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**UNITED STATES DEPARTMENT OF LABOR  
OFFICE OF ADMINISTRATIVE LAW JUDGES**

OFFICE OF FEDERAL CONTRACT  
COMPLIANCE PROGRAMS, UNITED  
STATES DEPARTMENT OF LABOR,

Plaintiff,

v.

ORACLE AMERICA, INC.,

Defendant.

OALJ Case No. 2017-OFC-00006

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Office of Administrative Law Judges  
San Francisco, Ca

**OFCCP'S MOTION TO EXCLUDE EXPERT TESTIMONY OF DR. ALI SAAD  
AND MEMORANDUM OF POINTS AND AUTHORITIES**

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## INTRODUCTION

OFCCP brings this motion to exclude the proffered testimony of Oracle's expert statistician, Dr. Ali Saad. "[T]he test under *Daubert* is not the correctness of the expert's conclusions but the soundness of his methodology." *Primiano v. Cook*, 598 F.3d 558, 564-65 (9th Cir. 2010). Fundamental flaws in Dr. Saad's methodology render his opinion neither relevant nor helpful to the Court in resolving the issues before it.

As a preliminary matter, Dr. Saad did not conduct an independent study of compensation at Oracle. Rather, as Dr. Saad freely admits, his assignment was merely to critique the study of OFCCP's expert, Dr. Janice Madden. As such, Dr. Saad conducted no affirmative study of the questions at issue here.

The opinions Dr. Saad provided critiquing Dr. Madden's study are flawed in three critical ways. Each error supports exclusion of his testimony altogether, and renders his opinions not only of little value, but detrimental to adjudication of the issues in this case.

*First*, Dr. Saad failed to examine the key question in this case. Put simply: Does Oracle pay similarly-situated women, Asians, and African Americans less than their White or male counterparts? Dr. Saad failed to answer this question because he studied only the compensation Oracle *promised*, rather than the compensation Oracle actually paid. What Oracle promised workers but never delivered is irrelevant to this litigation. Nevertheless, rather than using Oracle's readily available W-2 data identifying the compensation paid to each employee annually, Dr. Saad ran his entire analysis on a "total compensation" data set that he created by adding to employee salary an *approximation of future, unvested*, stock compensation promised by Oracle. His study of approximated "promised wages" has no relevance to any question at issue here.

Dr. Saad also failed to reach a central component of the pay discrimination question at issue because he only compared a small subset of similarly-situated employees. His analysis did not account for the possibility that Oracle channeled similarly-qualified people into different job levels, as specifically alleged by OFCCP, which directly impacted their compensation. By presuming Oracle's job level assignments are bias-free, Dr. Saad assumed his own conclusion

and failed to rebut Dr. Madden's detailed study which found that Oracle's pay discrimination against Women, Asians and African Americans is driven by channeling these groups into lower paid global career levels both at hire and over time.

*Second*, Dr. Saad ignored the actual facts pertinent to this case. In his narrow study, Dr. Saad appears to have studied the compensation practices of a hypothetical technology company, rather than Oracle's compensation data and practices. In his compensation regression analyses, Dr. Saad began by looking to the compensation data for workers Oracle assigned to the same job title and global career level, but then applied a wide array of controls that he contends reflect characteristics Oracle took into consideration when setting compensation. Oracle's detailed compensation policies, however, make clear that Oracle does not consider any of the characteristics Dr. Saad applied as "controls" when it actually sets compensation.

Among the controls Dr. Saad applied that are unrelated to Oracle's actual compensation policies is a class of more than 860 variables which identify each employee's "Cost Center" designation (also known as Organization). Dr. Saad applied this Cost Center/Organization control as a proxy for the product an employee works on. The Cost Center/Organization control, however, does not reflect the product an employee works on, but is instead a designation Oracle uses for budget tracking. More critically, Oracle's policies make clear that product has absolutely no bearing on employee compensation and Oracle does not track or maintain records of the product to which an employee is assigned.

*Third*, Dr. Saad failed to provide opinions that take into account established principles of labor economics, the area in which he is offered for his expertise. Woven throughout Dr. Saad's report is his opinion that "unmeasured" skill and ability differences that vary by race and gender are responsible for the striking pay disparities between similarly-skilled Asians and Whites, African Americans and Whites, and women and men at Oracle's headquarters. Stated plainly, Dr. Saad asserts that, while he cannot measure or specify any difference between men and women, between Whites and Asians, or between Whites and African Americans, those differences nonetheless exist and they justify Oracle's pay disparities. Thus, not only do Dr. Saad's opinions defy accepted principles of labor economics, they are grounded in the prejudiced

notion that certain groups—women, Asians, and African Americans—are simply inferior to others—men and Whites.

A key example of Dr. Saad’s abdication of economic analysis for bias is that he included multiple controls in his regression analyses that relate to leaves of absence. According to Dr. Saad, an employee’s cumulative leaves of absence and whether an employee takes a leave of absence in a given year is an indication of that employee’s skills or productivity. As Dr. Madden explained in her Rebuttal Report, Dr. Saad’s view is biased and was rejected long ago by labor economists who recognized that applying a leave of absence control only identifies and punishes mothers. As a *scientific* matter, the fact that employees, mostly women, take leaves of absence (as required by childbearing) says nothing about those workers’ skills or productivity, other than that they were not at work for those periods of time. Labor economists agree that the appropriate way to account for leaves of absence is simply to reduce an employee’s job tenure by the amount of time spent on leave. Dr. Saad’s recommendation that pay equity analysis should include “motherhood controls” speaks volumes as to the absence of rigor and scientific thought in his analysis.

For the reasons detailed below, OFCCP respectfully asks the Court to exclude Dr. Saad’s testimony at trial.<sup>1</sup>

### **SUMMARY OF ORACLE’S COMPENSATION POLICIES AND DATA**

#### **A. Oracle Does Not Guarantee All Components of its Compensation to All Oracle Employees.**

As explained and detailed in OFCCP’s companion Motion for Summary Judgment, Oracle sets compensation pursuant to detailed written compensation policies maintained to comply with federal regulation.<sup>2</sup> These policies explain that compensation at Oracle can include “cash” and “stock” compensation.<sup>3</sup> Cash earnings consist of salary and short-term incentives

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<sup>1</sup> The parties met and conferred regarding the issues addressed in this brief on October 16, 2019. Decl. of Charles Song (“Song Decl.”) ¶ 2.

<sup>2</sup> OFCCP’s Motion for Summary Judgment (“MSJ”) at 6-10. In accordance with the Court’s June, 10, 2019 Order, OFCCP incorporates and cites to the specific materials filed with its MSJ including its Memorandum of Points and Authorities, Statement of Uncontested Material Facts in Support of OFCCP’s Motion for Summary Judgment (“SUF”) and Exhibits filed simultaneously with OFCCP’s Motion for Summary Judgment.

