

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The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process ... the fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates.<sup>8</sup>

Today, innovation economists find their home mostly in academia, sometimes in economic departments that are willing to buck conventional thinking, but often in schools of management, public policy and city and regional planning.<sup>9</sup>

IE holds that the major economic policy priority is long-term growth and that the major drivers of growth are productive efficiency (the ability of organizations to reorganize production in ways that maximize outputs with minimal inputs, including labor inputs) and adaptive efficiency (the ability of economies and institutions to change over time to respond to successive new situations, in part through technological innovation). If the focus in neoclassical economics is the study of how societies use scarce resources to produce valuable commodities and distribute them among different people, the focus in innovation economics is the study of how societies create new forms of production, products, and business models to expand wealth and quality of life.

In contrast to neoclassical economics, which focuses on getting the price signals right to maximize the efficient allocation of scarce resources, innovation economics focuses on spurring economic actors – from the individual, to the organization or firm, and to broader levels, such as industries, cities, and even entire nations – to take actions to be more productive and innovative. From the standpoint of innovation economists, if policies to encourage innovation “distort” price signals and result in some minor “deadweight” loss to the economy, so be it, because losses to allocative efficiency are almost always minor compared to the significant gains from increased productive and adaptive efficiency.<sup>10</sup>

Innovation economics also holds that although there is equilibrium in some markets at some times, in a growing share of markets in the knowledge-based economy, equilibrium is a fleeting moment. Markets are constantly roiled by entrepreneurial entry, disruptive technologies, political and social upheavals, changes in trade patterns, and more, never settling down into equilibrium. The lack of equilibrium is especially common to industries characterized by higher levels of change and innovation, including network industries. Moreover, innovation economists believe that market disequilibrium is responsible not for economic inefficiency but for growth and progress.

Innovation economics also holds that individuals and firms are not rational maximizers. Rationality has generally been understood to involve consistency across decision-making based on measurable calculations. Risk can be managed through rational decision-making. Innovative activity, particularly if it involves a high degree of novelty, typically involves uncertainty, where outcomes and their associated probabilities are unknown, not risk, where outcomes are known with a calculable probability. As a result of such uncertainty, innovative efforts will meet with many failures, as well as some great successes. When the economy is characterized by uncertainty, price signals alone are not the best guide to decision-making.

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## ECONOMIC DOCTRINES AND NETWORK POLICY ISSUES

Because many network policy issues involve economic actors making decisions in marketplaces, many of these issues are at heart economic policy issues. Thus the economic doctrines held by advocates and policy makers play an important role in shaping positions and analysis. Proponents of both conservative and liberal neoclassical doctrines include economists (defined here as holders of an advanced degree in economics) as well as advocates from various types of organizations. Neo-Keynesians (and to a lesser extent innovation economists), are often not formally trained in economics, but in disciplines such as law and political science. To the extent that they analyze their issue through an economic lens they do so with a focus on distributional issues and a distrust of concentrated economic power. There follows an analysis of the role of doctrines in four policy areas: broadband competition, net neutrality, copyright and privacy.

### Broadband Competition

One of the longstanding debates over network policy concerns the nature and proper extent of competition. From the earliest debates on the AT&T divestiture to the current debates about unbundling and municipal broadband, competition has been a central and contentious issue. Not surprisingly, each of the four doctrinal camps has a different view of broadband competition and focuses on different parts of the overall policy challenge.

Conservative neoclassicalists (CNCs) believe that, absent government intervention enabling monopoly, most markets are competitive. And while most CNCs do not think U.S. broadband markets are competitive in the textbook sense (in the sense of multiple competitors and a low Herfindahl-Hirschman Index), they do see them as competitive enough to not need prescriptive regulations, such as unbundling, price regulation or other corrective measures.<sup>11</sup> They also are more likely to see new technologies (e.g., cable telephony, VOIP, wireless telephony for voice, and wireless and satellite for broadband) as effective economic substitutes (for voice and data), thereby providing even more competition to markets often characterized as having one or two main competitors.

Even where markets are not competitive in terms of structure (e.g., markets characterized by one or two providers) many CNCs (as well as IEs) will argue that the unique nature of the broadband industry (e.g., high fixed costs relative to marginal costs), gives monopolists strong incentives to act as if they are in competitive markets.<sup>12</sup> As Quigley writes (with respect to Canada), “Thus, the state of competition in local access telecommunications in Canada hinges much more on the presence of alternative access technologies that may supplant fixed wire local access than it does on the fact that those companies do not yet have a large market share in local access telephony.”<sup>13</sup> Moreover, the threat of entry, they argue, particularly from new technology, exercises significant discipline on incumbents.

Because they see broadband markets as generally working (with the exception of markets in high-cost areas), CNCs generally minimize the role of policy to address competition issues, albeit except through the use of anti-trust. They generally opposed 1996 Telecommunications Act provisions to require unbundling of incumbents’ networks, believing that the provisions deterred investment.<sup>14</sup> As Crandall writes, “In the modern era of telecommunications, the need for regulatory intervention has all but disappeared.”<sup>15</sup>



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In contrast, adherents of the other three doctrines, particularly the liberal neoclassicalists (LNCs) and neo-Keynesians (NKs), are more open to the idea that telecommunications markets are not competitive or might become less so. Nevertheless, the nature and causes of low levels of competition and the appropriate public policy response are debated. LNCs and NKs would use telecommunications policy to help create more competitive markets, but for different reasons. Innovation economists (IEs) would not.

Because LNCs and NKs often adopt conventional definitions of competition based on market structure, (markets with a high HHI are automatically suspect) they view monopolist or oligopolistic broadband markets with suspicion, and see any efforts to argue that competition is robust as simply an excuse for deregulation. As such, they generally reflect Economides' view that there is "limited competition in the broadband access marketplace,"<sup>16</sup> and Frieden's view that this leads to higher prices.<sup>17</sup>

Moreover, in contrast to CNCs, LNCs and NKs believe that "wireless broadband access services are unlikely to act as effective economic substitutes for wireline broadband access services (whether offered by telephone companies or cable operators) and instead are likely to act as a complement."<sup>18</sup> Thus, for them, markets are unlikely to evolve into more competitive structures, even as new technologies emerge.

