UNITED STATES DISTRICT COURT

DISTRICT OF MASSACHUSETTS

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<td>NATCHITOCHES PARISH HOSPITAL SERVICE DISTRICT and JM SMITH CORPORATION d/b/a SMITH DRUG COMPANY on behalf of themselves and all others similarly situated,

Plaintiffs,
vs.

TYCO INTERNATIONAL, LTD., TYCO INTERNATIONAL (US) INC, TYCO HEALTHCARE GROUP, LP,; THE KENDALL HEALTHCARE PRODUCTS COMPANY,

Defendants</td>
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<td>Civil Action No. 05-12024 PBS

<u>DECLARATION OF PROFESSOR EINER ELHAUGE</u></td>
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INTRODUCTION

1. I file this declaration to correct the economic and factual errors made by Tyco and its experts in Tyco's motion to exclude my testimony and the supporting declarations of Professors Ordover and McFadden.[1]

2. In Part I, I show that Tyco mischaracterizes this case as being about mere "discounting," when in fact it involves affirmative commitments by buyers and GPOs to limit or eliminate any dealings with Tyco's rivals, and penalties on those who would not commit. I also show that, contrary to what Tyco says, the bundled contracts did significantly contribute to the foreclosure shares I calculated.

3. In Part II, I discuss Tyco's claims about my statistical analysis of anticompetitive impact. I show that Tyco's arguments on selection bias all hinge on the nonsensical assumption that Tyco gave lower prices to get exclusionary contracts that had no effect on buyer purchases, an assumption that conflicts both with the fundamental premise of antitrust economics that market participants behave as rational profit-maximizers and with all the documentary evidence in this case. I further show that Tyco's selection bias argument is disproven by the longitudinal Novation study, the simultaneous GPO comparisons, and the regressions of buyers whose contract status changed over time. I also show that none of Tyco's critiques of those studies are valid, in part because Tyco's new expert, Professor McFadden, failed to actually run the Novation regression that his declaration said should have been run and that was proper to run given the available data. Finally, I establish that the alternative "access" approach that Tyco says would cure the selection bias problem is inferior and would in any event actually establish even *larger* anticompetitive effects.

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[1] I incorporate by reference my Dec. 18, 2007 expert report (hereinafter "Elhauge Report" or "report"), my Feb. 15, 2008 reply report (hereinafter "Elhauge Reply Report" or "reply report"), and my corrections produced prior to my March 11, 2008 deposition (hereinafter "Elhauge Corrections").

4. Part III responds to Tyco's arguments on economies of scale, showing that my analysis of economies of scale was correct and in accord with the opinions of defense experts and the other evidence in this case. I also show that Professor McFadden's declaration deceptively fails to reveal that his economies-of-scale regression both (1) did find statistical significance at the 92.4% confidence level, and (2) arbitrarily excluded Tyco's ten biggest-selling container models and would have found statistical significance at the 99.9% confidence level without this unrevealed exclusion.

5. I conclude, in Part IV, by addressing challenges to my qualifications and economic theories. I begin by showing that I am, as several courts have found, qualified in the field of antitrust economics, which involves the application of economics to antitrust issues, that this expertise qualifies me to apply econometrics to antitrust issues, and that in any event none of my conclusions depends on my econometric analysis. I also show that there is no factual basis to Tyco's claim that my testimony will be legal and not economic in nature, and that Tyco has falsely categorized prior cases, which in fact all qualified me to testify. Finally, I establish that my antitrust economic theories comport with peer-reviewed economics scholarship.

I. TYCO'S EXCLUSIONARY CONDUCT

A. This Case Does Not Involve Ordinary Discounting, But Rather Affirmative Exclusionary Commitments Induced by Price Penalties

6. Tyco repeatedly asserts that this case does not involve "exclusive dealing contracts," which it says "may be assumed to exclude competitors," but rather just involves ordinary

"discounting," which Tyco says cannot be assumed to have any anticompetitive impact.[2] Tyco's economic claim that exclusive dealing contracts have a different competitive impact than loyalty discounts ignores all of the economic analysis and literature cited in my original report, which showed that loyalty discounts have similar economic effects to pure exclusive dealing contracts.[3] Tyco's claim also mischaracterizes the actual facts of this case, for the following reasons.

7. First, the challenged Tyco sole-source GPO contracts were 100% exclusive and absolutely precluded GPOs from providing any brokerage service to Tyco's rivals. Tyco's own expert, Professor Ordover, admits that "under a sole source contract with [Tyco] covering disposable sharps containers, the GPO would agree to broker transactions for disposable sharps containers *only* between [Tyco] and its members hospitals."[4]

8. Second, the challenged buyer contracts did not merely make pricing conditional on purchase levels, but generally included affirmative buyer commitments to restrict purchases from Tyco's rivals to a low share.[5] Buyers thus contractually obligated themselves to restrict rival purchases for the term of their contracts, which generally were lengthy and lacked termination clauses.[6] Thus, given that Tyco admits exclusionary impact may be assumed from an exclusive dealing commitment, Tyco necessarily admits that the buyer commitments here can be assumed to have at least 80-95% of the exclusionary impact of a 100% exclusive buyer commitment. Moreover, standardization incentives in this market meant that, for most buyers, 80-95% sharps container

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[2] Tyco Motion to Exclude Elhauge 3, 17-18, 20 (claiming that this case just involves Tyco's "discounting practices," allegations that Tyco was merely "offering discounts where buyers who buy more pay less," and that the challenged practices constitute "vigorous price competition" and are a "procompetitive price cut").

[3] Elhauge Report ¶¶26, 32.

[4] Ordover Motion to Exclude Declaration ¶1, n.2 (emphasis added).

[5] Elhauge Report ¶146; Elhauge Reply Report ¶¶66-68.

[6] Elhauge Report ¶147; Elhauge Reply Report ¶74.

purchase requirements were effectively 100% purchase requirements, for reasons I discussed in my original report.[7] Further, many of Tyco's tailored volume-based contracts required buyers to purchase 100% or more of their prior purchases from Tyco to avoid a pricing penalty, which in effect imposed an exclusivity requirement on those buyers if they had purchased 100% of their needs from Tyco in the past.[8]

9. Third, although Tyco did use differential pricing in order to induce GPOs and buyers to accept these exclusionary commitments, it did not use "discounts" but rather price *penalties*. If the prices charged to uncommitted buyers equaled the but-for price that would have been charged without the market foreclosure, then the lower prices charged to committed buyers would reflect a true short-term discount. But if the prices charged to uncommitted buyers exceeded the but-for price, then the difference between committed and uncommitted prices reflected a price *penalty*, not a true discount. Tyco's argument simply assumes (incorrectly) that its prices reflected a true discount from but-for prices rather than a penalty over but-for prices. In fact, even Tyco's committed prices are above but-for prices, and the price differences thus constituted price penalties, not discounts.[9]

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[7] Elhauge Report ¶164.

[8] Elhauge Report ¶¶18-19, 128, 136, 150, 153-57.

[9] Elhauge Report ¶¶20, 27, 33-40, 200-06; Elhauge Reply Report ¶115; Singer Report ¶¶64-65, 70, 72, Tables 14-17. Nor is it true, as Tyco claims, that I "agree[] that GPOs help their buyers to pool their buying power to obtain lower prices." Tyco Motion to Exclude Singer 9, n.5 (citing Elhauge deposition at pages 82 and 161-63). I said nothing of the sort in the portions Tyco cites of my deposition. In the first passage Tyco cites, I stated only that GPOs "are capable of negotiating competitive prices" and that in a world without the exclusionary contracts they would have incentives to do so, which plainly says nothing about whether GPOs allow buyers to create "buying power." Elhauge Deposition 82-83. In the second portion of the deposition Tyco cites, I stated (1) that small buyers in the but-for world "often could combine with other buyers to achieve volume-based purchases and achieve volume-based efficiencies" and that they might be able to do this through GPOs, and (2) that GPOs could continue to provide buyers with "economies of scale in contracting" and "effective marketing," which would allow GPOs to negotiate lower prices in the but-for world. Elhauge Deposition 161-63. Again, none of this says anything about whether GPOs allow buyers to create "buying power." In any event, even if GPOs do exert buyer power, they would also do so in the but-for world, and thus their exertion of buyer power would not alter the fact that above but-for prices were imposed on GPOs and buyers who did not make exclusionary commitments.

10. Nor is Tyco right that the allegations here are that Tyco was merely "offering discounts where buyers who buy more pay less," which it characterizes as a "common business practice."[10] This case involves no challenge to ordinary volume-based discounts.[11] Instead, the challenge is to: (1) GPO sole-source contracts that eliminate GPO brokerage for Tyco rivals; (2) exclusionary buyer commitments that limit Tyco rivals to a small share of buyer purchases, irrespective of volume; and (3) the fact that Tyco imposed price penalties on GPOs and buyers that refused to agree to such exclusionary commitments. The claim that these contracts promote volume-based efficiencies is fallacious and contradicted by the evidence in this case.[12] Nor is it a common practice to have *share*-based commitments that foreclose a substantial share of relevant markets and that are induced by price penalties.[13]

11. Professor Ordover claims that the challenged buyer contracts cannot be exclusionary because they were terminable with no penalty "other than the loss of discounts."[14] In fact, the buyer contracts were not terminable. Instead, as noted above, the buyer contracts generally required exclusionary commitments, were lengthy, and lacked termination clauses. Even if the buyer contracts had been terminable, any termination would clearly have triggered at least the same pricing penalties that were used to induce buyers to agree. I calculated the median pricing penalty for buyers at GPOs through which Tyco offered both uncommitted and share-based commitment tiers by calculating the difference between what uncommitted and committed buyers had to pay.[15]

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[10] Tyco Motion to Exclude Elhauge 17.
[11] Elhauge Report ¶¶208-10.
[12] Elhauge Report ¶¶208-10; Elhauge Reply Report ¶¶140-43.
[13] Elhauge Reply Report ¶¶148-49.
[14] Ordover Motion to Exclude Declaration ¶8.
[15] For each GPO, I first determined the average price for each product in its uncommitted tier. Because the challenge is to share-based commitments and not to volume-based commitments, I defined committed buyers as those in the highest share-based commitment tier that lacked significant volume requirements. I then determined how much each committed buyer would have paid for the units of the products that it purchased if it had instead bought them at

[redacted]

12. [redacted]

uncommitted-tier prices. I then subtracted from that amount the customer's actual purchases to get the total dollar penalty, and then divided that total dollar penalty by its actual dollar purchases to calculate the percentage penalty. The median pricing penalty was then found on a monthly basis at each GPO through which Tyco offered both committed and uncommitted tiers.

[16] Elhauge Report ¶125 (discussing administrative fee differences at GPOs).

[17] Elhauge Reply Report ¶20 (analyzing pricing at dual versus multi source GPOs). This paragraph reported the price differences between dual-source GPOs and buyers purchasing outside of a GPO and between multi-source GPOs and buyers purchasing outside of a GPO from 2001-2006 for dual-source and in 2005 and 2006 for multi-source. The difference between dual-source and multi-source GPO pricing is thus the difference between these two figures. Although this paragraph did not report the pricing between sole-source GPOs and buyers purchasing outside of a GPO, it was calculated using the same methodology and the same computer program that calculated the other figures. The price difference was 19.9% between 2001 and 2006, conservatively weighting by sales made to sole-source buyers. From this, I can calculate the difference between sole-source pricing and dual or multi source pricing.

[redacted] [18] These GPOs would have suffered even larger penalties if they switched to being multi-source rather than dual-source.

13. However, Tyco and Professor Ordover are wrong when they assert that my theory depends on the proposition that hospitals were "forced" or "coerced" into accepting the exclusionary commitments.[19] As I have clearly explained, the relevant theory supported by the economic literature does not at all depend on whether buyers were "forced" or "coerced" to purchase against their will from Tyco.[20] Instead, the relevant economic theory is that the choices offered to buyers by Tyco were structured to exploit buyer externalities that meant the economic self-interest of each individual buyer would induce them to willingly agree to make an exclusionary commitment in order to avoid pricing penalties that Tyco imposed on buyers that refused to agree.[21] Similarly, Professor Ordover is wrong when he states that the theory in this case is that an individual "hospital would be better off if it could refuse [Tyco's] contract offer."[22] The antitrust economic theory underlying this case is that each hospital is *individually* better off accepting the exclusionary contract, because the costs of its agreement to that exclusionary contract are mainly externalized on the rest of the market, even though all hospitals as a group would be better off if every hospital rejected these contracts.

14. Relatedly, Tyco claims that its contracts are "entirely voluntary" and thus cannot be exclusionary.[23] However, entry into these contracts was not truly "voluntary," because buyers and

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[18] I report figures only for full years in the class period when the GPOs had an exclusionary sole-source GPO contract. For example, in 2005 when Novation switched from being sole-source to multi-source, I do not report the size of the penalty, nor do I report figures from 2001 when only the last quarter is in the class period.

[19] Tyco Motion to Exclude Elhauge 1; Ordover Motion to Exclude Declaration ¶31 & n.28.

[20] *See, e.g.*, Elhauge Report ¶¶26-30, Elhauge Initial Declaration on Class Certification ¶60.

[21] *See, e.g.*, Elhauge Report ¶¶26-30.

[22] Ordover Motion to Exclude Declaration ¶31, n.28.

[23] Tyco Motion to Exclude Elhauge 17.

GPOs had to agree to the exclusionary contracts to avoid the pricing penalties imposed on those who did not agree to exclusionary contracts. Even if entry into the contracts were deemed voluntary, antitrust economics shows that, because exclusionary contracts externalize most of the anticompetitive harm onto other market participants, buyers and GPOs will each have individual incentives to enter into the exclusionary contracts, even though the aggregate result of all of them doing so is substantial foreclosure that anticompetitively raises market prices.[24] The voluntariness of the contracts is thus not at all economically relevant to assessing whether they had an anticompetitive impact. Likewise, the economic literature shows that terminability is economically irrelevant for the same reasons that voluntariness is irrelevant, because the same externality problem that gives buyers or GPOs individual incentives to enter into exclusionary contracts would keep them from terminating those contracts even if they were free to do so.[25]

B. The Bundled Contracts Did Significantly Contribute to Foreclosure

15. Tyco argues that Professor Ordover showed Tyco's bundled discounts covered "an insignificant portion" of the market, and that I do not "claim to analyze what effect" Tyco's bundling had on competition.[26] But both assertions are baseless. First, [redacted].[27] Second, my reports did analyze Tyco's bundled contracts, and concluded they were exclusionary and contributed to the marketwide foreclosure that I

[24] Elhauge Report ¶¶26, 141; Elhauge Reply Report ¶15.
[25] Elhauge Report ¶¶26, 147; Elhauge Reply Report ¶61.
[26] Tyco Motion to Exclude Elhauge 6, n.3.
[27] Ordover Report ¶110 & Figure 4.

calculated.[28] Tyco's bundled buyer contracts were thus *included* in all my reports' foreclosure figures for the sharps container market. I do not separate the foreclosure share from bundling from the foreclosure produced by share-based contracts, because the anticompetitive harm here arises from the marketwide foreclosure, not the particular means used to achieve that foreclosure. Thus, the economically relevant foreclosure is the marketwide foreclosure created by the combination of bundled contracts with share-based contracts.[29] My analysis of that marketwide effect thus correctly does include the anticompetitive impact of the bundled contracts.

