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11
                    UNITED STATES DISTRICT COURT
12
                  NORTHERN DISTRICT OF CALIFORNIA
13
                          OAKLAND DIVISION
14
   THE APPLE IPOD ITUNES ANTI-TRUST      )   Lead Case No. C-05-00037-YGR
15 LITIGATION                            )
                                         )   CLASS ACTION
16 ─────────────────────────────────────  )
                                         )   PLAINTIFFS' NOTICE OF MOTION AND
17 This Document Relates To:             )   *DAUBERT* MOTION TO EXCLUDE
                                         )   CERTAIN OPINION TESTIMONY OF
18    ALL ACTIONS.                       )   KEVIN M. MURPHY AND ROBERT H.
   ─────────────────────────────────────  )   TOPEL
19
                                             DATE:     February 18, 2014
20                                           TIME:     2:00 p.m.
                                             CTRM:     5, 2nd Floor
21                                           JUDGE:    Hon. Yvonne Gonzalez Rogers
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TO: ALL PARTIES AND THEIR ATTORNEYS OF RECORD

PLEASE TAKE NOTICE that on February 18, 2014, at 2:00 p.m., before the Honorable Yvonne Gonzalez Rogers, in Courtroom 5, 2nd Floor of the above-entitled Court, located at 1301 Clay Street Oakland, California 94612, Plaintiffs Melanie Tucker, Mariana Rosen, and Somtai Troy Charoensak (collectively, "Plaintiffs"), will move the Court for an Order to exclude certain opinion testimony of Kevin M. Murphy and Robert H. Topel.

Plaintiffs respectfully seek an Order precluding Apple's experts, Kevin M. Murphy and Robert H. Topel, from offering, at trial or in connection with Apple's summary judgment motion, any testimony concerning their "clustering" opinions, and precluding Apple from relying on any testimony, report, or declaration concerning these opinions.

## I.    INTRODUCTION

Apple has proffered two new expert witnesses, Kevin M. Murphy and Robert H. Topel, to attack the econometric model that Plaintiffs' economist, Stanford Professor Emeritus Roger G. Noll, uses to demonstrate anticompetitive injury and calculate class-wide damages. For the most part, Murphy's and Topel's attacks are mere volleys in the "battle of the experts," and – even assuming they were accurate – would affect only the weight the fact-finder should give to Noll's testimony.[1] But one of their opinions is so far afield it does not meet the minimum standards for admissibility under *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469 (1993) ("*Daubert I*"). Specifically, both Murphy and Topel argue that Noll's regression is unreliable because it assumes that the sales transactions ("observations") Noll uses in his regression are independent when, according to Murphy and Topel, those observations occur in "clusters" of correlated observations. Thus, according to Murphy and Topel, Noll should have adjusted his model to control for this alleged "clustering" phenomenon.

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[1]    *See* Ex. 4, Rebuttal Report of Roger G. Noll, dated November 25, 2013 ("Noll Rebuttal"). All references to "Ex." are to the exhibits attached to the Declaration of Bonny E. Sweeney in Support of Plaintiffs' *Daubert* Motion to Exclude Certain Opinion Testimony of Kevin M. Murphy and Robert H. Topel, filed concurrently.

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As explained in Noll's rebuttal report, however, and as confirmed by one of the leading experts on clustering problems in econometrics, Professor Jeffrey M. Wooldridge,[2] a clustering adjustment is wholly inappropriate here.[3]

## II.    BACKGROUND

Plaintiffs represent a certified class of individuals and businesses that purchased iPods (Apple's portable digital media player) directly from Apple between September 12, 2006 and March 31, 2009. Plaintiffs allege that Apple maintained and enhanced its monopoly power in the market for portable digital media players by implementing software and firmware updates – the 7.0 updates – that disabled RealNetworks' Harmony, a product that allowed iPod users to download and play audio files from RealNetworks' on-line music store. Before Harmony was released, Apple's proprietary digital rights management system ("DRM"), called FairPlay, blocked iPod owners from downloading music from on-line stores other than Apple's iTunes Music Store. Disabling Harmony increased iPod users' switching costs, enabling Apple to charge higher prices for iPods. The deliberate redesign of the FairPlay DRM that disabled Harmony did not improve the software's ability to withstand so-called hacks that stripped DRM encryption from songs from the iTunes Music Store. And, critically, the software updates that disabled Harmony provided no benefit to consumers. In fact, they harmed consumers by making entire libraries of songs disappear. In sum, Apple used the pretext of fighting hackers to shut down a technology that would have dramatically enhanced competition and benefitted consumers by letting them play songs legally purchased from

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[2]    *See* Ex. 1, Declaration of Jeffrey M. Wooldridge in Support of Plaintiffs' Objections to and Motion to Exclude Expert Testimony, dated December 20, 2013 ("Wooldridge Decl.").

