Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of GN Docket No. 14-28, Protecting and Promoting the Open Internet and GN Docket No 10-127, Framework for Broadband Internet Service

Comment of MFRConsulting
MFRConsulting
144 Beacon Street
Boston, Massachusetts 02116-1449
Author: Martyn Roetter, mroetter@gmail.com, (617) 216-1988

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Internet Incentives, Investment and Innovation:
The FCC Got it Right

Summary ........................................................................................................................................ 1
Introduction .................................................................................................................................... 2
Assessment of Economists’ Work ............................................................................................... 4
The Virtuous Circle Report ......................................................................................................... 4
The Broadband Investment and Title II Report .......................................................................... 6
Spectrum Policy and Economists versus Physics and Other Evidence .................................... 7
Conclusions – The Necessary Role of the FCC ........................................................................... 10

Summary

A well-funded fierce campaign of opposition is being waged against an active and substantive role for the Federal Communications Commission (FCC) in establishing rules for the US broadband market. The alternative proposed is “light touch” regulation. This campaign is based on a combination of:

• **A false depiction of history** - it attributes the remarkable progress and impressive achievements in the T-I-E (Telecommunications-Information-Entertainment) sector to the efforts of private sector players made possible allegedly only because the public sector, including the FCC, has had a “hands off” approach with respect to their behavior and actions;

• **An unfounded and convincingly rebutted assertion that all key market players are subject to intense competitive pressures** so that “market forces” or the “invisible hand” ensure that they will always act to foster
innovation and strive to satisfy customers to the best of their ability as a matter of the highest priority;

• **An equally unfounded accompanying assertion contradicted by historical evidence that any substantive interventions by the FCC, a government bureaucracy, are bound to be harmful** for consumers and other customers, and hence for the US economy, as well as unreasonably burdensome to the companies who have to comply with the rules that are established;

• **Devious and tendentious interpretations** of statutes and the meaning of language.

This document does not purport to present a thorough exposure of the false, misleading and unfounded contents of the campaign against the FCC that is being led and financed by the largest US network operators. It focuses on one aspect of this campaign, namely the recruitment of outside economists to make pronouncements and produce analyses and findings that support the positions and goals of these operators. These economists, as shown by examples, fail to respect the rules of evidence through their highly selective use of information while they turn a blind eye to substantial, verifiable contradictory facts. In some cases they even develop their findings on the basis of flawed logic or models whose outcomes are pre-determined by the premises or inputs that drive them.

**Introduction**

The Federal Communications Commission (FCC) has an indispensable and active role to play in the US broadband market. This role is to ensure that the broadband market operates to the benefit of all Americans in accordance with the traditional goals and values of public policy embodied in the Communications Act. These goals and values, notably of providing universal affordable access to network services for all Americans, have served the US economy and society very well for over 80 years. They are at least as valid today in the era of multi-service broadband networks as they were in the days of narrowband telephony.

However, an active role of the FCC is being vigorously opposed as unnecessary and allegedly harmful by the major broadband operators or ISPs (Internet Service Providers), notably AT&T, Verizon and Comcast. Their intent is to remove any significant regulatory restraints on their ability to act at their sole discretion, despite the obligations incumbent on them as stewards of scarce public resources to which they have been awarded privileged rights of access and use that substantially protect them from competition. Their opposition to the FCC’s February 2015 Open Internet Order is one of the most visible and important battles of their campaign against effective regulation.

In their opposition to the FCC’s initiatives the leading ISPs are supported by a significant coterie of economists in academia, think tanks and consultancies. These
economists regularly churn out articles and analyses that present findings and opinions that seek to justify the big ISPs’ claims and arguments. In some cases the economists are overtly funded by the broadband operators, while in others the source of funding is not explicitly identified.

