Exhibit 2

KELLEY DRYE & WARREN LLP
A LIMITED LIABILITY PARTNERSHIP

101 PARK AVENUE
NEW YORK, NY 10178

(212) 808-7800

FACSIMILE
(212) 808-7897
www.kelleydrye.com

WASHINGTON, DC
LOS ANGELES, CA
CHICAGO, IL
STAMFORD, CT
PARSIPPANY, NJ

BRUSSELS, BELGIUM

AFFILIATE OFFICE
MUMBAI, INDIA

AUGUST T. HORVATH
DIRECT LINE: (212) 808-7528
EMAIL: ahorvath@kelleydrye.com

September 29, 2014

VIA FEDEX AND EMAIL

Benjamin Lambiotte, Esq.
Garvey Schubert Barer
1000 Potomac Street, N.W.
5th Floor
Washington, DC 20007

Re: *Resco Products, Inc. v. Bosai Minerals Group Co., Ltd. and CMP Tianjin Co., Ltd.*, 2:06-cv-235 (JFC)

Dear Benjamin:

Pursuant to the Court's discovery order dated June 25, 2014 [Docket No. 241], please find enclosed the expert report of Dr. Russell L. Lamb.

Sincerely,

August Horvath

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

RESCO PRODUCTS, INC., Plaintiff, v. BOSAI MINERALS GROUP CO., LTD, CMP TIANJIN CO., LTD Defendants.	Civil Action No.: 2:06-cv-325-JFC

EXPERT REPORT CONCERNING DAMAGES

Dr. Russell L. Lamb
Senior Vice President
Nathan Associates Inc.
2101 Wilson Boulevard
Suite 1200
Arlington, VA 22201

September 29, 2014

Table of Contents

I. Introduction and Summary of Conclusions

A. Expert background and qualifications

1. I am a Senior Vice President at Nathan Associates Inc. ("Nathan Associates") where I direct the litigation activities in the Arlington, VA office. Nathan Associates is a business and economic consulting firm that provides economic research and analysis to clients in the U.S. and internationally and maintains offices in Arlington, VA; Irvine, CA; London, England and Chennai, India. I have studied the economics of markets and prices for more than 25 years and have consulted on these issues for over 20 years. I previously have been asked to opine on a variety of economic issues, including the existence of cartel behavior in various markets, damages arising from anti-competitive conduct, and class-wide impact arising from alleged price-fixing and anticompetitive conduct as well as class-wide injury arising from allegations of consumer fraud or breach of warranty. I have also been retained to offer opinions regarding liability and damages issues in antitrust matters. A copy of my C.V., including a list of the matters in which I have submitted expert testimony in the past four years, is attached to this report as Appendix A.

2. I graduated from the University of Tennessee, Knoxville in 1987 (summa cum laude, Phi Beta Kappa) as the top graduate in my class. I earned a Master's degree in economics from the University of Maryland in 1989 and received a Ph.D. in economics from the University of Pennsylvania in 1994. My economic research has been published in peer-reviewed journals such as the *Journal of Econometrics*, *Journal of Development Economics*, *CATO Journal, Regulation* and others. I have also served as a referee for leading economics journals including the *International Economic Review*, *Journal of Business and Economic Statistics*, *American Journal of Agricultural Economics* and *Contemporary Economic Policy*.

3. Prior to my employment at Nathan Associates, I held a variety of positions in government, academia, and other consulting firms. From 1994 until 1999 I was an Economist (later Senior Economist) with the Federal Reserve System of the U.S. in Washington, DC and Kansas City, MO. From 1999 until 2004 I taught economics and agricultural economics at North Carolina State University in Raleigh, NC. I have also been hired as an economic consultant to the World Bank and the Government of Peru, in addition to being retained on a wide range of economic consulting projects in a variety of contexts. In addition to my consulting activities, I teach

economics at the George Washington University, where I am an adjunct faculty member in the Department of Economics. Nathan Associates is being compensated for my work in this matter at my hourly rate of $550 per hour. Nathan Associates' compensation in this matter is not contingent upon the content of my testimony or the outcome of this litigation.

B. Summary of plaintiff's allegations

4. I understand that the allegations in this matter involve the manipulation by defendants of the market and the price for refractory grade bauxite products beginning as early as January 1, 2003 and continuing until 2009.[1] I discuss these allegations in further detail in my report below. I have been retained by counsel for the plaintiff in this matter to determine class-wide damages. In the remainder of my report I assume that the allegations contained in the complaint are in fact true. That is, I assume that the defendants engaged in a conspiracy to fix prices and restrain supply of refractory grade bauxite products in the U.S. during the class period.

5. I understand that for purposes of determining damages the class has been proposed as follows:

> All persons or entities who directly purchased refractory grade bauxite products for delivery or use in the U.S. from any of the defendants or their co-conspirators from January 1, 2003 to the date that the cartel is ended by an injunction or otherwise (the "damages" class). Excluded from [the class] are all governmental entities, defendants, their co-conspirators, and their respective subsidiaries and affiliates.[2]

6. In preparing this report I have relied upon numerous publicly available documents and manuscripts that describe various aspects of the production of and market for refractory grade bauxite products. A list of the documents that I have reviewed is contained in Appendix B to this report.

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[1] In the United States District Court for the Western District of Pennsylvania, Resco Products, Inc v. Bosai Minerals Group Co. Ltd., et al, "First Amended Class Action Complaint," July 17, 2009 (hereafter "Complaint") at ¶2. Laura Liang, deputy manager of bauxite exporting department of Bosai, testified that Bosai's bauxite exporting department ceased to exist after 2009. Deposition of Laura Liang, April 18, 2014, p. 14.

[2] Complaint at ¶¶18-19.

7. In preparing this report I have performed a multiple regression analysis using the transaction data provided by the defendants. My multiple regression analysis, which is common to the class as a whole, is capable of showing that the prices of Chinese refractory bauxite cannot be explained solely by market factors. Based upon my analysis of the market for bauxite as well as my multiple regression analysis, I have determined that all class members were injured as a result of the defendants' alleged misconduct, in that they paid more for refractory grade bauxite products than they would have paid but for the defendants' alleged misconduct. I have estimated damages owed to class members for their total imports to be $27.47 million before trebling. I have also estimated damages that are attributable to the two defendants, Bosai and CMP, to be $2.46 million and $2.19 million, respectively, before trebling.

II. Industry Background

A. Metallurgical and non-metallurgical bauxite

8. Bauxite is a mineral used for both metallurgical and non-metallurgical applications. Metallurgical applications of bauxite are nearly synonymous with aluminum production, whereas non-metallurgical applications employ bauxite as an input in the manufacturing of refractories, Portland cement, and aluminum chemicals, among other uses.[3] As discussed below, the ultimate use of bauxite is determined by chemical properties present "in the ground" rather than by how it is further processed, so metallurgical grade bauxite cannot be converted into non-metallurgical grade by processing. Demand for non-metallurgical grade bauxite is small relative to metallurgical uses, accounting for roughly five percent of U.S. demand in 2002.[4] Refractory grade bauxite is a type of non-metallurgical grade bauxite and is used primarily in iron and steel mill furnaces. Virtually no refractory grade bauxite is produced domestically and nearly all

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[3] Discussed in more detail below, a refractory is a material that retains its shape and chemical identity at high temperatures and in the presence of molten metal, glass, slag, and hot gas and is often used in kilns, furnaces, boilers, incinerators, and other applications. U.S. Environmental Protection Agency, *Economic Impact Analysis of the Refractory Product Manufacturing NESHAP – Final Rule*, http://yosemite1.epa.gov/EE/EPA/ria.nsf/EIO/7B393B16BFC7532985256D11004DEFD5, p. 1-1.

[4] Roskill Information Services Ltd., *The Economics of Bauxite and Alumina*, Sixth Edition, 2005, p. 2 and U.S. Geological Survey, Bauxite statistics, in Kelly, T.D., and Matos, G.R., comps., Historical statistics for mineral and material commodities in the United States: U.S. Geological Survey Data Series 140, available online at http://pubs.usgs.gov/ds/2005/140/.

consumed in the U.S. is imported from three countries: China, Guyana, and Brazil.[5] Between 2002 and 2008, China was the largest supplier, accounting for roughly half of all U.S. imports.[6]

9. Bauxite is composed of the hydrated aluminum oxides boehmite, diaspore, and gibbsite and may also contain silica, iron oxide, titania, aluminosilicates such as clay, and other impurities in small amounts.[7] Both between and within deposits, the aluminum oxides vary in ratio, resulting in different physical properties, structures, and textures.[8] Bauxite is typically found in tropical climates where wet and dry seasons alternate.[9]

10. Metallurgical bauxite is, by definition, converted to alumina by what is known as the Bayer process and is typically then refined to aluminum metal.[10] Bauxite is the only commercial ore of aluminum and is used overwhelmingly in metallurgical applications.[11] For example, in 2006, metallurgical bauxite represented 96 percent of the 12.3 million metric tons of bauxite consumed in the U.S., and 87 percent of this amount became aluminum metal.[12] Metallurgical bauxite not refined to aluminum metal, and non-metallurgical bauxite, are used to produce end products for industrial uses such as abrasives, chemicals, and refractories.[13] Since non-metallurgical bauxite is often roasted or fired, it is also referred to as "calcined" bauxite. The process of "calcinations" consumes large quantities of energy. Table 1 compares U.S. consumption of various grades of bauxite to world production on an annual basis for the years 1998 to 2009.[14]

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[5] Kogel et al., pp. 242-244.
[6] This share is based on U.S. import information for refractory grade bauxite from 2002 to 2010. U.S. Geological Survey, Minerals Yearbook, Bauxite and Alumina, 2003-2010.
[7] Roskill Information Services Ltd., p. 2 and Kogel et al., p. 227.
[8] Kogel et al., p. 232.
[9] Roskill Information Services Ltd., p. 7 and Kogel et al., p. 229.
[10] Kogel et al., pp. 227 and 238.
[11] Roskill Information Services Ltd., p. 7.
[12] U.S. Geological Survey, 2006 Minerals Yearbook: Bauxite and Alumina, p. 10.7.
[13] Non-metallurgical bauxite can also be converted to brown fused alumina, approximately 40-50 percent of which is used to make refractories. Roskill Information Services Ltd., pp. 2 and 12 and Kogel et al., p. 242. According to the Mineral Information Institute, about 85% of all the bauxite mined worldwide is used to produce alumina for refining into aluminum metal. Another 10% produces alumina which is used in chemical, abrasive, and refractory products. The remaining 5% of bauxite is used to make abrasives, refractory materials, and aluminum compounds. "Aluminum & Bauxite," Mineral Information Institute, http://www.mii.org/Minerals/photoal.html.
[14] Although alumina is used primarily in metallurgical processes, a small percentage is sometimes used in non-metallurgical applications. For example, in 2006, 87% of alumina was shipped to "aluminum smelters for metal production" while the remaining 13% was used in non-metallurgical processes. See U.S. Geological Survey, 2006 Minerals Yearbook: Bauxite and Alumina, p. 10.1.