<sup>3</sup> SUF No. 50.

such as bonuses.<sup>4</sup> Bonuses and stock grants are discretionary and are not awarded to all employees.<sup>5</sup> Oracle caps the number of employees who can be granted stock in the United States to 35%.<sup>6</sup>

**B. Oracle’s Stock and Option Awards Vest Pro Rata Over a Four Year Schedule.**

Stock grants at Oracle differ from the cash compensation reflected in salaries and bonuses. At Oracle, employees who receive stock grants do not have anything of actual value at the time of the grant; rather, they must still be employed with Oracle when those grants “vest” in 25% increments over four years.<sup>7</sup> If an employee separates from Oracle before the end of the first year or prior to the annual vesting date for any part of the award, the employee forfeits the percentage of the stock award that has not yet vested.<sup>8</sup> For example, Oracle hired an employee in 2012 and issued her a stock grant at hire.<sup>9</sup> Oracle laid her off after she had been employed for approximately twelve months, but prior to her first vesting date.<sup>10</sup> Thus, none of the stock she was awarded at hire had vested before she left Oracle and she never received any “money or other form of financial profit” from that stock grant.<sup>11</sup>

**C. Oracle Sets Salary On the Basis of Job Function, Specialty Area, Job Title, and Global Career Level.**

Managers are trained to set an employee’s salary within salary ranges identified in Oracle’s Global Job Table for a specific “job code.”<sup>12</sup> Oracle’s job codes are based on an employee’s: (1) job function (e.g., Product Development), (2) specialty area (e.g., Software

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<sup>4</sup> SUF No. 60; MSJ, Exhibit 12 at ORACLE\_HQCA\_0000042098-9, 11.

<sup>5</sup> MSJ, Exhibit 78 (Oracle Compensation Guidelines) at ORACLE\_HQCA\_0000382600-603.

<sup>6</sup> MSJ, Exhibit 79 (Eligibility: FY14 Focal Stock Grant) at ORACLE\_HQCA\_0000022959; MSJ, Exhibit 84 (Email from Stefanie Wittner) at ORACLE\_HQCA\_0000022961; MSJ, Exhibit 80 (Eligibility: FY13 Focal Stock Grant) at ORACLE\_HQCA\_00000380593.

<sup>7</sup> MSJ, Exhibit 27, (Deposition of Kate Waggoner) at 270:13-271:14.

<sup>8</sup> MSJ, Exhibit 83 (Stock Options/Restricted Stock Units (RSUs) FAQ-June 2016) at ORACLE\_HQCA\_0000416489 (RSUs and stock options “both require continuous employment in order to earn the right to the shares based on a 25% annual vesting schedule.”); MSJ, Exhibit 27 at 271:7-14.

<sup>9</sup> MSJ, Exhibit 98, Declaration of Rachel Powers (“Powers Decl.”) at ¶ 13.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

<sup>12</sup> MSJ at 6-10.

Engineer), (3) job title (e.g., software developer 3), and (4) global career level (e.g., individual contributor level 3).<sup>13</sup>

**D. Oracle Neither Considers Product In Setting Compensation Nor Maintains Data Regarding Product Assignment.**

Oracle's compensation policies explicitly specify the factors Oracle considers in setting compensation.<sup>14</sup> Oracle has expressly stated that product is not linked to compensation. As Oracle's Chief of Human Resources and Oracle's corporate designee regarding Oracle's compensation policies, Kate Waggoner, explained: "while product used to be associated with pay for some job codes not subject to this litigation, [t]he job codes in IT and development, in particular, have never been product-associated and product is no longer associated with pay in other job codes."<sup>15</sup> Oracle further admits it has maintained no records that identify the products to which each employee is or has been assigned.<sup>16</sup>

**SUMMARY OF DR. SAAD'S METHODOLOGY AND STUDY**

On July 19, 2019, Dr. Saad submitted his Expert Report to OFCCP and on August 15, 2019, he submitted his Expert Rebuttal Report.<sup>17</sup>

**A. Dr. Saad Conducted No Independent Analysis of Oracle's Compensation.**

In his reports, Dr. Saad describes his methodology for the regression analysis upon which he bases his opinions. Dr. Saad did not conduct his own, independent analysis in order to study compensation at Oracle.<sup>18</sup> Rather, he was retained to critique OFCCP's and Dr. Madden's studies

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<sup>13</sup> MSJ at 7; SUF No. 65.

<sup>14</sup> MSJ at 6-10.

<sup>15</sup> MSJ, Exhibit 81 (Kate Waggoner *Jewett* 30(b)(6) Deposition) at 102:14-103:9; *see also* Exhibit 85 (J.R. Riddell to C. Song Email dated July 12, 2019)(confirming that "that testimony given in a PMK capacity on behalf of Oracle in *Jewett* is binding on Oracle in [*OFCCP v. Oracle America, Inc.*] to the extent allowed by law.").

<sup>16</sup> SUF No. 30; Exhibit 62, ORACLE\_HQCA\_0000607049-50; *See also* Exhibit 93 at ¶ 141 ("Product data is not available").

<sup>17</sup> MSJ, Exhibits 93 (Dr. Saad's Initial Report) and 94 (Dr. Saad's Rebuttal Report).

<sup>18</sup> Dr. Saad's Report contains no methodology section describing construction of a statistical model. Further, his Summary of Findings states "I have been asked to evaluate and respond to the statistical analyses described in the SAC, and the claims that the OFCCP makes on the basis of them." Exhibit 93 at ¶ 4. He then proceeds to discuss the critiques his Report presents about OFCCP's variable choices and additional variables OFCCP should have used, which he relies on in his analysis. *Id.* at ¶¶ 4-7.

and analyses. He ran and produced regression analyses by adding a series of variables to the model Dr. Madden created and explained in her Report.<sup>19</sup>

Dr. Madden conducted a detailed study of Oracle's compensation of employees in three job functions at its headquarters.<sup>20</sup> Her analysis revealed sweeping pay disparities between employees of commensurate education and experience working in the same job title.<sup>21</sup> Dr. Saad's analysis, in contrast, took Dr. Madden's regression, which includes controls for managerial designation and global career level,<sup>22</sup> and then added large classes of additional controls, including: (1) Cost Center, which is a class of budget codes assigned to different Organizational Cost Centers; (2) cumulative time spent on leave of absence; (3) time spent working in standard job title; (4) total tenure working at Oracle; (5) whether an employee received a patent bonus; (6) whether an employee took a leave of absence in the current year; and (7) whether the employee arrived at Oracle as an experienced hire or through acquisition.<sup>23</sup>

Oracle's Cost Centers are used by Oracle's Finance group to track budgetary items, such as travel and entertainment.<sup>24</sup> The Cost Center in which Oracle places an employee is "not a factor in determining an employee's compensation, such as the employee's salary range, bonus grants, or stock options and [Restricted Stock Unit] awards."<sup>25</sup> Oracle managers do not look to the Cost Center assigned to an employee to determine an employee's "skills, abilities, or work

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<sup>19</sup> MSJ, Exhibit 93 at ¶ 4.

<sup>20</sup> OFCCP describes Dr. Madden's study and reports in OFCCP's Motion for Summary Judgment, filed simultaneously with this motion. MSJ at 18-22. OFCCP incorporates by reference OFCCP's recitation of the facts and findings of Dr. Madden included in OFCCP's Motion for Summary Judgment and accompanying Statement of Undisputed Facts.

<sup>21</sup> *Id.* (describing Dr. Madden's study and findings).

<sup>22</sup> Dr. Madden included these controls not because she believes they are appropriate to include in her model, but to underline the robust nature of the gender- and race-based pay disparities her studies reveal. Dr. Madden's report explains that even when potentially biased endogenous variables, such as Oracle's assignment of global career level, are added as controls, Oracle's compensation practices still show significant race- and gender-based pay disparities with standard deviations of statistical significance. MSJ, Exhibit 91 (Dr. Madden's initial report) at 1-5.

<sup>23</sup> MSJ, Exhibit 93 at ¶ 121.

