

Further Comments on Spectrum Auction Rules
That Foster Mobile Wireless Competition

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In the Matter of Policies Regarding Mobile Spectrum Holdings, WT Docket No. 12-269¹

Since I submitted my paper on “Spectrum Rules That Foster Mobile Wireless Competition” in this docket,² Professors Michael Katz and Philip Haile, and Drs. Mark Israel and Andreas Lerner (hereinafter “KHIL”), writing at the request of AT&T, have submitted two papers in this proceeding – a Comment on the submission by the U.S. Department of Justice and a Supplemental Reply Declaration on spectrum aggregation policy commenting in part on my paper.³ I have been asked by T-Mobile US to discuss whether these submissions lead me to change any conclusions set forth in my paper.⁴ For the reasons set forth below, they do not.

KHIL and I appear to agree that if large incumbent providers of mobile wireless services can obtain or preserve market power in those services by keeping spectrum available at auction away from their rivals, they will place a “foreclosure value” on that spectrum. Under these circumstances, the large incumbents may outbid smaller incumbents or new entrants when that

¹ T-Mobile is also submitting this paper in GN Docket No. 12-268, *In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, in response to the Commission’s request for comments on how to structure the forward auction of spectrum reclaimed from broadcasters.

² Jonathan B. Baker, “Spectrum Rules That Foster Mobile Wireless Competition” (March 12, 2013) (“Baker Submission”), *attached to* Letter from Howard J. Symons, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-269 (filed March 12, 2013).

³ Michael L. Katz, Philip A. Haile, Mark A. Israel, and Andreas V. Lerner, “Comment on the Submission of the U.S. Department of Justice Regarding Auction Participation Restrictions” (June 13, 2013) (“KHIL DOJ Comment”) and Michael L. Katz, Philip A. Haile, Mark A. Israel, and Andreas V. Lerner, “Comments on Appropriate Spectrum Aggregation Policy with Application to the Upcoming 600 MHz Auction” (June 13, 2013) (“KHIL Supplemental Reply”), *attached to* Letter from David L. Lawson, Sidley Austin LLP, Counsel to AT&T, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, WT Docket No. 12-269 (filed June 13, 2013).

⁴ I have also submitted a paper responding to related arguments put forward by the Phoenix Center. Jonathan B. Baker, “FCC Spectrum Allocation Rules that Promote Competition are in the Public Interest” (July 8, 2013), *attached to* Letter from Howard J. Symons, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, WT Docket No. 12-269 (filed July 8, 2013).

would not be the best outcome for consumers and society as a whole.⁵ We also appear to agree that restrictions on the ability of large firms to bid could lead potentially foreclosed smaller incumbents and new entrants to increase their auction participation, in which case auction revenues could also increase.⁶

Notwithstanding these important areas of agreement, KHIL do not agree that rules restricting spectrum aggregation at the time of new spectrum auctions – spectrum-aggregation limits (caps) – would help protect and foster competition in mobile wireless services. My comments in this submission highlight some major flaws with their argument.⁷

- I. KHIL’s conclusion that a foreclosure strategy is very unlikely incorrectly presumes that smaller mobile wireless providers could and would provide a comparable competitive constraint for the two largest providers if limited to high-frequency spectrum

KHIL’s claim that large incumbents would need to purchase “an enormous amount of spectrum,” not just at auction but also from “various actual and potential rivals,” in order for a foreclosure strategy to succeed effectively presumes that mobile wireless providers of all sizes have low incremental costs of expansion.⁸ But KHIL are wrong for two reasons. First, small regional providers (firms smaller than T-Mobile or Sprint) or new entrants cannot reasonably be expected to constrain the exercise of market power by the largest incumbents without expensive geographic expansion. As the FCC staff has correctly pointed out, “to provide service comparable to a nationwide provider, and thus be able to compete effectively and prevent competitive harm, a regional provider would most importantly need to obtain a nationwide spectrum footprint and the resources to build it out.”⁹ Even if they did so, “[t]he smaller

⁵ Compare KHIL DOJ Comment at 2-3 with Baker Submission at 3-4. KHIL question the likelihood of this scenario in the current marketplace, but do not appear to dispute the underlying economic theory.

⁶ Compare KHIL Supplemental Reply at 2, 15 (“[T]here is no controversy that it is *theoretically* possible for participation restrictions to raise auction revenues.”) (emphasis in original) with Baker Submission at 7, 10-11. See also Gregory Rosston & Andrzej Skrzypacz, “A Dynamic Rule for the Broadcast Incentive Auction: Ensuring Spectrum Limits Do Not Reduce Spectrum Clearance,” GN Docket No. 12-268 (filed July 26, 2013) (describing methods of implementing spectrum caps to protect revenue targets).

