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Cindy A. Schipani
Stephen M. Ross School of Business
University of Michigan

H. Nejat Seyhun
Stephen M. Ross School of Business
University of Michigan

Michael Hartzmark
Navigant Consulting, Inc.

UNIVERSITY OF MICHIGAN

Fraud on the Market: Analysis of the Efficiency of the Corporate Bond Market[+]

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by

Michael Hartzmark[*]

Cindy A. Schipani[**]

H. Nejat Seyhun[***]

The efficiency of the corporate bond market is not well understood. Although many of the factors used to analyze stock market efficiency translate with some adjustments to corporate bond markets, the cause-effect factor is not intuitive and can be a source of significant confusion. In this paper we analyze bond market efficiency in the context of a recent court decision.

The U.S. District Court, in *In re* American International Group, Inc. Securities Litigation (*AIG*) was asked to certify as a class claims of lead plaintiffs against American International Group (AIG) and various other defendants for a number of violations of the securities laws.[1] The gist of lead plaintiffs' claims is that the defendants made material misstatements and omissions in AIG's financial statements which caused artificial inflation of the valuation of AIG's financial assets.[2] Investors who purchased the securities at the inflated prices thus claimed to be harmed when the prices fell upon revelation of the omissions and misstatements.[3]

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[1] 265 F.R.D. 157 (S.D.N.Y. 2010).

[2] *Id.* at 157-166.

[3] *Id.* at 166.

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The court certified a class of equity holders but denied lead plaintiffs' request for certification with respect to a class of AIG bondholders.[4]

This decision, in which the court held there was insufficient evidence to support a conclusion that $1.71 billion in AIG bonds, traded in open, developed and efficient markets, has serious implications for the corporate bond market. The finding that the publicly-traded bonds of the world's largest insurance company with over $100 billion in revenues, $850 billion in assets, $85 billion in shareholders' equity, and $750 billion in debt and other liabilities, listed on three international exchanges – the New York Stock Exchange (NYSE), the Tokyo Stock Exchange and the Irish Stock Exchange– and serviced over 60 million customers, raises the question whether, based on this precedent, a court could find that any corporate bonds could possibly trade in open, developed and efficient markets.[5] At best, the court's decision reduces AIG bondholder rights. At worst, it effectively precludes investors in the $7.4 trillion corporate bond market[6] from the opportunity to utilize class actions as a means to recover legitimate economic losses. An ancillary consequence of this decision is that if bondholders are left without recourse for recovery of legitimate claims, additional risks will be transferred from issuers to investors,[7] likely resulting in an increase in the costs of capital for bond issuers.[8]

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[4] *Id.*

[5] American International Group, Inc., Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 (Form 10-K) (Mar. 16, 2006).

[6] Note that the bond market is only slightly smaller in size than the United States Treasury Market of $8.9 trillion. *See* SEC. INDUS. AND FIN. MARKETS ASS'N, OUTSTANDING U.S. BOND MKT. DEBT (last updated Dec. 16, 2010), http://www.sifma.org/uploadedFiles/Research/Statistics/StatisticsFiles/CM-US-Bond-Market-Outstanding-SIFMA.xls.

[7] *See* Clifford W. Smith, Jr., *On Financial Contracting: An Analysis of Bond Covenants*, 7 J. FIN. ECON. 117 (1979).

[8] "If the probability of a complete wealth transfer to stockholders prior to required payments to bondholders is 1, then the bonds will sell for a zero price." *Id.* at 119.

