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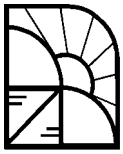

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WIRELESS NET NEUTRALITY: FROM *Carterfone* TO CABLE BOXES

Abstract: Over the past few months there have been calls to impose "wireless net neutrality" rules on the burgeoning United States wireless industry. These critics assert that certain practices by the wireless industry—such as handset "locking" practices, data bandwidth limitations, and control over features included on handsets—unduly hamper the ability of consumers to access and use advanced data communications services and, therefore, require severe regulatory intervention to protect consumers. To correct this perceived market defect, wireless network neutrality advocates essentially seek to turn highly sophisticated wireless telecommunications networks into commodity-based networks. In support of this proposal, wireless network neutrality advocates point to the Federal Communications Commission's 1968 *Carterfone* decision and the more recent *Cable Navigation Devices* rules as examples in which the Commission has taken what they allege to be a similar regulatory approach for both the landline telephone and video programming distribution market. In this BULLETIN we show that neither the mandates of, nor conditions relevant to, *Carterfone* and the *Cable Navigation Devices* decisions appear to support the regulatory intervention sought by the wireless network neutrality advocates. Indeed, the *Carterfone* and *Cable Navigation Devices* decisions appear to decidedly call for a rejection of the recent proposals for wireless network neutrality. We also discuss the substantial risks that *Carterfone*-type regulation would commoditize wireless network services in a way that could substantially harm the prospects for entry and competition in the industry.

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I. Introduction and Background

Over the past few months there have been calls to impose "wireless net neutrality" rules on the burgeoning United States wireless industry.[1] While conceding that the nation's wireless industry is a "wonder,"[2] these critics assert that certain practices by the wireless industry—such as handset "locking" practices, data bandwidth limitations, and control over features included on handsets—unduly hamper the ability of consumers to access and use advanced data communications services and, therefore, require severe regulatory intervention to protect consumers.[3] To correct this perceived market defect, wireless network neutrality advocates essentially seek to turn highly sophisticated wireless telecommunications networks into commodity-based networks.[4]

At the core of the "wireless net neutrality" argument is an appeal to the Federal Communications Commission's 1968 *Carterfone* decision, wherein the agency required the Bell System local phone monopoly to allow telephone devices from unaffiliated manufacturers to be connected to the local phone network.[5] The national phone monopoly at the time, the old Bell System, refused to allow any "foreign attachment" to their network. The Bell System's incentives to sabotage the evolution of a competitive equipment market are well understood as a consequence of the presence of market power, vertical integration, and regulation. The

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[1] *See, e.g.,* T. Wu, *Wireless Network Neutrality: Cellular Carterfone on Mobile Networks* (Feb. 2007) (available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=962027); Petition of Skype Communications S.A.R.L. to Confirm a Consumer's Right to Use Internet Communications Software and Attach Devices to Wireless Networks, RM-11361, filed February 20, 2007 ("Skype Petition"); Testimony of Ben Scott, Policy Director—the Free Press, before United States Senate Committee on Commerce, Science and Transportation (April 24, 2007)(available at: http://commerce.senate.gov/public/_files/UPDATEDTESTIMONYScottCommerceTestimony424.pdf) ("Scott Testimony").

[2] Wu, *supra* n. 1 at 1 ("devices that were science fiction thirty years ago are now widely available" and the wireless industry "has succeeded in bringing wireless telephony at competitive prices to the American public").

[3] *See, e.g.,* Skype's allegation that "carriers are using their considerable influence over handset design and usage to maintain an inextricable tying of applications to their transmission networks and are limiting subscribers' rights to run applications of their choosing." Skype Petition, *supra* n. 1 at 2.

[4] On the dangers of commoditization, *see* G. S. Ford, T. M. Koutsky and L. J. Spiwak, *Network Neutrality and Industry Structure,* PHOENIX CENTER POLICY PAPER NO. 24 (Apr. 2006) (available at: http://www.phoenix-center.org/pcpp/PCPP24Final.pdf); *a revised version is printed in* 29 HASTINGS COMMUNICATIONS AND ENTERTAINMENT LAW JOURNAL 149 (2007).

[5] Wu, *supra* n. 1 at 5-7; Skype Petition, *supra* n. 1 at 25-30 (calling on FCC to "declare that wireless carrier services are fully subject to *Carterfone*" and to "enforce the mandate of *Carterfone* in the wireless industry"); Scott Testimony, *supra* n. 1 at 19 ("*Carterphone* [sic] rules should apply to the wireless broadband platform").

Commission's decision,[6] along with related subsequent decisions and rules, created the competitive telephone equipment market we enjoy today. As another point of precedent, proponents of wireless network neutrality cite the more recent *Cable Navigation Devices* decisions,[7] in which the Commission implemented rules to satisfy the Communications Act's Section 629 mandate, to support the imposition of new and stringent regulation on the wireless industry.[8]

We explain in this BULLETIN that neither the mandates of, nor conditions relevant to, *Carterfone* and the *Cable Navigation Devices* decisions appear to support the regulatory intervention sought by the wireless network neutrality advocates. Indeed, viewed correctly, both the *Carterfone* and *Cable Navigation Devices* decisions are precedent for *rejecting* the recent proposals for wireless network neutrality regulation.