Reflecting their overall belief that competition spurs allocative efficiency, LNCs see limited competition as leading to monopolist pricing and therefore to deadweight losses. As such, more competition is needed to increase consumer surplus. As Shelanski argues, more players are better because they will make the competitive environment more intense, driving more efficiency, experimentation, and innovation.<sup>19</sup>

NKs also consider competition critical, but for a different reason than LNCs. Reflecting their general wariness of large corporations, NKs see broadband markets as dominated by one or two large providers, forces that rob consumers of choice, limit their access to information (see discussion below of net neutrality), and yield windfall corporate profits at consumer expense. For advocacy organizations like Free Press, Consumer Federation of America, New America Foundation, and Public Knowledge, the purported monopoly or duopoly markets lead to excess profits and prices. This is also a reason why many of the NK advocates oppose bit pricing and bit caps on the consumer side (as opposed to the current "all you can eat" pricing): they believe it is just one more way for monopolistic corporations to increase profits.

As such, some NK groups, particularly Free Press, advocate government subsidies for new competitors, particularly for government-owned providers (e.g., municipal broadband) or small companies (who are seen as less rapacious than large broadband providers).<sup>20</sup> Any subsidy policy, they argue, should favor these providers and not apply to large incumbents.<sup>21</sup> Many NK groups opposed legislative proposals to provide tax incentives for broadband investment as part of the American Recovery and Reinvestment Act. Even though the proposed tax incentives for faster and more widely deployed broadband would have helped small carriers, they would not have helped municipal non-profit firms (which don't pay taxes) and would have provided an incentive for big incumbents to roll out more broadband too. For this reason, groups like Free Press decried these proposals as "corporate

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welfare.” That is consistent with their view that we need a “national broadband plan that would protect Internet freedom and foster competition by bringing new providers into the marketplace.”<sup>22</sup> This view explains these groups’ strong opposition to laws limiting municipal broadband. They believe that through government subsidies for more competitors (essentially payments for “overbuilders”), prices will fall, speeds will increase, consumers will have more choice, and everyone except the incumbents will be better off.

In the absence of more competition, however, NKs favor regulatory intervention. For example, Frieden argues that “the absence of robust price competition among many facilities-based broadband operators in many areas of the nation challenges many of the assumptions built into recent FCC policy initiatives that seek to abandon consumer safeguards.”<sup>23</sup> This is behind the call by the NK-based Berkman Center for unbundling regulations to be applied to incumbent broadband networks.”<sup>24</sup>

In contrast, IEs (and some CNCs) believe that broadband markets are characterized by significant economies of scale (especially in providing “last mile” services) and that increased competition, especially that promoted proactively by government, could result in excessive and duplicative investments, thereby lowering industry productivity, limiting network upgrades, and ultimately raising consumer prices.<sup>25</sup> They argue that it is expensive to build a standard broadband network to homes, and even more expensive to build a high performance one with large data capacity (e.g., fiber optic). As Hofer notes, “Competition between parallel infrastructures incorporates opposing welfare effects. The gain from reduced deadweight loss might be outweighed by the inefficient duplication of an existing infrastructure.”<sup>26</sup> In short, IEs (and many CNCs) take a more Schumpeterian view of competition and argue that fully competitive markets would come at a cost of the surplus providers need to make highly capital-intensive and risky investments to expand broadband capital plant. In this sense, competition is at best a means to the more important goal of continued development of a more robust broadband network.

For these reasons, IEs are skeptical of unbundling, especially in light of many supporters’ rationale that it would provide a “stepping stone” for entrants to subsequently build their own networks. They consider additional networks an inefficient use of investment resources, and (along with CNCs) believe unbundling reduces incentives to invest in network upgrades. As Gayle and Weisman show, unbundling can limit incentives for investment and innovation in new networks.<sup>27</sup>

IEs are more generally more skeptical than CNCs about the extent to which new network technologies are substitutes for existing “duopoly” wireline broadband. However, they acknowledge that while these technologies may not represent perfect substitutes now, they have the potential to be as technologies evolve. CNCs are more likely than NKs to view expected developments in broadband technologies (e.g., 4G and next generation satellite technology) as potential sources of greater competition going forward.

Because IEs see telecommunications infrastructure as a “general purpose technology” that drives innovation and productivity, most tend to favor explicit policies that encourage providers to invest more, particularly in higher speed broadband and in getting broadband to areas and more people. Thus, IEs would support a national broadband policy focused,



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not on increasing competition, but on 1) fostering higher speeds— for example, through tax incentives or grants to broadband providers to deploy very high-speed networks; 2) deploying networks to places where there are currently none; and 3) programs to encourage more broadband adoption.<sup>28</sup>

Finally, like CNCs, IEs tend to be supportive of bit caps and bit pricing which they see as ways to encourage greater and more efficient use of the network.

### Net Neutrality

Net neutrality refers to the notion that broadband networks should not discriminate (either in quality or price) between the packets that are delivered on their networks. While much of the net neutrality debate is informed on the basis of political and cultural issues (e.g., some groups worry that without net neutrality regulations, free speech will be diminished), much of it also revolves around economics issues, and in particular whether and in what circumstances price and quality discrimination is economically beneficial or harmful.

Conservative neoclassical economists (in the case of net neutrality, these include some economists who might not be politically conservative, but who identify few market failures) generally believe that net neutrality regulations lower economic welfare and that two-sided pricing by ISPs (allowing ISPs to charge more for higher quality transit) maximizes consumer and overall economic welfare by enabling new applications with different requirements than traditional ones.