<sup>24</sup> See MSJ, Exhibit 97, Declaration of Christina J. Kolotouros ("Kolotouros Decl.") at ¶ 7; MSJ, Exhibit 98 (Powers Decl.) at ¶ 10; MSJ, Exhibit 82 (Letter from J. Pitcher to L. Bremer)(Cost Center is the most "granular" level of line of business used for budget tracking) at 8-9. As explained by Kate Waggoner, Oracle's Chief Executive of Global Compensation, there are many cost centers under one manager, and she did not know if Cost Centers were related to product. MSJ, Exhibit 7 (Deposition of Kate Waggoner) at 102:10-104:24.

<sup>25</sup> MSJ, Exhibit 97 (Kolotouros Decl.) at ¶ 7; see also MSJ, Exhibit 98 (Powers Decl.) at ¶ 10.

experience.”<sup>26</sup> Instead, managers look at the employee’s resume, portfolio, work samples, and work performance to determine skill, abilities, or work experience, which in turn drive employee compensation.<sup>27</sup>

Dr. Saad’s back-up files reveal that Oracle utilizes more than 860 distinct Cost Centers.<sup>28</sup> Although Dr. Saad justifies including the 860 Cost Center variables as a proxy for product, Dr. Saad testified that he did not know whether Cost Centers had a discernable connection to Oracle products.<sup>29</sup> Dr. Saad did not conduct any empirical research or analysis to support his application of the Cost Center control.<sup>30</sup> He relied on the declaration of Steve Miranda, the Executive Vice President of Oracle Application Product Development, who stated that “organization[/Cost Center] is not unrelated to product and, in some instances, is squarely on product, but not in every single instance.”<sup>31</sup>

**B. Dr. Saad Ran His Regression Analysis on Unvested Promised Compensation, Rather than Actual or Received Annual Compensation.**

To measure pay outcomes, Dr. Saad applied his model to a “total compensation” dataset created from Oracle’s native compensation data. He explained that his total compensation data is a combination of “base pay, annual bonus, and shares or options awarded in that year.”<sup>32</sup> The critical difference between the total compensation dataset Dr. Saad created and the W-2 total compensation data utilized by Dr. Madden is that Dr. Saad’s total compensation data includes an estimation of stock and/or option compensation that has been promised to an employee, but has not vested or been realized by the employee.<sup>33</sup>

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<sup>26</sup> MSJ, Exhibit 97 (Kolotouros Decl.) at ¶ 7.

<sup>27</sup> MSJ, Exhibit 98 (Powers Decl.) at ¶ 10.

<sup>28</sup> MSJ, Exhibit 88 (Saad Backup Data entitled re\_yearly\_incumbent\_2013\_2018). Dr. Saad testified that he did not know how many Cost Centers Oracle utilized, and he did not know how many Cost Centers contained only one employee, the median size of a Cost Center, or the average size of a Cost Center. MSJ, Exhibit 89 (Saad Depo.) at 222:12-21; 227:12-18; 229: 6-21.

<sup>29</sup> See, e.g., MSJ, Exhibit 89 at 245:8-11 (Dr. Saad said he “didn’t know” if the Organization variable was connected to product); 246:19-25 (Dr. Saad admits he does not know if Oracle keeps records of what product each employee works on).

<sup>30</sup> MSJ, Exhibit 89 at 260:13-262:20.

<sup>31</sup> MSJ, Exhibit 89 at 224:06:13 20.

<sup>32</sup> MSJ, Exhibit 93 at ¶ 10; *Id.* at 73-75.

<sup>33</sup> MSJ, Exhibit 93 at ¶ 10; see also MSJ, Exhibit 91 (Madden Initial Report) at 11 (discussing her total compensation variable based on Medicare-taxed W-2 compensation data, which includes vested stock earnings).

**C. Dr. Saad Did Not Incorporate His Word Cluster Analysis Into His Statistical Model.**

In his reports, Dr. Saad expended significant effort to describe a word cluster analysis that has no bearing on the statistical model he employed. In this word cluster analysis, Dr. Saad evaluated the frequency of words within a set of 521 job requisitions for Software Developer 4.<sup>34</sup> Dr. Saad suggested that word clusters can serve as a good proxy for identifying skills in high demand, which in turn should correlate with pay differentials because employees with skills in higher demand should “command higher compensation than those with more readily available, less in demand skills.”<sup>35</sup> In conducting this analysis, Dr. Saad chose 24 clusters, but did not explain why he chose that number of clusters.<sup>36</sup> Dr. Saad did not eliminate words from the frequency check that have no connection to skills or qualifications.<sup>37</sup> Thus, Dr. Saad’s 24 word clusters reveal that “knowledge” is a highly demanded skill, as is “Oracle” and “development.”<sup>38</sup> Dr. Saad did not add any findings from his word cluster analysis as additional control variables to Dr. Madden’s model, and he did not use word clusters to statistically analyze Oracle’s compensation data.<sup>39</sup>

**LEGAL STANDARD FOR ADMISSION OF EXPERT OPINION  
UNDER FEDERAL RULE OF EVIDENCE 702**

Federal Rule of Evidence 702 provides, in relevant part:

[a] witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

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<sup>34</sup> MSJ, Exhibit 93 at ¶¶ 47-60.

<sup>35</sup> MSJ, Exhibit 93 at ¶ 48; *see also Id.* at ¶ 55 (discussing how the word clusters can serve as a proxy for skill).

<sup>36</sup> MSJ, Exhibit 93 at ¶¶ 55-56; *see also* MSJ, Exhibit 92 (Madden Rebuttal Report) at 28 (Dr. Saad “appears to have arbitrarily determined that 24 clusters should be used.”).

<sup>37</sup> *See, e.g.* Exhibit 93, Attachment E, Cluster 1 (revealing Dr. Saad failed to omit words like “skills” and “knowledge” in his cluster analysis).

<sup>38</sup> *Id.* Other clusters in Dr. Saad’s analysis include words whose relationship to specialized employee skills is unclear, such as “storage,” “fast,” “work,” and “strong.” *See* Exhibit 93, Attachment E.

<sup>39</sup> While Dr. Saad did not include his word clusters as a variable in his regression analysis, Dr. Madden included Dr. Saad’s word clusters as a variable in her Rebuttal Report, finding that it has no effect on pay disparity for Asians, and drives about a third of the pay disparity for women. Exhibit 92 (Madden Rebuttal Report) at 29, Table R7.

Fed. R. Evid. 702; *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).

To be admissible, the proposed expert testimony must be both reliable and helpful to the trier of fact. *Primiano v. Cook*, 598 F.3d 558, 564 (9th Cir. 2010), *as amended* (Apr. 27, 2010). “The expert opinion must also be relevant or ‘fit’ the facts of the case. The standard for ‘fit’ is higher than bare relevance. The scientific knowledge must be connected to the question at issue and the trial court ‘must ensure that the proposed expert testimony is relevant to the task at hand ...i.e., that it logically advances a material aspect of the proposing party’s case.’” *Silong v. United States*, No. CVF06-0474 LJODLB, 2007 WL 2535126, at \*2 (E.D. Cal. Aug. 31, 2007) (internal citations omitted).