Section II discusses the Commission's *Carterfone* rules, and notes that they were designed to mitigate and control market power by regulated network providers (at that time, principally, the old, vertical integrated Bell System). But in comparison to the vertically-integrated Bell System monopoly monolith of 1968, the Commission has determined that the wireless communications industry in the United States today is robustly competitive and the industry is not price regulated.[9] Indeed, about 98% of households have the option to purchase wireless

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[6] *In re Use of the Carterfone Device in Message Toll Telephone Service*, 13 FCC 2d 420 (1968) , 14 FCC 2d 571 (1968) (hereinafter "*Carterfone*"); *see also Hush-A-Phone Corp. v. American Tel. & Tel. Co.,* 20 FCC 391 (1955), *rev'd, Hush-A-Phone Corp. v. U.S.,* 238 F.2d 266 (D.C. Cir. 1956) (*per curiam*), *on remand, Hush-A-Phone Corp. v. American Tel. & Tel. Co.,* 22 FCC 112 (1957).

[7] *See* 47 U.S.C. § 549; *Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices,* 13 FCC Rcd 14775, 14775, ¶1 (1998) (*Navigation Devices Order*), *aff'd, General Instrument Corp. v. FCC,* 213 F.3d 724 (D.C. Cir. 2000). The FCC extended the implementation deadline of these requirements in 2003 *Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices,* 18 FCC Rcd 7924 (2003), and again in 2005, *Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices,*20 FCC Rcd 6794 (2005), *aff'd Charter Communications, Inc. v. FCC,* No. 05-1237, slip op. (D.C. Cir. Aug. 18, 2006) (available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-267179A1.pdf).

[8] Skype Petition, *supra* n. 1 at 11 (noting that while "the context was different" for the cable navigation device rules, "the principle was pure *Carterfone*").

[9] Over the past five years, the average price for a wireless telephone service has declined nearly 20% annually in real terms (on a per minute basis). Subscribership has risen 14% annually, with nearly 100 million subscribers added from 2001 to 2005. Usage has nearly doubled over the past five years, with an annual growth of 24%. Productivity, measured as dollars generated per industry employee, has risen by an average of 12% per year over the last half decade. *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services,* WT Docket 06-17, ELEVENTH REPORT, 21 FCC Rcd 10947 (2006) ("*11th CMRS Competition Report*") at App. A, Tables. 1, 9 and 10.

service from one of three (or more) providers, a near-ubiquitous competitive choice unsurpassed by any other developed nation.[10] Moreover, rather than expand the application of *Carterfone* over the years, the Commission has in fact reduced its significance, consistently setting aside the principle in markets it deems competitive.

In Section III, we turn toward the Commission's *Cable Navigation Devices* decisions, which were motivated by a very specific statutory mandate to promote a competitive equipment market for cable set-top converter boxes. Importantly, the provision of the Communications Act that mandates these Commission rules allows for the elimination of such regulation in the presence of competition at both the platform and equipment stages of the market. As discussed above, there is ample evidence that both conditions exist in the wireless industry, and the Commission has formally concluded as much. Like *Carterfone*, the exceptions to the rule are also important—for example, the Commission has refused to apply the mandates to the satellite television industry due to the presence of competition and the widespread availability of equipment. Understanding this background is relevant when assessing whether to apply this precedent and its attendant regulations on the wireless industry.

Finally, Section IV briefly discusses the substantial risks that *Carterfone*-type regulation would present to the wireless industry. Product and service differentiation are critical to how wireless carriers compete to obtain and retain subscribers. As a result, the Commission has eschewed policies that would commoditize wireless services and instead has moved toward policies that give wireless licensees flexibility to develop and deploy services with much less government command-and-control than other nations. Changing that policy in favor of one that would deliberately commoditize wireless network services could substantially retard the prospects for entry and competition in the industry.

II. Applying *Carterfone* Principles to the Wireless Industry

As noted above, proponents of wireless network neutrality essentially wish to turn wireless service networks into a commodity industry. To support this position, they wave the flag of the Commission's *Carterfone* precedent.[11] We demonstrate below, however, that this historical

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[10] *Id.* at Table 11; Table 1, *infra.*

[11] *See, e.g.,* Wu *supra* n. 1 at 21-22 ("The industry or the FCC should, as in the Part 68 rules, define a basic interface to which any equipment manufacturer could build a mobile device and sell it to consumers. . . . The wireless world already has standardized interfaces. . . . A standardized interface would work like any other in the phone or electric industry. Spectrum bandwidth is a commodity, and the interface would provide the user with a fixed maximum bandwidth and, like an electric meter, bill the consumer for the amount of bandwidth actually used. . . The full implementation of *Carterfone*, would, over time, transform the wireless industry."); Skype Petition, *supra* n. 1 at 30 ("[T]he Commission should create a mechanism to establish similar [Part 68] technical standards updated to take into

(Footnote Continued….)

analogy is being grossly misapplied by these advocates. The *Carterfone* rules were promulgated to prevent the leveraging of market power from a dominant, regulated, vertically-integrated telephone service provider into the telephone equipment market (or consumer premises equipment or "CPE" market). The obvious question is whether these conditions are present in the wireless industry in 2007. If not, then while intervention may have an appropriate remedy in 1968 in the *Carterfone* case, the same intervention would be entirely unnecessary and counterproductive in the wireless industry.

To even the most casual observer, the vertically integrated, monopoly nature of the telephone network in the late 1960's in no way parallels that observed in the wireless communications industry today: (i) 98% of the country has a choice of at least three wireless providers; (ii) the wireless carriers are not vertically integrated into the equipment market; and (iii) neither the wireless carriers nor the equipment vendors are price regulated. In the absence of these features, it is impossible to link *Carterfone* sensibly to the modern wireless telecommunications industry in the United States. Indeed, the primarily principle drawn from *Carterfone* is that that *regulation* can create incentives counter to consumer welfare, leading to low quality products and services and the sabotage or crippling of competitors by the regulated and dominant firm. As we explain below, it was the *presence* of regulation—not its absence—that made *Carterfone* regulation necessary.