This article demonstrates that the work of these economists is fatally flawed and should be dismissed. Their conclusions as illustrated in a few examples, are invalid. In particular, the FCC and other Government agencies should reject their opinions and recommendations in deliberations about critical issues in broadband and assessments of the validity of representations by the major operators. The methodologies the economists employ contain logical flaws. Furthermore they only consider highly selective and hence misleading data, while ignoring substantial well-documented contradictory evidence from diverse independent sources. Their findings violate the requirement in the Federal Code of Regulations for “truthful and accurate statements” in information submitted to the FCC\(^1\). It is not clear whether the cause of this regrettable situation is overreliance by the economists on information selectively provided by the broadband operators themselves.

The major US broadband operators claim that the US broadband market is:

(i) Intensely competitive, hence market forces alone will ensure that the ISPs act to produce outcomes that are in the public interest and for the maximum benefit of customers,

(ii) Delivering world-class services to its customers so there is no problem that requires a new or modified solution, and

(iii) Flourishing because the FCC has not until now applied any significant rules to or interfered with the activities of the major broadband operators under a regime of so-called “light” regulation.

Very diverse interests from consumers to smaller network competitors as well as third party services providers, public interest groups and others have vigorously and effectively disputed and rebutted these claims in multiple forums, including notably in the huge volume of submissions filed in the FCC’s Docket 14-28 on the Open Internet in 2014 and early 2015. The active role of the FCC, as manifested among other initiatives in its Open Internet Order adopted in this Docket on February 26\(^{th}\), 2015\(^2\), is indispensable to correct imbalances in power and the impact of asymmetric information that will otherwise lead to market failures.

The claims of the major ISPs and their allies are in fact baseless, for one or more of the following reasons:

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\(^1\) See Electronic Code of Federal Regulations, [http://www.ecfr.gov/cgi-bin/text-idx?SID=d0ac7a3c66aba70915a7bc7156ad16e4&mc=true&node=se47.1.1_117&rgn=div8 §1.17 Truthful and accurate statements to the Commission.](http://www.ecfr.gov/cgi-bin/text-idx?SID=d0ac7a3c66aba70915a7bc7156ad16e4&mc=true&node=se47.1.1_117&rgn=div8 §1.17 Truthful and accurate statements to the Commission.)

1. The methodology employed in the analysis is illogical and fatally flawed;
2. Substantial, well-documented facts that contradict the findings are ignored;
3. The selective facts that are included in the analyses are either fabricated, or presented in a misleading light.

**Assessment of Economists’ Work**

Among the examples of fatally flawed economic analyses are the reports:


Moreover, in support of AT&T’s and Verizon’s arguments that their participation in spectrum auctions should not be limited in any way, economists have delivered findings and opinions that defy the laws of physics (electromagnetic propagation) and the known economics of the deployment of wireless networks. If these two operators are allowed to apply their financial resources to acquire spectrum licenses without any limits competition in the wireless market may be impaired. Other operators may not be able to acquire sufficient spectrum - a scarce essential input - to compete, no matter how efficient and innovative they are. The establishment of a wireless duopoly would obstruct the purpose behind the FCC’s Open Internet Order, which applies to both wireless and fixed broadband, of fostering competition and innovation for the sake of all users of broadband.

**The Virtuous Circle Report**

The virtuous circle of innovation is the process in which new uses of the network - including new content, applications, services, and devices - foster increased end-user demand for broadband, which drives network improvements, and in turn then leads to further innovative network uses. The premise of the Ford report is that there is no risk that ISPs will be motivated to take actions that reduce customer demand, and hence investment, because in so doing they would reduce their profits. Hence the FCC’s justification of its February 2015 Open Internet Order that it is necessary to protect the virtuous circle against such actions by the ISPs is invalid, or “nonsense.” The author states that the FCC’s position is logically flawed because it “...requires profit-maximizing firms to do things willingly and knowingly that reduce the demand for their products. In a strange logical twist, this reduced demand must somehow increase profits and, in another strange logical twist, reduce investment.”

