Consumer Federation of America

RESEARCH NOTE

ABUSE OF MARKET POWER FOR BROADBAND INTERNET ACCESS SERVICE: BLIND THEORY AND BONEHEAD ANALYSIS CAN'T HIDE THE PROBLEM
The Flawed and Misleading Analysis of the Phoenix Center and the Information Technology and Innovation Foundation

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In November 2013, the Consumer Federation of America (CFA) released a research note that analyzed competition in the U.S. wireline and wireless broadband services markets.[1] In that study, *Comparing Apples to Apples*, the CFA reviewed economic data relating to municipal and commercial wireline broadband offerings, and found that overall municipal operators offer more consumer-friendly service than private broadband providers. In the wireless market, the CFA found that non-incumbent U.S. wireless broadband service providers and non-U.S. wireless broadband service providers both offer more attractive service for consumers than that offered by the dominant wireless carriers in the United States (AT&T and Verizon).

Recent blog posts by the Phoenix Center and Information Technology and Innovation Foundation (ITIF) written in response to the CFA study add another chapter in these authors' never-ending effort to excuse the high prices and profits of the dominant wireless carriers.[2] They attack my analysis and claim that I do not properly account for "demand." In fact, they are the ones in error – errors so numerous and egregious it would appear that the authors cut some of the most important classes back in their college days:

- Economics 101: where students learn that oligopoly results in the abuse of market power to increase prices and profits. — Phoenix Center
- English 101: where basic reading skills are acquired.
- Statistics 101: where you learn how to build multivariate models that control for important confounding variables. — ITIF

This paper briefly rebuts these facile and poorly-researched arguments, and sets the record straight, once again, on the need to encourage greater competition in the wireline and wireless broadband marketplaces in the U.S.

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[1] Mark Cooper, *Comparing Apples To Apples: How Competitive Provider Services Outpace The Baby Bell Duopoly; Municipal Wireline and Non-Baby Bell Wireless Service Providers Deliver Products that are More Consumer-Friendly*, Consumer Federation of America (Nov. 21, 2013), *available at http://www.consumerfed.org/pdfs/comparing-apples-to-apples-11-2013.pdf.*

[2] *See* George Ford, "Prices, Profits and Efficiency: Mark Cooper's Bungled Analysis, Phoenix Center (Dec. 13, 2013), *available at* http://phoenix-center.org/blog/archives/1671; Richard Bennett, "Three Forms of Bad Analysis (Part 2): Economics," techpolicydaily.com (Dec. 23, 2013), *available at http://www.techpolicydaily.com/communications/three-forms-bad-analysis-pt-2-economics/*.

Theoretical Myopia

As is typical of Phoenix Center analyses, it starts with a theoretical hypothetical that presents a set of assumptions in which the behavior of AT&T/Verizon, as the dominant wireless broadband providers, can be justified as efficient. The Phoenix Center argues that the high prices, dominant market share, and profit data of AT&T and Verizon "is powerful evidence of superior efficiency—not undue relative market power." According to the Phoenix Center analysis, the efficiency offered by these dominant providers comes not from offering the same service as their competitors at lower cost, but from providing a higher quality service than their rivals for the same price charged by the rest of the market, made possible by superior investment in their networks. However, there are several other ways the supply-demand conditions Phoenix Center hypothesizes could be represented:[3]

- The wireless broadband market structure could be characterized by a dominant seller (or sellers) that set supranormal prices along a strategic demand curve after the competitive fringe has taken a small market share; 4 or
- The market could be characterized by the lack of competition for differentiated products, which allows dominant providers to abuse their market power.[5]

Economic theory generally allows different hypotheticals. The Phoenix Center should know this fact, but as always, it chooses a framing set of assumptions that defends the dominant companies.

- The theoretical bias is bothersome, but
- Much worse: The Phoenix Center's empirical analysis is simply and totally WRONG.

A Huge Mistake

The Phoenix Center's critique hinges on the claim that AT&T and Verizon have approximately twice as much in capital expenditures (CAPEX) as the fringe firms, which allegedly enables them to acquire and maintain customers who are attracted to their "superior" networks. To support this claim, the Phoenix Center points to data from the FCC's *16th CMRS Report.*[6] Unfortunately for the credibility of its analysis, the data the Phoenix Center takes from the FCC's

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[3] One facet, ignored by the Phoenix Center that imparts complexity to the problem of evaluating the wireless broadband service market is the diversity of initial structural and behavioral assumptions on which such an analysis could be based. " Plausible candidates for investigation include: monopoly with blockaded entry; monopolists deterring entry through either pricing or investment strategy; unfettered oligopolistic non-price rivalry with cooperation in pricing; rivalry among firms ignoring their interdependence on both price and quality dimensions (that is, classic Chamberlin monopolistic competition); and various "ideal" cases in which monopolists or monopolistic competitors are induced by diverse government interventions (such as subsidies or controls) to behave optimally in both price and quality dimensions," *See* F. M. Scherer and David Ross, *Industrial Market Structure and Economic Performance* 160 (1990).