A core argument of CNCs is that net neutrality regulations are not needed because U.S. broadband markets are competitive. Only if this were not the case would regulation potentially be justified. Thus, as Speta argues, “absent a finding of market power, there should be limited government regulation of network neutrality.”<sup>29</sup> Likewise, a group of CNC economists argue that “regulation can improve economic welfare only in the face of market imperfections, such as market power, externalities or information asymmetries.”<sup>30</sup>

But most CNCs go further and argue that in most instances, providers, even if they are monopolists, don’t have incentives to limit or block content. They argue that platform providers benefit from a multitude of applications that ride on their networks and therefore will not block or treat them unfairly. Moreover, even if companies would do this, (perhaps because they are “stupid” monopolists) competition and consumer choice will discipline most anti-consumer violations of net neutrality; for the ones it doesn’t, antitrust is the appropriate tool.<sup>31</sup>

Many CNCs argue that any imposition of two-sided pricing arrangements, even across-the-board mandatory ones, are welfare enhancing.<sup>32</sup> For example, Ehrlich, Eisenach and Leighton argue that business practices such as two-side market pricing are a way to spread and reduce risk and lower transaction costs, leading to more broadband choice, not less.<sup>33</sup> Likewise, Yoo argues that stopping networks from charging different prices to some users or for some content might harm ordinary consumers, depending on the context.<sup>34</sup>

CNCs generally see net neutrality regulation as economically harmful, in part because any efforts to limit network provider actions with regard to pricing or even blocking and

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degrading, are thought to limit investment. As Owen and Rosten argue, “failure to permit platform owners to control access threatens to result in inadequate investment in, to maintain, and to upgrade local broadband platforms.”<sup>35</sup>

Finally, most CNCs do not favor one side of the market over the other (e.g., content vs. transport). For one thing, they are skeptical of arguments regarding market failure. And to the extent they agree that the Internet is a “general purpose technology” with large externalities, they do not attribute different levels of externalities to different parts of the Internet (e.g., content vs. transport). Thus, they resist the notion that regulation should prevent one part of the broadband system (e.g., content and applications) from paying to subsidize another part (broadband networks).<sup>36</sup>

Most LNCs, on the other hand, identify market failure on both sides of the market, though of different kinds. They believe producers have market power, enabling them to extract high levels of producer surplus at the expense of consumer surplus. As Economides argues, broadband price discrimination “will decrease consumer surplus in a variety of ways” and “reduce societal welfare for numerous reasons.”<sup>37</sup> LNCs generally argue that any two-sided pricing arrangements, even ones voluntarily agreed upon by both parties (e.g., content and ISP) are welfare reducing. While CNCs argue that market power doesn’t necessarily lead to abuse, LNCs counter that even providers without market power are likely to engage in anticompetitive behavior. Van Schewick argues that “a network operator may have the ability and incentive to discriminate against independent applications in spite of competition in the market for Internet services.”<sup>38</sup>

At the same time, LNCs see applications and content as having significant positive network externalities (especially compared to networks) and any regime in which they are not subsidized (either explicitly by government or implicitly by consumers) leading to an underproduction of these goods and a lowering of consumer welfare. Chettiar and Holladay argue that there is widespread “Internet market failure” because “the Internet ... produces billions of dollars of free value for the American public: Information is shared, reused, and reconfigured without fees or penalties.”<sup>39</sup> Lee and Wu agree, arguing that a regulatory ban on two-sided pricing “provides a direct subsidy for the production of content and inventions...” They add, “Since both creative works and inventions have characteristics of a public good, such intervention may be necessary to avoid underproduction.”<sup>40</sup> Conversely, allowing price discrimination on the content and application side of the market “could lead to pricing practices that transfer wealth from content to ISPs, a form of price discrimination that would reduce the return on investment for Internet content.”<sup>41</sup>

This is a problem for LNCs not only because they see positive externalities as higher on the content and application side, but also because they believe that is easier to overcome the market failure of positive externalities on the network side through direct government subsidies. As Economides argues, “in light of the severe consequences of stifling application-level innovation for economic growth, subsidizing the deployment of broadband infrastructure may be preferable to allowing network providers to discriminate.”<sup>42</sup>

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NKs have similar views, but see a need for net neutrality regulations to limit the power of large broadband corporations to harm content and application producers (including individual bloggers) and individual freedom to access content.<sup>43</sup> For Larry Lessig – who perhaps, along with Tim Wu, is the most prominent NK in this debate – the advent of managed Internet networks and the purported demise of end-to-end open architecture portend a permanent shift in the Internet and a loss of the freedom and innovation that have characterized it to date.<sup>44</sup> In addition, NKs see telecommunications as a key anchor of democratic discourse and would impose net neutrality regulation to preserve such discourse.<sup>45</sup> NKs worry that if large ISPs get their way, the Internet will evolve into something resembling cable TV, in their view a cultural wasteland, and a system that limits the diversity of voices heard. At the same time, both NKs and LNCs believe discriminatory pricing hurts consumers as any increase in revenues goes to corporate profits, and not to lowering subscriber prices or expanding network investment. Economides argues that “contrary to what some have argued, allowing broadband providers to charge third party content providers will not necessarily result in lower prices being charged to residential Internet subscribers.”<sup>46</sup> In fact, he argues that it will actually lead to increased consumer prices and higher provider profits. Likewise, Chettiar and Holladay argue that the adoption of two-sided pricing would mean that “most additional revenue generated for ISPs is likely to be transferred to their shareholders rather than invested in expanding broadband lines.”<sup>47</sup> Lee and Wu agree, arguing that “termination fees may provide a way to increase profits of Internet service providers...”<sup>48</sup>

In contrast, IEs agree with CNCs that two-sided pricing can enhance both consumer and societal welfare, but they also see situations where it would not be. For example, discriminatory pricing can be welfare enhancing if both sides of the market voluntarily choose it (somewhat akin to letting airlines charge more for business class to accommodate people who elect to pay more for superior amenities). However, it may not be if it is imposed unilaterally on all content and applications or if it is imposed in a discriminatory way on certain content or applications that compete with network provider content or applications.

In contrast to LNCs and NKs, IEs argue that two-sided pricing should lead to increased network investment and/or lower consumer broadband prices, since they consider markets sufficiently price competitive to prevent increased revenues being mostly captured as profits. Rather, most revenues from two-sided pricing would go to either lower prices or network upgrades. LNCs and NKs argue that networks are so uncompetitive that providers can direct increased revenue to the bottom line. If competition were indeed that weak, IEs point out, carriers could raise prices on consumers with little restraint (something that has not occurred to date).

