IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

STATE OF NEW YORK, BY ATTORNEY GENERAL ERIC T. SCHNEIDERMAN, Plaintiff, v. INTEL CORPORATION, a Delaware corporation, Defendant.	:	C.A. No. 09-827 (LPS) **PUBLIC VERSION**

NEW YORK'S MEMORANDUM IN OPPOSITION TO INTEL'S MOTION TO EXCLUDE TESTIMONY OF DR. FREDERICK WARREN-BOULTON

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PRELIMINARY STATEMENT

Intel's obligatory *Daubert* motion rests on distortion and mischaracterization of Dr. Warren-Boulton's testimony and New York's claims of exclusionary conduct. For all the reasons set forth below, it should be denied.[1]

Summary of Dr. Warren-Boulton's Qualifications and Opinions

Dr. Warren-Boulton is a distinguished economist with extensive experience in the field and whose work has been cited by the United States Supreme Court. *See Monsanto v. Spray-Rite Srv. Corp.*, 465 U.S. 752, 764 (1984). In addition to his academic credentials, numerous publications on the economics of anticompetitive and exclusionary behavior in high-tech industries, including personal computer operating systems and microprocessors, and teaching experience, he has served as the chief economist for the Antitrust Division of the United States Department of Justice and as an expert witness in a number of antitrust matters, including as expert witness for the Federal Trade Commission in *FTC v. Staples and Office Depot*, and for the United States and the States in *United States v. Microsoft*. Most recently, Dr. Warren-Boulton testified on behalf of the United States in its successful challenge to the H&R Block merger.[2] Intel does not contest that Dr. Warren-Boulton is qualified to opine in this matter.

Dr. Warren-Boulton's Report and testimony show that Intel: (1) has monopoly power in a properly defined market, the market for x-86 microprocessors; (2) engaged in a broad campaign of exclusionary conduct which foreclosed sales by AMD and raised its costs; thus (3) enabling Intel to maintain prices above competitive levels; and (4) preventing AMD's products from being

[1] New York incorporates by reference statements and arguments it presented in its concurrently filed combined opposition to Intel's summary judgment motions, including the supporting declarations.

[2] *See United States v. H&R Block, Inc.*, --- F. Supp. 2d ----, 2011 WL 5438955 (D.D.C. Nov. 10, 2011) (enjoining merger).

fully accepted and promoted by major OEMs (Rep. at 34), a pre-requisite to a full-scale challenge to Intel's monopoly position.

Market Definition and Intel's Monopoly Power

Dr. Warren-Boulton first defined the relevant market, utilizing the tests set forth in the Horizontal Merger Guidelines used by the U.S. Department of Justice and the Federal Trade Commission. Rep. at 9. He found, after carefully considering the evidence, that x86 microprocessors constitute the relevant product market, and the geographic market is worldwide. Intel does not challenge these conclusions. Dr. Warren-Boulton also found that Intel held monopoly power in this market between 2001 and 2006, based on (1) a market share that was consistently above 70%; (2) the fact that Intel is a "must-carry" brand for all major OEMs of x86 computers; (3) substantial barriers to entry and growth; and (4) Intel's anticompetitive behavior. Rep. at 3, 15-17. Intel does not place this analysis in issue on this motion.

Intel's Exclusionary Conduct

Dr. Warren-Boulton concluded that Intel used anticompetitive behavior to limit competition. He distinguished between three kinds of anticompetitive behavior: (1) exclusionary pricing, which he defined to include exclusive dealing as a special case; (2) predatory, or below-cost pricing; and (3) raising rivals' costs, which includes strategies by which a monopolist can raise the unit costs of its rivals' products more than its own unit costs, thereby allowing the monopolist to profitably raise prices above its own costs. Rep. at 17, 24. Over the relevant period, Intel engaged in both exclusionary pricing (including multiple forms of exclusive dealing) and strategies which raised AMD's costs.[3] But neither of these would be

[3] Dr. Warren-Boulton concluded that "Intel tied up the x86 market with a variety of exclusionary contracts at least through the first half of 2006. Some of the contracts were *de facto* exclusive. Other contracts allowed customers to deal with AMD only within certain distribution channels

detected, Dr. Warren-Boulton found, by a test which identified only predatory pricing. In contrast to predatory pricing, which entails substantial short-term losses, a firm in Intel's position can exclude a rival with little or no sacrifice of short-term profits. Rep. at 18 n.38.

In order to estimate the extent of and foreclosure occasioned by Intel's exclusionary conduct, Dr. Warren-Boulton made use of an index showing, for each quarter and each segment of the microprocessor market (*i.e.*, desktops, servers, or mobile units) the unit shares of sales of x86 containing-computers sold by major OEMs affected by Intel's conduct. Dr. Warren-Boulton divided this conduct into four categories:

(1) Full exclusion, which occurred where Intel and an OEM had an explicit or *de facto* exclusive dealing agreement. Rep. at 29. The most notable example of full exclusion was Intel's long-term exclusive dealing agreement with Dell, which lasted throughout the damages period, up through mid-2006.

(2) Market-share discounts, which are discounts conditioned on the OEM devoting to Intel a certain large percentage of its purchases. Rep. at 29-30. Dr. Warren-Boulton analyzed exclusive dealing as a special case of market-share discounts, where the share necessary to earn the discount is 100%. Intel, he found, generally did not absolutely refuse to deal on any terms with OEMs that wished to purchase from AMD in ways that threatened Intel. It did not need to, in order to accomplish exclusion. Rather, "it simply made it clear that the price for nonexclusive purchases would exceed the price if the customer accepted exclusive terms . . . . The customer incurs a lump sum penalty in the form of foregone discounts when it purchases its first unit from a rival." Rep. at 22, n.42.

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for certain computer types. In addition, Intel had exclusionary pricing arrangements with many of its customers that restricted them to purchasing at most a very small share of their microprocessor requirements from AMD." Rep. at 27-28.

(3) Restrictions on selling rivals' products downstream. These agreements limited how an OEM could market an AMD product downstream. Rep. at 30.