[4] Lestor Taylor, *Economics,* 1998, pp. 309-310, "Strategic demand curve: a downward sloping demand curve in which the firms incorporates its expectations of what other firms will do… An oligopolistic firm's strategic demand curve lies above its strategic marginal cost curve. The quantity produced by the firm is found by equating marginal cost and strategic marginal revenue…. We can relate the size of the *price-cost margin* [P-MC/P] of an oligopolistic firm to the elasticity of its strategic demand curve. The smaller the elasticity of the strategic demand curve, the greater the price-cost margin. "

[5] W. Kip Viscusi, John M. Vernon & Joseph E. Harrington, Jr., 2001, *Economics of Regulation and Antitrust* 109-110, 112, "The more differentiated a company's product, the more it is able to act like a monopolist and set prices without inducing large numbers of consumers to switch to buying a competitor's product. When a firm's products become so differentiated that consumers do not even perceive them as being substitutes, each firms is effectively a "local" monopolist and charges the monopoly price for its market."

[6] *See* Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, including Commercial Mobile Services, *Sixteenth Report*, 28 FCC Rcd 3700, 3890-91 Table 42 (2013) ("16th CMRS Report").

report and mislabels as CAPEX in its article is not CAPEX; in the original source, it is clearly labeled "EBITDA minus CAPEX."[7] It is not merely that the column in the FCC's table is labeled that way; the entire discussion in the source text makes this clear.[8] EBITDA minus CAPEX, or high cash flow or profit numbers, indicate exactly the opposite of CAPEX numbers. By misreading the clearly-labeled source data, the Phoenix Center got the evidence wrong.

If we correct this basic flaw in the Phoenix Center's analysis, we can use the data from its table to arrive at the correct conclusion, as shown in Table 1. By recognizing that the FCC had identified cash flow (EBITDA minus CAPEX), we can calculate CAPEX and compare that to cash flow. What we find—in contrast to the Phoenix Center's claim—is that the CAPEX for the competitive fringe is very close to that of the dominant firms. Sprint lags in both CAPEX and cash flow, as during the time these numbers were compiled it was absorbing recent acquisitions and integrating different technologies. Therefore in my earlier analysis I focused on T-Mobile as the basis for comparing the competitive fringe. As shown below, although AT&T and Verizon have only slightly higher CAPEX, they have much higher cash flow. The free cash flow of the dominant carriers is between two and three times higher.

TABLE 1. CMRS FINANCIAL DATA: PER SUBSCRIBER, CORRECTING THE PHOENIX CENTER'S BONEHEAD MISTAKE

As Misrepresented by Phoenix Center

	ARPU	EBITDA	CAPEX	CAPEX/ARPU
AT&T	47.04	18.23	9.98	0.21
Verizon	46.55	20.85	13.79	0.30
Sprint	43.19	6.84	2.95	0.07
T-Mobile	46.00	13.17	6.40	0.14

Corrected Analysis

	ARPU	EBITDA	CAPEX	Free Cash[9]	CAPEX/ARPU	Free Cash/ARPU
AT&T	47.04	18.23	8.25	9.98	0.175	0.21
Verizon	46.55	20.85	7.06	13.79	0.152	0.30
Sprint	43.19	6.84	3.89	2.95	0.09	0.07
T-Mobile	46.00	13.17	6.77	6.40	0.147	0.14

Source: Federal Communications Commission, *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, including Commercial Mobile Services, Sixteenth Report,* 28 FCC Rcd 3700, 3890-91 Table 42 (Mar. 21, 2013) ("16th CMRS Report").

Further evidence of the existence and abuse of market power can be found in an analysis of cash flow by the dominant wireless broadband provider based on this Table. As Figure 1 shows, AT&T and Verizon have enjoyed a per subscriber cash flow that is $7 higher than their closest competitor, T-Mobile. Even if we subtract the difference in CAPEX between AT&T and Verizon and the non-dominant providers, as the Phoenix Center argued we should, the excess cash flow is still over $6 per month per subscriber, which amounts to excessive charges imposed by the dominant providers on American wireless consumers of over $15 billion per year.[10] With its argument regarding CAPEX shown to be spurious the Phoenix Center's position, that the dominant carriers' excess cash flow is a result of superior network investment, falls away, leaving as the most

[7] *See* Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, including Commercial Mobile Services, Sixteenth Report, 28 FCC Rcd 3700, 3890-91 Table 42 (Mar. 21, 2013) ("16th CMRS Report").