As analyzed below, the decision turned on an evaluation of whether the bond market in which the AIG bonds traded is open, developed and efficient.[9] Unfortunately, in determining that the bonds were not traded in an open, developed and efficient market, and thus not finding "questions of law or fact common"[10] to the class of bondholders, the court failed to sufficiently adjust the analysis of factors commonly used for determining whether common stock is traded in an efficient market to account for the trading of corporate bonds. This paper proposes a comprehensive analysis that takes into account the differences between the stock and bond markets. Specifically, the factors courts have found indicative of an efficient stock market relating to frequency of ownership turnover,[11] analyst reporting,[12] and price-related issues associated with cause-and-effect,[13] need to be adjusted to take into account the nuances of the bond market. Our analysis of these factors lends support to a conclusion, contrary to that reached by the *AIG* court, that the AIG bonds indeed traded in open, developed and efficient markets and that certification of a class of bondholders pursuing claims for material misleading statements and omissions would have been warranted.[14]

To address these issues, this paper is organized as follows. Part I provides an overview of the law as it has developed regarding certification of class actions and the elements of a claim of fraud on the market as relevant to the lead plaintiffs' claims of violations of the securities

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[9] *AIG,* 265 F.R.D. at 175. "An open market is one in which anyone, or at least a large number of persons, can buy or sell. A developed market is one which has a relatively high level of activity and frequency, and for which trading information (e.g., price and volume) is widely available. It is principally a secondary market in outstanding securities. It usually, but not necessarily, has continuity and liquidity (the ability to absorb a reasonable amount of trading with relatively small price changes). An efficient market is one which rapidly reflects new information in price. These terms are cumulative in the sense that a developed market will almost always be an open one. And an efficient market will almost invariably be a developed one." Cammer v. Bloom, 711 F.Supp. 1264, 1276 (D.N.J. 1989) (quoting 4 ALAN R. BROMBERG & LEWIS D. LOWENFELS, SECURITIES FRAUD AND COMMODITIES FRAUD, § 8.6 (1988)).

[10] *AIG,* 265 F.R.D. at 172.

[11] *Cammer,* 711 F.Supp. at 1286.

[12] *Id.* at 1286.

[13] *Id.* at 1287.

[14] The authors are not making any assertions regarding liability and materiality of the AIG bondholders' claims.

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laws. Part II introduces the required empirical analysis and benchmarks to evaluate a claim of

fraud on the market. Part III continues with a theoretical discussion of the distinctions missing in

the *AIG* analysis between bonds and stocks relevant to determining whether the bond market

should be afforded the fraud on the market presumption. Part IV builds on this with a discussion

of our alternate empirical analyses. Concluding remarks follow.

I. Securities Class Actions and Fraud on the Market

The AIG litigation involved the request by Ohio Public Employees Retirement System,

State Teachers Retirement System of Ohio and the Ohio Police & Fire Pension Fund

(collectively, "Lead Plaintiffs") against AIG, Maurice "Hank" Greenberg – AIG's former Chief

Executive Officer and Chairman, the firm's outside auditors and other corporations and

individuals (collectively, "Defendants") for class certification.[15] Ultimately, the court granted

class certification, after making a number of modifications to the definition of the class, with

respect to the equity stockholders, but denied class certification of the AIG bondholders.[16]

The first question addressed with regard to the bondholders' claims was whether they had

standing. Although the bondholders were found to be without standing to bring some of their

claims (the Sections 11[17] and 15[18] claims under the Securities Act of 1933),[19] the court found

standing for their Securities Exchange Act Section 10(b)[20] and Securities Exchange Commission

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[15] *AIG*, 265 F.R.D. at 160-161.
[16] Claims against the defendants Wachovia Securities, Merrill Lynch, Gen Re, Ferguson, Houldsworth, and Naples were also dismissed *AIG,* 265 F.R.D. at 161, 189**.**
[17] Securities Act of 1933 § 11, 15 U.S.C. §77a (2006).
[18] Securities Act of 1933 § 15, 15 U.S.C. § 77b (2006).
[19] *AIG*, 265 F.R.D. at 189.
[20] *AIG*, 265 F.R.D. 157 at 157-66. Securities Exchange Act §10(b), 15 U.S.C. §78a (2006).