⁷ I have not noted every difference between my views and theirs, so my lack of comment on any statement they make should not be taken to mean that I agree with them on the point.

⁸ KHIL Supplemental Reply at 9. KHIL’s claim that large incumbents would need to purchase an enormous amount of spectrum apparently does not reflect a market-by-market analysis. Hence, it does not account for differences in the distribution of spectrum ownership across markets, which may lead to differences across markets in the amount of spectrum the large incumbents would need to purchase to obtain or maintain market power.

⁹ Bureau Staff Analysis and Findings, attached to Applications of AT&T, Inc. and Deutsche Telekom AG for Consent to Assign or Transfer Control of Licenses or Authorization, Order, 26 FCC Rcd 16184, ¶ 64 (2011), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-11-1955A2.pdf.

providers would need to match the rest of the national providers' business model (*e.g.* by expanding their marketing nationwide) in order to provide a comparable competitive threat" – tasks that "would likely take years to complete."¹⁰

Second, KHIL also suppose that a mobile wireless provider's incremental costs of expansion – and its corresponding ability to constrain competitively the largest providers – would be the same regardless of whether it owned high-frequency spectrum primarily or whether it owned a mix of high- and low-frequency spectrum.¹¹ This theory appears to lie behind their presumption that the smaller national providers (T-Mobile and Sprint) have low incremental costs of expansion, presumably in every market. Yet the supposition that mobile wireless providers would expand the same way, regardless of whether they were limited to high-frequency spectrum or if they also had access to low-frequency spectrum,¹² is inconsistent with the evidence that mobile wireless services of any given geographic coverage and quality typically can be provided more efficiently using a mix of low- and high-spectrum frequencies than using either frequency exclusively, and that the cost penalty for providing service without using a mix of spectrum frequencies is likely to be particularly high for providers with limited use of low-frequency spectrum.¹³

¹⁰ *Id.* ¶¶ 65, 68.

¹¹ KHIL Supplemental Reply at 34 (claiming that large incumbents cannot successfully foreclose rivals by outbidding them for low-frequency spectrum because doing so "would leave the high-frequency option available to entrants"); *id.* at 35-36 (implying that a foreclosed rival's costs of expansion are not affected by the mix of frequencies in the spectrum it holds).

¹² If this supposition were correct, contrary to what the information I have reviewed demonstrates, a cap on low-frequency spectrum would not materially harm the larger providers who apparently fear it, as those providers could simply substitute high-frequency spectrum combined with additional capital expenditures

¹³ See Baker Submission at 14-15, 17 n.28. For the reasons indicated in my previous submission, this cost penalty is important in urban areas as well as rural areas, contrary to what KHIL suppose (*e.g.* KHIL Supplemental Reply at 29-30). See, *e.g.*, AT&T, "About Us, What You Need to Know About Your Network," <http://www.att.com/gen/press-room?pid=14003> (last visited July 31, 2013) ("What is the difference between 850 MHz and 1900 MHz? . . . 850 MHz offers better in-building coverage because the signal can better penetrate walls than signals at other frequencies, while 1900 MHz is best for protection against interference with nearby sites."); "AT&T Offers Nation's Fastest 3G Network," AT&T Press Release (July 10, 2008), <http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=25921&mapcode=financial|mobile-devices> ("[T]he company is deploying additional 3G coverage using 850 megahertz (MHz) spectrum that is now available from the recent sunset of its older TDMA network. This spectrum extends farther and better covers the interior of buildings."). Incremental infrastructure is likely to cost more with high-frequency spectrum, notwithstanding KHIL's observation that a denser network can engage in greater frequency reuse, KHIL Supplemental Reply at 37, for the reasons set forth in my first paper. Baker Submission at 14-15, 17 n.28. For instance, low-frequency spectrum's in-building penetration capabilities cannot be matched by high-frequency spectrum, potentially requiring a provider with little or no low-frequency spectrum to undertake costly additional construction of in-building femtocells or similar facilities in order to extend high-frequency coverage indoors.

KHIL's response is that the difference between the price of low- and high-frequency spectrum will exactly offset the difference in discounted present value of the capital investments needed to equalize the quality of service a mobile wireless provider could offer using either input. From that assumption, they argue that large incumbents could not limit competition from smaller providers seeking to expand by foreclosing the latter from access to low-frequency spectrum.¹⁴ Even if the difference in spectrum costs did exactly offset the difference in capital spending, which may not be true,¹⁵ their conclusion does not follow.