[3]    Apple's experts reports suffer from a number of other flaws not specifically the subject of Plaintiffs' current motion, but those flaws further demonstrate why the relief requested here is proper. For example, Murphy sets forth reasons why he believes that closed systems like Apple's are superior to systems with complementary products purchased by different vendors with no economic analysis at all to support such a questionable hypothesis. Professors Murphy and Topel also claim that Professor Noll's regression is unreliable because it does not include every technical characteristic that differentiates models of iPods. The addition of variables that fail to provide explanatory power causes the equation to suffer from "extreme multicollinearity (*i.e.*, a high correlation between separate independent variables in the equation). High multicollinearity causes a reduction in the efficiency of the estimates of the coefficients in the regression equation, making both the point estimates and the standard errors of the regression coefficients unreliable." Ex. 4, Noll Rebuttal at 8.

1  Apple's competitors on their iPods. Dkt No. 537 at 1 (Plaintiffs' Memorandum in Opposition to

2  Apple's Motion for Summary Judgment).

3  On May 19, 2011, the Court denied in part and granted in part Apple's motion for summary

4  judgment. The Court granted Apple's motion regarding Harmony-disabling updates that Apple

5  implemented in 2004, but denied its motion regarding Apple's 2006 updates (the 7.0 updates). Dkt.

6  No. 627. The Court subsequently certified a damages class consisting of "[a]ll persons or entities in

7  the United States (excluding federal, State, and local government entities, Apple, its directors,

8  officers, and members of their families) who purchased [a specified model of] iPod directly from

9  Apple between September 12, 2006 and March 31, 2009." Dkt. No. 694 at 9.

10  Plaintiffs' economics expert on liability and damages, Professor Noll, was also Plaintiffs'

11  expert on class certification. Before he submitted his liability and damages report, Noll submitted

12  six expert reports or declarations, and was deposed four times by Apple's lawyers. The Ninth

13  Circuit Court of Appeal denied Apple's Rule 23(f) petition challenging the class certification order

14  on December 6, 2011. Dkt. Nos. 697, 701. Class notice was completed in 2012 in accordance with

15  the notice plan approved by the Court. Dkt. No. 704.

16  In April and May of 2013, Plaintiffs served the original and a corrected version of Noll's

17  liability and damages report.[4] Subsequently, shortly before serving its own expert reports, Apple

18  produced an employee declaration correcting previous information identifying the iPod models on

19  which the 7.0 updates were implemented.[5] Apple served the expert reports of two brand-new

20

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21  [4]      Ex. 2 , Declaration of Roger G. Noll on Liability and Damages, dated April 3, 2013 ("Noll
22  Liability and Damages Report"); Ex. 3, Corrections to Declaration of Roger G. Noll on Liability and
   Damages, dated May 31, 2013 ("Noll Corrections"). The Noll Corrections report accounts for an
23  error that calculated damages through the end of the data period instead of the end of the class
   period, and removed four unaffected transactions.

24  [5]      The witness on whose sworn testimony Noll had previously relied submitted a Supplemental
25  Declaration to "correct and clarify the timing of the release of the [7.0 updates] and clarify on which
   iPod models the codes were enabled." Ex. 7, Supplemental Declaration of Augustin Farrugia, dated
26  July 2, 2013, ¶1. In his Corrections report, Professor Noll explained that he had been alerted to a
   potential issue concerning affected models, but that the information was not yet definitive. He stated
27  that "[w]hen definitive information is received concerning the iPod models for which Harmony was
   disabled, re-estimation of the regression models and recalculation of damages may be necessary."
28  Ex. 3, Noll Corrections at 2 n.1.

experts,[6] Professors Murphy and Topel, on July 19, 2013 and then amended reports on August 19, 2013. They were deposed on November 8 and 12, 2013.

