UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

THOMAS LAUMANN, FERNANDA GARBER, ROBERT SILVER, DAVID DILLON, GARRETT TRAUB and PETER HERMAN, representing themselves and all others similarly situated, Plaintiffs, v. NATIONAL HOCKEY LEAGUE, *et al.* Defendants	CA No. 12-1817 (SAS)
FERNANDA GARBER, MARC LERNER, DEREK RASMUSSEN, ROBERT SILVER, GARRETT TRAUB, and PETER HERMAN, representing themselves and all others similarly situated, Plaintiffs, v. OFFICE OF THE COMMISSIONER OF BASEBALL, *et al.* Defendants	CA No. 12-3704 (SAS) **ECF Cases** **Filed Under Seal**

DECLARATION OF ARIEL PAKES

I. QUALIFICATIONS AND ASSIGNMENT

1. My name is Ariel Pakes. I am the Thomas Professor of Economics in the Department of Economics at Harvard University, where I teach courses in Industrial Organization and Econometrics. I received a Bachelor of Arts and a Masters of Arts with distinction from Hebrew University in 1971 and 1973, respectively. I received a Masters of Arts and a Ph.D. from Harvard University in 1976 and 1979, respectively. I received the Frisch Medal of the Econometric Society in 1986, and was elected as a fellow of that society in 1988. I was elected fellow of the American Academy of Arts and Sciences in 2002 and was the Distinguished Fellow of the Industrial Organization Society in 2007. My research has focused on developing methods for empirically analyzing both static and dynamic responses of markets to environmental and policy change. I have authored a number of the seminal papers in this area. In addition, I have mentored over fifty students, many of whom are now leading researchers in Industrial Organization and related fields at prestigious institutions.[1] I have also given lectures to U.S. agencies and several foreign agencies responsible for antitrust activities on methodological issues in analyzing antitrust actions. My curriculum vita is available at http://scholar.harvard.edu/pakes/biocv/cv. I am being compensated at my customary billing rate of $1,000 per hour.[2]

2. I was asked by counsel for the joint defendants to examine the Declaration and Supplemental Declaration of Professor Roger G. Noll, as well as Dr. Noll's deposition testimony, to determine whether Dr. Noll used a methodology that reliably applies the accepted principles and methods of economic science, including from the field of empirical industrial organization.

II. SUMMARY OF OPINIONS

3. I have analyzed Dr. Noll's pricing model and have concluded that Dr. Noll's pricing predictions

[1] I advised Ali Yurukoglu in connection with his doctoral dissertation on the welfare effects of bundling television content on cable and satellite television. That paper was later published with Greg Crawford (see n. 2). As a result I am familiar with the components of the structural model used in that paper.

[2] During the previous five years I have submitted economic expert testimony in the following two cases: *Sky Technologies LLC v. SAP AG and SAP America Inc.* (E.D. Tex.) and *InfoSpan Inc et al v. Emirates NBD Bank PJSC* (C.D. Cal.).

are not reliable because the analytic framework he uses to construct his counterfactual or "but-for world" ("BFW") is seriously flawed and fails to comport with basic economic principles and standards for structural modeling. Below is summary of my findings.

i. Dr. Noll's model is flawed because he has failed to appropriately model the strategic interactions between teams and Regional Sports Networks ("RSNs") and between RSNs and Multichannel Video Programming Distributors ("MVPDs") in the BFW. These strategic interactions must be modeled to analyze how prices would change in response to teams distributing their games nationally on a standalone basis and how the RSNs' loss of content exclusivity in the home television territories of the teams.

ii. Although Dr. Noll claims to have relied on a paper by Crawford and Yurukoglu ("C&Y")[3] that estimates the welfare effects of unbundling cable channels, he has elected not to attempt to model or otherwise account for the strategic interaction between content providers (the RSNs) and MVPDs that the paper found fundamental to understanding the prices that content providers would charge if channels were unbundled. Moreover, Dr. Noll's justifications for using a Bertrand pricing model instead of modeling these strategic interactions are inconsistent with his own findings, with the economic evidence in this case, and with basic economic principles relating to the implications of a Bertrand pricing model.

iii. Dr. Noll has failed to adhere to one of the tenets of making counterfactual predictions in structural modeling: he has failed to base his predictions on an appropriately-defined equilibrium point. An equilibrium exists in models in which one actor's actions affect other actors' profits when, given the actions of the other actors, each actor's actions maximize its own profits. That is, equilibrium defines a "rest point" where each actor's profits are maximized given the actions of all other actors, and thus each actor has no incentive to change its action. The analysis presented below demonstrates that, given Dr. Noll's assumptions and

[3] Crawford, Gregory S. and Ali Yurukoglu ("C&Y"), "The Welfare Effects of Bundling in Multichannel Television Markets," *The American Economic Review*, Vol. 102, No. 2, June 2012, pp. 643–85.

pricing model, certain RSNs could earn higher profits if they elected to deviate from Dr. Noll's claimed equilibrium. Moreover, these deviations' effect on the profits of other teams is positive, so the League would have an incentive to approve them. So Dr. Noll has not, in fact, found an equilibrium and his pricing predictions are not those that firms would be likely to charge in the counterfactual world he describes.

iv. Dr. Noll's model is flawed because it does not even attempt to model the anticipated profit-maximizing behavior of the participants. Each League is a joint venture and would consider the teams' profits when it sets a price for a League-wide package. Dr. Noll's model assumes that each League prices its BFW League Package in direct competition with each team's à la carte offerings (i.e., he assumes each League has the same pricing incentives as an entity that was not owned by the teams). Dr. Noll makes this erroneous assumption even though he acknowledges that in his BFW RSNs would have to give up not just their home television territory, but also content exclusivity and as a result their relationship with the teams would change. Dr. Noll does not model what would occur if the relationship and/or fees between the RSNs and the teams change. For the reasons explained below, one likely possibility is that the teams and the RSNs would act to maximize their combined profits. If Dr. Noll's model is modified to take account of such changes, then the predicted price of each BFW League Package increases above the BFW price Dr. Noll predicted and above the League's Out-of-Market Package ("OMP") in the actual world.

v. Dr. Noll's model is flawed because it presumes that RSNs will sell à la carte channels with only one sport and will set the prices of their telecasts of that sport to potential viewers, including those that purchase from an MVPD. These assumptions are not realistic. Most RSNs market bundles of sports programming (including multiple professional teams on one RSN) and their telecasts would not be comprised solely of one professional sport's games (e.g., baseball or hockey). Moreover, the RSNs do not set prices to consumers; the MVPDs do, and the MVPDs have different pricing incentives than do the RSNs. I show below that

these flaws in Dr. Noll's model bias his results in favor of finding that prices to consumers would be lower in his counterfactual world.

III. OVERVIEW OF APPROPRIATE STRUCTURAL MODELING

4. Industrial organization is the field of economics that studies how markets work and how firms compete with one another. There are many different methodological approaches typically used by economists in the study of industrial organization. These approaches range from theoretical to empirical and within empirical industrial organization, different depths of modeling are appropriate for different problems. The type of statistical model that Dr. Noll has employed here is an example of what is known in industrial organization as a structural model. Economists use these models to understand how firms compete and how consumers make decisions, and how the decisions of each of these economic actors are interrelated. When these models of economic and strategic interactions are properly applied, they can help us make predictions about but-for scenarios and lead to a deeper understanding of historical phenomena.[4] However, if these models are inappropriately applied, or when a model relies on assumptions that are inappropriate for a particular industry, then the model is likely to yield predictions about the but-for world that are flawed.[5]

5. An initial important step in estimating a structural econometric model is to describe accurately the relevant economic actors within that industry that are being modeled. For example, an industry may have multiple layers: consumers may buy from retailers, who buy from multiple producers, who buy raw materials from multiple suppliers. When investigating certain economic questions it may be sufficient for the model to focus only on, say, the retailers; but properly answering other economic

[4] Nevo, A. and Michael D. Whinston, "Taking the Dogma out of Econometrics: Structural Modeling and Credible inference," *The Journal of Economic Perspectives* Vol. 24, No. 2, Spring 2010, pp. 69–82.

[5] All models are abstractions from more complex realities. An economic model is flawed if it either makes unrealistic assumptions which, if changed to make them more realistic, would change the results of interest or that there is an internal inconsistency in the logic of the model. An example of this inconsistency that is relevant to this report is use of a model which assumes profit maximizing behavior and then does not satisfy the equilibrium conditions that profit maximizing behavior would imply.

questions may require understanding each of these interactions.

6. The researcher then must describe the rules by which the economic actors make decisions and interact. First, what is each economic actor trying to achieve? Second, what actions can each actor take? Third, how do the actions of one economic actor affect the outcomes of another economic actor? The answers to the questions regarding pricing responses are intricately tied to the estimates of consumer demand the researcher uses. This is because how one firm's price affects another firm's profits depends on whether the initial price change induces consumers to switch their purchase from one firm's product to the other firm's product.

7. The answers to each of the above questions are some of the fundamental factors that will determine the equilibrium of the model. In equilibrium, no actor has an incentive to deviate – to change its action – because none of the other actions it can take leads to a higher profit given the actions of every other actor.[6] Significant changes to an industry like the one being proposed by Dr. Noll are unlikely to result in "instantaneous" movements to a new equilibrium, but changes are likely to keep occurring until an equilibrium is reached. Once equilibrium conditions are satisfied, the model reflects a "rest point" where no agent has an incentive to change its behavior.

8. Finally, to make a prediction about what the BFW would look like, the researcher asks whether changing something in the industry creates incentives for one or more actors to deviate from their observed action. For a but-for prediction to be credible, it must satisfy the equilibrium test: if any economic actor has an incentive to profitably deviate from her predicted course of action, the prediction is methodologically flawed and likely to be inaccurate.[7]

9. As I explain in the rest of this report, Dr. Noll has failed to model all of the relevant economic actors; he has failed to allow the actors he did model to market the products that they are likely to market; and he has failed to allow the economic actors he did model to pursue actions with which they would profitably deviate from his prediction. These failures render his analysis unreliable.

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[6] Mas-Colell, Andreu, Michael D. Whinston, and Jerry R. Green ("MWG"). *Microeconomic Theory*, Vol. 1, (New York: Oxford University Press, 1995), p. 307.
[7] MWG, p. 307

When I modify Dr. Noll's model to rectify some of its failures I find that Dr. Noll's results regarding the claimed harm done to viewers who purchased the OMP are overstated or just wrong.

IV. STRUCTURAL MODELING IN VERTICAL MARKETS, INCLUDING TELEVISION MARKETS

10. Television markets, including the market for sports telecasts, are examples of what economists refer to as vertical markets. The defining feature of vertical markets is that they are multi-layered, in that they feature different groups of firms that sell to one another (in contrast to selling directly to consumers). A common vertical structure is that of a group of firms that produce underlying products and sell them to one or more groups of intermediary firms that bundle such products together and sell them on to other firms or directly to consumers.[8]

11. Importantly, the Bertrand pricing assumption that is typically used in consumer goods markets does not apply – and different equilibrium assumptions must be used when analyzing markets in which (1) there are vertical layers in which firms at one level transact with firms at the next layer and (2) relatively few firms are on each side of the transaction. In some consumer goods markets, especially those sold at retail, a researcher often can validly assume that essentially the only action a consumer can take is to decide whether or not to purchase a particular product at the offered price. In contrast, when a firm is selling to a small number of intermediaries, the intermediary bargains with the seller, and can respond to a price offer with a counteroffer. The actual price outcome will be a result of a bargaining process. That price then becomes a component of the costs of the intermediary when it sets the price of its product to consumers, and part of that cost is passed on to consumers. This makes the strategic interactions of firms upstream in the distribution chain determinative of, and therefore important to understanding, the price the consumer will pay for the products marketed to them.