(4) Payments in exchange for putting off the introduction of rival-based products. In such agreements, rebate dollars or other benefits were conditioned on an OEM cancelling or delaying the introduction of an AMD-based product. [redacted]

Conditions Enabling A Monopolist To Profitably Exclude

Drawing on previously published research by himself and others regarding exclusionary conduct in the computer industry, Dr. Warren-Boulton identified three conditions under which such exclusionary conduct is likely to be an effective strategy for a monopolist seeking to maintain its pricing power against rivals. First, there are intermediate buyers between the monopolist and final consumers, in this case the OEMs, as to which the monopolist is a "must-carry" supplier.[4] The OEMs cannot rely wholly on the rivals' products; the monopolist's products and support are very important or essential because many or most of their customers prefer them. Second, the monopolist can condition benefits such as discounts on agreements by the intermediate buyers (again, the OEMs) to exclusivity, essentially offering the OEMs a "take-it-or-leave-it" deal. In this way, the monopolist can "leverage" its dominance as to those products which an OEM *must* purchase from it (the "uncontested" segment) to bar competition with respect to products which the OEM *might* purchase from a rival (the "contestable" segment), tying the two together. Should an OEM wish to purchase a rival's products in the

[4] "Given the substantial share of end-users that have a preference for the Intel brand, an OEM cannot maximize its profits by relying exclusively on AMD to supply its microprocessors – Intel is a 'must-have' brand." Rep. at 52.

contestable segment, it must pay a "tax" or "penalty" on its purchases of the rivals' products in the form of the foregone "discount" on the products which the OEM *must* purchase from Intel. Such conduct is exclusionary. "Exclusion works by getting customers not to deal with competing sellers." Rep. at 27. The third condition is that the costs to the monopolist of this strategy remain low. Rep. at 23; *see also* Schwartz Decl., Exs. B-F (attaching articles).

Dr. Warren-Boulton found each of these conditions satisfied in this case. First, Intel is clearly, for each major OEM, a "must-carry" supplier. None of the top ten OEMs of x86 computers have chosen to operate using only AMD chips. Rep. at 15. Second, Intel was able to make the OEMs' receipt of benefits contingent on the OEMs' acquiescence to the exclusionary conditions Intel wished to impose. This was the basic *quid pro quo* of Intel's dealings with the OEM. Rep. at 31, 52. Third, Dr. Warren-Boulton found that the costs to Intel of engaging in such conduct were likely to be low. Although agreements with exclusionary conditions such as market share discounts are not in customers' individual or collective interest, Intel need not compensate them.[5]

Dr. Warren-Boulton summarized the extensive economic literature on which his views are based. Rep. at 24-26. Specifically, the research on which Dr. Warren-Boulton bases his theory of exclusionary pricing extends back over 15 years and has been published in periodicals edited by expert editors, such as the *Antitrust Bulletin* and the *International Journal of*

[5] "Each customer pays less in total if it purchases enough to qualify for the discount. However, the discounted price is higher than the net price the dominant firm could charge in the absence of a market-share discount." Rep. at 23. That is, absent its exclusionary conduct, Intel would have been compelled to lower the list prices on which its discounts were calculated (as it eventually did in mid-2006).

Economics of Business.[6] Further research related to the theory was presented by Dr. Warren-Boulton and a co-author in a paper presented to the 2006 International Industrial Organization Conference (*see* Schwartz Decl. Ex. D [Fredrick R. Warren-Boulton & Daniel Haar, "Competitive Price Effects From Market-Share Discounts"]) to which he referred in his deposition testimony (Warren-Boulton ["FWB"] Dep. 280). There, Dr. Warren-Boulton presented support for the thesis that market share discounts, as compared to either a linear[7] price schedule or a volume-based discount schedule, can be anticompetitive and harmful to consumers when they are designed and used to tax smaller rivals and exclude them from the market. Economists at antitrust enforcement authorities such as the Federal Trade Commission and academic researchers have used similar analysis. As FTC Chief Economist Joseph Farrell and his co-authors recently explained in the *Review of Industrial Organization*, "[w]hile 'discounts' sounds good, discounts based on *market share* to non-final buyers [such as the OEMs in this case] can enable a dominant firm to tax sales by a nascent or small rival [emphasis in original]."[8] Likewise, two academic researchers applied a similar analysis to some of the same practices at issue here.[9] Consistent with this literature, Dr. Warren-Boulton testified that market share discounts and exclusivity are not invariably, or even usually, anticompetitive, but are likely to be

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[6] *See* Schwartz Decl., Ex. B [Fredrick Warren-Boulton et al., *The Antitrust Bulletin* article] & Ex. C [Robert W. Wilson & Fredrick R. Warren-Boulton, *International Journal of the Economics of Business* article].

[7] Linear describes when quantity and price are mapped to each other in linear fashion.

[8] Schwartz Decl., Ex. E [*Review of Industrial Organization* article] at 267 (emphasis in original).

[9] Roman Inderst & Greg Shaffer, *Market-share Contracts as Facilitating Practices*, 41 RAND J. of Econ. 709, 709 (2010) (appended as Exhibit F to the Schwartz Declaration). Professors Inderst and Shaffer concluded that market share contracts give the "dominant firm the ability to influence not only the quantity sold of its own product but also the quantity sold of its rivals' products . . . by imposing a minimum market-share requirement [on its customers] and inducing their compliance with a sufficiently large rebate or all-units discount. Because the rebate is applied to the [customers'] inframarginal units [*i.e.*, all those which the customer must purchase from the monopolist], the dominant supplier can induce their participation by setting an artificially high pre-rebate per-unit price." *Id.* at 723.

so under the conditions he specified. FWB Dep. 96:14-97:10. Dr. Warren-Boulton also testified that Intel's strategy appeared to be not to exclude AMD in the sense of driving it out of the market, but to constrain its ability to compete.[10]

In sum, Dr. Warren-Boulton opined that "[e]xclusionary pricing works by imposing lump sum penalties (*e.g.*, loss of first-dollar discounts) on customers who purchase more than a given small share of their requirements from the dominant firm's competitors. The direct effect is to raise customers' (switching) costs." Rep. at 24. In his report, Dr. Warren-Boulton illustrated the point with a numerical example.[11] Rep. at 18-22. The example illustrates how a must-carry monopolist (Intel) with a 90% share can use the threat of withdrawing the "discount" an OEM earns in a "non-contestable" segment only if it purchases 90% of its requirements from Intel to raise the cost to the OEM of purchasing from the rival (AMD). In that situation, it will likely be profitable for the OEM to purchase more than 10% of its requirements from AMD only if AMD can compensate it for the discount it loses on all 90 units. However, the amount of that compensation is likely to significantly increase the minimum price at which the rival can operate. That, in turn, will allow the monopolist to raise the net, *i.e.*, post-discount price that customers pay.