On November 25, 2013, Noll submitted his rebuttal liability and damages report. In that report, Noll re-affirmed his prior opinions on liability and damages, rejecting and responding to the criticisms of Apple's experts. Ex. 4, Noll Rebuttal at 3-11. He also re-estimated his damages regressions to take into account Apple's corrected information identifying the iPod models affected by the 7.0 updates, and adopted – without agreeing that they were necessary – several changes in the regression equations prompted by criticisms from Murphy and Topel.[7]

Professor Noll rejected Murphy's and Topel's main opinions in their entirety. *Id.* at 6-7. He concluded that their clustering argument is "without merit," and that its "sole effect is vastly to reduce the number of transactions observations that are used to estimate the regression equation, thereby reducing the explanatory power of the regression analysis [and] destroying the reliability and precision of the regression results." *Id.* at 11. On December 18, 2013, as a courtesy to Apple, Plaintiffs again produced Noll for deposition, his *sixth* in the case.[8]

Plaintiffs also submit the Declaration of Jeffrey M. Wooldridge in support of their motion. Wooldridge, a University Distinguished Professor of Economics at Michigan State University, is one of the nation's foremost experts on clustering problems in econometric analysis. He is an expert on problems associated with nonrandom sampling, including cluster sampling, and has published and taught about these issues for many years. He has published two popular textbooks in econometrics,

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[6] In the extensive class certification proceedings, Apple relied solely on the expert opinions of Michelle M. Burtis. *See, e.g.*, Dkt. Nos. 241, 286, 511, 665, 691. For this phase of the case, however, Apple has replaced Dr. Burtis and now relies solely on Murphy and Topel.

[7] Specifically, ███████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████████. Ex. 4, Noll Rebuttal at 5-6.

[8] Plaintiffs repeatedly informed Apple that it was not entitled to another deposition of Professor Noll under the scheduling order (*see* Dkt. No. 735), but agreed as a courtesy to permit a short deposition to allow questioning on material deemed "new" by Apple. *See* Ex. 8, Deposition Transcript of Professor Roger G. Noll, taken December 18, 2013 ("Noll Dep.") at 7:10-18.

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and teaches microeconometric methods to graduate students.  Ex. 1, Wooldridge Decl. at 1-2 and Appendix A.

Professor Wooldridge has concluded, after analysis of the Noll, Murphy and Topel reports, that Apple's clustering attack on the Noll regressions is unsupportable.  He states:

> (i) Clustering is inappropriate where, as here, the regressions use the entire population of transactions.  There can be no cluster sampling problem because there is no sampling.
>
> (ii) Professor Noll's use of heteroskedasticity-robust standard errors is appropriate.  By contrast, Professors Murphy and Topel, who suggest clustering at the family product/quarter level, are guilty of ex post clustering.  Their standard error calculations are much too imprecise.
>
> (iii) Computing "cluster-robust" standard errors where, as here, clustering is not appropriate, is not harmless.  Clustering can produce standard errors that are vastly inflated compared with the true precision of the estimates.

Ex. 1, Wooldridge Decl. at 13.

## III.  THE GOVERNING STANDARDS FOR ADMISSIBILITY OF EXPERT TESTIMONY UNDER RULE 702 AND *DAUBERT*

Rule 702 imposes a "gatekeeping" function upon district courts that requires them to exclude expert opinions based upon unreliable methods. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 147, 119 S. Ct. 1167, 143 L. Ed. 2d 238 (1999); *Daubert I*, 509 U.S. at 589.  Trial courts must "make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Kumho Tire*, 526 U.S. at 152.  In addition to reliability, this standard requires that the expert testimony "logically advances a material aspect of the proposing party's case." *Daubert v. Merrell Dow Pharms., Inc.*, 43 F.3d 1311, 1315 (9th Cir.1995) ("*Daubert II*").  In particular, the expert opinion must be "sufficiently tied to the facts of the case that it will assist the jury in resolving a factual dispute." *Daubert I*, 509 U.S. at 591.  "This condition goes primarily to relevance." *Id.*