12. This kind of multi-layered complexity is at play in the industry of sports telecasting. Teams hold

[8] Katz, Michael L., "Vertical Contractual Relations," *Handbook of Industrial Organization*, Vol. 1, (Elsevier Science, 1989) pp. 655–721. An example is the market for health care where health insurers contract with different health providers (hospitals, physician groups, etc.) and then market a bundle of these providers to consumers in the form of health plans.

the in-market telecast rights to their games. They negotiate terms and offer those rights to a RSN that operates in their geographic region. These RSNs then incur costs to produce and telecast the feed of the games, but do not telecast and price directly to consumers themselves. The RSNs also bundle the team's games with other sports programming, including other live professional sports in some cases. The RSNs negotiate with the next layer of the industry's supply chain, namely the MVPDs, to obtain distribution of the RSNs' sports programming. The MVPDs, which include cable, satellite, and telco TV providers, bundle the sports networks along with other TV networks and price those bundles, typically in tiers, directly to consumers.[9]

13. Dr. Noll states that his structural model is based on a model by Gregory Crawford and Ali Yurukoglu. That model investigated the broader marketplace for television networks, rather than the marketplace for sports networks, though much of the industry structure is similar. As the paper explains, the first layer of the broader industry consists of entities that produce content, such as independent producers, film and television studios, sports leagues, etc. These entities offer their content to networks that in turn provide their bundled content to MVPDs. These MVPDs bundle different types of networks together and offer these bundles to consumers as different subscription packages.

14. The question that Drs. Crawford and Yurukoglu were trying to answer was whether consumers would benefit if the MVPDs were forced to unbundle the subscription packages they offer consumers, and instead offer each of the networks that they carry à la carte. Although forced unbundling would directly affect only the interaction between consumers and MVPDs, Drs. Crawford and Yurukoglu concluded that focusing only on that layer of the distribution chain led to erroneous and misleading results. Instead, they found that it is critical to investigate the effect that offering networks à la carte has on the negotiations of supply contracts further upstream, between networks and the MVPDs that bundle and distribute that content.[10]

15. Specifically, Drs. Crawford and Yurukoglu found that, if cable and satellite MVPDs were

[9] See, e.g., FCC (2013) 15th Video Competition Report, ¶¶ 100,113.
[10] C&Y, p. 645–6, 675, 678.

required to offer networks à la carte, but networks and MVPDs did not renegotiate affiliate fees, then consumers would be better off. Drs. Crawford and Yurukoglu then allowed networks and MVPDs not just to bargain for higher or lower affiliate fees, but also to reach or fail to reach agreement.[11] For example, a network that previously supplied a given channel to an MVPD may now fail to reach agreement. One reason would be that given the other agreements made, there is no agreement between these two actors which would increase one or both entities' profits. When Drs. Crawford and Yurukoglu calculated the new equilibrium in these supply contracts, they found that on balance the strength of the market for the networks enabled them to insist that the MVPDs pay significantly higher affiliate fees.[12] Drs. Crawford and Yurukoglu then found that the higher MVPD costs in the form of higher affiliate fees would be passed on to consumers and would eliminate all of the consumer gains that they had previously attributed to à la carte offerings.[13] Thus, incorporating the strategic interactions among market participants into their model reversed the conclusions of their analysis.

16. In the words of Drs. Crawford and Yurukoglu, recognizing the importance of accounting for the bargaining between networks and MVPDs was the key contribution of their model: "The central innovation in our model is accounting for the change in distributors' input costs that result from bargaining between content and distribution in an à la carte world."[14] Indeed, this is the reason this paper has had an impact on the literature.

17. Dr. Noll has failed to incorporate this fundamental innovative element of the Crawford and Yurukoglu analysis. His model is different and much more simplistic. It *assumes* that RSNs (1) continue to supply their telecasts for no royalties to the League for inclusion in the BFW League Package, (2) do not make different choices about how to offer their product in the marketplace, and (3) price directly to MVPD consumers (which they do not have the power to do). As a result Dr. Noll

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[11] C&Y, p. 675.
[12] As the authors note, "how much the input costs rise [for any given channel] depends on the structure of preferences for individual channels and the relative bargaining power of channels and distributors." C&Y, pp. 648–49.
[13] C&Y, pp. 645–646.
[14] C&Y, p. 644.

has not used realistic modeling assumptions and his conclusions are not reliable. When I change Dr. Noll's assumptions to better reflect reality, I find the BFW price of the BFW League Package increases above that of League OMP in the actual world. For example, as I explain below, unbundling would give the RSNs incentives to deviate from the behavior that Dr. Noll assumes they will continue to follow despite better, more profitable options. Once that is taken into account, his prediction unravels.

V. OVERVIEW OF DR. NOLL'S MODELS

18. Dr. Noll states that he uses "the data on subscriber viewing patterns for the existing out-of-market bundles of games… to construct an econometric model of how unbundling these packages would affect prices and subscriptions to both the league bundles and to each of the RSNs that carry these games if each were offered separately."[15] In his report, Dr. Noll claims that the C&Y model described above provides "[t]he core model of the effects of unbundling the packages of out-of-market games."[16] However, at his deposition, Dr. Noll acknowledged that he did not implement their bargaining model,[17] which was the "central innovation" of the C&Y model.[18] In addition, Dr. Noll acknowledged that, contrary to C&Y, his model assumes that the bundle would be available in addition to the à la carte offerings.[19] This is another fundamental departure from C&Y's methodology.

19. Dr. Noll estimates three separate models using viewership data and simulates results for his counterfactual assumptions using these three sets of estimates. The first set of estimates uses viewership data from MLB.TV subscribers (i.e., subscribers to the MLB Internet OMP) and simulates prices and demand for Internet MLB products in the BFW. The second set of estimates uses viewership data from a random sample of DIRECTV Extra Innings subscribers and simulates the demand and prices for DIRECTV MLB products in the BFW ("DIRECTV MLB model"). The third

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[15] Supplemental Declaration of Roger G. Noll, September 19, 2014 ("Noll Supplemental Declaration"), p. 23.
[16] Noll Supplemental Declaration, p. 24.
[17] Deposition of Roger G. Noll, Ph.D., Vol. 1–2, October 16–17, 2014 ("Noll Deposition"), p. 15.
[18] C&Y, p. 644.
[19] Declaration of Roger G. Noll, May 21, 2014 ("Noll Declaration"), p. 101.

set of estimates uses viewership data from NHL GameCenter Live subscribers (i.e., subscribers to the NHL Internet OMP) to simulate demand and prices for Internet NHL products in the BFW.[20]

20. Dr. Noll assumes that during the entire class period RSNs and the League do not consider the impact that Internet distribution has on MVPD demand.[21] As a result of these assumptions, Dr. Noll's DIRECTV MLB model is totally separate from and independent of his Internet MLB model. Likewise, because Dr. Noll does not even model the BFW NHL television package, his analysis necessarily excludes any potential interaction between Internet and MVPD demand for NHL content. (And Dr. Noll fails to model any League package offered by Comcast.)

21. The starting point for any counterfactual modeling exercise is an analysis of consumers' preferences or demand for the products at issue. Dr. Noll first "specifies a model of a consumer's decision whether to buy the bundle and, if the bundle is purchased, the allocation of time to viewing items in the bundle."[22] Dr. Noll then uses the out-of-market viewership data to implement simplified versions of the demand analysis conducted by C&Y.[23] I understand that another expert is analyzing Dr. Noll's demand model and thus do not provide a detailed critique of the analysis here. That is, I will make use of Dr. Noll's estimates of demand even though I find certain aspects of the demand model troubling.

22. As described above, C&Y model the strategic interactions between the networks and MVPDs, which is affected by the ownership structure (channel conglomerates) of the networks.[24] Dr. Noll acknowledges that his model differs from C&Y in that he does not model the bargaining between DIRECTV and RSNs,[25] nor does he account for the ownership structure of RSNs (i.e., the existence

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[20] Dr. Noll did not provide a model for estimating impact or damages as to either of the OMPs (MLB Extra Innings and NHL Center Ice) offered by Comcast, or as to DIRECTV's offering of NHL Center Ice, the NHL television OMP. Noll Supplemental Declaration, p. 5. As I discuss below, Dr. Noll's suggestion that the results he derives from his other models somehow could be applied to those products is baseless.

[21] Dr. Noll acknowledged that, contrary to his model's assumptions, if RSNs were distributing their channels both directly to consumers through the Internet and through MVPDS, then the RSN would jointly set the prices for the two distribution channels. Noll Deposition, pp. 160–161.

[22] Noll Supplemental Declaration, p. 24.

[23] Noll Deposition, pp. 135–136.

[24] See C&Y, p. 674, Table 7.

[25] Noll Deposition, p. 15.

of conglomerates like 21st Century Fox ("21CF") that own multiple RSNs).[26] Many of my comments relate to the vertical structure of the industry but I note that not accounting for the ownership structure of products is both unrealistic and uncommon even in Bertrand pricing models.[27] In particular, in Bertrand models, if one firm sells multiple differentiated products or brands (e.g., different cereal brands), then the firm will have an incentive to price the brands higher than if each brands were owned by a separate firm.

23. Instead of modeling the vertical interactions and considering the ownership structures of RSNs, Dr. Noll makes a number of assumptions about what would happen in the BFW. In particular, Dr. Noll's model assumes that (1) each RSN will still provide its live game feeds[28] to the League at no cost and (2) the League will offer a bundle of all 30 teams to *all* viewers (i.e., there would be no "black-outs" in the BFW League Package). Given these two key assumptions, Dr. Noll simulates the BFW prices by assuming that each RSN will set the standalone price of its live games with just its team's content in direct competition with the BFW League Package[29] and that the League will set the price of the BFW League Package to maximize the League's profits from sales of the product. In particular, Dr. Noll assumes that each RSN sets the price for its team's live games to maximize the RSN's profits from sales of its live games[30] given the prices that the League and all other RSNs are charging. Similarly, the League sets the price of the BFW League Package to maximize the profits it earns on the BFW League Package conditional on the prices that are charged by the RSNs. Dr.

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[26] Noll Deposition, pp. 396–399.
[27] See, e.g., Berry, Steven, James Levinsohn, and Ariel Pakes, "Automobile Prices in Market Equilibrium," *Econometrica*, Vol. 63, No. 4, July,1995, pp. 841–890.
[28] As noted above, although RSNs offer a bundle of programming that usually includes multiple professional sports teams' live games (e.g., one MLB and one NHL team's games), Dr. Noll's model assumes that each team's RSN offers a "channel" that only contains that team's live game feeds.
[29] This assumption rules out the possibility that 21CF sets the price of all of its RSNs to maximize 21CF's total RSN profits. Rather, he assumes each RSN sets its price independently, regardless of the RSNs ownership structure. Noll Deposition, pp. 396–397.
[30] Dr. Noll's model assumes that the RSNs set the price for its live games through the Internet for the Internet model and through DIRECTV for the DIRECTV MLB model. For the DIRECTV MLB model, Dr. Noll claims that he has modeled the prices that consumers would have to pay to purchase standalone RSNs and the BFW League Package from DIRECTV. Noll Deposition, pp. 448–452. However, as described below, Dr. Noll has failed to model the prices DIRECTV would charge end consumers.

Noll's model then finds the purported equilibrium price points in which each RSN and the League's profits are maximized given all other actors prices (i.e., no entity can increase its profits by charging a different price).[31] This type of price competition is often referred to as a Bertrand pricing model.

24. In the following sections, I describe flaws in Dr. Noll's analysis and consider what would happen to Dr. Noll's results if his model were amended to correct some of these flaws. Throughout I use Dr. Noll's parameter estimates. This lets me separate out the impacts of the behavioral assumptions he uses in his counterfactual simulation from the impacts of his demand estimation procedures. Throughout this report, I usually use MLB as my leading example. However, my exhibits include results from Dr. Noll's NHL model where applicable.