A. *The Carterfone Decision*

The Commission's 1968 *Carterfone* decision was, without question, an important regulatory watershed in communications history. To a large extent, the ability to purchase phones made by a variety of manufacturers at any number of retailers is a result of that decision, though its full influence was not felt until it was commingled with some later, related decisions and rulemaking proceedings. The Commission's decision effectively allowed manufacturers unaffiliated with the Bell System to manufacture telephones, under strict technical standards, that consumers could purchase and connect to the telephone network without restriction or additional fees levied by the phone company. At that time, the Bell System's affiliate, Western Electric, was the exclusive and only manufacturer of telephones for the Bell System, and the Commission's decision to mandate a standard technical interface to the telephone network allowed for the emergence of competition in the manufacture and sale of telephone equipment.

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account the unique environment of the mobile Internet. The goal should be to create transparent and neutral standards under which consumers can exercise their right to run the Internet communications applications of their choice. . .")

When considering the implications of *Carterfone* for the mobile handset industry, it is important to understand the environment, including the presence of regulation, in which the original decision was made. At the time of *Carterfone*, the Bell System had a virtual monopoly over the entire telephone network, stretching from telephone to telephone and everything in between. The firm was regulated at all levels, a consequence of its bargain with the government in the Kingsbury Commitment of 1913, where the government countenanced its monopoly in return for its regulatory durance.[12] The only source of supply of telephone equipment was Western Electric, a wholly-owned subsidiary of the Bell System.[13]

So, at the time of *Carterfone*, the nation had a phone company with the following traits: (i) it was a monopoly; (ii) it was vertically integrated into nearly all stages of its industry; and (iii) it was regulated at nearly every level of its business. This setting is very much different than that found in the mobile telecommunications industry today. In today's wireless industry, the carriers are obviously not monopolists, and the Commission acknowledges that they compete aggressively on service quality, features, and prices.[14] As stated above, 98% of the country lives in areas with three or more mobile carriers offering service. The Commission, therefore, has repeatedly concluded that "there is effective competition in the [wireless] marketplace," and this position is unchanged even after the recent mergers of several large wireless carriers.[15]

Second, the wireless industry is not vertically integrated into the manufacture of telephone equipment. Thus, the potential for the sabotage of competing equipment manufacturers to protect an equipment affiliate is entirely absent in the wireless industry. Since the *Carterfone* decision was essentially about actions aimed to protect the position of an affiliated equipment manufacturer, how exactly the decision applies to the wireless industry is a bit of a mystery.

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[12] S. M. Benjamin, D. G. Lichtman & H. A. Shelanski, TELECOMMUNICATIONS LAW AND POLICY, 624-28 (2001); S. McMaster, THE TELECOMMUNICATIONS INDUSTRY (2002).

[13] While the Bell System is often criticized for its lack of innovation in telephone equipment, this lack of innovation may have been due, at least in part, to the price regulation of the equipment. For the role of regulation in communications markets on quality, *see* D. J. Boudreaux and R. B. Ekelund Jr., *The Cable Television Consumer Protection and Competition Act of 1992: The Triumph of Private over Public Interest*, 44 ALA. L. REV. 355 (1993) and T. Hazlett and M. Spitzer, PUBLIC POLICY TOWARD CABLE TELEVISION: THE ECONOMICS OF RATE CONTROLS (1998).

[14] Even Professor Wu admits that wireless services are available at "competitive prices to the American public." Wu, *supra* n. 1 at 1.

[15] *11th CMRS Competition Report*, *supra* n. 9 at ¶ 2; *In the Matter of Applications of Nextel Partners, Inc., Transferor, and Nextel WIP Corp. and Sprint Nextel Corporation, Transferees For Consent To Transfer Control of Licenses and Authorizations,* MEMORANDUM OPINION AND ORDER, 21 FCC Rcd 7358 (2006), Separate Statement of Commissioner Copps ("But in most of [U.S. wireless] markets four or more substantial competitors will continue to compete post-merger.").

Finally, and most importantly, the wireless industry is not subject to price regulation.[16] The presence of regulation is critical to the *Carterfone* decision, since without regulation, a firm would have little incentive to sabotage and the decision likely would have been unnecessary in the first instance. As noted by Beard, Kaserman and Mayo, the factors necessary for sabotage—as defined as the ability to increase or raise the cost of a rival's key input of production by non-price behavior (e.g., blocking)—include (but are not limited to): (a) significant monopoly power in one or more markets and (b) the presence of price or profit regulation.[17] This approach is consistent with more general and well-accepted economic treatments of leveraging.[18] Or, as summarized by Ordover, Sykes and Willig:

> In sum, when a regulated firm is subject to a binding rate-of-return ceiling that exceeds its true marginal cost of capital, it has a profit incentive to expand in to the production of vertically related services. . . . If, however, the regulated firm is comparatively inefficient in producing vertically related services, it may still endeavor to extend its monopoly by means of such tactics as below-cost pricing, tie-ins, and predatory systems rivalry—all to the detriment of economic welfare.[19]

The explicit and primary role regulation played in the *Carterfone* decision is well established. As noted in a paper by Farrell and Weiser, the Bell System's entry deterring behavior in telephone

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[16] *See* 47 USC § 332(c); *see also In Re Petition Of The Connecticut Department Public Utility Control To Retain Regulatory Control of the rates of Wholesale Cellular Service Providers in the State of Connecticut*, 10 FCC Rcd 7025, FCC 95-199 (1995), *aff'd sub nom. Connecticut Department Of Public Utility Control v. FCC,* 78 F.3d 842 (2nd Cir 1996).