The problem with KHIL's argument is that a smaller firm that mainly owns high-frequency spectrum in a market may build out differently if it adds more high-frequency spectrum than if it adds low-frequency spectrum, because of the higher incremental costs of expansion associated with high-frequency spectrum. In particular, the smaller firm in these circumstances may respond to those higher costs by offering a more targeted service (*e.g.*, less coverage or more limited building penetration) rather than offering service comparable to what the larger incumbents provide.¹⁶ If so, a larger incumbent could limit the competitive constraint imposed by smaller rivals by foreclosing those rivals' access to low-frequency spectrum, thereby allowing the larger incumbent to obtain or maintain market power – to the detriment of consumers, who would pay higher prices and experience lower rates of service improvement than what would be expected with greater mobile wireless competition. A spectrum cap on low-frequency spectrum holdings would benefit consumers by preventing such a result.

A stylized numerical example illustrates why KHIL are wrong in claiming that if the total spectrum and infrastructure costs needed to provide similar service with both bands of spectrum happen to be equal, then a larger provider cannot harm competition by limiting its foreclosed rivals to high-frequency spectrum.¹⁷ Suppose that in a hypothetical competitive auction – a

¹⁴ KHIL Supplemental Reply at 31, 35-36.

¹⁵ KHIL appear to presume that spectrum arbitrage will induce this outcome without considering whether the risks and transaction costs of employing arbitrage strategies would limit the application of such strategies, and thereby prevent spectrum prices from fully offsetting differences in build out costs.

¹⁶ Baker Submission at 16-18. When upgrading its network, for example, the smaller provider might be led to choose between enhancing building penetration within its existing footprint and expanding its service into new regions, rather than offering equivalent service by doing both.

¹⁷ The values in the example were chosen to reflect KHIL's assumption that the differences between the auction prices for high- and low-frequency spectrum would equal the difference in the build out cost of offering equivalent service in the event a larger firm pursued a foreclosure strategy in bidding, and to account for the benefits of owning a mix of spectrum frequencies. See Reply Declaration of Mark A. Israel and Michael L. Katz, WT Docket No. 12-269, at 18 (Jan. 7, 2013), *attached as* Attachment B to Reply Comments of AT&T, Inc., WT Docket No. 12-269 (filed Jan. 7, 2013) (“[T]o the extent that high frequency spectrum necessitates greater additional cost to achieve a certain degree of capacity expansion, all else equal, the price of that spectrum is expected to be lower, thus offsetting the higher cost of expansion.”).

setting in which larger incumbents do not obtain or maintain market power by foreclosing their smaller rivals – a block of low-frequency spectrum initially sells for 10 (at auction) and a block of high-frequency spectrum that could be used to provide equivalent wireless services in the same market sells for 5. A smaller firm that already owns high-frequency spectrum can use either block of additional spectrum to build out mobile wireless service comparable to what the large incumbents will offer with the spectrum they own and acquire (“equivalent” service), but would prefer to do so by acquiring low-frequency spectrum. In particular, suppose that the discounted present value of the build out cost of providing wireless service is 6 if the smaller incumbent purchases the low-frequency spectrum block, for a total cost of 16, while the build out cost is 14 if the firm purchases the high-frequency spectrum block, for a higher total cost of 19.¹⁸

Suppose further that the smaller firm could instead choose to offer “targeted” service (more limited than equivalent service) using the additional high-frequency spectrum and spending only 9 on build out, but would prefer not to do so at the current spectrum prices (*i.e.*, it would rather purchase low-frequency spectrum and offer equivalent service). It may prefer to spend more to acquire low-frequency spectrum and offer equivalent service (total cost of 16) rather than to acquire high-frequency spectrum and offer targeted service (total cost of 14, including 5 for the spectrum and 9 for the build out). It prefers to do so because offering higher quality service will give it extra revenue (with a discounted present value more than 2, say 4)¹⁹ from gaining more customers or charging higher prices that reflect the greater value it would offer customers, and this additional revenue exceeds the additional cost of 2 so its profit rises.²⁰ In this example, with no foreclosure, the smaller firm chooses to purchase the low-frequency block and offer equivalent service, rather than to purchase the high-frequency block and offer targeted service.²¹

¹⁸ This assumption builds in the benefits of owning a mix of spectrum frequencies over owning mainly high-frequency spectrum.