25. In Section VI, I examine Dr. Noll's failure to conduct bargaining analysis between RSNs and MVPDs in his DIRECTV MLB model and his use of an inappropriate Bertrand analysis. This section focuses primarily on Dr. Noll's DIRECTV MLB model because it analyzes Dr. Noll's failure to appropriately model the strategic interaction between MVPDs and RSNs that was the main innovation of the C&Y model. I do not present NHL results of analyses that relate to how an MVPD would price the BFW League Package because Dr. Noll did not present an NHL MVPD model.

26. In the remaining sections of the report, I examine whether his equilibrium is viable; that is, do any of the firms have an incentive to deviate from the behavior that Dr. Noll presumes, and if so, how would Dr. Noll's results change once I account for the deviation. In particular, I will show that both the RSNs and the MVPDs have incentives to act differently than Dr. Noll presumes they will act. For example, I show that each RSN could obtain higher profits by deviating from Dr. Noll's claimed equilibrium (which means that he has not, in fact, identified an equilibrium). Moreover, I demonstrate that the combined profits of all RSNs and the League increase if RSNs deviate from Dr. Noll's assumptions. This means that, contrary to Dr. Noll's claims, the League (acting on behalf of its member teams) would have an incentive to allow deviations. In another example, I analyze how the MVPDs would market and price the various telecasts. In each case I end by examining how Dr.

[31] Noll Deposition, pp. 180, 276

Noll's methodological errors affect the conclusions he draws about the price of the BFW League Package.[32]

VI. DR. NOLL'S BERTRAND PRICING ASSUMPTION IS INCONSISTENT WITH THE STRUCTURE OF THE INDUSTRY AND INAPPROPRIATE

A. Bertrand Pricing Models

27. The underlying assumptions implicit when a Bertrand pricing model is used are that (i) at least over the time period for which the prices are predicted, either the seller cannot take, or it is not in the sellers' interest to take, another action that might increase the profits generated by the pricing decision (examples of such actions are exiting the market or changing the way a product is marketed), and (ii) buyers decide which product (or products) to purchase based on set prices (i.e., the buyer's only possible action is to purchase or not purchase at the offered price). It is not appropriate to apply a Bertrand pricing model (i) without first checking whether sellers have other strategic variables that are feasible and in their interest to change that affect the profits earned at given prices or (ii) in cases in which purchasers do not view prices as "take-it-or-leave-it" offers, but rather have the option of engaging in price negotiations.

B. Dr. Noll's Bertrand Pricing Model Ignores the Strategic Interactions Among the Various Market Participants

28. The results of the C&Y model—including, the ultimate conclusion that unbundling in that industry would reduce consumer welfare—depend upon modeling the strategic interaction between networks and MVPDs.[33] In the absence of modeling this strategic interaction in the upstream portion of the vertical supply chain, C&Y note that they would have come to the erroneous conclusion that

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[32] Dr. Noll also asserts that his estimate of "the percentage overcharge for DirecTV Extra Innings could be applied to" the products that he did not model – namely, Comcast's offering of NHL Center Ice and MLB Extra Innings, and DIRECTV's offering of NHL Center Ice. *See* Noll Supp. Decl. at 7-8. He is wrong for two independent reasons. First, as I have concluded, Dr. Noll's estimate of the "overcharge" for DIRECTV Extra Innings is unreliable. Second, Dr. Noll has provided no basis to conclude that his estimate could validly be applied to other, different products. According, Dr. Noll has proffered no reliable methodology for assessing impact or damages for a significant subset of the proposed classes.

[33] C&Y, p. 644.

unbundling of video programming would have unambiguously benefited consumers.[34] Thus, modeling the strategic interaction between MVPDs and content providers reversed C&Y's results. Dr. Noll has elected to ignore the central result of the C&Y paper: that modeling the outcome of the bargaining process between the content providers and MVPDs is crucial to understanding how the MVPDs will set the prices that consumers face. Instead Dr. Noll's model assumes that RSNs would set prices to consumers for a single team's games, both over the Internet and through MVPDs, without any input from the teams, the MVPDs, or the League. Precisely how they would manage to do this is not modeled. In reality, each RSN is a bundle of sports programming geared towards regional sports fans, which includes shoulder programming and other team-related content, and may include the live games of multiple sports teams (not just one team or one sport). RSNs are not equipped to sell directly to consumers in the TV market. Instead, they market to an intermediary (the MVPD) which then resells the RSN programming as part of a bundle of content to consumers. Dr. Noll's failure to model the strategic interactions of the various industry participants results in his model being unreliable.

a) *Dr. Noll's DIRECTV Bertrand Pricing Model Ignores the Interaction between RSNs and MVPDs*

29. Dr. Noll's DIRECTV MLB model assumes that there is Bertrand price competition between the RSNs and the League. At his deposition, Dr. Noll claimed that the prices he simulated in his DIRECTV MLB model are the prices that end consumers would pay for products purchased from DIRECTV.[35] Contrary to this claim, Dr. Noll's model predicts the prices the *RSNs and League* would charge, not those DIRECTV charges consumers. In reality, RSNs and the League charge MVPDs, like DIRECTV, fees to distribute their content. These fees then become a cost to the MVPD, not the price the MVPD charges end consumers.

30. Dr. Noll's pricing model assumes that, given his cost estimates for the RSNs and the League, each RSN and the League will set the price of its respective product to maximize its profits from

[34] C&Y, pp. 645–6.
[35] Noll Deposition, p. 452.

sales of that product (i.e., the League sets the price of the bundle to maximize its profits from the bundle and each RSN sets the price of its offering to maximize its profits). Dr. Noll's model does not assume that DIRECTV then sets the prices it charges to consumers for the RSN and League products to maximize its profits from selling these products to end consumers. Thus, his claim that his DIRECTV price estimates reflect what end consumers would pay only makes sense if he assumes that DIRECTV will simply pass along each RSN's standalone live games and the BFW League Package without adding any markup and without considering how its pricing of standalone RSN products impacts purchases of the BFW League Package and vice versa. There is no basis for any such assumption.

b) *Dr. Noll's Results Are Sensitive to His Unrealistic Assumption that DIRECTV Would Not Price Products to Earn a Mark Up in the BFW*

31. Dr. Noll's implicit assumption that DIRECTV would not mark up the prices it charges consumers is inconsistent with the actual practices of MVPDs. Indeed, were an MVPD not to apply markups to the content it sells to consumers it could not cover its fixed (and sunk) costs and therefore would not be a viable enterprise. Not surprisingly, then, the FCC (2009) estimates that MVPD markups are around 56%, while C&Y estimate that they are somewhat higher than 40%.[36] Assuming Dr. Noll's model did accurately predict the prices RSNs and the League would charge DIRECTV (which it does not), if DIRECTV marked up Dr. Noll's simulated prices by even 40%, then Dr. Noll's model would predict that DIRECTV would charge $35.35 per month[37] for MLB Extra Innings, which is higher than Dr. Noll's reported actual world price of $33.59 (the price Dr. Noll claims DIRECTV charges for Extra Innings),[38] and would be further adjusted upward for the reasons detailed below.

32. It is important to note that, if DIRECTV charged a 40% markup, the final price to end consumers would not be the $35.35 presented in the previous paragraph. The reason is that, if DIRECTV

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[36] FCC 13th Video Competition Report, Table 5, (2009), ¶ 48. This is based on dividing total programming expenditures in 2005 ($15.8 billion) by total revenue from basic and digital video service in 2005 ($35.6 billion), which implies that programming expenditures are about 44% of revenues. See also C&Y, p. 669.

[37] Dr. Noll estimates the DIRECTV BFW League Package price would be $25.25 ($35.35=1.4*$25.25).

[38] Noll Supplemental Declaration, Exhibit 5C, p. 50.

charged a markup, then the League (and the RSNs) would also change its price (even if I assumed there is a Bertrand equilibrium in marketing RSNs and the BFW League Package to the MVPDs). The resulting equilibrium price of the BFW League Package to DIRECTV would take into account DIRECTV's markup (i.e., the League would recognize that as a result of double marginalization it would lose some end consumers and would change its price). Thus, in order to obtain a reliable prediction of the prices to end consumers, one must analyze the strategic interaction between the League and DIRECTV. This strategic interaction is *precisely* the negotiation between the content providers and MVPDs (in our case RSNs, League and DIRECTV) that C&Y found critical to model and which Dr. Noll elected to ignore, thereby rendering his pricing predictions unreliable..

c) ***Dr. Noll's Results Are Sensitive to His Unrealistic Assumption That DIRECTV Would Not Set Prices to End Consumers to Maximize Its Profits***

33. The analysis above indicates that, if Dr. Noll's analysis did correctly estimate the prices the League and RSNs would charge DIRECTV, it would not accurately reflect the prices consumers pay because it fails to allow for a DIRECTV markup, suggesting the actual price to consumers would be higher than Dr. Noll's predicted BFW price. Alternatively, I can investigate the impact that DIRECTV's pricing incentives have on Dr. Noll's results by using Dr. Noll's model. In particular, rather than allowing each RSN and the League to set prices in competition with one another, I can assume that the RSNs and League provide their products to DIRECTV at cost (or at least at Dr. Noll's estimated cost) and ask how the predicted prices would change if DIRECTV set the prices to consumers for all 31 products?

34. If one assumes that DIRECTV were to purchase the feeds at the costs that Dr. Noll has estimated for the Leagues and RSNs and then set the prices of the 31 products (30 RSN channels and BFW League Package) to maximize its profits, then the price of the package would be higher than Dr. Noll's predicted BFW League Package price. See Exhibit 1, which shows the price for each RSN's à la carte product and the BFW League Package that Dr. Noll's model predicts when it is allowed to set the prices of the products it sells consumers. The predicted BFW League Package price is $36.08, which is higher than the price Dr. Noll predicted for BFW League Package and higher than DIRECTV's actual price for Extra Innings.

35. The analysis presented in Exhibit 1 is informative in understanding how Dr. Noll's decision not to model DIRECTV's pricing decision affects his results (he finds lower prices). However, this analysis cannot be accepted as a prediction of the prices that DIRECTV would charge. In particular, this analysis is overly simplistic because (in addition to relying upon Dr. Noll's problematic parameter estimates) it incorrectly assumes the RSNs and League would offer their products to DIRECTV at cost and it does not consider the competition DIRECTV might face from Internet distribution or from competing MVPDs. The unrealistic assumption that RSNs (and the League) would provide their products to DIRECTV at cost results in an unrealistic model understating the BFW League Package price, all else equal. In reality, the RSN and DIRECTV would negotiate a price that would have to be greater than the RSN's cost to insure viability of the RSN, and part of this cost increase would be passed on to consumers.[39]

36. The analysis presented in Exhibit 1 maintains Dr. Noll's modeling convention of ignoring any competition that DIRECTV faces from alternative distributors (either Internet distribution or competing MVPDs) and therefore demonstrates that his own model leads to higher BFW prices when more realistic assumptions are used. If consumers' costs of switching MVPDs are low relative to the markup that DIRECTV charges on these products, then the modeling convention of ignoring competition from other MVPDs would have relatively little impact on DIRECTV's pricing.[40] The effect on the predicted BFW prices of following Dr. Noll's convention and ignoring Internet competition during the putative class period is likely small because, as Dr. Noll stated, there was very little, if any, substitutability between Internet and video programming.[41] Even in December 2012,

[redacted]

[39] Exhibit 1 presents results for Dr. Noll's DIRECTV MLB offerings. As noted above, Dr. Noll did not conduct an MVPD analysis for the NHL and thus I do not present analogous NHL results. However, if Dr. Noll were to use this same model to calculate BFW NHL prices, then these same critiques would hold.

[40] To the extent that consumers would substitute away from DIRECTV in response to price increases on these products; this convention will likely overstate the price of the BFW League Package, all else equal. However, it is worth noting that the average MVPD markups that C&Y and FCC report suggest that, in general, switching costs are non-trivial.

[41] Dr. Noll testified "In the 2011/2012 period, it [the cross-price elasticity between MVPD and Internet] wouldn't be significant. It would be significant now." Noll Deposition, p. 162.