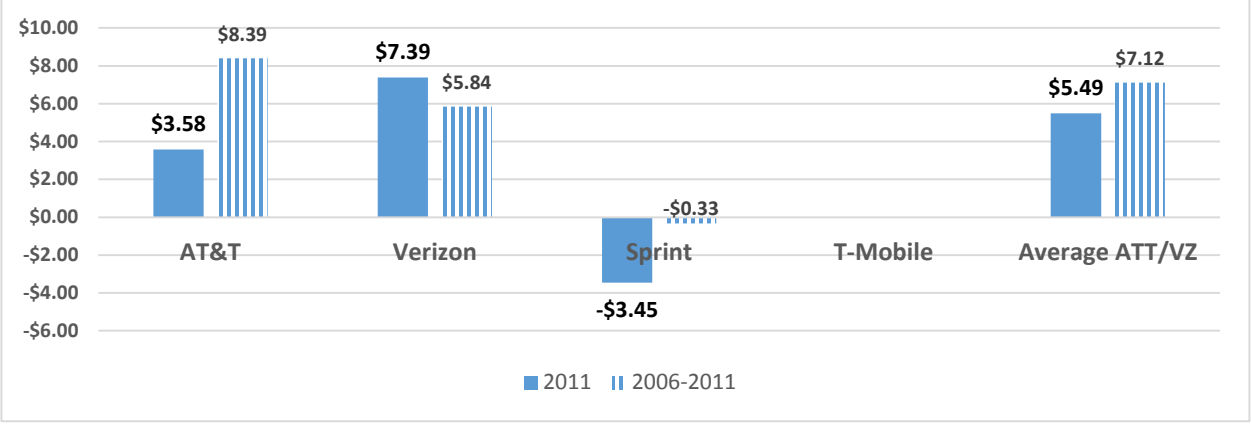
[8] *Id.* at 3889 ¶ 287 ("EBITDA minus CAPEX equals EBITDA…less capital expenditures. EBITDA minus CAPEX incorporates capital expenditures into the profitability measure, providing a rough approximation of free cash flow.").

[9] Calculated as EPITDA – CAPEX. *See id.*

[10] Assuming 210 million subscribers at $6 per month.

credible explanation for the state of the U.S. wireless broadband market monopolistic pricing behavior by AT&T and Verizon.

FIGURE 1:
DOMINANT CARRIER EXCESS CASH FLOW V. T-MOBILE



Source: *16th CMRS Report* 28 FCC Rcd at 3700, 3890-91 Table 42 (Mar. 21, 2013).

In our earlier analysis and at the event to which the Phoenix Center blog post refers,[11] CFA showed that excess cash flow is not the only indicator of market power. CFA also showed that AT&T and Verizon have higher ARPU, higher EBITDA, and higher prices than the fringe providers. That analysis which focused on longer term trends, rather than being limited to a single year, is consistent with the recent annual results, with the excess profit of the dominant carriers estimated to be just under $5.50 per month. CFA's previous analysis, which is not addressed by the Phoenix Center,[12] also demonstrated other key conditions for market failure. As shown in Figure 2, the wireless broadband market is highly concentrated.

Moreover, as shown in Figure 3, the dominant carriers are less efficient than the fringe providers, given the superior spectrum for which they hold licenses. The Phoenix Center regurgitates the incorrect argument of the dominant carriers which claims that the propagation characteristics of spectrum so not matter. As we pointed out in our earlier analysis, "the advantages of high-quality, low-frequency spectrum in area coverage and penetration of structures are widely recognized,"[13] even by a senior executive of Verizon.[14] "[O]nce the propagation characteristics of frequencies are taken into account, large carriers that dominate the holdings of high-quality, low-frequency spectrum are clearly less efficient.[15]

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[11] *See* New American Foundation, Spectrum Auctions: Promoting More Mobile Market Competition…or Less? (Nov. 21, 2013), *available at* http://www.newamerica.net/events/2013/spectrum_auctions.