¹⁹ The table below shows revenues rising from 20 to 24, for an increase of 4.

²⁰ In the table below, profits are 8 if the firm offers equivalent service using low-frequency spectrum, and 6 if the firm offers targeted service using high-frequency spectrum, for a difference of 2.

²¹ In this example, the price of low-frequency spectrum has not been bid up to a level that would make the smaller firm indifferent between offering targeted service using high-frequency spectrum (its best choice if it obtains high-frequency spectrum) and offering equivalent service using low-frequency spectrum. The difference in profit (between 8 and 6) can be understood as the cost to spectrum purchasers of engaging in arbitrage. Alternatively, it may result from the difference in the cost of building out high-frequency spectrum between the larger firms and the smaller ones (which have higher incremental costs because they lack substantial low-frequency spectrum holdings). That is, the larger firm may have bid up the price of low-frequency spectrum to a point where it is indifferent between providing equivalent service using the two frequency bands, while the smaller firm prefers to acquire low-frequency spectrum at those spectrum prices. Even if the pre-foreclosure price were bid up to 12, moreover, so that the smaller firm was indifferent in the pre-foreclosure setting between purchasing low-frequency spectrum to offer equivalent service and high-frequency spectrum to offer targeted service (as both would give it a profit of 6), it

Now suppose that a larger incumbent bids up the price of the block of low-frequency spectrum from 10 to 13, in order to foreclose the smaller incumbent firm from access to low-frequency spectrum.²² At that price, the smaller incumbent firm will purchase high-frequency spectrum but will no longer offer equivalent service; it will offer targeted service. The smaller firm must now pay 19 to offer equivalent service, regardless of whether it does so by purchasing low-frequency spectrum (13 for spectrum plus 6 to build it out) or by purchasing high-frequency spectrum (5 for spectrum plus 14 to build it out). But with the low-frequency spectrum price bid up to 13, the smaller incumbent will no longer choose to offer equivalent service, but will instead purchase high-frequency spectrum and offer targeted service, for a total cost of 14 (5 for spectrum plus 9 to build it out). It will change its strategy because the additional revenue from offering equivalent service rather than targeted service (4) is now less than the additional cost of offering equivalent service (higher cost of 5, the difference between 19 and 14), so it profits more from offering targeted service.²³

would not alter the essence of this example so long as some smaller firms would have chosen to purchase low-frequency spectrum and offer equivalent service.

²² The example assumes that the benefit to the larger incumbent of inducing the smaller firm to offer targeted rather than equivalent service, in conferring or protecting the larger firm's market power, exceeds the costs to the incumbent of adopting this strategy. Cf. Jonathan B. Baker, *Exclusion as a Core Competition Concern*, 78 ANTITRUST L.J. 527, 567-72 (2013) (discussing factors affecting the profitability of the purchase of an exclusionary right to an excluding firm).

²³ In the table below, profits from offering targeted service using high-frequency spectrum (6) exceed the profits from offering equivalent service in the foreclosure scenario (5). KHIL appear to contend, stated in terms of the numbers in this example, that the price of high-frequency spectrum would be bid up at auction to a level greater than 5, perhaps to 7 – that is, to a point where the smaller incumbent would again prefer to offer equivalent service – because the higher price for low-frequency spectrum will lead mobile wireless providers to shift their spectrum demand to high-frequency spectrum. But there is no reason to suppose that the price of high-frequency spectrum will rise as much as would be required to generate this outcome. The larger incumbents will shift their demand away from high-frequency spectrum (because they are trying to steer smaller incumbents toward high-frequency spectrum and targeted service), and no other firms have the ability to engage in “arbitrage” between high-frequency and low-frequency spectrum (shifting additional spectrum purchases from low- to high-frequency blocks) that KHIL suppose would induce the auction price of high-frequency spectrum to sufficiently rise. See KHIL Supplemental Reply at 31.

The smaller firm’s costs, revenue and profit in the alternative scenarios set forth in the example are summarized in the table below.

