

1 Robert A. Mittelstaedt #60359  
ramittelstaedt@jonesday.com  
2 Craig E. Stewart #129530  
cestewart@jonesday.com  
3 Michael Scott #255282  
michaelscott@jonesday.com  
4 JONES DAY  
5 555 California Street, 26th Floor  
San Francisco, CA 94104  
6 Telephone: (415) 626-3939  
Facsimile: (415) 875-5700

7 Attorneys for Defendant  
APPLE INC.

8  
9 UNITED STATES DISTRICT COURT  
10 NORTHERN DISTRICT OF CALIFORNIA  
11 SAN JOSE DIVISION

12  
13 THE APPLE IPOD iTUNES ANTI-TRUST  
LITIGATION.

Case No. C 05-00037 JW  
C 06-04457 JW

14  
15 **REPLY EXPERT REPORT OF  
DR. MICHELLE M. BURTIS**

16 **Date:** November 23, 2009  
17 **Time:** 9:00 A.M.  
18 **Place:** Courtroom 8, 4th floor

19  
20  
21 **I. INTRODUCTION**

22 1. My background and experience are summarized in my expert report of June 17,  
23 2009 in the indirect purchaser case.<sup>1</sup> Previously I submitted a Declaration in this matter regarding  
24 the opinions of plaintiffs' expert, Professor Noll.<sup>2</sup> Attorneys for Apple have asked me to review

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26 <sup>1</sup> Expert Report of Dr. Michelle M. Burtis, Ph.D., *Somers v. Apple Inc.*, Case No. C 07-6507 JW, June 17, 2009.

27 <sup>2</sup> Expert Report of Dr. Michelle M. Burtis, *Apple iPod iTunes Antitrust Litigation*, Case No. C 05-  
28 00037 JW, C 06-04457 JW, October 5, 2009 ("Burtis Report").

1 the Reply Declaration submitted by Professor Noll and to evaluate the claims made in that  
2 Declaration.<sup>3</sup>

3 2. In preparing this Report, I have reviewed Professor Noll's Reply Declaration,  
4 materials cited in his Declaration, his deposition transcript, as well as other materials listed in  
5 Exhibit 1 to this Report.

6 **II. PROFESSOR NOLL'S PROPOSED "BEFORE-DURING" APPROACH**

7 3. In my first report, I described why Professor Noll's proposed "before and during"  
8 method would not work in this case.<sup>4</sup> Professor Noll's response, in his reply report and at his  
9 deposition, confirms the problems with his proposed methods.

10 **A. Omission of Important Variables in the Before-During Regression**

11 4. Professor Noll's before-during model assumes that the important factors that affect  
12 the demand for iPods (and which, according to plaintiffs' theory, could have increased the price of  
13 iPod products) can be measured and included as variables in a regression analysis. Professor Noll  
14 claims that his proposed model would include variables that measure product features, cost and the  
15 stage of the product in its life-cycle.<sup>5</sup>

16 5. I agree with Professor Noll that all regressions may have some omitted variables  
17 and that the key question is whether omitting some of the variables would bias the estimate of the  
18 effect of the challenged conduct. However, I disagree with him that omitting many of the variables  
19 that account for iPods' success would not bias any estimate of the effect of the challenged conduct  
20 on prices. These variables include Apple's innovative design of iPods, ease of their use, their  
21 perceived "coolness," and the availability of easily accessible downloadable music that became  
22 available around the same time as the challenged conduct and was a complementary product to  
23 iPod products. All these factors increased the demand for iPods, which, according to plaintiffs'

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25 <sup>3</sup> Reply Declaration of Roger G. Noll, *Apple iPod iTunes Antitrust Litigation*, October 19, 2009  
26 ("Noll Reply").

27 <sup>4</sup> Burtis Report ¶¶ 14-22.

28 <sup>5</sup> Declaration of Roger G. Noll, *Apple iPod iTunes Antitrust Litigation*, Case No. C-05-00037,  
July 15, 2008 at p. 55.