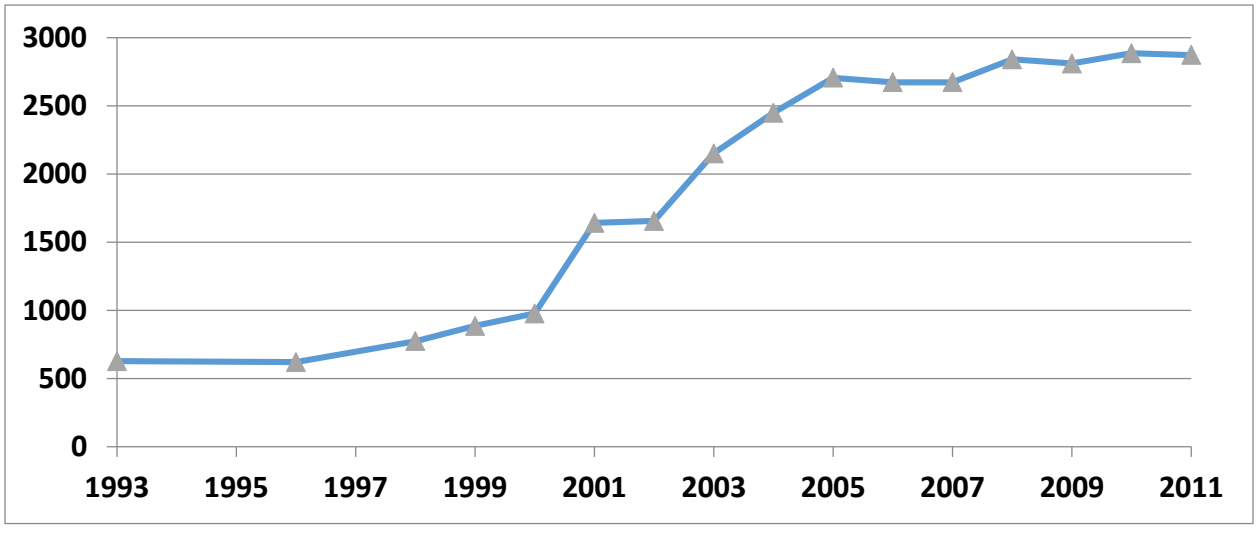
[12] *See* Letter from Mark Cooper, Director of Research, Consumer Federation of America, to Acting Chairwoman Mignon Clyburn and Commissioners Jessica Rosenworcel and Ajit Pai, *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*; GN Docket No. 12-268, WT Docket No. 12-269 (filed June 3, 2013) ("CFA June 3 Letter"); Panel: "Promoting Efficiency and Competition with Spectrum Auction Rules: The Key to Wireless Consumer Benefits, FCC Spectrum Auctions: Maximizing Competition, Revenues, And Consumer Choice," 253 Russell Senate Office Building (May 30, 2013); "The Central Role of Wireless in the 21st Century Communications Ecology: Adapting Spectrum and Universal Service Policy to the New Reality," *Telecommunications Policy Research Conference* (Sept. 2011).

[13] Richard Thanki, "The Economic Value Generated by Current and Future Allocations of Unlicensed Spectrum," Perspective 59 (2009).

[14] *See* Tony Melone, Verizon Wireless – Senior VP & CTO, Wells Fargo Securities Technology, Media & Telecom Conference slide 12 (Nov. 10, 2010) slide 12, *available at* http://www.verizon.com/investor/DocServlet?doc=event_1005_colpre.pdf.