II. ANTICOMPETITIVE IMPACT

16. Tyco's critique of my statistical analysis of anticompetitive impact is flawed in several ways. First, Tyco's selection bias argument assumes that Tyco was economically irrational, contrary to all economic theory and the actual evidence in this case. Second, as Tyco acknowledges, its selection bias argument cannot explain the longitudinal study showing that rival shares at Novation increased far faster after Novation stopped being sole-source. Tyco's alternative claim is that in fact rival shares did not increase faster after the Novation sole-source ended, but that alternative claim turns out to be factually wrong, an artifact of its expert's failure to actually run the regression he said should have been run and that was proper to run given the available data. Third, Tyco's selection bias argument also cannot explain the simultaneous comparisons showing that buyers purchased far less from Tyco rivals when their GPO had a sole-source Tyco contract, because buyers generally do not select GPOs based on GPO contracting policies regarding a single type of product. Fourth, Tyco's selection bias argument also cannot explain the regressions showing that

[28] *See* Elhauge Report ¶¶1, 18-19, 24-26, 129-34, 137 & Table 5, 148, 150-55; Elhauge Reply Report ¶¶75-78.
[29] Elhauge Report ¶26.

buyers changed their purchasing behavior when their contract status changed. Tyco's claim that I reclassified buyers as unburdened by their exclusionary contracts when they bought from rivals is factually wrong, and ignores the fact that none of my conclusions would be materially altered even if I never reclassified buyers. Tyco's other critiques of these regressions are also misguided and irrelevant because they would not alter the results or my conclusions. Fifth, the alternative that Tyco advocates to avoid selection bias problems – differentiating buyers by "access" to exclusionary contracts – is inferior because: (a) actual contractual status is what produces the relevant effects, (b) all buyers had "access" because Tyco's general policy was to offer exclusionary contracts, and (c) using the "access" approach and Tyco's definition of "access" almost always shows an even *larger* anticompetitive impact.

17. To put it another way, to show that my statistical results were caused by selection bias, Tyco and its experts would have to show *all* of four things: (1) Tyco acted irrationally; (2) my longitudinal GPO study was flawed, (3) my simultaneous GPO comparison was flawed, *and* (4) my regressions were all flawed. If they fail to show *any one* of those things, then my statistical analysis shows an anticompetitive impact that cannot be explained by selection bias. In fact they are wrong in their critiques on all four points. And even if Tyco *were* right about all four of these things, the alternative that Tyco advocates to cure the selection bias problem would almost always show even *larger* anticompetitive effects.

18. After addressing these five flaws, I then go on to address Tyco's argument, relying on Professor McFadden, that my impact analysis should have controlled for relative prices. This argument ignores the reality that the relevant anticompetitive theory is that Tyco induced agreement to its exclusionary contracts by imposing pricing penalties on buyers and GPOs that would not

agree. Thus, one cannot separate out price differences from the existence of the exclusionary contracts because they are inextricably linked. This argument amounts to saying one should judge whether loyalty discounts have anticompetitive effects independently of whether loyalty discounts exist. This is nonsensical as a matter of antitrust economics.

19. I go on to point out that comparisons that precisely parallel the ones I have used here were used in other cases by myself and other experts, including by Professor Ordover himself, and that courts have approved such usage.

20. Finally, I point out that my analysis is conservative in various ways that would tend to offset any selection bias.

A. Tyco's Selection Bias Argument Assumes Its Own Irrationality, Contrary to Standard Economics and the Evidence Here

21. Tyco's and defense expert Professor Ordover's primary criticism is that the possibility of selection bias means that my comparisons are consistent with a lack of any anticompetitive impact.[30] A fundamental problem with their argument is that it assumes Tyco irrationally gave tens of millions of dollars in discounts to buyers to get them to accept contracts that had no effect on buyer purchases. Such an assumption is contrary to the standard assumption in economics that actors are all rational profit-maximizers. This unrealistic, uneconomical assumption that Tyco's contracts are completely irrational and do not have any effect on buyer purchasing behavior also underlies Tyco's stylized example that it claims illustrates selection bias.[31]

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[30] Tyco Motion to Exclude Elhauge 2, 9-15; Ordover Motion to Exclude Declaration ¶¶13-18.

[31] Tyco Motion to Exclude Elhauge 11-12 (explicitly stating that the assumption in its stylized example is that "*the contract has no impact at all on their purchasing*") (emphasis in original).

22. Tyco and its experts never offer any response to this fundamental problem with their analysis, even though I pointed it out in my initial report.[32] They never deny that their claim that these agreements had no impact conflicts with the central premise of economics that firms make rational choices. They simply ignore this fundamental problem. Their entire line of argument about selection bias thus conflicts with standard economics.

23. Their assumption that Tyco was irrationally spending money to secure ineffectual contracts is also inconsistent with the actual evidence in this case. That evidence shows that Tyco had a general policy of entering into exclusionary contracts with GPOs and buyers and that Tyco considered obtaining these contracts to be vitally important to its continued success.[33]

B. Tyco's Selection Bias Argument Cannot Explain the Longitudinal Novation Study and Its Alternative Critique of This Analysis Is Invalid

24. Tyco's selection bias argument simply has no application to my longitudinal study showing that buyers purchased far more rival products when the sole-source contract at Novation ended. Tyco argues that a finding that persons who take speed reading classes read faster than those who do not would not justify a conclusion that the classes increase reading speed because more avid readers may be more likely to take the classes.[34] But suppose students who were in a school that had no speed reading class read slowly, and those very same students started to read much faster after that school made speed reading classes part of their standard curriculum. Selection bias could not explain such a result because the choice was made by the school, not the students. Surely, if one

[32] Elhauge Report ¶199.
[33] Elhauge Report ¶¶119-37.
[34] *See* Tyco Motion to Exclude Elhauge 9-10.

coupled evidence of such a longitudinal change when school policy changed with evidence that students in speed reading classes read faster than students who were not in them, one would not deny that speed reading classes increase reading speed. Likewise here, selection bias cannot explain the longitudinal Novation study because the decision to switch from sole-source to multi-source was made by Novation, not the hospitals.

25. I already pointed this out in my initial report,[35] and neither Tyco nor its experts deny that my longitudinal Novation study was not infected by selection bias. Indeed, Tyco affirmatively acknowledges there is no selection bias problem when one reclassifies a buyer "if its GPO . . . becomes multi-source."[36] Instead, Tyco offers the alternative critique that my longitudinal Novation study failed to show that rival growth rates actually increased after the Novation sole-source contract ended. Thus, unless this alternative critique is valid, their selection bias argument necessarily fails. In fact, Tyco's alternative critique in invalid for the following reasons, which thus also invalidate Tyco's selection bias argument.

26. Tyco bases its critique on Professor McFadden's conclusion that there is no statistically significant difference between the rival growth rate before and after the Novation contract switched to being multi-source.[37] However, examining Professor McFadden's backup data reveals that he reached his conclusion only because he never actually ran a regression with the beginning and end dates indicated by his declaration. If he had, he would have found a statistically significant change that confirms my conclusions.

27. Call the period before the August 2005 end of Novation's sole-source contract the

[35] Elhauge Report ¶196.
[36] Tyco Motion to Exclude Elhauge at 13.
[37] Tyco Motion to Exclude Elhauge 15; McFadden Declaration ¶21.

pre-change period and the period starting in August 2005 the post-change period. In his declaration, Professor McFadden states that he ran a regression with the pre-change period defined to start in October 2003.[38] [redacted].[39] Professor McFadden's declaration also states that he ran his regression with the post-change end date indicated in his Figure 3, which was October 2006.[40] [redacted] However, when one examines Professor McFadden's backup materials, one discovers that he never actually ran any regression that began in October 2003 and ended in October 2006. Instead, he ran four regressions with the following combinations of start and end dates: (1) October 2001-October 2006, (2) October 2003-May 2007, (3) October 2000-May 2007, and (4) March 2004-October 2006.[41] [redacted]

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[38] McFadden Declaration ¶21.

[39] [redacted]

[40] *See* McFadden Declaration ¶21 & Figure 3.

[41] See the McFadden backup file named "Figure3.xls."

[redacted] The last McFadden regression makes a different error, which is to arbitrarily begin the analysis in March 2004 and to simply toss out all the relevant observations on rival performance at Novation before that date. This truncation of the data not only ignores relevant information, but also biases the regression against finding statistical significance, because it is harder to find significance with a smaller number of observations.

28. If one re-runs Professor McFadden's regressions using his own figures and methodology, but instead uses the proper start and end dates of October 2003-2006, one finds that the average difference in monthly rival share growth before and after the Novation sole-source contract ended was 0.83%, and that this is statistically significant at a 90% confidence level. If one instead uses a moving average across three months to reduce the impact of variations in share from month-to-month, then Professor McFadden's figures and regressions indicate the average difference was 0.52% and that this result is statistically significant at a 99% confidence level.

29. [redacted]

30. [redacted]

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[42] Elhauge Report ¶189.

[redacted] [43] Neither Tyco nor its experts discuss any of this documentary evidence, which supports my view.

31. One can also disprove Tyco's claim that rival performance did not improve at Novation after the contract switched from sole-source to multi source by comparing the change in rival share at Novation to the rival share in a control group where rivals were not as excluded as they were at Novation. Using control groups is useful because it helps to control for external factors that might have influenced rivals' shares in the market as a whole, such as, for example, more attractive products being offered by rivals. If the rival share is lower at Novation than in the control group when the Novation contract is sole-source, but becomes more similar after the Novation contract becomes multi-source, that is further evidence that Tyco's sole-source contracts had an exclusionary effect on rivals. I perform this analysis in Exhibit 17B. In this exhibit, I compare rivals' share at Novation with their share (1) at Premier, a dual-source rather than a sole-source GPO; and (2) in the non-Novation segment of the market. Although rivals' share increased over time in all three groups, rivals clearly performed much worse at Novation relative to the control groups when the Novation contract was sole-source, and since the Novation contract has become multi-source, the gap between the rival share at Novation and the control groups has narrowed considerably. True, the rival share at Novation had not yet caught up with the control groups as of October 2006, but that was only about one year after the Novation contract went multi-source, and it is unsurprising that it would take rivals some time to convert enough sales at Novation for their share to equal their share outside Novation.

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[43] Elhauge Report ¶186.

32. Tyco, Professor McFadden, and Professor Ordover argue that any exclusionary effect is rebutted by the fact that rival shares began to increase at Novation in October-November 2004, before the sole-source contract ended.[44] But even if rival shares at Novation were able to grow to some extent during the Novation sole-source contract, the above analysis proves that the *rate* of rival share growth increased after the Novation sole-source contract ended, thus indicating that rival shares would have grown faster without the sole-source contract, which is the relevant anticompetitive impact. Finally, their claim is belied by the analysis using control groups performed above, which shows that, although the rival share as a general matter increased slightly starting in mid-2004, the rival share at Novation nevertheless did not come anywhere close to the rival share in the control groups until after the Novation sole-source contract ended.

33. Professor Ordover also claims that various other factors, such as BD offering better products and Daniels and Stericycle getting larger market footholds, explains the increase in sales at Novation, and not the change in the contract status.[45] But this claim is belied by the comparisons performed above. Factors such as the quality of BD's products and the geographic scope of Daniels and Stericycle would be common to the market as a whole, not specific to Novation. Thus, if these factors caused the growth at Novation, one would expect to see similar growth in the control groups. But in fact, Exhibit 17B plainly shows that rival share increased much faster at Novation than in the control groups during the period after the Novation contract changed. Specifically, rival share at Novation increased from 15% to over 30% at Novation between August 2005 and October 2006,

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[44] Tyco Motion to Exclude Elhauge 15; Ordover Motion to Exclude Declaration ¶36; McFadden Declaration ¶18.

[45] Ordover Motion to Exclude Declaration ¶¶32-34, 36. Professor Ordover also argues that any longitudinal study is misguided because Tyco's sole-source contract at Novation was obtained through a process of ex ante contracting. Ordover Motion to Exclude Declaration ¶35. Because he develops this ex ante contracting argument more fully for the simultaneous GPO comparisons, I rebut it when I discuss those comparisons.

while it increased only from about 40% to about 45% at Premier and did not change much at all in the non-Novation segment over that same period.[46]

C. Tyco's Selection Bias Argument Cannot Explain the Comparisons Showing that Buyer Behavior Differs at Sole-Source GPOs

34. Tyco's selection bias argument cannot explain the simultaneous comparison showing that buyers purchase much less from Tyco rivals when their GPO has a Tyco sole-source contract. The reason, as I pointed out in my initial report, is that buyers generally do not select GPOs based on GPO contracting policies regarding a single type of product; nor do buyers generally select or switch between different GPOs for different products.[47] Returning to the speed reading example, if one state assigned all of its students to speed reading classes and another state did not, surely one would not conclude that differences in student reading speed in the two states was due to student self-selection, because students generally do not select the state they live in based on whether schools offer speed reading classes. Likewise here, buyers generally do not select which GPO to

[46] Rivals' share in the non-Novation segment of the market is highly variable, making it difficult to compare shares over time. But in October 2006, the rival share in this segment was about 35%, while in July 2005 (before the contract switched) it was about 38%, indicating that there was little change in the share over the period.

[47] *See, e.g.*, Elhauge Report ¶198; Crowder Deposition 48 (stating that "MedAssets is our primary GPO" and that although it belongs to Novation as well, it uses Novation only for "products that MedAssets doesn't have the contracts with"); Robert Neil, *The Choice is Yours*, 13(2) MATERIALS MANAGEMENT IN HEALTH CARE 19 (Feb. 2004), at 20-21 (quoting materials managers discussing the high cost of switching GPOs and quoting GPO officials as stating that buyers need to have "some very compelling reasons" to switch); Martha A. Dula, *Testing the GPO Water*s, 58 Healthcare Financial Management 70-76 (June 2004) (discussing cost and other factors to consider in switching GPOs and noting that "in some cases" it costs "at least $17,000 per program to change GPOs"). Indeed, a buyer that tried to select a different GPO for each product would lose many of the contracting efficiencies that GPO brokerage services provide, because such a buyer would have to expend resources evaluating the contract and terms each GPO offered for each product and these additional costs would offset some or all of the benefits that GPOs provide by negotiating directly like manufacturers This would be analogous to a buyer of homes going to look at the same homes with many different real estate agents to try to negotiate the best deal on the homes with each different agent. The contracting efficiencies the buyer would obtain from using real estate brokerage services in buying the home would be offset by the additional costs of having to deal with multiple real estate brokers.

join based on whether it enters into sole-source contracts with Tyco on sharps containers.

35. Tyco and Professor Ordover claim that my GPO sole-source comparisons are affected by selection bias because I classified a buyer as burdened by a given GPO's sole-source contract only if it bought some containers through that GPO.[48] But because the relevant issue is the impact of sole-source contracts that foreclosed GPO brokerage service, it is appropriate to include only buyers that actually utilize a GPO's brokerage services as being burdened by the foreclosure of that GPO's brokerage services. Professor Ordover argues that my approach results in selection bias because, if a GPO has a sole-source contract, then buyers who prefer Tyco products will buy through the GPO, whereas buyers who prefer the rival products "must necessarily" purchase outside their GPO.[49] But forcing buyers who want to buy rival products to purchase without using their GPO is highly anticompetitive because those buyers are no longer able to take advantage of the GPO brokerage services that, absent the exclusionary contract, they would prefer to use, and the costs to rivals of making sales to them is increased. Professor Ordover's admission that buyers who want rival products "must necessarily" purchase outside their GPO when that GPO has a sole-source contract thus admits precisely the anticompetitive impact that he is trying to rebut.