"Encompassed in the determination of whether expert testimony is relevant is whether it is helpful to the jury, which is the 'central concern' of Rule 702." *Mukhtar v. Cal. State Univ.*, No. 01-

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15565, 2002 U.S. App. LEXIS 27934, at *23 n.7 (9th Cir. Aug. 7, 2002).[9] The helpfulness requirement has also been deemed the "fit" requirement and ensures a "valid scientific connection to the pertinent inquiry as a precondition to admissibility." *Daubert I*, 509 U.S. at 592. Apple bears the burden of establishing that Murphy's and Topel's testimony "fits" with the facts and legal theories in the case, such that the testimony is "relevant to the task at hand." *Id.* at 591, 597; *Daubert II*, 43 F.3d at 1315; *United States v. Hankey*, 203 F.3d 1160, 1168 (9th Cir. 2000) ("fit" is one of the factors to be considered by the trial court in determining admissibility of expert testimony); *see also FTC v. Wellness Support Network, Inc.*, No. 10-cv-04879-JCS, 2013 U.S. Dist. LEXIS 144140, at *32 (N.D. Cal. Oct. 4, 2013) (excluding expert testimony for lack of "fit"); *Daubert I*, 509 U.S. at 592 n.10 (proponent of expert testimony bears burden of establishing its admissibility by a preponderance of the evidence); *United States v. Sayre*, 434 Fed. Appx. 622, 624 (9th Cir.) *cert. denied, Sayre v. United States*, __ U.S. __ , 132 S. Ct. 353, 181 L. Ed. 2d 223 (2011) (finding that the "district court correctly applied Federal Rule of Evidence 702 in excluding testimony it judged would not be both reliable and relevant"). Murphy and Topel's clustering opinion lacks the "fit" to the facts of this case to satisfy this standard.

"The bottom line . . . is that one major determinant of whether an expert should be excluded under *Daubert* is whether he has justified the application of a general theory to the facts of the case." *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1316 (Fed. Cir. 2011) (excluding damage expert's opinion because his use of a generally accepted methodology was not tethered to the particular facts and issues to be determined in case); *see also Am. Booksellers Ass'n v. Barnes & Noble, Inc.*, 135 F. Supp. 2d 1031, 1041-42 (N.D. Cal. 2001) (excluding expert opinion that in calculating damages ignored "real-world evidence").

## IV. APPLE'S EXPERTS' CLUSTERING OPINIONS MUST BE EXCLUDED BECAUSE THEY DO NOT FIT THE FACTS OF THE CASE

### A. Noll's Regression Models

In his liability and damages reports, Noll concluded that:

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[9]      Unless otherwise noted citations are omitted, and emphasis is added.

[REDACTED]

Ex. 2, Noll Liability and Damages Report at 4-5; Ex. 4, Noll Rebuttal at 50-51.

Professor Noll calculated damages and demonstrated anticompetitive impact using a before-and-after multiple-variable regression analysis. [REDACTED]

[REDACTED] Ex. 2, Noll Liability and Damages Report at 71-72. [REDACTED]

[REDACTED] *Id.* at 71-72. [REDACTED]

*Id.* at 73. [REDACTED]

[REDACTED] Ex. 4, Noll Rebuttal at 50-51. [REDACTED]

*Id.* at 12.

Notably, Professor Noll did not rely on *samples* of the iPod sales transaction data; instead, he used the *entire population* of iPod sales transactions during the class period, except for outliers and transactions with incomplete data.[10] For the reseller regression, Noll used a data set consisting of

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[10] Noll excluded price observations so implausibly low (even zero or negative) or high (several times the list price) that they could not possibly be accurate ("the outlier data"). Ex. 2, Noll Liability and Damages Report at 76.

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████████████████████████████████████████████████████████████. Ex. 2, Noll

Liability and Damages Report at 77-78, 81-82, 88.

Apple's experts do not challenge the make-up of the population of observations used in the Noll regressions. Ex. 9 , Deposition Transcript of Robert Topel, Ph.D., taken November 8, 2013 ("Topel Dep.") at 95:21-22 █████████████████████████████████████████

████████████████; Ex. 10 , Deposition Transcript of Kevin Murphy, Ph.D., taken November 12, 2013 ("Murphy Dep.") at 46:2-6 (Murphy used same data set as Noll).[11] Nor do they contend that adjusting for their putative clustering concern would alter the coefficients ████████████████ derived from the regressions. Ex. 9, Topel Dep. at 157:6-25.