[17] T. R. Beard, D. Kaserman and J. Mayo, *Monopoly Leveraging, Path Dependency, and the Case for a Local Competition Threshold for RBOC Entry into InterLATA Toll*, in M. Crew, ed., REGULATION UNDER INCREASING COMPETITION (2003); *see also Olympia Equipment Leasing Co. v. Western Union Telegraph Co.*, 797 F.2d 370, 374 (7th Cir. 1986) at 374 ("There are, however, special circumstances in which a rational monopolist may want to restrict competition in an input market; as it happens, one of those circumstances is where the monopolist's rates are regulated."). Likewise, we have demonstrated the role of regulation in sabotage in earlier work. *See, e.g.,* T.R. Beard, G.S. Ford, and L.J. Spiwak, *Why ADCo? Why Now? An Economic Exploration into the Future of Industry Structure for the "Last Mile" in Local Telecommunications Markets,* 54 FED. COM. L. J. 421 (May 2002).

[18] Useful general discussions of leveraging can be found in the following: T. R. Beard, D. Kaserman and J. Mayo, *Regulation, Vertical Integration and Sabotage*, 49 JOURNAL OF INDUSTRIAL ECONOMICS 319-333 (2001); J. Farrell and P. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age,* 17 HARVARD JOURNAL OF LAW & TECHNOLOGY 85-134 (2003); D. Mandy and D. Sappington, *Incentives for Sabotage in Vertically Related Industries*, 31 JOURNAL OF REGULATORY ECONOMICS 235-260 (2007); D. Sappington and D. Weisman, *Self-Sabotage*, 27 JOURNAL OF REGULATORY ECONOMICS 155-175 (2005); J. Farrell, *Integration and Independent Innovation on a Network*, 93 AMERICAN ECONOMIC REVIEW: PAPERS AND PROCEEDINGS 420-424 (2003).

[19] J. Ordover, A. Sykes, and R. Willig, *Nonprice Anticompetitive Practices by Dominant Firms Toward the Producers of Complementary Products,* in F. Fisher, ed., ANTITRUST AND REGULATION, 125 (1985).

equipment was "because of the price regulation of local telephone service."[20] Economists recognize that it was combination of market power at the downstream level plus classic public utility-type regulation that created the incentive for the Bell System to leverage and exclude entry in the equipment sector (neither factor being present in today's wireless industry). Accordingly, *it was the firm's efforts to evade regulation*, not simply a monopolist's inherent desire to protect revenue and profits, which created the incentive to sabotage and necessitated the *Carterfone* decision.

B. *Recent Applications of Carterfone*

Rather than expand the scope of *Carterfone* regulation, as recently proposed by network neutrality advocates, the Commission has continually reduced the applicability of the decision in the communications industry, based primarily on the argument that such intervention is not required in competitive industries. Since market power is a relevant condition for sabotage, the agency's decisions have an analytically-sound foundation.

The *Carterfone* and subsequent decisions eventually became part of a series of decisions, including the *Computer Inquiries*, that evolved into various Commission rules, including the "no bundling" rules in 47 C.F.R. §64.702. In 1992, the Commission stopped applying this rule to the cellular industry. In regulatory parlance, the "incentive to cross-subsidize" is shorthand for the economic theory of sabotage discussed above, and the Commission found that motive to be reduced in the wireless industry given "the lack of regulation based on rate-of return principles, combined with the absence of monopoly status for cellular carriers."[21] The Commission later observed that this decision helped consumers, giving them "the option of avoiding high up-

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[20] Farrell and Weiser, *supra* n. 18 at 104-05 ("This exception to [the economics theorem that firms vertically integrate to "internalize complementary efficiencies" or "ICE"] has figured prominently in telecommunications policy. In particular, the Bell System allegedly leveraged its way to market power in complementary markets, denying equal access to its network to competitors in long distance and equipment manufacturing. By excluding such competitors, AT&T could rent telephones to its customers and sell equipment from its Western Electric affiliate to its operating companies or telephone subscribers at inflated rates. Such a strategy was available to AT&T because of its network-level market power, but ICE would claim the option should be unattractive because it would decrease demand for telephone subscription. But that decrease did not deter AT&T because of the price regulation of local telephone service"). As a result, a regulated monopoly will have an inexorable incentive to seek to collect that monopoly rent from adjacent markets.

[21] *Bundling of Cellular Customer Premises Equipment and Cellular Service*, CC Docket No. 91-34, Report and Order, 7 FCC Rcd 4028, ¶ 25 (1992) (*Cellular Bundling Order*). This decision was made when consumers only had a choice of two cellular phone operators, before entry by PCS carriers.

front expenditures by bundling service and equipment was one of the factors that contributed to the significant growth in the cellular market."[22]

The Commission has also removed application of the "no bundling" rule in the interstate, inter-exchange market and for non-dominant local telephone companies.[23] An examination of whether the carrier had market power was central to the Commission's analysis. As the Commission observed: "It is a well established economic principle, however, that in order for a buyer to be harmed by such an arrangement, the seller must have market power over the desired product such that the buyer has no choice but to purchase it from the seller."[24] The economic rationale for the "no bundling" rules are similar to the proposed *Carterfone* regime for the wireless industry. By that logic, since the Commission has determined the wireless industry is competitive and buyers do have choices among numerous equipment vendors, such regulatory intervention would be unwarranted.