36. Moreover, I did not, as Tyco and Professor Ordover imply, reassign buyers to the unburdened group whenever they began to buy sharps containers from a Tyco rival without a GPO contract.[50] Instead, I concluded that a buyer was not in the burdened group only if it did not buy any sharps containers through a restricted GPO *at all*. Purchasing even a *single* container from Tyco through a sole-source GPO contract was enough to continue assigning a buyer to the burdened group

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[48] Tyco Motion to Exclude Elhauge 11; Ordover Motion to Exclude Declaration ¶¶26-27.
[49] Ordover Motion to Exclude Declaration ¶26.
[50] Tyco Motion to Exclude Elhauge 2, 11; Ordover Motion to Exclude Declaration ¶¶26-27.

for purposes of the GPO comparisons, even if it switched to buying 99.9% of its containers from rivals.[51] Professor Ordover is thus simply wrong when he asserts that [redacted].[52] To the contrary, my approach continued to classify this hospital as sole-source through May 2007, even after it started to purchase sharps containers from Daniels. Tyco and Professor Ordover are also simply wrong when they assert that I reassigned buyers who bought 100% of their containers without a GPO to the unburdened category.[53] I instead excluded such buyers from both the burdened *and* unburdened category, on the ground that they were no longer in the market for using GPO brokerage services.[54] My approach is actually conservative because buyers and rivals do suffer additional anticompetitive harm when buyers must, to buy the rival container they prefer, dispense with the GPO brokerage services that they and rivals would have enjoyed without the sole-source contract.

37. In any event, even if we use Tyco's approach by never reassigning buyers, even when they stop buying through a GPO entirely, it does not alter my conclusions. This is proven in the discussion on Tyco's "access" approach, which shows that, if one reruns my GPO sole-source comparisons to leave a buyer in the burdened group if it ever bought anything from a GPO that has a sole-source contract, the anticompetitive effects are almost always even larger.[55]

38. Professor Ordover claims that my simultaneous comparisons involving GPOs are "misguided" because he thinks GPO sole-source contracts are not exclusionary due to (1) the

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[51] *See* Elhauge Report ¶181.
[52] Ordover Motion to Exclude Declaration ¶27.
[53] *See* Elhauge Report ¶181.
[54] *See* Elhauge Report ¶181.
[55] *See infra* ¶66, Table 2A.

existence of ex ante competition for those sole-source contracts and (2) the fact that some buyers purchased outside of GPOs.[56] But these misbegotten claims simply dispute whether the GPO sole-source contracts were exclusionary, not whether comparisons are a valid method of illustrating anticompetitive impact. As my reports demonstrated, Tyco's GPO sole-source contracts clearly were exclusionary.[57] Indeed, my reply report rebutted the exact same arguments that Professor Ordover makes here. On Professor Ordover's first claim, my reply report showed that effective ex ante competition for GPO sole-source contracts did not exist, would not alter the foreclosing effect even if it did, and did not generate any procompetitive benefits.[58] On his second claim, my reply report established that the ability of buyers to purchase outside of GPOs had no relevance for whether GPO brokerage services were foreclosed because those purchases are not in the GPO brokerage service market, and the source of the anticompetitive harm from foreclosing GPO brokerage services is to force buyers to use more costly ways of contracting outside of GPOs.[59]

39. Professor Ordover also argues that my simultaneous comparisons cannot reflect the anticompetitive harm caused by Tyco's contracts because [redacted]"[60] Here Professor Ordover confuses the fact of foreclosure with one possible anticompetitive impact that foreclosure can have. As I clearly explained in my reply report when Professor Ordover made the same fallacious claim in his report, substantial foreclosure can cause anticompetitive harm and impair BD's ability to compete for

[56] Ordover Motion to Exclude Declaration ¶¶28-29.
[57] Elhauge Report ¶¶121-26; 138-42; Elhauge Reply Report ¶¶48-62.
[58] Elhauge Reply Report ¶¶41-46; 138-43.
[59] Elhauge Reply Report ¶49.
[60] Ordover Motion to Exclude Declaration ¶23.

buyers in many ways other than preventing BD from reaching an efficient scale. Specifically, I explained that, even if BD had reached an efficient scale, (1) foreclosure could still raise BD's costs of brokering sales by foreclosing the GPO brokerage service market, (2) given BD's non-infinite elasticity of supply, any increase in Tyco's market share at BD's expense would increase Tyco's pricing power above but-for levels, and (3) even assuming away these harms, the use of loyalty discounts would perversely discourage price competition.[61]

D. Tyco's Selection Bias Argument Cannot Explain the Regressions Showing that Buyer Behavior Changed When Their Contract Status Changed

40. Tyco's selection bias argument cannot explain the regressions showing that buyers changed their purchasing behavior when their contracts changed from exclusionary to nonexclusionary.[62] These regressions took the set of buyers whose contract status changed, and showed that those *very same* buyers bought far less from rivals when they were subject to an exclusionary contract than when they were not. This was true both for buyers who changed from having commitment contracts to not having them, and for buyers who belonged to a GPO that changed from being sole source to not being sole source. Returning again to Tyco's speed reading example, suppose the evidence not only showed that students in speed reading classes read faster than students who are not in those classes, but also showed that students who switched into a speed reading class started to read faster than those very same people did beforehand, and that persons who switched out of a speed reading class started reading less quickly than they did when they were in the class. Selection bias could not explain such a result because the very same students are in both

[61] Elhauge Reply Report ¶131.
[62] *See* Elhauge Report ¶¶188-92.

groups. Surely, one would not deny that this evidence shows the speed reading class causes people to read faster. Likewise here, selection bias cannot explain the results of this regression because the very same buyers are in both groups.

41. I already pointed this out in my initial report.[63] In response, Tyco offers various flawed arguments, which I address in turn below.

42. *1. Tyco's Unsupported Assertion That Buyer Preferences Happened to Change Whenever Their Contract Status Changed.* Tyco and Professor Ordover claim that selection bias infects my regressions because buyer preferences may change over time, so that when buyers prefer Tyco products, they agree to its exclusionary contracts, and when their preferences switch to a rival product, they do not agree so that they can buy from the rival.[64] But neither Tyco nor Professor Ordover provide any evidence to support their claim that buyer preferences happened to always conveniently change whenever their contract status changed. Certainly this cannot be true when what changed the buyers' contract status was a change in GPO policy. Nor is it plausible that buyer preferences radically shifted every time their commitment contracts ended and they were able to switch to a rival, but never shifted during the period of any commitment contract.

43. At base, this claim by Tyco and Professor Ordover boils down to an incredibly self-serving assertion that one should just simply assume – even when it is contrary to the evidence – that changes in buyer contract status just happen to perfectly track changes in buyer preferences. This position is plainly biased in favor of Tyco and defendants more generally, because if this view were to be accepted, no plaintiff could ever challenge any exclusionary contracts, because the defendant could always argue that one must assume that changes in whether a buyer was subject to an

[63] Elhauge Report ¶195.
[64] Ordover Motion to Exclude Declaration ¶31; Tyco Motion to Exclude Elhauge 17.

exclusionary contract just happened to track changes in buyer preferences.

44. *2. Tyco's False Claim That Reclassifications Manipulated the Results.* Tyco and Professor Ordover claim that I manipulated the test and control groups by reclassifying any hospital that failed to comply with its commitment into the unburdened category.[65] This is untrue. Instead, as I made clear in my original report and explained again in my reply report, I conservatively included all buyers with commitment contracts in the burdened category, even when they did not comply with those commitments in those contracts.[66]

45. Tyco argues that this is a distinction without a difference because it asserts that a buyer's "purchasing pattern *determines*" its contract status, an assertion which in turn rests on Tyco's factual claim that buyers that stop complying with their commitment levels "will lose [their] committed contract status."[67] But as already discussed above, this factual claim, while oft-repeated by Tyco, is simply false. The challenged commitment contracts generally required buyer commitments for a long time that were not terminable, rather than, as Tyco asserts, simply making contract status and prices conditional on whatever actual compliance level a buyer achieved.[68] Nor is there any evidence that Tyco reclassified each committed buyer as being uncommitted in its sales data as soon as that buyer became noncompliant with its commitments. In any event, even if Tyco were right, my conclusions on anticompetitive impact would not be changed if I never reclassified

[65] Tyco Motion to Exclude Elhauge 12-13; Ordover Motion to Exclude Declaration ¶¶21-22.

[66] *See* Elhauge Report ¶180; Elhauge Reply Report ¶¶86-87. Including such noncompliant buyers in the burdened category when assessing anticompetitive impact conservatively cuts against the plaintiff class because it tends to understate the difference between burdened and unburdened sales. Elhauge Report ¶180, n.405. In contrast, I excluded noncompliant buyers from any foreclosure share because that approach conservatively cuts against the plaintiff class by tending to understate the foreclosure share. *Id.* ¶163. The opposite choices would be the conservative ones to make for a defense expert.

[67] Tyco Motion to Exclude Elhauge 12-13, n.11 (emphasis in original).

[68] *See supra* ¶8.

buyers who stopped buying from Tyco, as I already stated in my reply report and detail below.[69] This clearly shows the whole reclassification argument is just a red herring.

46. Tyco also claims that selection bias is created because, as buyers' contract status changed, my analysis reclassified them based on their actual contractual status, rather than based on whether they had "access" to an exclusionary contract.[70] I address this "access" argument below, showing that Tyco's "access" approach is misguided and that in any event using it would indicate even larger anticompetitive effects.[71]

47. *3. Tyco's Irrelevant Analogy to a Volume Discounts Comparison.* Tyco's makes the tendentious argument that, if one considered Tyco's volume discounts instead of its share-based commitment contracts, my "comparisons would yield the exact same results."[72] But it would make no economic sense to run comparisons on volume-based discounts because no one has claimed they were anticompetitive. Tyco here ignores the fact that these comparisons are not being used to establish that the challenged contracts are exclusionary, but rather to confirm their impact. Tyco's argument is like saying that empirical evidence that fraud led to reduced rival sales is disproven if one can show that offering a better product would also have led to reduced rival sales. The impact on rival sales may be the same, but the impact on rivals from undesirable conduct is not disproven by a showing that desirable conduct could have led to a similar impact. To the contrary, such evidence provides all the more reason to deter the undesirable conduct in order to channel firm behavior towards the desirable conduct.

48. *4. Tyco's Argument that I Should Have Used Linear Regressions Is Mistaken and*

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[69] *See infra* ¶65 n.89.
[70] Tyco Motion to Exclude Elhauge 12-13, 17.
[71] *See infra* ¶¶58-73.
[72] Tyco Motion to Exclude Elhauge 11, n.10.

Irrelevant Because It Would Not Alter the Results. Tyco and Professor McFadden claim that I should have run linear regressions instead of logarithmic regressions.[73] Professor McFadden's central criticism is that, by performing a logarithmic regression, I dropped any observations where buyers bought 0% from rivals and thus excluded the vast majority of observations in the data.[74] To avoid this, he suggests that it would have been better to use a linear regression. But he completely ignores the reasons why a logarithmic regression better focuses on the effects that different contract statuses have on rival share. He also ignores the fact that my logarithmic analysis effectively excluded thousands of observations where buyers bought 0% from *Tyco,* and thus evenhandedly focused on buyers that purchased from *both* Tyco and rivals, which tended to reduce the selection bias concern that buyers might simply have strong preferences for the containers of either Tyco or its rivals. Further, Professor McFadden's alternative linear regression makes the fundamental error of including every buyer who bought 0% from rivals without also including thousands of observations from buyers who bought 0% from Tyco. This error biases his linear regressions against finding any effect from the challenged contracts. When this error is corrected, the linear regression strongly confirms all of my conclusions. I address each point in turn below.

49. First, Tyco and Professor McFadden ignore the reasons why using a logarithmic regression would be superior to a linear regression. One reason noted in my report is that a linear regression assumes "that the rivals' market share will change by the same number of percentage points regardless of the rivals' starting market share," while a "logarithmic regression, on the other hand, plausibly assumes that the rivals' market share changes multiplicatively."[75] In other words,

[73] Tyco Motion to Exclude Elhauge 16; McFadden Declaration ¶¶23-29.
[74] McFadden Declaration ¶¶20-22.
[75] Elhauge Report ¶190.

a switch in contract status might be expected to cause buyers to on average increase their purchases from rivals by a given percentage rather than by an absolute share amount. Another reason is that my logarithmic regression focused only on buyers able and willing to buy *both* from Tyco and its rivals, thus limiting the impact that selection effects might have on the regressions. Although these selection effects are not serious for reasons noted above – and in particular are absent from the regressions focusing only on buyers whose contract status changed – this point is relevant to Tyco's criticisms because Tyco believes that selection bias is a problem. However, neither Tyco nor Professor McFadden consider these reasons why the logarithmic regression I performed might here be preferable to a linear regression.

50. Second, Professor McFadden fixates only on the fact that my logarithmic regression excludes any observation where buyers bought 0% from rivals, and ignores the fact that my logarithmic regression also excluded thousands of observations where buyers bought 0% from Tyco.[76] My analysis did this because, as I explained in my original report, I treated "each buyer with a separate Tyco customer number ... as a separate observation."[77] All BD buyers that did not purchase anything from Tyco in any given month were not associated with a Tyco customer number, and thus would have a blank customer number for that month. The same was true for buyers from other rivals that did not purchase anything from Tyco in any month. These observations were thus effectively excluded from the analysis that I performed.[78] My analysis thus evenhandedly focused on those buyers that purchased some containers from *both* Tyco and rivals, which as explained above is a virtue of my logarithmic analysis because it limits selection bias concerns.

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[76] *See* McFadden Declaration ¶¶23-29.

[77] Elhauge Report ¶190.

[78] More technically, all the buyers who purchased from rivals but had a blank Tyco customer number were treated as a single observation in each month. This greatly muted the effect that these buyers had in the regressions.

51. Third, Professor McFadden's alternative linear regression is biased because, while he adds back buyers who bought 0% from rivals, he fails to add back the thousands of observations from buyers that were not matched to a Tyco customer number and thus necessarily bought 0% from Tyco. It is thus unsurprising that he finds relatively small numbers in his linear regression, because he has excluded thousands of observations from buyers that do not have an exclusionary Tyco contract and purchase 0% of their sharps containers from Tyco.

52. I correct Professor McFadden's error in his linear regression by treating each unique matching of customers across manufacturers as an individual observation, which restores buyers who buy 100% from Tyco's rivals.[79] Re-running his linear regressions with this correction confirms the conclusions of my logarithmic regressions, and shows that Tyco's exclusionary contracts have a significant anticompetitive effect on Tyco's rivals. Table 1A gives the results:

[79] For example, a buyer that had a BD, Daniels, or Stericycle customer number that was not manually matched to a Tyco customer number would be treated as a unique observation under this approach, as would any buyers that had a rival customer number that was manually matched to a Tyco customer number and any buyers that had only a Tyco customer number that was not matched to the customer number of any rival. The numerical analysis in this declaration also reflects some minor data corrections I have made in the 9 months since my reply report was filed, none of which change my conclusions but which do alter the specific numbers. Specifically, BD and Tyco customer numbers have been more completely matched, and duplicate matching of some Stericycle and Bemis customers was eliminated. Additional information on Premier tiers from 1997-2002 allowed more accurately categorization of Premier buyers into tiers, and I corrected the failure of my programs to track my report's classification of Tyco's Amerinet Elite contracts as buyer-commitment contracts. I corrected a programming error that dropped 11 groups of buyers that first showed up in the data after May 2006. Finally, for Daniels, I reconciled some overlapping sales data, and (in Exhibit 17B) I adjusted for missing Daniels joint venture sales and corrected a failure to properly categorize some Daniels sales as going to Novation members when Daniels did not have a Novation contract.

TABLE 1A: HOW MUCH LOWER RIVAL MARKET SHARE IS AT BUYERS BURDENED WITH TYCO'S EXCLUSIONARY CONTRACTS, LINEAR REGRESSION, NOT EXCLUDING BUYERS WHO ONLY PURCHASE FROM RIVALS		
	All Buyers	Only Buyers Whose Contract Status Changed
Sole-Source v. Not Sole-Source	-47%	-14%
Restricted v. Unrestricted	-32%	-16%
Restricted and Sole-Source v. Neither	-41%	-10%
Restricted or Sole-Source v. Neither	-34%	-19%
* All results are significant at 99% level.		