Smaller Firm Cost, Revenue and Profit

High-Frequency Spectrum

	Cost			Revenue	Profit
	Spectrum	Build Out	Total		
<i>Equivalent Service</i>	5	14	19	24	5
<i>Targeted Service</i>	5	9	14	20	6

Low-Frequency Spectrum

	Cost			Revenue	Profit
	Spectrum	Build Out	Total		
<i>Without Foreclosure:</i>					
<i>Equivalent Service</i>	10	6	16	24	8
<i>With Foreclosure:</i>					
<i>Equivalent Service</i>	13	6	19	24	5

By raising the price of low-frequency spectrum, this example shows, the larger incumbent can induce its smaller rival to purchase a high-frequency block rather than a low-frequency block. Moreover, the smaller firm would offer targeted service even though it would have offered equivalent service had the larger incumbent not bid up the price of low-frequency spectrum as a means of foreclosure. If the smaller firm provides a lesser competitive constraint on the larger firm by offering targeted service,²⁴ the larger incumbent may be able to obtain or maintain market power, to the detriment of consumers of wireless services.²⁵

II. KHIL inappropriately ignore the benefits of spectrum caps

KHIL oppose auction spectrum aggregation limits primarily because, as discussed above, they do not share the Justice Department’s concern that large incumbents could obtain or

²⁴ See Baker Submission at 18 n.29.

²⁵ Contrary to what KHIL seem to suggest, it is appropriate to characterize this example as one in which the smaller firm was effectively foreclosed from offering equivalent service – in the sense the term foreclosure is used when discussing competition policy – even though the smaller firm could have physically “chosen” to offer equivalent service. KHIL Supplemental Reply at 35-36. Even though the smaller incumbent “[chose] the best competitive strategy available to [it] given the marketplace characteristics,” *id.* at 36, what matters is that the larger incumbent manipulated the marketplace characteristics in order to induce the smaller firm to make a choice that benefits the larger firm, not consumers or society as a whole.

maintain market power in mobile wireless services by keeping spectrum away from their rivals. As a result, they put little or no weight on the benefits spectrum caps create for mobile wireless services markets, and focus instead on the possibility that those caps would limit large incumbents from realizing production efficiencies through spectrum agglomeration.²⁶ They ignore the danger that spectrum aggregation limits address: that the largest two incumbent firms could foreclose rivals from access to spectrum, and thereby relax the existing competitive constraint those rivals impose on the largest two firms or prevent those rivals from imposing a greater competitive constraint. As a result, the large firms would have an incentive to charge higher prices and invest less in improving service quality or in developing product improvements, relative to what they would do if prevented by spectrum limits from foreclosing rivals – and consumers could be harmed even if those spectrum purchases would also confer scale economies on the incumbent firms.²⁷

KHIL also oppose auction spectrum aggregation limits based upon a variety of arguments about institutional design. They propose combining safe harbors announced in advance with case-by-case review of spectrum acquisitions after the auction is completed. Their advocacy for this combination accepts that an after-the-fact review of auction outcomes introduces uncertainty to bidders at the time spectrum is purchased as to the outcome of such a review (*i.e.* whether such acquisitions would be allowed), while assuming that the cost of permitting such uncertainty is outweighed by the potential for greater precision in evaluating the competitive consequences of spectrum transfers. But KHIL improperly assume that the tradeoff should be made the same way regardless of whether the spectrum is transferred through an auction or through later secondary market transactions. This assumption fails to account for important differences between the settings. In particular, the complexity of auctions – with many parties, each making interdependent decisions regarding multiple alternatives available for sale at the same time – should lead the FCC when specifying auction rules to favor the certainty that clear rules announced in advance and enforced will provide.²⁸

KHIL also claim that spectrum aggregation limits cannot succeed if secondary market transactions (that typically occur well after the auction) are subject to case-by-case review, because the FCC will apply different standards to judge later auction transfers, creating

²⁶ *Id.* at 17.

²⁷ KHIL misinterpret my discussion of this point. Contrary to what they suppose, *id.* at 18, I was not discussing the extent to which firms participating in imperfectly competitive markets will lower prices if their marginal costs decline.

²⁸ Baker Submission at 8-9. Because there is a tradeoff between precision and certainty, one would not expect the application of a spectrum cap before an auction to lead to an identical result as a post-auction review if the latter were to account for more factors than would be used in specifying the spectrum aggregation limit. Moreover, in contrast with upfront spectrum caps, KHIL's proposal for combining post-auction review with safe harbors will not remove the uncertainty.

opportunities for arbitrage.²⁹ KHIL's assertions are wrong for two reasons. First, the standards are likely to be similar if the Commission takes a long-run perspective and frames spectrum policies primarily based on criteria not closely tied to current spectrum uses, as it should in an environment where future technologies and spectrum uses are uncertain.³⁰ Second, even if the standards were to differ, arbitrage would be limited by the risk that the FCC will not approve a later transfer that undermines the original spectrum-aggregation limits and by the transaction costs of case-by-case review and delay.³¹

KHIL's proposal that the Commission implement spectrum aggregation standards through after-auction reviews rather than pre-auction bidding prohibitions also ignores the transaction costs, uncertainties, time-inconsistency problems,³² and problems assuring effective divestitures that would be created by after-auction reviews.³³ They contend that the FCC has the tools to prevent relaxation of the standards when implementing them after an auction,³⁴ but they

²⁹ KHIL Supplemental Reply at 23.