1 theory, could have increased the market prices for iPods. Therefore, not only would these omitted  
2 variables likely be correlated with the challenged conduct but they are likely to be positively  
3 correlated. (For example, improvements in the design of iPods during the class period would lead  
4 to higher demand, and therefore under plaintiffs' theory, higher market prices.) As I discussed in  
5 my last report, it is well understood that not accounting for variables that are positively correlated  
6 with the challenged conduct and prices would overstate any estimated effect of the challenged  
7 conduct.<sup>6</sup> That means that, if a regression does not include a variable that accounts for these  
8 causes of increased demand, the effect of those causes will be mistakenly attributed to the alleged  
9 conduct and the regression will find an "overcharge" when none may, in fact, exist. Therefore,  
10 Professor Noll's suggestion that he need not be concerned about omitting these factors is not  
11 accurate.

12         6. Professor Noll's claim that the problems created from omitting important variables  
13 can be solved by using "instrumental variables" is an attempt to sidestep the primary issue that the  
14 variables are not measurable. He does not address the inherent difficulties in identifying and  
15 measuring the omitted variables in this case. First, Professor Noll's description of an "instrumental  
16 variable" is not correct. Professor Noll describes it as a variable that should be "correlated with the  
17 omitted variable but not with the included variables." In this case, and adopting Professor Noll's  
18 description, he must find variables that are correlated with the innovative design of iPods, ease of  
19 their use, their perceived "coolness," and availability of easily accessible downloadable music but  
20 those variables cannot be correlated with the effect of the alleged conduct, one of the variables that  
21 is included in the regression. Professor Noll is describing finding a variable that is more like a  
22 proxy for some variable, rather than an instrument. However, if there was a reliable proxy for a  
23 variable, then it would be considered measurable. That is, Professor Noll's approach of  
24 "instrumental variables" is incorrect.<sup>7</sup> Professor Noll has neither proposed such an instrument nor  
25 shown how he would identify an instrument that would satisfy the necessary econometric criteria.<sup>8</sup>

26 <sup>6</sup> Burtis Report at ¶18.

27 <sup>7</sup> Noll Reply, p. 34. "The method of instrumental variables involves the search for a new variable  
28 Z which is both highly correlated with the independent variable X and at the same time

(continued)

1           7.       Professor Noll claims that without “near-perfect” overlap between the measure of  
 2 an important variable and the measure of the exclusionary conduct he can estimate the effect of the  
 3 challenged conduct.<sup>9</sup> While the context of Professor Noll’s claim is whether or not there are  
 4 product features with such “near-perfect” overlap, his statement is helpful in understanding the  
 5 difficulty of separating the effect of Apple’s not licensing Fairplay from the introduction of the  
 6 iTS. These events have perfect overlap and thus, the effect of one cannot be isolated from the  
 7 effect of the other. Within the context of product features, Professor Noll’s proposed model  
 8 assumes, rather than tests, whether all iPod product prices were impacted by the alleged conduct.  
 9 He does not test whether the amount of any impact is different for different iPod products or at  
 10 different points in time.

11           8.       My first report and Professor Noll’s reply report discuss whether another factor  
 12 that explains iPod demand is that, unlike other MP3 players, iPod products are “cool” and whether  
 13 such coolness can be included in a model used to explain iPod prices. Professor Noll’s claim that  
 14 “coolness” and its potential effect on the demand for iPods is a “joke” is contradicted by the  
 15 literature he cites in his reply report.<sup>10</sup> That literature indicates that iPods are considered “cool”  
 16 and that this factor contributes to the marketing success of iPods.<sup>11</sup>

17 \_\_\_\_\_  
 18 uncorrelated with the error term in the equation (as well as the errors of measurement of both  
 19 variables).” (Pindyck, Robert S. and Daniel L. Rubinfeld, “Econometric Models and Economic  
 20 Forecasts,” McGraw-Hill 1991: p. 161.) It is not the case, as Professor Noll seems to imply, that  
 21 instrumental variables are routinely used to solve the issue of omitted variable bias. Exhibit 2.

22 <sup>8</sup> The problems associated with instrumental variables are well known. “Assuming for the  
 23 moment that such a variable can be found, we can alter the least-squares regression procedure to  
 24 obtain estimated parameters that are consistent. There is unfortunately no guarantee that the  
 25 estimation process will yield unbiased parameter estimates.” (Pindyck, Robert S. and Daniel L.  
 26 Rubinfeld, “Econometric Models and Economic Forecasts,” McGraw-Hill 1991: pp. 161-162.)  
 “The major problem with the instrument variables technique is that it is difficult to find a ‘good’  
 instrumental variable, i.e., an instrumental variable that is highly correlated with the independent  
 variable with which it is associated, but uncorrelated with the disturbance. Usually the choice of  
 an instrumental variable is highly arbitrary – there is no way of knowing whether the most  
 efficient of the available instrumental variables has been chosen. Worse still, there is really no  
 way of checking if the instrumental variable is in fact independent of the disturbance.” Kennedy,  
 Peter, “A Guide to Econometrics,” The MIT Press, 1985 at p. 115. Exhibit 3.