Table 1. U.S. consumption of bauxite by selected grades

(Thousands of metric tons)

Year	World production	U.S. consumption, metallurgical and non-metallurgical grade	U.S. consumption, non-metallurgical grade	U.S. consumption, alumina for non-metallurgical processes (converted to thousand metric tons of bauxite)	U.S. consumption, refractory-grade
1998	123,000	12,700	2,102	1,693	213
1999	129,000	11,700	1,413	1,042	140
2000	136,000	10,800	2,170	1,692	177
2001	137,000	9,770	1,791	1,253	81
2002	144,000	9,980	1,738	1,231	103
2003	153,000	11,300	1,819	1,231	79
2004	164,000	13,600	1,881	1,039	158
2005	178,000	12,400	1,689	1,189	221
2006	193,000	12,300	2,065	1,565	228
2007	221,000	10,200	1,612	1,242	278
2008	224,000	9,550	1,001	767	361
2009	210,000	5,490	1,114	961	202

Source: U.S. Geological Survey, Bauxite Statistics, in Kelly, T.D., and Matos, G.R., comps., Historical statistics for mineral and material commodities in the U.S.: U.S. Geological Survey Data Series 140, available online at http://minerals.usgs.gov/minerals/pubs/historical-statistics/; and U.S. Geological Survey, Minerals Yearbook, Bauxite and Alumina, 1998-2010. [15]

B. Refractory grade bauxite is the largest non-metallurgical market excluding alumina

11. Bauxite used in production of refractories accounts for the largest category of non-metallurgical bauxite, after alumina is excluded.[16] A refractory is a material that maintains it shape and chemical identity at high temperatures and in the presence of molten metal, glass, slag, or hot gas. It is often used in kilns, furnaces, boilers, and incinerators where temperatures exceed 538°C (1000°F) and is classified as acidic or basic, depending upon its chemical composition.[17]

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[15] Alumina used by the abrasives, chemicals, refractories, and specialties industries accounted for a small percentage of U.S. consumption for non-metallurgical processes. To convert this amount to a bauxite equivalent amount, I multiplied the amount of alumina consumed for non-metallurgical processes by 2.25, since 2.25 tons of bauxite is used to produce one ton of alumina.

[16] Markets for non-metallurgical bauxite in the production of aluminum chemicals, such as aluminum sulphate for water treatment use, and of proppant, which helps to keep fractures in rock formations and is used in gas and oil drilling, are much smaller. Roskill Information Services Ltd., pp. 4-5 and Kogel et al., p. 240.

[17] U.S. Environmental Protection Agency, pp. 1-1 and 2-12; Kogel et al., pp. 239-240 and Roskill Information Services Ltd., p. 199.

Refractories made from non-metallurgical bauxite are considered acidic due to their alumina content.[18]

12. The U.S. consumes refractory grade bauxite in production of iron and steel, non-ferrous metal, and cement and lime manufacturing, as well as for use in glass manufacturing and oil refining.[19] Of these, the iron and steel industry is the largest, representing about 62 percent of refractory use; the second largest market is non-ferrous metal manufacturing and accounts for 11 percent of consumption.[20] Steel industry refractories are used to create teeming ladles and also to line coke ovens, blast furnaces, blast furnace stoves, basic oxygen vessels, electric furnaces, open-hearth furnaces, and other heat-related manufacturing equipment.[21]

13. There are no direct substitutes for refractories and few for those made from refractory grade bauxite, particularly in the U.S. In applications not requiring extreme temperatures, medium-alumina content bauxite-based refractories can be replaced by synthetic mullite which is produced from kyanite and sillimanite.[22] The U.S., however, has been slow to adopt these alternatives.[23]

C. Refractory grade bauxite differs from metallurgical bauxite in both composition and production

14. Regardless of whether they are metallurgical or non-metallurgical grade, almost all bauxite deposits are mined by surface or open cast methods.[24] A single deposit is generally only suited for one application due to variability in chemical composition. For example, deposits used for non-metallurgical applications must meet stricter specifications than those used for metallurgical purposes. Natural impurities in the ore are not chemically removed during

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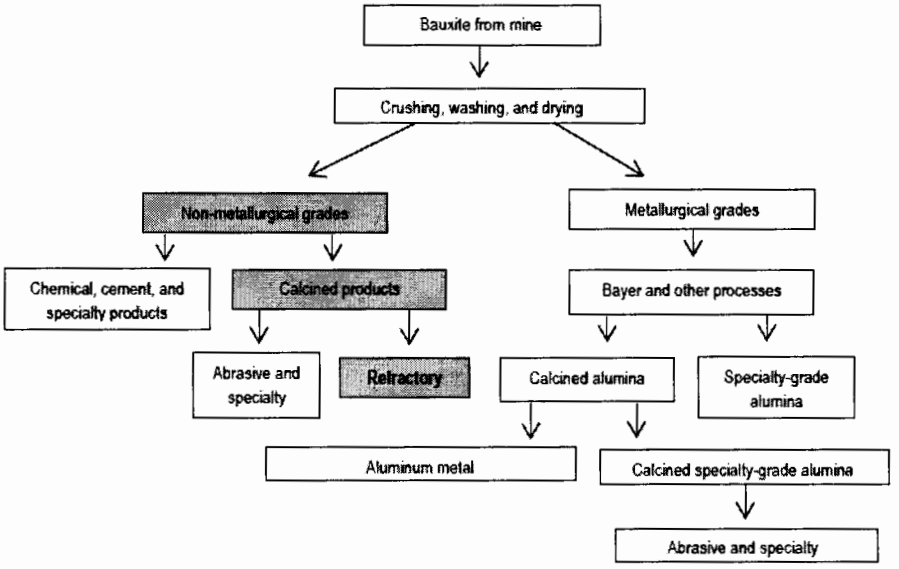
[18] Roskill Information Services Ltd., pp. 199-200.
[19] Kogel et al., p. 244. According to a source cited by the U.S. Environmental Protection Agency, the steel industry uses 50 to 80 percent of all refractories produced. U.S. Environmental Protection Agency, pp. 2-34 and 4-3; Roskill Information Services Ltd., pp. 232-233.
[20] Roskill Information Services Ltd., p. 226 and U.S. Environmental Protection Agency, p. 2-29. Alternative sources cited by the U.S. Environmental Protection Agency have listed the iron and steel industry as representing 50 to 75 percent of refractory demand. U.S. Environmental Protection Agency, p. 4-3.
[21] U.S. Environmental Protection Agency, p. 2-34 and National Development Strategy, Chapter 12: The External Sector and Monetary Management, August 7, 1996. http://www.guyana.org/NDS/chap12.htm, p. 19.
[22] Kogel et al., p. 240 Table 7 and p. 242.
[23] National Development Strategy, Chapter 12: The External Sector and Monetary Management, August 7, 1996. http://www.guyana.org/NDS/chap12.htm.
[24] Roskill Information Services Ltd., p. 2 and Kogel et al., pp. 236-237.

processing as they are with metallurgical bauxite, requiring "purer" deposits.[25] Refractory grade bauxite requires more alumina to resist high temperature increases.[26] Therefore, the amount of reactive silica present is crucial as it reduces the amount of available alumina.

15. Generally, prior to calcination, crude refractory grade bauxite is 59 to 61 percent aluminum oxide, whereas metallurgical grade bauxite can have as little as 32 percent.[27] Non-metallurgical bauxite often necessitates additional processing, such as jigging or heavy media separation, to decrease iron content or eliminate calcareous impurities.[28] Due to its higher aluminum oxide content, relative scarcity, and processing costs, refractory grade bauxite sells at a premium compared with metallurgical bauxite.[29] Figure 1 illustrates the basic production and classification of bauxite.

Figure 1. Production and classification of bauxite



Source: Roskill Information Services Ltd., The Economics of Bauxite and Alumina, Sixth Edition, 2005, p. 13 and Kogel et al, Industrial Minerals & Rocks: Commodities, Markets, and Uses, 7th Edition, p. 228.

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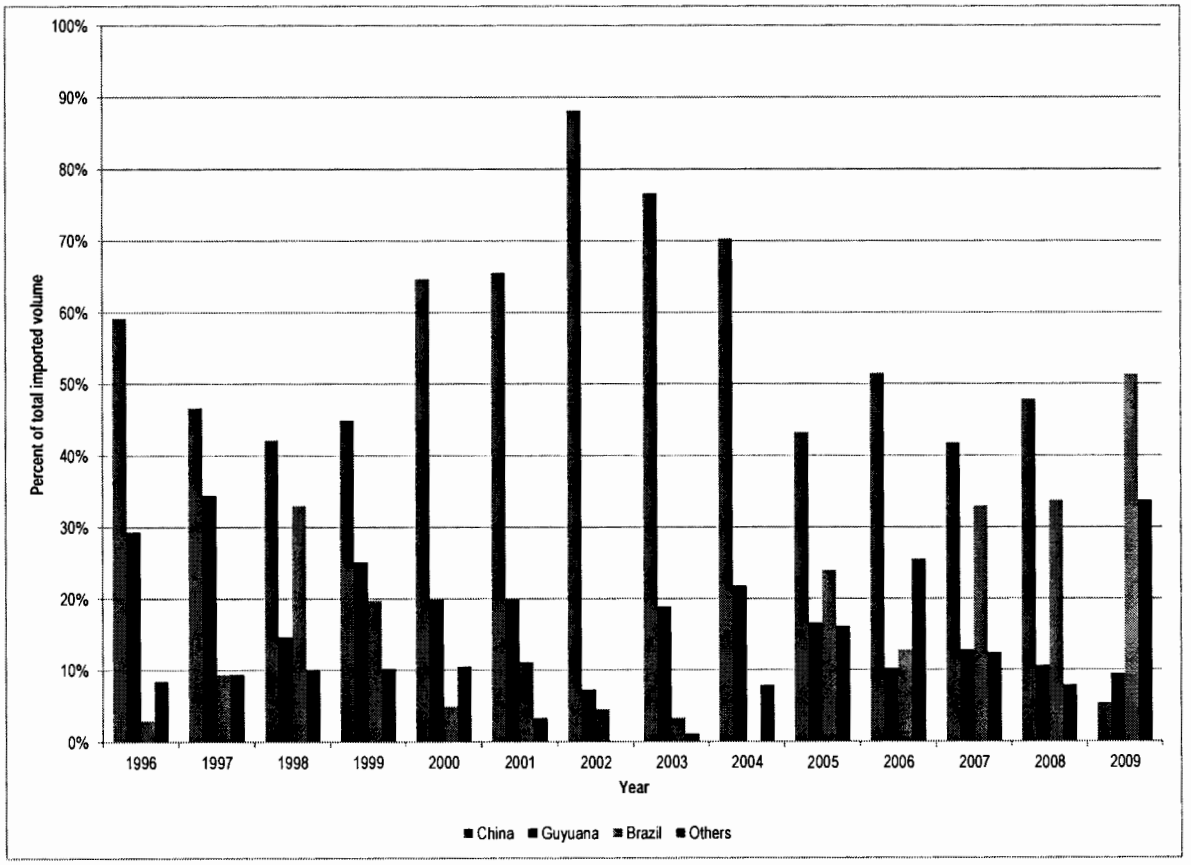
[25] Roskill Information Services Ltd., p. 12. Note, however, that some deposits allow for mining of both non-metallurgical and metallurgical grade bauxite. Kogel et al., pp. 227, 237, and 239.
[26] Roskill Information Services Ltd., p. 208 and Kogel et al., p. 240.
[27] Roskill Information Services Ltd., pp. 2 and 12.
[28] Roskill Information Services Ltd., p. 12 and Kogel et al., pp. 237-238.
[29] Roskill Information Services Ltd., p. 355.

D. China is the main source of U.S. refractory grade bauxite

16. Virtually all bauxite consumed in the U.S. market is imported.[30] From 2002 to 2008, China was the predominant source of bauxite for the U.S. with its imports representing 42 to 88 percent of all imported refractory grade bauxite.[31] Figure 2 shows imports of refractory grade bauxite from China, as well as other countries, expressed as a percent of total volume of U.S. imports before and during the class period.

Figure 2. U.S. imports of refractory grade bauxite



Source: U.S. Geological Survey, Minerals Yearbook, Bauxite and Alumina, 1997-2010.