Anticompetitive Effects of Intel's Conduct

[10] "What I see as most consistent with the . . . facts is that Intel's behavior in this case . . . was not being used . . . to drive AMD [out] of the market, but rather to limit the effectiveness of AMD as a competitor, particularly during the period during which AMD's products were becoming increasingly technically equivalent to or superior to Intel. And that Intel's choice during the damage period was either compete on a . . . price basis, price war basis, or to try to use its great advantage, which is that it is a must-carry brand for a significant number of . . . OEMs. And that that strategy, as a way to limit AMD, is simply much more profitable." FWB Dep. 167:11-25.

[11] The example offered by Dr. Warren-Boulton is intended to be illustrative of his theory, and not a substitute for factual analysis. As show below, (*see infra*, Section II of the Argument) Dr. Warren-Boulton conducts the appropriate factual analysis.

Dr. Warren-Boulton concluded that Intel's exclusionary behavior had "significant anticompetitive effect" because "[it] imposed a significant 'tax' on microprocessors OEMs purchased from AMD." Rep. at 34. Dr. Warren-Boulton discussed in his report and testimony several ways in which the existence of the tax could be confirmed and its approximate magnitude estimated. In particular, Dr. Warren-Boulton directed and supervised the construction of the conduct index in order to, among other things, quantify the prevalence of exclusionary conduct by Intel likely to impose such a tax.

The conduct index involved a determination of what was anticompetitive conduct and an extensive review of relevant documents and testimony over a period of more than two years. FWB Dep. 218:24 -221:14.[12] Dr. Warren-Boulton clearly summarized his directions for constructing the indices.[13] The process of reviewing documents to determine the extent to which such conduct occurred is, as Dr. Warren-Boulton testified, "subjective" only "in the sense that it's a matter of judgment . . . that depends on the particular facts and how much facts are in the record." FWB Dep. 63:16-23.

[12] "[T]his is a continuous process of talking with the lead economist on the liability section as to just what is anticompetitive and what isn't anticompetitive. He then interprets that, working closely with the particular economist who is trying to actually look at the documents and make that decision." FWB Dep. 220:13-19. *See also* FWB Dep. 215:3-13 ("He [the lead economist] and I have discussions about what we consider to be, at length, anticompetitive conduct.").

[13] "[W]hat I asked my staff to do was to look at discounts and broadly ask the question, to the extent that they can, when you look at these documents, do you see some connection between this discount and other sales? In other words, if you offered a discount on a … contestable segment, but if that discount was available … only if you were exclusive, then I would regard that as tying the discount to essentially what … the economists would call potential consumer surplus in the noncontestable zone, otherwise tying. That is problematic . . . . [W]hat I asked my staff to do is to read the documents and as best they could to make judgment call as to what discounts they thought were in effect. Purely just . . . responding to a very specific bid and limited, versus which were tied to … a broader response . . . . In other words, was there -- if you -- purchased more from AMD … in this … contestable zone, was there an effect on your cost, if you like, of either the rest of the contestable or the noncontestable." FWB Dep. 61:21-63:2.

The conduct index, which includes major OEMs, shows that Intel's conduct foreclosed significant sales opportunities for AMD. Rep. 32-33, Exs. L-5, L-6. The graphs appended to Dr. Warren-Boulton's Report demonstrate the extent to which AMD was foreclosed from Tier-1 OEMs. Exhibit L-6 graphs the three most destructive forms of exclusionary conduct: full exclusion, market share discounts, and restriction of rival's sales. It shows that, when aggregated, the percentage of Intel-OEM agreements affected by those three forms of exclusionary conduct in the relevant time period (Q3'01 – Q2'06) ranged from a low of just-under 60% to a high of approximately 75%. These forms of conduct abated significantly—but did not disappear entirely—after Q2'06, affecting approximately 20% of Intel-OEM agreements.

Dr. Warren-Boulton also concluded generally that Intel's pricing to a particular OEM depends on the share of its chips which that OEM purchases from Intel, rather than AMD. Rep. 35. This opinion derived from the regression analysis performed by Professor Murphy, Intel's economic expert in both the AMD case and this case, addressing this question. Dr. Warren-Boulton concluded that Professor Murphy's analysis itself shows that "the tax, regardless of specific [conduct] index . . . on rival purchases is a function of market share [that the particular OEM maintains with Intel]." FWB Dep. 48:6-11. Dr. Warren-Boulton concluded that there is an "overall pattern of relationship between market share and—and the increased cost to the OEM of buying from -- from the rival." *Id.* at 48:18-22.

Dr. Warren-Boulton used alternative methods of estimating the tax. For example, he considered Intel's reaction to Dell's decision in 2006 to break its exclusivity with Intel and purchase some microprocessors from AMD, and [redacted]

[redacted] Dr. Warren-Boulton also used Professor Murphy's regression analysis to estimate the tax. Professor Murphy had calculated that an OEM that increased the share of microprocessors it purchased from AMD from 10 percent to 20 percent experienced a 2.4% increase in average price it paid for Intel chips. By calculating the effect which that 2.4% increase would have on an OEM, which increased its share of AMD purchases from 10% to 20%, Dr. Warren-Boulton estimated that the tax imposed on purchases from AMD by such an OEM would be approximately 19.2%. Rep. at 35.