27 <sup>9</sup> Noll Reply, pp. 38-39.

28 <sup>10</sup> Deposition of Roger G. Noll, Ph.D. *Apple iPod iTunes Antitrust Litigation*, October 27, 2009

(continued)

1           9.       Professor Noll’s attempt to dismiss coolness as “functionality” or “ease of use”  
2 misstates the concept, as many products are quite easy to use and functional but clearly are not  
3 considered cool.<sup>12</sup> The example used with Professor Noll at his deposition was tissue, or  
4 “Kleenex.”<sup>13</sup> Kleenex meets Professor Noll’s criteria of being functional and easy to use but  
5 clearly does not meet any reasonable definition of coolness. Moreover, as I discussed earlier, even  
6 if it were simply a matter of functionality and ease of use, Professor Noll does not identify any  
7 means of measuring those attributes in a regression analysis.

8           10.       Professor Noll alternatively argues that, if iPod demand is affected by the  
9 perception that the products are “cool,” that perception existed before the alleged conduct and did  
10 not increase during the period of the alleged conduct.<sup>14</sup> That assertion is not supported by any  
11 analysis or evidence. Professor Noll cites two trade press articles published in 2001 noting that the  
12 first iPod products were “cool.”<sup>15</sup> He also claims that these are only examples and that there are  
13 “dozens” of others. But he cites no evidence to support his claim that whatever coolness the first  
14 iPods may have had remained static over the entire period iPods have been sold. The fact is that  
15 iPods’ popularity increased exponentially over time and their features changed dramatically.  
16 Indeed, the two articles Professor Noll cites note that “you might want to wait for the iPod II”<sup>16</sup>

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18 (“Noll 2009 Deposition”) at p. 144.

19 <sup>11</sup> Global Cool Hunt 2003/04, Hill and Knowlton, accessed November 3, 2009 at  
20 <http://www.signsofthetime.nl/image/globalcoolhuntfinal.pdf>, Noll Reply at fn. 51. (“Knowing  
21 what is cool to youth is key to communication and marketing success for all products, brands and  
22 companies that compete for successful access to the youth markets worldwide.” at p. 4 and  
23 “Firstly, the iPod is considered cool all over the globe.” at p. 12) See also Noll Reply, p. 22,  
24 where he seems to agree that the products are, in fact, cool. (“*The Perfect Thing* [another source  
25 cited by Professor Noll] also reports a conversation between the author and Apple CEO Steve  
26 Jobs about why Apple products are cool.”).

27 <sup>12</sup> Noll Reply, p. 22.

28 <sup>13</sup> Noll 2009 Deposition at pp. 149-150.

<sup>14</sup> Noll Reply, p. 24.

<sup>15</sup> Noll Reply at fns. 58 and 59.

<sup>16</sup> Exhibit 4, “Apple’s iPod has its charms,” Henry Norr, SFGATE.com, October 29, 2001,  
<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2001/10/29/BU215879.DTL&type=printable>  
accessed November 11, 2009.

1 and that certain “obstacles” associated with the first device are likely to be overcome (suggesting  
2 that future products may be more “cool”).<sup>17</sup> Moreover, if Professor Noll’s definition of “coolness”  
3 (functionality and ease of use) is adopted, then certainly iPod products’ coolness has increased  
4 over time, requiring some quantitative variables measuring functionality and ease of use to be  
5 included in any before-during regression of iPod prices. But as discussed earlier, Professor Noll  
6 does not offer any methodology to measure these variables. Professor Noll’s inability to include a  
7 variable in a regression analysis to capture the effect of consumers’ perception of iPod products on  
8 iPod prices will mistakenly attribute that effect to the alleged conduct.