53. The above table completely contradicts the claims by Tyco and Professor McFadden that a linear regression "diminishes the supposed impact of the challenged contracts on burdened buyers by over 90%" and that in some cases the "rival actually captured a greater percentage of the sales in the allegedly burdened group."[80] Their claims are spurious conclusions caused solely by Professor McFadden's error of essentially excluding buyers that buy exclusively from rivals. Once this error is corrected, the linear regressions show a clear anticompetitive effect from the challenged contracts that is entirely consistent with the conclusions in my reports.[81]

54. *5. Professor McFadden's Suggestion that I Should Have Used a Fixed-Effects Regression Is Mistaken and Irrelevant Because It Would Not Alter the Results.* Professor McFadden

[80] Tyco Motion to Exclude Elhauge 16; McFadden Declaration ¶¶27-29, Table 2.

[81] Because the analysis here is linear, the percentage reduction here in Table 1A is not comparable to the percentage reduction in Table 9 from my reports. Here in Table 1A, the percentage reduction is the absolute difference between the rival share in the burdened and unburdened portions. In Table 9 from my report, because I used a logarithmic regression, the percentage reduction was the percentage of rival share that was reduced. For example, if rivals on average had a share of 30% in the unburdened market and 15% in the burdened market, that would be reported as a drop of 15% here in Table 1A, but a drop of 50% (because 15% is half of 30%) in report Table 9.

complains there may be variation in the product needs of hospitals that could have a confounding effect on the regression and that I should have controlled "for the individual hospital effects."[82] Although he does not use the term, Professor McFadden appears to be suggesting that I should have run what is known as a "fixed-effects" regression to control for hospital-specific factors. A fixed-effects regression can be used to control for entity-specific characteristics that might affect the coefficients of the dependent variables of interest. It does this by first calculating each entity's average value across time for the constant, error term, and dependent and independent variables, and then subtracting that average value from that entity's actual value at each point in time for those terms. It then performs a standard ordinary least squares regression on the results of this subtraction. By applying this method, the goal is to zero out uncontrolled-for characteristics specific to each entity in the data.

55. However, Professor McFadden is wrong to suggest that it would be more appropriate to apply a fixed-effects model in this case, because it is important for the regressions to capture not only the effects of changes in commitment status over time, but also the effects of differences in commitment status at any one time. Applying the fixed effects model, as Professor McFadden suggests, would essentially drop from the analysis *all* buyers that either (1) consistently were unburdened by the exclusionary contracts; or (2) consistently were burdened by the exclusionary contracts. Doing so would be economically erroneous because these observations contain valuable information about the exclusionary effect of the challenged contracts, and reflect much of the anticompetitive effect. For example, if buyers that are always committed tend to purchase more from Tyco than buyers that are always uncommitted, that is valuable information about the

[82] McFadden Declaration ¶25.

exclusionary effects that should be accounted for in proper econometric analysis. If I had instead performed a fixed-effects regression, it would have ignored these buyers and thus would have understated the adverse effects from the challenged contracts.

56. Moreover, even if I did use the fixed-effects model, that would not alter any of my conclusions. This is true whether I run a logarithmic regression with fixed-effects or a linear regression with fixed effects. (For consistency, in both cases, I use the new method of treating each unique matching of customers across manufacturers as a separate observation to include buyers who purchase only from Tyco's rivals.) Table 1B reports the logarithmic regression using fixed effects and Table 1C reports the linear counterpart.

TABLE 1B: HOW MUCH LOWER RIVAL MARKET SHARE IS AT BUYERS BURDENED WITH TYCO'S EXCLUSIONARY CONTRACTS, LOGARITHMIC REGRESSION WITH FIXED EFFECTS, NOT EXCLUDING BUYERS WHO PURCHASE ONLY FROM RIVALS

	All Buyers	Only Buyers Whose Contract Status Changed
Sole-Source v. Not Sole-Source	-33%	-33%
Restricted v. Unrestricted	-36%	-37%
Restricted and Sole-Source v. Neither	-27%	-28%
Restricted or Sole-Source v. Neither	-41%	-43%
* All results significant at 99% level.		

TABLE 1C: HOW MUCH LOWER RIVAL MARKET SHARE IS AT BUYERS BURDENED WITH TYCO'S EXCLUSIONARY CONTRACTS, LINEAR REGRESSION WITH FIXED EFFECTS, NOT EXCLUDING BUYERS WHO PURCHASE ONLY FROM RIVALS		
	All Buyers	Only Buyers Whose Contract Status Changed
Sole-Source v. Not Sole-Source	-9%	-8%
Restricted v. Unrestricted	-10%	-11%
Restricted and Sole-Source v. Neither	-6%	-6%
Restricted or Sole-Source v. Neither	-13%	-14%
* All results significant at 99% level.		

57. These tables show that each regression continues to find an adverse effect on rival shares due to Tyco's challenged contracts. This is true even though these regressions are extraordinarily conservative because they use fixed effects, which, as explained above, means all the buyers who were consistently burdened or unburdened by exclusionary contracts will have a limited effect on the contract status coefficients, given that their average contract status was the same as their contract status in each year.

E. Tyco's "Access" Alternative Makes No Sense and Would Not Alter the Results Even If Implemented

58. Tyco argues that, instead of classifying buyers based on the contract terms that actually governed their purchases, I should have classified buyers based on whether they had *access*

to an exclusionary contract.[83] But this approach is flawed for many reasons: (1) it focuses on an economically irrelevant issue; (2) it is nonsensical because all buyers had the relevant "access"; and (3) even if implemented using the "access" definition preferred by Tyco and its expert, it almost always shows a *larger* anticompetitive impact.

59. ***First***, Tyco's "access" approach is inferior because actual contractual status, not "access" to such contracts, is what produces the anticompetitive impact. The relevant issue in this case is how the challenged exclusionary commitments affected the choices made by buyers or GPOs subject to those commitments. The anticompetitive effect flows from the fact that rivals lost sales when buyers or GPOs made exclusionary commitments to Tyco. There is no anticompetitive effect when rivals lost sales to buyers or GPOs that made no exclusionary commitment but had "access" to a chance to do so. Focusing on whether buyers had "access" to the challenged contracts would thus be economically incorrect and fail to test the relevant anticompetitive theory.

60. My approach was thus economically proper because it was designed to assess the impact the challenged exclusionary terms had on rival sales to buyers who were purchasing under contracts with those exclusionary terms. The anticompetitive effects arise from the fact that the exclusionary terms of the contracts themselves restricted the choices of buyers who bought under those contracts. There is no anticompetitive effect on rival sales to buyers who do not purchase under such exclusionary contracts but were offered the chance to do so. Therefore, to measure the exclusionary effects that the terms of the contracts themselves have, it is plainly necessary to classify buyers based on the terms of the contracts through which they actually purchased. Any alternative means of classification would not focus on the effect of exclusionary contracts, and thus would

[83] Tyco Motion to Exclude Elhauge 11-13, 17.

distract attention from the relevant issues at stake in this case. I explained all this in my reply report, but Tyco simply ignores the explanation and makes no effort to rebut it.[84]

61. Consider, for example, what Tyco's "access" approach would mean as applied to a defendant who offered every buyer in the market an exclusive dealing agreement, which 80% of buyers accepted. Under Tyco's "access" approach, one could not determine whether these exclusive dealing agreements actually impacted sales by comparing rival sales in the foreclosed 80% of the market to rival sales in the unforeclosed 20%. Instead, Tyco's "access" approach would conclude that rival sales to all buyers were equally affected, whether or not their purchases were restricted by an exclusive dealing contract, because all buyers had "access" to an exclusive dealing contract. This is nonsensical and contrary to standard antitrust economics. Moreover, Tyco's "access" approach would eliminate any possibility of showing anticompetitive effects in any case where the defendant offered exclusionary agreements to the entire market, because having put all buyers who had "access" to the exclusionary agreement in the "burdened" group would necessarily mean that there would be no unburdened group left with which to run a comparison.

62. Tyco's argument is like claiming that, to assess whether smoking causes cancer, one should not compare persons who smoke to those who do not smoke, but rather should compare persons who had "access" to cigarettes to those who do not. This would be silly because the relevant issue is how the actual act of smoking affects cancer rates. There is no reason to expect higher cancer rates among people who have "access" to cigarettes but never use them. Nor would such an approach be workable given that every adult has "access" to cigarettes.

63. ***Second***, Tyco's "access" approach is nonsensical as applied here because in fact

[84] Elhauge Reply Report ¶¶87-90.

every buyer in this case did have "access" to the challenged contracts. As I explained in my reports, Tyco had a general policy of entering into exclusionary contracts with every GPO and buyer it could, which defense experts never disputed.[85] Every buyer thus had "access" to Tyco's exclusionary buyer contracts. If a buyer belonged to a GPO that did not broker such exclusionary contracts, the buyer could have entered into an individualized exclusionary contract with Tyco. Likewise, every GPO had "access" to a Tyco sole-source contract, because Tyco wanted every GPO to agree to sole-source contracts that excluded rivals. Using "access" to assign buyers to the burdened and unburdened groups would thus be a completely pointless exercise, and would not be able to classify buyers into two different groups, because every buyer had "access" to the challenged contracts.

64. ***Third***, even if one denied that all buyers and GPOs had "access" to the relevant contracts, and instead defined "access" in the way that Tyco and its expert do, it would nonetheless show an anticompetitive impact. Tyco and its expert use "access" to mean affiliation with a GPO that has a sole-source contract or offers buyer-commitment contracts. Tyco states that I should have reclassified buyers only when "the buyer loses *access* to the contracts (such as if its GPO stops offering share-purchase discounts and becomes multi-source)."[86] Likewise, in its hypothetical analysis, Tyco assumes that hospitals "that belong to no GPO . . . have no access to the challenged contracts" but that hospitals that belong to a GPO that offers share-based discounts do have "access" to them.[87] Similarly, when Professor Ordover advocated an "access" approach in the *Masimo v. Tyco* damages re-trial, he indicated that one should assign buyers to the burdened group when they

[85] Elhauge Report ¶¶119-37; Elhauge Reply Report ¶41.
[86] Tyco Motion to Exclude Elhauge 12-13.
[87] Tyco Motion to Exclude Elhauge 11-12.

are affiliated with GPOs that had sole-source contracts or offered commitment contracts.[88] This is not actually a true "access" approach because all buyers and GPOs actually had "access" to the chance to enter into an exclusionary commitment with Tyco. But even if we implemented it, it would not alter the conclusions on anticompetitive impact.

65. Indeed, my reply report already pointed out that my conclusions on anticompetitive impact would not be altered even if one used the more extreme approach of refusing to reassign buyers even when their GPO stopped being sole source or ceased offering commitment contracts, and instead kept constant the contractual status of any buyer that was ever burdened.[89] Tyco and Professor Ordover never rebut my point that eliminating *any* reassignment of buyers would not alter any of my conclusions, even though my point clearly shows that all their reassignment arguments are red herrings.

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[88] *See* Masimo Corp. v. Tyco Healthcare Group LP, CV 02-4770, 10/19/2006 Hearing Tr., 73 (Professor Ordover testifying that he classified buyers based on "the GPO in which the hospital is a member of" rather than based on whether the buyer had an exclusionary share-based contract).

[89] *See* Elhauge Reply Report ¶90. If one never re-assigns buyers even when their exclusionary contract status ends, the reduction in rival share from the unburdened to the burdened portions of the market would still be 34-57% for the GPO sole-source comparison, 27-50% for the buyer-commitment comparison, 39-67% for the combined GPO sole-source *and* buyer-commitment comparison, and 38-65% for the either GPO sole-source *or* buyer-commitment comparison. On average, the difference in the sole-source GPO comparisons would be 9% higher than in my prior comparisons, while the other comparisons would be only 4-8% lower than my prior comparisons, thus clearly showing that even the extreme step of eliminating all reassignments would not alter any of my conclusions.

Contrary to these results, Professor Ordover asserts that if one does not re-assign buyers when their contract status changes, the gap in rival performance narrows considerably. *See* Ordover Motion to Exclude Declaration ¶22. But he reaches this conclusion by artificially limiting his analysis to Daniels and completely ignoring all other rivals, which cannot be justified given that the claimed foreclosure here affected all rivals. *See* Elhauge Reply Report ¶¶93-94 [redacted]. *Id.* ¶¶100-01. Although my reply report explained why his reassignment analysis suffers from crucial errors in its execution that, when corrected, reverse his results, Professor Ordover responds to none of my analysis and instead simply repeats the incorrect claims from his report.

In any event, because Tyco now concedes that reassignment is proper at least when GPOs cease making or offering exclusionary commitments, the text focuses on the rival share reductions that are found when such limited reassignments are made.

66. *1. GPO Sole-Source Comparisons Using Tyco's "Access" Approach.* To implement Tyco's "access" approach for the GPO sole-source comparisons, I re-ran them using Tyco's definition that "access" means affiliation with a GPO having a challenged sole-source contract. I treated a buyer as having such GPO access/affiliation if it was ever listed as being part of that GPO at any previous point in time in the data of any firm. I then classified buyers as burdened by the challenged sole-source GPO contracts whenever a GPO to which they had "access" had a Tyco sole-source contract, and classified them as being unburdened at every point in time when no GPO to which they had "access" had a Tyco sole-source contract. For example, a buyer who was listed as being part of Novation in any firm's data in 2001 was under this approach treated as having "access" to Tyco's Novation sole-source contract from 2001 to the end of that contract in 2005, even if that buyer was never listed as part of Novation in Tyco's data in any year nor in any other firm's data from 2002-2005. For buyers that were associated with multiple GPOs in the past, I conservatively treated them as being in the burdened group if *any* GPO with which they were associated had a Tyco sole-source contract. This assumption is a conservative one because, if anything, it understates the effects of sole-source contracts by treating more buyers as having "access." Using this method, I found that rival shares were significantly lower at buyers with "access" to Tyco sole-source contracts than at buyers without such "access". Table 2A summarizes the results I from these alternative comparisons.

TABLE 2A: RIVAL SHARE AT BUYERS WITH AND WITHOUT "ACCESS" TO TYCO'S SOLE-SOURCE GPO CONTRACTS				
Year	Rival Share at Buyers With "Access"	Rival Share at Buyers Without "Access"	Absolute Gap in Shares	Percentage Difference in Shares
2001	1%	35%	34%	2427%
2002	2%	36%	34%	1779%
2003	2%	45%	43%	1784%
2004	4%	51%	47%	1317%
2005	14%	56%	42%	304%
2006	25%	52%	27%	110%

67. Re-running the GPO sole-source comparisons using Tyco's "access" approach thus disproves Tyco's claim that using its "access" approach would alter my conclusions. Indeed, using Tyco's "access" approach would, if valid, indicate an even larger anticompetitive impact on rival sales than that found in my prior GPO sole-source comparisons. In all but 2002, the rival share in the "unburdened" segment is larger using the "access" approach than using my approach, and in 2002 the shares are the same. Further, the difference between rival shares at buyers in the "unburdened" and "burdened" portions of the market is larger using the "access" approach than using my approach in 2001 and 2003-2005, and is lower by only 2% in 2002 and 2006. The average reduction in rival shares over all the years is 38% using the "access" approach, higher than the 36% average with my approach.

68. *2. Buyer-Commitment Comparisons Using Tyco's "Access" Approach.* To implement Tyco's "access" approach for the buyer-commitment comparisons, I re-ran them using its definition that "access" means affiliation with a GPO that offers Tyco commitment contracts,

finding GPO affiliation using the same method noted above. I classified a buyer as burdened by Tyco commitment contracts whenever a GPO to which the buyer had "access" offered any challenged Tyco commitment contracts. Otherwise, I classified buyers as unburdened. Using this method, I found a significant difference in rival performance between buyers with and without "access" to Tyco commitment contracts. Table 2B reports the results.