IEs agree with CNCs that platform providers benefit from applications that ride on their networks; therefore, in most cases they would not advocate blocking or treating them unfairly. However, they point to cases where providers could have an incentive to do so, especially for applications that compete with other applications or services provided by the ISP. When a company’s revenue stream is endangered by allowing unmitigated competition among unaffiliated applications, there can be discrimination, as in the case of

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Madison River Communications, a rural telephone company that resorted to the extreme tactic of blocking Vonage's VoIP service. This is not to say that providers will engage in this behavior; there are many factors, including competition and public outcry that act to limit it. Thus, rather than seek to impose sweeping regulatory bans, as NKs advocate, IEs would prefer to address these issues on a case-by-case basis. They favor a regime in which competitors and consumers who are harmed by unfair or discriminatory practices can have recourse to government intervention. In contrast to CNCs, IEs do not favor using a market power test to determine when competitors should get recourse. Even where there is competition, there can be abuse, particularly when consumers face high switching costs.

The overall goal of IEs is to ensure that networks evolve and improve toward optimal platforms for the deployment of new and useful applications. They believe that governments can play a facilitative role to enable this. LNCs and NKs seek to reduce access prices for present-day technology, largely through regulation; and CNCs believe that market forces alone are sufficient to ensure that networks advance in the proper direction, as no regulator can foresee the future in any case.

### Copyright

A core component of economics is the price-mediated exchange of products in marketplaces. The four doctrines offer significantly different perspectives on how digital "products" should be treated with respect to exchange. However, both at the scholarly and popular levels the debate has been framed by two basic groups: maximalists and minimalists, with the former seeking to expand copyright protection and the latter seeking to weaken it. Under this framing, CNCs are maximalists and LNCs and NKs are minimalists, although for different reasons. IEs could best be described as "moderates."

These positions don't stem only or even principally from different methods of analysis or data sources. While many NC economists state that economic analysis can identify the optimal policy with respect to copyright (even if according to them copyright is inherently a "second best" solution), the reality is that as in so many other policy areas, the best economics can do is provide information on tradeoffs. All the doctrines see a tradeoff between current allocative inefficiency created by copyright and long-run incentives for content production. But as IE economist Richard Lipsey notes, "there is nothing in neoclassical welfare economics... to tell us the optimum position on this tradeoff."<sup>49</sup> Moreover, the empirical findings that might inform the correct position are virtually impossible to generate, not just because of data limitations but also because there are no natural experiments to be conducted. As a result, deciding how to make this tradeoff ultimately involves judgments that are significantly influenced by economic doctrine, thus often magnifying the differences on policy.

The conservative neoclassical position, also known as the law and economics position, is that copyright is a legal and institutional arrangement that encourages the generation and dissemination of creative works by rewarding the creator with limited property rights on their creations. Without a grant of exclusive rights, the argument goes, creators will have too little incentive to produce creative rights.<sup>50</sup> The reason is that the creative rights have high fixed costs and low marginal costs of production. As a result, subsequent copies cost

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far less to produce.<sup>51</sup> This school is strongly influenced by the work of Coase, who argued that if property rights are fully established, then private negotiations, rather than state intervention, can address allocation issues, as long as transaction costs are not too high. Thus, although copyright is a form of state intervention, and thereby inherently suspect for CNCs, its purpose is to enable markets.

Both CNCs and LNCs see a tradeoff between the benefits and costs of copyright, but the former are more willing to assume that the benefits (in terms of inducing production of content) outweigh the costs (monopoly pricing and search costs for obtaining permission to use copyrighted works). In this sense, CNCs minimize the notion of “fair use,” arguing that economic welfare is maximized when content owners have almost exclusive control over content. If they want to allow use without compensation, that is their choice. The lower the costs of administering copyright become (e.g., digital technologies to facilitate search), the stronger the protection should be in this view.<sup>52</sup>

While most conservatives accept the role of the state to grant copyright status, there is one strain of conservative neoclassical economics that actually favors limited or no copyright enforcement. With their overarching focus on freedom, these “nihilists” argue that copyright, as the grant of monopoly by government, impinges on the freedom of individuals.<sup>53</sup> Because liberty trumps property, in their view, individuals should be free to use digital content in ways they want and content holders, not others such as digital intermediaries, should be responsible for policing its use. For example, Boldrin and Levine argue that unhindered competition is the best economic system and since copyright hinders this, it should be abolished.<sup>54</sup>

In contrast to mainstream CNCs, LNCs are more likely to be copyright minimalists. For many of them, copyright is a form of monopoly that, by definition, reduces allocation efficiency. As such, this monopoly pricing (pricing above marginal costs) leads to “deadweight” welfare loss. Because some consumers would gain utility from consuming content without paying the “monopoly price” (and because they see creative works as public goods that are non-rival), weak copyright regimes allow more consumers to benefit without suffering harm. As Arrow wrote almost 50 years ago, because information goods have characteristics of public goods, non-rivalry implies that free access is needed for economic efficiency.<sup>55</sup> Likewise, as Lipsey notes (the LNC doctrine), “the optimum condition for any piece of knowledge that already exists is that its price be zero since that maximizes its use.”<sup>56</sup>

Because the marginal price is zero, and because they argue that consumer welfare is maximized by price discrimination, LNCs are much less likely than CNCs to view use of copyright materials without paying as a problem (maximalists call this practice piracy, minimalists call it copying or price discrimination). Indeed, as LNC Joel Waldfoel asserts, “stealing is just a form of do-it-yourself price discrimination.”<sup>57</sup> He goes on to note, “To the extent that the folks stealing would not have been purchasing, at the price where it was offered, well that's just a welfare improvement. And it doesn't harm the sellers.”<sup>58</sup>

Like LNCs, NKs are copyright minimalists, but for different reasons. NKs see much of economics, including the economics of digital content, in distributional terms. The real

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*Because neo-Keynesian economists see digital “copying” as a form of societal redistribution from large profit-making corporations to individuals (liberal neoclassical economists see this as a form of allocation efficiency), neo-Keynesians oppose virtually all steps to limit individuals from “copying.”*

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issue boils down to who gets the fruits of economic growth, workers or owners. For copyright, the conflict is between consumers and copyright owners, and in particular the big copyright corporations (as opposed to individual artists). In NKs’ view, the benefits of strong copyright regimes flow to large content producers (e.g., the Disneys of the world) in the form of higher profits. NKs make their case against such regimes more convincing politically by distinguishing between them and actual artists (the “little guys and gals”), whom they say they want to help.