17. Shanxi and Guizhou provinces are the two main sources of Chinese refractory grade bauxite bound for export with other provinces supplying the domestic market. Shanxi, whose

[30] As of 2003, at least one domestic source of bauxite existed; Kogel et al., pp. 231, 240, and 244 and Roskill Information Services Ltd., p. 5.
[31] U.S. Geological Survey, Minerals Yearbook, Bauxite and Alumina, 2003-2009.

ore is of higher purity, represents 60 to 70 percent of exports, while Guizhou, characterized by denser bauxite, accounts for the remaining 30 to 40 percent.

III. Estimation of Damages Suffered by Class Members

18. In this matter, the injury to class members arises because they purchased Chinese refractory grade bauxite at prices higher than they would have paid but for the defendants' alleged misconduct. I have been retained by counsel for the plaintiff in this matter to determine whether there was class-wide injury and to quantify damages owed to class members as a result of that injury. As part of this assignment, I quantify the extent by which prices for Chinese refractory grade bauxite were higher than those that would have prevailed but for the alleged misconduct.

A. Methodology overview

19. The calculation of damages arising from a conspiracy to fix price usually involves two steps. In the first step, one develops a model of the price paid for the product involved in order to determine the extent to which price was higher as a result of the alleged misconduct. The difference between the actual, conspiratorial price and the price that would have prevailed but for the alleged misconduct is sometimes referred to as the "overcharge," and it may be expressed as a percentage or as an amount per unit of the good sold. In the second step of the damages analysis, the overcharge is applied to the dollar value of sales that occurred in the marketplace in order to calculate the aggregate damages suffered by class members.

20. To calculate the overcharge in this matter, I use a method known as a benchmark, but I extend the benchmark analysis to account for other factors which may have affected pricing by using a technique called multiple regression analysis. In a benchmark analysis, the overcharge is calculated by comparing the price that arose as a result of the alleged conspiracy with the price for that product in some market in which there was non-conspiratorial pricing. One possible method is to compare prices for the good in the same market at different points in time, e.g. during the conspiracy period and during some non-conspiratorial period. Such method is referred to as a "before-during-after" analysis; two variants of this analysis are the "before-during" and the "during-after" comparison.

21. In this matter, the conspiracy is alleged to continue until 2009 and defendants have not provided any sales data after March 2009, so there is no period after the conspiracy on which to base an overcharge measure.[32] However, since Chinese refractory grade bauxite was sold to the U.S. for many years before the conspiracy began, there is a "before" period which is free from conspiratorial pricing. Therefore, I use the "before-during" benchmark to measure the effect of the alleged conspiracy on refractory grade bauxite prices. In this case I use the period from March 2002 through December 2002 as the "before" period and the period from January 2003 through March 2009 as the "during" period.[33]

22. The benchmark methodology is an accepted method for calculating damages in the field of antitrust economics.[34] It has been widely used for many years in calculating damages that arise from collusive pricing of the sort alleged here.[35]

23. The two defendants in this matter, Bosai and CMP, have produced some invoices on their exporting sales of refractory grade bauxite into the U.S. However, the defendants may not have provided the complete set of such invoices. For example, defendant Bosai has not produced any invoices for August 2004 through January 2006, January 2007 through May 2007, and November 2007 through May 2008; defendant CMP has not produced any invoices prior to March 2003. In addition, it is my understanding that the co-conspirators have not produced any data in this matter to date. Therefore, I reserve the right to revise my damages analysis when more information becomes available to me.

24. In measuring the overcharge in a matter that involves a price-fixing conspiracy such as this one, the analysis should control for other relevant factors so that the measured overcharge includes only the effect of the conspiracy on prices. If all the other factors that affect refractory grade bauxite prices are the same during the before period (on average) as during the period of the alleged conspiracy, then it would be possible to simply compare the difference in prices in

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[32] CMP provided only one transaction in 2009 (see CMP_000082). Bosai did not provide any transaction in 2009. Laura Liang, deputy manager of bauxite exporting department of Bosai, testified that Bosai's bauxite exporting department ceased to exist after 2009 (see Deposition of Laura Liang, April 18, 2014, p. 14).
[33] Defendant Bosai provided sales data starting from March 23, 2002. See 5_BOS_000242.
[34] Daniel Rubinfeld, "Reference Guide on Multiple Regression," *Reference Manual on Scientific Evidence,* Federal Judicial Center 2000, Second Edition (hereafter "Rubinfeld"), pp. 181-185.
[35] See, for example Robert B. Bergstrom, "The Role of the Expert in Proving and Disproving Damages in Antitrust Claims," *Antitrust Bulletin* (1967), pp. 677-706.

the two periods. However, such a direct comparison is usually not appropriate in measuring damages. The need to consider the effect of other factors on price arises because even when suppliers collude to set price, prices may still be affected by other factors.

25. Prices for refractory grade bauxite depend on many factors, in the presence of the alleged price-fixing conspiracy as well as in the non-conspiratorial period. As I discuss below, factors which affect demand for refractory grade bauxite, as well as factors that affect its production costs or supply, are likely to influence price. If any of these market factors also vary between the class period and the before period, then movements in these other factors should be taken into account when determining the overcharge.

26. In order to control for changes in other factors which affect refractory grade bauxite prices in my comparison of the "before" period and the "during" period, I have employed a statistical technique known as multiple regression analysis. Multiple regression analysis considers the relationship between a single variable whose behavior we wish to explain (usually called the dependent variable) and a set of other variables that are important in explaining the behavior of the dependent variable (often called explanatory variables or "regressors"). In this analysis, I have developed a multiple regression model in which the price of Chinese refractory grade bauxite is the dependent variable; my model explains the behavior of refractory grade bauxite prices using information on market factors as well as a conspiracy indicator variable to measure the effect of the alleged conspiracy on prices. Multiple regression is an appropriate technique in this context because it controls for the impact of each explanatory variable upon the dependent variable, therefore allowing me to quantify the difference between prices during the alleged conspiracy and the benchmark period, i.e., the overcharge.

B. Model of Chinese refractory grade bauxite prices

27. To select the appropriate set of explanatory variables that determine fluctuations in market prices of Chinese refractory grade bauxite, I have considered supply and demand factors that are likely to drive the market prices as well as defendant heterogeneity. I have also included an indicator variable to capture and isolate the effect of the alleged conspiracy to raise prices above their competitive levels.

i. The dependent variable is the price paid by direct purchasers of refractory grade bauxite

28. One input in the development of a multiple regression model is data on the variable to be explained. In this case, it is the prices paid by direct purchasers of refractory grade bauxite products for delivery or use in the U.S. from the defendants or their co-conspirators. Since none of the co-conspirators have produced their sales and price data of refractory grade bauxite to date, I have relied upon the invoice data produced by the two defendants, Bosai and CMP.[36]

ii. Demand factors

29. Even in the presence of anticompetitive behavior, the price of refractory grade bauxite is affected by demand factors. Typically, demand for a product used as a production input, such as refractory grade bauxite, is affected by demand for any of the goods that it is used to produce. Refractory grade bauxite is predominantly consumed in the manufacture of steel. Therefore, one factor which may influence demand and thus market prices for refractory grade bauxite is the level of steel production.

30. During the period considered here (2002-2009), world steel production and Chinese steel production increased every year until the end of 2007 and then declined sharply in 2008. However, Chinese steel production experienced particularly rapid growth and accounted for more than 40 percent of world steel production by the end of the class period. From 2002 to 2009, the compound annual growth for world steel production was 5.7 percent; for Chinese steel production, 17.2 percent. Increases in steel production are likely followed by increased demand for refractory grade bauxite as new mills are constructed and existing ones repaired.

31. Given that the use of refractory grade bauxite in Chinese refractories (which depends in turn on the level of steel production) is an important source of demand for Chinese refractory grade bauxite, I have included Chinese steel production reported by the International Iron and Steel Institute as an explanatory demand variable in my regression analysis. In addition, increases in steel production are likely to be more useful in explaining demand because they represent the need for additional capacity; therefore I use lagged values of the percent change in Chinese steel production over the past twelve months as explanatory variables. This also

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[36] I reserve the right to revise my damages analysis when more data and information become available to me.

accounts for the fact that steel production affects demand for refractory grade bauxite with a significant lag.

32. U.S. refractories also demand Chinese refractory grade bauxite for the production of steel domestically. The U.S. consumes roughly half of the western world's total refractory grade bauxite, predominantly in the production of iron and steel.[37] I have included U.S. steel production reported by the International Iron and Steel Institute as an explanatory variable in my regression analysis, modified to reflect the percent change in production over the past twelve months.

33. Fluctuations of world foreign exchange rates relative to the Chinese yuan can affect the competitiveness of Chinese refractory grade bauxite sold on the export market. For instance, if the Chinese yuan depreciates in value relative to other currencies, then the same yuan-denominated price for refractory grade bauxite translates into a lower price in terms of the buyer's domestic currency. Conversely, if the Chinese yuan appreciates in value, the same yuan-denominated price for refractory grade bauxite translates into a higher price in terms of the buyer's domestic currency. Therefore, changes in foreign currency markets may affect the price of Chinese refractory grade bauxite in the export market. In particular, changes in the value of the yuan relative to the U.S. dollar, although limited during the time period I consider here, would affect prices paid by U.S. consumers directly.

34. To account for movements in the value of the Chinese currency on prices for Chinese refractory grade bauxite, I used two exchange rate variables. The first variable measures the value of the Chinese yuan vis-a-vis the U.S. dollar and is available from the Board of Governors of the Federal Reserve System.[38] For much of the estimation period prior to July 2005, the yuan's value was pegged to the U.S. dollar. However, in July 2005 the yuan was allowed to appreciate versus the U.S. dollar for the first time in many years.[39] In addition to the yuan to dollar exchange rate, I also use an exchange rate that measures the value of the yuan vis-a-vis a broad basket of world currencies. This exchange rate series, which is compiled by the

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[37] Kogel et al., p. 244; Roskill Information Services Ltd., p. 226; and U.S. Environmental Protection Agency, p. 2-29.
[38] http://www.imf.org/external/np/fin/ert/GUI/Pages/CountryDataBase.aspx.
[39] "Yuan high marks float anniversary," *BBC News*, http://news.bbc.co.uk/2/hi/business/5202462.stm.

International Monetary Fund, represents the value of the yuan generally in international markets.[40] The yuan appreciated during the mid to late 1990s, began to depreciate in 2002, and then began to appreciate again from 2005 to the end of the class period. I considered the percent change in the value of the yuan over the last twelve months as explanatory variables. Because it often took up to three months to ship bauxite from China to the U.S., prices are quoted a few months earlier in U.S. dollars, I used the lagged exchange variables in my model.

iii. Supply factors

35. I also considered supply factors that may influence the market price of refractory grade bauxite. Since nearly 13,000,000 British thermal units (BTUs) are required during the calcination phase per ton of product produced in order to reach temperatures of 1,700 to 1,800°C, the cost of energy is potentially an important determinant of refractory grade bauxite prices.[41] In addition, I took into account the increasing cost of raw materials in China. To account for changes in the cost of raw materials and energy, I included in my regression model the purchasing price index for raw materials, fuel and power as one explanatory variable and modified it to reflect the percent change in the index over the past twelve months. I used the purchasing price index obtained from the National Bureau of Statistics of China.[42] Jianhong (John) Liu, vice president of Bosai, testified that labor cost is a pricing factor.[43] I obtained the average wage of manufacturing staff from the National Bureau of Statistics of China and included the percent change in the wage over the past twelve months in the regression model. [44] Because it may take time for changes in production costs to be reflected in bauxite prices, I used the lagged values of the Chinese purchasing price index and average wage of manufacturing staff in the model.