TABLE 2B: RIVAL SHARE AT BUYERS WITH AND WITHOUT "ACCESS" TO TYCO'S BUYER-COMMITMENT CONTRACTS

Year	Rival Share at Buyers With "Access"	Rival Share at Buyers Without "Access"	Absolute Gap in Shares	Percentage Difference in Shares
2001	5%	55%	50%	970%
2002	7%	59%	52%	752%
2003	7%	70%	62%	841%
2004	10%	76%	66%	696%
2005	15%	77%	62%	428%
2006	20%	78%	58%	285%

69. Re-running the buyer-commitment comparisons using Tyco's "access" approach thus again confirms that using that approach would not alter my conclusions. Indeed, using Tyco's "access" approach would again indicate an even larger anticompetitive impact on rival sales. In every year, the "access" approach indicates not only a larger rival share in the "unburdened" segment, but a larger difference between that share and the rival share in the "burdened" portion of the market. Further, the average reduction in rival shares over all the years is 58% using the "access" approach, while it was 48% under my approach.

70. *3. Combined Comparisons Using Tyco's "Access" Approach.* To implement Tyco's

"access" approach for the combined comparisons, I re-ran them, finding GPO affiliation/access using the same method noted above. For the study that focused on buyers burdened by *both* a GPO sole-source contract *and* a buyer-commitment contract, I classified buyers as burdened whenever they had "access" to both a GPO that had a Tyco sole-source contract and a GPO that offered a Tyco commitment contract. I conservatively classified buyers as being in the burdened group even if this "access" was through two different GPOs. Otherwise, I classified buyers as unburdened. Table 2C reports the results.

TABLE 2C: RIVAL SHARE AT BUYERS WITH "ACCESS" TO BOTH TYCO'S SOLE-SOURCE GPO CONTRACTS AND BUYER-COMMITMENT CONTRACTS VERSUS AT BUYERS WITH "ACCESS" TO NEITHER				
Year	Rival Share at Buyers With "Access"	Rival Share at Buyers Without "Access"	Absolute Gap in Shares	Percentage Difference in Shares
2001	1%	59%	57%	4075%
2002	2%	59%	57%	3047%
2003	2%	70%	68%	2831%
2004	3%	77%	73%	2112%
2005	13%	87%	74%	554%
2006	25%	86%	61%	241%

71. Re-running these combined comparisons using Tyco's "access" approach again confirms that using that approach would not alter my conclusions. Indeed, using Tyco's "access" approach again would indicate an even larger anticompetitive impact on rival sales. In every year, the "access" approach indicates a larger rival share in the "unburdened" segment. The "access" approach also indicates a larger difference between that share and the rival share in the "burdened" portion of the market in every year but 2006, when the gap remains over 60%. Further, the average

reduction in rival shares over all the years is 65% using the "access" approach versus 59% using my approach.

72. For the study that focused on buyers burdened by *either* a GPO sole-source contract *or* a buyer-commitment contract, I classified buyers as burdened whenever any GPO to which they had "access" *either* had a Tyco sole-source GPO contract or offered Tyco buyer-commitment contracts. Otherwise, I classified buyers as unburdened. Table 2D reports the results.

TABLE 2D: RIVAL SHARE AT BUYERS WITH "ACCESS" TO EITHER TYCO'S SOLE-SOURCE GPO CONTRACTS OR BUYER-COMMITMENT CONTRACTS VERSUS AT BUYERS WITH "ACCESS" TO NEITHER

Year	Rival Share at Buyers With "Access"	Rival Share at Buyers Without "Access"	Absolute Gap in Shares	Percentage Difference in Shares
2001	5%	59%	54%	1075%
2002	7%	59%	52%	752%
2003	7%	70%	63%	841%
2004	10%	77%	67%	704%
2005	15%	87%	73%	492%
2006	20%	86%	66%	322%

73. Re-running these combined comparisons using Tyco's "access" approach again confirms that using that approach would not alter my conclusions. Indeed, using Tyco's "access" approach would again indicate an even larger anticompetitive impact on rival sales. In every year, the "access" approach indicates a larger rival share in the "unburdened" segment, and in every year but 2006, there is also a larger difference between that share and the rival share in the "burdened" portion of the market. Further, the average reduction in rival shares over all the years is 62% using the "access" approach versus 57% using my approach.

F. Professor McFadden Is Wrong to Claim One Should Assess Whether Exclusionary Contracts Created Anticompetitive Effects Independently of Whether The Contracts Existed

74. On the effects of sole-source GPO contracts, Professor McFadden claims that I am incorrect to treat Tyco's sole-source contracts as exclusionary because this assumes that "all events in which [Tyco] succeeded in bidding for a challenged contract were the result of anti-competitive practices," rather than considering the possibility that Tyco would have "been a successful bidder for many GPO contracts even without any of the pricing practices" challenged here.[90] But it is the sole-source provisions *themselves* that have been challenged as anticompetitive in this case. Professor McFadden's criticism thus completely misses the point because he incorrectly believes that the claim is about anticompetitive behavior during the bidding process or about anticompetitive pricing practices. In fact, the theory here is not that the GPO bidding process was anticompetitive (although there is evidence of this as well), nor is the theory that the prices Tyco offered to GPOs were too low or constituted predatory pricing. The theory on the GPO sole-source contracts is that their restrictions on brokering sales with Tyco's rivals were exclusionary and had anticompetitive effects.

75. On the effects of both GPO sole-source contracts and buyer-commitment contracts, Professor McFadden criticizes my analysis for failing to "consider relative prices as a factor in the analysis of relative market shares," and opines that I should have controlled for the possibility that "the share outcomes that [I] observe[] under different contractual forms are the result of price competition" rather than anticompetitive conduct.[91] Tyco relies on Professor McFadden's conclusion to argue that my comparisons and regressions should have controlled for relative prices

[90] McFadden Declaration ¶14.
[91] McFadden Declaration ¶¶15-16.

at burdened and unburdened buyers.[92] But this argument misses the simple fact that, in this case, the prices depended on the contractual status of GPOs and buyers, so that one cannot simply control for pricing as Professor McFadden suggests. Specifically, Tyco imposed pricing penalties on buyers and GPOs that did not agree to its exclusionary contracts; indeed, this threat of pricing penalties is the very method by which Tyco induced buyers and GPOs to agree to the exclusionary contracts. Thus, as detailed above, the buyers who had the challenged commitment contracts received lower prices than buyers that did not, and buyers purchasing through a GPO that had a challenged sole-source contract received lower prices than buyers that did not.[93] The fact that the anticompetitive conduct determined whether buyers faced higher or lower prices from Tyco would thus stymie the effort to control for prices that Professor McFadden suggests I should have used.

76. In short, Professor McFadden essentially argues that one somehow should: (1) assess whether GPO sole-source contracts had an anticompetitive impact independently of whether the GPOs had sole-source contracts, and (2) assess whether loyalty discounts had an anticompetitive impact independently of whether buyers got loyalty discounts. These arguments indicate a failure to understand that the challenges here are to those GPO sole-source contracts and loyalty discounts. These arguments thus reflect basic conceptual errors of antitrust economics and fundamentally misunderstand the theories of anticompetitive harm in this case.

G. The Same Comparison Methodology Was Court-Approved In Other Cases

77. Consistent with the view that my comparisons reflect sound economics, the federal court in *Applied Medical Resources v. Ethicon* admitted me to testify as an economic expert using

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[92] Tyco Motion to Exclude Elhauge 13, n.12, 16-17; McFadden Declaration ¶¶14-16.
[93] *See supra* ¶¶9, 11-12.

the same comparison methodology to assess GPO sole-source and buyer-commitment contracts that were nearly identical to those at issue here.[94] Further, Tyco's own motion states that Michigan Economics Professor Jeffrey MacKie-Mason used my same comparison methodology in the *Masimo v. Tyco* case, and was admitted by the court in that case to testify as an economic expert.[95] Moreover, Professor Ordover himself used a similar comparison methodology in the initial jury trial in *Masimo,* and was admitted by the court in that case to testify as an economic expert.[96] And Tyco was the party that presented Professor Ordover's comparisons in the *Masimo* case. This past practice belies the notion that my comparison methodology would never be used by an economist or is contrary to standard economics.

78. Tyco wrongly accuses me of making a "demonstrably false claim" when I pointed out that Tyco and Professor Ordover used similar comparisons in the original *Masimo* jury trial.[97] Instead, Tyco claims that Professor Ordover's comparisons were not similar because he assigned buyers based on whether they had "access" to exclusionary contracts, not based on whether they actually utilized exclusionary contracts.[98] But Tyco's claim is disproven by Professor Ordover's actual testimony from the original *Masimo* jury trial, which shows that Professor Ordover assigned buyers to the "affected" and "unaffected" groups based on whether the buyers *actually had* an exclusionary contract, not based on whether they had "access" to such a contract. The fact that actual contract status mattered to his classification scheme is made clear in the following portion of

[94] Elhauge Report ¶6. I testified in Applied Medical that: "The simultaneous comparisons I ran compare Applied shares at the same time with buyers or GPOs that had foreclosing agreements versus those that didn't. And I ran comparisons with hospitals with and without carve-outs and between hospitals that bought through GPOs who did or did not have sole-source agreements." Applied Med. Res. Corp. v. Johnson & Johnson, et al., SACV-03-1329-JVS, 7/27/2006 Tr., Vol. 2, 55-56.

[95] Tyco Motion to Exclude Elhauge 14-15.

[96] *See* Elhauge Reply Report ¶¶84-85.

[97] Tyco Motion to Exclude Elhauge 14.

[98] Tyco Motion to Exclude Elhauge 14.

Professor Ordover's direct testimony:

> Q. Will you describe for the jury what you considered to be an effective [i.e., an "affected"] hospital for purposes of your analysis?
>
> A. Right. So broadly speaking, there are all these details that I don't think I have to go into, but broadly speaking, hospitals that belong to Novation, Premier, MedAssets, and Consorta I viewed as being restricted with some exceptions. In particular, I view hospitals that belonged to these four GPO's, but also belong to a GPO that was not affected in my terminology. I also regard them as being unaffected hospitals.
>
> On the other hand, even if the hospital was -- even if the hospital belonged to two GPO's, one of which was unaffected, but it was buying a bundled product, whether it was a Novation bundle, the Premier bundle, I took that to be an affected hospital irrespective of its other stated characteristics. Okay? That was again a decision that I made in order not to have to get involved in an assessment of these bundles as incentive offerings.
>
> Q. I think you said that -- well, let me ask you point blank. How did you treat in your analysis a hospital that belonged to both Premier and Amerinet?
>
> A. I treated that as being an unrestricted hospital, unless the hospital was buying a bundled product through Premier.[99]

This exchange first shows that Professor Ordover classified a buyer based on the GPO contract that they actually had, not based on to which contracts they had "access", and that he classified a buyer who was a member of two GPOs as being unaffected, even if one of the GPOs offered exclusionary contracts to which the buyer had "access." This exchange also shows that Professor Ordover classified buyers who were members of GPOs that offered bundled contracts as "unaffected" if the buyers did not accept the bundled contract, even though such buyers plainly had "access" to and could have accepted the bundled contracts. The specific example of the buyer who is a member of both Premier and Amerinet illustrates this point. Professor Ordover admits that this buyer had "access" to a bundled contract offered by Tyco through Premier, yet Professor Ordover classifies this buyer as "unaffected" if it does not sign the bundled contract, but would change the

[99] Masimo Corp. v. Tyco Healthcare Group LP, CV 02-4770, 3/14/2005 Hearing Tr., 2752-53.

classification to "affected" if it did sign the bundled contract. Tyco's characterization of Professor Ordover's testimony as classifying buyers based on whether they had "access" to exclusionary contracts thus does not match what he testified to at the original *Masimo* jury trial.

79. Rather than addressing my point that Professor Ordover used a similar comparison methodology as me in the original *Masimo* jury trial, Tyco falsely states that my claim was about Professor Ordover's testimony during the damages re-trial, which is demonstrably untrue given that my report cited to his original jury trial testimony.[100] The testimony discussed above shows that during the original *Masimo* jury trial, Professor Ordover did classify buyers based on the contracts the buyers actually had, rather than based on the contracts to which the buyers had "access".

80. Tyco also tries to claim that my testimony should be excluded because the *Masimo* judge, when acting as a fact-finder during the damages re-trial, "accepted Dr. Ordover's methodology" and rejected a damage methodology used by the plaintiff's expert Professor MacKie-Mason that Tyco claims is similar to my own.[101] But the *Masimo* judge in fact *admitted* Professor MacKie-Mason's testimony. Furthermore, it is not clear that the *Masimo* judge in fact adopted Professor Ordover's alleged view that all that mattered was whether buyers had "access" to the exclusionary contract, rather than their actual contractual status, because in the very ruling that Tyco cites, the judge stated that Masimo was "entitled to damages as to those hospitals ... which negotiated 'stand alone' market share commitments with Tyco."[102]

81. Further, the fact that in the *Masimo* damages re-trial Tyco and Professor Ordover did use comparisons – even if he assigned the burdened and unburdened groups using "access" to

[100] Tyco Motion to Exclude Elhauge 14; Elhauge Reply Report ¶84.
[101] Tyco Motion to Exclude Elhauge 14-15.
[102] Masimo v. Tyco, Case No. CV 02-4770, Civil Minutes -General, Jan. 25, 2007, at 1.

exclusionary contracts – would still rebut all of Tyco's objections that are not based on selection bias concerns. Specifically, it would rebut (1) Tyco's argument that my comparisons needed to control for price effects, because Professor Ordover's "access" comparisons in the *Masimo* damages re-trial did not control for such effects;[103] and (2) Professor Ordover's own claim that comparisons involving GPOs are "misguided" because of the existence of ex ante competition, as he plainly did not think they were misguided in the *Masimo* damages re-trial.[104]

H. My Analysis Is Conservative In Various Ways That Offset Any Selection Bias

82. Even if it were true that there was some selection bias in some of the comparisons that I ran, that would not mean that the comparisons overstate the anticompetitive impact of Tyco's challenged contracts. As I explained in my original report, my comparisons are conservative because they (1) ignore the fact that substantial foreclosure can lower rival efficiency and competitiveness in *both* the burdened and unburdened portions of the market, and (2) treat as burdened any buyer with a commitment contract, even if it was noncompliant.[105] Thus, even if there were some selection bias, whatever effect it had would be offset by these conservative features of the comparisons.

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[103] *See supra* ¶¶74-75.
[104] *See supra* ¶38.
[105] *See* Elhauge Report ¶180 & n.405, ¶187. My analysis also conservatively classified restricted sales in sundry other ways. *See id.* ¶¶159, 162, 181; Elhauge Reply Report ¶¶99, 101.

III. ECONOMIES OF SCALE

83. Tyco and Professor McFadden also critique one of the regressions that I ran in the course of analyzing economies of scale.[106] Not only is this critique misguided, for reasons I detail below, the whole issue is a red herring because there is no actual dispute about economies of scale in this case. Tyco's liability expert Professor Ordover affirmatively *agrees* with my conclusions that economies of scale exist and that Tyco and BD have achieved them,[107] and nowhere disputes my conclusion that Daniels, Stericycle, and other smaller rivals have not yet reached their minimum efficient scale.[108] Nor does Professor McFadden actually dispute these conclusions. He does not analyze the economies of scale of Daniels and Stericycle at all, failing to address any of my analysis on that issue. He also explicitly admits that he has no opinion "on whether there are economies of scale for [Tyco's] sharps containers."[109] Moreover, what McFadden's own statistical analysis found was an absence of statistically significant evidence that Tyco could gain further economies of scale if Tyco "increased" its "overall manufacturing" above current levels.[110] Thus, McFadden's declaration actually *supports* my conclusion that Tyco has achieved its minimum efficient scale and would not gain additional economies of scale from further increases in overall production.[111]

84. In any event, Professor McFadden statistical analysis on economies of scale is highly

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[106] Tyco Motion to Exclude Elhauge 17, n.15; McFadden Declaration ¶¶9, 30-32.