(SEC) Rule 10b-5[21] claims. It was thus the Section 10(b) and Rule 10b-5 claims for which the court considered whether class certification of the bondholders would be appropriate.[22]

Rule 23 of the Federal Rules of Civil Procedure[23] outlines the requirements for class certification.[24] The salient missing element with respect to the proposed class of bondholders in the AIG litigation involved the requirement of Rule 23(b)(3) that "questions of law or fact common to class members predominate over any questions affecting only individual members."[25] According to the *AIG* court, the "predominance requirement is met 'if the plaintiff can establish that the issues in the class action that are subject to generalized proof, and thus are applicable to the class as a whole . . . predominate over the issues that are subject only to individualized proof."[26]

A significant part of the analysis in *AIG* for determining whether the predominance requirement was met involved whether common issues of "reliance on the integrity of the price set by the market"[27] existed. In order to establish that common issues of reliance predominated, the court found it necessary for the Lead Plaintiffs "to meet the requirements of the fraud on the market presumption"[28] as described by the U.S. Supreme Court in *Basic, Inc. v. Levinson*.[29] According to *Basic,* "the fraud on the market theory is based on the hypothesis that, in an open and developed securities market, the price of a company's stock is determined by the available material information regarding the company and its business. . . . Misleading statements will

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[21] *AIG*, 265 F.R.D.at 157-66;   Securities and Exchange Commission Rule 10b-5, 17 C.F.R. § 240.10b-5 (2010).
[22] *AIG,* 265 F.R.D. at 167.
[23] FED. R. CIV. P. 23.
[24] *AIG*, 265 F.R.D. at 157-66.
[25] *Id.* at 172 (citing FED. R. CIV. P. 23(b)(3)).
[26] *AIG*, 265 F.R.D. at 172 (quoting Cordes & Co. Financial Svcs. Inc. v. A.G. Edwards & Sons, Inc., 502 F.3d 91, 108-09 (2d Cir. 2007)).
[27] *Id.* at 172, 173-74 (quoting Basic, v. Levinson, 485 U.S. 224, 245 (1988)).
[28] *Id.* at 174.
[29] 485 U.S. 224 (1988).

therefore defraud purchasers of stock even if the purchasers do not directly rely on the misstatements."[30]

The *AIG* court further cited the opinion of the Second Circuit Court of Appeals in In re *Salomon Analyst Metromedia Litigation*,[31] where the court explained *Basic* as follows: "The Basic court thereby set forth a test of general applicability that where a defendant has (1) publicly made (2) a material misrepresentation (3) about stock traded on an impersonal, well-developed (i.e. efficient) market, investors' reliance on those misrepresentations may be presumed."[32]

Integral to the court's analysis then was the determination of whether the securities held by the bondholders were traded in an efficient market. In *Cammer v. Bloom*,[33] the district court detailed a five-factor test for determining the efficiency of equity markets. The *AIG* court identified the following factors, emanating from those identified by *Cammer,* as important for establishing that stocks are traded in an efficient market:

(1) a large weekly trading volume;

(2) a significant number of securities analysts following and reporting on a company's stock;

(3) the presence of market makers and arbitrageurs who are able to react swiftly to company news and drive the price;

(4) the eligibility of the company to file an S-3 Registration Statement for its public offerings; and

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[30] *Id.,* 485 U.S. 224, 241-42 (1988)
[31] 544 F.3d 474 (2d Cir. 2008).
[32] *AIG,* 265 F.R.D. at 174 (quoting *Salomon*, 544 F.3d. at 480-81).
[33] 711 F. Supp. 1264 (D.N.J. 1989).