They argue that artists are “not likely to get a good deal” under strong copyright regimes and may not even seek one because they “are motivated not only (or even) by monetary reward but peer recognition.”<sup>59</sup> This framing of the issue makes it easier to justify weak copyright regimes, since even if there are costs to the producers they are borne by big corporations, not individual artists. Waldfogel admits that “it’s very hard to argue, today, that copying isn’t harmful to the sellers of the recorded music.” But he goes on to say that this really doesn’t matter, because “the artists, to the extent that they can make money on compliments to recorded music, may or may not be harmed. But the record labels clearly are harmed.”<sup>60</sup>

Waldfogel is silent about what happens to songwriters – perhaps they can also sell t-shirts. But many NKs are not silent on this. Some argue that copyright is not needed because musicians would “generate revenue by endorsements or live performances.” This would be a significant shift from the traditional model where artists now receive touring income and recording income, but it certainly doesn’t apply to movies, books, software and other production that doesn’t involve live performance that can be monetized.<sup>61</sup>

NKs, and to some extent LNCs, have worked to show that copying doesn’t weaken incentives to produce. If piracy doesn’t hurt producers, then the rationale that strong copyright is needed to encourage production of creative works is weakened. As a result, NKs and LNCs cite (and produce) research that attempts to show that technologies like Napster and P2P either don’t reduce purchases of music, or reduce it only minimally. They also argue that copying can have benefits for producers, especially in the form of sampling and enhanced network effects. The notion is that if producers of material actually benefit from weak copyright then the case for weaker copyright will be stronger.

To the extent that they admit that lax rules and enforcement against copying would affect the incentives for production, NKs (and to some extent LNCs) have several responses. Some argue that government tax revenues should pay for copyright holders.<sup>62</sup> For example, Romer proposes this as an alternative to legislation requiring general purpose ICTs to have copy protection installed.<sup>63</sup> Others want artists to get paid for their actual production of copyrighted material, but want to do so in more collective ways with their individual rights forfeited. For example, they are more likely to support copyright collectives that financially benefit all content artists through some kind of compulsory licensing system.

Because NKs see “copying” as a form of societal redistribution from large profit-making corporations to individuals (LNCs see this as a form of allocation efficiency), NKs oppose virtually all steps to limit individuals from “copying.” These include strengthening copyright laws or keeping them strong (either domestically or through international



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treaties), technology mandates to limit copying,<sup>64</sup> empowering intermediaries (such as ISPs or Internet registrars) to fight copying, and enabling copyright holders to bring legal action against “copiers.” A case in point is the Electronic Freedom Forum’s “Let the Music Play” campaign, which protests the music and film industries’ prosecution of file copiers; another is Public Knowledge’s campaign to have the FCC prohibit ISPs from acting as intermediary enforcers of the Digital Millennium Copyright Act. As part of this argument they claim that digital technology has evolved so that it is virtually impossible to stop copying--why, then, bother with copyright? As NK Larry Lessig argues, “Copying – for a digital network – is like breathing to us.”<sup>65</sup>

While NCs (CNCs and LNCs) look only at impacts on cost allocation issues, NKs also consider non-allocation or distribution issues. For example, Benkler argues that strong copyright systems “foster commercialization, concentration and homogenization of information production, and thus entail normative implications that may be more salient than its quantitative effects.”<sup>66</sup> For NKs, copyright not only raises costs for consumers, it limits the “rights” of individuals to access content, and shifts the production of content toward greater homogenization and corporatization. That is the main reason NKs focus so much on fair use,<sup>67</sup> even going so far as to stretch the term to imply “the ability to download and copy virtually all copyrighted content, as long as one doesn’t resell.”<sup>68</sup> (This is the regime that some European countries have adopted, under pressure from NK advocates.) Some in the NK camp actually find intellectual agreement with the CNC nihilists when they argue that the Internet Age marks the end of intellectual property rights altogether.

In this sense, the LNC and NK (and CNC nihilist) camps are natural allies. However, to date they have not joined forces in any serious way. In fact, Samuelson bemoans the lack of influence of neoclassical economics on copyright in part because, as an NK she believes that the greater influence of LNC economics would lead to more decisions and policies that favor consumers instead of producers.<sup>69</sup> In other words, if LNC economic doctrine is applied, it would show that copyright regimes could be much weaker without significantly hurting the economic motivation of creative producers.

At the end of the day, both LNCs and NKs diminish the importance of the copyright industry, in large part because of their focus on consumer welfare, not on innovation, productivity or quality. Romer even goes so far as to argue that “if all of the traditional music firms go out of business, the net harm to the economy in the United States and the rest of the world would be trivial.”<sup>70</sup>

IEs look at the issue differently. First, like CNCs, IEs place more emphasis on dynamic effects. As Aghion and Griffith argue, “there may be a tradeoff between competition and innovation and an inverted u-shaped curve, with high and low levels of competition harmful to innovation.”<sup>71</sup> The same may be true with regard to copyright: a level of protection either too strong or too weak can reduce innovation. As Towse, Handke, and Stepan argue, “as greater understanding of this evolutionary approach to economics takes hold, we can expect less condemnation of some aspects of monopoly.”<sup>72</sup> In other words, IEs don’t reflexively condemn deadweight losses due to copyright. Moreover, they are more

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likely to agree with Watt: “the ‘monopoly’ created by copyright is not like most monopolies, it is really nothing more than the protection of private property from misuse.”<sup>73</sup>

As Lipsey notes, while NC economists see copyright as leading to deadweight losses of monopoly, “these so-called losses are another word for the profits that drive the system’s economic growth, taking the economy to ever higher levels of per capita real income.”<sup>74</sup> In other words, IEs recognize that “increasing returns to scale” and “natural monopoly” in copyright industries are not “market failures” as LNCs argue, but rather “production successes,” in the sense that they enable lower cost production of content or higher quality content. For example, increased sales can lead to lower costs for consumers as companies can cover their fixed costs with a larger number of buyers. Lipsey notes, “scale effects, rather than being imperfections to be offset, are some of the most desirable results of new technologies.”<sup>75</sup>

Second, unlike CNCs, IEs look at copyright as a series of tradeoffs. IEs also focus more on tradeoffs, as between innovation and copyright protection, than LNCs. Thus, they are skeptical of efforts to limit piracy by limiting the introduction of new technology or by technological requirements that would impose costs and restrictions on general purpose technologies (e.g., computers). IEs want to ensure that copyright rules do not impair innovation in related industries. For example, while NKs supported the Sony Betamax decision (the Supreme Court’s 1984 decision that making individual copies of television shows for purposes of time shifting is fair use) because VCRs enabled copying, IEs supported the decision because it enabled an innovative technology (VCRs) to go forward. Likewise, IEs opposed copyright holders who sought to restrict the introduction of MP3 players in the marketplace, and those who later tried to get copy protection technologies built into general purpose IT technologies, like PCs.