9 **B. Measurement of the Alleged Conduct in a “Before-During” Model**

10 11. One requirement for a “before-during” model is to include a variable that measures  
11 the alleged conduct. This is a different problem from whether or not other variables that affect  
12 iPod product prices can be identified, measured and included in the equation. That is, even if all of  
13 those variables could be included in the regression equation, Professor Noll would still need to find  
14 a way to quantitatively measure the alleged conduct with a variable that could be included in the  
15 regression. Professor Noll has admitted he has “fail[ed] to commit to a particular method for  
16 measuring the effect of the defendant’s alleged exclusionary conduct.”<sup>18</sup> This failure means that  
17 there is no legitimate basis for his claim that the approach is viable.

18 12. The most common method used to measure the effect of some alleged conduct in a  
19 “before-during” model is an indicator variable (or “dummy” variable) that separates the “before”  
20 period from the “during” period. In my first report, I showed that there are a number of problems  
21 with using this method in this case. Apparently, Professor Noll agrees that method is not feasible.  
22 He has described it as having “excessive simplicity.”<sup>19</sup> But Professor Noll has not identified any  
23 other method that could overcome the problems. The only possible methods he has suggested

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25 <sup>17</sup> Exhibit 5, “For Apple, sweet music from iPod,” Charles Haddad, *Business Week*, October 31,  
26 2001, [http://www.businessweek.com/bwdaily/dnflash/oct2001/nf20011031\\_4266.htm](http://www.businessweek.com/bwdaily/dnflash/oct2001/nf20011031_4266.htm) accessed  
November 9, 2009

27 <sup>18</sup> Noll Reply, p. 30.

28 <sup>19</sup> Noll Reply, p. 30.

1 include multiple indicator variables or some, unknown “quantitative” variable.<sup>20</sup> However,  
2 multiple indicator variables do not address any of the problems associated with a single indicator  
3 variable. There are simply more indicator variables that are likely to confound the effects of the  
4 challenged conduct with concurrently changing pro-competitive factors. Professor Noll’s  
5 suggestion of a variable that measures the “incremental market power created by the exclusionary  
6 effect” assumes such a variable can be found. Professor Noll has not identified any such variable,  
7 which strongly suggests that none exists.

8 13. Professor Noll’s claim that the proposed before-during model can be used to  
9 capture the effect of the alleged conduct is highly dubious given Professor Noll’s complicated  
10 characterization of the but-for world. According to Professor Noll, the but-for world “starts off  
11 with the hypothesis that Apple is not a vertically integrated firm and ask[s] the question what  
12 would the strategy be of a firm that’s not vertically integrated into MP3 players...”<sup>21</sup> Apparently,  
13 in Professor Noll’s but-for world, Apple sells only music, not iPods. In Professor Noll’s but-for  
14 world, Apple makes the decision to license the music format to “maximize the number of people  
15 who wanted to buy downloads from the iTunes Store.”<sup>22</sup> Apple’s decisions to provide licenses to  
16 suppliers of portable digital media players, in Professor Noll’s but-for world, would have been  
17 made before the launch of the iTunes Store and before there were any “iPod-like products out  
18 there.”<sup>23</sup> Given this highly complex and counterfactual but-for world, it is not surprising that  
19 Professor Noll has not been able to describe a method to capture the alleged conduct in a before-  
20 during regression analysis. None of the possible methods he has set out in his reply report could  
21 possibly capture the world Professor Noll envisions.

22 14. Finally, Professor Noll’s claim that the number of songs available from iTS can be  
23 used in a regression to separate out the pro-competitive aspects of iTS does not address the  
24 numerous other features of iTS relative to other on-line music stores. At the time iTS was

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25 <sup>20</sup> Noll Reply, p. 30.

26 <sup>21</sup> Noll 2009 Deposition at p. 75.

27 <sup>22</sup> Noll 2009 Deposition at p. 75.

28 <sup>23</sup> Noll 2009 Deposition at p. 75.



1 introduced, other on-line music stores, such as MusicNet and Pressplay, offered consumers only  
2 the ability to “rent” music for a subscription fee. The music could be played only on a computer,  
3 not a portable device, and disappeared if the consumers did not pay the monthly fee. Those stores  
4 also did not allow consumers to burn music to CDs.<sup>24</sup> The introduction of iTS was considered  
5 radically different at the time. iTS allowed consumers the ability to purchase music on a song-by-  
6 song basis, to play the music on an unlimited number of iPods and up to three computers and it  
7 allowed consumers to burn music onto an unlimited number of CDs. In addition, iTS offered  
8 consumers an easier way to browse and purchase music, a sound quality that was superior to MP3  
9 players with less disk space, and the ability to download digital album artwork from the CD on  
10 which the song was originally sold. None of these characteristics can be captured with a variable  
11 that measures the number of songs available from iTS, as Professor Noll proposes.