Further, consumers can switch between mobile carriers and there are ample sources of supply of both locked and unlocked mobile handsets, and the buying, selling, and trading of used equipment is nearly costless due to markets such as eBay.[25] "Churn"—the number of wireless customers that a carrier loses in a time period—is considerable in the wireless industry.[26] Even carriers attempts to limit churn, such as long-term contracts, can be circumvented: the website CelltradeUSA.com actually gives customers seeking to leave one service provider for another the ability to exchange long-term contracts with customers seeking to do the opposite. In the presence of arbitrage, consumers are well protected from efforts to extract consumer surplus through various tactics.

In sum, the wireless industry is not a monopoly, wireless carriers are not vertically integrated into equipment, and the prices of wireless carriers and equipment manufacturers are

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[22] *In the Matter of Policy and Rules Concerning the Interstate, Interexchange Marketplace, Implementation of Section 254(g) of the Communications Act of 1934, as amended, 1998 Biennial Regulatory Review—Review of Customer Premises Equipment and Enhanced Services Unbundling Rules In the Interexchange, Exchange Access and Local Exchange Markets*, CC Docket No. 96-61, REPORT AND ORDER, FCC 01-98, 16 FCC Rcd 7418 (2001) at ¶ 35.

[23] *Id.*

[24] *Id.* at ¶ 23, *citing* Phillip E. Areeda, 9 ANTITRUST LAW ¶ 1700(d)(3) (1991).

[25] *See* http://cell-phones.ebay.com/.

[26] The FCC reports that most wireless providers have a churn of between 1.5% and 3.0% per month. *11th CMRS Competition Report, supra* n. 9 at ¶ 145. For example, according to 2006 SEC Form 10-K Annual Reports, Sprint reported a monthly churn rate of 2.6%, and Alltel reported a monthly churn rate of 1.57%. As the FCC notes, "[a] carrier with a typical monthly churn of 2.5% will lose 30% of its customers each year," *id.* at ¶ 145, or the rate of nearly a complete turnover in just over three years.

not regulated. As a result, we are unable to establish a nexus between *Carterfone* and the modern wireless communications industry that can be drawn by even a casual analysis of the facts.

III. The Faulty Analogy to Cable Set-Top Boxes

Proponents of wireless net neutrality regulation also cite the Commission's policy and rules regarding cable set-top "navigation devices" serve as the template for regulating wireless carriers.[27] Again, the distinctions between conditions giving rise to these rules and the wireless marketplace are readily apparent, rendering the Commission's policy and rules regarding cable set-top "navigation devices" another useless precedent for regulating the wireless industry.

The Commission's role in set-top box interoperability was mandated by the Communications Act in order to promote retail competition in a marketplace where there was little if any such competition.[28] Specifically, Section 629 of the Communications Act mandates that television "navigation devices" be interoperable so that consumers would have the ability to purchase those devices from independent sources (*i.e.*, not their video services provider).[29] Section 629 of the Act states:[30]

> The Commission shall, in consultation with appropriate industry standard-setting organizations, adopt regulations to assure the commercial availability, to consumers of multichannel video programming and other services offered over multichannel video programming systems, of converter boxes, interactive communications equipment, and other equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems, from manufacturers, retailers, and other vendors not affiliated with any multichannel video programming distributor.

In response to this mandate from Congress, the Commission's *Navigation Devices Order* requires the cable television industry to develop and support a CableCARD technology, where the tuning, descrambling and security features are effectively severed from the cable set-top box.[31] This CableCARD technology allows electronic manufacturers to build television sets that are

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[27] Skype Petition, *supra* n. 1 at 11.

[28] *See Navigation Devices Order, supra* n. 7 (noting that the rationale for the rule was to "ensure the movement of navigation devices toward a fully competitive market").

[29] *Id*. at ¶ 1.

[30] 47 U.S.C. § 549.

[31] *Navigation Devices Order*, *supra* n. 7 at ¶ 1

fully compatible with the cable system without the need for a cable converter box, though the CableCARD must be acquired and programmed by the cable operator.

There are a number of important and interesting facets to this policy of promoting competitive availability of cable navigation devices. Like *Carterfone*, the *Navigation Devices* rules are aimed at promoting competition in the equipment markets by giving consumers the right to purchase CPE from manufacturers, retailers, and other vendors not affiliated with their video programming provider (usually the dominant incumbent cable company).[32] At the time of the decision, all converter and security technology was available from the dominant cable operator only, so the lack of equipment from retail outlets and from different manufacturers was apparent and unquestioned. In the wireless industry, by stark contrast, equipment is manufactured by numerous manufacturers and can be purchased not only in the carrier's stores, but at a large number of independent retailers including electronics stores such as BestBuy and Circuit City, shopping mall vendors, wireless resellers, eBay, and even Wal-Mart.[33] In effect, the primary purpose of the legislation and Commission decision—widespread availability of devices for end-users—is already realized in wireless communications.

In addition, Section 629(e) terminates the application of the cable navigation devices rules when the Commission determines: (1) the market for the multichannel video programming distributors is fully competitive; (2) the market for converter boxes, and interactive communications equipment, used in conjunction with that service is fully competitive; and (3) elimination of the regulations would promote competition and the public interest. Since the Commission has already determined the wireless market is competitive, and the mobile handset market appears robustly competitive, the grounds for removal of such a regulatory mandate had it been applied to wireless are clearly in place.[34]

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[32] The Commission recognized the common goal of the two decisions, but noted "The parallel to the telephone has limitations. When customer ownership of telephone CPE became available, the telephone network was effectively a national monopoly. Well developed technical standards existed throughout an almost ubiquitous network. CPE compatible with the telephone network was part of this environment. In contrast, cable networks do not reflect universal attributes, and have substantially different designs. Nor do satellite systems share commonality beyond the most basic elements. Additionally, as Section 629 recognizes, preventing interference to other network users and maintaining the integrity of the system signal is of greater concern for video delivery systems than for telephone systems." *Id.* at ¶12.