Courts also have “wide latitude” to apply the *Daubert* reliability analysis “to exclude portions of expert testimony that fail to meet the *Daubert* standards while allowing the expert to testify as to other matters.” *NetAirus Techs., LLC v. Apple, Inc.*, No. LACV1003257JAKEX, 2013 WL 11237200, at \*2 (C.D. Cal. Oct. 23, 2013) (citing *inter alia Oracle America, Inc. v. Google, Inc.*, No. C 10–03561 WHA, Dkt. 785 (N.D.Cal. March 13, 2013) (striking portions of damages expert’s third report)). “When the report of an expert witness offers no foundation for one of his conclusions, a court may properly exclude that portion of the opinion under Rule 702, *Daubert*, and *Kumho Tire*.” *Cameron v. Lowes Home Centers Inc.*, No. CV-17-08082-PCT-JJT, 2019 WL 2617032, at \*2 (D. Ariz. June 26, 2019).

Erroneous admission of expert testimony is presumed prejudicial and requires a new trial absent a showing that the error was harmless. *Id.* at 467. The party offering the expert testimony must prove its admissibility by a preponderance of the evidence. *Harris v. Koenig*, 815 F.Supp.2d 6, 8 (D.D.C. 2011).

## **ARGUMENT**

### **A. Dr. Saad’s Testimony Should Be Excluded Because He Failed to Study the Compensation Discrimination Claims at Issue in This Case.**

Under FRE 702, Dr. Saad’s testimony is inadmissible expert testimony because he failed to study whether Oracle engaged in compensation discrimination against women, Asians, and African Americans at its headquarters in Redwood Shores, California.

As an initial matter, Dr. Saad did not conduct his own independent analysis or examination of whether Oracle had gender- or race-based compensation disparities.<sup>40</sup> He admits he was retained only to poke holes in OFCCP's or Dr. Madden's analyses, not to provide an independent evaluation of Oracle's compensation.<sup>41</sup> It is well settled law, however, that once a plaintiff has established a prima facie case with statistical evidence as OFCCP has here,<sup>42</sup> "the defendant cannot rebut an inference of discrimination by merely pointing to flaws in the plaintiff's statistics." *E.E.O.C. v. Gen. Tel. Co. of Nw.*, 885 F.2d 575, 581 (9th Cir. 1989). Because his report is confined to critiquing Dr. Madden's study, Oracle cannot rely on Dr. Saad's testimony, as a matter of law, to defeat the inference of discrimination established through Dr. Madden's analyses.

More critically, the core of OFCCP's claims here is that similarly-situated women, Asians, and African Americans receive less salary and less overall compensation than their male and White counterparts. Dr. Saad failed to study this question because he:

- Did not conduct any regression analysis testing OFCCP's claim that pay disparities arise from Oracle channeling certain groups into lower paying global career levels;<sup>43</sup>
- Did not study or conduct any analysis regarding OFCCP's claim of *salary* discrimination; and
- Did not study or apply his methodology to total compensation paid by Oracle.

First, as a result of the way he built his regression analyses, Dr. Saad did not compare compensation of similarly-qualified employees who might be assigned different global career levels *within the same job title*, thereby disregarding OFCCP's claims that pay disparities are due in part to discriminatory channeling.<sup>44</sup> Dr. Saad's failure to study the possible impact of channeling in his initial report is curious, given that OFCCP specifically alleged Oracle's

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<sup>40</sup> See *supra* n. 18.

<sup>41</sup> *Id.*

<sup>42</sup> See e.g., *Palmer v. Shultz*, 815 F.2d 84, 96 (D.C. Cir. 1987); *Segar v. Smith*, 738 F.2d 1249, 1283 (D.C. Cir. 1984); *Castaneda v. Partida*, 430 U.S. 482, 496 n. 17 (1977).

<sup>43</sup> Significantly, OFCCP's claim is not an Equal Pay Act claim, which requires pay comparisons only be made between and among employees in the *same job*. In the claims at issue here, the relevant pay comparisons are between and among *similarly-situated* employees and similarly-qualified new hires at the time of hire. See 41 C.F.R. 60-20.4.

<sup>44</sup> SAC ¶¶ 18-22.

channeling fueled its discriminatory pay practices.<sup>45</sup> Dr. Saad’s failure to address this question in his Rebuttal Report speaks volumes. Dr. Madden’s initial report detailed that, in fact, Oracle’s assignment of global career levels to employees working within the same job titles, both at hire and over time, drives the majority of the gender disparity in pay for women<sup>46</sup> and Asians.<sup>47</sup> Dr. Saad’s failure to study this central component of the discriminatory practices at issue in this litigation, or to respond to it in his Rebuttal Report, renders his opinion of limited value.

Second, Dr. Saad did not study, nor did he apply his regression analysis to, Oracle’s salary (known as “base pay”) data.<sup>48</sup> This is critical because OFCCP specifically alleged Oracle engaged in salary discrimination,<sup>49</sup> and 41 C.F.R. §60-20.4(b) plainly prohibits discrimination in any form of compensation. Further, Dr. Madden conducted a detailed study which produced findings of sweeping salary disparities for women, Asians, and African Americans as compared to their similarly-situated White and/or male colleagues.<sup>50</sup> Dr. Saad failed to study this key question at issue in this litigation.<sup>51</sup>

Finally, Dr. Saad only applied his regression methodology to a data set which he dubbed “total compensation,” yet does not, in fact, reflect the compensation Oracle employees actually received.<sup>52</sup> Like all employers, Oracle maintains compensation data, known as “Medicare wages,” which precisely identifies the annual total compensation, consisting of salary, bonuses,

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<sup>45</sup> *Id.*

<sup>46</sup> MSJ, Exhibit 91 (Madden Initial Report) at 22 (“The gender differentials in base pay in column 8 are about 60% less than in column 6, indicating that Oracle’s gender differences in the assignment of global career levels contribute to a substantial part, but not all, of the gender base pay differential.”); *Id.* at 51 (“Between 2013 and 2018, Oracle was less likely to award women than to award men, who were in global career level of IC3 and IC4, higher global career levels (see regression analyses in Appendix B). Because of this disparity in the assignment of global career levels, current global career level also contributes to half of the current gender disparities in pay.”); *Id.* at Appendix B.

<sup>47</sup> MSJ, Exhibit 91 at 29 (“The Asian pay differential for each year in column 8, which is about 6 to 10 percentage points lower (or 53 to 67% of the total differential) than those in column 6, indicates that Oracle’s Asian-white variations in job global career level assignments are associated with more than half, but not all, of the racial differentials in compensation.”); *Id.* at 51 (“Job assignments at hire account for most of the Asian-white compensation differential.”); *Id.* at Appendix B.

<sup>48</sup> MSJ, Exhibit 89 at 268:21-23.

<sup>49</sup> SAC ¶¶ 11-17.

<sup>50</sup> *See* MSJ, Exhibit 91.

<sup>51</sup> *See supra* at n. 17.

<sup>52</sup> MSJ, Exhibit 93 at ¶ 10 (Dr. Saad discusses that he included the value of unvested stock in his total compensation variable).

and the value of *vested* stock, if any, that each Oracle employee received.<sup>53</sup> Rather than applying his regression methodology to Oracle’s Medicare wages—actual compensation paid—as Dr. Madden did,<sup>54</sup> Dr. Saad applied his regression analysis to a data set he created to estimate total promised compensation. Dr. Saad’s dataset consists of the sum of each employee’s salary plus Dr. Saad’s estimation<sup>55</sup> of the value of the *unvested* stock and/or option awards Oracle had promised to that employee.<sup>56</sup>

Dr. Saad’s analysis of promised compensation renders his study irrelevant to the questions at issue here. OFCCP’s claims do not concern gender and racial disparities in promised total compensation.<sup>57</sup> OFCCP’s claims here concern gender and racial disparities in total compensation, and the components thereof,<sup>58</sup> that Oracle actually paid to its IT, Support, and Product Development employees at its headquarters. Because Dr. Saad chose not to study or apply his expertise to the compensation at issue, his report is inadmissible under FRE 702.