Instead, Murphy and Topel contend ██████████████████████████████

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██████. Ex. 6, Expert Report of Robert H. Topel (Amended) ("Topel Rpt."), ¶¶72-74; Ex. 5, Expert Report of Kevin M. Murphy (Amended), August 19, 2013 ("Murphy Rpt."), ¶¶94-95. According to Murphy and Topel, ████████████████████████████████████

████████████████████████████████████████████████████████████████████

██████. *Id.*[12]

Topel cites as authority two pages from Angrist and Pischke's *Mostly Harmless Econometrics* (Ex. 11) at 293-94, and two pages from the ABA's *Proving Antitrust Damages: Legal and Economic Issues* (Ex. 12) at 145-46. Ex. 6, Topel Rpt., ¶¶75-76. Murphy cites one page from Colin Cameron & Douglas L. Miller's *Robust Inference with Clustered Data* (Ex. 13) at 2. Ex. 5, Murphy Rpt., ¶96 n.138. While the cited references address in general terms the effect data clusters

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[11] In fact, when Murphy and Topel's staff reconstructed the data and compared it to Professor Noll, ███████████████████████████████████████████████████████████ Ex. 9, Topel Dep. at 97:7-10.

[12] Even accepting *arguendo* Apple's misguided clustering argument as to the precision of Professor Noll's regression analysis, the fact-finder could nonetheless find Professor Noll's analysis persuasive. *See Cook v. Rockwell Int'l Corp.*, 580 F. Supp. 2d 1071, 1105 (D. Colo. 2006) (holding that neither "the Tenth Circuit ([nor] any other court) has adopted a rule barring admission of any epidemiological study that was not statistically significant at the 95-percent confidence level."); *see also* Ex. 10, Murphy Dep. at 51:9-52:9 (acknowledging that results need not be statistically significant to be reliable under *Daubert*).

can have on the estimation of standard errors, they do *not* support Murphy's and Topel's argument that these concerns have any relevance here.

## B. Clustering Adjustment Inappropriate Here

As Professors Noll and Wooldridge explain, Murphy and Topel's clustering adjustment is inappropriate because none of the clustering problems raised by Murphy and Topel are present in Noll's regression analysis.

### 1. Noll Uses Entire Population of Transactions, Not a Sample

First, because Noll used the entire population of sales transaction observations, the clustering analysis is irrelevant. As Professor Noll explains:

> Clustering problems arise because of the way that a sample of observations is drawn from a larger population. A cluster sample consists of a data-gathering technique that divides all observations into groups, selects a sample of these groups from which observations will be drawn, and then, for each sampled group, takes a sample of observations within the sampled groups. The issues that give rise to a cluster problem are: (1) observations from a sample of groups may not be representative of observations in all groups, and (2) membership in a group may be correlated with other factors that could influence the dependent variable in the regression but that are not included as independent variables in the regression.

Ex. 4, Noll Rebuttal at 10.

Professor Wooldridge agrees that "there can be no cluster sampling problem because there is no sampling." Ex. 1, Wooldridge Decl. at 10. As he puts it: "If we observe the entire population of shipments, how can one meaningfully introduce sampling uncertainty into the estimates? After all, if we can compute a price for every transaction in the population, we can compute the differences in average prices among various product family/time period groups without error." *Id.*

As Wooldridge explains in his Declaration, clustering problems arise when individual units are grouped into clusters at the outset. For example, if a researcher who wants to study the effects of class size on test scores draws a sample of elementary schools from the state's population, and then collects data about individual students in that sample, this *a priori* grouping creates substantive problems for computing standard errors. That is, the researcher would need to account for the fact

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1   that student outcomes within a school are likely to be influenced by common, school-level factors.

2   Ex. 1, Wooldridge Decl. at 3.

3         But a "common misunderstanding" – and one which Murphy and Topel apparently share – is

4   that ex post grouping of a randomly drawn sample creates similar clustering problems. *Id.* at 3. If

5   the above example is changed so that a random sample of students within a state is drawn, and then

6   data is collected – including each student's school identifier – there is no clustering problem. *Id.* at

7   3-4. Because Murphy and Topel's clustering exercise "fits into the framework of ex post clustering,

8   [it] is therefore an inappropriate and unreliable application of clustering." *Id.* at 4.