36. In addition, I considered the total factor productivity (TFP) in China.[45] Even though the cost of raw materials, energy, and labor increased during the period considered here, development economics literature suggests that the increasing total factor productivity allowed

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[40] http://www.imf.org/external/np/fin/ert/GUI/Pages/CountryDataBase.aspx.
[41] Kogel et al., p. 242.
[42] http://www.stats.gov.cn/tjsj/ndsj/2010/indexeh.htm.
[43] See Deposition of Jianhong Liu, April 22, 2014, p. 39.
[44] http://www.stats.gov.cn/english/Statisticaldata/AnnualData/.
[45] http://www.ey.com/Publication/vwLUAssets/China_productivity_imperative_en/$FILE/China-Productivity-Imperative_en.pdf, see Figure 3.

developing countries, such as China, to enhance production efficiency in order to maintain competitiveness in the global market.[46]

37. Another factor which can affect the supply of refractory grade bauxite products from China is a change in the general price level, or inflation, in China. The faster other prices increase, the more prices for refractory grade bauxite are likely to increase as well. I control for these effects by including annual consumer price inflation in China, which was obtained from the International Monetary Fund.[47] I used the lagged value of the consumer price index since price changes may not immediately be passed through to prices for Chinese goods.

iv. A defendant indicator variable controls for the price differential between the two defendants

38. The transaction and invoice data provided by the two defendants indicate that CMP often charged higher prices than Bosai did. To account for the price differential between the two defendants, I included an indicator variable for one defendant (CMP) that takes value one if a transaction belongs to CMP and zero if it belongs to Bosai.

v. An indicator variable controls for the operation of the conspiracy

39. In this matter the plaintiff alleged that the operation of the conspiracy resulted in higher prices for refractory grade bauxite products in the U.S. To determine the extent, if any, by which prices for refractory grade bauxite products are higher because of the operation of the alleged conspiracy, I included a conspiracy indicator variable that takes the value one from January 2003 to March 2009 and zero elsewhere. The coefficient on this variable can be used to calculate the

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[46] "The higher total factor productivity (TFP) growth projection in the China country report indicates that reliance on energy imports can be reduced by as much as 60 percent and minerals by 50 percent. Aided by FDI and information technologies, China and India along with other developing countries are finding it increasingly easier to transfer technology from developed countries to exercise their comparative advantage in manufacturing." See "Rapid Growth of Selected Asian Economies: Lessons and Implications for Agriculture and Food Security." *FAO Regional Office for Asia and the Pacific*. RAP Publication 2006/04. pp. 9. "Additionally, a greater share of the economy (mainly the export sector) was exposed to competitive forces. Local and Provincial governments were allowed to establish and operate various enterprises without interference from the government. In addition, FDI in China brought with it new technology and processes that boosted efficiency." See Wayne M. Morrison. "China's Economic Rise: History, Trends, Challenges, and Implications for the United States." *Congressional Research Service*. August 21, 2014. pp. 5.

[47] http://stats.oecd.org/Index.aspx?DataSetCode=G20_PRICES#.

percentage by which prices for refractory grade bauxite are higher as a result of the alleged conspiracy during the class period.

C. Regression estimates of the overcharge

40. The results of the multiple regression model of refractory grade bauxite prices are presented in Table 2. The model is estimated with variables converted to their natural logarithms. A "log-log" specification such as this is often used in econometric analysis because it allows one to interpret coefficients on the explanatory variables as the percent change in the price arising from a one percent increase in the explanatory variable. The coefficient estimates represent the average impact that each explanatory variable has on price, controlling for other factors in the model.

41. One statistic which is often used to evaluate performance of an econometric model is the *R*-squared statistic. The *R*-squared statistic measures the share of total variation in the dependent variable which is explained by the model.[48] The model of refractory grade bauxite prices developed here explains 75.7 percent of the variation in the dependent variable. Another summary statistic which is used for model evaluation is the *F* statistic. The *F* statistic allows one to test whether or all explanatory variables taken as a group are related to the dependent variable. For this model, the *F*-statistic is highly statistically significant, meaning the regressors are collectively useful in explaining the dependent variable.

42. Another way to examine the explanatory power of variables included in the model is to examine *t*-statistics.[49] Associated with each explanatory variable included in the multiple regression analysis is a coefficient which is estimated in the statistical procedure. The coefficient shows the impact of the independent variable on the dependent variable. Each coefficient has a *t*-statistic associated with it. While the *t*-statistic will always have the same algebraic sign as the coefficient, the magnitude or absolute value of the *t*-statistic will vary depending on how strong the statistical relationship is. The higher is the *t*-statistic (in absolute value, ignoring its sign) the more confidence can be placed in the estimated coefficient. When the *t*-statistic exceeds a certain level, the variable is considered to be "statistically significant" at

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[48] Peter Kennedy, *A Guide to Econometrics, Third Edition* (Cambridge, MA: The MIT Press), 1994, pp. 26-28.
[49] Kennedy, pp. 55-61.

that level. Many of the individual coefficients in the model are statistically significant individually, because their *t*-statistics exceed the critical value.

43. An additional way to determine whether the model performs as expected is to examine the behavior of all the lags of a variable or several related variables taken together to see if they behave as expected as a group. In examining steel production in China and U.S., purchasing price index of raw materials, fuel and power, manufacturing labor cost and total factor productivity in China, Chinese CPI, and exchange rates of RMB (yuan), I look at the sum of the coefficients on their lags, which is a common way to determine their joint effect on the dependent variable. The variables measuring steel production in China and U.S. are jointly statistically significant; the Chinese purchasing price index of raw materials, fuel and power together with Chinese manufacturing labor cost and total factor productivity are jointly statistically significant; the Chinese CPI variables are jointly statistically significant; the exchange rate variables are jointly statistically significant.

44. The conspiracy indicator variable included in the model measures the extent by which prices were higher as a result of the alleged conspiracy in this matter. This variable is positive and statistically significant at 5% level in the model. Because the multiple regression analysis is performed using the defendants' transaction and invoice data before and during the proposed class period, this result suggests that class members were all injured as a result of the alleged conspiracy, in that they paid a higher price for refractory grade bauxite products during the class period than they otherwise would have. This regression analysis is one piece of evidence that the proposed class members were injured as a whole.

45. The coefficient on the conspiracy indicator variable in Table 2 can be used to estimate the overcharge suffered by class members. Table 3 shows the estimated overcharge percentage from the regression model. The overcharge percentage indicates that the prices paid for refractory grade bauxite were 24.9% higher than the but-for prices as a result of the alleged conspiracy.[50]

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[50] In order to obtain the percentage overcharge from the estimated coefficient it is necessary to make a technical adjustment. For a discussion of this issue see Robert Halvorsen and Raymond Palmquist, "The Interpretation of Dummy Variables in Semilogarithmic Equations," *American Economic Review*, June 1980 and Peter Kennedy, "Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations," *American Economic Review*, September 1981.

Table 2. Chinese refractory grade bauxite regression model results

Observations	155			F Statistic	85.50
Root MSE	0.3045			Prob > F	0.000
				R-squared	0.757

Explanatory variables	Coefficient estimate	Standard error	*t*-Statistic	*p*-value	Statistical significance [a]
(1) Annual growth in Chinese steel production					
1 month lag	1.637	0.742	2.210	0.029	**
2 month lag	-0.754	0.623	-1.210	0.228	
3 month lag	1.707	0.812	2.100	0.037	**
(2) Annual growth in US steel production					
1 month lag	-0.371	0.628	-0.590	0.555	
2 month lag	-1.562	1.080	-1.450	0.150	
3 month lag	1.738	0.976	1.780	0.077	*
(3) Annual growth in Chinese purchasing price index of raw materials, fuel and power					
1 month lag	2.332	3.632	0.640	0.522	
2 month lag	-2.260	2.857	-0.790	0.430	
3 month lag	0.259	1.776	0.150	0.884	
(4) Annual growth in Chinese manufacturing labor cost					
1 month lag	-11.968	7.215	-1.660	0.100	*
2 month lag	8.960	7.721	1.160	0.248	
3 month lag	4.575	6.040	0.760	0.450	
(5) Chinese total factor productivity	-0.384	0.257	-1.500	0.137	
(6) Annual growth in the Chinese Consumer Price Inflation					
1 month lag	6.263	8.165	0.770	0.444	
2 month lag	4.404	8.447	0.520	0.603	
3 month lag	-6.720	4.873	-1.380	0.170	
(7) Annual growth in the Yuan / USD foreign exchange rate					
1 month lag	9.615	15.410	0.620	0.534	
2 month lag	-13.742	21.667	-0.630	0.527	
3 month lag	-6.273	15.191	-0.410	0.680	
(8) Annual growth in the Yuan / World foreign exchange rate					
1 month lag	-0.904	1.974	-0.460	0.648	
2 month lag	-2.151	2.870	-0.750	0.455	
3 month lag	-0.198	1.632	-0.120	0.904	
(9) Defendant indicator	0.204	0.054	3.760	0.000	***
(10) Constant	4.416	0.615	7.180	0.000	***
(10) Conspiracy indicator [b]	0.228	0.114	2.010	0.047	**

[a] Statistical significance levels: *** < 1% significance level, ** < 5% significance level, and * < 10% significance level.

[b] Conspiracy period is from January 2003 to March 2009.

Table 3. Estimated overcharge percentage

Collusion Period	Estimated overcharge percentage
January 2003 to March 2009	24.9%

D. Damages

46. To estimate damages, the overcharge percentage in Table 3 is applied to bauxite sales using the following formula.[51]

$$\frac{Overcharge\%}{1 + Overcharge\%} \times Sales$$

47. Table 4 presents the total damages suffered by class members on their purchases of Chinese refractory grade bauxite imported to the U.S. based on my analysis. Class-wide damages are $27.47 million before trebling.

Table 4. Estimated overcharge on Chinese refractory grade bauxite imported into the U.S.

	2003	2004	2005	2006	2007	2008	2009	Total
US import value	$ 5,730,000	$ 15,300,000	$ 14,100,000	$ 15,900,000	$ 17,600,000	$ 63,100,000	$ 6,190,000	$ 137,920,000
Overcharges	$ 1,141,415	$ 3,047,758	$ 2,808,718	$ 3,167,278	$ 3,505,917	$ 12,569,510	$ 1,233,047	$ 27,473,643

Source (US import value): U.S. Geological Survey, Minerals Yearbook, Bauxite and Alumina, 2004-2010.

48. Table 5 presents the damages suffered by class members on their purchases of Chinese refractory grade bauxite from the two defendants. The damages due to Bosai and CMP's collusive behavior are $2.46 million and $2.19 million respectively before trebling.

Table 5. Estimated overcharges on Chinese refractory grade bauxite purchased from the defendants

	2003	2004	2005	2006	2007	2008	2009	Total
Bosai sales	$4,269,135	$2,399,987		$572,914	$946,746	$4,140,211		$12,328,992
Bosai overcharges	$850,411	$478,077		$114,124	$188,592	$824,729		$2,455,933
CMP sales	$1,110,968	$1,956,490	$1,108,844	$1,298,338	$2,053,861	$3,338,917	$133,665	$11,001,083
CMP overcharges	$221,305	$389,732	$220,882	$258,629	$409,129	$665,112	$26,626	$2,191,414

Source: Defendants' sales analysis.

[51] The 24.9% reported in Table 3 is the percent of overcharge with respect to the but-for prices; $\frac{Overcharge\%}{1+Overcharge\%}$ represents the overcharge with respect to the actual prices.