At the same time, they distinguish between 1) restrictions on innovation in other industries as a way to protect the content industry, and 2) the content industry itself using technology to protect content in ways that do not harm other industries. In this sense, they generally favor the use of encryption and other DRM technologies to protect digital content. Likewise, they distinguish between innovative technologies (for example, P2P file transfer) and “innovative” business models that are largely, if not exclusively, based on piracy (e.g., Napster, Kazaa, and LimeWire).

Third, IEs recognize that markets for copyrighted goods are not populated by rational actors, independently and accurately judging their utility function. Rather, markets are social constructions. For example, while LNCs and NKs can talk about “piracy” as “price discrimination” and “free culture” respectively, IEs recognize that piracy can have a tipping point. They would argue that it is quite difficult to achieve the right balance if individuals who don’t value paying the full price are allowed to “copy” while the rest of the population willingly pays. As IEs argue, markets are dynamic and if copyright regimes are weakened legally or are not enforced (either because of political and social pressures placed on copyright holders, or because nations with low levels of production don’t enact or enforce legal regimes), then markets could easily tip to a state where there is very little purchasing

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and very large amounts of copying. The result would be the loss not just of content, but of content innovation, higher quality content and the jobs that are associated with content production.

In this context, IEs view the production of expressive works in terms of economic agents embedded in complex production systems characterized by a variety of actors, including individuals (the focus of NKs to the extent they look at the production system), small firms, and large corporations. One goal of copyright is to enable a healthy production system that includes not only productivity, quality and innovation, but also national competitiveness. As such, in contrast to the other doctrines which look at the impact of different copyright regimes largely as a binary issues (spurring a decision to produce or to not produce), IEs also focus on the impact of copyright regimes on the overall production system, including the ability to produce higher quality and more innovative content. For example, strong copyright enables the production of more complex, expensive products (particularly in movies where copyright enables studios to invest tens of millions of dollars in high-tech special effects). Similarly, strong copyright helps preserve and create jobs (many of them higher wage) and incomes in nations, like the United States, that specialize in the production of copyrighted content.

Fourth, in contrast to the NC model, which holds that economies do not undergo structural change and therefore economic regulations do not need to adapt, IEs would argue that technological change “necessitates the upgrading of copyright law so as to afford the same protection before and after some technological change.”<sup>76</sup>

### Privacy

With the recent Congressional hearings and legislation on Internet privacy, this issue appears to be moving from the realm of panel debates to that of government decision-making. However, views on the appropriate role of government in privacy differ significantly and many of those differences stem from the underlying economic doctrines held by advocates in the debates. With privacy, as with copyright, it is necessary to consider a set of tradeoffs with benefits (and costs) accruing to different parties depending on how information is treated. Each of the four doctrines views the economics of information sharing and the effects of government policy on it differently.

CNCs generally favor enabling companies to collect and use information. In part, this is because they believe that companies own the data that consumers provide to them and as such can use the data more or less as they see fit, as long as they do not engage in deceptive practices. To CNCs, markets for personal information are like markets for conventional goods and services, and efforts to restrict information reduce economic efficiency. As Posner argues, “the concealment of personal characteristics in the employment contest retards rather than promotes the efficient sorting of employees to employers.”<sup>77</sup> Thus, privacy legislation “reduces, rather than increases efficiency.”<sup>78</sup> As Murphy summarized, “In grossly oversimplified terms, the consensus of the law and economics literature is this: more information is better, and restrictions on the flow of information in the name of privacy are generally not social wealth maximizing, because they inhibit decision-making, increase transaction costs, and encourage fraud.”<sup>79</sup>

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In contrast, LNCs argue that reliance on free markets alone for the exchange of information will not optimize societal welfare, in large part because they believe that information markets are rife with externalities. Hui and Png argue that the Chicago School (referred to as CNCs here) “critique overlooks various direct externalities associated with the collection and use of personal information. These include direct marketing solicitations that overtly intrude into personal seclusion as well as covert intrusions into personal secrecy and autonomy.”<sup>80</sup> Hermalin and Katz agree, giving as an example the externality that arises if people know that results from AIDS testing were required to be disclosed. In this regime, they argue, individuals might forgo testing, with unintended adverse consequences.<sup>81</sup>

LNCs also focus on the risks of activities such as price discrimination resulting from the collection of personal information, fearing that consumers who balk at a higher price will not consume the item, causing deadweight loss.<sup>82</sup> As Hui and Png note with respect to markets with limited competition, “the collection and use of non-productive personal information may redistribute surplus among sellers and consumers, but it does not necessarily generate more exchange.”<sup>83</sup> However, they go on to argue that in more competitive markets price discrimination based on the collection of personal information may lead to higher consumer welfare. While CNCs are likely to focus mostly on the costs of restricting information flow, LNCs see both costs and benefits.