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(5) empirical facts showing a cause and effect relationship between unexpected corporate events or financial releases and an immediate response in the stock price.[34]

Recognizing that the Second Circuit has not adopted a test to determine whether stocks or bonds have been traded in an efficient market, the *AIG* court noted that the Second Circuit courts often apply the factors listed by the *Cammer* court in cases involving common stock[35] and that these factors may be used as an analytical tool in litigation involving bonds.[36] The *AIG* court then analyzed the efficiency of the AIG bond market, using these factors as a framework while considering other evidence it found relevant to the efficiency of the bond market.[37]

II. Empirical Analysis and Benchmarks

To certify an investor class in Section 10 and Rule 10b-5 securities litigation the federal courts have relied for almost twenty years on analysis of the factors listed by the court in *Cammer* as a framework for determining whether securities traded in open, developed and efficient markets, with various modifications. [38] The factors articulated by the court in *Cammer* as expanded and enhanced by courts throughout the years, are referred to herein, collectively, as the *Cammer* factors. These factors can be separated into two general categories – operational factors and price-related factors. The operational factors include a determination of whether:

1) there was high average weekly turnover of the securities; [39]

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[34] *AIG,* 265 F.R.D. at 176 (quoting *In re* SCOR Holding (Switzerland) AG Litig., 537 F. Supp.2d 556, 574 (S.D.N.Y. 2008) (citing *Cammer*, 711 F. Supp. at 1286-87)).
[35] *AIG,* 265 F.R.D. at 175.
[36] *Id.* at 175-76 (citing *Teamsters Local* 445, 546 F. 3d 196, 204 n.11 (2d Cir. 2008)).
[37] *Id.* at 175-76.
[38] *See, e.g.*, Freeman v. Laventhol & Horwath, 915 F. 2d 193 (6th Cir. 1990); Krogman v. Sterrit, 202 F.R.D. 467 (N.D. Tex. 2001); AAL High Yield Bond Fund v. Ruttenberg, 229 F.R.D. 676, 684-85 (N.D. Ala. 2005), *In re* Enron Corp. Sec., Derivative & ERISA Litig., 529 F.Supp. 2d 644 (S.D.Tex. 2006); *In re* DVI Inc. Sec. Litig*.,* 249 F.R.D. 196 (E.D. Pa. 2008); *In re* HealthSouth Corp. Sec. Litig., 257 F.R.D. 260 (N.D. Ala. 2009), *Polymedica*, 453 F. Supp. 2d at 274.
[39] Weekly trading volume has been called possibly "one of the most important" of the *Cammer* factors. *Polymedica,* 453 F. Supp. 2d at 266 (quoting *Krogman*, 202 F.R.D. at 474 (D.Tex. 2001)).

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2) there was continuous coverage of the securities by investment professionals, along with the regular disclosures by the company; [40]

3) there were a relatively high number of market makers or dealers of the securities, along with arbitrageurs; [41]

4) the securities were eligible to file on SEC Form-S-3 and to incorporate by reference on SEC Form S-4; [42]

5) there was a relatively large cumulative face value of the securities; [43]

6) there were a relatively large proportion of institutional holdings of the securities; [44]

7) there were opportunities for arbitrage, including short selling at reasonable borrowing rates or observing violations in put-call parity; [45]

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[40] *See In re* Xcelera.com Sec. Litig. 430 F.3d 503, 514 (1st Cir. 2005) ("[T]he greater the number of securities analysts following and reporting on a company's stock, the greater the likelihood that information released by a company is being relied upon by investors.").

[41] *See Polymedica*, 453 F. Supp. 2d at 267-68 (quoting Cammer v. Bloom, 711 F. Supp. 1264, 1286-87 (D.N.J. 1989) ("The existence of market makers and arbitrageurs would ensure completion of the market mechanism; these individuals would react swiftly to company news and reported financial results by buying or selling stock and driving it to a changed price level."). Furthermore, according to *Polymedica*, "A market-maker is '[o]ne who helps establish a market for securities by reporting bid-and-asked quotations' (the price a buyer will pay for a security and the price a seller will sell a security. . . . A market-maker also "stand[s] ready to buy or sell at these publicly quoted prices." *Id.* at 268 (citations omitted).