**B. Dr. Saad’s Testimony Should Be Excluded Because His Methodology Ignored the Facts of This Case.**

Dr. Saad confined his study to a very narrow set of issues. He did not study salary discrimination. He did not study actual total compensation. He did not compare compensation for similarly-qualified employees assigned to different global career levels within the same job titles.

The limited study Dr. Saad conducted is built on opinions regarding how Oracle sets compensation that are contrary to Oracle’s clear and undisputable compensation practices. In

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<sup>53</sup> Oracle maintains this data because the IRS requires that employees pay taxes on the full compensation received by the employee each year. *See* IRS Publication 15 (2019), (Circular E), Employer’s Tax Guide.

<sup>54</sup> MSJ, Exhibit 91 at 11.

<sup>55</sup> It is problematic that Dr. Saad’s estimate of the value of Oracle’s stock option awards disregards the universal stock valuation method, known as the “Black-Scholes” method, which courts have approved for valuing stock options. *See, e.g., Mathias v. Jacobs*, 238 F. Supp. 2d 556, 573-74 (S.D.N.Y. 2002). *Lucente v. Int’l Bus. Machines Corp.*, 117 F. Supp. 2d 336, 354–55 (S.D.N.Y. 2000) *rev’d on unrelated grounds* 310 F.3d 243 (2d Cir. 2002); MSJ, Exhibit 89 (Saad Deposition) at 281:17-21.

<sup>56</sup> MSJ, Exhibit 93 at ¶ 10.

<sup>57</sup> Dr. Madden’s study reveals that Oracle also issues women and Asians fewer and smaller stock awards (promises of future stock compensation) than their male and white counterparts. *See, e.g.,* MSJ, Exhibit 91 at 3 (“Women received between 6 and 12 thousand fewer stock award units each year than did men of comparable age, education, and seniority.”).

<sup>58</sup> SAC ¶¶ 12-13.

sharp contrast to Oracle's compensation policies, which provide the complete universe of factors Oracle considers when setting compensation, Dr. Saad incorporated into a regression methodology as controls, a host of additional factors that are nowhere to be found in Oracle's compensation policies. Stated differently, Dr. Saad did not employ the facts of *this* case in conducting his analysis.

Dr. Saad erroneously asserts that Oracle *values* the work of employees assigned to some products more than the work of employees assigned to other products because, he claims, Oracle makes more profit on some products than others.<sup>59</sup> Yet, Oracle never identifies anywhere in its compensation policies, or in its compensation training provided to managers, that product assignment has any weight or should even be considered when setting compensation.<sup>60</sup> Oracle's written policies, which they must maintain to comply with Oracle's obligations under its affirmative action plan ("AAP"),<sup>61</sup> state *all* factors Oracle considers when setting compensation.<sup>62</sup> Product assignment is nowhere identified or even mentioned.<sup>63</sup>

In fact, contrary to Dr. Saad's opinion that Oracle places different values on its employees based on their product assignment and sets compensation accordingly, Oracle's compensation policies explicitly provide that employees sharing the *same salary grade* have the *same value* to Oracle.<sup>64</sup> Oracle's compensation policies are clear that Oracle's managers must set compensation within salary ranges identified for the employee's job code (determined by job function, specialty area, job title, and global career level) on Oracle's Global Job Table.<sup>65</sup> Both Oracle's compensation policies and its compensation data make plain that employees in different

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<sup>59</sup>MSJ, Exhibit 93 at 80-81 ("All else constant, an employee working on a highly profitable product or an innovative new product with high profit potential will be paid more than an employee working on a low profit margin product.")

<sup>60</sup> Exhibit 11, U.S. Employee Handbook at p. 39.

<sup>61</sup> MSJ at 3-5.

<sup>62</sup> Dr. Saad testified that he formed his opinions on the understanding that Oracle has no compensation policies. SUF No. 242.

<sup>63</sup> *Id.*

<sup>64</sup> MSJ at 8; SUF Nos. 86, 87 (jobs that have the same market value to Oracle are assigned the same salary grades and have the same salary ranges; Multiple job codes can be assigned to the same salary grade, and therefore have the same salary range); *see also* SUF No. 76 (career level for a job in one organization with the same level of responsibilities and complexity as a job in another organization, will be the same career level).

<sup>65</sup> MSJ at 7.

*job functions*—such as Information Technology, Product Development, and Support—and different systems *job titles*—such as applications developer or database administrator—can have the *same salary grades and salary ranges*.<sup>66</sup> For example, thirteen different job titles found within the three job functions at issue in this litigation have the *same salary grade*, meaning different job titles within Oracle have the same salary ranges and same value to Oracle.<sup>67</sup> Since these thirteen job titles spanning Oracle’s headquarters all share the same salary grade, Oracle’s compensation policies explicitly provide that the work of these employees is of the *same value* to Oracle.<sup>68</sup>

Oracle’s compensation policies regarding transfers further underline that Oracle does not set compensation based on product assignment. Oracle’s policies makes clear that if an employee transfers from one product to another, that employee should not receive a pay increase.<sup>69</sup> Thus, if Oracle shares Dr. Saad’s belief that the work of employees assigned to more profitable products has more value, and therefore should be awarded higher compensation, Oracle’s compensation policies should indicate that compensation should *change* when employees transfer from one product to another. Oracle’s policies say the opposite, negating Dr. Saad’s assumptions regarding Oracle’s consideration of product assignment in setting compensation.

Finally, and even more problematic for Dr. Saad’s theory that Oracle appropriately sets compensation differently based on product assignment<sup>70</sup> is that product does not appear in Oracle’s Global Job Table and Oracle does not maintain data on which employee works on which product.<sup>71</sup> As a federal contractor, Oracle is required to maintain detailed records of all

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<sup>66</sup> MSJ at 8.

<sup>67</sup> The job titles are I [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]. MSJ at 8-9.

<sup>68</sup> MSJ at 8.

<sup>69</sup> MSJ at 9.

<sup>70</sup> Dr. Saad also does not countenance the conundrum that many Oracle employees may work on many products simultaneously. *See* MSJ, Exhibit 101, (Declaration of Lynn Snyder) at ¶¶ 6-10 (describing her work and that of her team for many years as working on beta testing on multiple products). *See also* SUF No. 190-191.

<sup>71</sup>MSJ at 6-7.

data upon which it bases compensation decisions.<sup>72</sup> Oracle says it maintained complete records, indicating the accuracy of its compensation policies, but Oracle admits it does not maintain records regarding the product assignment of each of its employees.<sup>73</sup> Precisely because Dr. Saad had no data he can harvest which identifies product assignment, he instead used the large class of “Cost Center/Organization” variables as a “proxy” for product in his regression analysis.<sup>74</sup> As described above, the record here shows that Oracle’s Cost Center designations have little relation to product and Cost Center designations are used only to track budgetary items, such as travel and entertainment.<sup>75</sup>

More important than this poor correlation, however, is the fact that Oracle does not consider Cost Center at all in setting compensation.<sup>76</sup> The Cost Center in which Oracle places an employee is “not a factor in determining an employee’s compensation, such as the employee’s salary range, bonus grants, or stock options and RSU awards.”<sup>77</sup> Oracle managers do not look to the Cost Center in which an employee is located to determine an employee’s “skills, abilities, or work experience.”<sup>78</sup> Instead, Oracle managers look at the employee’s job title, resume, portfolio, work samples, and work performance to determine skill, abilities, or work experience, which in turn drive employee compensation.<sup>79</sup>

The same is true for Dr. Saad’s application of controls for employee leaves of absence, patent bonuses, or method of entry into Oracle, by hire or acquisition. Oracle’s compensation policies make plain that it considers *none* of these issues when setting employee compensation.<sup>80</sup> Thus, Dr. Saad has no basis for restricting pay comparisons to employees with these characteristics.