Finally, Dr. Warren-Boulton noted that Intel's exclusionary agreements with major OEMs had another consequence for AMD: they "prevent[ed] AMD's products from being fully validated by major customers." Rep. at 34. In other words, Intel's anticompetitive conduct prevented the AMD products and brand from obtaining the acceptance and prestige they would have garnered absent Intel's illegal conduct. By preventing AMD's acceptance amongst Tier-1 OEMs, Dr. Warren-Boulton opined that Intel's conduct is "likely to have affected [AMD] sales to OEMs that did not enter into exclusionary agreements with Intel." *Id.*

Damages Calculation Resulting from Intel's Exclusionary Conduct

Dr. Warren-Boulton also calculated damages suffered by New York consumers and governmental entities as a result of Intel's exclusionary conduct. This involved determining what prices to these customers would have been in a "but-for" world absent that conduct, and then subtracting actual prices. In order to do so, he used a standard method of calculating what prices would have been in the "but-for" world—the before and after method. Rep. at 38. Specifically, Dr. Warren-Boulton employed a regression analysis—a frequently employed statistical technique—based on data from both the damage period and the "competitive" or "benchmark" period to estimate what prices would have been during the damages period. *Id.*

In his Report, Dr. Warren-Boulton reviewed various factors supporting the conclusion that the scope of Intel's exclusionary conduct diminished sharply, and the market for x86 microprocessors became significantly more competitive, after mid-2006. These included changes over time in the percentages of sales affected by the most exclusionary of the various types of anticompetitive conduct in which Intel had engaged. Dr. Warren-Boulton found these to be (1) full exclusion; (2) market share discounts; and (3) requirements that OEMs restrict their sales or marketing of computers using non-Intel chips. Rep. at 33. These measurements showed "a sharp decline after 2005 in Intel's aggregate exclusionary behavior, from about 60-70% of purchases in late 2005 and early 2006, to about 20% at the end of 2006." Rep. at 33, Ex. L-6.[14] Dr. Warren-Boulton also took account of various other factors, including greater market recognition of AMD's technical capabilities, Dell's announcement that it would market AMD-based computers, increased antitrust scrutiny of Intel's actions, and other empirical evidence in reaching that conclusion.

Dr. Warren-Boulton then used a regression analysis to control for changes in market conditions between the damages period—from 2001 to mid-2006—and the benchmark period—from mid 2006 to mid-2009. Rep. at 46.[15] Gross margin percentage was chosen as the dependent variable in order to abstract as much as possible from the effects of changing costs on prices. Rep. at 44. [redacted]

[14] Dr. Warren-Boulton also took account of various other factors, including greater market recognition of AMD's technical capabilities, Dell's announcement that it would market AMD-based computers, increased antitrust scrutiny of Intel's actions, and other empirical evidence in reaching that conclusion.

[15] Regression analysis estimates the relationship between a dependent variable (in this case, Intel's gross margin percentage) and a set of independent or explanatory variables that affect the dependent variable. Rep. at 44.

[redacted] Rep. at 47. Dr. Warren-Boulton then calculated, on a quarterly basis, the estimated price effect implied by this decline in gross margin percentage, to determine damages suffered by purchasers who dealt directly with Intel (the OEMs) and then estimated the extent to which those damages were "passed-through" to consumers by the OEMs and other market intermediaries, such as retailers. He concluded that the pass-through ratio was "1," that is, the damages were fully passed through.

ARGUMENT

I. DR. WARREN-BOULTON'S OPINIONS EASILY SATISFY FEDERAL RULE OF EVIDENCE ("FRE") 702

Dr. Warren-Boulton's expert testimony regarding Intel's anticompetitive conduct and its destructive effects on competition is amply grounded in the record, the product of reliable and established economic principles and methods, and reliably applied to the facts of this case. Intel's extravagant assertions to the contrary rest on wholesale distortions of his testimony or amount at most to matter for cross-examination. There is no genuine question that Dr. Warren-Boulton's testimony fits the facts and will assist the jury to resolve the issues in this case, and his testimony should be admitted pursuant to FRE 702.[16]

FRE 702 has a "liberal policy of admissibility," *Pineda v. Ford Motor Co.*, 520 F.3d 237, 243 (3d Cir. 2008) (quoting *Kannankeril v. Terminix Int'l, Inc.*, 128 F.3d 802, 806 (3d Cir.

[16] FRE 703 provides: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case."

1997)), and "doubts regarding whether an expert's testimony will be useful should generally be resolved in favor of admissibility." *United States v. Finch*, 630 F.3d 1057, 1062 (8th Cir. 2011) (citation omitted). Accordingly, the rejection of expert testimony by federal judges is "the exception rather than the rule." Fed. R. Evid. 702 (Advisory Committee notes to the 2000 Amendments).[17] The Third Circuit has noted that "Rule 702 embodies three distinct substantive restrictions on the admission of expert testimony: qualifications, reliability, and fit." *Elcock v. Kmart Corp.*, 233 F.3d 734, 741 (3d Cir. 2000) (citing *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717 (3d Cir. 1994)).

The reliability prong is satisfied if the expert's testimony is not based on "subjective belief" or "unsupported speculation," and the expert has "good grounds" for the opinion. *Paoli*, 35 F.3d at 742. "The evidentiary requirement of reliability is lower than the merits standard of correctness." *Id.* at 744.[18]

When deciding whether an opinion "fits" the facts of the case, the question for the Court is whether the opinion assists the trier of fact by having some connection to issues of disputed fact in the case. *Paoli*, 35 F.3d at 742-43. Thus, fit "depends in part on the proffered connection

[17] As the Supreme Court stated in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, "vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." 509 U.S. 579, 596 (1993).