[42] *See* http://www.sec.gov/about/forms/secforms.htm ("Form S-3 and Form S-4 allow eligible firms to use the short form and incorporate additional information by reference. Form S-3 is a securities-registration form for companies that meet guidelines set by the SEC and report under the Securities Exchange Act of 1934, where the offering and issuer must meet the requirements for eligibility. One of the requirements to be eligible is that the issuer must have met all disclosure requirements throughout the past twelve months. Form S-4 is a securities registration form relating to an exchange or merger. It contains details on share distribution, terms, and amounts. . An important point is that S-3 eligible public companies can incorporate by reference in their SEC Form S-4 filings.); *see also* SEC Securities Act Release No. 6331 (August 13, 1981), as cited in *Cammer*, 711 F. Supp. at 1284 (D.N.J. 1989) ("This form [S-3 or S-4] is predicated on the Commission's belief that the market operates efficiently for these companies, i.e., that the disclosure in Exchange Act reports and other communications by the registrant, such as press releases, has already been disseminated and accounted for by the market place.").

[43] In *Krogman* the court suggested, "Market capitalization, calculated as the number of shares multiplied by the prevailing share price, may be an indicator of market efficiency because there is a greater incentive for stock purchasers to invest in more highly capitalized corporations." *Krogman*, 202 F.R.D. 467.

[44] For example, in *In re* Enron Corp. Sec. Derivative & "ERISA" Litig., the court decided that the Enron bonds traded in efficient markets partially based on the "data on institutional holdings demonstrate[ing] that from 20 to 115 institutions held Enron bonds throughout any quarter end throughout the Class Period (65 on average, a median of 65). Total holdings for all reporting institutions at a quarter-end throughout the Class Period ranged from 2.7% of face value to 93% of face value per issue (45% on average, a median of 49%). The total reported increases in holdings for quarters in the Class Period (Q4-98 through Q4-01) as a percentage of issue amount ranged from 12% to 137% per issue (77% on average, a median of 69%). Thus there was active trading in Enron Registered Bonds throughout the Class Period, there were a substantial number of institutional investors." 529 F.Supp. 2d 644, 750 (S.D. Tex. 2006).

[45] *See In re* Polymedica Corp. Sec. Litig., 453 F.Supp.2d 260 (D. Mass. 2006) ("This Court rejects the assertion that arbitrage is the only mechanism of information efficiency, but accepts that the significant role of arbitrageurs toward that end is widely acknowledged in academic commentary – including sources cited by the First Circuit in *PolyMedica*.").

8) there was a reasonably small bid-ask spread;[46] and

9) there is a sufficiently large float (i.e., the amount of outstanding securities that are not held by insiders of the corporation).[47]

Price-related factors include a determination of:

1) whether there was a rapid price reaction to new information relevant to the valuation of these securities;[48] and

2) whether there were certain statistical properties of price or yield movements, such as the lack of autocorrelation.[49]

The criteria outlined by various courts addressing whether a particular securities market is open, developed and efficient have generally been used to examine a corporation's common stock and thus require adjustment when the securities market at issue is a corporate bond market. Unfortunately, in *AIG*, both the economic and legal analyses failed to account for the critical differences between the functioning and performance of common stock markets versus corporate bond markets. Specifically, further evaluation of the rate of turnover of the AIG Debt Securities,[50] coverage by investment professionals,[51] and the speed of the reaction to new information in the bond market about the company is needed to address whether the AIG Debt

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[46] *See Krogman*, 202 F.R.D. 467, ("A large bid-ask spread is indicative of an inefficient market, because it suggests that the stock is too expensive to trade.").

[47] Insiders cannot freely trade in the stock of their firm based on their privileged, nonpublic information. They are subject to both trading restrictions (blackout periods, and restrictions of Securities and Exchange Act of 1934 §§ 10(b)(5), 16(b), and 16(c), as well as reporting requirements of Section 16(a)). 15 U.S.C. §78a et. seq. (2006).