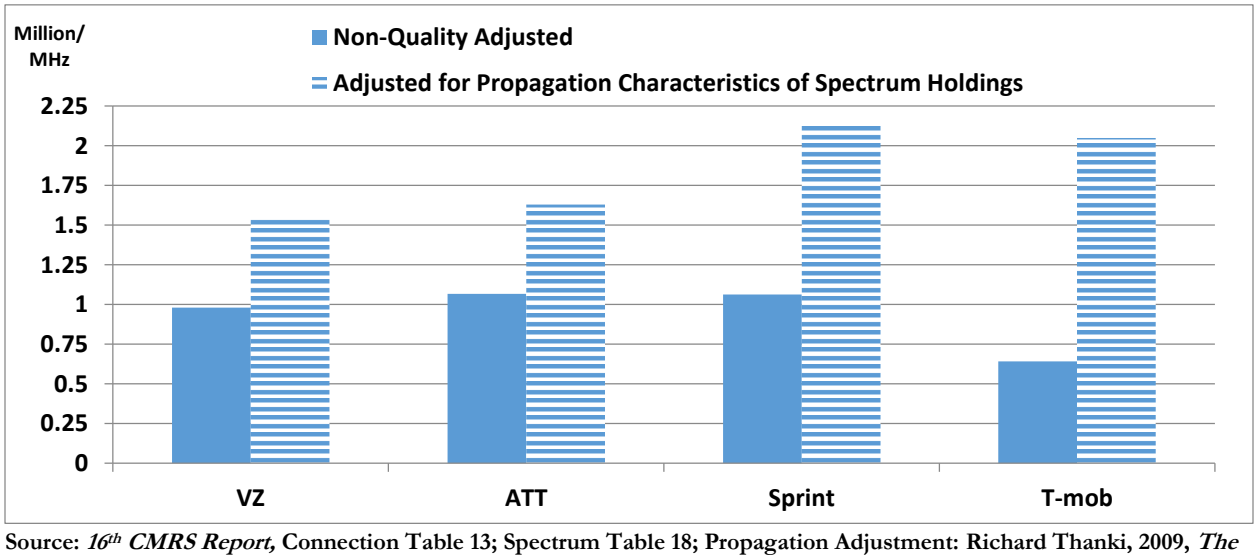
[15] While it is certainly the case that capital and spectrum are inputs that can be traded off to deliver service, the mistake made by AT&T and its apologists is to fail to recognize that the capital/spectrum "indifference curve" varies between frequencies. The tradeoff of capital for spectrum—and the failure of the dominant incumbents to make adequate infrastructure investment in the context of use of unlicensed spectrum—was addressed in earlier CFA comments filed in this proceeding. *See* Comments Of The

FIGURE 2:
WIRELESS CONCENTRATION: HHI



Source: Mark Cooper, "The Central Role of Wireless in the 21st Century Communications Ecology: Adapting Spectrum and Universal Service Policy to the New Reality," *Telecommunications Policy Research Conference* (Sept. 2011). Early years are from Eli Noam, *Media Ownership and Concentration in America,* 2009. Recent years are from the FCC CMRS reports, using the most recently published numbers for each year.

FIGURE 3: [16]
SPECTRAL EFFICIENCY = CONNECTIONS/MHZ



Source: *16th CMRS Report,* Connection Table 13; Spectrum Table 18; Propagation Adjustment: Richard Thanki, 2009, *The Economic Value Generated by Current and Future Allocations of Unlicensed Spectrum* Perspective, p. 59; Tony Melone, Verizon Wireless- Senior VP & CTO, *Wells Fargo Securities Technology, Media and Telecom Conference,* November 10, 2010.

Consumer Federation Of America, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auction; Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band; Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition; Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations, Including Wireless, WT Docket Nos. 12-268, WT Docket No. 08-166, WT Docket No. 08-167, ET Docket No. 10-24 (filed Jan. 25, 2013).

[16] *See* CFA June 3 Letter at 13.

INFORMATION TECHNOLOGY AND INNOVATION FOUNDATION (ITIF)

Ignoring Clearly Defined, Carefully Controlled Statistical Analysis

The ITIF makes several criticisms both of CFA's work, and of a recent study of the cost of consumer broadband services in twenty-two cities around the world released by New America Foundation (NAF), *The Cost of Connectivity 2013*.[17] The NAF study found that U.S. cities lag behind cities around the world in pricing and high-speed broadband availability, urging policy reforms that would increase competition, which in turn would foster faster speeds and more affordable access.

The ITIF critique starts by restating old arguments, such as claiming that NAF chose the "odd collection" of cities in its study in order to create an artificial comparison between major international hubs, such as Hong Kong, Seoul, Tokyo and Amsterdam, where government programs have subsidized large-scale fiber installations, and the "small towns…and half cities" like Lafayette, Louisiana and parts of New York and Los Angeles, that also feature municipal or government fiber installations. Although the ITIF claims that "NAF doesn't explain what motivated their choice of cities," in fact the reason for studying these cities is evident and clear: all of the small towns are selected because they have long standing municipal broadband service providers. To study municipal providers, as was one of the goals of the NAF study, you have to include the places where they are located.

To analyze the data set of wireline broadband networks, one must carefully control for key factors like population density. This is exactly what CFA did in utilizing the NAF data. We took the following steps that render the ITIF's objections inapplicable. The analysis did so by:

- Relying on intra-city comparisons where density is not a big factor;
- Controlling for density and other important variables in inter-city comparisons; and
- Using national service offerings where service is available at uniform prices and speeds throughout a given country.

In all cases, CFA's findings regarding broadband pricing and performance were statistically significant and quantitatively large:

- Municipal wireline broadband providers offer more consumer friendly rates and terms than their local commercial competition;
- European wireline broadband providers offer more consumer friendly rates and terms than non-municipal American service providers; and
- Integrated wireless/wireline providers (AT&T and Verizon) offer much less attractive rates and terms for mobile broadband than their non-integrated competitors.