12 **C. Professor Noll’s Definitions of the “Before” or “After” Periods**

13 15. Professor Noll has failed to reliably define either a “before” or “after” period that  
14 could be used in a damage model. Professor Noll’s claim that the date separating the “before”  
15 period from the “during” period for his damages analysis is the very day that the iTS was launched  
16 is flawed and not supportable.<sup>25</sup> First, his selection of the date appears to be based on allegations  
17 contained in the Complaint, and is not consistent with any economic rationale of when the alleged  
18 conduct, the decision not to license Fairplay, could have affected iPod prices. Consumers could  
19 not have been “locked-in” by the iTS the day it was introduced. The decisions by large electronic  
20 retailers or wholesalers to purchase iPods could not have been affected by the alleged “lock-in”  
21 effect the day iTS was introduced. At the time of its launch, iTS was a small entrant in a vibrant  
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24 <sup>24</sup> Exhibit 6, Songs in the Key of Steve, Steve Jobs may have just created the first great legal  
25 online music service. That’s got the record biz singing his praises,” Devin Leonard, May 12,  
26 2003, at [http://money.cnn.com/magazines/fortune/fortune\\_archive/2003/05/12/342289/index.htm](http://money.cnn.com/magazines/fortune/fortune_archive/2003/05/12/342289/index.htm)  
27 accessed November 3, 2009. “Apple launches the iTunes music store,” Ian Bell, April 29, 2003,  
28 Digital Trends, <http://www.digitaltrends.com/computing/apple-launches-the-itunes-music-store/>  
accessed November 3, 2009.

<sup>25</sup> Noll Reply, p. 5.



1 and competitive existing marketplace for music that included distribution online by the record  
2 companies, by peer-to-peer services, as well as through more traditional retail channels.

3 16. Second, this definition of the “during” period conflates the effects of the  
4 challenged conduct with the pro-competitive effects of Apple’s innovations in iTunes. Professor Noll  
5 has failed to demonstrate how he would separate the effect of the alleged anticompetitive conduct  
6 from the pro-competitive effects of the iTunes, whose launch occurred at the same time as the  
7 beginning of his “during” period and is therefore correlated with the challenged conduct.

8 17. Professor Noll suggestions about a possible “after” period are contradictory. On  
9 the one hand, he suggests that he may use an “after” period starting in January of 2009, when the  
10 iTunes began selling DRM-free music.<sup>26</sup> That implies that the effect of the challenged conduct can be  
11 measured by comparing the “during” period with the period after the introduction of DRM-free  
12 music in the iTunes. On the other hand, he claims that competition would not have been increased  
13 “all the way to the but-for case in which Apple imposes no exclusionary restrictions.”<sup>27</sup> That is, he  
14 does not believe that the effect of the challenged conduct ended in January of 2009, which would  
15 invalidate his proposal to use the period after that as an “after” period.

16 **D. Professor Noll’s Proposed “Hedonic” Regression**

17 18. Professor Noll’s proposal to use a “hedonic” regression in this case does not  
18 overcome the problems identified with the “before-during” methodology. A “hedonic” regression  
19 is one in which the price of a product is decomposed, through regression analysis, into values of  
20 the product’s characteristics.<sup>28</sup> Professor Noll’s proposal to use a “hedonic regression” is, in  
21 essence, a proposal to include product features in a regression analysis to explain iPod prices. This  
22 is not a new proposal. In his first report, describing the “before-during” approach, Professor Noll

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24 <sup>26</sup> Noll Reply, pp. 44–45 (“in 2009 the market for portable digital media players entered a more  
competitive era that needs to be taken into account in the before-after test”).

25 <sup>27</sup> Noll Reply, p. 44.

26 <sup>28</sup> The hedonic approach is described as one where “a product’s total price [is] the sum of the  
27 various characteristics’ prices.” See Rolf Dewenter, Justus Haucup, Ricardo Luteher and Petr  
28 Rotzel, “Hedonic Prices in the German Market for Mobile Phones, “Telecommunications Policy,  
Vol. 31, No. 1 (2004) at pp. 6.