[48] *See Polymedica*, 453 F. Supp. 2d at 271("In other words, for a market to be efficient, the response of a stock's price to news must be made completely (i.e., have reached a new equilibrium) before an 'ordinary investor' can earn a trading profit based upon it.").

[49] "Autocorrelation is usually found in time-series data. Economic time-series often displays a 'memory' in that variation is not independent from one period to the next." WILLIAM H. GREENE, ECONOMETRIC ANALYSIS 358 (2d ed. 1993). In other words, autocorrelation is the measurement of the relationship between the security return at time t and the return of the same security at some fixed time in the past. First-order autocorrelation would be found when there is a statistically significant relationship between the bond return today and the bond return yesterday. Another way of looking at this concept is that if an observer can use the return from yesterday to predict with some level of certainty the return today there exists autocorrelation. *See* Lehocky v. Tidel Techs., Inc., 220 F.R.D. 491, 505 n.15, 506 n.18 (S.D. Tex. 2004) at 506 n.20 (noting that both parties' experts agreed on the helpfulness of autocorrelation); *Poylmedica*, 453 F. Supp. 2d at 276-78.

[50] *In re* American Int'l Group, Inc. Sec. Litig, 265 F.R.D. 157, 176-77 (S.D.N.Y. 2010) (describing the trading frequency of the AIG Debt Securities).

[51] *Id.* at 177.

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Securities traded in an efficient market.[52] Furthermore, close examination of these factors sheds

light on the differences between the trading of stocks and bonds. Unfortunately, the *AIG* court

instead focused on the alleged lack of transparency of the bond market.[53] To more fully address

how the bond market differs from the stock market, Part III provides a brief primer on corporate

bonds followed in Part IV with the bond market analysis missing in *AIG*.

III. Fraud on the Market: Stock vs. Bonds and the Missing Theoretical Analysis

A. The Corporate Bond Market

A corporate bond is a security issued in connection with a corporation's borrowing

activity. The borrower (the corporation) receives a lump sum payment in return for a promise to

make periodic payments to the lender in the future. These periodic payments typically include

semiannual payments of interest to lenders (called coupon payments), as well as a lump sum

payment at maturity (called principal payment).[54]

After the corporate bonds are issued, investors can, if they wish, buy and sell the bonds in

the secondary market. If the corporate bonds are not registered with the Securities Exchange

Commission (SEC), trading can only take place based on applicable SEC rules. Under SEC Rule

144A, unregistered securities may only be bought and sold by Qualified Institutional Buyers.[55]

If, however, the bonds are registered with the SEC, any investor may buy or sell bonds in the

secondary market.

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[52] *Id.* at 179-79.

[53] *Id.* at 179.

[54] Corporate bonds frequently have covenants or terms whereby the bond may be put to the company by the investor or called by the company. They can be convertible and/or secured by assets.

[55] SEC Rule 144A(a) defines Qualified Institutional Buyer as institutions that manage at least $100 million in securities, including banks, savings and loans institutions, insurance companies, investment companies, employee benefit plans, or an entity owned entirely by qualified investors. Also included are registered broker-dealers owning and investing, on a discretionary basis, $10 million in securities of non-affiliates. *See* 17 C.F.R. 230 144A(a)(1) (2010).

Even so, for registered corporate bonds, the market is primarily composed of institutional traders. Furthermore, most transactions take place over-the-counter, where the potential bond trader cannot observe quotes on a centralized or electronic exchange.[56] Instead, the institution or customer must call one or more dealers for quotes or alternatively, have access to the broadcast list of bonds that are trading from various dealers for quotes through electronic platforms such as Bloomberg, a vendor of quotes and financial information that is popular with institutions.[57]

The price of bonds is calculated as the present value of the expected future cash flows they generate. In turn, the present value calculation depends upon the magnitude and timing of promised bond payments and the likelihood of repayment, as well as the market interest rates for comparable securities. The price of a fixed coupon bond is inversely related to its yield. This means that as bond prices fall, the yield rises.