Overall, CFA found that U.S. providers charge more, offer slower speeds and, in the case of mobile broadband, have lower caps and impose more onerous penalties for exceeding those caps than their non-U.S. counterparts. These findings are extremely well supported in the data and based on solid statistical analysis.

CFA also analyzed the product attributes it believes are important to consumers. In the case of wireline broadband, CFA looked at monthly bills and the cost per megabit. The ITIF suggests that wireline speed does not matter for consumers, arguing that the slow network speeds available to

[17] *See* Hibah Hussain, Danielle Kehl, Patrick Lucey, & Nick Russo, *The Cost of Connectivity 2013*, New American Foundation (Oct. 2013), *available at* http://newamerica.net/sites/newamerica.net/files/policydocs/Cost_of_Connectivity_2013_Data_Release.pdf.

many consumers today are adequate for "today's world." The ITIF provides no support for this claim, which must be news to network operators who relentlessly advertise higher speed tiers, policy analysts who argue that faster speeds are critical to ensuring our international competitiveness in years to come, and to consumers, who increasingly demand higher-speed tiers.[18]

As a global criticism, The ITIF chastises CFA for "for poorly constructed economic models that are utterly inconsistent with market behavior." This claim is dead wrong. CFA measured the output of broadband networks by exactly the product attributes that the network operators use to market their products; as any consumer could tell you, wireline broadband prices are set based on speed tier, while wireless broadband prices are set by usage limits.[19] CFA's approach is not only consistent with the market reality, as defined by network operators, it is consistent with the approach taken by many other analysts.

In fact, a recent study from Ofcom, the U.K. equivalent of the FCC, corroborates and reinforces NAF's survey results, as well as CFA's findings (see Figure 4).[20] In its latest report on the international communications market, Ofcom designates baskets of services (defined by speed for wireline broadband). Like NAF, it identifies the "best available" offers as well as the "weighted average" of offers available in the market. As shown in Figure 4, four of the countries studied by Ofcom are represented in the cities NAF surveyed (London, England; Paris, France; Berlin, Germany; and Washington, Los Angeles, and San Francisco). The Ofcom analysis confirms both NAF's methodology and CFA's findings, as it shows that U.S. wireline broadband rates are much higher at each level of speed offered to the public than rates in other countries.

Wireline Broadband and Video Content

The ITIF also insists on confusing multichannel video and wireless voice with broadband – at least, those are the examples he gives when he claims that NAF/CFA failed to accurately measure broadband service. ITIF argues that comparison of "triple play" packages, which include voice and video services as well as wireline broadband, neglects to factor in the cost of programming in the U.S. compared to programming costs in other countries. However, this criticism misses the point: as noted in the NAF report, "[c]omparing triple play is a useful metric for most consumers as a substantial number of individuals purchase their high-speed Internet in conjunction with television and phone packages," and such packages are popular in the U.S. as well as, increasingly, internationally. In the context of evaluating the price of broadband access, the issue is the over-recovery of costs from bundles that also include video and voice services. Consumers who are compelled to pay triple-play prices to ensure broadband access pay those prices regardless of the underlying program licensing agreements, and the margins on these bundles of services are exceptionally large.[21]