VI. Conclusions

49. I have demonstrated that it is possible to measure the overcharge to the class as a whole using a formulaic method, class-wide evidence, and without individual inquiry. I can do this by comparing the actual prices from within the conspiracy period with the prices but for the conspiracy using multiple regression analysis, and then multiplying the total volume of sales by the overcharge with respect to the actual prices to arrive at the total overcharges incurred by the class during the class period.

50. Based on my analysis of the market for Chinese refractory grade bauxite, I have determined that all class members were injured as a result of the alleged conspiracy, in that they paid higher prices than they would have paid but for the alleged conspiracy. I have calculated class-wide damages suffered by class members using a multiple regression analysis. The class-wide damages arising from the collusive behavior are $27.47 million. The damages suffered by class members for the refractory grade bauxite products purchased from Bosai and CMP are $2.46 million and $2.19 million respectively.

I swear under penalty of perjury under the laws of the State of Pennsylvania and the U.S. that the foregoing is true and correct to the best of my knowledge, information, and belief.

Russell L. Lamb, Ph.D.

September 29, 2014

Appendix A

Russell Lamb, Ph.D.

Senior Vice President
Nathan Associates Inc.
Phone: (703) 615-3474
Email: rlamb@nathaninc.com

Professional Summary

Russell Lamb is an expert in antitrust economics and has testified concerning antitrust liability, impact, and damages in U.S. District Court. He has an extensive background in applied econometrics and has developed econometric models to measure damages in a number of matters involving allegations of horizontal price fixing. He has provided expert testimony in State and Federal Courts in the United States and in Canada on a range of issues including class-certification and economic damages in antitrust, RICO and consumer fraud matters. In addition, he has provided expert advice to client attorneys at all levels of the litigation. Dr. Lamb has an extensive background in the analysis of domestic and international agricultural markets, and has authored more than 50 articles in peer-reviewed economics journals, trade press, and major newspapers.

Dr. Lamb's work has been cited by courts in certifying classes in the United States and Canada. For example, in *In re Aftermarket Automotive Lighting Products Antitrust Litigation*, the court held that his analysis provided "a sufficient basis from which to conclude that Plaintiffs would adduce common proof concerning the effect of Defendants' alleged price-fixing conspiracy on prices class members paid." In certifying the Class in *In re: Titanium Dioxide Antitrust Litigation*, the Court said, "This Court finds that Dr. Lamb's regression analysis accurately reflects the characteristics of the titanium dioxide industry, and the facts in this case." In the Canadian LCD Competition Act Class Action, the Court held that Dr. Lamb's analysis provided "evidence of a viable methodology for the determination of loss on a class-wide basis." In *In re: Puerto Rican Cabotage Litigation*, the Court held that "Dr. Lamb [had] set forth a reputable and workable model for determining damages as to individual class members." In certifying the class in *Clarke and Rebecca Wixon, et al. v. Wyndham Resort Development Corp., et al.*, the Court held that "Dr. Lamb [had] presented a plausible class-wide method of proof." In certifying the class in *Eugene Allan, et al., v. Realcomp II, Ltd., et al.*, the Court held that "the Plaintiffs have produced sufficient evidence that common proofs will yield a finding of class-wide damages that predominates over any specific individualized damages. The

Lamb Report and Lamb Reply are sufficient to establish this fact." Furthermore, Dr. Lamb was the Indirect Purchaser Plaintiffs' expert in the *In re: Polyurethane Foam Antitrust Litigation* matter, which was certified by the Court in April 2014.

With regard to agricultural economics, Dr. Lamb has a particular expertise in agricultural markets and has undertaken extensive original research and econometric analysis on markets for agricultural commodities. His articles on agricultural economics have been published in peer-reviewed journals, trade press, and major newspapers. Dr. Lamb regularly presents at conferences on topics including the state of the U.S. Economy and farm policy.

Prior to rejoining Nathan Associates, Dr. Lamb established the Arlington, VA office of Advanced Analytical Consulting Group where he served as a Principal, as well as the Washington, DC office of Econ One where he served as Managing Director and DC Office Head. In these positions, he developed and managed a practice of ten litigation professionals. He earlier served as an Assistant Professor of Agricultural Economics and faculty member of the Graduate Group in Economics at North Carolina State University and as an Economist and Senior Economist in the Federal Reserve System of the United States, at the Federal Reserve Board and the Federal Reserve Bank of Kansas City.

Dr. Lamb received his Ph.D. in Economics from the University of Pennsylvania.

Education

- Ph.D., Economics, University of Pennsylvania, 1994
- M.A., Economics, The University of Maryland, 1989
- B.A., Economics, The University Tennessee, 1987

Expert Testimony Offered

2014 *Meredith Corporation, et al., v. SESAC, LLC, et al.*

- United States District Court for the Southern District of New York
- 09 Civ. 9177 (PAE)
- Expert Report, July 10, 2014
- Opinion concerning class certification issues
- Retained by Weil, Gotshal & Manges LLP

Janet Skold, et al., v. Intel Corporation, et al.

- Superior Court of the State of California for the County of Santa Clara
- Case No. 1-05-CV-039231
- Expert Report, June 14, 2007
- Testified at deposition, August 31, 2007
- Testified at deposition, January 10, 2014
- Opinion concerning class certification issues
- Opinion concerning damages issues
- Retailed by Girard Gibbs LLP

2013 *William P. Elliott v. Delhaize America, Inc., d/b/a Food Lion, LLC*

- United States District Court Eastern District of Virginia Alexandria Division
- Civil Action No. 1:12-CV-01426-LO-TRJ
- Expert Report Concerning Damages, July 5, 2013
- Testified at deposition, September 16, 2013
- Opinion concerning damages
- Retained by EvansStarrett PLC

Charles Benson, et al. v. Dean Foods Company, et al.

- United States District Court Eastern District of Tennessee at Greenville
- No. 2:13-CV-00026
- Declaration, June 14, 2013
- Opinion concerning size of commerce at issue
- Retained by Gordon Ball Law Firm

In Re: Polyurethane Foam Antitrust Litigation

- United States District Court Northern District of Ohio Western Division
- MDL No. 2196
- Declaration, June 11, 2013
- Reply Declaration, October 23, 2013
- Trial Declaration, March 18, 2014
- Reply Trial Declaration, June 30, 2014
- Testified at deposition, August 20, 2013
- Testified at deposition, November 20, 2013
- Testified at class certification hearing, January 15, 2014
- Testified at deposition, April 14, 2014
- Testified at deposition, July 14, 2014
- Opinion concerning class certification issues regarding indirect purchasers
- Opinion concerning merits and damages issues
- Retained by Miller Law LLC

Jabo's Pharmacy, Inc., et al. v. King Pharmaceuticals, Inc.

- In the Circuit Court for Cocke County, Tennessee
- No.: 31,973 (Class Action)
- Expert Affidavit, May 10, 2013

- Reply Affidavit, August 22, 2013
- Testified at deposition, May 30, 2013
- Opinion concerning class certification issues
- Retained by Hausfeld LLP

In Re: Skelaxin (Metaxalone) Antitrust Litigation

- United States District Court Eastern District of Tennessee at Chattanooga
- Lead Case No.: 2:12-cv-4
- MDL Case No.: 1:12-md-2343
- Expert Declaration, May 6, 2013
- Reply Declaration, August 13, 2013
- Testified at deposition, May 30, 2013
- Opinion concerning class certification issues for indirect purchaser for resale plaintiffs
- Retained by Hausfeld LLP

Amvac Chemical Corporation v. RedEagle International LLC

- Before the American Arbitration Association
- Case No.: 16 171 00285 11
- Testified at trial, April 10, 2013
- Retained by McKenna Long & Aldridge LLP

2012 *Thomas Boland, v. Consolidated Multiple Listing Service, Inc., et al.*

- United States District Court for the District of South Carolina
- Case No.: 3:09-1335-SB
- Expert Report, December 10, 2012
- Affidavit, March 15, 2013
- Testified at deposition, January 10, 2013
- Opinion concerning class certification
- Retained by Goldman Scarlato Karon & Penny, P.C.

David Osmun, et al., v. Cadbury Adams Canada Inc., et al.
Ontario Superior Court of Justice
Court File No.: 08-CV-347263PD2

Jacob Stuart Main, et al., v. Cadbury Schweppes Plc, et al.
In the Supreme Court of British Columbia
S078807 (Vancouver Registry)

Gaetan Roy v. Cadbury Adams Canada Inc., et al.
Canada Superior Court (Province of Quebec, District of Quebec)
No.: 200-06-000094-071

- Expert Report, September 24, 2012
- Opinion concerning pass-through
- Retained by Sutts, Strosberg, LLP

Eugene Allan, et al., v. Realcomp II, Ltd., et al.

- United States District Court for the Eastern District of Michigan Southern Division
- Case No.: 2:10-cv-14046
- Expert Report, August 1, 2012
- Reply Expert Report , October 26, 2012
- Testified at deposition, September 14, 2012
- Opinion concerning class certification and damages issues
- Retained by Goldman Scarlato Karon & Penny, P.C.

Nancy Jean Adams v. Apple, Inc., et al.

- Ontario Superior Court of Justice
- Court File No.: CV-12-17511
- Expert Report, July 12, 2012
- Opinion concerning class certification issues
- Retained by Sutts, Strosberg, LLP

Animal Science Products, Inc., et al., v. China National Metals & Minerals Import & Export Corporation, et al.

- United States District Court District of New Jersey
- Expert Affidavit, May 24, 2012
- Retained by Boies, Schiller & Flexner LLP

In Re: Titanium Dioxide Antitrust Litigation

- United States District Court of Maryland (Northern Division)
- Case No.: 10-cv-00318-RDB
- Expert Declaration, February 22, 2012
- Expert Rebuttal Declaration, July 24, 2012
- Expert Trial Report, October 1, 2012
- Trial Expert Rebuttal Report, February 18, 2013
- Testified at deposition, April 20, 2012
- Testified at deposition, August 6, 2012
- Testified at deposition, November 9, 2012
- Testified at deposition, March 5, 2013
- Opinion concerning class certification issues
- Opinion concerning merits and damages issues
- Retained by Gold Bennett Cera & Sidener LLP

2011 *Brokers' Services Marketing Group, LLC, et al., v. Cellco Partnership*

- United States District Court District of New Jersey
- Expert Report, October 14, 2011
- Retained by Hagens Berman LLP

Westminster Mutual Insurance Company, v. TYC Brother Industrial Co. Ltd., et al.

- Ontario Superior Court of Justice
- Court File No.: 62732
- Expert Report, September 14, 2011
- Opinion concerning class certification issues
- Retained by Siskinds LLP

CEMEX Caracas Investments B.V. and CEMEX Caracas II Investments B.V., v. The Bolivarian Republic of Venezuela

- Before the International Centre for Settlement of Investment Disputes ("ICSID")
- Expert Report, September 6, 2011 (with Dr. Juan F. Riveros, Ph.D.)
- Opinion concerning the value of the operating assets of CEMEX Venezuela
- Retained by Curtis, Mallet-Prevost, Colt & Mosle LLP

Henry Kahwaty, v. LECG, LLC and LECG Corporation

- Before PAX ADR
- Expert Report, August 22, 2011
- Opinion concerning damages arising from a breach of contract dispute
- Retained by Katz, Marshall & Banks, LLP

David Osmun, et al., v. Cadbury Adams Canada Inc., et al.

- Ontario Superior Court of Justice
- Court File No.: 08-CV-347263PD2
- Expert Report, August 12, 2011
- Opinion concerning class certification issues
- Retained by Sutts, Strosberg, LLP

Danny Lynn Electrical & Plumbing, et al., v. Veolia ES Solid Waste Southeast, Inc., et al.