[redacted][2]

d) *Dr. Noll's Claim that His Failure to Model MVPD/RSN Bargaining Understates the BFW Prices Is Flawed*

37. Dr. Noll has argued that, in his current model, he gives all of the bargaining power to the RSNs and that, if he were to allow for negotiation between the RSNs and MVPDs (i.e., if he assumed the MVPDs had some bargaining power), then the prices charged to the MVPDs would decrease.[43] However, as described above, even if the RSN were to lower its prices, a model that allowed MVPDs to maximize profits by charging markups would likely find that, although the price the RSN charged the MVPD decreased, the price to the end consumer increased. Indeed, if consumers do not readily switch between MVPDs, the analysis above suggests that prices could be higher even if the RSN sold the feed to the MVPD at cost. Because Dr. Noll has neither modeled the strategic interactions between RSNs and MVPDs nor considered pricing incentives of the MVPDs, his model has not demonstrated that the price of the BFW League Package would be lower than in the actual world. Moreover, the analysis presented above suggests that changes to Dr. Noll's assumptions that are likely to be closer to reflecting actual real world relationships would increase the price of the BFW League Package relative to the price Dr. Noll predicted.

38. Thus, despite Dr. Noll's claim in his deposition, his Bertrand pricing analysis for his DIRECTV MLB model fails to recognize that RSNs do not sell directly to consumers but instead to DIRECTV, Comcast, and other MVPDs, which then resell a bundle of content to the public. The RSNs do negotiate a price which becomes the cost of the MVPDs. That is, since the RSNs are selling to a small number of MVPDs in each consumer market, the interaction between the RSNs and MVPDs should be modeled as a negotiation, just as in the C&Y model.[44] The appropriate modeling

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[42] DIRECTV Presentation [redacted] December 13, 2012, (DTV-SP0001208) p. 5.
[43] Noll Declaration, p. 102.
[44] Because there are numerous small regional MVPDs, some RSNs might market and sell to hundreds of MVPDs and some may elect not to negotiate with small MVPDs. However, in a but-for world in which RSNs are national networks, many smaller MVPDs might choose to negotiate with RSNs through the National Cable Television Cooperative (NCTC), which handles purchasing of national

framework then involves a bargaining process between the MVPDs and RSNs, and MVPDs then taking the negotiated prices as costs when setting prices to consumers with those costs in hand.

39. The input costs for the MVPDs that result from the bargaining can be much higher than in the alternative in which bargaining is not considered. Indeed C&Y find "...equilibrium input costs are an estimated 103.0 percent higher than when the distributors sell bundles."[45] These input costs will likely be passed on to consumers, thus increasing the price paid for the RSN telecasts to consumers. In the C&Y analysis, "[t]hese higher costs are passed into prices, offsetting the welfare benefits to consumers from being able to purchase individual channels. We estimate that, accounting for higher input costs, consumer welfare changes between -5.4 percent and 0.2 percent..."[46]

40. **Conclusion:** It is inappropriate to use Bertrand pricing to model the prices that consumers would pay for RSNs that are distributed through MVPDs. The pricing to the consumer is done by the MVPDs after contracts are signed with the RSNs. These contracts set the cost of the RSN feed to the MVPDs. The price the MVPD charges will contain, in addition to the bargained cost of the RSN, a markup by the MVPD. Dr. Noll's model does not consider the bargaining process which determines the costs of the RSN to the MVPD, and does not allow for the MVPD to earn a separate markup when marketing to the public. This methodological flaw biases Dr. Noll's results toward finding that the BFW League Packages would have a lower price in the BFW than they would actually have. Indeed my results indicate that when these methodological problems are corrected BFW prices for the BFW League Packages would likely be higher than current prices.

e) *Dr. Noll's Analysis Ignores the Interaction among RSNs and Teams*

41. In addition to ignoring the strategic interaction and bargaining between RSNs and MVPDs, Dr. Noll ignores the bargaining that occurs between RSNs and teams. Just as in the case of MVPDs and RSNs, the outcome of the bargaining between an RSN and a team is a contract that establishes the

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cable networks for about 1,000 small MVPDs. Thus, as in the C&Y model, if RSNs were available nationally, it is reasonable to assume they would negotiate with a few large entities, including the large MVPDs like DIRECTV, Comcast, and Time Warner Cable, and the cooperative NCTC.

[45] C&Y, p. 644.

[46] C&Y, p. 644.

price (or rights fees) that the RSN will pay the team and other conditions of sale, including guarantees for the minimum number of games that will be produced and content exclusivity for the RSN.[47] If any of the significant extra-price conditions change materially, the negotiated price would also change.

42. Dr. Noll acknowledges that the RSN and team contracts would need to be renegotiated, but rather than actually modeling or analyzing the impact of those negotiations, he assumes that the teams would simply accept a lower price, but that all other aspects of the relationship (besides the RSN no longer having content exclusivity and facing in-market competition both from competing teams and from the BFW League Package) will stay the same.[48]

43. In particular, he assumes that despite their loss of in-market content exclusivity, the RSNs would still produce all of the games at the same quality as they do in the current world. These assumptions are inconsistent with the testimony and incentives of the RSNs.[49] Moreover, the assumption that one can simply "ignore" bargaining between market participants because it will just "strengthen results" is counter to the finding of C&Y. In particular, once C&Y modeled the most important negotiation that was relevant for their analysis, they found that their results flipped.[50] Given that the paper Dr. Noll relies upon has found that it is necessary to model bargaining in a vertical supply change to obtain reliable results, it is rather odd, if not presumptive, for Dr. Noll to simply assume his results would be strengthened if he were to model the negotiations.[51]

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[47] See, e.g., COM-00001014.
[48] Noll Deposition, pp. 109–11; 176.
[49] Declaration of Patrick Crumb, April 4, 2014 ¶¶13–16 and November 10, 2014 ¶¶ 4-7; Declaration of Jon Litner, April 7, 2014, ¶ 21; Deposition of John Tortora, October 8, 2013, pp. 215, 246; Deposition of Jon Litner, October 8, 2013, pp. 62–3; 118–9.
[50] C&Y, pp. 645–6.
[51] It is worth noting that Dr. Noll claims that his failure to model the negotiation between RSNs and teams was consistent with the C&Y model because C&Y "didn't address how much CNN pays Anderson Cooper." (Noll Deposition, p. 114.) This analogy falls flat because the counterfactual world that C&Y explored did not force CNN to give up its content exclusivity for shows hosted by Anderson Cooper. In particular, in C&Y's counterfactual analysis they do not assume that CNN is forced to *give the feeds for telecasts involving Anderson Cooper to a direct competitor at no cost*. By comparison, in the current case, Dr. Noll is hypothesizing a BFW in which the RSN's feed of a game is provided to a direct competitor (the League) at no cost.

C. Dr. Noll's Reasons for Not Modeling Bargaining Are Inconsistent Both with His Own Results and with the Empirical Facts

44. Dr. Noll has given two reasons for not modeling the bargaining between RSNs and MVPDs: (i) Internet competition constrains the bargaining power of MVPDs and (ii) RSN channels are too "homogeneous" to have bargaining power.[52] Both of these reasons contradict the empirical facts presented in Dr. Noll's report and his own analysis.

45. First, Dr. Noll asserts that the Internet standalone channels that RSNs will supposedly market directly to consumers are a competitive substitute for standalone television channels in the BFW.[53] Dr. Noll argues that, even if this was not true throughout much of the putative class period, it is likely the case now and will be the case in the future.

46. I assume that the reasoning behind Dr. Noll's argument is that in the case of a competitive substitute, the substitute cannot charge a price (significantly) higher than the original good, because if it did no one would buy the substitute. To check this, one can look at the data, which disprove Dr. Noll's assumption. Dr. Noll provides the prices of the MLB Extra Innings TV bundle and MLB.TV Internet bundle. According to Dr. Noll's Exhibits 2A and 3A to his Supplemental Declaration, the 2012 price for the full season TV bundle of MLB Extra Innings varies between $179.00 for Comcast's Early Bird option to $223.96 for DIRECTV's regular season price. The entire range of television prices that Dr. Noll presents are higher than the most expensive MLB.TV's undiscounted full season price of $124.99 that he reports in Exhibit 1A to his Supplemental Declaration.

47. Moreover, Dr. Noll's own BFW simulations predict that the monthly prices for all MLB teams' channels over the Internet would be lower than the same channels distributed over television and that the price of the DIRECTV MLB bundle would be over 60% more than the Internet MLB bundle ($15.42 for the Internet product versus $25.25 for the DIRECTV product). See Exhibit 2.[54] Despite these substantial differences in prices, viewers still purchase the TV bundle. So the data needed for

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[52] Noll Deposition, p. 116–117.
[53] Noll Declaration, p. 102: "If Internet delivery is a competitive substitute for delivery over an MVPD, an MVPD also would not have significant bargaining power over the channels in the bundle."
[54] I have not conducted a similar analysis for the NHL because Dr. Noll did not estimate an MVPD NHL model.

Dr. Noll's substitutability argument do not support his assumptions—he is clearly wrong. Moreover, it is troubling that Dr. Noll can make this assertion that TV bundle pricing is strongly tied to (indeed determined by) Internet pricing when his own model does not consider the Internet price in its analysis of RSN TV pricing, or the RSN TV prices in his analysis of the Internet.

48. If RSNs offer standalone Internet products, a relationship could exist between Internet pricing and TV pricing if consumers viewed the two services as imperfect substitutes. What this means is that RSNs and teams would consider the Internet price during the bargaining process discussed above. Of course, the RSNs and the League would also consider the price that results from the bargaining process when setting Internet prices.[55]

49. The second argument Dr. Noll makes in support of his failure to implement a bargaining model is that RSN channels are too "homogeneous" when compared to the different channels at issue in C&Y so that bargaining analysis is not appropriate.[56] What Dr. Noll is saying is that OMP viewers are essentially indifferent between watching the different teams (i.e., telecasts of the different teams are competitive substitutes to viewers), so competition between the teams would drive the price down to the Bertrand prices. I understand that Dr. Ordover has analyzed this issue and concluded that viewers perceive that one team's live games are poor substitutes for another team's live games. For example, Yankees fans do not consider Rays' games to be a close substitute. Moreover, even if RSNs are substitutes, this does not indicate that a bargaining model is inappropriate.[57]

50. **Conclusion:** Dr. Noll's two arguments seeking to excuse his failure to perform a bargaining analysis are simply incorrect. They are inconsistent with Dr. Noll's own findings, and they fly in the face of the actual empirical facts.

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[55] In fact, Dr. Noll acknowledges that the two prices would actually be set in tandem. Noll Deposition, pp. 156–157.
[56] Noll Deposition, pp. 460–462.
[57] Rather, if a buyer faced multiple substitutes from different suppliers, this would affect the maximum amount the buyer would be willing to pay for one of the products, but it does not imply that the buyer would not negotiate with sellers.

VII. DR. NOLL'S MODEL HAS FAILED TO IDENTIFY AN APPROPRIATELY DEFINED EQUILIBRIUM BECAUSE IT INCORRECTLY SPECIFIES THE LEAGUE'S INCENTIVES AND IGNORES THE RSNS' INCENTIVES TO DEVIATE

51. Yet other reasons that Dr. Noll's predicted prices do not represent an equilibrium are that his model fails to appropriately model the League's incentives and fails to consider how distributing the RSNs' telecasts to out-of-market ("OOM") areas and the loss of content exclusivity is likely to affect the RSNs' behavior. In this section, I analyze how some of these changes in the League's incentives and the RSN behavior are likely to affect the prices and the content of the RSN feeds. Dr. Noll ignores these elements in his predicted equilibrium.

52. I begin with an analysis of the League's incentives. As Dr. Noll acknowledged in his deposition, his model assumes that the League, which is a joint venture that is owned by the teams, sets the price of the BFW League Package as if it were an independent competitor.[58] Dr. Noll justified his assumption because each team's "1/30th interest in the joint venture …isn't zero, but its close enough to zero that, for modeling purposes, we're ignoring it."[59] Contrary to Dr. Noll's claim, as I describe below, once Dr. Noll's model is updated to account for the ownership structure of the League, the predicted BFW prices increase.