1 described a “regression analysis that explains the price of a product model in each time period *as a*  
2 *function of product features*, input costs, and the stage of the product in its life-cycle” (emphasis  
3 added).<sup>29</sup> Professor Noll has not introduced any new type of analysis and has not solved any of  
4 the existing problems simply by labeling the proposed regression a “hedonic” regression. The  
5 analysis must still overcome the problems identified in my initial report, including, for example,  
6 that not all variables that affect price are measurable, the regression must include a variable  
7 capable of measuring the alleged conduct, the regression must be able to separate any effect of the  
8 alleged conduct from the effect of the pro-competitive benefits of the iTS, and the “before” (or  
9 “after”) period must be reasonably identified to depend on the effect of the alleged conduct.

10 19. The two articles Professor Noll claims “demonstrate that a hedonic price  
11 regression is highly likely to be feasible in this case” do not address the issues raised in this case.<sup>30</sup>  
12 The papers do not attempt to capture the change in any product’s price as a result of some alleged  
13 conduct, they do not involve any type of “before-during” analysis, they do not address or rely on  
14 any instrumental variables to account for any omitted variable bias, and the papers do not offer any  
15 solutions to account for the hard-to-measure factors, such as ease of use, design, or “coolness.”  
16 One of the papers uses different dummy variables for different firms to account for unobservable  
17 characteristics that vary across firms but do not change over time. This kind of analysis would not  
18 work in this case, since all of the iPod products are made by the same firm, Apple, and it is not  
19 reasonable to assume that their innovation, design, and perceived “coolness” did not vary over  
20 time.<sup>31</sup>

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23 <sup>29</sup> Declaration of Roger G. Noll, *Apple iPod iTunes Antitrust Litigation*, Lead Case No. C-05-  
24 00037, July 15, 2008 at p. 55.

25 <sup>30</sup> Noll Reply, pp. 39-40.

26 <sup>31</sup> One of the papers cited by Professor Noll describes some “problems” with hedonic regression  
27 including for example, the choice of measurement units and the stability of the coefficients over  
28 time. Naoki Watanabe, Ryo Nakajima, and Takanori Ida, “Quality-Adjusted Prices of Mobile  
Phone Handsets and Carriers’ Product Strategies: The Japanese Case,” Discussion Paper No.  
1224, Department of Social Systems Management, University of Tsukuba, January 2009, at p. 2.

### 1 **III. YARDSTICK AND MARK-UP METHODS**

2 20. Professor Noll proposes two other possible approaches to estimating damages. He  
3 concedes that the “yardstick” method is “like the before-after test where you’re doing regressions  
4 and things like that to estimate price equations and show that they come out different.”<sup>32</sup> However,  
5 he asserts that the mark-up method is quite different. That approach, he argues, is based on “a set  
6 of products that have similar R&D intensity, that have similar scale, similar production  
7 technologies,” and therefore “the mark-ups in those industries on average of leading firms are a  
8 good benchmark for the but for world in this market.”<sup>33</sup>

9 21. The differences in the two methods identified by Professor Noll are superficial.  
10 While in his Reply Report, he claimed that one would not examine the technical details of products  
11 in a mark-up method, at his deposition, he admitted that such information would be examined.<sup>34</sup>  
12 Obviously, not adjusting for such differences would lead to inaccurate results. While Professor  
13 Noll claims that the mark-up method relies on more than one benchmark comparison, it is just as  
14 possible to use multiple benchmark products when implementing a yardstick method. Professor  
15 Noll’s claim that a mark-up method is different because it is based on a comparison “with several  
16 products” rather than a single benchmark product is without merit. The yardstick method could  
17 use more than one benchmark product if such products actually existed just as easily as the mark-  
18 up method. The problem is not the number of products that are compared but rather the difficulty  
19 of finding at least one product or firm that could be used as a benchmark. This problem applies to  
20 both of Professor Noll’s approaches.<sup>35</sup> Moreover, Professor Noll’s suggestion that using several

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22 <sup>32</sup> Noll 2009 Deposition at p. 234.

23 <sup>33</sup> Noll 2009 Deposition at p. 234.

24 <sup>34</sup> Noll Reply, p. 50; Noll 2009 Deposition at p. 235.