- United States District Court, Middle District of Alabama, Northern Division
- Case No. 2:09cv192-MHT
- Expert Report, July 19, 2011
- Testified at deposition, August 2, 2011
- Retained by McCallum Methvin & Terrell, P.C.

Daesang Corporation against The NutraSweet Company, NutraSweet IP Holdings, Inc. and, Sweeteners Holdings Korea LTD.

- International Court of Arbitration International Chamber of Commerce
- Reference: 15 641 / VRO
- Written Testimony, May 31, 2011
- Testified at Tribunal Hearing, July 21, 2011
- Response to the opinions of Daesang's economic expert
- Retained by NutraSweet

Thomas L. Logue, et al., v. West Penn Multi-List, Inc. et al.

- United States District Court for the Western District of Pennsylvania
- Case No.: 2:10-cv-0451
- Expert Report, January 12, 2011
- Testified at deposition, January 26, 2011
- Opinion concerning class certification issues
- Retained by Goldman Scarlato & Karon, P.C.

2010 *In Re: Puerto Rican Cabotage Antitrust Litigation*

- United States District Court for the District of Puerto Rico
- Master Docket No. 08-md-1960 (DRD)
- Affidavit, October 28, 2010
- Affidavit, January 10, 2011
- Opinion concerning the total monetary value of an option in the settlement agreements with the defendants
- Opinion concerning the monetary value of an option elected by the plaintiffs in the settlement agreements with the defendants
- Retained by Grant & Eisenhofer, P.A.

In Re: Mercedes-Benz Tele Aid Contract Litigation

- United States District Court, District of New Jersey
- MDL No. 1914, Civ. No. 07-2720
- Expert Report, October 1, 2010
- Opinion concerning class-wide damages
- Retained by Lieff Cabraser Heimann & Bernstein, LLP

In Re: Aftermarket Automotive Lighting Products Antitrust Litigation

- United States District Court, Central District of California
- Case No. 09-ML-2007 GW (PJWx)
- Expert Report, September 24, 2010
- Expert Reply Report, June 24, 2011
- Expert Trial Report, March 29, 2013
- Expert Trial Rebuttal Report, June 7, 2013
- Expert Declaration, July 8, 2013
- Testified at deposition, April 19, 2011
- Testified at deposition, April 24, 2013
- Testified at class certification hearing, July 25, 2011
- Opinion concerning class certification issues and class-wide damages
- Retained by Stueve Siegel Hanson, LLP

In Re: Air Cargo Shipping Services Antitrust Litigation

- United States District Court for the Eastern District of New York
- Master File No. 06-MD-1775 (CBA) (VVP)
- Expert Declaration, March 29, 2010

- Opinion concerning the use of multiple regression analysis in antitrust contexts and the sufficiency of defendant's data production
- Retained by Levin, Fishbein, Sedran & Berman

Louise Knowles c.o.b. as Special Events Marketing v. Arctic Glacier Inc., Keith E. Corbin and Reddy Ice Holdings, Inc.

- Ontario Superior Court of Justice
- Court File No. CV 10-14457
- Expert Report, March 19, 2010
- Reply Expert Report, November 30, 2010
- Testified at deposition, December 15, 2010
- Opinion concerning class certification issues
- Retained by Sutts, Strosberg LLP

Nathan Nygren, Stephen Shifflette and Amy Fromkin, on behalf of themselves and all others similarly situated, v. Hewlett-Packard Company

- United States District Court for the Northern District of California (San Jose Division)
- Case No. 07-05793 JW
- Expert Report, February 16, 2010
- Expert Reply Declaration, May 21, 2010
- Testified at deposition, March 12, 2010
- Opinion concerning class certification issues
- Retained by Spector Roseman Kodroff & Willis PC

In Re: General Motors OnStar Litigation

- United States District Court for the Eastern District of Michigan
- Master File No. 07-1867
- Expert Report, January 15, 2010
- Testified at deposition, March 3, 2010
- Opinion concerning class certification issues
- Retained by Spector Roseman Kodroff & Willis PC

BabyAge.com, Inc. and The Baby Club of America, Inc., v. Toys "R" Us, Inc., d/b/a Babies "R" Us, et al.

- United States District Court for the Eastern District of Pennsylvania
- C.A. No. 2:05-06792-AB
- Expert Report, December 15, 2009
- Reply Report, February 4, 2011
- Testified at deposition, May 12-14, 2010
- Testified at deposition, February 23, 2011
- Opinion concerning antitrust liability and damages
- Retained by Berger & Montague, P.C.

Chevron Phillips Chemical Company LP, v. BDP International, Inc.

- District Court of Harris County Texas
- Cause No. 2007-68768
- Expert Report, August 5, 2009
- Testified at deposition, January 21, 2010
- Opinion concerning breach of contract damages
- Retained by Susman Godfrey LLP

Michael Harris, v. LG Philips LCD Co., Ltd., et al.

- Ontario Superior Court of Justice
- Court File No. 54054 CP
- Expert Report, October 17, 2008
- Rebuttal Expert Report, June 19, 2009
- Affidavit, March 7, 2013
- Testified at deposition, December 14, 2010
- Opinion concerning class certification issues
- Retained by Siskinds, LLP

Clarke and Rebecca Wixon, et al., v. Wyndham Resort Development Corp. (F/K/A Trendwest Resorts, Inc.), et al.

- United States District Court for the Northern District of California
- Case No. C 07 2361 JSW
- Expert Report, March 16, 2009
- Expert Rebuttal Report, June 4, 2009
- Expert Report, April 19, 2010
- Expert Rebuttal Report, May 19, 2010
- Testified at deposition, April 29, 2009 and June 15, 2009
- Testified at deposition, June 9, 2010
- Opinion concerning class certification issues
- Opinion concerning class-wide damages arising from breach of contract and unfair business practices
- Retained by Girard Gibbs, LLP

Professional Experience

Economic Consulting Positions

Nathan Associates, Inc., Arlington, VA, *Senior Vice President*, January 2013 – present

Advanced Analytical Consulting Group, Inc., Washington DC area, *Principal*, March 2011 – January 2013

Econ One Research, Inc., Washington, DC, *Managing Director and D.C. Office Head*, July 2006 March 2011

- Opened and staffed the DC office; managed office affairs on a daily basis
- Retained as an expert witness for damages and class certification issues in antitrust, breach of contract, product liability and RICO cases; representative testimony

includes determination of liability and damages in a case involving resale price maintenance in consumer products, class certification in a horizontal price-fixing case involving international travel in the airline industry, class certification in a consumer class action involving RICO claims in state court

- Industry pre-litigation analyses for consumer products, chemicals, and other industries

Navigant Consulting, Inc., Washington, DC, *Associate Director*, February 2006 – July 2006

- Case manager for damages analysis in asbestos litigation and personal injury claims

Nathan Associates, Inc., Arlington, VA, *Managing Economist*, July 2004 – February 2006

- Case manager for economic analysis of class certification and damages issues in antitrust and RICO cases involving the chemical, consumer products and tobacco industries
- Retained as expert on damages for direct purchasers of NBR in the Crompton Global Settlement; submitted an Affidavit on damages and appeared before the Special Master for the Crompton Global Settlement (the Hon. Kenneth Feinberg)

Board Membership

- Board of Advisors, American Antitrust Institute, Washington, DC
- Department of Economics Advisory Council, University of Tennessee, Knoxville, *Chairman*, Spring 2006 – April 2011

Teaching Positions

- **The George Washington University**, Washington, DC, *Adjunct Assistant Professor of Economics*, Fall 2004 – present
- **North Carolina State University (NCSU)**, *Assistant Professor* (Department of Agricultural and Resource Economics), Fall 1999 – Spring 2004
- **The University of Pennsylvania**, *Adjunct Instructor*, Summer 1990 – Spring 1994

Additional Teaching Experience

- The Wharton School Evening Division, Philadelphia, PA, summer 1993
- Rutgers University, Camden, NJ, summer 1993
- Philadelphia College of Textiles and Science, Philadelphia, PA, fall 1992
- The Pennsylvania State University, Media, PA, 1991
- St. Mary's College of Maryland, St. Mary's City, MD, summer 1989
- The University of Maryland University College, College Park, MD, 1988-1989

Courses Taught

- Managerial Economics for MBA students (George Washington University)

- Law and Economics (George Washington University)
- Intermediate Microeconomics – graduate level (George Washington University)
- Latin American Economic Development (George Washington University)
- International Trade: Theory and Policy (George Washington University)
- International Finance: Theory and Policy (George Washington University)
- Agricultural Production and Supply – Ph.D. field course (North Carolina State University)
- U.S. Agricultural Policy (North Carolina State University)
- Microfinance: Theory, Practice and Regulation (Superintendencia de Banca y Seguros)
- Statistical Analysis for Economics (University of Pennsylvania)
- Principles of Microeconomics (University of Maryland, St. Mary's College of Maryland)
- Principles of Macroeconomics (University of Pennsylvania, The Wharton School, Penn State University)
- Fundamentals of Micro/Macro Economics (University of Maryland)
- Environmental and Natural Resource Economics (Rutgers)

Federal Reserve Experience

Federal Reserve Bank of Kansas City, *Senior Economist* (Jan. 1998 – Aug. 1999), *Economist* (Jan. – Dec. 1997)

- Analysis of regional, macroeconomic developments in agriculture, and energy
- Research on public policy towards agriculture in the U.S., especially the impact of farm policy reform
- Briefings to the Bank president and outside groups on the regional economy, agriculture, agricultural trade

Board of Governors of the Federal Reserve System, *Economist*, June 1994 – Dec. 1996

- Analysis of macroeconomic conditions, commodity markets and prices (CPI, PPI, Core prices)
- Forecasting of agricultural output, prices, and income
- Briefings to the Board of Governors on agriculture and food-price developments

Other Consulting Experience

World Perspectives, Inc., 2003 - 2004

- Analysis of trade barriers for U.S. exports of feed ingredients, pet food ingredients, and food ingredients
- Analysis of the impact of a Free Trade Area of the Americas on U.S. soybean producers
- Analysis of the potential for U.S. Halal-certified meat exports to the Middle East

Womble Carlyle Sandridge & Rice, LLP, 2003 - 2004

- Provided expert testimony related to the estimation of business profitability

Smith-Moore, 2002 - 2003

- Provided economic analysis of the U.S. Tobacco Program

Superintendencia de Banca y Seguros (Lima, Peru), 1998 - 2000

- Developed and taught a class on Microfinance issues (in English) to students enrolled in a training program for bank examiners; the program was sponsored by the Inter-American Development Bank.