[107] Ordover Report ¶¶25, 28, 69, 102.

[108] As I discuss in my reply report, Professor Ordover does make the fallacious claim that it is economically irrelevant whether rivals have achieved their economies of scale, *see* Elhauge Reply Report ¶¶117-121; Ordover Report ¶¶21 n.16, 25, 40, 53 n.51, 74, but he never disputes my conclusions that rivals smaller than Tyco and BD have not reached their economies of scale, never rebuts the evidence I presented on this point, nor presents evidence of his own. Indeed, the only response to my analysis on economies of scale that Professor Ordover provides is a single footnote, where he claims that I should not have used a linear regression to assess the existence of economies of scale, *see* Ordover Report ¶74, n.81, and I showed in my reply report that none of my conclusions changed if I instead reported the results from logarithmic regressions on economies of scale that I also ran, *see* Elhauge Reply Report ¶121.

[109] McFadden Declaration ¶32.

[110] McFadden Declaration ¶32.

[111] Elhauge Report ¶¶97-98.

flawed for two reasons. First, his model-by-model method is biased against finding statistical significance. Second, his declaration deceptively mischaracterizes his aggregate method as failing to finding statistically significant evidence of economies of scale. In fact, his backup materials reveal that his aggregate method not only *did* find statistical significance at a 92.4% confidence level, but would have found significance at a 99.9% confidence level had he not arbitrarily excluded Tyco's ten biggest-selling container models.

85. Having argued that I should have controlled for the possibility that different models have different sales levels, Professor McFadden first runs a regression on a model-by-model basis by allowing the constant term and coefficient to differ for every single model, and finds that only about 10% of the coefficients are negative and statistically significant.[112] His model-by-model method is biased against finding statistical significance for two reasons.

86. First, because Professor McFadden's model-by-model method effectively focuses on a separate regression for each model's annual units and costs, his method has at most six observations of costs and units for each model, because there are only six full years in the relevant period. Indeed, many models have fewer than six observations because they were not produced in all six years. A regression is less likely to find statistical significance when the number of observations used in the regression are kept low, as Professor McFadden's model-by-model method does.

87. Second, Professor McFadden's model-by-model method is unlikely to find economies of scale (even though they exist) if the annual output of a specific model does not vary much in the covered years. The reason is that, absent variation in output levels, one will lack the data necessary

[112] McFadden Declaration ¶32.

to test for economies of scale. For example, suppose a certain model would have per unit costs of $5.00 if 1,000 units were made, $4.00 if 10,000 units were made, and $3.00 if 100,000 units or above were made. This means there are clear economies of scale. Suppose, however, that in the years covered by the data, Tyco made between 190,000 and 210,000 units of that model. Then Professor McFadden's regression would find no evidence that there are economies of scale in the production of that model, but this finding would simply reflect the lack of output variation in the available data. The data supports the view that many models do not have much variation in their output across time. For 97 out of 207 Tyco models, the standard deviation in units is less than 25% of the average units for the model. Thus, it is unsurprising that Professor McFadden's model-by-model method finds little statistically significant evidence of economies of scale.

88. As for his aggregate method, Professor McFadden states that "one can test whether there are economies of scale in [Tyco's] overall manufacturing by performing a statistical test" on the weighted sum of the model-by-model coefficients, and claims that performing this analysis yields "no consistent statistical evidence that [Tyco] had economies of scale at a conventional level of statistical confidence."[113] But his claim is deceptive for two reasons. First, Professor McFadden's backup materials reveal that his aggregate method *did* find evidence of economies of scale at a 92.4% confidence level, or more than 90%, which is "a conventional level of statistical confidence" that Professor McFadden himself has used in his prior academic work.[114] Second, Professor McFadden's backup materials also reveal that his aggregate method arbitrarily excluded Tyco's ten

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[113] McFadden Declaration ¶32.

[114] Rather than producing his actual output data in his backup materials, Professor McFadden produced only his program, called "Paragraph 32.do." Re-running his program reveals that the weighted sum of the model-by-model coefficients is negative and significantly different from zero at a 92.4% confidence level. For an example of Professor McFadden's own work that uses the 90% confidence interval more than a half dozen times, see McFadden, *Contingent Valuation and Social Choice*, 76 AM J. OF AGRICULTURAL ECON. 689, 697, n.10, 698, 701, 702 (1994).

biggest-selling models.[115] Re-running his aggregate method without excluding Tyco's ten biggest-selling models reveals statistically significant evidence of economies of scale at a 99.9% confidence level. Professor McFadden never even mentions in his declaration that he drops Tyco's ten biggest-selling models, much less provides any justification for doing so.

89. An alternative to Professor McFadden's methods that controls for his stated concern that model size may affect costs is to use a control variable for size. The model descriptions in Tyco's data usually contain an indicator of size, typically in gallons or quarts, and I can use this information to calculate a standardized size measurement for each model. Then, using this size measurement as a control variable, I can control for the issue that Professor McFadden identifies of more costly models having smaller levels of production. Using this method, I find that a 1% increase in size leads to a 0.4% increase in cost, and that a 1% increase in the units produced of an individual model leads to a 0.2% reduction in the cost of that model, a result that is almost identical to the results in my reply report.[116] This regression controls for the size issue that Professor McFadden identifies, but does not suffer from problems of small sample size or from limited variation in individual model output. This regression thus confirms that model size differences do not explain the results in my report.

90. Another alternative to Professor McFadden's approach that would control for variation between models would be to use a fixed-effects regression to investigate the existence of

[115] This was revealed by examining Professor McFadden's program, "Paragraph 32.do." His program defines a variable called "avgunits" that takes the value of the mean units produced for each Tyco model from 2001-2006, and then performs his regression only for those Tyco models where the variable "avgunits" has a value that is less than "Tycolimit," which the program hard codes as being equal to 837,832. The program imposes this limit in the following line of code: <xi: reg lcosts i.item*lunits if avgunits<`Tycolimit'.> The program does not show where this 837,832 figure comes from. When I re-run his program, I find that this limitation results in the following ten Tyco model numbers being exclude from his regression: 31143731, 8506SA, 8507SA, 8508SA, 8509SA, 8536SA, 8537SA, 8900SA, 89671, and 8970.

[116] Elhauge Reply Report ¶121.

economies of scale on a model-by-model basis. A fixed-effects regression performs an ordinary regression on the difference between the actual and average value of a variable for an entity, and thus would eliminate Professor McFadden's concern that different models with different production levels might have different costs. I already ran such a fixed-effects regression as part of the programs supporting my reply report that were turned over to the defense. In this fixed-effects regression, I found that a 1% change in Tyco's units produced for a single model leads to a 0.01% change in costs for that model, and that this result is significantly different from zero. This fixed-effects regression that I ran avoids the two problems with Professor McFadden's regression noted above, but he never responds to it. Further, the result of this fixed-effects regression is conservative because it ignores any variation in costs between models of similar sizes and design that may have different output levels. For example, suppose that Tyco offered a red 2 gallon container and a clear 2 gallon container, that Tyco sold 200,000 units of the first container but only 50,000 units of the second container, that the cost of producing the red container was $3.00 while the cost of producing the clear container was $4.00, and that the cost differential was due to different economies of scale. A fixed-effects regression would not capture these economies of scale, because it would look at each model separately and would focus only on the variation in the units produced and costs of each individual container. The alternative approach discussed above of directly controlling for the size of the containers would avoid this problem.

91. Finally, to the degree that Professor McFadden's conclusion based on his regression analysis is that there are no economies of scale even at low production levels, that conclusion would be in conflict with the conclusions of the other data, the documents, and the industry witnesses in

this case.[117] My conclusion on economies of scale, in contrast, is consistent with this other evidence. Professor McFadden never addresses this other evidence of economies of scale.

IV. MY QUALIFICATIONS AND ECONOMIC THEORIES

A. My Qualifications

92. Tyco claims my testimony should be excluded because I am a law professor who lacks an economics degree.[118] I offer no opinion on whether the law requires my exclusion because I lack an economics degree, notwithstanding my knowledge and experience in the field of antitrust economics, because that is a legal question for the Court to decide. But I do respond to Tyco's arguments that: (1) misleadingly omit most of my qualifications, mischaracterize court holdings that in fact qualified me to testify as an expert in antitrust economics, and falsely claim I plan to testify about law rather than economics; and (2) misstate my testimony about econometrics and the relevance of econometrics to my conclusions.

93. *1. My Qualifications in Antitrust Economics.* First, Tyco's repeated claims that I have no qualifications other than being a law professor ignore all the other economic qualifications described in my reports, none of which Tyco denies is true. Those qualifications include: (1) a peer-reviewed economics article on loyalty discounts, (2) textbooks on global and U.S. antitrust law and economics that were peer-reviewed in the proposal stage, (3) being selected to be editor of the *Research Handbook on the Economics of Antitrust Law,* (4) several other lengthy pieces of antitrust economics published in leading law reviews, (5) co-authorship on a volume of the Areeda antitrust treatise that extensively considered the economics of tying, (6) service on a number of law and

[117] Elhauge Report ¶¶99-104.
[118] Tyco Motion to Exclude Elhauge 1-2, 4-8.

economics advisory boards, (7) past experience testifying in court and before Congress on the economic issues raised in this case, (8) other work for the government, and (9) work as an antitrust economics expert in many other cases.[119] Since those reports, I have also published a peer-reviewed article on patent economics.[120]

94. Tyco also mischaracterizes prior decisions on my qualifications. In fact, several courts have qualified me to testify on antitrust economics, and no court has ever held I am not qualified to testify in that field. In two cases, *Masimo v. Tyco* and *Applied Medical Resources v. Ethicon,* the courts qualified me to testify before juries as an expert in antitrust economics regarding the same types of exclusionary contracts that are challenged in this case.[121] In both cases, the courts rejected similar motions that claimed I was not qualified to testify on antitrust economics. In *Masimo*, the court reviewed my qualifications and held that "despite his lack of an economics degree, Mr. Elhauge's 'knowledge, skill, experience, training or education' give him special expertise in the area in which he seeks to testify."[122] Likewise, in *Applied Medical,* the court stated: "The Court finds that Elhauge's background and experience . . . qualify him as an expert in the field of antitrust economics."[123] Both cases, like this one, involved claims against medical device makers who entered into exclusionary contracts with GPOs and bundled or share-based commitments with hospitals. In both cases, I testified, as here, about the extent to which those sorts of exclusionary contracts caused foreclosure, anticompetitive effects, and had offsetting efficiencies. One of those

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[119] Elhauge Report ¶¶3-7; Elhauge Reply Report ¶4. Since my reply report, my economics article on loyalty discounts has been accepted for publication in the peer-reviewed Journal of Competition Law & Economics.

[120] *See* Elhauge, *Do Patent Holdup and Royalty Stacking Lead to Systematically Excessive Royalties*, 4(3) J. COMPETITION LAW & ECON. 535 (2008).

[121] Elhauge Report ¶6.

[122] Masimo Corp. v. Tyco, Case No. CV 02-4770 MRP, May 28, 2004, Memorandum of Decision Re: Motions in Limine at 10-11 (C.D. California) (Judge Pfaelzer).

[123] Applied Medical Resources Corp. v. Ethicon, Case No. SACV 03-1329 JVS MLGx), Tentative Minute Order re Motions in Limine, at 24 (C.D. California) (Judge Selna).

cases (*Masimo*) was against Tyco itself, in which the court rejected Tyco's same argument there that I was unqualified to testify on those issues. In the other case, *Applied Medical*, the court not only qualified me to testify on antitrust economics, but admitted economic testimony in which I used, as noted above, the same comparison methodology Tyco here critiques.[124] I also testified as an expert in antitrust economics at a bench trial in this district before Judge Young in *Amgen v. F. Hoffman La-Roche*.[125] Judge Young there rejected a motion to exclude my testimony that made similar claims that I lacked the qualifications to testify on antitrust economics.[126]

95. Tyco falsely claims that several prior courts have found that prior testimony I have given is impermissibly legal.[127] In fact, in *all* of the cases that Tyco cites, the courts qualified me to testify as an expert. Tyco miscites *Applied Medical* for the proposition that the court singled me out for a corrective instruction.[128] But in fact the court merely issued an instruction that reminded the jury that it should disregard opinions by *any* experts for the plaintiff *or* defendant that conflicted with legal instructions.[129] Nothing in the court's instruction excluded any part of my testimony for being legal analysis rather than economic analysis; to the contrary, as just noted, the court admitted my testimony on antitrust economics. Tyco likewise miscites *Masimo* for the proposition that the court there rejected my testimony as legal.[130] In fact, as just noted, the *Masimo* court qualified me

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[124] *See supra* ¶77 n.94.

[125] Elhauge Report ¶7.

[126] Amgen v. Roche, Jan 3, 2008, Electronic Order Denying Motion to Exclude Expert Report and Testimony of Professor Elhauge Due to Lack of Qualification (D. Mass.) (Judge Young).

[127] Tyco Motion to Exclude Elhauge 14, 20 & n.22.

[128] Tyco Motion to Exclude Elhauge 20 & n.22.

[129] Applied Med. Res. Corp. v. Johnson & Johnson, et al., SACV-03-1329-JVS, 8/22/2006 Tr., 64 ("Ladies and gentleman, during the course of this trial, we have heard opinions from a number of different experts about conduct under the antitrust laws and the significance of certain conduct. At the end of the trial, which will be tomorrow, I will instruct you on the law. I want to remind you that if any of the opinions of the experts differ from the instructions which I give you on the law you are going to be bound to follow the law that I give you.")

[130] Tyco Motion to Exclude Elhauge 14.

to testify as a liability expert on all the same issues of antitrust economics that I cover in this case. What Tyco misleadingly cites is a hearing where the judge expressed skepticism about whether my testimony on liability was necessary for a damages re-trial, not because the judge thought my testimony was legal in nature or economically unsound, but rather because the judge decided that liability issues had already been resolved by the original trial and thus were not relevant to the damages re-trial.[131] That the court continued to view me as qualified is confirmed by the fact that the judge explicitly stated that my economic testimony could be used in the damages re-trial for limited circumstances, such as describing the anticompetitive practices briefly or in rebuttal to correct any misstatements made by Tyco's experts.[132] The judge also agreed that I have been "quite a student of this industry and the practices" [i.e., GPOs, medical devices, and exclusionary contracting practices like those involved here], and said that the analysis of economies of scale that I had performed in advance of the damages re-trial was economically valid.[133] No court has held that I am not qualified to testify on antitrust economics.[134]

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[131] *See, e.g.,* Masimo Corp. v. Tyco Healthcare Group LP, CV 02-4770, 10/5/2006 Hearing Tr. 56.

[132] *See* Masimo Corp. v. Tyco Healthcare Group LP, CV 02-4770, 10/5/2006 Hearing Tr. 65. The court never actually had to make an explicit ruling on whether to admit my testimony in the damages re-trial because the parties mutually agreed to limit the damages re-trial to one witness, the damages expert for each side. *See id.* at 70.

[133] *See* Masimo Corp. v. Tyco Healthcare Group LP, CV 02-4770, 10/5/2006 Hearing Tr. 65-66.