[33] A quick review of carrier websites revealed more than 10 different manufacturers of mobile CPE.

[34] Indeed, the poor performance of cable industry stands in stark contrast to that of the modern wireless industry. *In the Matter of Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Rates for Basic Service, Cable Programming Service, and Equipment*, MM Docket No. 92-266, REPORT ON CABLE INDUSTRY PRICES, FCC 06-179, 21 FCC Rcd 15,087 (2006).

Finally, there is one other important distinction that renders the cable navigation devices policy inapplicable to the wireless communications industry. In particular, the Commission has affirmatively decided that satellite video providers, like DirecTV and Echostar, need not comply with the Section 629 rules. The Commission's rationale is particularly important to review in detail, as it could easily be applied to the wireless industry. The Commission reasoned:

> [D]ifferences in the marketplace for DBS equipment, where devices are available at retail and offer consumers a choice, as compared to equipment for other MVPD services, particularly cable operators, provide justification for not applying the rule requiring separation of security functions to DBS service. We are reluctant to implement a rule that could disrupt an evolving market that is already offering consumers the benefits that derive from competition. In the DBS environment, *there are three service providers and at least ten equipment manufacturers competing to provide programming and equipment to consumers. The equipment is available at retail stores*. The result, over a relatively short time frame, has been lower equipment prices, enhanced options and features. Requiring DBS providers to [comply with the 629 rules] would serve a limited purpose and disrupt technical and investment structures that arose in a competitive environment.[35] (Emphasis supplied.)

If one were to apply this same screen for regulation to the wireless industry, then interoperability requirements like the navigation devices rules would not pass muster. The wireless communications industry in the United States contains far more than the three providers and ten equipment manufacturers noted by the Commission in the DBS waiver. Indeed, mobile handsets are available in many of the same retail stores that DBS boxes are sold, like BestBuy and Circuit City, in addition to a myriad of other distribution outlets.[36] Moreover, the Commission's decision to exempt DirectTV and Echostar from Section 629 requirements also indicates that the Commission explicitly was *not* interested in a policy that would give consumers the right to use the same navigation device across different multichannel video programming distributors. In sum, based on the rationale for excluding DBS providers from the set-top rules, the Commission would have a difficult time applying the requested regulatory mandates on the wireless industry based on its decisions in the *Cable Navigation Devices* rules.

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[35] *Navigation Devices Order*, *supra* n. 7 at ¶64.

[36] Indeed, on the Best Buy website, www.bestbuy.com, twelve different brands of mobile handsets are available for sale, as opposed to eleven different brands of traditional, land-line telephones subject to Part 68 rules (visited on April 17, 2007).

IV. Balancing the Costs and Benefits of Regulatory Intervention

There is no mistaking the fact that "wireless net neutrality" proposals seek to render a substantial restructuring of the nation's wireless industry, from one in which carriers are granted flexibility in deploying diverse technology and services to one that would transform the wireless carriers into commodity network service providers. While we should never aspire to limit ourselves to little dreams, a proper understanding and showing of the costs and benefits of any significant change in policy is always advisable. And in this the proponents of wireless net neutrality have failed. In this Section IV, we discuss several the potential sizeable harms to industry structure that could result from regulatory intervention in the name of "wireless net neutrality." This impact on industry structure includes harm to the prospects for entry and competition in the industry, and thus a real threat to consumers. For a proposal that would radically restructure the wireless industry, it is probably not unreasonable to expect proponents to provide at least crude estimates of the potential costs and benefits before requesting the Commission to initiate what inevitably will be a multi-million dollar proceeding with multi-billion dollar consequences.

A. *Commoditization and Wireless Carterfone Regulation*

We have written elsewhere that commoditization of broadband networks would lead to increased industry concentration, produce higher prices, and potentially less innovation.[37] Moreover, the current diversity of wireless services in the United States today reduces the possibility of oligopolistic coordination.[38] Yet the leading wireless net neutrality proponent

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[37] *See generally,* Ford, Koutsky and Spiwak, *Network Neutrality and Industry Structure, supra* n. 4.

[38] *In re Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services,* Second Report & Order, FCC Docket No. 94-31 (rel. Mar. 7, 1994) at ¶ 149 ("[c]omplex pricing structures, such as are used in the cellular industry, make it difficult for a carrier to sustain collusive pricing."). Indeed, economic theory suggests that product differentiation often impedes oligopolistic coordination. As observed by Kaserman and Mayo:

> [W]here firms in the market produce a product whose differences are either nonexistent or so minor that the only dimension of competition between firms is price[,] it is relatively easy for firms to agree to establish an anticompetitive price. Where firms compete in many dimensions (for example, price, quality, and new service or product innovations), however, it becomes more difficult to successfully collude because firms will need to establish limits on competition in each of the relevant dimensions.