LNCs (like CNCs and IEs) also argue that it is difficult if not impossible to judge the value of privacy to individuals, especially from opinion polls, and that this makes it more difficult to develop optimal privacy policy. They point out that when asked, people will put a high value on “their” information, but when prompted to exchange information for a benefit (e.g., to access a web site), they put a very low value on it.<sup>84</sup> Moreover, different people put a different price on personal information, making it difficult for regulation to optimize efficiency. As Romaosky and Acquisti argue, “only in rare and extreme cases will any of these policy approaches be able to achieve the socially optimal outcome.”<sup>85</sup>

LNCs are likely to favor economic responses to the privacy issue, rather than regulatory ones (for example, enabling individuals to exchange information for monetary incentives or convenience). As such, LNCs want to enable markets to set the “right price” for information and let market transactions determine what that is. However, they do not believe that unregulated markets in personal information will maximize societal welfare because of externalities. While they would accept government intervention to overcome information market externalities, they prefer the use of price signals to regulation. For example, they would rather have a spam tax than a national “do not spam list.”<sup>86</sup>

As with other issues, NKs focus less on efficiency and more on fairness in privacy matters. Most NKs believe that individuals inherently own their personal data and that companies that use this data are taking something of value from the individual without compensation. As such, they favor legal regimes that would codify this ownership and give individuals rights over that data including the right to limit its use and to inspect it.<sup>87</sup>

NKs generally minimize the economic benefits of information sharing (such as enabling advertising to support Internet sites), focusing instead on the potential costs to individuals of sharing information. In this regard, some NKs see the increased collection of personal

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*Innovation economists look at how privacy regulation can affect the development and spread of new business models and technologies. For example, they see high risk to the viability of new, ad-dependent Internet business models in some privacy regimes (e.g., opt in for third party sharing, or significant restrictions on behavioral targeting).*

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information as part of the development of a surveillance society, where people are regularly tracked in order to limit free speech and boost corporate profits. For many NKs, privacy is a fundamental human right that should not be traded off in exchange for other values like innovation or economic productivity.<sup>88</sup> Even if much of this activity, including behavioral targeting, can be done in a way that is anonymous, many NKs see the use of information about themselves for instrumental purposes as fundamentally unfair and in some cases dehumanizing. For this reason, they seek rules whereby organizations would not be able to use data for more than the most basic purposes without the affirmative consent (e.g., opt in) of the individual involved.

When confronted with the fact that consumers who say they value their privacy in fact give it away for very low rewards, NKs argue that consumers are misinformed and not fully aware of the costs of their choices; one role of government, in their view, is to protect the fundamental human right to privacy.

Because they see privacy in such basic terms, NKs also do not distinguish between off line and online privacy regulations and believe that any regulation of online data should apply equally in the offline world. NKs generally minimize the costs (either direct administrative costs or costs from the limited use of data) involved in privacy regulation. To the extent that there are costs from privacy regulations, they are generally seen as borne by companies in the form of lower profits, rather than as assessed to consumers in the form of higher prices and/or reduced choice or quality of services.

In contrast to the other three doctrine holders, IEs look more at the effect of privacy regulation on productivity and innovation. With regard to productivity, they look both at the costs of particular privacy regulations as well as how new uses of information can boost productivity. For example, the costs to financial institutions of complying with Graham, Leach, Bliley financial privacy notices is likely in the billions, as each American financial consumer receives multiple mailed notices each year explaining the firm's privacy policy. On the other hand, the use of information can also dramatically boost productivity, particularly in the advertising industry, which is characterized by extremely high levels of inefficiency, due to the low cost effectiveness of messages. Ads are delivered with very low response rates in part because without better information it is hard to target the right ad to the right person. With regard to innovation, IEs look at how privacy regulation can affect the development and spread of new business models and technologies. For example, they see high risk to the viability of new, ad-dependent Internet business models in some privacy regimes (e.g., opt in for third party sharing, or significant restrictions on behavioral targeting, even if done with anonymity).<sup>89</sup>

Like CNCs, IEs argue that excessive government control over the privacy policies of social networks is not necessary to protect consumers. Moreover, such control would be harmful to future innovation and economic growth. In the heated political environment of the privacy debate, government intervention would probably become regulatory overkill, stifling innovation and increasing costs for consumers. In contrast to CNCs, IEs argue that absent any rules, some users may not develop the trust needed for the digital economy and society to flourish. In this sense, targeted rules to enable useful information sharing with

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some choice provided to individuals (e.g., opt out) as well as control over and sensitive data (financial or medical information, for example) can be welfare maximizing.

## CONCLUSION

Views on network policy are shaped in large part by the economic doctrine held by the advocate, scholar or policy maker. These differences over doctrine cause partisans to view facts differently and to focus on small segments of complex debates, leading to a breakdown of constructive dialog and much “talking past each other.” Therefore, understanding the relationship between economic doctrine and network policy views can help bring more clarity and insight to the policy making process. Rather than debate why one advocate interprets the impacts of a policy proposal in one way and another in different way, it is more productive to appreciate that differences stem from deeply held views of how society and the economy should work and what goals are paramount. Of course, an understanding of doctrines will not eliminate differences on network policy, but it may better illuminate them. Dialogue can’t proceed toward productive conclusions until parties are agreed on a common set of facts and a common set of basic definitions. Many technology policy debates never achieve consensus on the nature of the subject matter under discussion because of impasses brought about by doctrinal effects on perception. Those debating difficult trade-offs in technology policy therefore need to clarify facts and establish a common frame of reference before turning to doctrinal notions of welfare, efficiency, and innovation enhancement.