However it is Dr. Ford’s analysis and finding that are nonsensical, not the FCC’s virtuous circle. He bases his finding on the premise that ISP profits are a
monotonically increasing function of demand. However, in the real world some customers have traditionally been subsidized to justify investments and partly cover operating costs in order to provide them with service at a retail price they can afford, while ISPs have often delayed or failed to provide coverage to some customers and areas because they consider them to be unprofitable or not sufficiently profitable. Absent subsidies, the ISPs may therefore not extend their networks to cover these customers. Demand from these customers will be suppressed, reducing overall demand below its potential. In sum, ISPs’ profits do not monotonically increase with demand, but may decrease at some levels of demand as a result of the incremental costs associated with meeting it.

A principle of US telecommunications policy for over 80 years has undergirded pursuit of the goal of providing everybody with affordable access to network services, as a social and economic value and in consideration of the network effect. In this context a corollary precept has been and remains not to allow the maximization of operators’ profits regardless of or prioritized at the expense of all other interests, particularly since they are awarded privileged rights of access to and use of scarce public resources that substantially protect them from competition. In other words the maximization of ISPs’ profits should be pursued within conditions defined by their obligations as stewards of public resources and the goals of public policy with regard to critical network infrastructure, that is today broadband. The goal of the FCC’s Open Internet Order is to sustain a virtuous circle within these conditions. Otherwise the motivations of the ISPs may lead them to take actions that maximize their own profits by violating these conditions, because they perceive that serving some customers and meeting some demands would decrease their profits, despite also decreasing the value that is generated by and for other constituencies that the FCC has the responsibility and authority to represent. The FCC has the duty to act to avoid this kind of outcome when the net impact of such decisions by ISPs would decrease total welfare.

Moreover there is substantial evidence of practices by one profit maximizing operator compared to another that create enormous disparities in demand, measured according to usage such as gigabytes of traffic per month, from customers in comparable economic and social circumstances. Particularly striking examples of these disparities are found in Europe. For example, mobile data usage in GB/month in 2014 varied by a factor of 13 between Germany (low end) and some Nordic and Baltic nations, while not so coincidentally the German retail price for mobile data is much higher. Clearly the profit maximizing operators in these countries have been pursuing very different pricing policies that have materially influenced demand, taking account of the various competitive forces and regulatory influences they confront. Germany is a more protected, i.e. less competitive market than many others within the European Union. Contrary to the comforting scenario depicted by

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3 The value of a good or service is increased the more people who use it.

Dr. Ford, its largest profit-seeking operator has taken actions that manifestly reduce demand for its products.

If an operator does not face effective competition, which is the situation for fixed broadband services in the US, then it may well decide as a logical and reasonable business decision, to maximize its profits through a combination of higher prices than would prevail in a truly competitive environment, with investments that are focused on the most profitable customers and locations. In these cases, the volume of demand or the usage of networks will be reduced below what it could be to generate the greatest total direct and indirect value for an economy and society. Broadband has a large economic multiplier effect. The indirect value created by the use of broadband is arguably at least as great if not greater than the direct value it generates.

Real world evidence of the actual behavior of operators and consideration of the traditional goals of US public policy in telecommunications demonstrate the false premise on which the finding of the Ford report is based, namely that ISP profits and the motivations that drive their pursuit of maximum profits are invariably aligned with maximizing demand or meeting all demands. The introduction of the FCC’s Open Internet Order to sustain and foster a virtuous circle for broadband of competition to innovation to stimulation of demand to investment and value creation is not nonsense. It is necessary in a market and supply structure that is not effectively competitive. It is necessary if the goals of public policy are to be achieved and the ISPs are to be held to a social contract inherent in the licenses and franchises they hold and linked to the privileges they have been awarded.

**The Broadband Investment and Title II Report**

The Hassett/Shapiro report finds that Title II reclassification of broadband will lead to a substantial reduction in broadband investment (of up to 30% or even more). The unsubstantiated nature of this finding has been thoroughly exposed. It is derived from a misuse of statistics, or the classic mistake of assuming causation from correlation without any evidence for the former. One example cited in the rebuttal of this report is the strong correlation between the consumption of margarine in the US and the divorce rate in Maine. Presumably according to the logic inherent in the Hassett/Shapiro report a goal to preserve marriages in Maine would justify steps to reduce the consumption of margarine, perhaps in favor of butter or some other substitute.