D. Kaserman and J. Mayo, GOVERNMENT AND BUSINESS: THE ECONOMICS OF ANTITRUST AND REGULATION (1995) at 159; *see also,* F.M. Scherer & David Ross, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE (1990) at 279 ("When products are heterogeneously differentiated, the terms of rivalry become multidimensional, and the coordination problem grows in complexity by leaps and bounds."); P. Areeda and H. Hovenkamp, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION (2d Ed. 2002) at ¶ 404a (product complexity, differentiation, or variety "multiplies avenues of rivalry and hence the decisions that must be coordinated, because even if firms reach a coordinated price, they may continue to compete by improving product quality."); *see also, In re*

(Footnote Continued….)

states plainly and approvingly that commoditization of wireless network services would be the ultimate result of applying *Carterfone*-like regulation to the industry.[39] Because of the presence of large fixed and sunk costs, the commoditization of wireless network services likely would result in increased industry consolidation, just as it would for wireline communications networks.[40]

We can begin to see the risk of industry consolidation that is possible by comparing the current United States wireless industry with those of other nations, especially those that have adopted technical specifications for 2G or 3G wireless network deployment. For example, providers of mobile 2G services in Europe must comply with the GSM Standard and 3G broadband service providers in Europe must comply with the Universal Mobile Telecommunications System ("UMTS"). Moreover, in Europe, it is not possible to operate 3G broadband services on 2G spectrum bands, so 3G service providers have been required to construct new networks entirely.

In contrast, carriers in the United States have deployed analog and digital networks using an array of technologies based on the carrier's plans for the devices it wants to support and services it wants to provide and the markets it services. The "air interface" technologies have included GSM, iDEN, EDGE, UMTS, CDMA, EVDO, EVDO-RevA, TDMA and more. The Commission specifically leaves to the carriers the decision about what technology to deploy, with the view that carriers looking to maximize a return on their investment in spectrum and infrastructure are best suited to decide the fastest way to do so. This policy facilitates competition between network providers and encourages the most rapid deployment of new technology, in part because new technologies can be deployed incrementally. According to Cowhey and Aronson, due to this policy, "[f]ragmentation in standards resulted, but so did

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Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, Second Report & Order, FCC Docket No. 94-31 (rel. Mar. 7, 1994) at ¶ 149 ("[c]omplex pricing structures, such as are used in the cellular industry, make it difficult for a carrier to sustain collusive pricing."); *but cf.,* S. Martin, ADVANCED INDUSTRIAL ECONOMICS (1993) at 116-7 ("[p]roduct differentiation reduces the incremental profit to be gains by departing form a joint-profit-maximizing configuration because product differentiation insulates rivals' markets and reduces the extent to which a single firm can lure rivals' customers into its own market.").

[39] Wu, supra n. 1 at 21 ("Spectrum bandwidth is a commodity, and the interface would provide the user with a fixed maximum bandwidth and, like an electric meter, bill the consumer for the amount of bandwidth actually used").

[40] *See generally,* Ford, Koutsky and Spiwak, *Network Neutrality and Industry Structure, supra* n. 4 at 2-3 ("given the economic characteristics of local communications networks, policies that promote commoditization of broadband access could lead to the monopoly provision of advanced broadband services in many markets. This outcome would harm consumers substantially.").

innovation, especially in CDMA deployment."[41] Moreover, according to Cowhey and Aronson, this flexible use policy "made the transition to 3G easier in the United States because incumbents could simply upgrade their existing networks rather than switch to new spectrum as was required by the European Union."[42]

It appears that as a consequence of a spectrum policy regime different than those adopted in Europe, the United States has a much broader diversity of wireless network platforms and more competition among network providers than markets where governments have taken much stronger command-and-control approaches to technical matters. Table 1 demonstrates that even after recent mergers, the United States, in contrast to other OECD countries (the exception being Denmark), has a substantial diversity among competing wireless service providers. This implies that the commoditization of wireless spectrum, as is more likely in countries with a mandated common technical standard, can significantly impact industry structure and concentration. Indeed, over a quarter of wireless subscribers in the United States receive service from a firm other than one of the top three providers nationwide.

Furthermore, the United States wireless market has in most cases more competitors than most other industrialized countries, higher usage rates of wireless networks, and significantly lower prices.[43] This superior market performance indicates that the current government policy of promoting network-to-network competition between wireless service providers on all possible levels, including technology and standards, is benefiting United States consumers. Restructuring the industry through the regulation that proponents of wireless net neutrality are urging, a manner that would sacrifice network-to-network competition for the sake of promoting a concept that proponents term "openness," could likely impact the quantity, quality and prices of wireless network services.

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[41] P. F. Cowhey and J. D. Aronson, *Wireless Standards and Applications: Industrial Strategies and Government Policy*, Annenberg Research Network on International Communication, 27 (2004) (available at: http://arnic.info/workshop04/Cowhey_Aronson.pdf).

[42] *Id.*

[43] *11th CMRS Competition Report*, *supra* n. 9 at App. A, Table 12.

Table 1. Mobile Operator Market Share According to Number of Operators, Percentage (2003)

Number of operators	1	2	3	4	5	Others
Australia	46.6	30.6	19.7	3.1		
Austria	43.9	28.7	19.4	7.8	0.2	
Belgium	49.9	35.8	14.3			
Canada	36.9	28.3	25.5	9.3		
Czech Republic	43.4	40.7	15.9			
Denmark	35.1	23.8	12.9	11.1	10.2	6.9
Finland	51.4	28.7	16.4	3.5		
France	48.8	35.3	15.9			
Germany	40.6	38.1	12.7	8.6		
Greece	37.8	35.5	23.2	3.5		
Hungary	47.4	35.8	16.8			
Iceland	66.8	32.9	0.3			
Ireland	55	40	5			
Italy	46.1	36.4	16.9	0.6		
Japan	53.9	19.6	17.3	4.2	3.3	2.5
Korea	54.4	31.1	14.4			
Luxembourg	62.7	37.3				
Mexico	77.8	11.5	6.6	4.1		
Netherlands	39.1	25	15.6	10.9	9.4	
New Zealand	52.3	47.7				
Norway	58.3	29.9	6.2	3.6	2	
Poland	35.7	32.8	31.5			
Portugal	52.3	30.2	17.5			
Slovakia	56.2	43.8				
Spain	52.4	25.8	21.8			
Sweden	43.6	38	15.1	3.3		
Switzerland	61.4	20.4	17.6	0.6		
Turkey	68.1	18.3	7.2	6.4		
United Kingdom	24.5	23.9	25.6	25.6	0.4	2
United States (2003)	23.6	13.9	13.8	10.0	8.1	30.6
United States (2006)*	26.6	25.2	22.0	10.7	5.2	10.3