[134] The *Pinal Creek* case that Tyco cites is a red herring. It was not an antitrust case and did not involve any of the issues of antitrust economics that are raised in this case. Rather, it was an environmental case, where the issue was whether one corporation was responsible for cleaning up the facility of another corporation, which turned on whether they operated jointly in a way that transgressed traditional corporate norms. The court admitted me as an expert to testify that those corporate norms were transgressed. It excluded only a few pages from my expert report which added the opinion that, given the antitrust law that prevailed in the past, certain old investigatory findings by Department of Justice's Antitrust Division confirmed that those corporate norms had been transgressed by joint operation and operational meddling that exceeded the role of a mere investor. Pinal Creek Group v. Newmont Mining Corp., 352 F. Supp. 2d 1037, 1046 (D. Ariz. 2005). Here, unlike there, I am not offering any opinions about what antitrust law currently means or has meant, as was clear in my original report. Instead, all of my opinions in this case are about the economic effects of certain conduct.

96. Tyco also mischaracterizes the nature and scope of my opinions and testimony, asserting – without any support – that I plan to testify about legal issues rather than economic ones.[135] Nothing could be further from the truth. I regard it as exclusively the province of the Court to determine the law and proper interpretation of any cases and legal principles in this case. All of my opinions and intended testimony are instead based solely on antitrust economics. Indeed, the scope of my testimony addresses the same topics covered by the defense's economic experts.

97. My report and deposition testimony make clear that all of the issues I plan to testify about are purely economic in nature. Nowhere in my reports do I ever cite any cases or rely on any propositions of law. In my deposition, I made this crystal clear, by stating repeatedly that none of my opinions are based on law and that I do not intend to testify on any legal issues. Specifically, in my deposition I made the following statements that emphasized and made perfectly clear the fact that I would not be testifying on any legal issue:

> (1) In response to a question directly asking whether I was "offering an opinion about whether anything [Tyco] did was against the law" I stated: "I'm not offering an opinion on that, on whether anything [Tyco] did is against the law."[136]
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> (2) In response to a question asking whether the antitrust laws guarantee competitors "any particular level of success," I stated: "But I'm not rendering a legal opinion, I guess, that's for the law, and I would not be testifying in court about whether the antitrust laws guarantee anything."[137]
>
> (3) In response to a question asking about the legal definition of tying, I stated "I'm not going to opine on the law in this case, but I can answer it, but I want to make clear this is not something that I'm planning to offer testimony on."[138]
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> (4) In response to a question asking whether Tyco's administrative fees to GPOs represented bribes or kickbacks, I stated "I guess that's a legal term, and I am

[135] *See* Tyco Motion to Exclude Elhauge 3 (claiming I am "committed to proffering improper legal advocacy rather than independent expert evaluation" and citing nothing in support); 19-20 (claiming that I "seek[] to present Plaintiffs' closing arguments from the witness stand, but to cloak that advocacy in the ostensible neutrality of an expert in economics," but citing no factual material in support of this claim).

[136] Elhauge Deposition 29.

[137] Elhauge Deposition 30.

[138] Elhauge Deposition 48.

not offering any legal opinion in this case."[139]

(5) In response to a question about whether it would be lawful for small buyers to aggregate their purchasing volume in the but-for world, I stated "I'm not opining about legality."[140]

In short, I made clear no less than five times during my deposition that I would not testify on any legal issue at trial, and the only time that legal materials were ever mentioned in my deposition were when Tyco's counsel insisted that I answer questions about legal issues.

98. Tyco also claims that I am a "plaintiff's advocate" who "began his work in the healthcare arena as a paid consultant" and has "never concluded that a medical device manufacturer did not engage in anticompetitive conduct."[141] These Tyco claims are all factually false. To start, it is patently untrue that I began my work in the "healthcare arena" as a paid consultant. I have been teaching health law policy since 1988, and writing scholarship in the area since the early 1990s, and I was not retained by anyone in conjunction with challenges to GPO practices until 2002. It also is false that I am a plaintiff's advocate, and in fact I have been an economics expert for defendants in a number of cases, including cases involving loyalty discounts. I have opined on behalf of plaintiffs in several cases involving medical devices, but that simply reflects the fact that many dominant medical device manufacturers entered into the same sorts of exclusionary contracts with GPOs and buyers. It is unsurprising that I have similar opinions about similar types of exclusionary conduct. It is untrue that I always "conclude" that every medical device manufacturer engaged in anticompetitive conduct.[142] Quite the contrary, in the medical device cases in which I have been

[139] Elhauge Deposition 61.

[140] Elhauge Deposition 162.

[141] Tyco Motion to Exclude Elhauge 19-20, n.20.

[142] The portion of my deposition that Tyco miscites for this proposition states only that "as an expert" I never "offered an opinion" that a medical device manufacturer did not engage in anticompetitive conduct, which does not at all mean that I concluded the conduct of every medical device manufacturer was anticompetitive. Elhauge Deposition 33-34.

involved, the only times I concluded that firms were engaged in anticompetitive conduct was when the firms had market power and foreclosed substantial market shares with exclusionary agreements that lacked redeeming efficiencies. I have not concluded that other conduct engaged in by those firms was anticompetitive. Nor have I concluded that other device manufacturers in those markets acted anticompetitively if they lacked market power, did not foreclose substantial market shares, or did not use exclusionary agreements. In any event, the fact that I have served as an *economic* expert for plaintiffs in several similar cases, if anything, confirms that my testimony will be economic in nature, not legal, and that I have knowledge and experience in the area.

99. *2. My Ability to Apply Econometrics and Its Relevance to My Conclusions.* Tyco falsely claims that I admitted in my deposition that I lack the expertise in econometrics necessary to perform the analysis in this case.[143] In fact, my testimony clearly stated that my expertise is in the field of antitrust economics, which involves applying economics, including sometimes econometrics, to antitrust issues. I simply acknowledged that, while I had the expertise to *apply* econometric methods to antitrust issues, I was not a scholar who develops *new* econometric methods. In my deposition, I clearly explained this, stating:

> "I am an expert in antitrust economics. . . . It's the application of economic principles and methods to antitrust issues. . . . So it's like many applied fields. It's the relevance of those principles and methods to a particular set of issues that are raised in antitrust cases. . . It's more the application to antitrust issues or to healthcare issues, for example, or contracts issues, or specific applied fields of economics that I have expertise in.... There's applications of econometric methods to various issues that I have used, but I'm not a scholar who develops methodology in econometrics."[144]

100. That I have expertise in applying econometrics but not in developing new methods

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[143] Tyco Motion to Exclude Elhauge 2, 5.
[144] Elhauge Deposition 8-9.

in econometrics is hardly surprising because antitrust economics – a well-recognized field of expertise in which I have been repeatedly qualified before – is an applied field. That is, it involves the application of economics (including, sometimes, econometrics) to antitrust issues, which was precisely the point I made in my deposition. The importance of expertise in this applied field is amply demonstrated in this case because Tyco offers a declaration from Professor McFadden who has expertise in econometrics, but no apparent expertise in applying econometrics to antitrust issues, which probably explains why (as I show above) he makes errors that reflect basic conceptual misunderstandings about antitrust economics and the issues raised in this case.[145] Further, my analysis above showed that, if one correctly understands the relevant antitrust economics and issues in this case, it is clear that I committed no errors in applying econometrics to the relevant antitrust issues, and indeed that my application of econometrics here itself demonstrates my ability to do so with expertise.

101. Moreover, even if (contrary to fact) Tyco were right that I lack the expertise to apply econometrics to antitrust issues or performed such analysis incorrectly in this case, that would not undermine any of my conclusions. My report applied econometric techniques in only two areas, namely when I used regression analysis to confirm other evidence on (1) the economies of scale of Tyco and BD, and (2) the anticompetitive impact of Tyco's exclusionary agreements.[146] Using these regressions is thus clearly not necessary for my opinions on all the other myriad topics covered in my reports. Nor are these regressions even necessary for my opinions on the particular issues of economies of scale or anticompetitive impact, because those regressions simply confirmed conclusions I independently reached based on copious non-econometric evidence.

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[145] *See supra* ¶¶74-76.
[146] *See* Elhauge Report ¶¶96, 192; Elhauge Reply Report ¶¶121, 177.

102. In analyzing economies of scale, the non-econometric evidence I relied on included [redacted][154]

While my regression analysis confirmed the existence of economies of scale, and was done properly for reasons detailed in Part III, my conclusions about economies of scale would remain unchanged without any regressions based on all of these other separate and independent sources of evidence. Moreover, as noted above, there is no actual dispute about economies of scale in this case.[155]

103. Similarly, although my regressions confirmed my conclusion on anticompetitive impact, and were done properly for reasons detailed above, my conclusion would remain unchanged without any econometric evidence based on the copious non-econometric evidence I relied on for that conclusion. In concluding that Tyco's rivals suffered anticompetitive impact, the non-econometric evidence that I relied on included: (1) direct evidence from Tyco's documents that its exclusionary contracts impeded the ability of rivals to compete and were designed to do so,[156] (2)

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[147] Elhauge Report ¶96.
[148] Elhauge Report ¶99.
[149] Elhauge Report ¶103.
[150] Elhauge Report ¶103.
[151] Elhauge Report ¶104.
[152] Elhauge Report ¶100.
[153] Elhauge Report ¶101.
[154] Elhauge Report ¶102.
[155] *See supra* ¶83.
[156] Elhauge Report ¶¶106, 110-111, 123-124, 130-134, 177, 186.

the fact that the contracts involved not only significant price penalties on those who did not restrict dealings with rivals, but affirmative commitments by buyers and GPOs to limit or eliminate any dealings with Tyco's rivals,[157] (3) [redacted] simultaneous comparisons of rivals' performance at buyers burdened and unburdened by exclusionary contracts,[161] and (7) longitudinal comparisons of rivals' performance over time as exclusionary contracts changed.[162] The regression analysis was thus only one type of evidence supporting anticompetitive impact, and without the regressions my conclusions would remain unchanged based on all these separate and independent sources of evidence proving anticompetitive impact.

104. Tyco tries to rebut this non-econometric evidence by claiming that Natchitoches Hospital testified that it was "free to buy from any sharps container vendor despite its GPO contracts."[163] But Natchitoches Hospital neither agreed to a buyer-commitment contract nor bought containers through a sole-source GPO. Thus, Natchitoches was not foreclosed, and any freedom it may have had is thus irrelevant to whether the foreclosed market was free. The harm to Natchitoches was that, to keep its freedom, it was forced to pay a penalty price on top of the anticompetitive price increase that the marketwide foreclosure inflicted on all buyers. Moreover, the Natchitoches testimony cited by Tyco never says the hospital bought sharps containers without

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[157] Elhauge Report ¶¶123, 138, 146-47; *see also* Ordover Motion to Exclude Declaration ¶1, n.2 (admitting that "under a sole source contract with [Tyco] covering disposable sharps containers, the GPO would agree to broker transactions for disposable sharps containers *only* between [Tyco] and its members hospitals.") (emphasis added).

[158] Elhauge Report ¶¶172-74.

[159] Elhauge Report ¶175.

[160] Elhauge Report ¶176.

[161] Elhauge Report ¶¶179-87.

[162] Elhauge Report ¶189.

[163] Tyco Motion to Exclude Elhauge 8, n.6.

going through a GPO; it says only that it bought "housekeeping carts" without using a GPO.[164]

105. Tyco wrongly claims that aspects of my analysis other than the regressions I performed "require expertise in econometrics and statistical analysis" when they do not involve econometric issues at all.[165] To start, Tyco claims that my simultaneous comparisons require econometric expertise.[166] But none of my simultaneous comparisons involved econometric analysis, as none of them involved any regressions. Instead, Tyco's argument for why these simultaneous comparisons involved econometrics seems to be that it requires econometric expertise to "properly populate[] a 'control group' and 'treatment group.'"[167] But in fact, identifying which buyers are burdened by exclusionary contracts, and which are not, does not require econometric expertise at all; instead, this exercise requires expertise in antitrust economics, the precise area of my expertise. Determining whether buyers are being burdened by the exclusionary contracts turns on (1) an analysis of the terms of those contracts and any efficiency claims, and (2) an analysis of which buyers have which contracts. Neither of these parts of the inquiry involve any econometrics whatsoever. Instead, they require one to understand the antitrust economic theories that I described in my initial report so that one can properly determine which contracts are exclusionary and what sort of exclusionary effects they have. Econometric training is thus not required for this exercise in classifying contracts.

106. Tyco also claims that one must be an expert in econometrics to understand how logarithms work, claiming that a footnote in my report that explains how to convert a coefficient in a logarithmic regression into percentage terms "makes plain [that I] purport[] to opine on complex

[164] Crowder Deposition 67-68.
[165] Tyco Motion to Exclude Elhauge 6.
[166] Tyco Motion to Exclude Elhauge 5-6.
[167] Tyco Motion to Exclude Elhauge 6.

economic and statistical matters."[168] But my footnote that Tyco cites affirmatively disproves its claim that I am unqualified to testify about any of these issues, because all of my analysis in this footnote is completely and indisputably correct, and none of Tyco's economic experts have ever challenged any aspect of this footnote. Nor does one need a doctorate in statistics to do algebra involving logarithms, which is all this footnote does.

B. My Theories on Loyalty Discounts Comport with Peer-Reviewed Economics Scholarship

107. Tyco claims that my economic theory that loyalty discounts can be anticompetitive even when they are voluntary and above-cost conflicts with the law and antitrust scholarship.[169] I express no view on what the law might be, but it is clear that my views on the economics do comport with peer-reviewed *economics* scholarship. Putting aside my own economics scholarship, my reports cited no less than 23 separate works of antitrust economics by other scholars supporting my views.[170] Tyco simply ignores all this work, and even scholarship by its own expert, Professor Ordover, that supports my views.[171]

108. At root, Tyco's argument rests on its economic claims that: (1) a difference between loyal and disloyal prices must reflect a true discount from but-for prices, (2) loyalty contracts cannot have anticompetitive effects if buyers enter into them "voluntarily" or if they require less than 100% exclusivity, and (3) loyalty discounts must be below cost to generate economic harm.[172] All three of these claims have been disproven by the peer-reviewed economics literature.

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[168] Tyco Motion to Exclude Elhauge 6.
[169] Tyco Motion to Exclude Elhauge 3, 17-19.
[170] *See* Elhauge Report ¶¶26-37.
[171] Elhauge Report ¶41; Elhauge Reply Report ¶¶13-14.
[172] Tyco Motion to Exclude Elhauge 3, 17-19.

109. Before explaining the economic theory, a concrete, hypothetical illustration may help. Suppose a monopolist charges $200 for a product that costs $100 to make. Other firms stand poised to enter the market, or to expand until they achieve sufficient scale to reduce their costs to $100, in which case competition will drive prices down to $100. To prevent this competitive outcome, the monopolist announces a loyalty program under which its price is $250, unless buyers agree to be loyal and buy 90% of their needs from the monopolist, in which case buyers get a nominal "discount" of $50. All the buyers agree to avoid the $50 price penalty, foreclosing 90% of the market. As a result, rivals cannot enter, or expand enough to achieve their minimum efficient scale, and the buyers all continue to pay the monopoly price of $200, which is double the $100 price they would have paid but for the loyalty program.[173]

110. This example illustrates the flaws in all three of Tyco's claims. (1) The loyalty "discount" does not reflect a true discount from but-for prices, but instead reflects a $50 penalty on disloyal buyers. (2) The harm arises even though each buyer "voluntarily" agreed to the loyalty contract in order to avoid paying $50 more, and even though the share-based requirement is 90% rather than 100%. (3) The harm arises even though all prices are above cost and even though rivals would have been equally efficient – meaning that they would have been able to lower their costs to $100, the same as the monopolist – if they had not been foreclosed. Indeed, the harm to loyal buyers is precisely that the nominal loyalty "discount" is at a price that exceeds the but-for price, and thus necessarily exceeds cost, and disloyal buyers are harmed even more because they pay more than loyal buyers.