Therefore both the price and yield[58] of corporate bonds are determined by six components: [59]

(1) The expected rate of return on similar maturity, risk-less debt (i.e., government or Treasury bonds);

(2) The various covenants, provisions and restrictions associated with the particular bond (e.g., call terms, convertibility features, seniority in the event of default, maturity date, etc.);

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[56] Corporate bonds also trade on the New York Stock Exchange, a centralized exchange where there are readily available price quotes. Estimates suggest that only a small proportion of all corporate bond trades are made on the New York Stock Exchange. *See* FRANK J. FABOZZI, THE HANDBOOK OF FIXED INCOME SECURITIES 40, 7th ed. (2005).

[57] *See id.* at 40.

[58] The value of a bond with a fixed coupon is expressed as a price relative to $100 par value. This price relative to par value is inversely related to its yield. This means that as the bond price falls, the yield rises.

[59] The first three components of the value of a corporate bond are discussed in detail in Robert C. Merton, *On the Pricing of Corporate Debt: The Risk Structure of Interest Rates,* 29 J. FIN. 449-70 (1974). With respect to components (4) and (6), *see, e.g.*, Edwin Elton, Martin Gruber, Deepak Agrawal & Christopher Mann, *Factors Affecting the Valuation of Corporate Bonds*, 28 J. BANKING & FIN., 2747-2767 (2004); Merton Miller, *Debt and Taxes*, 32 J. FIN. 261-75 (1977); Merton Miller and Myron Scholes, *Dividends and Taxes*, 6 J. FIN. ECON. 333-64 (1978); Harry DeAngelo & Ronald W. Masulis, *Leverage and Dividend Irrelevancy under Corporate and Personal Taxation*, 35 J. FIN. 453 (1980).

(3) The default risk or the probability that the company will be unable to satisfy some or all of the indenture requirements given current and expected future economic conditions;

(4) The likely recovery rate of the bonds in case of bankruptcy or liquidation given current and expected future economic conditions;

(5) The tax considerations of the bond payments; and

(6) The likelihood of being able to sell the corporate bond in a liquid market.

In an efficient market, changes in these factors will explain the variation in the prices and yields of corporate bonds. Generally, however, daily changes in corporate bond prices and yields are most often a function of only three of these factors: changes in risk-free Treasury rates of interest, changes in risk-premiums for similar-risk corporate bonds, and changes in the company's likelihood of default on its obligations.[60] Most important, and key to any proper analysis of whether the a debt security trades in an efficient market is understanding that, all else constant, if firm-specific disclosures do not alter the company's likelihood of default, bond pricing theory predicts there will be little change in the price or yield of the bond.[61] In addition, bond pricing theory predicts that changes in risk-free interest rates or changes in risk-premiums, say from an economy-wide shock, might cause a price reaction for a corporate bond. Thus, even without any new firm-specific information or change in the company's likelihood of default on its obligations, bond pricing theory predicts there might be a price change due to changes in other factors.[62]

Although U.S. Government obligations are typically viewed as free from default risk, the same is not true for corporate bonds. Corporations can and do default on their promises to make

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[60] Typically, tax, recovery rate, and liquidity factors are stable day-to-day. Another variable that can affect the valuation of the bonds, the age of the bond, is deterministic (i.e., known in advance). Thus, while all of these factors affect bond prices, they will have only a small effect day-to-day. *See* FABOZZI, *supra* note 56, chs. 5-7.

[61] *See id.* ch. 13.