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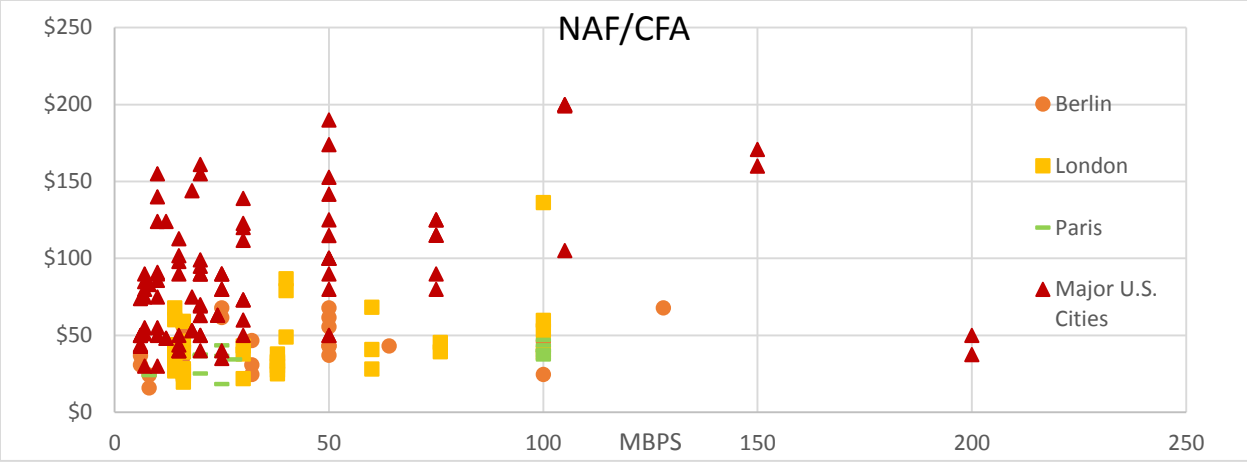
[18] *See* FCC Chairman Julius Genachowski Issues Gigabit City Challenge to Providers, Local, and State Governments to Bring at Least One Ultra-Fast Gigabit Internet Community to Every State in U.S. by 2015, News Release (Jan. 18, 2013), *available at* *http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-318489A1.pdf* . Ofcom, *International Communications Market Report* 246 (Dec. 12, 2013), *available at* http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/icmr/ICMR_2013_final.pdf (consumers with "superfast" connections reported higher satisfaction with their wireline broadband service than non-"superfast" subscribers in nearly all cases, with "superfast" connections being defined as have advertised speeds of "up to" at least 30 Mbps or higher) ("Ofcom Report").

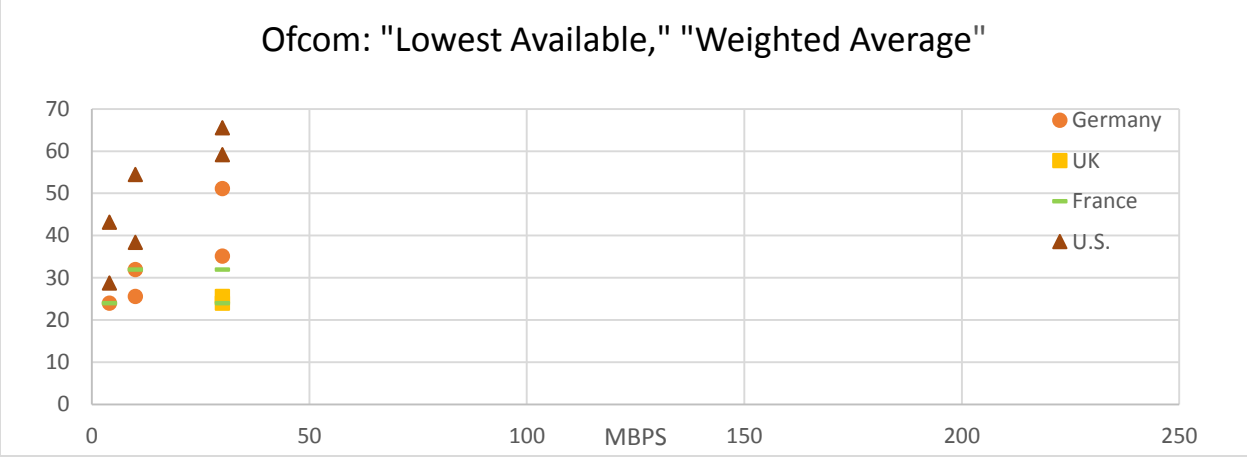
[19] For the wireline market, NAF compared speed availability and pricing data by market; in the wireless space, NAF analyzed monthly bills and caps on usage (including data cap thresholds and penalties for exceeding these caps).

[20] *See generally* Ofcom Report.

[21] *See* Supplementary Affidavit of Mark Cooper and Adam Lynn in Support of Replies to Opposition of Public Interest Petitioners, Federal Communications Commission, Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Consent to Assign Licenses or Transfer Control of Licensees, MB Docket No. 10-56 (2010).

FIGURE 4: WIRELINE MONTHLY RATES BY SPEED OF SERVICE





Source: Ofcom, International Communications Market Report (Dec. 12, 2013); Mark Cooper, Comparing Apples To Apples: How Competitive Provider Services Outpace The Baby Bell Duopoly Municipal Wireline and Non-Baby Bell Wireless Service Providers Deliver Products that are More Consumer-Friendly, Consumer Federation of America (Nov. 21, 2013).

