

I. Qualifications and Assignment

I, Janet S. Netz, am a founding partner of applEcon, LLC. I have also been a tenured Associate Professor of Economics at Purdue University and a Visiting Associate Professor at the University of Michigan. I received a B.A. (1986) from the University of California, Berkeley, *cum laude*, and an M.A. (1990) and Ph.D. (1992) from the University of Michigan. My qualifications are laid out in Exhibit A, attached to my Expert Reply Report, filed 22 August 2011.

I have been asked by counsel to calculate

- The relative monetary harm to purchasers of LCD TVs, notebooks, and monitors;
- The quantity of LCD panels purchased by end consumers in class states; and
- The proportion of LCD panel purchases by consumers, businesses, and government.

II. Class Members who Purchased TVs Were Harmed about Twice as Much as Class Members who Purchased Monitors or Notebooks

The antitrust damage to an individual class member is the difference in price that he or she paid for a monitor, laptop, or TV containing an LCD panel and the price that the same consumer would have paid but for Defendants' price fixing conspiracy. In my Reply Report, I estimated that Defendants had imposed an average overcharge of 10.9% on direct panel purchasers and that at least 100% of the overcharge was passed through to end purchasers of LCD TVs, notebooks, and monitors.¹ The result is that indirect purchaser class members bore at least a 10.9% overcharge.²

Although the estimated percentage overcharge borne by each class member is 10.9%, the dollar amount of the overcharge depends on the price charged by the Defendants, and ultimately paid by class members, for the panel. For example, if Defendants sold TV panels at a price of \$400 and notebook panels for \$200, a class member who purchased an LCD TV would be overcharged by \$43.60,³ while class member who purchased an LCD notebook would be overcharged \$21.80.⁴

Because the TV panel prices were assumed to be twice as expensive as notebook panel prices in the preceding example, class members purchasing LCD TVs suffered damages in an amount twice as large as class members purchasing LCD notebooks. More generally, the relationship of the dollar amount of damages between class members is given by the relationship of the prices charged by Defendants for different panel types.

I calculate the panel price for each product type (i.e., panels for monitors, for laptops, and for TVs) using two datasets. One dataset is a combination of the transaction data produced by the Defendants in this case and the other is from DisplaySearch, a third-party market research firm.⁵

¹ Reply Report, p. 62 and p. 81.

² The direct purchaser overcharge multiplied by the pass-through rate gives the overcharge imposed on the indirect class members; $10.9\% \times 100\% = 10.9\%$.

³ $\$400 \times 10.9\% \times 100\% = \43.60 .

⁴ $\$200 \times 10.9\% \times 100\% = \21.80 .

⁵ The Defendants use data and reports from DisplaySearch in the normal course of business. See, e.g.,

- Expert Report of Janet S. Netz, Ph. D., 25 May 2011, Appendix 2 and the sources cited therein.

Defendant data are limited to the nine Defendants that produced usable transactional LCD panel sales data.⁶ DisplaySearch reports data on the worldwide sales of LCD panels in the Quarterly Large Area TFT-LCD Shipment Report.⁷ I find that the average panel price for TV panels sold during the class period is approximately twice the average price for notebook panels and monitor panels in both the Defendant data and the DisplaySearch data.

| Table 1: Defendant Panel Sales Data | | |
|--|----------------------------|--|
| LCD Product Type | Average Panel Price | TV Panel Price Divided by Average Panel Price |
| Monitor | \$196.02 | 2.1 |
| Notebook | \$183.72 | 2.2 |
| Television | \$404.45 | |

| Table 2: DisplaySearch Panel Sales Data | | |
|--|----------------------------|--|
| LCD Product Type | Average Panel Price | TV Panel Price Divided by Average Panel Price |
| Monitor | \$211.64 | 2.0 |
| Notebook | \$205.58 | 2.1 |
| Television | \$422.43 | |

The dollar amount of damages to a class member is directly proportional to the price charged by the panel manufacturers. On average, LCD panel manufacturers sold TV panels at a price twice that of panels to be used in LCD notebooks and monitors. Therefore, class members who purchased LCD panels in TVs were damaged twice as much as class members who purchased LCD panels in notebooks and monitors.

- Reply Report, p. 35.