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7 Martyn Roetter, [ibid.](#)
Just as serious as its misuse of statistics the Hassett/Shapiro report overlooks the well-documented evidence that Verizon has exploited its Title II benefits to support its investment in and deployment of its FiOS broadband infrastructure. In other words Verizon’s apparent position is that Title II is a bad thing except when it benefits Verizon.

Considerable evidence is also available from the broadband operators themselves that their investment plans are not driven by the presence or absence of a Title II regime. Other factors such as demand, the needs for and advantages of installing new generations of technology etc. are the real drivers. The announcement of the trilateral Charter/Time Warner Cable (TWC)/BHN (Bright House Networks) deal that puts a valuation of almost $79 billion on TWC is the most recent evidence that Title II is not the “nuclear option” that will put a sizable harmful dent in the propensity to invest in broadband. Hassett/Shapiro’s obliviousness to evidence is like a meteorologist on TV who would maintain a forecast of a dry day even while raindrops were splattering loudly against the windows of the broadcast studio.

The purpose of opposition to Title II reclassification, including scare mongering about its impact on investment, is part and parcel of a general aversion to and strategy by the largest ISPs to obviate any attempts to impose effective regulations on their actions that will inhibit their ability to proceed “at their sole discretion.” Some economists may agree with this purpose of the largest broadband operators for ideological or other reasons that they have every right to defend. However in advocating for this outcome it is not legitimate for them to ignore facts or to present fabricated facts provided by the broadband operators, or to utilize analytical models that are logically flawed.

The attitude or ideology underlying the findings and opinions of the economists who have produced the two reports just assessed can be encapsulated in a variation of an old joke.

**Question:** How many economists does it take to change a light bulb?

**Answer:** Unknown. The light bulb is not changed because they all assume that market forces alone will do the job.

**Spectrum Policy and Economists versus Physics and Other Evidence**

Economists hired by AT&T have produced the following astounding argument as to why an operator that holds only high frequencies in its portfolio of licenses (i.e. in practice near and above 2GHz in contrast to sub 1 GHz frequencies) is not at a significant economic and hence competitive disadvantage in achieving national coverage of its own facilities including rural or coverage-limited areas. They contend that:

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8 Michael L. Katz, Philip A. Haile, Mark A. Israel, and Andres V. Lerner,
“A fundamental lesson of economics is that market forces generally will equate the costs of substitutes. Here, this means that prices of different types of spectrum will adjust to equate the total costs of providing equivalent service (i.e., the rights for spectrum requiring greater facilities investment will tend to sell for less than rights to spectrum requiring less facilities investment).”

This assertion is not only not a fundamental lesson of economics, but directly contradicts the value and histories of a wealth of innovations over time in which new substitutes for existing resources or commodities have been introduced and succeeded because they could provide the same value at lower cost and/or even superior or additional value at equal or lower cost. Moreover, it is refuted by ample evidence of the actual differences in prices paid to acquire low and high frequency spectrum. These price differentials fail by large margins to compensate for the higher numbers and hence greater costs of deployment of more numerous base stations needed to cover rural areas at high as compared to generally more expensive low (sub-1 GHz) frequencies.

The alleged “fundamental lesson of economics” just cited, which is refuted by elementary calculations using actual prices paid for spectrum licenses and engineering costs of base station installations, is used to justify AT&T’s and Verizon’s position that it is not reasonable to reserve some portion of the 600 MHz frequencies in the planned Incentive Auction for operators other than the current dominant holders of sub 1 GHz spectrum, i.e. AT&T and Verizon. Yet this lesson is neither fundamental nor a lesson that can be derived from observations of the working of the economy, while readily available evidence proves that it is nonsense when applied to spectrum used in the deployment of mobile networks.