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<sup>72</sup> MSJ at 5.

<sup>73</sup> SUF No. 30; *See also* Exhibit 93 at 108, ¶ 141 (“Product data is not available”).

<sup>74</sup> MSJ, Exhibit 93 at 108.

<sup>75</sup> *Supra* at n. 24.

<sup>76</sup> SUF Nos. 193-194 (Oracle did not identify Organization or Cost Center as a factor that affected compensation under Focal salary Review; at no place in Oracle’s compensation training is it indicated that Organization or Cost Center should be considered in setting compensation.)

<sup>77</sup> MSJ, Exhibit 97 (Kolotouros Decl.) at ¶ 7; *see also* MSJ, Exhibit 98 (Powers Decl.) at ¶ 10.

<sup>78</sup> MSJ, Exhibit 97 (Kolotouros Decl.) at ¶ 7.

<sup>79</sup> MSJ, Exhibit 98 (Powers Decl.) at ¶ 10.

<sup>80</sup> *See, e.g.*, MSJ at 6-10; MSJ, Exhibit 98 (Powers Decl.) at ¶ 10.

Oracle's compensation policies, for example, provide that Oracle may, in its discretion, provide a bonus to an employee that participates in securing a patent during the course of employment with Oracle. Yet, Oracle's policies never mention that receiving a patent bonus would support an adjustment in an employee's compensation.<sup>81</sup> In fact, as explained by Nicole Alexander, who worked for Oracle for more than two decades and secured a patent (and a patent bonus) for work done at Oracle, she could not convince Oracle to increase her compensation despite her extraordinarily high performance, including her innovative work which earned her a patent.<sup>82</sup>

Similarly, contrary to Dr. Saad's application of a control based on whether an employee enters Oracle as an external hire or as an acquisition, Oracle's policies clearly provide that Oracle sets the job code for each and every employee secured through an acquisition to be consistent with the job codes of employees hired externally.<sup>83</sup> Dr. Saad's analysis, which is built on compensation theories which Oracle itself rejects, has no probative value in this case.

**C. Dr. Saad's Testimony Should Be Excluded as Contrary to Established Scientific Understanding and Practices in the Discipline in Which He Claims Expertise.**

In addition to constructing his narrow regression analysis on the basis of employee assignments and characteristics that Oracle admits it does not consider in setting compensation, Dr. Saad's study repeatedly failed to apply "reliable principles and methods" of labor economics.

Both undergirding and strewn throughout Dr. Saad's reports and opinions is Dr. Saad's troubling and highly unscientific opinion that "unmeasured"<sup>84</sup> skill and ability differences are responsible for the striking pay disparities between similarly-skilled Asians and Whites, African Americans and Whites, and women and men at Oracle's headquarters. For example, Dr. Saad suggests that "hard work"<sup>85</sup> might differ between employees and may explain why his data analysis at times shows men or White employees as earning more than women, Asian, and African American employees. As such, Dr. Saad opined that any systematic differences in pay

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<sup>81</sup> *Id.*; see also MSJ, Exhibit 11 (Oracle US Employee Handbook) at 39.

<sup>82</sup> MSJ, Exhibit 103 (Declaration of Nicole Alexander) at ¶¶ 7-17.

<sup>83</sup> MSJ, Exhibit 7 (Waggoner Depo.) at 9:13-16; 18:10-19:11; 22:3-24:3.

<sup>84</sup> MSJ, Exhibit 94 (Saad Rebuttal Report) at 35, 44, 53, 60.

<sup>85</sup> MSJ, Exhibit 94 at ¶ 36.

adversely affecting women, Asians, and African Americans at Oracle are caused by an unmeasured, unspecific inferiority in the skills or productivity of female, Asians, and African American employees and similarly-situated White or male Oracle employees.

Dr. Saad's opinions are wholly in opposition to mainstream principles underlying labor economics and core Title VII precedent.<sup>86</sup> Indeed, Dr. Saad's insistence that the regression analysis of Oracle's compensation data should include controls both for "cumulative leaves of absence" and whether the employee took a leave of absence in the current year is a classic example of Dr. Saad rejecting objective economic principles for bias.<sup>87</sup> According to Dr. Saad, these controls are necessary because the frequency of leaves of absence and the fact that an employee took a leave of absence in a given year is an indicator of that employee's "skills" or "productivity."<sup>88</sup> Yet, it is well understood generally, and by labor economists specifically, that women are more likely to take leaves of absence than men and that women's brief departures from the workforce as required by childbearing is not correlated with, nor indicative of, skill or productivity (and therefore appropriate compensation).<sup>89</sup> As explained by Dr. Madden in her Rebuttal Report, it is well settled that as a matter of labor economics, the appropriate way to factor in the effect of leaves of absence on employees' skill is to deduct the time spent on leave

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<sup>86</sup> See MSJ, Exhibit 92 (Madden Rebuttal Report) at 2, 8-9, 28-29; see, e.g., *Segar v. Smith*, 738 F.2d 1249, 1266 (D.C. Cir. 1984)("[A] disparity in treatment of the comparably qualified is 'the expected result of a regularly followed discriminatory policy.' ") (quoting *Int'l Bhd. of Teamsters v. United States*, 431 U.S. 324, 360 n. 46 (1977)); *Palmer v. Shultz*, 815 F.2d 84, 91 (D.C. Cir. 1987) (acknowledging that while statistical tests cannot conclusively prove the specific cause of workplace disparities between two groups of employees, "Title VII nevertheless provides that if the disparity between selection rates for men and women is sufficiently large so that the probability that the disparities resulted from chance is sufficiently small, then a court will infer from the numbers alone that, more likely than not, the disparity was a product of unlawful discrimination—unless the defendant can introduce evidence of a nondiscriminatory explanation for the disparity or can rebut the inference of discrimination in some other way.").

<sup>87</sup> Dr. Saad's lengthy discussion regarding his word clusters also indicates a concerning abandonment of scientific methods. He gives no justification for why he selected 24 clusters, although his backup data reveals he could have used any number. His algorithm sorts jobs by considering a variety of typos or nonsense words, such as "ahands" and "echnical." Further, the clusters he created do not isolate identifiable skills. See MSJ, Exhibit 93 at ¶¶ 55-60; E14-E15 (Cluster 4: "knowledge, applications, strong"; Cluster 5: "ideas, innovative, database, problems, deliver, highly").

<sup>88</sup> MSJ, Exhibit 93 at ¶ 121.