[18] In particular, it is not necessary that each of the *Daubert* factors or guidelines be applied or satisfied, for that "list of factors was meant to be helpful, not definitive." *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 151 (1999); *see also Elcock v. Kmart Corp.*, 233 F.3d at 746 ("*Kumho Tire* makes clear that this list [of *Daubert* factors] is non-exclusive and that each factor need not be applied in every case.); *ID Sec. Sys. Can., Inc. v. Checkpoint Sys., Inc.*, 198 F. Supp. 2d 598, 602 (E.D. Pa. 2002) ("because these factors were developed in the context of testing the reliability of scientific methods, they may not be easily applied when testing opinions concerning complicated business transactions and antitrust matters").

between the scientific research or test result to be presented and particular disputed factual issues in the case." *Id.* at 743 (quotation omitted).[19]

Given the standard's focus on methodology and fit, as a general rule, the factual bases of an expert's opinion are deemed matters that go the credibility of the testimony, as opposed to the admissibility. *Finch*, 630 F.3d at 1062. Thus, even if some of the underlying data or assumptions are questioned, so long as there is some basis in factual record for the expert's testimony relating to those data or assumptions, courts will admit the testimony, subject to cross-examination. *See Stecyk v. Bell Helicopter Textron, Inc.*, 295 F.3d 408, 414 (3d Cir. 2002) (affirming admission of expert testimony and concluding "[a] party confronted with an adverse expert witness who has sufficient, though perhaps not overwhelming, facts and assumptions as the basis for his opinion can highlight those weaknesses through effective cross-examination.").[20]

II. DR. WARREN-BOULTON RELIABLY APPLIED HIS THEORY OF EXCLUSIONARY PRICING TO THE FACTS OF THE CASE

[19] The "fit" requirement is "not that high," although "higher than bare relevance." *Id.* at 745. It was not intended to require plaintiffs "to prove their case twice – they do not have to demonstrate to the judge by a preponderance of the evidence that the assessments of their experts are correct, they only have to demonstrate by a preponderance of evidence that their opinions are reliable." *Oddi. v. Ford Motor Co.*, 234 F.3d 136, 145 (3d Cir. 2000) (quoting *Paoli*, 35 F.3d at 744); *Protocomm Corp. v. Novell Adv. Servs., Inc.* 171 F. Supp. 2d 473, 481 (E.D. Pa. 2001) (only inquiry for fit standard is whether reasoning is valid and methodology reliable, not whether conclusions or opinions are correct in light of the facts).

[20] *See also In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 530 (6th Cir. 2007) ("rejection of expert testimony is the exception, rather than the rule . . . and we will generally permit testimony based on allegedly erroneous facts when there is some support for those facts in the record") (citation omitted); *Arkwright Mut. Ins. Co. v. Gwinner Oil, Inc.*, 125 F.3d 1176, 1183 (8th Cir. 1997) (expert testimony properly admitted because it had "some basis in fact"); *United States v. 14.38 Acres of Land*, 80 F.3d 1074, 1079 (5th Cir. 1996) ("perceived flaws" in an expert's testimony often should be treated as "matters properly to be tested in the crucible of the adversarial system" and not as a "basis for truncating that process"); *In re Ready-Mixed Concrete Antitrust Litig.*, 261 F.R.D. 154, 165 (S.D. Ind. 2009) (testimony admissible because experts assumptions were based on a review of the record).

Much of Intel's argument rests on its attempt (Def. Mem. at 4-5) to substitute an example given in Dr. Warren-Boulton's report, and intended, as Dr. Warren-Boulton testified, purely as an illustration of how exclusionary pricing works, for the theory itself, to which Intel's only reference—a conclusory one—is limited to a footnote. Def. Mem. at 7, n.4. As will be shown below, this attack is misplaced because although Dr. Warren-Boulton created the hypothetical to demonstrate his theory, he nonetheless applied his theory to the *actual* facts of this case. Moreover, by focusing solely on an example and ignoring the substance of Dr. Warren-Boulton's testimony, Intel seeks to show that Dr. Warren-Boulton: (1) failed to identify actual examples of exclusionary conduct to support his theory (Def. Mem. at 4); (2) supposedly "admitted" that despite Intel's exclusionary acts AMD could "effectively compete" by "matching" offered discounts and profitably win contested sales; (3) never performed any factual analysis showing that Intel's conduct "had any exclusionary effect on competition" (Def. Mem. at 6); and (4) failed to keep his theory and testimony consistent.[21] Each assertion grotesquely misstates Dr. Warren-Boulton's actual testimony.

A. Intel Ignores Dr. Warren-Boulton's Report and Testimony Reflecting His Recognition and Consideration of Actual Examples of Intel's Exclusionary Conduct

First, Intel ignores that Dr. Warren-Boulton includes within the umbrella economic category of "exclusionary pricing" conduct which is not "pricing" at all, in the sense in which antitrust courts use the term, but exclusive dealing and other exclusionary conduct, which courts have repeatedly qualified as "exclusionary" because, particularly when employed by a monopolist, it has the potential to exclude competition through the exercise of monopoly power,

[21] Intel also argues that Dr. Warren-Boulton's testimony is contrary to antitrust law because he fails show the existence of below-cost pricing in the Intel discounts and fails to show that AMD was excluded from the market. Def. Mem. at 9. However, as explained in New York's opposition to Intel's summary judgment motions, these arguments are baseless.

rather than through competition on the merits.[22] Second, to the extent he does focus on pricing, Dr. Warren-Boulton is concerned not with genuine low pricing, but rebates tied to exclusionary conditions, which function as price penalties.

Third, Intel claims that Dr. Warren-Boulton did not identify any actual instances of such "taxing" or "exclusionary" conduct. That is absurd. His report (Rep. at 29-32), his deposition testimony (*see, e.g.*, FWB Dep. 76-79, 80-82), and above all, the conduct index cite numerous examples of it. Intel argues that such instances do not count because "further analysis" was required. Def. Mem. at 8. But as shown above, Dr. Warren-Boulton has fully articulated the specific conditions under which the categories of exclusionary conduct he described are likely to be profit-maximizing for a "must-carry" monopolist and injurious to competition.[23] Intel simply ignores that analysis.

B. Intel Mischaracterizes Dr. Warren-Boulton's Testimony Regarding AMD's Ability to Match Intel's Discounts and Compete Effectively

Intel claims that Dr. Warren-Boulton "admitted" that AMD could profitably "match" Intel's discounting offers and thus "compete effectively" despite Intel's conduct. Again, Intel

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[22] *See, e.g., LePage's Inc. v. 3M*, 324 F.3d 141 (3d Cir. 2003) (*en banc*) (holding bundled discounts and *de facto* exclusive dealing agreements violative of Section 2); *United States v. Microsoft*, 253 F.3d 34, 58, 67-71 (D.C. Cir. 2001) (finding as anticompetitive, *inter alia*, exclusive deals with internet access providers).