53. I then move to the question of Dr. Noll's assumption about which product offerings would be in the RSNs' interests in Dr. Noll's counterfactual world. Here the answer is rather stark; firms have strong incentives to change their offerings. The changes RSNs would seek entirely refute Dr. Noll's contention that allowing for the BFW League Package to market all teams' game feeds everywhere, including the former home television territories (i.e., eliminating content exclusivity) increases consumer welfare. I also highlight other unsound assumptions implicit in Dr. Noll's analysis that are unlikely to materialize if the territorial restrictions were to be removed.[60]

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[58] Noll Deposition, p. 103.
[59] Noll Deposition, p. 104.
[60] Throughout this section I use Dr. Noll's demand analysis and, to the extent possible, I mimic Dr. Noll's pricing assumptions. I do this despite the fact that I believe his demand analysis is flawed and his pricing assumptions are inappropriate. The reason I maintain these assumptions in this section (despite these concerns) is that using Dr. Noll's assumptions enable us to highlight the effects of the non-price actions the firms can take in response to the change in conditions that Dr. Noll hypothesizes.

54. Using Dr. Noll's results on demand and his assumptions on competition, I examine the likelihood of participants in the industry responding to Dr. Noll's assumed BFW with non-price actions. In Dr. Noll's counterfactual analysis, these non-price actions are implicitly held to what they were in the actual world, despite the fact that if one were to implement Dr. Noll's counterfactual world, there would be strong incentives for RSNs to change some of them, and these changes would have large (and largely negative) effects on consumers.

55. When I examine Dr. Noll's implicit assumptions I find that they lead to results which are inconsistent with Dr. Noll's presumed actions. At Dr. Noll's "equilibrium" individual RSNs have an incentive not to abide by his implicit assumptions: the RSNs can increase their profits by taking an action that violates his assumptions. As a result Dr. Noll's "equilibrium" is not an equilibrium in the appropriate sense of the word.[61]

A. Dr. Noll's Model Incorrectly Specifies the League's BFW Pricing Incentives

56. Dr. Noll's model assumes that the League prices the BFW League Package in competition with the RSNs as if it were an independent competitor of the teams, as opposed to the League being a joint venture that is owned by the teams.[62] In contrast to this assumption in his model, however, Dr. Noll testified at his deposition that the League would consider the impact its actions had on total industry profits.[63] In addition, he testified that the teams would consider the revenue they would receive from the League's sales of the BFW League Package.[64]

57. The current contracts between the RSNs and the teams are negotiated pursuant to the League requirement, that the RSNs must provide their telecasts to the BFW League Package free of charge. Since the ownership of the League *is just* the ownership of the teams, this is not surprising. However, it does imply that the League can and will constrain the negotiations between the teams and the RSN in ways that increase the value of the joint venture, and that the agreed upon rights fees, which are

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[61] See Section V.
[62] Noll Declaration, p. 101, ("The idea is that consumer choices are expanded to include unbundled as well as bundled services and that each of these services is priced independently. Thus, the league packages become a competitor of the unbundled, stand-alone channels.").
[63] Noll Deposition, pp. 57–58, 490.
[64] Noll Deposition, pp. 102–104.

subject to the League requirements, will thus be related to the subsequent profit (and hence price) of the BFW League Package. As a result, the team rights fees and the BFW League Package price to consumers would be set with the profits of the joint venture in mind. This would require us to model an even more complex set of relationships between the teams, the RSNs, and the League. I consider a related model in which I assume that the League (which is the joint venture) considers the effect the BFW League Package price has on the profits earned through the sales of the teams' à la carte offerings, and the teams consider the impact of their standalone prices on the BFW League Package. In this model each team and its RSN agree to choose prices to maximize their joint profits. This generates a framework that I can analyze, and that I believe would be closer to what would actually prevail in the counterfactual world, for several reasons (some of which are given below).

58. Even though Dr. Noll recognizes that his proposed changes would decrease the value of the telecast fees to the RSNs,[65] Dr. Noll has testified that he did not need to model the relationship between the RSN and team because, given that there is money to be made producing and distributing games,[66] a solution to the bargaining problem exists, which means the RSN and team would come to some agreement.[67] Dr. Noll does not model what would occur as part of the negotiation, but one possibility is that the team and RSN vertically integrate[68] (i.e., the team obtains an ownership stake in the RSN or vice versa). Another is that the two entities negotiate and enter into a contract that allows them to maximize joint profits. Either of these possibilities would increase the combined profits of the two firms and thus would be economically reasonable. I now investigate that possibility and show that if Dr. Noll's model is updated to account for the teams' ownership of the League and the possibility that each team and its RSN maximize their joint profits, then Dr. Noll's model predicts a price for the BFW League Package that is higher than what Dr. Noll predicted and higher than the

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[65] Noll Deposition, pp. 432–433, 437–440.
[66] Noll Deposition, pp. 111–113.
[67] Noll Deposition, pp. 87–91.
[68] The assumption that a team and its RSN act to jointly maximize profits is consistent with the vertical integration that is becoming more common between RSNs and teams and Dr. Noll's modeling (or lack of modeling) approach. In particular, about half of the MLB teams currently have ownership stakes in the RSN that carries their games while at least 5 NHL teams have such an ownership stake. Public press; RSN websites.

price of the OMP in the actual world.[69]

59. If each team and its RSN agree to choose prices to maximize their joint profit, the profit functions that Dr. Noll uses for both the RSN and League would change. If each team and its RSN optimized as one unit, that unit would realize that it also earns money from the BFW League Package, as the returns from marketing the BFW League Package are redistributed to the teams. As a result, their pricing incentives would change. In particular, each RSN/team pair would realize that some of the viewers it would lose were it to increase its TV or Internet price would go to the BFW League Package, and it would earn partial returns from the markup on that Package. Since the RSN/team pair would internalize those returns, they would change their pricing decisions from those presumed by Dr. Noll.

60. In addition, the League is owned by the teams. So, if each team and its RSN acted as a unit, the League would realize that its pricing decisions on the BFW Packages affect the owners not only through their impact on the number of viewers who purchase the BFW League Package, but also through the viewers of the various RSNs. Thus, the League's pricing decisions would also change; it would realize that when it increased the price of the BFW League Package some of the viewers who stop purchasing it would switch to one of the teams, and the team owners (which are the League) would benefit from the markups those viewers generated.

61. Exhibits 3 and 4 provide the prices that would result from using Dr. Noll's demand estimates and the new profit functions for Dr. Noll's DIRECTV and the NHL Internet models, respectively.[70] All prices would change, but two points are directly relevant to our analysis.

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[69] It is worth noting that each team and its RSN may already be maximizing their joint profits, which would simply strengthen the argument that Dr. Noll's analysis incorrectly specifies the League and RSN/teams incentives. The discussion above was not meant to rule out this possibility, but only to point out that were the territorial rules changed and were the RSNs to lose content exclusivity, then the incentives for each team and its RSN to maximize joint profits may be even greater in Dr. Noll's BFW.

[70] These results hold for an analysis of MLB.TV models. See Pakes work papers.

- The predicted prices of the BFW League Packages for DIRECTV and NHL are, respectively, 40 and 36% higher than what Dr. Noll presents in his report and higher than the prices of the OMP in the actual world.
- Each teams' profits go up relative to the "equilibrium" found by Dr. Noll, so the League (whose decisions, in part, are made by the owners of the teams) would find it in its interest to price in this way.[71]

B. RSN Product Offerings

62. I now consider whether the teams and/or League have an incentive to change their product offerings in the BFW envisioned by Dr. Noll. In particular, I consider whether any teams have a profitable deviation strategy that would preclude the equilibrium that is predicted by Dr. Noll's model. [redacted]

63. I look at one particular deviation: the Yankees' RSN ("YES Network") withdraws its feed from the BFW League Package.[74] I recognize that (i) this deviation would have to be permitted by the

[71] For each actor, be it an RSN or the League, profits are calculated in the same way Dr. Noll calculates profits in Exhibit 7 of his Supplemental Declaration. That is, profits are defined as the product between the profit margin and number of subscription services demanded. Specifically, the profit margin is equal to price minus the marginal cost, while subscription services demanded are equal to the market share times the size of the market.

[72] [redacted]

[73] [redacted]

[74] In this analysis, I am modeling the Yankees/YES incentive to deviate from Dr. Noll's equilibrium in which he claims the League would require the RSN to provide the feed for free for the BFW

League (or a vote of the teams), and (ii) this is not the only possible deviation. Indeed if this deviation occurred it would change the incentives facing other firms which might result in, say, further withdrawals from the BFW League Package.[75]

64. Using Dr. Noll's model, I look at the incentives to withdraw the Yankees from the BFW League Package, and ask whether it would be in MLB's (meaning the joint venture of all the teams') economic interest to sanction that change. As I discuss below, this deviation would benefit all teams and so there is good reason to believe the League (the clubs) would permit the Yankees to withdraw from the BFW League Package. This unexplored rational deviation implies that Dr. Noll's model has failed to find an appropriately defined equilibrium.

65. Dr. Noll testified that, even if it was in a particular team's interest to deviate, the League would prevent that deviation, which would maintain his equilibrium.[76] The foundation for Dr. Noll's argument is that it would be in the interest of the League to prevent the deviation and thus the League would do so, preserving the equilibrium. However, the analysis below demonstrates that, contrary to Dr. Noll's claims, his model predicts that the entire League would benefit from the deviation. As a result, Dr. Noll has no foundation for claiming that the League would prevent the deviation and consequentially his analysis is not based upon an appropriate defined equilibrium.

66. It is important to note that, even if Dr. Noll's model were a valid model of the industry, the Yankees analysis below does not identify an appropriately defined equilibrium. The reason is that if the Yankees withdrew from the BFW League Package, this might change the incentives for other teams to stay in the BFW League Package. But this does not change the fact that both the Yankees

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League Package. As noted, there are other deviations that may also be profitable (e.g., it may be profitable for the Yankees and other teams to demand compensation from the League).

[75] Dr. Noll admits at his deposition that, absent a League requirement all RSNs to provide their feeds to the BFW League Package for free, it would not be in the interests of particular teams like the Yankees to participate in the Package, or at a minimum, to charge the League a fee for staying in the Package. Thus, when asked what might happen if the League did not require their participation in the Package, Dr. Noll answered: "Of course, it would be more profitable for the Yankees to charge for the Yankee network [rather than] . . . simply to . . . accept a 1/30th share. Obviously, the League bundle is an indirect form of revenue sharing; all right? And—and the most popular teams would . . . for sure set a fee for the carriage of their games in a bundle that exceeded 1/30th of the profits." Noll Deposition, p. 77.

[76] Noll Deposition, pp. 77–8.

and the League would want the Yankees to withdraw. This does, however, raise an important underlying point. Once one allows for the end of territorial restrictions and content exclusivity that Dr. Noll posits, there may well be incentives for many changes in product offerings. Without further details, neither Dr. Noll nor the current author can specify what the equilibrium product offerings and prices would be in the face of the rather dramatic rule change he suggests.

67. Thus, the elimination of territories and content exclusivity proposed by Dr. Noll clearly would induce other changes. A rest point would likely not be reached immediately, as the teams and the League would experiment with different product offerings and prices until they found values for them that were close to a rest point where no actor wanted to deviate given what the other actors were doing. In the interim the changes would require the viewing public, the teams, and the RSNs to constantly monitor prices and offerings and incur the costs of changes– a costly undertaking that is likely to take away from the enjoyment of baseball or hockey and impose harm (likely quite permanent harm) to the sport.

a) ***Modeling the Yankees' Withdrawal from the BFW League Package***

68. There are two choices to make in modeling what would happen were the Yankees to leave the BFW League Package. First, I would have to choose the incentive structure facing the RSN, teams, and Leagues. I could assume either: (i) each team and its RSN act to maximize their joint profits as in Exhibits 3 and 4; or (ii) the RSNs act independently of the teams, as in Dr. Noll's analysis. Exhibit 5 provides the estimates with both incentive structures. The discussion will focus on the latter, the incentives Dr. Noll's analysis uses.