[173] Anticompetitive effects do not depend on the disloyal price exceeding the pre-program price. For example, if the disloyal price equaled the pre-program monopoly price of $200, then a loyalty "discount" of $50 would still mean that all buyers would pay $150, which is $50 above the competitive price that would have resulted but for the loyalty program.

111. These points are all supported by the economic literature. ***First***, that literature shows that a monopolist can get buyers to agree to be loyal for a nominal "discount" from the price charged disloyal buyers, even though the result of all them agreeing is that they exclude the monopolist's rivals and then pay higher prices than the but-for competitive price they would have paid.[174] Although many of these models focus on the simple case of excluding an entrant, the results are equally applicable when the loyalty contracts prevent small rivals from achieving economies of scale.[175] Thus, the term loyalty "discount" does not mean that buyers pay less than but-for prices. In fact, the contracts, standing alone, can show only that disloyal buyers pay more than loyal buyers. Because the disloyal price can be artificially increased, or inflated by the anticompetitive effects, giving a loyalty "discount" from the disloyal price can still result in prices far higher than but-for competitive prices.

112. ***Second,*** the economic literature shows that anticompetitive effects are not disproven by "voluntary" buyer agreement to loyalty contracts. In all the economic models noted above, buyers voluntarily agree in order to get "discounts" from disloyal prices, but the overall result is an anticompetitive price increase. These models find that buyers agree to exclusionary contracts that harm buyers as a whole because the harm caused by each buyer's individual decision to agree is largely externalized onto the rest of the market, in the form of a marketwide reduction in competition and increase in prices. A buyer with 1% market share whose agreement contributes to a marketwide

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[174] Farrell, *Deconstructing Chicago on Exclusive Dealing*, 50 ANTITRUST BULLETIN 465, 476 (2005); Elhauge, *How Loyalty Discounts Can Perversely Discourage Discounting*, 5. J. COMPET. L. & ECON. (forthcoming March 2009); Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253, 284-92 (2003); Segal & Whinston, *Naked Exclusion: Comment*, 90 AM. ECON. REV. 296 (2000); MICHAEL D. WHINSTON, LECTURES ON ANTITRUST ECONOMICS 144-47, 166 (2006); Kaplow & Shapiro, *Antitrust*, in 2 HANDBOOK OF LAW & ECONOMICS 1073, 1203-1210 (eds. Polinsky & Shavell, 2007); Rasmusen, et al., *Naked Exclusion*, 81 AM. ECON. REV. 1137 (1991); ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 406-410 (2008).

[175] WHINSTON, *supra* note 174, at 147; Kaplow & Shapiro, *supra* note 174, at 1206; Elhauge *Defining Better*, *supra* note 174, at 320-23; ELHAUGE, U.S. ANTITRUST, *supra* note 174, at 316-17, 408.

price increase externalizes 99% of the harm caused by its contribution to that increase in market prices. In contrast, the benefits of avoiding disloyal pricing by agreeing to the exclusionary contract go entirely to the individual buyer that agrees.

113. This externality problem gives buyers incentives to accept (or even initiate) exclusionary agreements that harm other buyers, and other buyers have similar incentives, meaning they can all have individual incentives to enter into exclusionary agreements even though the ultimate result of all of them doing so is that all buyers are harmed. Indeed, when, as here, there are many buyers, the monopolist can get buyers to voluntarily agree to anticompetitive agreements for an arbitrarily small "discount" from disloyal pricing.[176] Even with the small "discount," each buyer has incentives to accept the monopolist's "discount," and the exclusionary effect is magnified as the buyers' actions collectively bar rivals from entering or expanding. Thus, as a matter of economics, anticompetitive effects here do not depend on whether the buyers acted involuntarily.

114. Nor do the anticompetitive effects from loyalty discounts depend on the agreements being literally 100% exclusive for participating buyers.[177] The anticompetitive effects flow from the foreclosure created by the exclusionary contracts, and to create anticompetitive foreclosure, the agreements need not completely prohibit buyers from dealing with a firm's rivals. For example, if

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[176] Kaplow & Shapiro, *Antitrust*, *supra* note 174, at 1204, 1212; Farrell, *supra* note 174, at 476-77; WHINSTON, *supra* note 174, at 144-47; Elhauge, *Defining Better*, *supra* note 174, at 284-88.

[177] *See* Kaplow & Shapiro, *Antitrust*, *supra* note 174, at 1203 n.198 (stating that "the economic principles and analysis are similar" for "exclusive dealing" and "discounts to buyers that purchase a large fraction of their needs from the incumbent supplier"); *id.* at 1206 n.207 (stating that "formal exclusivity contracts are not necessary for this result [that rivals can be excluded by a dominant firm's contracts]. Similar effects may arise from pricing strategies (such as quantity or loyalty discounts)"); Willard K. Tom, David A. Balto & Neil W. Averitt, *Anticompetitive Aspects of Market-Share Discounts and Other Incentives to Exclusive Dealing*, 67 ANTITRUST L.J. 615, 615, 623-24, 627 (2000) ("market-share discounts structured to produce total or partial exclusivity should be judged according to the same economic principles that govern exclusive dealing" and should be condemned "if they produce anticompetitive effects without counterbalancing procompetitive effects"); Elhauge, *How Loyalty Discounts*, *supra* note 174, at 1, 4-5, 19-25, 30 ("These anticompetitive effects occur . . . even if the loyalty conditions require no buyer commitments and less than 100% loyalty."); ELHAUGE, U.S. ANTITRUST, *supra* note 174, at 407-408.

loyalty contracts in a certain market foreclosed 90% of sales to 80% of the buyers, then those contracts would achieve 72% marketwide foreclosure. This foreclosure would be even more anticompetitive than 100% foreclosure of 70% of buyers.

115. ***Third***, nothing in the economic theory depends on the loyal price being below cost. In all the economic models cited above, the price with the loyalty discount is well above cost, indeed at monopoly levels. The fact that the loyal price exceeds costs does not eliminate the anticompetitive effect; it makes it all the greater. Unlike with predatory pricing, what causes the anticompetitive effect from loyalty discounts is *not* low prices, but the *exclusionary conditions* attached to price differences. If a monopolist just wanted to give discounts, it could do so without conditioning those discounts on agreeing to exclusionary contracts. Further, a cost-based test would perversely exempt the *most* anticompetitive form of loyalty pricing, namely charging penalty prices to get buyers to agree to loyalty contracts at supracompetitive prices that are above but-for levels, and thus necessarily above cost.

116. As the example above illustrates, and the economic models show, loyalty contracts can foreclose rivals that are equally efficient (in the sense of having a long run cost curve that is as low as the defendant's) because the foreclosure created by the loyalty contracts may prevent such rivals from expanding and achieving economies of scale.[178] The sole-source GPO contracts can also raise the costs of equally efficient rivals by depriving them of the most efficient means of brokering their sales.[179] In addition, foreclosing rivals who would never be equally efficient also can cause

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[178] ELHAUGE, U.S. ANTITRUST, *supra* note 174, at 412; Elhauge, *How Loyalty Discounts*, *supra* note 174, at 27-28. The economic models cited in footnote 174 all involved the exclusion of equally efficient rivals by preventing them from achieving their economies of scale.

[179] *See* Elhauge Report ¶35; HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY 421 (2d ed. 1999) (noting that "foreclosure theories of exclusive dealing become more robust if" a the substantial foreclosure is "raising rivals' costs by relegating them to inferior distribution channels"); Thomas G. Krattenmaker & Stephen C. Salop,

anticompetitive harm by reducing constraints on monopoly pricing.[180] Further, even if rivals were equally efficient and able to achieve all of their efficiencies, rivals and consumers could still be harmed by loyalty contracts because such foreclosure could impair rival expandability.[181] Rather than assuming that rivals can instantly expand, standard economic models of market power instead assume that rivals' ability to expand depends in part on how large the rivals already are. That is, these models reasonably assume that larger firms will be able to expand further and faster than smaller firms. Thus, because foreclosure reduces the market share of rivals, it lessens their ability to constrain pricing by the monopolist by expanding to win sales away from it, even if rival efficiency is unimpaired. Loyalty discounts can also perversely encourage equally efficient rivals to offer higher prices to uncommitted buyers by making it more costly for the defendant to compete for uncommitted buyers, and discourage rivals from offering lower prices to committed buyers because defendant pricing responses makes any such price cuts futile and thus irrational.[182]

117. Thus, as a matter of economics, anticompetitive effects here do not depend on allegations that the loyalty discounts resulted in below-cost pricing. Not only is a cost-based test inconsistent with the economic models already described, it has been explicitly rejected in the economic literature on loyalty discounts.[183] Other literature likewise explicitly rejects cost-based tests for bundled discounts for similar reasons.[184]

Anticompetitive Exclusion: Raising Rivals' Costs to Achieve Power Over Price, 96 YALE L.J. 209, 234-45 (1986); Elhauge, *Defining Better, supra* note 174, at 321.

[180] ELHAUGE, U.S. ANTITRUST, *supra* note 174, at 413.

[181] *Id.* at 317.

[182] *Id.* at 412-413; Elhauge, *How Loyalty Discounts, supra* note 174.

[183] *See* Elhauge, *How Loyalty Discounts, supra* note 174, at 27; Gavil, *Exclusionary Distribution Strategies by Dominant Firms*, 72 ANTITRUST L.J. 3, 56-61 (2004); Spector, *Loyalty Rebates*, 1(2) COMPETITION POLICY INT'L 89, 108-09 (Autumn 2005); ELHAUGE, U.S. ANTITRUST, *supra* note 174, at 412-13.

[184] *See* Greenlee, Reitman, & Sibley, *An Antitrust Analysis of Bundled Loyalty Discounts*, 26 INTERNATIONAL J. INDUSTRIAL ORG. 1132, 1149 (2008); Brennan, *Bundled Rebates as Exclusion Rather than Predation*, 4 J. COMP. L. & ECON. 335, 353-59, 371 (2008). Brennan makes clear his analysis also applies to single-product loyalty discounts.

118. Ignoring all the above economics literature, most of it peer-reviewed, Tyco cites to four law review articles by law professors and one unadopted legal staff memorandum.[185] None of Tyco's cited sources was peer reviewed and none actually supports Tyco's argument. The articles by Professor Hovenkamp, Associate Professor Lambert, and Assistant Professor Crane are limited to (1) real discounts from but-for prices, that (2) are *not* conditioned on commitments.[186] Here, instead, the prices reflect a penalty above but-for prices and were generally conditioned on commitments.[187] Moreover, Professors Hovenkamp and Crane actually *agree* with me that above-cost loyalty or bundled discounts can have anticompetitive effects as an economic matter, and take the view that they should be legal only because they doubt the administrative competence of courts to assess when that is the case.[188] Professor Lambert does differ from them and myself in asserting that above-cost loyalty discounts can never be anticompetitive, but his assertion fails to address all the economic literature summarized above. What Tyco quotes from Assistant Professor Wright actually attempts to rebut an irrelevant claim that he erroneously attributes to me: the claim that a monopolist should have per se liability whenever it forecloses more than 50% of a distribution market.[189] His discussion is clearly irrelevant, not only because I never made the claim he rebuts,

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See id. at 339, 345, n.37, 363. In addition to the reasons Brennan notes, bundled discounts have similar economics to loyalty discounts that cover both contestable and incontestable portions of demand for a single product. ELHAUGE, U.S. ANTITRUST, *supra* note 174, at 411-12.

[185] Tyco Motion to Exclude Elhauge 19.

[186] *See* Herbert Hovenkamp, *Discounts and Exclusion*, 2006 UTAH L. REV. 841, 844, 846-47 (2006); Hovenkamp, *The Law of Exclusionary Pricing*, 2(1) COMPETITION POLICY INT'L 21, 27-28 (Spring 2006); Thomas A. Lambert, *Evaluating Bundled Discounts*, 89 MINN. L. REV. 1688, 1689, 1713 (2005); Crane, *Mixed Bundling, Profit Sacrifice, and Consumer Welfare*, 55 EMORY L.J. 423, 443-44, 451, 461-62, 473- 4775 (2006). All my observations about Professor Hovenkamp's *Utah Law Review* article apply equally to the Tyco-cited portions of Professor Hovenkamp's treatise, which are almost identical to his article.

[187] *See supra* ¶¶8-9.

[188] Herbert Hovenkamp, *Discounts and Exclusion*, *supra* note 186, at 843, 847-48; Crane, *Mixed Bundling*, *supra* note 186, at 454, 479-80.

[189] *See* Joshua D. Wright, *Antitrust Law and Competition for Distribution*, 23 YALE J. ON REG. 169, 197 (Summer 2006). Other portions of his article, which Tyco cites but does not quote, argue that terminable contracts should be per se legal, but his argument on that point ignores the above-cited economics literature, and in any event the

but also because I never relied on such a claim at any point in this case. Tyco's last citation is to a footnote in a staff memorandum that: (a) was never adopted by the Antitrust Modernization Commission, (b) used the term "loyalty discounts" to mean volume-based discounts, rather than share-based contracts like those challenged here, and (c) made only the noneconomic legal assertion that such volume-based discounts were generally lawful.[190]

119. Finally, Tyco also makes the outrageous claim that I "do[] not believe that [Tyco's] rivals should be required to compete aggressively to win business."[191] Nothing could be further from the truth. As is obvious from my reports, my actual view is precisely the opposite. My view is that rivals should be allowed to compete aggressively to win business and would be better able to do so in the but-for world, but are prevented from competing aggressively in the actual world by Tyco's exclusionary contracts.[192] I strongly favor above-cost price competition. The problem is with exclusionary commitments, which can create anticompetitive effects that raise prices, anticompetitive effects that are worsened, not alleviated, by the fact that even higher prices are charged to uncommitted buyers even if one calls that price difference a "discount."

120. The only support Tyco offers for its false claim that I oppose above-cost price competition is its own mischaracterization of a sentence from my reply report, which Tyco claims stated that "Prof. Elhauge protests that 'Professor Ordover would require rivals to lower their prices below their usual levels to offset the [discounts] imposed by Tyco.'"[193] In fact, my sentence not only never said I was "protesting" any rival price reduction, but also used the word "penalties" not

agreements challenged here were not freely terminable.

[190] Tyco Motion to Exclude Elhauge Exhibit M, at 39, n.155.

[191] Tyco Motion to Exclude Elhauge 18.

[192] *See, e.g.*, Elhauge Report ¶¶1, 32-33, 35, 120, 200.

[193] Tyco Motion to Exclude Elhauge 18.

"discounts," making clear that the premise was not that Tyco was giving true discounts, but rather that it was inflicting price penalties on buyers who refused to accept exclusionary commitments.[194] Further, the rest of the paragraph makes clear my objection was *not* that offsetting rival price cuts would occur, but precisely the contrary: that, given the exclusionary commitments, rival price cuts were unlikely to actually occur, unlikely to be able to offset the price penalties, and unlikely to eliminate the anticompetitive effects from the exclusionary commitments.[195] *Without* the exclusionary conditions, on the other hand, rivals would have had more incentives and ability to cut prices to match any true above-cost discounting. The problem with Tyco's exclusionary conditions was that they *did not* permit rivals to just compete directly on price and quality.

* * *

I declare under penalty of perjury that the foregoing is true and correct. Executed November 14, 2008.

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Einer Elhauge

[194] Elhauge Reply Report ¶73.
[195] Elhauge Reply Report ¶73.

Exhibit 17B [Declaration]: BD, Daniels & Stericycle Share of Sales at Novation, Premier & the Non-Novation Segment Before and After Novation Became Multi-Source in August 2005