[23] *See* Rep. at 29-31. In short, Dr. Warren-Boulton's analysis itself constitutes a series of screens through which conduct must pass before it is considered likely to be exclusionary: "[Y]our screen begins with whether or not you have a firm that has a significant market power and the ability to leverage . . . that market power in what we're . . . calling the noncontestable zone. I think that's a necessary condition. It has to be, in our terms, a must-carry brand. So we've gone through a series of screens to get here." FWB Dep. 282. Once those screens are satisfied, Dr. Warren-Boulton testified, some "special reason" would be required to justify the restraint: "In a context in which the discounts are used and have the effect of taxing the rival's product, to the extent that they become first-dollar discounts as opposed to continuous discounts, this magnifies the anticompetitive effect. And so I think that under those circumstances you would need to have some special reason to explain use of first-dollar discounts, because they create . . . a particular barrier to the expansion of the entrant." FWB Dep. 253-54.

wholly misstates Dr. Warren-Boulton's theory and his testimony. In fact, Dr. Warren-Boulton testified that Intel's anticompetitive conduct was likely to limit competition and increase prices to consumers irrespective of whether AMD was "significantly harmed" by that conduct. FWB Dep. 280. That is because the effect of a first-dollar, market share discount is to withhold from the OEM the entire discount it would earn on units it must purchase from Intel, should it make prohibited purchases from AMD. Rep. at 31-32 [redacted] When such a tax is imposed, Dr. Warren-Boulton testified, "[w]hether or not that rival can . . . pay that tax and still survive, whether or not that rival decides to absorb part of it . . . or pass on part of it, is a factual question. It is a tax on a rival, and that's anticompetitive." FWB Dep. 275.[24]

Intel does not define the term "effectively compete" in this context. But Dr. Warren-Boulton's testimony makes clear that, Intel's conduct prevented AMD from "effectively competing." *See, e.g.*, RWB Dep.17, 19, 20. As a result of Intel's conduct, because the price-constraining competition which AMD imposed on Intel was limited and excluded, Intel was able to maintain its monopoly pricing longer than it otherwise would have, and consumers were harmed.

Intel claims that Dr. Warren-Boulton "admitted that a company (like AMD) with a similar costs structure to Intel's could offer a matching discount and win the contested sales profitably, while the customer (*i.e.*, the OEM) 'breaks even' or pays less." Def. Mem. at 5 (emphasis in original). That is inaccurate and misleading in at least three respects. First, far from admitting that AMD had a "similar cost structure to Intel," Dr. Warren-Boulton testified

[24] The critical point is that whether or not a rival in AMD's position is able to "compensate" the OEM, Intel's strategy of maintaining high prices by means of the tax will be successful, because the "compensation" will simply be transferred to Intel, rather than consumers. FWB Dep. 277-78.

that AMD's average costs were higher.[25] FWB Dep. 335:8-23. Intel's argument therefore lacks any factual basis. Second, however, Dr. Warren-Boulton testified that the numerical example—and his theory of anticompetitive exclusion more generally—"does not depend on whether one firm is more efficient than another." FWB Dep. 273:19-24. The anticompetitive effect—which results from the dominant firm's leveraging of its monopoly power in the "must-carry" or incontestable segment—does not depend on the cost structure of the rival. Third, Intel's suggestion is that the possibility that a rival in the position of AMD *might* be able to compensate an OEM for the penalty inflicted on it by Intel as a result of the OEM's decision to purchase from AMD removes any harm to competition. For the reasons noted above, that is wholly incorrect. Intel's actions would lead to the limiting of AMD, the exclusion of price competition, and higher consumer prices irrespective of whether or not an OEM might be compensated for the Intel-imposed tax.

C. Dr. Warren-Boulton Performed Factual Analyses Showing That Intel's Conduct Had Exclusionary Effect on Competition

Intel contends that Dr. Warren-Boulton performed no "factual analysis" showing the likely effect of Intel's actions. Def. Mem. at 6. Again, Intel ignores the record, in three respects. First, Dr. Warren-Boulton testified that Intel's anticompetitive conduct foreclosed sales by AMD to the major OEMs. Rep. at 34. This prevented AMD from acquiring the "validation" it sought from being marketed by the Tier-1 OEMs, affected sales to other customers, raised AMD's distribution costs, and reduced the competitive constraint that AMD could exercise on Intel's pricing, allowing Intel to raise prices. FWB Dep. 20. The extent to which Intel's actions did in

[25] "I'm saying that the result that I have, which is that a three percent discount results in a between 14 and 27 percent tax, depending on the range over which you are looking at, that does not depend on whether one firm is more efficient than another. And that is what the example shows." FWB Dep. 273:18-24.

fact foreclose such sales to major OEMs is factually analyzed through the conduct index. Second, Dr. Warren-Boulton performed regression analysis to show effects—specifically, to show that Intel's actions had a pervasive effect in imposing a tax on purchases made by major OEMs of AMD products. Based on that regression analysis, which itself employed results reached by Intel's economic expert, Dr. Warren-Boulton concluded that the overall pattern of discounts which Intel extended to OEMs varied in accordance with the share of purchases which each OEM made from AMD; in other words, Intel favored OEMs which dealt less or not at all with AMD with higher discounts. Rep. at 3, 25, 28-35; FWB Dep. 48:2-11. Third, Dr. Warren-Boulton also employed regression analysis to estimate the price effect of Intel's anticompetitive conduct. After controlling for other factors which might have affected it, Dr. Warren-Boulton found that Intel's average gross margin percentage declined significantly when Intel's anticompetitive conduct abated. Rep. at 47.