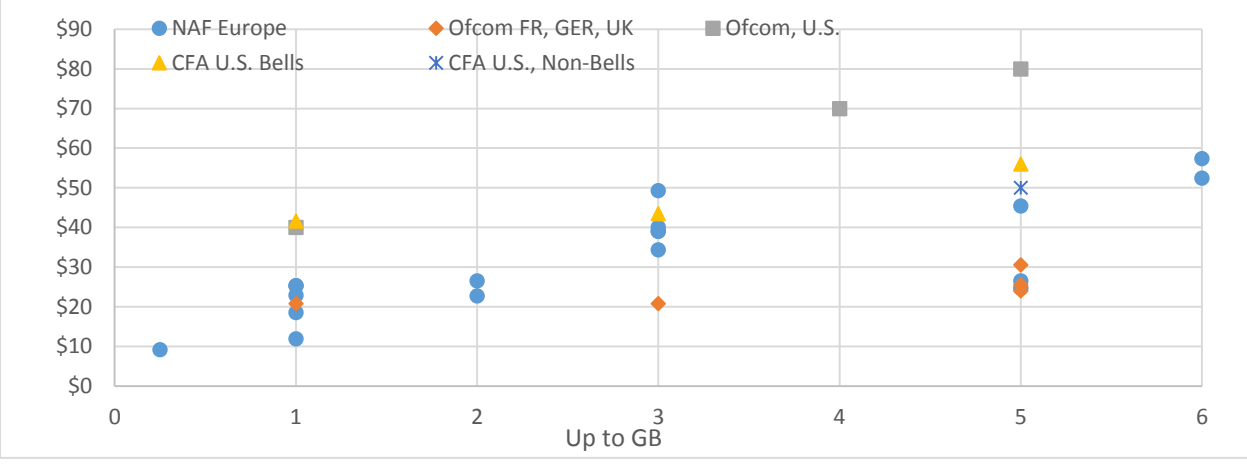
Wireless Broadband

Finally, the ITIF argues that NAF/CFA have compared apples to oranges in its analysis of the wireless space, noting that the U.S. has shifted to 4G broadband more rapidly than European markets. If speed is the most important factor in measuring broadband, the ITIF asks rhetorically, then why doesn't NAF/CFA consider the superior speeds available to U.S. mobile wireless consumers? The answer is that speed is not, in fact, the most critical aspect for mobile broadband: the determinative factor is the data cap for each relative speed tier, and this is how the NAF survey calculated the cost of mobile broadband. Ofcom agrees with this assessment of the mobile broadband market. In its report Ofcom took a similar approach, and provided price estimates for wireless service tiers based on each tier's usage caps.[22] Figure 5 shows that U.S. prices for mobile broadband service are much higher, per GB, than European prices. In fact, the price differences are larger for the broadband services with higher data caps than for services with lower data caps, and much larger for the dominant wireless broadband providers than their fringe competitors. By ITIF's

[22] *See* Ofcom report at 112.

reasoning, economies of scale should be lowering the cost, so the high prices charged by AT&T and Verizon are particularly egregious.

FIGURE 5: WIRELESS MONTHLY PRICE AT VARIOUS CAP LEVELS



Source: Ofcom, International Communications Market Report (Dec. 12, 2013)

CONCLUSION

To claim that CFA bungled its analysis of the U.S. wireless broadband market, when it was at most a difference of opinion about two theoretically plausible interpretations, was typical Beltway bluster from the Phoenix Center. To then totally botch the empirical analysis that claims to prove CFA wrong raises the level of the Phoenix Center's mistake substantially. At best, the Phoenix Center's analysis is just horribly sloppy. At worst it is fraudulent and intended to mislead policymakers. Most likely the errors are driven by preconceived notions and ideological blindness that prevent the Phoenix Center from seeing reality, when that reality casts a harsh light on the dominant communications companies. Similarly, cheap shots from the ITIF based on spurious speculation regarding the nature of the wireline and wireless broadband markets fail to advance the legitimate public debate over critical policy decisions that are currently before Congress and regulators.

The evidence overwhelmingly points to the existence and abuse of market power in the U.S. wireline and wireless broadband markets. Stale theory and bad analysis cannot hide the facts. If this is a teachable moment then there are two lessons to be learned.

- First, with respect to process, the Phoenix Center and ITIF have to learn that there are too many serious researchers working on these important issues to get away with incanting myopic theory, fudging the data or regurgitating stale empirical arguments that have been thoroughly refuted.
- Second and even more importantly, with respect to substance, the FCC must recognize the current level of competition does not effectively protect consumers, and much more needs to be done to promote competition. Only with true competition in the wireline and wireless marketplace and responsible policies to promote the goals of the Communications Act where competition falls short can we promote the public interest under the Communications Act."