69. Second, I have to ask how the choices available to consumers would change. Recall that Dr. Noll's model allowed the viewer only three choices: (i) to purchase the BFW League Package; (ii) to purchase the telecasts of his or her favorite team; or (iii) not to purchase any OOM telecasts (the outside option). If I were to simply drop the Yankees from the BFW League Package and maintain the assumption that the only choices the viewer could make were the viewer's favorite team, the BFW League Package, and the outside option, it would be impossible for a viewer whose favorite team is not the Yankees to choose an option with Yankees' live games. It is highly unlikely that

there would be rules that made it impossible for most viewers to watch the Yankees telecasts, so I view this as an artificial restriction that results from the limitations of the choice set that underlies Dr. Noll's demand analysis.[77] I use the following choice set (i.e., each consumer can choose one of the following options):

- purchase the BFW League Package without the Yankees;
- purchase the BFW League Package without the Yankees and purchase the Yankees (paying independently for both);
- purchase the favorite team; or
- the outside option.[78]

This choice set is as close as I can get to Dr. Noll's choice set and still insure that every person who is willing to pay enough can purchase the Yankees

70. Exhibit 5 presents my results. The exhibit contains two tables: one for prices (Ex. 5A) and one for profits (Ex. 5B). In each table there are four columns of results:

- Columns A and B reproduce the results from Dr. Noll's analysis; once with Dr. Noll's incentives and once with the Joint Venture incentives.
- Columns C and D present results from a model in which the BFW League Package does not include the Yankees, and the viewer can choose: (i) the BFW League Package without the Yankees; (ii) its favorite team; (iii) the BFW League Package without the Yankees plus the Yankees if the viewer is willing to pay for both; or (iv) the outside alternative. This is the choice set that I view as most directly comparable to that in Dr. Noll's analysis. Column C is with Dr. Noll's incentives, Column D is with the Joint Venture incentives.

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[77] To be fair, a weaker, but related, limitation underlies much of the discrete choice demand analysis used in empirical economics (that consumers purchase only one good). There are various reasons why it is viewed as inconsequential in much of applied work, and when it is consequential multiple choices are often allowed. In the current context, this limitation of the framework is consequential, so I enlarge the choice set to investigate what would happen when the Yankees withdraw from the BFW League Package.

[78] I could have enlarged this choice set further, say by allowing each viewer to buy the Yankees telecast plus that of their favorite team. I have done that and the results push us even further in the direction of higher League prices and profits, but it involves adding 30 new choices, and is not as directly comparable to Dr. Noll's results.

71. I focus initially on the comparison of Dr. Noll's results (column A) with column C which allows for Dr. Noll's choice set when the BFW League Package does not contain the Yankees telecast, but gives the consumer the ability to buy both the BFW League Package and the Yankees telecast.

72. The first thing to notice in the tables is that the total profits generated from Exhibit 5B column C's arrangement is over 20% higher than the total profits that emanate from Dr. Noll's arrangement. The profits generated by the BFW League Package are also more than 20% higher than those that would accrue to the League under Dr. Noll's arrangement, so the League would support this change. Moreover, even if none of the profits from the BFW League Package were redistributed to teams, each RSN but the Mariners' RSN would earn more from Column C than from Dr. Noll's arrangements, and the difference for the Mariners RSN is minimal (under 0.5%). So if there were a vote, the arrangement in Column C would win that vote over Dr. Noll's arrangement. Finally, note that the Yankees' profits from the arrangement in Column C are over three times what their profits would be under Dr. Noll's arrangement, so it is very clear that given Dr. Noll's arrangement the Yankees would have a very strong incentive to seek to exit the BFW League Package. Indeed, were there costs of changing, it is highly unlikely that they would be anywhere near the incremental profits generated for the Yankees, so the Yankees could easily cover those costs and still have a large percentage profit increase.

73. Why does this happen? The price of the Yankees nearly triples and, again as expected, the share of consumers that buy the Yankees and nothing else (the "standalone" Yankee share) plummets, from 0.60 to 0.16%. However among the 2.25% who would still buy the BFW League Package, about 22% would want *both* the BFW League Package and the Yankees. Prior to this they would have simply bought the BFW League Package as it included the Yankees telecast. Now they must also buy the Yankees. As a result the total share of the Yankees package would go up by over 7% despite the fact that its price nearly triples. The combination of a tripling of price and an increase of share would make the Yankees' profits skyrocket when they withdraw from the BFW League Package.[79]

[79] See Pakes work papers.

74. What impacts would these changes have on the conclusions Dr. Noll draws from his model about consumers who had bought the OMP under existing conditions? Using Dr. Noll's number for the existing price of the BFW League Package ($33.59) fans would fare as follows:

- The viewers who bought the OMP in the actual world and just wanted the Yankees telecasts would have to pay 10% more for just those telecasts than they had paid for the OMP and they would not have access to the out-of-market telecasts of the other teams (which they do have access to under the actual world arrangement).
- The viewers who wanted the Yankees plus the BFW League Package would have to pay *over 100% more* for the telecasts they receive.
- The viewers who bought the OMP and were not sufficiently interested in the Yankees telecasts to buy them separately would pay between 5% and 6% less for the BFW League Package but would not have access to the Yankees telecasts (which they do have access to under the current arrangement).
- The viewers who opted out of watching out-of-market baseball entirely would be worse off by virtue of the fact that they could have done so in the BFW but have chosen not to.

75. Before leaving this comparison it is important to realize that, if Dr. Noll's model were further modified to allow for RSN's pricing above cost, which is more realistic, Column C would underestimate the prices of the BFW League Package. That is, prices are likely to be higher than the prices in Column C of Exhibit 5A for both (1) the BFW League Package and (2) the BFW League Package plus the Yankees. This is because the institutional arrangement proposed by Dr. Noll misses what is likely to be a major cost of the BFW League Package, and part of that cost would be passed on to consumers in the form of higher prices. The missing cost is the cost of the RSN telecasts to the BFW League Package.

b) ***Alternative RSN/Team Deviations***

76. It is one thing to have a restriction that forces the RSN to provide its telecasts to the BFW League Package in return for the exclusive right to telecast its games in its home territory. It is quite another to assume the RSN would be willing to give its telecasts to the BFW League Package free of

charge when that Package is competing with the RSN in its home market. In this situation it is unrealistic to assume that the RSN would provide the telecasts to the BFW League Package for free.

77. There are at least two alternative ways to take account of the RSN costs to the BFW League Package. One is to model the costs that the RSN would impose on the BFW League Package in Dr. Noll's counterfactual directly. I have not pursued this path because I understand it has been pursued by Dr. Ordover.

78. A second alternative is to again assume that each team acts with its RSN to maximize their combined profit, including the profits they obtain as a share of the BFW League Package, much as in the analysis of Exhibits 3 and 4. This could at least give the RSN's a *quid pro quo* for accepting that they would compete with other teams and the BFW League Package in their home market. Now, however, the Yankees, seeing as they are not in the BFW League Package, do not get a share of the returns from that Package. This is the case analyzed in column D of Exhibit 5. The price of the BFW League Package and the price of the Yankees remain higher than under Dr. Noll's assumption that the RSNs would supply telecasts for free to a BFW League Package.

79. Finally, it is worth noting that the incentive to withhold feeds from the BFW League Package – that is the incentive to deviate from Dr. Noll's claimed equilibrium– is not unique to the Yankees or baseball. Rather, according to Dr. Noll's model, each baseball or hockey team's profits increase relative to Dr. Noll's original analysis if the team unilaterally withholds its feed from the League. In particular, Exhibit 6 shows that, according to Dr. Noll's model, each MLB team's prices and profits increase relative to Dr. Noll's claimed equilibrium if the team unilaterally withdraws from the BFW League Package. For example, the first line of Exhibit 6 indicates that the Angels' predicted price increases from $12.65 to $43.00, while their profits increase from [redacted] Moreover, the entire predicted industry profits also increase from [redacted] in the base joint venture case to [redacted] when the Angels withdraw from the BFW League Package. Exhibit 7 provides similar results for the NHL. The fact that each team has an incentive to deviate from Dr. Noll's claimed equilibrium means that Dr. Noll's results are not based on an appropriately defined equilibrium, implying that Dr. Noll's model violates one of the basic tenets of counterfactual simulations.

VIII. CONCLUSION

81. For all of the reasons I have outlined above, the predictions of Dr. Noll's pricing model are not reliable because the analytic framework he uses to construct his counterfactual or "but-for world" is seriously flawed.

IX. SIGNATURE

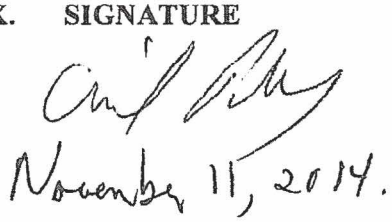

Exhibit 1
Dr. Noll's Model Predicts Higher But-For Prices When DIRECTV Is Allowed to Set Prices to Consumers for MLB Content

Actor	Noll Exhibit 5C [A]	DIRECTV MLB Prices [B]
1 Angels	$11.76	$16.71
2 Astros	$11.13	$14.98
3 Athletics	$11.71	$17.18
4 Blue Jays	$12.71	$18.86
5 Braves	$12.29	$18.44
6 Brewers	$12.28	$17.76
7 Cardinals	$11.89	$17.45
8 Cubs	$12.20	$18.25
9 Diamondbacks	$13.01	$19.67
10 Dodgers	$12.15	$18.37
11 Giants	$12.42	$18.94
12 Indians	$11.82	$16.73
13 Mariners	$14.00	$24.64
14 Marlins	$14.00	$20.98
15 Mets	$12.65	$18.28
16 Nationals	$11.82	$17.47
17 Orioles	$12.83	$18.85
18 Padres	$13.33	$21.02
19 Phillies	$13.35	$21.91
20 Pirates	$12.28	$17.65
21 Rangers	$12.06	$17.94
22 Rays	$11.57	$16.26
23 Red Sox	$13.26	$19.55
24 Reds	$12.46	$18.32
25 Rockies	$11.87	$17.70
26 Royals	$12.49	$18.15
27 Tigers	$11.66	$16.81
28 Twins	$12.67	$19.60
29 White Sox	$11.85	$19.45
30 Yankees	$12.40	$18.30
31 BFW League Package	**$25.25**	**$36.08**

Source: Noll Supplemental Declaration

Note: DIRECTV's MLB Extra Innings package price according to Dr. Noll is $33.59 per month.

[A] Dr. Noll's counterfactual DIRECTV prices per month.

[B] DIRECTV sets the price to consumers for each of the 31 products.