D. Dr. Warren-Boulton's Methodology is Internally Consistent

Intel also asserts that Dr. Warren-Boulton's analysis is internally inconsistent because it takes account of situations where AMD may have chosen to compensate an OEM for the tax—the foregone discounts on units the OEM needs from Intel—which Intel imposed when the OEM's AMD purchases exceeded Intel-imposed limits. First, the likelihood that AMD would be able to absorb the penalty imposed by Intel is remote. However, in the unlikely scenario that AMD actually could pay the tax, Dr. Warren-Boulton nonetheless testified that in such a case there is ultimately harm to consumers. FWB Dep. 754:23; *see generally id.* 751:16-757:10.[26] That is because, in the example, AMD can compensate the OEM for the loss of Intel's loyalty

[26] "In the example you've got here, if AMD goes down to its marginal cost, it . . . can make that sale, I would say, forcing -- taxing AMD so that its price is forced down to -- to something on the order of . . . a small percentage of its total cost. I wouldn't say that doesn't hinder AMD." FWB Dep. 755:19-24.

discounts only if market prices remain high enough for AMD to collect revenues from the OEM sufficient to allow it to cover the tax. Rep. at 20. AMD's ability to constrain Intel's monopoly pricing is diminished because absent the tax, "no-strings-attached" competition between AMD and Intel would have resulted in lower prices, closer to marginal costs. Thus, free of its competitor-imposed price-restraint, Intel is able to keep prices for x86 processors at supracompetitive levels, raising costs to direct purchasers (OEMs) and end-users (consumers) alike.

Intel's claim that this represents "competition" is undercut by the fact that AMD is not matching a "no-strings-attached" price decrease offered by Intel. Instead AMD is compensating the OEM for a penalty which Intel is able to impose by leveraging its monopoly pricing power over the "uncontestable segment" of the OEMs' purchases from Intel. In effect, AMD's "discount" goes to Intel (which is why it is a tax), not to the consumer (which would occur if prices were discounted without anticompetitive strings). Intel's conduct is not competition on the merits.

III. THE CONDUCT INDICES ARE RELIABLE AND WERE CONSTRUCTED WITH DR. WARREN-BOULTON'S OVERSIGHT

Intel argues that the conduct indices used by Dr. Warren-Boulton to tally the incidence of Intel's anticompetitive acts across the relevant time period and in each segment of the computer industry (desktop, mobile, server) are "subjective and unscientific," and that Dr. Warren-Boulton was unfamiliar with the documentary record of the case on which the indices were based. Def. Mem. at 11. In fact, the conduct indices are a methodically transparent tool, designed and controlled by Dr. Warren-Boulton in extensive discussions with his staff, by means of which he reliably applied his theory of liability to the record evidence in this case. Intel's repeated suggestions that Dr. Warren-Boulton lacked familiarity with the record evidence are unfounded.

The method applied in the conduct indices was Dr. Warren-Boulton's own, not that of another expert.

As set forth above, the conduct index summarizes whether certain categories of conduct—determined by Dr. Warren-Boulton in discussions with his staff over a period of years—occurred in the dealings between Intel and major OEMS on a quarter-by-quarter, segment by segment basis.[27] *See* Hinman Decl., Ex. C (sample pages from Dr. Warren-Boulton's conduct index). Dr. Warren-Boulton testified to the procedures followed in their construction, which were developed after extensive discussions.[28] These discussions occurred over a period of two years and approximately a thousand hours were spent. FWB Dep. 219; 242.

As this testimony makes clear, the design and the methodology underlying the conduct indices are Dr. Warren-Boulton's own. There is nothing "subjective" or "unscientific" about that methodology, as a matter of economics or of law. Intel's contention that the conduct index is objectionable because these categories of conduct were "automatically" deemed anticompetitive (Def. Mem. at 12) simply ignores the analysis and reasoning, set forth above (*see supra*, Section II; *see also* FWB Dep. 253-54), which led Dr. Warren-Boulton to identify them as anticompetitive in the circumstances of this case.

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[27] The summary tabulation of the occurrence of such conduct is supported both by a "deal summary," which provides a capsule summary of each transaction in which anticompetitive conduct was found to have occurred, and a table of references, which, for each transaction, lists the documentary and deposition evidence on which the conclusions found in the conduct index are based.

[28] "I had extensive discussions with the staff working through what we thought was anticompetitive behavior and the criteria. They then followed those instructions, looking at the documents to see do I see examples of exclusion, do I see examples of market share discounts, do I see examples in which OEMs would have cut back on purchases of AMD. . . . [T]his is a continuous process of talking to the lead economist on the liability section as to just what is anticompetitive and what isn't anticompetitive. He then interprets that, working closely with the particular economist who is trying to actually look at the documents and make that decision." FWB Dep. 216:25-217, 220.

Nor is there anything unscientific, "illicit or unusual" in the fact that Dr. Warren-Boulton's staff assisted him in applying that methodology to the underlying record facts and documents. *See Adani Exp. Ltd v. AMCI (Exp.) Corp.*, No. 2:05-cv-0304, 2008 WL 4925647 at *3 (W.D. Pa. Nov. 14, 2008) ("An expert may use assistants in performing his work, so long as those assistants do not exercise professional judgment that is beyond the expert's ken.") (citation omitted). Intel's repeated attempts to suggest that Dr. Warren-Boulton was unfamiliar with relevant documents in the case themselves ignore the evidence. Dr. Warren-Boulton testified that he reviewed all of the documents cited in his report (FWB Dep. 239:23-25) as well as extremely large collections of evidence contained in the expert reports submitted by the opposing experts in the AMD case (FWB Dep. 235:9-25). His deposition testimony also reveals familiarity with the documentary evidence. FWB Dep. 76-79 (discussion of Dell documents); FWB Dep. 80-82 (discussion of HP documents).[29] Finally, Intel's attempt to analogize Dr. Warren-Boulton's role with respect to the conduct index to that of experts relying on the methods of other experts fails because, as shown above, the only methodology embodied in the conduct indices was Dr. Warren-Boulton's own. In contrast, Intel relies on cases in which experts relied on methods applied by other experts in fields with which they were not familiar. *See* Def. Mem. at 15 (citing, *e.g., Eberli v. Cirrus Design Corp.*, 615 F. Supp. 2d 1357, 1364-65 (S.D. Fla. 2009)).[30]

[29] The conduct index is, of course, based on facts which are themselves disputed. But there is nothing objectionable in that. As the Third Circuit concluded in *Walker v. Gordon*, 46 Fed. App'x 691, 695-96 (3d Cir. Sept. 17, 2002), an expert is "permitted to base his opinion on a particular version of disputed facts and the weight to be accorded to that opinion is for the jury."