World Bank, Africa Technical Department, 1992 – 1993

- Summarized and provided an overview of data available on African economic and social indicators

ACG-Afrique, January 1993

- Provided critical review of a study document outlining the impact of structural adjustment on African agriculture

Professional Organizations

- National Association for Business Economics
- American Economic Association

Papers, Publications and Speeches

Papers Published in Refereed Journals

- "Government Regulation and Quality in the U.S. Beef Market," (with Peyton Ferrier) *Food Policy*, 32:1 (2006) pp. 84-97
- "Rent-seeking in U.S.-Mexican Avocado Trade," *Cato Journal*, 26:1 (Winter 2006) pp. 159-177
- "Consolidation in U.S. Agriculture and the Role of Public Policy," *The ICFAI Journal of Agricultural Economics*, 1(2004) pp. 7-16
- "Fertilizer Use, Risk, and Off-farm Labor Markets in the Semi-Arid Tropics of India," *American Journal of Agricultural Economics*, 85(2) (May 2003) pp 359-371
- "Inverse Productivity: Land Quality, Labor Markets, and Measurement Error," *Journal of Development Economics*, 71 (2003) pp. 71-95
- "A Market-Forces Policy for the New Farm Economy?" *Review of Agricultural Economics*, 24 (2002) 15-30
- "Food Crops, Exports, and the Short-run Policy Response of Agriculture in Africa," *Agricultural Economics*, 22 (2000) 271-298

- "FAIR Act Implications for Land Values in the Corn Belt," (with Jason Henderson) *Review of Agricultural Economics,* 22 (2000) 102-119
- "Why are Estimates of Agricultural Supply Response So Variable?" (with Francis X. Diebold) *Journal of Econometrics,* 76 (1997) 367-373

Non-refereed Publications, Articles and Editorials

- "The Predominance Requirement for Antitrust Class Actions – Can Relevant Market Analysis Help?" (with Jeffrey Leitzinger) American Bar Association – Section of Antitrust Law, *Economics Committee Newsletter,* Spring 2007, pp. 17-22
- "Reform of U.S. Farm Policy in an Integrating World Economy," forthcoming in *Developing Countries in the WTO System*, published by Rowman & Littlefield, 2006
- "New Farm Economy," *Regulation*, Winter 2003-2004, Washington, DC: Cato Institute for Public Policy Research (2003)
- "What Road Will U.S. Economy Take in 2003?" *Southeast Farm Press*, February 5, 2003
- "Fast Track for the Tax Cuts," guest editorial, *News and Observer* (Raleigh, NC), January 18, 2003
- "The 2002 Farm Bill," (with Blake Brown and Michele Marra) *NC State Economist,* November/December 2002
- "Economy-minded Tax Cuts: Bush's Reductions Provided the Boost to Lift U.S. From Recession," guest editorial, *News and Observer* (Raleigh, NC), July 2, 2002
- "Policy Only Effective if Farm Economy is Recognized," special report to *Feedstuffs*, June 5, 2000
- "Aid During Crisis of Little Long-term Help to Farmers," guest editorial, *Kansas City Star,* August 23, 1999
- "Survey of Agricultural Credit Conditions," Federal Reserve Bank of Kansas City, *Regional Economic Digest*, various issues, 1997-1999
- "U.S. Agriculture at the Crossroads in 1999," *Economic Review,* Federal Reserve Bank of Kansas City, 84 (1999)
- "Can U.S. Oil Production Survive the 20th Century?" *Economic Review,* Federal Reserve Bank of Kansas City, 84 (1999)
- "Will the Tenth District Catch the Asian Flu?" (with Ricardo Gazel) *Economic Review,* Federal Reserve Bank of Kansas City, 83 (1998)
- "From the Plains to the Plate: Can the Beef Industry Regain Market Share?" (with Michelle Beshear) *Economic Review,* Federal Reserve Bank of Kansas City, 83 (1998)
- "U.S. Agriculture: Another Solid Year in 1998?" (with Mark Drabenstott) *Economic Review,* Federal Reserve Bank of Kansas City, 83 (1998)
- "How Will the 1996 Farm Bill Affect the Outlook for District Farmland Values?" *Economic Review,* Federal Reserve Bank of Kansas City, 82 (1997).

- "Food Prices and the Farm Sector," monthly *Greenbook* (various issues, 1994-1996), Federal Reserve Board of Governors, Washington, DC
- "Hedge to Arrive Contracts," Memo to the Board of Governors, Federal Reserve Board of Governors, Washington, DC, June 5, 1996
- "Prices in the May Greenbook," Federal Reserve Board of Governors, Washington, DC, May 19, 1996
- "Prices in the March Greenbook," Federal Reserve Board of Governors, Washington, DC, March 24, 1996
- "Commodity Price Developments," Weekly memo to the Board of Governors, Federal Reserve Board of Governors, Washington, DC, August 1994 – December 1996

Conference Presentations

- "Damages: Go Big or Go Home," presenter at the 360 Advocacy Institute's Conference, Las Vegas, NV, March 24, 2014
- "Class Action Developments," panelist at the American Antitrust Institute's 6th Annual Private Antitrust Enforcement Conference, Washington, DC, December 4, 2012
- "Consequences for Antitrust Thought and Practice," presented at the American Antitrust Institute Invitational Symposium: Antitrust Challenge of Multi-Channel Distribution in the Internet Age, Washington, DC, June 22, 2011
- "The U.S. Economy in the Year Ahead," presented at the Long Company Annual Conference, Chicago, IL, September 11, 2009 and September 19, 2008
- "The U.S. Economic Outlook," presented at the Industry Outlook Conference, Chicago, IL, October 17, 2006 and October 18, 2005
- "How Will the Economy Impact Your Business?" presented at the Long Company Annual Conference, Las Vegas, NV, August 14, 2004
- "Focus on The Economy" presented at *Milling and Baking News* annual Purchasing Managers' Conference, Kansas City, MO, June 14, 2004, June 10, 2003 and June 11, 2002
- "The U.S. Economic Outlook and Agriculture," presented at the Industry Outlook Conference, Chicago, IL, October, 2003
- "The U.S. Economic Outlook and Agriculture," presented at the Industry Outlook Conference, Breckenridge, CO, April 7, 2002
- "The U.S. Economic Outlook: The Cost of Terror," presented at the Southern Agricultural Outlook Conference, Atlanta, GA, September 24, 2001
- "The Economy in Focus," presented at *Milling and Baking News* annual purchasing managers' conference, Kansas City, MO, June 5, 2001
- "The Great American Growth Machine," presented at the Southern Agricultural Outlook Conference, Atlanta GA, September 27, 2000
- "The Economy in Focus," presented at *Milling and Baking News* annual purchasing managers' conference, Kansas City, MO, June 6, 2000

- "The Outlook for the U.S. Pork Sector," presented to the Industry Outlook Conference, Las Vegas, NV, April 17, 2000
- "The National Economic Outlook: The Road Ahead," presented to the Food Industry Outlook Conference, Breckenridge, CO, April 11, 1999
- "Farm Policy for the New Millennium," presented to Federal Reserve Bank of Kansas City, Division of Bank Supervision and Regulation, Bank Examiners' Annual Training Conference, January 7, 1999
- "The Impact of the 1996 Farm Bill on Farmland Values," (with Jason Henderson) first place poster presentation at the annual meetings of the American Agricultural Economics Association, Salt Lake City, August 4, 1998
- "A Note on the Inverse Productivity Relationship," presented at the annual meetings of the Western Economic Association International, Seattle, July 1997
- "Off-farm Labor Supply and Fertilizer Use in the Semi-Arid Tropics of India," presented at the annual meetings of the American Agricultural Economics Association, August 1995
- "Prices for Food-Away-From-Home and Core Inflation: Some Empirical Relationships," (with James E. Kennedy) presented at the Federal Reserve System Committee on Agriculture, Richmond, VA, October 1995
- "Some Simple Dynamics of Farming," presented at the annual meetings of the American Agricultural Economics Association, Orlando, August 1993
- "Structural Adjustment and Food Security," (with W. Graeme Donovan), presented at the annual meetings of the American Agricultural Economics Association, Orlando, August 1993
- "Structural Adjustment and African Agricultural Supply Response to Exchange Rate and Price Movements," (with W. Graeme Donovan), presented at the annual meetings of the Southern Agricultural Economics Association, Tulsa, January 1993

Other Presentations

- Panelist, "Antitrust Class Actions – Where Are We? A 360 Degree Perspective," NYSBA Annual Antitrust Law Section Meeting," January 30, 2014
- Panelist, Retrospective on the Baby Products Litigation, ABA Section of Antitrust Law: Pricing Conduct Committee, July 31, 2013
- Panelist, Economic Forecasting Summit, Northern Indiana Workforce Investment Board, Inc., March 29, 2007
- "The Welfare Benefits of USDA Beef Quality Certification Programs" (with Peyton Ferrier), presentation memo, 2007
- "Reform of U.S. Farm Policy in an Integrating World Economy," presented to the Cordell Hull Institute, Trade Policy Roundtable on Reform of U.S. Farm Policy and the WTO System, Washington, DC, March 31, 2006

- "The Case for a Market-forces Farm Policy in the U.S." presented at the Cordell Hull Institute Trade Policy Roundtable, Washington DC, May 26, 2005
- "How Will the Economy Impact Your Business?" presented at the Apple Processors Association annual meeting, Homewood Resort, June 20, 2004
- "The U.S. and International Economic Outlook," presented at the AgFirst Loan Officer's Seminar, Atlanta, GA, October 30-31, 2002
- "Will the U.S. Economy Bounce or Crawl?" presented to the Eastern Bankruptcy Institute, North Myrtle Beach, SC, June 1, 2002
- "The U.S. Economic Outlook and Agriculture," presented to the National Pork Producers Pork Action Group, Washington, DC, April 10, 2002
- "The U.S. Economic Outlook" presented to the Risk Management Associates, Raleigh, NC, February 7, 2002
- "The U.S. Economic Outlook: The Cost of Terror," presented at the National Pork Producers Pork Action Group, Marco Island, FL, November 14, 2001
- "Consolidation in Agriculture and the Role of Public Policy," paper presented to the Southern Extension Meetings, Williamsburg, VA, June 13, 2000
- "The New Farm Economy," presented at the annual meetings of the National Association of County Agricultural Agents, Omaha, NE, September 14, 1999
- "Regional Economic Update," presented to bankers in Kansas, Nebraska, Missouri, and Oklahoma as part of the Regulatory Update Seminar, Federal Reserve Bank of Kansas City, April 1999
- "The National Economic Outlook," presented to Oklahoma State University Advanced Cattle Management Seminar, Stillwater, OK, March 11, 1999
- "Regional Economic Update," presented to Thomas Hoenig, President, Federal Reserve Bank of Kansas City, November 13, 1998
- "Can the Tenth District Survive the Asian Flu?" The Federal Reserve Bank of Kansas City Economic Forums, nine presentations to bankers in Wyoming, Oklahoma, and New Mexico, September 21 - October 21, 1998
- "The Impact of Asian Economic Developments on Tenth District Agriculture," presented to Thomas Hoenig, President, Federal Reserve Bank of Kansas City, January 30, 1998
- "The Outlook for the Nebraska Economy," The Federal Reserve Bank of Kansas City: Nebraska Economic Forums, six presentations to bankers in Nebraska, October 6 - 15, 1997
- "Update on the Macroeconomy and Special Briefing on Forecast Performance at the Kansas City Fed," presented to Thomas Hoenig, President, Federal Reserve Bank of Kansas City, August 13, 1997
- "Regional Economic Update," presented to Thomas Hoenig, President, Federal Reserve Bank of Kansas City, May 14, 1997 and March 21, 1997

- "Producer Prices, Retail Sales, and Agricultural Commodity Markets," presented to the Board of Governors of the Federal Reserve System, July 15, 1996

Referee Experience

Referee for the following academic journals:

- World Development, 1993
- Journal of Development Economics, 1994, 1995
- International Economic Review, 1995
- Journal of Human Resources, 1997
- Journal of Business and Economics Statistics, 1997
- American Journal of Agricultural Economics, 1999, 2001, 2002
- Agricultural Economics, 2000, 2001, 2004
- Agricultural Finance Review, 2000, 2004
- Review of Agricultural Economics, 2000, 2002, 2004
- Journal of Agricultural and Resource Economics, 2000, 2001, 2002
- Emerging Markets Review, 2001
- Contemporary Economic Policy, 2004

Fellowships, Honors and Awards

Fellowships

- Departmental Fellowship, University of Pennsylvania, 1989-1990
- Dean's Fellowship, University of Pennsylvania, 1991-1992
- Graduate School Fellowship, University of Maryland, College Park, 1987-1989

Honor Societies and Professional Organizations

- Phi Eta Sigma National Honor Society
- Mortar Board National Honor Society
- Golden Key National Honor Society
- Vice President for Professional Activities, Delta Sigma Pi

Awards

- Top Graduate in Liberal Arts, University of Tennessee, Knoxville, Spring 1987
- Chancellor's Citation for Extraordinary Professional Promise, University of Tennessee, Knoxville
- Chancellor's Citation for Outstanding Academic Achievement, University of Tennessee, Knoxville

- First place poster presentation, American Agricultural Economics Association annual meetings, August 1998 (with Jason Henderson)
- Honorable mention, American Agricultural Economics Association, Essay for the 21st Century, 2001, "A Market Forces Policy for the New Farm Economy"
- Honorable mention, American Antitrust Institute Antitrust Enforcement Awards, Outstanding Antitrust Litigation Achievement in Economics (for work on In Re Titanium Dioxide Antitrust Litigation matter)

External Funding

- "Unmanufactured Flue-Cured Tobacco Exports and the Export Component of the Quota Formula." $13,890 NC Tobacco Foundation. With Blake Brown 2000/2001.