9         **2.    Apple's Prices Are Not Uniform**

10         Murphy and Topel's clustering adjustment should also be rejected because it is based on the

11   false factual premise that virtually all resellers and direct consumers paid the same price for their

12   iPods. Ex. 6, Topel Rpt., ¶74 ████████████████████████████████

13   ████████████████████████████████████████████

14   ████████████ *id.* ████████████████████████████

15   ████████ *accord* Ex. 5, Murphy Rpt., ¶95 ████████████████

16   ████████████████████████████████████████████

17   ██████████████████████████████████ *id.* ████████

18   ████████████████████████████████████ As Topel puts it:

19   ████████████████████████████████████████████

20   ████████████████████████████████████████████

21   ████████████████████████ Ex. 6, Topel Rpt., ¶74.

22         This central factual premise of Murphy and Topel's criticism is, however, "wildly incorrect."

23   Ex. 4, Noll Rebuttal at 33. As the price and quantity data histograms in Appendix B to Noll's

24   Rebuttal Report demonstrate, ████████████████████████████████

25   ████████████ *Id.* ████████████████████████████

26   ████ *Id.*[13]

27   ────────────────────────

28   [13]     The data used in the regressions also understate true variation because Apple did not provide information necessary to match all discounts to a specific transaction. Ex. 4, Noll Rebuttal at 33.

1    Furthermore, it is inappropriate to use the amount of variation in the data as a guide to

2    whether a data set constitutes a cluster sample. "Clustering is a property of how the data are

3    collected and has nothing to do with how much variation there is in the underlying population

4    variable or variables." Ex. 1, Wooldridge Decl. at 6.

5          **3.**      **Murphy and Topel Erroneously Assume that Sales to Different Buyers Are Not Independent Simply Because the Seller (Apple)**

6                     **Is the Same**

7    Forced to concede that there is variation in Apple's pricing,[14] Murphy and Topel are left with

8    the argument that the observations in Professor Noll's regression are not independent simply because

9    Apple was the seller in all transactions. *See, e.g.*, Ex. 5, Murphy Rpt., ¶95 ████████████

10   ████████████████████████████████████████████████████████

11   ████████████████████████████████████████████████████████

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15   ████████████████████████████████████████████████████████

16   ████████████████████ Ex. 10, Murphy Dep. at 135:7-136:4.

17   But this argument is nonsensical. As Professor Noll explains, ████████████

18   ████████████████████████████████████████████████████████

19   ████████████████████████████████████ Ex. 4, Noll Rebuttal at 36; *see*

20   *generally id.* at 36-39. The mere fact that it is Apple that sets the sales price of each iPod is

21   irrelevant to the question of whether the observations are independent. *Id.* at 9, 37-39.

22

23

_____

[14]    Although the Murphy and Topel reports cherry-pick three anecdotes in which different

████████████████████████████ Ex. 9, Topel Dep. at 54:8

– 55:7; *id.* at 55:6-7 ██

████████████████████████████████████████████████████████

████████████████████████████████████████████████████ *Id.*

at 49:19-50:4; *id.* at 51:5-17.

### 4. Even Assuming Clustering Were Relevant Here, Other Errors Render Apple's Experts' Opinions Unreliable and Inadmissible

Even assuming clustering were relevant here, the clustering adjustment Murphy and Topel use is not appropriate. First, in this case the ████████████████████████████ ██████. Under these conditions (even assuming clustering were appropriate, which it is not), adjusting for 'cluster-robust' standard errors can be very misleading as estimates of statistical precision." Ex. 1 , Wooldridge Decl. at 5-6, 7-10. Indeed, because the ████████████████████ ████████████████████████████████████████████████" *Id.* at 9.

Second, Murphy and Topel's decision ████████████████████████████ ████████████ As Professor Noll states, these clusters ████████████████ ████████████████████████████████████████████████████████ ████████████████████████████████████████. Ex. 4, Noll Rebuttal at 43. ██ ████████████████████████████████████████████████████████████ ████████████████████████████████████████████████████████████ ████████████████████████████████ *id.*, Noll Rebuttal at 44; Ex. 1, Wooldridge Decl. at 8 ████████████████████████████████████████.