25 <sup>35</sup> In his Reply Report, Professor Noll claims that my criteria for an appropriate benchmark  
26 product for use in a yardstick method are that the products and market conditions must be  
27 essentially identical and that such criteria are “incorrect.” However, at his first deposition,  
28 Professor Noll described the yardstick method as “you look at an alternative product that is being  
sold in a competitive market, that is otherwise identical, and then you estimate the difference in  
the price as the overcharge.” Deposition of Roger G. Noll, *Apple iPods iTunes Antitrust  
Litigation*, September 19, 2008 at p 138.

1 products or firms in a mark-up method would avoid problems of finding a single comparable  
2 benchmark product or firm is not logical. Aggregating multiple non-comparable products for use  
3 as a benchmark does not yield a more valid comparison than one non-comparable product. In  
4 addition, using more than one product or firm would only compound the problems he has  
5 identified with the cost and impracticability of obtaining the necessary data regarding those  
6 products or firms. Finally, the mark-up method examines prices less cost (e.g. mark-ups) and the  
7 yardstick method examines prices but must control for cost.

8           22. Notwithstanding Professor Noll's attempt to distinguish these two methods, his  
9 own description shows that they both rely on comparisons of the products at issue with other  
10 products sold by other firms.<sup>36</sup> The only way to implement either of these two methods is to  
11 identify those benchmark products or firms. The obstacle of identifying an acceptable benchmark  
12 product for the yardstick method was the reason Professor Noll stated, in his first deposition, that  
13 he had "more doubts" about the yardstick method than the other proposed methods and it was the  
14 method he was "least happy about."<sup>37</sup> Likewise, Professor Noll admits in his reply report that the  
15 "the necessary proprietary information about costs, inputs and products characteristics" may not be  
16 "forthcoming" in any attempted third-party discovery from companies that can be expected to  
17 jealously guard such information. Because both the yard-stick and mark-up methods depend first  
18 on identifying appropriate benchmarks and then obtaining such information, Professor Noll's  
19 doubts apply equally to both methods.

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21 <sup>36</sup> In his report, Professor Noll claimed that Dr. French did not propose these two methods and  
22 that I did not mention them in my report addressing Dr. French's proposed analyses. Noll Reply,  
23 p. 16. These claims are not true. See Affidavit of Gary L. French, Ph.D., February 23, 2009, ¶ 65;  
Expert Report of Dr. Michelle M. Burtis, June 17, 2009, fn. 14.

24 <sup>37</sup> Deposition of Roger G. Noll, *Apple iPods iTunes Antitrust Litigation*, September 19, 2008 at  
25 pp. 72-73. Professor Noll now claims that it is the cost and availability of information associated  
26 with implementing the yardstick method that causes him concern. Noll Reply, p. 48. According  
27 to Professor Noll, the yardstick method should be attempted only if some unexpected problem  
28 arises in implementing the other two methods. At his recent deposition, he testified that with  
respect to prices charged direct purchaser consumers, the before-during approach is the "least  
likely thing to do" and "not what I would try first." Noll 2009 Deposition at pp. 27-28. It is  
unclear which of Professor Noll's approaches is the least likely to work, in his view.

1           23.     Professor Noll’s claim that using more than one benchmark in the mark-up method  
2 would provide a “more aggregate” approach and thus, would be more reliable, is an  
3 acknowledgement that any mark-ups of benchmark firms found by Professor Noll are likely to be  
4 highly variable. The study Professor Noll claims is an “illustration” of the mark-up method shows  
5 profitability measures among firms included in the study are highly diverse.<sup>38</sup> For example, the  
6 study finds gross margins ranging from nearly 85 percent (for Microsoft) to less than 25 percent  
7 (for Hewlett-Packard).

8           24.     The study identified by Professor Noll also illustrates some of the problems in  
9 implementing a mark-up method for purposes of estimating damages. The purpose of the study  
10 was not to identify a firm or product to serve as a competitive benchmark for some other firm or  
11 product, but to analyze the differences in the “value from the innovation” embodied in certain  
12 products. The differences among profitability across firms is attributed to a variety of factors such  
13 as the stage of industry evolution, the role of product design (versus price) competition, the ability  
14 to appropriate or control certain product features, brand image, sourcing strategies (e.g. multiple  
15 sourcing and switching from one key supplier to another), ability to negotiate input prices,  
16 strategies related to complementary accessories and assets, as well as others. Far from suggesting  
17 that this study could be used to determine what the markup on any iPod would have been if Apple  
18 had licensed FairPlay, the study further illustrates the difficulties of doing so. The study also  
19 makes clear that profits vary across products sold by a single firm, suggesting that, in addition to  
20 all the other obstacles, Professor Noll’s proposed mark-up method would require separate analyses  
21 for separate iPod products. He has proposed no way to do that. Quite to the contrary, Professor  
22 Noll’s second report disclaims any intention to examine the “technical details of the products.”<sup>39</sup>