<sup>89</sup> See, e.g., *Why Do Women Earn Less Than Men? Evidence from Bus and Train Operators Working Paper*, Bolotonyy V., Emmanuel, N. From Dr. Valentin Botonyy's research page, Harvard Department of Economics, last accessed on October 21, 2019 at <[https://scholar.harvard.edu/files/bolotnyy/files/be\\_gender\\_gap.pdf](https://scholar.harvard.edu/files/bolotnyy/files/be_gender_gap.pdf)>

from the employee's total time of work. Applying a "motherhood control" as Dr. Saad deems appropriate is nothing short of polluting scientific study with bias.<sup>90</sup>

Further, Dr. Saad's recommendation that more than 860 Cost Center designations be added as controls in his regression analysis is also deeply concerning as a measure of his understanding of statistical analysis. As explained above, Dr. Saad included this large class of variables as a control even though it does not sort employees on the basis of the characteristic he seeks—product assignment. Oracle further does not maintain records of, or consider, product when setting compensation.<sup>91</sup> Including this huge class of variables as a control not only fails to achieve its goal of sorting employees by product for purposes of compensation comparisons, it also, as a statistical matter, renders to a nullity the power of any statistical analysis.

Indeed, employers seeking to escape pay discrimination liability often overload models of pay disparities with myriad explanatory variables "to destroy any significant statistical output." *OFCCP v. Harris Trust & Savings Bank*, 78-OFCCP-2, Slip. Op. at p. 23 (Dec. 22, 1986).<sup>92</sup> Courts recognize that fragmenting data into smaller and smaller groups is a tool to mask the statistical significance, and they reject such disaggregation. *McReynolds v. Sodexo Marriott Servs., Inc.*, 349 F. Supp. 2d 1, 15–16 (D.D.C. 2004) ("[T]o sanction the disaggregation of data in this case... would necessarily mean that plaintiffs could not satisfy their prima facie burden ... For, as recognized in both the case law and in statistical treatises, the more that data is disaggregated, the more difficult it is to demonstrate statistical significance.").<sup>93</sup>

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<sup>90</sup> MSJ, Exhibit 92 at 18-19, R4.

<sup>91</sup> MSJ at 6-10.

<sup>92</sup> See *Moore v. Napolitano*, 926 F. Supp. 2d 8, 25 (D.D.C. 2013) (quoting *Segar v. Smith*, 738 F.2d 1249, 1286 (D.C. Cir. 1984) ("the D.C. Circuit described 'repeatedly disaggregating [data] until groups were too small to generate any statistically significant evidence of discrimination' as a 'methodological misstep'"); *Chen-Oster v. Goldman, Sachs & Co.*, 114 F. Supp. 3d 110, 120-121 (S.D.N.Y. 2015) ("...such disaggregation tends to mask common mechanisms because the sample size in each unit is so small...[b]y breaking up the dataset into much smaller units, the amount of 'noise,' or random variation, is elevated over any pattern that exists.").

<sup>93</sup> See also, *Paige v. California*, 291 F.3d 1141, 1148 (9th Cir. 2002), as amended (July 18, 2002) ("[I]t is a generally accepted principle that aggregated statistical data may be used where it is more probative than subdivided data) (internal citations omitted); see also *Capaci v. Katz & Besthoff, Inc.*, 711 F.2d 647, 654–56 (5th Cir. 1983) (court rejected employer's statistical analysis based on data broken down by city and year as "an unfair and obvious attempt to disaggregate that data to the point where it was difficult to demonstrate statistical significance. By fragmenting the data into small sample groups, the statistical tests became less probative ... [and it] became impossible to demonstrate significance with such small numbers in many instances." Further criticized the employer's disaggregated model because there was no factual basis for such fragmentation); *Gutierrez v. Johnson &*

Here, for more than 150 Cost Center designations, Oracle applies those designations to a single employee annually.<sup>94</sup> For all those single-employee Cost Centers, Dr. Saad’s opinion must be that these employees have no comparators.<sup>95</sup> For groups containing only a handful of employees,<sup>96</sup> the Cost Center control renders any pay comparison meaningless because it does not allow for any meaningful comparison between similarly-situated employees. By way of analogy, if applied to baseball, Dr. Saad’s model divides players into individual teams with nine distinct positions and concludes that the pitcher cannot be compared to anyone else on the team, while ignoring all pitchers on all other teams across the league.

Dr. Saad also claims that because Oracle’s “employees perform a wide array of work that requires varying skills, abilities, and competencies and contribute different value to the company,”<sup>97</sup> there is too much variation in Oracle’s compensation data to permit analysis of the pay of similarly-situated employees at Oracle’s headquarters. Yet, variation in pay data has no connection to whether pay is appropriate for study through statistical regression.<sup>98</sup> These serious errors in Dr. Saad’s opinions render them unfit for consideration by this Court. *See Morgan v. United Parcel Serv. of Am., Inc.*, 380 F.3d 459, 470 (8th Cir. 2004) (“illegitimate reasons—reasons themselves representative of the unlawful discrimination at issue—should be excluded from the regression (or otherwise dealt with) to avoid underestimating the significance of a disparity.”).

### **CONCLUSION**

For the reasons stated above, OFCCP respectfully asks the Court to exclude Dr. Saad’s testimony at trial.

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*Johnson, Inc.*, 2002 WL 34717245, at \*4–5 (D.N.J. Aug. 13, 2002) (quoting *Washington v. Elec. Joint Appren. & Train. Comm.*, 845 F.2d 710, 713 (7th Cir. 1988).

<sup>94</sup> Exhibit 88, Saad Backup Data entitled re\_yearly\_incumbent\_2013\_2018.

<sup>95</sup> Exhibit 89 at 233:13-237:3.

<sup>96</sup> For the Cost Centers with a handful of employees, which is the median size of Oracle’s Cost Centers, many are the functional equivalent of single-employee costs centers as any Cost Center without race or gender comparators in that small Cost Center would not permit any pay comparison across genders or races.

<sup>97</sup> Exhibit 93 at p. 17.

<sup>98</sup> Peter Kennedy, *A Guide to Econometrics* 41-42 (Blackwell Publishing ed., 6<sup>th</sup> ed. 2008); Song Decl., Exhibit A.

Respectfully submitted,

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UNITED STATES DEPARTMENT OF LABOR  
OFFICE OF ADMINISTRATIVE LAW JUDGES

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OFFICE OF FEDERAL CONTRACT  
COMPLIANCE PROGRAMS, UNITED  
STATES DEPARTMENT OF LABOR,

Plaintiff,

v.

ORACLE AMERICA, INC.

Defendant.

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Case No. 2017-OFC-00006

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OCT 21 2019

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San Francisco, Ca

**DECLARATION OF CHARLES SONG IN SUPPORT OF OFCCP'S MOTION TO  
EXCLUDE TESTIMONY OF DR. ALI SAAD**

I, Charles Song, state and declare as follows:

1. I am a Senior Trial Attorney for the U.S. Department of Labor, Office of the Solicitor, and counsel of record for Plaintiff in this action. I submit this declaration in support of OFCCP's Motion to Exclude Testimony of Dr. Ali Saad. I have personal knowledge of the matter set forth in this declaration, and I could and would competently testify thereto if called upon to do so.

2. On October 16, 2019, I met and conferred with Counsel for Oracle, Ms. Katie Mantoan and Ms. Jessica James, regarding OFCCP's and Oracle's motions to exclude expert testimony. During the call, the parties discussed in good faith the issues to be addressed in their respective Motions to Exclude Expert Testimony. However, the parties were unable to agree on excluding or limiting the testimony of either expert.

3. For the Court's convenience, attached as Exhibit A is a true and correct copy of pages 40-42 of Peter Kennedy, A Guide to Econometrics (Blackwell Publishing ed., 6th ed. 2008).