### C. Effect of Applying Clustering Adjustment Here Is to Distort Results

Murphy and Topel's clustering adjustment in the absence of any need for one is not harmless. To the contrary, as Noll and Wooldridge have explained, applying the clustering adjustment in this case "causes more harm than good" in the quality of the regression estimates. Ex. 4, Noll Rebuttal at 47. The reason for this is that if there is no clustering problem to "correct," the standard method for adjusting for clustering – and the one used by Murphy and Topel – causes an upward bias in the estimates of the standard errors of the regression, and greatly reduces the number of transactions observations. The result is a regression "that cannot reliably explain anything." *Id.* at 46-47. Professor Wooldridge agrees: "It is important to know that computing so-called "cluster-robust" standard errors is not harmless when the data have come from a random sample [or] the sample is the population. . . . Clustering can produce standard errors that are vastly inflated compared with the true precision of the estimates." Ex. 1, Wooldridge Decl. at 5.

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**D.    Murphy's Opinions Found Unreliable and Inadmissible by Other Courts**

This is not the first time Murphy's expert work on behalf of Apple has failed to withstand scrutiny. In *In re High-Tech Employee Antitrust Litig.*, 289 F.R.D 555 (N.D. Cal. 2013), plaintiffs alleged that their former employers – including Apple – conspired to fix and suppress employee compensation and restrict employee mobility. *Id.* at 559. The defendants offered Murphy's expert report to oppose the plaintiffs' class certification motion. As here, Murphy criticized plaintiffs' expert's regression model, which used aggregate data from all of the defendants' employees. Murphy attempted to discredit plaintiffs' analysis by disaggregating the regression, which led to to dramatically different results. *Id.* at 579. However, the court rejected Professor Murphy's disaggregated model because his analysis may have "'minimize[d] artificially' the effects of anti-solicitation agreements by spreading those effects across a wider range of variables." *Id.* at 580. Due to the flaws in Professor Murphy's analysis, the "Court [was] not persuaded that Dr. Murphy's results are more credible than" plaintiff's expert and further determined that it was "not clear that these models would be reliable." *Id.* As a result, the court found that plaintiff's expert had provided a plausible methodology for demonstrating harm and estimating class-wide damages that Professor Murphy failed to adequately challenge. *Id.* at 582.

Similarly, in *United States v. Apple, Inc.*, Nos. 12 Civ. 2826 (DLC), 12 CIV 3394 (DLC), 2013 U.S. Dist. LEXIS 96424 (S.D.N.Y. Oct. 4, 2013), the court held, after a bench trial, that Apple conspired with five of the six biggest publishers in the U.S. to raise the price of e-books in violation of the Sherman Act. The court excluded Murphy's testimony, holding that it was "premised on a faulty legal assumption and . . . irrelevant in this case. To the extent that Professor Murphy simply presents his own views regarding Apple's motives and intentions, that testimony is also inadmissible as an improper invasion of the fact finder's role." Ex. 14, *United States v. Apple* Hearing Transcript at 3.

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## V. CONCLUSION

As shown above and in the Noll Rebuttal Report, and as confirmed by Professor Wooldridge, Apple's invocation of clustering is an absolute red herring. Clustering is irrelevant to Noll's regression analysis, and Apple's argument is based on admittedly unsupportable factual premises. Because Murphy and Topel's clustering opinions do not "fit" the facts, they fail to pass muster under *Daubert*, and must be excluded from the summary judgment record and at trial.

DATED: December 20, 2013

Respectfully submitted,

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## CERTIFICATE OF SERVICE

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3 with the Clerk of the Court using the CM/ECF system which will send notification of such filing to

4 the e-mail addresses denoted on the attached Electronic Mail Notice List, and I hereby certify that I

5 caused to be mailed the foregoing document or paper via the United States Postal Service to the non-

6 CM/ECF participants indicated on the attached Manual Notice List.

7       I certify under penalty of perjury under the laws of the United States of America that the

8 foregoing is true and correct. Executed on December 20, 2013.

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