Exhibit 2
Comparison of Dr. Noll's But-For Internet and DIRECTV Prices for MLB Content

	Actor	Noll Exhibit 5A Internet Price per month [A]	Noll Exhibit 5B DIRECTV Price per month [B]	Percent Difference ([B] – [A]) / [A]
1	Angels	$8.15	$11.76	44.3%
2	Astros	$8.17	$11.13	36.2%
3	Athletics	$8.31	$11.71	40.9%
4	Blue Jays	$8.67	$12.71	46.6%
5	Braves	$8.39	$12.29	46.5%
6	Brewers	$8.37	$12.28	46.7%
7	Cardinals	$8.34	$11.89	42.6%
8	Cubs	$8.17	$12.20	49.3%
9	Diamondbacks	$8.59	$13.01	51.5%
10	Dodgers	$8.41	$12.15	44.5%
11	Giants	$8.64	$12.42	43.8%
12	Indians	$8.38	$11.82	41.1%
13	Mariners	$8.43	$14.00	66.1%
14	Marlins	$9.13	$14.00	53.3%
15	Mets	$8.54	$12.65	48.1%
16	Nationals	$7.93	$11.82	49.1%
17	Orioles	$8.53	$12.83	50.4%
18	Padres	$8.36	$13.33	59.4%
19	Phillies	$8.76	$13.35	52.4%
20	Pirates	$8.76	$12.28	40.2%
21	Rangers	$8.20	$12.06	47.1%
22	Rays	$8.46	$11.57	36.8%
23	Red Sox	$8.88	$13.26	49.3%
24	Reds	$8.64	$12.46	44.2%
25	Rockies	$8.00	$11.87	48.4%
26	Royals	$8.75	$12.49	42.7%
27	Tigers	$8.74	$11.66	33.4%
28	Twins	$8.71	$12.67	45.5%
29	White Sox	$7.79	$11.85	52.1%
30	Yankees	$8.57	$12.40	44.7%
31	BFW League Package	$15.42	$25.25	63.7%
	Average	**$8.68**	**$12.81**	**47.1%**

Source: Noll Exhibits 5A and 5C

Exhibit 3
Dr. Noll's Model Predicts Higher DIRECTV MLB But-For Prices When the League Prices as a Joint Venture

	Actor	Noll Exhibit 5C [A]	Dr. Noll's But-For Prices Accounting for Joint Venture Incentives [B]
1	Angels	$11.76	$12.65
2	Astros	$11.13	$11.88
3	Athletics	$11.71	$12.67
4	Blue Jays	$12.71	$13.78
5	Braves	$12.29	$13.40
6	Brewers	$12.28	$13.25
7	Cardinals	$11.89	$12.87
8	Cubs	$12.20	$13.22
9	Diamondbacks	$13.01	$14.11
10	Dodgers	$12.15	$13.21
11	Giants	$12.42	$13.46
12	Indians	$11.82	$12.69
13	Mariners	$14.00	$15.42
14	Marlins	$14.00	$15.16
15	Mets	$12.65	$13.62
16	Nationals	$11.82	$12.83
17	Orioles	$12.83	$13.91
18	Padres	$13.33	$14.55
19	Phillies	$13.35	$14.87
20	Pirates	$12.28	$13.23
21	Rangers	$12.06	$13.09
22	Rays	$11.57	$12.41
23	Red Sox	$13.26	$14.33
24	Reds	$12.46	$13.52
25	Rockies	$11.87	$12.91
26	Royals	$12.49	$13.43
27	Tigers	$11.66	$12.59
28	Twins	$12.67	$13.75
29	White Sox	$11.85	$12.95
30	Yankees	$12.40	$13.41
31	**BFW League Package**	**$25.25**	**$35.30**
32	**BFW League Package price relative to DIRECTV's MLB Extra Innings package price**	**-$8.34**	**$1.71**

Source: Noll Supplemental Declaration

Note:

[A] This column replicates Noll's Exhibit 5C. The teams and the League act as separate entities. Each of the teams cares solely about the sales of its standalone channel. The League cares solely about the sales of the BFW League Package.

[B] Same as Dr. Noll's original analysis in [A], except the League and teams have joint venture incentives. Here, the teams are interested not only in the sales of their own channels, but also in the sales of the BFW League Package, since the revenue from the BFW League Package is assumed to be equally split between the 30 teams. The League, in turn, is concerned with the aggregate industry profits, including the sales of the BFW League Package.

Exhibit 4
Dr. Noll's Model Predicts Higher NHL Internet But-For Prices When the League Prices as a Joint Venture

	Actor	Noll Exhibit 5B [A]	Dr. Noll's But-For Prices Accounting for Joint Venture Incentives [B]
1	Ducks	$7.41	$7.98
2	Bruins	$7.88	$8.47
3	Sabres	$8.13	$8.71
4	Hurricanes	$9.16	$9.92
5	Flames	$7.82	$8.35
6	Black Hawks	$8.39	$8.98
7	Blue Jackets	$8.14	$8.77
8	Avalanche	$7.74	$8.37
9	Stars	$8.57	$9.25
10	Red Wings	$8.17	$8.82
11	Oilers	$9.11	$9.86
12	Panthers	$7.72	$8.24
13	Kings	$8.57	$9.35
14	Wild	$8.81	$9.46
15	Canadiens	$8.63	$9.18
16	Devils	$8.16	$8.77
17	Predators	$8.74	$9.38
18	Islanders	$9.47	$10.26
19	Rangers	$8.65	$9.27
20	Senators	$8.52	$9.16
21	Flyers	$8.48	$9.15
22	Coyotes	$7.52	$8.02
23	Penguins	$9.01	$9.70
24	Sharks	$7.94	$8.50
25	Blues	$8.49	$9.21
26	Lightning	$8.22	$8.83
27	Maple Leafs	$7.61	$8.10
28	Canucks	$8.64	$9.36
29	Jets	$8.23	$9.10
30	Capitals	$8.62	$9.23
31	**BFW League Package**	**$20.08**	**$27.34**
32	**BFW League package price relative to NHL GameCenter LIVE package price**	**-$6.20**	**$1.06**

Source: Noll Supplemental Declaration

Note:

[A] This column replicates Noll's Exhibit 5B. The teams and the League act as separate entities. Each of the teams cares solely about the sales of its standalone channel. The League cares solely about the sales of the BFW League Package.

[B] Same as Dr. Noll's original analysis in [A], except the League and teams have joint venture incentives. Here, the teams are interested not only in the sales of their own channels, but also in the sales of the BFW League Package, since the revenue from the Package is assumed to be equally split between the 30 teams. The League, in turn, is concerned with the aggregate industry profits, including the sales of the BFW League Package.

Exhibit 5A
Dr. Noll's DIRECTV Model is Not in Equilibrium
Because the Yankees Have an Incentive to Deviate
Prices

	Dr. Noll's BFW League Package		BFW League Package Without the Yankees	
Actor	Dr. Noll's Incentives [A]	Joint Venture Incentives [B]	Dr. Noll's Incentives [C]	Joint Venture Incentives [D]
1 Angels	$11.76	$12.65	$11.65	$11.69
2 Astros	$11.13	$11.88	$11.10	$11.14
3 Athletics	$11.71	$12.67	$11.63	$11.68
4 Blue Jays	$12.71	$13.78	$12.52	$12.58
5 Braves	$12.29	$13.40	$12.26	$12.31
6 Brewers	$12.28	$13.25	$12.13	$12.18
7 Cardinals	$11.89	$12.87	$11.79	$11.84
8 Cubs	$12.20	$13.22	$11.94	$11.99
9 Diamondbacks	$13.01	$14.11	$12.76	$12.82
10 Dodgers	$12.15	$13.21	$12.01	$12.06
11 Giants	$12.42	$13.46	$12.18	$12.23
12 Indians	$11.82	$12.69	$11.65	$11.70
13 Mariners	$14.00	$15.42	$13.37	$13.44
14 Marlins	$14.00	$15.16	$13.72	$13.79
15 Mets	$12.65	$13.62	$12.42	$12.48
16 Nationals	$11.82	$12.83	$11.70	$11.75
17 Orioles	$12.83	$13.91	$12.65	$12.71
18 Padres	$13.33	$14.55	$13.03	$13.09
19 Phillies	$13.35	$14.87	$13.18	$13.25
20 Pirates	$12.28	$13.23	$12.11	$12.16
21 Rangers	$12.06	$13.09	$11.93	$11.98
22 Rays	$11.57	$12.41	$11.43	$11.47
23 Red Sox	$13.26	$14.33	$13.03	$13.09
24 Reds	$12.46	$13.52	$12.42	$12.47
25 Rockies	$11.87	$12.91	$11.81	$11.86
26 Royals	$12.49	$13.43	$12.28	$12.33
27 Tigers	$11.66	$12.59	$11.58	$11.63
28 Twins	$12.67	$13.75	$12.39	$12.45
29 White Sox	$11.85	$12.95	$11.63	$11.68
30 Yankees	$12.40	$13.41	$37.05	$36.68
31 BFW League Package	**$25.25**	**$35.30**	**$31.63**	**$30.92**
32 Teams Avg.	**$12.40**	**$13.44**	**$13.04**	**$13.08**
33 Price of Creating BFW 30-Team Package	**$25.25**	**$35.30**	**$68.69**	**$67.59**
Choice Set				
34 Favorite	✓	✓	✓	✓
35 BFW 30-Team Package	✓	✓	✓	✓
36 BFW 29-Team Package			✓	✓

Source: Noll Supplemental Declaration
Note: All values are expressed in dollars.

[A] This column replicates Dr. Noll's original analysis. Consumers have two alternatives, in addition to the outside option. Individuals may purchase the right to watch the games of their favorite teams, or may purchase the BFW League Package of 30 teams. The teams and the League act as separate entities. Each of the teams cares solely about the sales of its standalone channel. The League cares solely about the sales of the BFW League Package.

[B] Same as Dr. Noll's original analysis in [A], except for the League and teams have joint venture incentives. Here, the teams are interested not only in the sales of their own channels, but also in the sales of the BFW League Package, since the revenue from the BFW League Package is assumed to be equally split between the 30 teams. The League, in turn, is concerned with the aggregate industry profits, including the sales of the BFW League Package.

[C] Same as [A], except that the Yankees are not part of the BFW League Package anymore. Consumers now have four options. Because the BFW League Package does not offer the Yankees channel, consumers have the option to combine the reduced package with the Yankees channel, and thus construct a package that contains all teams. Thus, the four options are: favorite team, reduced BFW League Package, full BFW League Package, and outside option.

[D] Same as [B], except that the Yankees are not part of the BFW Package anymore. Consumers now have four options. Because the BFW League Package does not offer the Yankees channel, consumers have the option to combine the reduced package with the Yankees channel, and thus construct a package that contains all teams. Thus, the four options are: favorite team, reduced BFW League Package, full BFW League Package, and outside option. The profit functions of the joint venture are additionally adjusted to reflect the assumption that the League's profit is not shared with the Yankees. The Yankees do not receive profits from the BFW League Package, but the League maximizes the industry profits including the Yankees.

Exhibit 5B
Dr. Noll's DIRECTV Model is Not in Equilibrium
Because the Yankees Have an Incentive to Deviate
Profit

		Dr. Noll's BFW League Package		BFW League Package Without the Yankees	
	Actor	Dr. Noll's Incentives [A]	Joint Venture Incentives [B]	Dr. Noll's Incentives [C]	Joint Venture Incentives [D]
1	Angels	$298,925	$311,389	$300,386	$299,437
2	Astros	$171,890	$178,782	$173,136	$172,616
3	Athletics	$240,932	$251,083	$242,347	$241,569
4	Blue Jays	$304,601	$318,398	$305,962	$304,911
5	Braves	$572,803	$599,824	$576,899	$574,871
6	Brewers	$161,274	$168,236	$162,028	$161,497
7	Cardinals	$376,828	$393,426	$378,997	$377,737
8	Cubs	$261,090	$272,270	$261,446	$260,599
9	Diamondbacks	$160,745	$167,956	$161,158	$160,604
10	Dodgers	$500,492	$522,658	$502,627	$500,950
11	Giants	$261,192	$272,507	$261,673	$260,809
12	Indians	$229,235	$238,771	$229,870	$229,147
13	Mariners	$193,048	$202,039	$192,255	$191,570
14	Marlins	$195,889	$205,318	$196,608	$195,878
15	Mets	$324,961	$339,321	$325,868	$324,774
16	Nationals	$297,103	$309,660	$298,638	$297,681
17	Orioles	$392,229	$410,391	$394,054	$392,679
18	Padres	$217,170	$227,374	$217,629	$216,846
19	Phillies	$439,928	$462,388	$441,666	$439,990
20	Pirates	$252,145	$263,099	$253,192	$252,358
21	Rangers	$267,633	$279,150	$268,888	$268,011
22	Rays	$359,710	$374,388	$360,929	$359,818
23	Red Sox	$470,685	$492,644	$472,451	$470,766
24	Reds	$308,088	$322,536	$310,489	$309,393
25	Rockies	$209,869	$218,950	$211,246	$210,554
26	Royals	$211,379	$220,527	$211,929	$211,229
27	Tigers	$328,233	$342,250	$330,189	$329,126
28	Twins	$261,122	$272,669	$261,399	$260,516
29	White Sox	$311,484	$324,665	$311,894	$310,889
30	Yankees	$937,859	$979,556	$3,035,722	$3,065,674
31	**BFW League Package**	**$6,272,181**	**$6,150,993**	**$7,553,421**	**$7,567,525**
32	**Teams Total**	**$9,518,542**	**$9,942,224**	**$11,651,574**	**$11,652,502**
	Choice Set				
33	**Favorite**	✓	✓	✓	✓
34	**BFW 30-Team Package**	✓	✓	✓	✓
35	**BFW 29-Team Package**			✓	✓

Source: Noll Supplemental Declaration
Note: All values are expressed in dollars.