[30] In a footnote, (Def. Mem. at 14 n.9), Intel claims that Dr. Warren-Boulton lacked an adequate documentary basis for a calculation which Dr. Warren-Boulton used as a check on his principal method of calculating damages—not, as Intel asserts, as a method of estimating damages. Rep. at 52. But the documents refer to a significant time period and range of PC models, and the calculation bears no resemblance to the sole reliance on *estimates of future profits* by an

IV. Dr. Warren Boulton's Regression and Damages Models Are Reliable and Accurately Reflect Facts in the Record

Intel claims that the date which Dr. Warren-Boulton selected to separate the "before" from the "after" periods lacked an adequate basis because it relied on the conduct indices and because Dr. Warren-Boulton "manipulated" the data, which according to Intel, did not provide any basis for the conclusion that the market for x86 Intel processors "bec[ame] significantly more competitive by mid-2006." Rep. at 39. However, the conduct indices, for the reasons set forth above, were sufficiently reliable for Dr. Warren-Boulton to have used them for this purpose. As set forth in the Report (pp. 39-43), Dr. Warren-Boulton did not assert that the market became more competitive only because Intel's misconduct abated. The Report (pp. 39-41) points to other factors as well, including new technology, missteps (in the form of product shortages) by Intel, increasing antitrust scrutiny of Intel's practices and AMD's growing market share.

Intel furthers its misplaced reliability attack on the regression by alleging that Dr. Warren-Boulton "cherry-picked" data. Def. Mem. at 16. He did no such thing. In fact, as Dr. Warren-Boulton explained, he selected the three most exclusionary kinds of Intel conduct. *See* Rep. at 33-34, n.65 (explaining his principled method of picking the most egregious forms of exclusionary conduct as the basis for his before-and-after analysis); *see also* FWB Dep. 655:15-673:5 (explaining that he narrowed his selection on the kinds of exclusionary conduct because some were ancillary and inconclusive in showing exclusionary conduct). Nor is the fact that Intel retaliated against Dell, after mid-2006, by withdrawing discounts after Dell broke exclusivity, inconsistent with the notion that the market became more competitive and prices

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economist estimating damages which the court in *ZF Meritor LLC v. Eaton Corp.*, 646 F. Supp. 2d 663, 667-68 (D. Del. 2009), found impermissible.

dropped around mid-2006. In short, Dr. Warren-Boulton had good grounds for his selection of the mid-2006 date.[31]

Furthermore, the fact that AMD's market share grew in the "before" damages period and fell in the "after" competitive period is no way inconsistent with the regression. Indeed, Dr. Warren-Boulton discusses and accounts for the data Intel claims he ignored in the Report itself.[32]

In a footnote, Intel claims that Dr. Warren-Boulton "reject[ed] his own regression when shown that it established the absence of any damages." Def. Mem. at 18, n.10. In fact, Dr. Warren-Boulton has confirmed the regression's reliability by adding independent variables suggested by Intel's experts[33] and showing that the regression model continues to yield substantial damages. FWB Dep. 731-735.

Intel also claims that Dr. Warren-Boulton acknowledged that he "would" have used additional quarters of price data in the regression had it been available—data that, according to Intel's counsel, make damages disappear when they are included in the regression. Def. Mem. at 18 n.10. But that was not his testimony: commenting on representations which were made to

[31] *See, e.g., Conwood Co. L.P. v. U.S. Tobacco Co.*, 290 F.3d 768, 793-94 (6th Cir. 2002) (finding good grounds to admit expert testimony on foreclosure despite the fact that plaintiff's market-share *grew* during the damages period).

[32] With respect to the decline in AMD's share in the after period, the Report notes that technological change overtook AMD's technology at that point, a development expected to reduce AMD's share. Rep. at 46 n.92; *see also* Rep. at 42 n.74 [redacted] Second, it is hardly surprising that Intel would gain share at AMD's expense when Intel finally reduced net prices to OEMs. The Report also explains that AMD's share is "endogenous" because "an increase in Intel's average sale price, all else equal, can be expected to increase AMD's share . . . ." Rep. at 47 n.93. These facts explain why the regression produces an unexpected relationship between Intel's margin and AMD's share, although it is a relationship which is not statistically significant. In short, Dr. Warren-Boulton himself called attention to and accounted for the facts which Intel charges he ignored.

[33] Namely, a capacity utilization variable (suggested by Professor Murphy) and combined share of Intel CPUs purchased by end-users that are businesses, governments and educational institutions (suggested by Dr. Dorman).

him, and which he had no opportunity to check regarding the data underlying the regression analysis shown to him for the first time at the deposition, he merely stated that one "could" add that data. FWB Tr. 747:20-22. Elsewhere, however, he has explained why doing so would be a bad idea.[34]

Finally, Intel claims that it was improper for Dr. Warren-Boulton to apply the same average overcharge to all relevant purchases. Instead, Intel claims Dr. Warren-Boulton should have "disaggregated" damages to reflect the effects of specific wrongful acts. But Dr. Warren-Boulton testified that he would expect those wrongful acts to have price effects throughout the market. FWB Dep. 21-22. Moreover, the law is clear that there is no obligation to "disaggregate" damages in the manner Intel requires. *See LePage's Inc.*, 324 F.3d at 166 (noting that "it would be extremely difficult if not impossible, to segregate and attribute a fixed amount of damages to any one act as the theory was not that any one act in itself was unlawful, but that all the acts taken together showed a § 2 violation") (citing *Bonjorno v. Kaiser Aluminum & Chem. Corp.*, 752 F.2d 802, 812-13 (3d Cir. 1984)).

CONCLUSION

For the reasons set forth above, the testimony and report of Dr. Warren-Boulton easily surpass the evidentiary thresholds articulated in both Federal Rule of Evidence 702 and *Daubert*. Therefore, Intel's motion to exclude should be denied.

[34] "[A]s noted above, Intel introduced new technology generally perceived to be superior to AMD's early in the benchmark period – a factor that cold be expected to increase Intel's gross margin percent and market share. Therefore, I would expect the estimated effect of Intel's anticompetitive conduct on its margin to increase if a relative quality index was available to serve as an additional independent variable. The absence of such an index is one reason for choosing a relatively short benchmark period. Estimating the regression equation over a longer period would increase the likelihood that unaccounted for changes in Intel's technology relative to AMD's could affect the margin comparison between periods." Rep. at 46, n.92.

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