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## ENDNOTES

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- <sup>1</sup> This is not to say that there was unanimity over these issues, but these were often issues that were decided out of the public eye and as such were more technocratic, and subject to more traditional “inside baseball” politics. That has changed significantly over the last 15 years as these issues are now more widely covered by the press and advocacy organizations.
- <sup>2</sup> Joseph A. Schumpeter, “Science and Ideology,” *American Economic Review*, 39, no. 2, (1949): 345-359.
- <sup>3</sup> ITIF has developed an online “test” to help individuals identify which doctrine best fits their thinking. See <http://www.innovationeconomics.org/type/>.
- <sup>4</sup> Milton Mueller, *Networks and States: The Global Politics of Internet Governance* (Cambridge, MA: MIT Press, September 2010).
- <sup>5</sup> For a more detailed discussion of these doctrines see Robert D. Atkinson and David Audrestch, “Economic Doctrines and Policy Differences: Why Washington Can’t Agree on Economic Policies” (Washington, D.C.: Information Technology and Innovation Foundation, September 2008) <http://www.itif.org/files/EconomicDoctrine.pdf>.
- <sup>6</sup> Adam Smith, *The Wealth of Nations* (New York: Modern Library, 1759): 423.
- <sup>7</sup> Heritage Foundation economist Dan Mitchell actually asks, “Is spending hindering economic performance because of the taxes used to finance government? Would the economic damage be reduced if government had some magical source of free revenue?” He concludes that even if somehow government programs could be implemented at no cost, they would still harm economic growth. Daniel J. Mitchell, “Supplement to “The Impact of Government Spending on Economic Growth” (Washington, D.C.: The Heritage Foundation, March 15, 2005).
- <sup>8</sup> Joseph A. Schumpeter, *Capitalism, Socialism and Democracy*, (New York: Harper, 1942): 82-3.
- <sup>9</sup> For a list of readings based on innovation economics see <http://www.innovationeconomics.org/resources/>.
- <sup>10</sup> Richard R. Nelson and Sidney G. Winter, *An Evolutionary Theory of Economic Change* (Cambridge, MA: Harvard University Press, 1982).
- <sup>11</sup> J. Gregory Sidak, Robert W. Crandall, and Hal J. Singer, “The Empirical Case Against Asymmetric Regulation of Broadband Internet Access,” *Berkeley Technology Law Journal*, 17, no. 3 (Summer 2002): 953 - 987, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=302876](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=302876).
- <sup>12</sup> See Jeffrey A. Eisenach, “Broadband Policy: Does the U.S. Have It Right After All?” in *Telecommunications Policy & Regulation*, (Practicing Law Institute, December 2008). [http://www.itif.org/files/Eisenach\\_USbroadbandpolicy.pdf](http://www.itif.org/files/Eisenach_USbroadbandpolicy.pdf) or Jeffrey A. Eisenach, “Broadband in the U.S. – Myths and Facts,” in *Australia’s Broadband Future: Four Doors to Greater Competition* (Sydney, Australia: Committee for Economic Development of Australia, 2008). See also, Thomas Hazlett and Dennis L. Wiseman, “Market Power in U.S Broadband Services,” George Mason University School of Law, 09-69.
- <sup>13</sup> Neil Quigley, “Dynamic Competition in Telecommunications: Implications for Regulatory Policy,” in *C.D. Howe Institute Commentary*, 194, (February 2004), [http://www.cdhowe.org/pdf/commentary\\_194.pdf](http://www.cdhowe.org/pdf/commentary_194.pdf).
- <sup>14</sup> Jerry A. Hausman and J. Gregory Sidak, “Did Mandatory Unbundling Achieve Its Purpose? Empirical Evidence from Five Countries,” *Journal of Competition Law & Economics*, 1, no. 1 (2005): 173.
- <sup>15</sup> Robert W. Crandall, “Letting Go? The Federal Communications Commission in the Era of Deregulation,” *Review of Network Economics*, 7, no. 4, Article 3 (2008).
- <sup>16</sup> Nicholas Economides, “Broadband Openness Rules are Fully Justified by Economic Research,” NYU Law and Economics Research paper No. 10-31, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1627694](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1627694).
- <sup>17</sup> Rob Frieden, “Lies, Damn Lies and Statistics: Developing a Clearer Assessment of Market Penetration and Broadband Competition in the United States,” Penn State Legal Studies Research Paper No. 13-2008, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1159727](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1159727).
- <sup>18</sup> Nicholas Economides, “Broadband Openness Rules are Fully Justified by Economic Research,” NET Institute Working paper #10-02, April 2010.
- <sup>19</sup> See Howard A. Shelanski, “Competition and Regulation in Broadband Communications,” in *Broadband: Should We Regulate High-Speed Internet Access?* eds. Robert W. Crandall & James H. Alleman (Washington, D.C.: AEI-Brookings Joint Center for Regulatory Studies, 2002): 157.
- <sup>20</sup> See Craig Dingwall, “Municipal Broadband: Challenges and Perspectives,” in *Federal Communications Law Journal* 59, (2006): 67; and Chris Doyle, “Promoting Efficient Competition in Telecommunications,” in *National Institute Economic Review* 159, no. 1, (January 1997): 82.

- <sup>21</sup> Art Brodsky, "Connect Kentucky Provides Uncertain Model for Federal Legislation", *Public Knowledge*, January 9, 2008, <http://www.publicknowledge.org/node/1334>.
- <sup>22</sup> "Future of the Internet," *Free Press*, [http://www.freepress.net/media\\_issues/internet](http://www.freepress.net/media_issues/internet).
- <sup>23</sup> Rob Frieden, "Lies, Damn Lies and Statistics: Developing a Clearer Assessment of Market Penetration and Broadband Competition in the United States," Penn State Legal Studies Research Paper No. 13-2008, p. 6.
- <sup>24</sup> "Next Generation Connectivity," (The Berkman Center for Internet and Society, October 2009), [www.fcc.gov/stage/pdf/Berkman\\_Center\\_Broadband\\_Study\\_13Oct09.pdf](http://www.fcc.gov/stage/pdf/Berkman_Center_Broadband_Study_13Oct09.pdf)
- <sup>25</sup> Robert D. Atkinson, "The Role of Competition in a National Broadband Policy," *Journal on Telecommunications and High Technology Law* 7, (2009).
- <sup>26</sup> Felix Hoffler, "Cost and Benefits from Infrastructure Competition. Estimating Welfare effects from Broadband Access Competition," *MPI Collective Goods Preprint* No. 2005/1, June 2005, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=643461](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=643461).
- <sup>27</sup> Philip G. Gayle and Dennis L. Weisman, "Efficiency Trade-Offs in the Design of Competition Policy for the Telecommunications Industry," *Review of Network Economics* 6, no. 3, Article 4, (2007).
- <sup>28</sup> Robert D. Atkinson, "Framing a National Broadband Policy," (Washington, D. C.: Information Technology and Innovation Foundation, 2007) <http://commmlaw.cua.edu/articles/v16/16.1/Atkinson.pdf>.
- <sup>29</sup> James B. Speta, "A Sensible Next Step on Network Neutrality: The Market Power Question," *Review of Network Economics* 8, no. 1, Article 7 (2009).
- <sup>30</sup> Jerry Brito, et al., "Net Neutrality Regulation: The Economic Evidence," filing before the FCC in the matter of preserving the open internet, April 12, 2010, 1.
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## **ABOUT THE AUTHOR**

Dr. Robert Atkinson is the President of the Information Technology and Innovation Foundation. He is also the author of the book, *The Past and Future of America's Economy: Long Waves of Innovation that Power Cycles of Growth* (Edward Elgar, 2005). Dr. Atkinson received his Ph.D. in City and Regional Planning from the University of North Carolina at Chapel Hill in 1989.

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