Professional Activities and Services

Graduate Student Advising

M.A. degree, North Carolina State University

- Joe Weinberg (Political Science)

Master of Economics, North Carolina State University

- William Pole (2000)
- Dwight Wilder (Chairman, 2002)
- Adrian Atkeson (2002)
- Sarah Spivey
- Li Zhang (Chairman, 2003)
- Nia Atmadja (2003)

Doctor of Philosophy, North Carolina State University

- William Deese (2003)
- Peyton Ferrier (Chairman, 2004)
- Yang Wang (2003)
- Bobby Huggett (2003)
- Syed Wadood (Chairman, 2004)
- Henry Kuo

Economic and Statistical Modeling Skills

- Experience with all major statistical software including SAS, STATA, LIMDEP and C++; applied econometric modeling skills in damage analysis of consumer industries, chemicals industries, and agricultural markets, correlation analysis for class certification.

Appendix B
Documents Reviewed and Relied Upon

Court Documents:

U.S. District Court Western District of Pennsylvania: *Resco Products, Inc., v. Nanchuan Minerals Group Co. Ltd., Jersey Mineral Processing Co. Ltd., CMP Ltd., Minelco Tianjin Minerals Co. Ltd., Minelco, Inc., USA, and LKAB,* Class Action Complaint.

U.S. District Court Western District of Pennsylvania: *Resco Products, Inc., v. Bosai Minerals Group Co., Ltd. and CMP Tianjin Co., Ltd.*, First Amended Class Action Complaint.

Publicly Available:

Almatis. *Almatis Global Product Concept for the Refractory Industry.*

"Aluminum & Bauxite." *Mineral Information Institute.* http://www.mii.org/Minerals/photoal.html.

Average Wage oF Employed Persons in Urban Unit by Sector. *China Statistical Yearbook 2013* Table 5-24. http://www.stats.gov.cn/tjsj/ndsj/2010/indexeh.htm.

Bergstrom, Robert. "The Role of the Expert in Proving and Disproving Damages in Antitrust Claims." *Antitrust Bulletin.*

BHP Billiton. "Presentation to Analysts." April, 2004.

Burke, Alison. "Battle of the Bauxites." *Industrial Minerals.* July 2005.

Ceramic Industry. "Online Exclusive: The State of the Industry." December 1, 2007.

Ceramic Industry. "Refractories Market Overview: Refractories Industry Sees Mixed Results." December 1, 2005.

Ceramic Industry. "Refractories Market Overview: Strength in Steel Industry Boosts Refractories Demand Worldwide." December 1, 2006.

Ceramic Industry. "Refractories Markets Poised for Recovery as Economy Regains Strength." October 6, 2003.

Ceramic Industry. "Refractories Review: A Snapshot of Refractories Online." February 28, 2003.

Ceramic Industry. "Refractories Review: Industry Snapshot." January 11, 2006.

Ceramic Industry. "Refractories Review: What Happened in 2001?" December 28, 2002.

Ceramic Industry. "Refractories Review: What's Happening in China?" June 1, 2004.

China Statistical Yearbook 2010. http://www.stats.gov.cn/tjsj/ndsj/2010/indexeh.htm.

Crossley, Penny. "Three's a Crowd? Refractory Bauxite Supply." *Industrial Minerals.* March 2003.

"The Dry Bulk Market in 2003." *InforMARE.* March 13, 2008.

"Daily Summary of Baltic Exchange Dry Indices." *Ship Chartering.* April 18, 2007.

"DryShips - Bouyant or Ebbing Away?" *RealTimeTradersNews.* February 25, 2005.

Ernst & Young. "China's Productivity Imperative." http://www.ey.com/Publication/vwLUAssets/China_productivity_imperative_en/$FILE/China-Productivity-Imperative_en.pdf.

Evans, John and Erica Chang. "Risky Rewards Investing in China's Industrial Minerals." *Industrial Minerals.* October 2003.

"FACTBOX - World Bauxite Reserves and Production." *Reuters.* February 15, 2007.

Federal Reserve. *China: Spot Exchange Rate, YUAN/US$.* http://www.imf.org/external/np/fin/ert/GUI/Pages/CountryDataBase.aspx.

"Guyana Seeks Bauxite Market-Sharing Deal with China." *Caribbean Net News.* June 14, 2006.

Halvorsen, Robert and Raymond Palmquist. "The Interpretation of Dummy Variables in Semilogarithmic Equations." *American Economic Review*. June 1980.

Industrial Minerals. *Monthly Bauxite Prices*. www.indmin.com.

International Monetary Fund. *Currency units per SDR*. http://www.imf.org/external/np/fin/ert/GUI/Pages/CountryDataBase.aspx.

Kennedy, Peter. "Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations." *American Economic Review*. September 1981.

Kennedy, Peter. *A Guide to Econometrics*. 3rd Edition, 1994.

Kogel, Jessica, Nikhil Trivedi, James Barker, and Stanley Krukowski. *Industrial Minerals & Rocks: Commodities, Markets, and Uses*. 7th Edition, 2006.

Litterick, David. "Container Rates Soar as China Booms." *Telegraph Media Group*. March 11, 2007.

Mineral Information Institute. *Aluminum & Bauxite*. http://www.mii.org/Minerals/photoal.html.

"Mining 101." Mining Journal Online. http://www.mining-journal.com/html/Mining101.html.

Moore, Paul. "The Changing Face of the Global Refractories Industry." *Industrial Minerals Magazine*.

National Bureau of Statistics of China. *Average Wage by Sector*. http://www.stats.gov.cn/english/Statisticaldata/AnnualData/.

National Bureau of Statistics of China. http://www.stats.gov.cn/english/Statisticaldata/AnnualData/.

National Bureau of Statistics of China. *Purchashing price indices for Raw Materials, Fuels, and Power*. http://www.stats.gov.cn/tjsj/ndsj/2010/indexeh.htm.

National Development Strategy. *Chapter 12: The External Sector and Monetary Management*. August 7, 1996. http://www.guyana.org/NDS/chap12.htm.

Nightingale, Alaric. "China Shipbuilding Boom Poised to Cut Freight Costs." *Bloomberg*. April 30, 2007.

OECD. *Chinese Consumer Price Index*. http://stats.oecd.org/Index.aspx?DataSetCode=G20_PRICES#.

"Presentation to Analysts." BHP Billiton. April, 2004.

Purchasing Price Indices for Raw Materials, Fuels and Power. *China Statistical Yearbook 2010* Table 9-15. http://www.stats.gov.cn/tjsj/ndsj/2010/indexeh.htm.

Rapid Growth of Selected Asian Economies: Lessons and Implications for Agriculture and Food Security: Policy Assistance Series 1/1. *FAO Regional Office for Asia and the Pacific*. RAP Publication 2006/04.

Roskill Information Services, Ltd. *The Economics of Bauxite and Alumina*. 6th Edition, 2005.

Rubinfeld, Daniel L. "Reference Guide on Multiple Regression." *Reference Manual on Scientific Evidence*. 3rd Edition, 2011.

Stevenson, Tom. "China Drives Shipping Costs to Record High." *Telegraph Media Group*. December 10, 2007.

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U.S. Census Bureau, 2002 Survey of Plant Capacity: Current Industrial Reports.

U.S. Census Bureau, 2006 Survey of Plant Capacity: Current Industrial Reports.

U.S. Census Bureau, 2008 Quarterly Survey of Plant Capacity Utilization.

U.S. Census Bureau, 2009 Quarterly Survey of Plant Capacity Utilization.

U.S. Department of the Interior. *Aluminum, Bauxite, and Alumina*. January 1993.

U.S. Environmental Protection Agency. *Economic Impact Analysis of the Refractory Product Manufacturing NESHAP - Final Rule*. http://yosemite1.epa.gov/ee/epa/ria.nsf/vwAN/A2003-2.pdf/$file/A2003-2.pdf.

U.S. Geological Survey. "Bauxite and alumina: End-Use Statistics." *U.S. Geological Survey Data Series 140*. 2003. http://pubs.usgs.gov/ds/2005/140/.

U.S. Geological Survey. "Bauxite and Alumina." Kelly, T.D., and Matos, G.R., comps., Historical statistics for mineral and material commodities in the United States: U.S. Geological Survey Data Series 140. 2012. http://minerals.usgs.gov/minerals/pubs/historical-statistics/.

U.S. Geological Survey. 1998 *Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *1999 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2000 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2001 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2002 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2003 Minerals Yearbook: Bauxite and Alumina.*

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U.S. Geological Survey. *2005 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2006 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2007 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2008 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2009 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *2010 Minerals Yearbook: Bauxite and Alumina.*

U.S. Geological Survey. *Mineral Commodity Summaries: Bauxite and Alumina*. January 2008.

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Wayne M. Morrison. "China's Economic Rise: History, Trends, Challenges, and Implications for the United States." *Congressional Research Service*. August 21, 2014

World Steel Association. *Monthly Crude Steel Production 1994-2013.* http://www.worldsteel.org/statistics/statistics-archive/monthly-steel-archive.html.

Xiangchong, Zhong. "Refractory Bauxite - The Next Generation." *Industrial Minerals.* January 2006.

"Yuan High Marks Float Anniversary." *BBC News.* http://news.bbc.co.uk/2/hi/business/5202462.stm.

Bates Stamped Documents:

CMP_000082

CMP_000919.pdf

CMP_000795.pdf

CMP_000618.pdf

CMP_000422.pdf

CMP_000187.pdf

CMP_000184.pdf

CMP_000082.pdf

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BOS_002427.TIF
BOS_002023 - order confirmation.pdf
BOS_002019.pdf
BOS_001653 - order confirmation.pdf
BOS_001501.pdf
BOS_001486.pdf
BOS_001473.pdf
BOS_001458.pdf
BOS_001422 - order confirmation.pdf
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BOS_001308 - order confirmation.pdf
BOS_001300 - order confirmation.pdf
BOS_001295 - order confirmation.pdf
BOS_001142.pdf
BOS_001127.pdf
BOS_001114.pdf
BOS_001103.pdf
BOS_001083.pdf
BOS_000609. - order confirmation pdf.pdf
BOS_000283.pdf
BOS_000268.pdf
BOS_000266.pdf
5_BOS_000242.pdf

Depositions:

Deposition of Laura Liang, April 18, 2014.
Deposition of Jianhong Liu, April 22. 2014.