³⁰ Baker Submission at 5-6.

³¹ Contrary to what KHIL suggest, KHIL Supplemental Reply at 23 n.61, arbitrage will be limited for this reason regardless of whether the bidder is a pure speculative bidder or has multiple motives when bidding in the auction. If KHIL are supposing that at the time of the auction bidders do not expect the FCC to relax its standard, and that successful spectrum purchasers will sell the spectrum after discovering that a later Commission would allow spectrum transactions that were previously prohibited, that dynamic would properly be characterized as the intended result of a change in FCC policy rather than arbitrage undermining pre-defined spectrum-aggregation limits.

³² Although KHIL claim to question my view that the FCC might approve a spectrum acquisition in an after-auction review that it might have objected to before the auction took place, Baker Submission at 12-13, they acknowledge that "the costs associated with undoing auction acquisitions are [a] reason why the Commission should be judicious about which acquisitions it reviews and overturns," KHIL Supplemental Reply at 26. Those costs are reasons that an after-auction review could allow spectrum transfers that should be prohibited, and why relying on after-auction review could encourage firms to bid for spectrum they would be prohibited from acquiring by a spectrum cap, with the expectation that their anticompetitive purchases would be too costly to reverse.

³³ On these problems, *see* Baker Submission at 9-10, 11-14. Here the issue is when to police the auction standards – before or just after the auction – not what standards to apply to later secondary-market transactions. KHIL wrongly claim I contradict myself on one of these points. KHIL Supplemental Reply at 28. I point out that firms could value any spectrum block differently after an auction, once the winners and losers make commitments to business plans, than they would value it when bidding during the auction, and that, in consequence, spectrum divestitures resulting from after-auction application of spectrum agglomeration standards would lead to different outcomes than would result from pre-auction prohibitions applying those standards. Baker Submission at 8. Nothing in that proposition contradicts my later observation that if – hypothetically and, I believe, contrary to the facts – wireless services can be offered effectively using either high-frequency or low-frequency spectrum, then imposing a separate cap on low-frequency spectrum at the time of the auction would make little practical difference to outcomes in mobile wireless services markets. Baker Submission at 18-19.

³⁴ KHIL Supplemental Reply at 26.

fail to account for the tools that firms have to influence agency decisions to their benefit and at variance with the public interest described in the literature on regulatory agency “capture.”³⁵

In characterizing a spectrum cap as a “success tax,” KHIL imply that a cap could not serve any legitimate purpose.³⁶ If this overheated rhetoric is taken seriously, and if KHIL consider protecting and fostering competition to be a legitimate goal, it means that KHIL think that preventing excessive spectrum agglomeration is unrelated to limiting the exercise of market power. In fact, for the reasons indicated above and in my previous submission, rules for spectrum auctions, including spectrum aggregation limits, can foster competition in mobile wireless services by preventing larger incumbent carriers from foreclosing their smaller rivals, thereby harming mobile wireless competition and consumers.



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³⁵ The term “capture” refers to settings in which regulatory decisions favor the interests of regulated firms relative to the public interest. *See generally* Ernesto Dal Bó, *Regulatory Capture: A Review*, 22 OXFORD REV. ECON. POL’Y 203 (2006); Theodore E. Keeler & Stephen E. Foreman, *Regulation and Deregulation*, in THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 213 (Peter Newman, ed. 1998); *cf.* Dorit Rubinstein Reiss, *The Benefits of Capture*, 47 WAKE FOREST L. REV. 569 (2012) (discussing differences between harmful capture of agencies by regulated firms and beneficial collaboration between agencies and regulated firms). Firms that seek to purchase spectrum in excess of agency standards are likely to have a greater ability to influence agency decisions in their favor, when that would be at variance with the public interest, during an after-auction review of spectrum purchases rather than when the agency is specifying generally applicable spectrum-aggregation limits in advance of auctions. That is because interest groups with opposing views are more likely to participate when auction rules are developed, and because the public attention would likely be greater in the rule-making proceeding.

³⁶ KHIL Supplemental Reply at 19.