Another example of the neglect and rejection of both logic and evidence by several economists lies in their acceptance and use of a demonstrably spurious metric of spectrum efficiency. This metric has been propagated and used repeatedly by the

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9 Intriguingly in the most recent spectrum auction in Germany (concluded in June 2015) the prices paid for winning licenses in the 700 MHz band were actually lower than those paid for 1800 MHz licenses ([http://www.bundesnetzagentur.de/EN/Areas/Telecommunications/Companies/FrequencyManagement/ElectronicCommunicationsServices/MobileBroadbandProject2016/project2016_node.html](http://www.bundesnetzagentur.de/EN/Areas/Telecommunications/Companies/FrequencyManagement/ElectronicCommunicationsServices/MobileBroadbandProject2016/project2016_node.html))


CTIA, even after this author has publicly and privately communicated proof of its false and misleading conclusions 12.

One explanation and demonstration of the spurious nature of the CTIA’s metric of spectrum efficiency was filed with the FCC in 201313, in response to the Shapiro/Holtz-Eakin/Bazelon paper.14 This metric has been used by the CTIA and Verizon to show that allegedly the US mobile sector and in particular Verizon, are more efficient in their use of licensed spectrum than any other country and smaller US operators. Therefore, so the argument goes, supported by Shapiro et al., it makes sense not to impose any restrictions or caps for competitive reasons on the amounts of spectrum that Verizon (and AT&T) can accumulate because the largest operators make the best use of spectrum. Hence they will allegedly generate the greatest value from any additional spectrum that is licensed for mobile communications services.

The CTIA/Verizon metric is calculated as the total number of mobile subscribers of an operator or a country divided by the average amount of spectrum licensed to an operator or in a country. It is spurious because it ignores the cellular structure of mobile networks and hence the basic characteristic of these networks that the same spectrum is reused many times over. The metric does not reflect the efficiency of use of spectrum within a cell, which is where efficiency counts so as to maximize both the number of users within the cell whose demands can be satisfied simultaneously and the capacity available to each such user. The metric intrinsically favors countries with the highest populations, and operators whose licenses cover the greatest number of people. Yet significantly the comparisons published by the CTIA and Verizon using their metric do not include operators or countries that cover or include larger populations than the US.

Two of the tables included in the 2013 filing to the FCC (“A Flawed Metric of Spectrum Efficiency”) are reproduced below, based on the information available at that time. They demonstrate beyond any shadow of doubt the absurdity of the CTIA metric. They include its application to more populous countries than the US and to an operator with a higher number of total customers than Verizon. As noted, the CTIA and Verizon omitted these comparisons in the Tables based on this metric that they have published, although it is not certain whether these omissions were deliberate or inadvertent.

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12 There has not been to my knowledge or brought to my attention any acknowledgment or attempt at rebuttal of the demonstrations of the dishonest character of this metric over a period of more than three years.
14 Robert J. Shapiro et al., ibid.
Table 1a: National Spectrum Efficiency According to the Verizon/CTIA Metric

<table>
<thead>
<tr>
<th>End-2011</th>
<th>U.S.</th>
<th>Japan</th>
<th>Germany</th>
<th>U.K.</th>
<th>France</th>
<th>Italy</th>
<th>Canada</th>
<th>Spain</th>
<th>Korea</th>
<th>Mexico</th>
<th>China</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Subs., Million</td>
<td>331.6</td>
<td>126.1</td>
<td>114.1</td>
<td>76.9</td>
<td>64.3</td>
<td>92.4</td>
<td>26.6</td>
<td>58.1</td>
<td>52.5</td>
<td>93.2</td>
<td>1,000</td>
<td>900</td>
</tr>
<tr>
<td>MHz, Million</td>
<td>409.5</td>
<td>347</td>
<td>615</td>
<td>375</td>
<td>375</td>
<td>375</td>
<td>270</td>
<td>625</td>
<td>270</td>
<td>260</td>
<td>400</td>
<td>220</td>
</tr>
<tr>
<td>SSMA</td>
<td>1.0</td>
<td>0.449</td>
<td>0.229</td>
<td>0.253</td>
<td>0.212</td>
<td>0.304</td>
<td>0.122</td>
<td>0.115</td>
<td>0.240</td>
<td>0.443</td>
<td>3.087</td>
<td>5.052</td>
</tr>
</tbody>
</table>