⁶ The Defendants that produced usable LCD panel sales data are: AUO, CPT, CMO, HannStar, Hitachi, LG, Samsung, Sharp, and Toshiba.

⁷ Defendants' Experts produced a full copy of this report in DisplaySearch, 23 March 2011, DisplaySearch Compass Lexecon Panel Shipment Database, DISP_LCD-000001.

III. Estimated Number of LCD Panels Purchased by Class Members

The DisplaySearch data allow me to estimate the number of LCD panels purchased by end consumers in a class state for each application type.⁸ Table 3 provides the number of LCD panels sold to class members by application.

| LCD Product Type | Estimated Quantity |
|------------------|--------------------|
| Monitor | 61,462,428 |
| Notebook | 47,575,415 |
| Television | 10,797,573 |

Table 4 provides the quantity by application of LCD panels manufactured by Defendants sold to class members, as estimated from the DisplaySearch data.

| LCD Product Type | Estimated Quantity |
|------------------|--------------------|
| Monitor | 53,707,829 |
| Notebook | 43,725,263 |
| Television | 10,518,813 |

IV. Purchases of LCD Panels by End Consumer Type

The Bureau of Economic Analysis (BEA) publishes data on computer sales, which are broken down into personal consumption expenditures, private fixed investment, and government purchases. Using these data, I assume that individual end consumers (sometimes referred to as natural persons) purchase at-issue products in proportion to personal consumption expenditures; business end consumers purchase at-issue products in proportion to private fixed investment; and government end consumers purchase at-issue products in proportion to government expenditures.⁹

I estimate that on average, during the class period 1999-2006, natural person end users purchased about 28.7% of all LCD TVs, notebooks, and monitors; business end consumers purchased about 64.4%; and government end consumers purchased about 6.8%.

⁸ I do not use the produced Defendant LCD panel sales transaction data to estimate quantities because not all Defendants produced complete sales data; thus, the quantities obtained from the transaction data would necessarily underestimate the true number of panels sold.

⁹ This results in a conservative estimate of natural persons' share of televisions because the business and government share of television purchases are likely to be smaller than business and government shares of computer purchases.

| Year | Natural Persons Share | Business Share | Government Share |
|-----------------------------|------------------------------|-----------------------|-------------------------|
| 1999 | 21.8% | 71.2% | 7.0% |
| 2000 | 22.0% | 71.6% | 6.4% |
| 2001 | 23.9% | 69.9% | 6.2% |
| 2002 | 26.0% | 66.5% | 7.4% |
| 2003 | 27.6% | 65.2% | 7.1% |
| 2004 | 29.1% | 63.9% | 7.1% |
| 2005 | 31.2% | 62.2% | 6.5% |
| 2006 | 31.2% | 62.1% | 6.7% |
| Average¹⁰ | 28.7% | 64.4% | 6.8% |

Excluding purchases by government and using the same BEA data, I estimate that on average, during the class period 1999-2006, natural persons end users purchased about 30.8% of all LCD TVs, notebooks, and monitors, and business end consumers purchased about 69.2%.

| Year | Natural Persons Share | Business Share |
|-----------------------------|------------------------------|-----------------------|
| 1999 | 23.5% | 76.5% |
| 2000 | 23.5% | 76.5% |
| 2001 | 25.4% | 74.6% |
| 2002 | 28.1% | 71.9% |
| 2003 | 29.8% | 70.2% |
| 2004 | 31.3% | 68.7% |
| 2005 | 33.4% | 66.6% |
| 2006 | 33.4% | 66.6% |
| Average¹¹ | 30.8% | 69.2% |

¹⁰ The average reported is a revenue-weighted average.

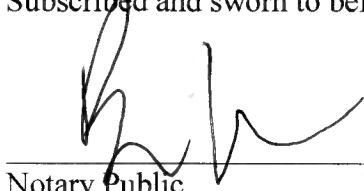
¹¹ The average reported is a revenue-weighted average.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief. This declaration was executed on the 12 day of July 2012, at Ann Arbor, Michigan.



JANET S. NETZ

Subscribed and sworn to before me this 12th day of July 2012.



Notary Public

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|---|
| BRIAN PAUL ROSEWARNE Notary Public, State of Michigan County of Washtenaw My Commission Expires May. 20, 2014 Acting in the County of _____ |
|---|

My commission expires: _____