1. Three operators in Norway are resellers.
2. There are 150 cellular mobile operators in the United States.

Sources: OECD, OECD COMMUNICATIONS OUTLOOK, Table 2.6 (2005); (*) *11th CMRS Competition Report,* App. A., Tables 2, 4 (for United States)

In addition to these harms from commoditization are the harms that would result from the dizzying complexity of applying *Carterfone* to the diverse wireless industry. While Skype blithely states that it "approaches these issues with humility,"[44] the fact is that standard-setting in the wireless business is a perilous, very technical and dynamic undertaking that the government should not trod into lightly. Carriers have deployed 2G and 3G networks using a myriad of competing and evolving technologies. There is no evidence that it would be possible to have a single, technical standard interface that would permit a handset to operate on all of the AMPS, D-AMPS, CDPD, GSM, iDEN, WIDEN, CDMA, GPRS, EDGE, W-CDMA, and EVDO (not to mention other 3G and 4G technologies that are in development) networks that are deployed today.[45] Moreover, these technologies have been developed by companies and standards bodies that are rife with different decision-making procedures that are intermeshed with corporate and even mercantilistic interests.[46]

The challenge would be daunting. The Commission's Part 68 rules, which are the end result of *Carterfone* regulation of the wireline public switched telephone network, take up 164 pages in the Code of Federal Regulations and contain 77 separate diagrams. And those regulations apply to the design of the familiar, plug interface for a telephone to a telephone network that was a local monopoly and already relatively standardized on a national basis.[47] The level of complexity involved in a regulator trying to micromanage the technical interface between hundreds of kinds of mobile devices and multiple wireless networks across the United States is hard to imagine.

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[44] Skype Petition, *supra* n. 1 at 30.

[45] In advancing his proposal, Wu (incorrectly) notes that much of "[t]he wireless world already has standardized interfaces," citing the GSM standard requirement of SIM cards that has been implemented in Europe. Wu, *supra* n. 1 at 21. But the mere presence of standards does not mean that navigating them is easy: Cowhey and Aronson describe a "standard's maze" of no fewer than 37 standards "that must be traversed to achieve" the future generation of wireless networks. *See* Cowhey and Aronson, *supra* n. 41 at 4-5.

[46] For example, the European Telecommunications Standards Institute, ETSI, maintains the GSM and other European standards, and it makes decisions based on the European revenues of the member companies. In the United States, the IEEE operates by requires 75% support for a standard, following principle of one company, one vote. The Korean government selected CDMA as its 2G standard with the intent of subsidizing the construction of handsets so as to create an export market. According to Cowhey and Aronson, in Korea, Samsung Electronics and SK Telecom are essentially in charge of standard-setting for 4G services. *Id.* at 54.

[47] *See Revision of Part 68 of the Commission's Rules to Specify Standard Plugs and Jacks for the Connection of Telephone Equipment to the Nationwide Telephone Network*, 62 FCC 2d 735, ¶¶ 2-3 (1976).

V. Conclusion

As we show in this BULLETIN, the *Carterfone* analogy to today's wireless industry handset practices simply do not hold water. The wireless communications industry in the United States is not the vertically-integrated, fully-regulated Bell System of old. The *Carterfone* decision and subsequent Commission regulation was concerned about quarantining a regulated, vertically-integrated monopoly service provider from leveraging its market power into an adjacent equipment market. The need for intervention in those cases was important and unquestionably motivated by market power and presence of (and the firm's concurrent efforts to evade) price regulation.

In the absence of price regulation and/or market power, the *Carterfone* decision would probably not have been needed, because the economic incentives to engage in the observed behavior would be absent. Indeed, the Commission has repeatedly diminished the influence of *Carterfone* on the communications industry over the years and explicitly removed the mandate in markets that are workably competitive. Similarly, the Commission's cable navigation device rules are no more helpful to the pro-regulatory arguments; in fact, the Commission's justification for applying and not applying those rules to different video providers starkly conflicts with the interventionist proposals.

Important to consumers is that both the *Carterfone* and cable navigation device rules were designed to create a competitive equipment market where consumers could purchase communications equipment from numerous manufacturers at a variety of retail outlets. Today, the wireless equipment market is substantially competitive: not only can consumers purchase communications equipment from numerous manufacturers at a variety of retail outlets, but both new and used mobile handsets manufactured by numerous electronics firms are available at a wide range of commercial outlets without any requirement to purchase wireless services from any particular wireless provider.

Like the rest of the network neutrality debate, the discussion of applying *Carterfone* to the wireless industry seems to have taken on an emotional tone, which is regrettable because emotion can get in the way of rigorous analysis. Consumers certainly would prefer to have a lot of things, and a mobile handset that can work on any wireless network in the nation (and the world) might rank highly for a select few affluent, well-heeled mobile professionals. But it is telling that given all the advocacy noise that has surrounded this issue, not a single meaningful anticompetitive or anti-consumer incentive to discriminate in the mobile handset market has been demonstrated by the proposals.