Sources: Adapted from CTIA and Information Age (IAE) estimates – figures for all countries except China and India are taken from CTIA documents

1. Notes: MHz = Spectrum assigned for Commercial use – this amount changes as more spectrum is assigned and in some countries the current (mid-2013) amounts have increased significantly since end-2011; SSMA= Spectrum efficiency defined as “Subscribers Served per MHz of Spectrum Assigned”, normalized to the U.S. at 809,755 subscribers/MHz – a higher number indicates greater spectrum efficiency

Table 1b: Spectrum Efficiency of Operators According to the Verizon/CTIA Metric

<table>
<thead>
<tr>
<th>End-2011</th>
<th>Verizon Wireless</th>
<th>China Mobile</th>
<th>Ratio China Mobile/VZW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscribers, million</td>
<td>109</td>
<td>649.6</td>
<td>5.96</td>
</tr>
<tr>
<td>Spectrum Depth, MHz</td>
<td>89</td>
<td>165</td>
<td>1.85</td>
</tr>
<tr>
<td>SSMA, million</td>
<td>1.225</td>
<td>3.937</td>
<td>3.21</td>
</tr>
</tbody>
</table>

Source: Operator reports and IAE

The most ludicrous or least credible of the findings based on the spurious spectrum efficiency metric derived from the Tables above include:

- In North America Canada is less than one eighth as efficient as the U.S. and Mexico is over 3.5 times more efficient than Canada
- Mexico is almost twice as efficient as Germany
- India is over 60% more efficient than China, which is itself over three times more efficient than the U.S., and China Mobile is similarly over 3 times more efficient than Verizon
- India is over 11 times more efficient than Japan.

Conclusions – The Necessary Role of the FCC

This document identifies fatal logical flaws in the analyses and findings presented by economists and their lack of knowledge or attention to evidence and factors that materially affect the development of the broadband market and the decisions of operators or ISPs. These findings, examples of which have been assessed here, are
being prominently exploited to support and justify the positions taken by the largest US broadband operators in opposition to the FCC.

The rebuttals of these economists’ work are not based on matters of judgment about which people of good faith can reasonably differ. They are built on matters of verifiable, independently sourced facts and logic.

Perhaps these economists have relied too heavily or naively on information selectively provided to them by the broadband operators, and paid insufficient attention to other evidence. This other evidence, some of which is even available from the broadband operators themselves, and the rest from diverse independent sources, paints a very different picture of the realities of the US broadband market than the environment and market dynamics depicted by the broadband operators in their lobbying against the FCC’s initiatives\textsuperscript{15}. Inclusion of this missing and contradictory evidence invalidates the findings and forecasts of the economists’ flawed models. It also highlights their incomplete recognition or inadequate understanding of the significant forces and incentives, neglected in their analyses, that materially influence the balance of power and nature of the relationships between major broadband operators and other stakeholders in broadband services. These stakeholders include smaller operators, third party providers of applications and content, and suppliers of equipment and devices as well as others such as franchise and licensing authorities and last, but far from least, customers.

The necessary active role of the FCC rests on its having tools that enable it to curb, and in the best case preempt abuses, and to use these tools efficiently in the hopefully rare cases when they may be required to correct an undesirable asymmetry in power and information leading to a market failure. Self-regulation, which would be the practical outcome if the recommendations of the broadband operators and their sympathizers among economists are accepted, is not a credible alternative when power is concentrated in fewer than a handful of giant companies, as is the case in the US broadband market today.

\textsuperscript{15} It is worth noting that current FCC Chairman Tom Wheeler is intimately familiar with the virtues and vices of the major network operators in both wireless and fixed access markets. Few people in Washington have had as rich a professional experience working with and for these companies on policy issues. He understands better than perhaps anyone else how to foster their virtues and curb their vices, by motivating and influencing their decisions in ways that sustain competition, innovation and investment throughout the broader Telecommunications-Information-Entertainment sector, respecting their need to generate reasonable profits while providing high quality affordable services to customers.