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26 <sup>38</sup> Noll 2009 Deposition at p. 5. The study identified by Professor Noll is Jason Dedrick, Kenneth  
27 L. Kraemer, and Greg Linden, “Who Profits from Innovation in Global Value Chains?: A Study  
of the iPod and Notebook PCs,” *Industrial and Corporate Change*, June 22, 2009.

28 <sup>39</sup> Noll Reply, p. 50.

1 **IV. MEASUREMENT OF IMPORTANT VARIABLES FROM OTHER**  
 2 **MANUFACTURERS IN PROFESSOR NOLL'S DAMAGE METHODS**

3 25. Professor Noll's methods depend on obtaining certain data from other  
 4 manufacturers. For example, in order to implement a mark-up approach, Professor Noll must  
 5 collect profitability information from other companies about particular products. Obtaining such  
 6 data, some of which is regarded as highly confidential and exists only in proprietary databases, is  
 7 difficult and there is no guarantee that Professor Noll will be able to obtain the necessary data.  
 8 Professor Noll has not made any efforts to obtain any of this data or to determine whether or not it  
 9 can be obtained. Even if he were able to obtain the data, the critical question is whether the data  
 10 would be sufficient to measure all the relevant demand and supply factors that determine iPod  
 11 prices. Professor Noll has failed to show that it is possible to quantify some of the critical  
 12 variables, such as the innovative design of iPods, ease of their use, their perceived "coolness," and  
 13 availability of easily accessible downloadable music. As discussed earlier, these factors must be  
 14 taken into account in evaluating plaintiffs' theory that increased demand for iPods affected iPod  
 15 prices.

16 **V. NET OVERCHARGE**

17 26. Plaintiffs' theory in this case is that proposed class members were impacted  
 18 because the prices of iPods were higher than they would have been absent the alleged exclusionary  
 19 conduct. In my first report, I pointed out that plaintiffs' theory implies that the price of iTS music  
 20 may have been lower as a result of the alleged conduct. The implication is that determination and  
 21 measurement of impact requires an individualized inquiry into whether a proposed class member  
 22 purchased music, the amount of music purchased by the class member and a comparison of an  
 23 alleged overcharge on iPods to an amount of the potential "undercharge" on iTS music.

24 27. In his Reply report, Professor Noll agreed that the price of iTS music could be  
 25 higher, lower or the same as a result of the alleged conduct.<sup>40</sup> Therefore, in order to determine

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 27 <sup>40</sup> Noll Rebuttal Report, p. 26. Professor Noll cites an academic article to support the contention  
 28 that the price of music could have been lower in the but-for world. Noll Reply, pp. 26-27, citing  
 Michael H. Riordan, "Anticompetitive Vertical Integration by a Dominant Firm," American

(continued)

1 whether an individual proposed class member was injured, some empirical analysis of the alleged  
2 conduct as it relates to iTS music must be undertaken. Professor Noll has not determined whether  
3 the price of music would have been higher or lower or the same and he has not identified any  
4 method that could be used to determine the effect of the alleged conduct on the price of iTS music  
5 or any common method that could be used to identify and separate those consumers that would  
6 have been impacted from those that would not have been impacted if the alleged conduct did lead  
7 to lower prices of music.

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24 Economic Review Vol. 88, No. 5 (December 1998) pp. 1232-48. The article does not relate to  
25 type of conduct at issue in this case. The article addresses vertical integration, not tying and  
26 analyzes the prices of a downstream product and an input used to produce that downstream  
27 product. The article finds that a vertically integrated firm may have the incentive to raise the  
28 price of the input to foreclose firms in the downstream product market. Plaintiffs here allege a  
tie, the analysis of which is different from the analysis of whether a vertically integrated company  
would raise input prices to competitors in order to foreclose them from the downstream market.  
The latter is the problem analyzed in the article cited by Professor Noll.



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I declare under penalty of perjury under the laws of the United States of America that the foregoing is true to the best of my knowledge and belief. Executed on November 9, 2009 in Washington, D.C.



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Michelle M. Burtis, Ph.D.

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