I declare under the penalty of perjury that the foregoing is true and correct and that this declaration was executed in Los Angeles, California on October 21, 2019.

/s/Charles Song  
CHARLES C. SONG

# EXHIBIT A

A Guide to

ECONOMETRICS

6E

Peter Kennedy

 WILEY-BLACKWELL

# **A GUIDE TO ECONOMETRICS**

## **SIXTH EDITION**

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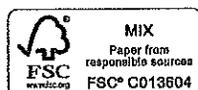
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## Chapter 3

# The Classical Linear Regression Model

### 3.1 Textbooks as Catalogs

In chapter 2 we learned that many of the estimating criteria held in high regard by econometricians (such as best unbiasedness and minimum mean square error) are characteristics of an estimator's sampling distribution. These characteristics cannot be determined unless a set of repeated samples can be taken or hypothesized; to take or hypothesize these repeated samples, knowledge of the way in which the observations are generated is necessary. Unfortunately, an estimator does not have the same characteristics for all ways in which the observations can be generated. This means that in some estimating situations a particular estimator has desirable properties but in other estimating situations it does *not* have desirable properties. Because there is no "superestimator" having desirable properties in all situations, for each estimating problem (i.e., for each different way in which the observations can be generated) the econometrician must determine anew which estimator is preferred. An econometrics textbook can be characterized as a catalog of which estimators are most desirable in what estimating situations. Thus, a researcher facing a particular estimating problem simply turns to the catalog to determine which estimator is most appropriate for him or her to employ in that situation. The purpose of this chapter is to explain how this catalog is structured.

The cataloging process described above is centered around a standard estimating situation referred to as the *classical linear regression model* (CLR model). It happens that in this standard situation the ordinary least squares (OLS) estimator is considered the optimal estimator. This model consists of five assumptions concerning the way in which the data are generated. By changing these assumptions in one way or another, different estimating situations are created, in many of which the OLS estimator is no longer considered to be the optimal estimator. Most econometric problems can be characterized as situations in which one (or more) of these five assumptions is violated in a particular way. The catalog works in a straightforward way: the estimating

situation is modeled in the general mold of the CLR model and the researcher pinpoints the way in which this situation differs from the standard situation as described by the CLR model (i.e., finds out which assumption of the CLR model is violated in this problem); he or she then turns to the textbook (catalog) to see whether the OLS estimator retains its desirable properties, and if not what alternative estimator should be used. Because econometricians often are not certain of whether the estimating situation they face is one in which an assumption of the CLR model is violated, the catalog also includes a listing of techniques useful in testing whether or not the CLR model assumptions are violated.

### 3.2 The Five Assumptions

The CLR model consists of five basic assumptions about the way in which the observations are generated.

1. The *first assumption* of the CLR model is that the dependent variable can be calculated as a linear function of a specific set of independent variables, plus a disturbance term. The unknown coefficients of this linear function form the vector  $\beta$  and are assumed to be constants. Several violations of this assumption, called specification errors, are discussed in chapter 6:
  - (a) *Wrong regressors* – the omission of relevant independent variables or the inclusion of irrelevant independent variables.
  - (b) *Nonlinearity* – when the relationship between the dependent and independent variables is not linear.
  - (c) *Changing parameters* – when the parameters ( $\beta$ ) do not remain constant during the period in which data were collected.
2. The *second assumption* of the CLR model is that the expected value of the disturbance term is zero; that is, the mean of the distribution from which the disturbance term is drawn is zero. Violation of this assumption leads to the *biased intercept* problem, discussed in chapter 7.
3. The *third assumption* of the CLR model is that the disturbance terms all have the same variance and are not correlated with one another. Two major econometric problems, discussed in chapter 8, are associated with violations of this assumption:
  - (a) *Heteroskedasticity* – when the disturbances do not all have the same variance.
  - (b) *Autocorrelated errors* – when the disturbances are correlated with one another.
4. The *fourth assumption* of the CLR model is that the observations on the independent variable can be considered fixed in repeated samples; that is, it is possible to redraw the sample with the same independent variable values. Three important econometric problems, discussed in chapters 10 and 11, correspond to violations of this assumption:
  - (a) *Errors in variables* – errors in measuring the independent variables.
  - (b) *Autoregression* – using a lagged value of the dependent variable as an independent variable.

- (c) *Simultaneous equation estimation* – situations in which the dependent variables are determined by the simultaneous interaction of several relationships.
5. The *fifth assumption* of the CLR model is that the number of observations is greater than the number of independent variables and that there are no exact linear relationships between the independent variables. Although this is viewed as an assumption for the general case, for a specific case it can easily be checked, so that it need not be assumed. The problem of *multicollinearity* (two or more independent variables being approximately linearly related in the sample data) is associated with this assumption. This is discussed in chapter 12.

All this is summarized in Table 3.1, which presents these five assumptions of the CLR model, shows the appearance they take when dressed in mathematical notation, and lists the econometric problems most closely associated with violations of these assumptions. Later chapters in this book comment on the meaning and significance of these assumptions, note implications of their violation for the OLS estimator, discuss ways of determining whether or not they are violated, and suggest new estimators appropriate to situations in which one of these assumptions must be replaced by an alternative assumption. Before we move on to this, however, more must be said about the character of the OLS estimator in the context of the CLR model, because of the central role it plays in the econometrician's "catalog."

**Table 3.1** The assumptions of the CLR model.

Assumption	Mathematical expression		Violations	Chapter in which discussed
	Bivariate	Multivariate		
1. Dependent variable a linear function of a specific set of independent variables, plus a disturbance	$y_t = \beta_0 + \beta_1 x_t + \varepsilon_t$ $t = 1, \dots, N$	$Y = X\beta + \varepsilon$	Wrong regressors Nonlinearity Changing parameters	6
2. Expected value of disturbance term is zero	$E\varepsilon_t = 0$ , for all $t$	$E\varepsilon = 0$	Biased intercept	7
3. Disturbances have uniform variance and are uncorrelated	$E\varepsilon_t \varepsilon_r = 0$ , $t \neq r$ $= \sigma^2$ , $t = r$	$E\varepsilon \varepsilon' = \sigma^2 I$	Heteroskedasticity Autocorrelated errors	8
4. Observations on independent variables can be considered fixed in repeated samples	$x_t$ fixed in repeated samples	$X$ fixed in repeated samples	Errors in variables Autoregression Simultaneous equations	10 11
5. No exact linear relationships between independent variables and more observations than independent variables	$\sum_{t=1}^N (x_t - \bar{x})^2 \neq 0$	Rank of $X = K \leq N$	Perfect multicollinearity	12

The mathematical terminology is explained in the technical notes to this section. The notation is as follows:  $Y$  is a vector of observations on the dependent variable;  $X$  is a matrix of observations on the independent variables;  $\varepsilon$  is a vector of disturbances;  $\sigma^2$  is the variance of the disturbances;  $I$  is the identity matrix;  $K$  is the number of independent variables;  $N$  is the number of observations.

**CERTIFICATE OF SERVICE**

I am over 18 years of age and am not a party to the within action. My business address is 90 7th Street, Suite 3-700, San Francisco, California 94103.

On October 21, 2019, I served the foregoing MOTION TO EXCLUDE EXPERT TESTIMONY OF DR. ALI SAAD AND MEMORANDUM OF POINTS AND AUTHORITIES, and SUPPORTING DECLARATION OF CHARLES SONG on Defendant Oracle America, Inc. by serving its attorneys below via electronic mail, pursuant to the parties' agreement:

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