[A] This column replicates Dr. Noll's original analysis. Consumers have two alternatives, in addition to the outside option. Individuals may purchase the right to watch the games of their favorite teams, or may purchase the BFW League Package of 30 teams. The teams and the League act as separate entities. Each of the teams cares solely about the sales of its standalone channel. The League cares solely about the sales of the BFW League Package.

[B] Same as Dr. Noll's original analysis in [A], except for the League and teams have joint venture incentives. Here, the teams are interested not only in the sales of their own channels, but also in the sales of the BFW League Package, since the revenue from the BFW League Package is assumed to be equally split between the 30 teams. The League, in turn, is concerned with the aggregate industry profits, including the sales of the BFW League Package.

[C] Same as [A], except that the Yankees are not part of the BFW League Package anymore. Consumers now have four options. Because the BFW League Package does not offer the Yankees channel, consumers have the option to combine the reduced package with the Yankees channel, and thus construct a package that contains all teams. Thus, the four options are: favorite team, reduced BFW League Package, full BFW League Package, and outside option.

[D] Same as [B], except that the Yankees are not part of the BFW Package anymore. Consumers now have four options. Because the BFW League Package does not offer the Yankees channel, consumers have the option to combine the reduced package with the Yankees channel, and thus construct a package that contains all teams. Thus, the four options are: favorite team, reduced BFW League Package, full BFW League Package, and outside option. The profit functions of the joint venture are additionally adjusted to reflect the assumption that the League's profit is not shared with the Yankees. The Yankees do not receive profits from the BFW League Package, but the League maximizes the industry profits including the Yankees.

Exhibit 6
Dr. Noll's DIRECTV Model is not in Equilibrium Because Each MLB Team Has a Unilateral Incentive to Deviate

		Individual Team Prices [A]		Individual Team Profits [B]		Industry Profits
	Excluded Team	Pre-Deviation	Post-Deviation	Pre-Deviation	Post-Deviation	[C]
1	Angels	$12.65	$43.00	$311,389	$2,545,969	$19,139,355
2	Astros	$11.88	$44.28	$178,782	$2,442,227	$19,122,468
3	Athletics	$12.67	$43.64	$251,083	$2,503,347	$19,137,521
4	Blue Jays	$13.78	$42.88	$318,398	$2,557,750	$19,146,338
5	Braves	$13.40	$40.30	$599,824	$2,779,771	$19,161,354
6	Brewers	$13.25	$44.62	$168,236	$2,443,589	$19,128,608
7	Cardinals	$12.87	$42.07	$393,426	$2,611,469	$19,148,961
8	Cubs	$13.22	$44.14	$272,270	$2,526,814	$19,134,030
9	Diamondbacks	$14.11	$44.84	$167,956	$2,448,275	$19,131,209
10	Dodgers	$13.21	$40.82	$522,658	$2,717,429	$19,168,223
11	Giants	$13.46	$43.91	$272,507	$2,527,675	$19,139,564
12	Indians	$12.69	$44.39	$238,771	$2,496,777	$19,126,817
13	Mariners	$15.42	$45.19	$202,039	$2,485,346	$19,134,995
14	Marlins	$15.16	$44.20	$205,318	$2,477,732	$19,140,220
15	Mets	$13.62	$43.06	$339,321	$2,574,080	$19,142,086
16	Nationals	$12.83	$42.98	$309,660	$2,547,455	$19,143,263
17	Orioles	$13.91	$41.85	$410,391	$2,627,169	$19,154,815
18	Padres	$14.55	$44.44	$227,374	$2,500,544	$19,138,710
19	Phillies	$14.87	$42.13	$462,388	$2,698,874	$19,164,775
20	Pirates	$13.23	$43.71	$263,099	$2,513,978	$19,134,607
21	Rangers	$13.09	$43.38	$279,150	$2,526,410	$19,140,724
22	Rays	$12.41	$42.80	$374,388	$2,594,075	$19,136,610
23	Red Sox	$14.33	$41.21	$492,644	$2,695,480	$19,168,272
24	Reds	$13.52	$42.35	$322,536	$2,557,392	$19,147,821
25	Rockies	$12.91	$44.00	$218,950	$2,482,445	$19,135,596
26	Royals	$13.43	$44.38	$220,527	$2,485,806	$19,132,122
27	Tigers	$12.59	$42.56	$342,250	$2,567,403	$19,141,591
28	Twins	$13.75	$44.21	$272,669	$2,531,140	$19,138,137
29	White Sox	$12.95	$43.75	$324,665	$2,572,699	$19,145,563
30	Yankees	$13.41	$36.68	$979,556	$3,065,674	$19,220,028

Note: All values are presented in dollars. Industry profits under the Joint Venture Incentive model are $16.1 million. See my work papers.

[A] The prices of individual teams' feeds before and after exclusion from the BFW League Package. In both scenarios, the League and teams have joint venture incentives. The pre-deviation scenario replicates Dr. Noll's DIRECTV analysis, in which consumers have three purchase options: their favorite team, a BFW League Package of all 30 teams, or the outside option. In the post-deviation scenario, each row represents a situation in which the given team is not included in the package and consumers are instead presented with four purchase options: their favorite team, the reduced package of 29 teams, a combination of the reduced package plus the excluded team, or the outside option.

[B] Same as [A], except the profit functions of the joint venture are additionally adjusted to reflect the assumption that the profit from the BFW League Package is not shared with the excluded team. The excluded team does not receive profits from the BFW League Package, but the League maximizes the industry's profits including that team.

[C] As in [A] and [B], each row represents a situation in which the given team is not included in the BFW League Package, and consumers are instead presented with four purchase options: their favorite team, the reduced package of 29 teams, a combination of the reduced package plus the excluded team, or the outside option. Industry profits represent the aggregate of all individual teams plus the BFW League Package after the given team's exclusion from the BFW League Package. The profit functions are additionally adjusted to reflect the assumption that the League's profit is not shared with the excluded team. The excluded team does not receive profits from the League, but the League maximizes the industry's profits, including that team.

Exhibit 7
Dr. Noll's Internet Model is not in Equilibrium Because Each NHL Team Has a Unilateral Incentive to Deviate

	Excluded Team	Individual Team Prices [A] Pre-Deviation	Individual Team Prices [A] Post-Deviation	Individual Team Profits [B] Pre-Deviation	Individual Team Profits [B] Post-Deviation	Industry Profits [C]
1	Ducks	$7.98	$34.36	$33,689	$296,170	$2,298,242
2	Bruins	$8.47	$32.99	$49,733	$307,778	$2,300,220
3	Sabres	$8.71	$33.08	$49,716	$307,824	$2,300,145
4	Hurricanes	$9.92	$34.78	$34,496	$298,950	$2,299,542
5	Flames	$8.35	$34.24	$36,615	$298,229	$2,298,119
6	Black Hawks	$8.98	$34.30	$48,326	$308,518	$2,298,787
7	Blue Jackets	$8.77	$35.08	$29,222	$294,373	$2,298,524
8	Avalanche	$8.37	$35.13	$33,531	$297,899	$2,298,454
9	Stars	$9.25	$35.58	$24,948	$291,783	$2,298,142
10	Red Wings	$8.82	$32.70	$60,739	$316,191	$2,299,900
11	Oilers	$9.86	$34.88	$36,972	$301,281	$2,299,741
12	Panthers	$8.24	$35.51	$33,778	$297,603	$2,296,916
13	Kings	$9.35	$34.81	$47,987	$310,213	$2,299,192
14	Wild	$9.46	$35.03	$26,290	$291,951	$2,298,332
15	Canadiens	$9.18	$35.00	$31,031	$295,124	$2,297,566
16	Devils	$8.77	$33.70	$46,178	$305,878	$2,299,153
17	Predators	$9.38	$34.97	$33,499	$297,587	$2,298,447
18	Islanders	$10.26	$34.66	$38,128	$302,244	$2,299,888
19	Rangers	$9.27	$34.37	$43,211	$304,691	$2,298,512
20	Senators	$9.16	$34.82	$36,383	$299,876	$2,298,858
21	Flyers	$9.15	$31.98	$70,216	$323,915	$2,302,142
22	Coyotes	$8.02	$35.28	$34,207	$297,577	$2,297,033
23	Penguins	$9.70	$32.66	$62,830	$319,598	$2,302,462
24	Sharks	$8.50	$33.15	$48,145	$305,884	$2,298,785
25	Blues	$9.21	$33.46	$48,013	$307,870	$2,300,251
26	Lightning	$8.83	$35.32	$28,284	$293,934	$2,298,346
27	Maple Leafs	$8.10	$34.48	$36,515	$297,812	$2,297,178
28	Canucks	$9.36	$33.68	$59,215	$318,086	$2,301,520
29	Jets	$9.10	$34.11	$41,935	$304,534	$2,301,229
30	Capitals	$9.23	$34.26	$36,102	$298,794	$2,299,235

Note: All values are presented in dollars. Industry profits under the Joint Venture Incentive model are $1.9 million. See my work papers.

[A] The prices of individual teams' feeds before and after exclusion from the BFW League Package. In both scenarios, the League and teams have joint venture incentives. The pre-deviation scenario replicates Dr. Noll's NHL analysis, in which consumers have three purchase options: their favorite team, a BFW League Package of all 30 teams, or the outside option. In the post-deviation scenario, each row represents a situatior in which the given team is not included in the BFW League Package and consumers are instead presented with four purchase options: their favorite team, the reduced package of 29 teams, a combination of the reduced package plus the excluded team, or the outside option.

[B] Same as [A], except the profit functions of the joint venture are additionally adjusted to reflect the assumption that the profit from the BFW League Package is not shared with the excluded team. The excluded team does not receive profits from the BFW League Package, but the League maximizes the Industry's profits including that team.

[C] As in [A] and [B], each row represents a situation in which the given team is not included in the BFW League Package, and consumers are instead presented with four purchase options: their favorite team, the reduced package of 29 teams, a combination of the reduced package plus the excluded team, or the outside option. Industry profits represent the aggregate of all individual teams plus the League's bundle after the given team's exclusion from the BFW League Package. The profit functions are additionally adjusted to reflect the assumption that the League's profit is not shared with the excluded team. The excluded team does not receive profits from the League, but the League maximizes the Industry's profits, including that team.

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Document Title, Bates Numbers	Document Date
Legal Pleadings	
Opinion and Order	August 20, 2014
Depositions	
Deposition of John Tortora	October 8, 2013
Deposition of Jon Litner	October 8, 2013
Deposition of Roger G. Noll, Ph.D., Vol. 1	October 16, 2014
Deposition of Roger G. Noll, Ph.D., Vol. 2	October 17, 2014
Declarations	
Declaration of Patrick Crumb in Support of DIRECTV Defendants' Motion for Summary Judgment	April 4, 2014
Declaration of Jon D. Litner in Support of Comcast's Motion for Summary Judgment	April 7, 2014
Declaration of Patrick Crumb in Support of Defendants' Opposition to Class Certification	November 10, 2014
Declaration of Reagan E. Feeney	November 11, 2014
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