[62] *See id.* Fama and French use regression analysis to attempt to adjust bond returns for these changes in risk-free rates and risk-premiums. *See* Eugene F. Fama & Kenneth R. French, *The Cross-Section of Expected Stock Returns*, 47 J. FIN. 427-65 (1992); Eugene F. Fama & Kenneth R. French, *Common Risk Factors in the Returns on Stocks and Bonds*, 33 J. FIN. ECON. 3-56 (1993).

future payments or otherwise abide by the bond indentures and covenants.[63] Bond default risk,

also called credit risk, is measured by various rating agencies, such as Moody's Investor

Services, Standard and Poor's Corporation, Duff and Phelps, and Fitch Investors Service. Bonds

are generally separated into two groups: investment-grade bonds, with Standard and Poor's

ratings BBB- or higher, and speculative-grade bonds with ratings BB+ or lower.[64]

Highly rated investment-grade bonds rarely default.[65] In other words, firms issuing

investment-grade bonds have adequate cash flows to cover current interest and principal payment

obligations and sufficient assets to back up the long-term payment obligations. The relative

safety of the investment-grade bonds in effect separates the pricing of the investment-grade

bonds (if they are not convertible or if the stock price is significantly below the conversion price

for convertible bonds) from day-to-day stock price fluctuations of the issuing firm.

Consequently, in efficient capital markets, the price of the investment-grade bonds is not very

sensitive to day-to-day stock price fluctuations of the issuer, nor will it always react to corporate

announcements.[66] Hence, in efficient capital markets, most of the variation in the prices of

investment-grade bonds comes from fluctuations in economy-wide interest rates, as opposed to

firm-specific information.[67]

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[63] *See* FABOZZI, *supra* note 56, chs. 32-33.

[64] Throughout the Class Period, the bond ratings for the AIG debt provided by Moody's Investor Services and Standard and Poor's Corporation were Aaa and AAA, respectively.

[65] For A or higher rated investment-grade bonds, default is rare as demonstrated by a cumulative ten-year default rate of less than one percent. Hence, fewer than one out of 1,000 of the A or higher rated investment-grade bonds have defaulted in a given year. Nevertheless, some highly rated bonds have defaulted. In May 2001, WorldCom sold $11.8 billion of highly rated bonds. A year later, the firm filed for bankruptcy, and the bonds lost more than 80 percent of the investment value. For the lowest level of investment-grade bonds, the BBB-rated bonds, the cumulative default rate after ten years is around ten percent, or about one percent per year. Overall, investment-grade bonds are characterized by high interest coverage and low debt-to-capital ratios. *See, e.g*., STEPHEN A. ROSS, RANDOLPH W. WESTERFIELD & JEFFREY JAFFE, CORPORATE FINANCE ch. 20, 8th ed. (2008).

[66] *See* FABOZZI, *supra* note 56, ch. 32.

[67] An investment-grade bond is assigned a rating in the top four categories by commercial credit rating companies. S&P classifies investment-grade bonds as BBB or higher, and Moody's classifies investment-grade bonds as Baa or higher. *See* STEPHEN A. ROSS, RANDOLPH W. WESTERFIELD & JEFFREY JAFFE, *supra* note 65, ch. 20.

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Defaults on non-investment-grade, high-yield or speculative-grade bonds (also called junk bonds) are much more common. About half of all bonds that are rated CCC by Standard and Poor's Corporation have defaulted within ten years.[68] Although high-yield bonds, like investment-grade bonds, are also sensitive to changes in interest rates and credit market conditions, stock price behavior of the issuing firm, and other firm-specific announcements have a much greater impact on the value of high-yield bonds.[69] Therefore, in efficient markets, there is substantially more sensitivity between the prices of the issuer's stock and its high-yield bond; that bond price will thus be more sensitive to corporate announcements.

A hypothetical example will demonstrate how economic factors might differentially affect the prices of investment-grade and high-yield corporate bonds. Assume an investment-grade bond has a coupon of 10 percent, it is priced in the market at its par value of $100, and it will be paid off at $100 in one year. All else constant, if the stock price of the issuer doubles, there will be little if any impact on the price of the investment-grade bond, because the maximum payoff at maturity is $100. If interest rates, however, double to 20 percent, the value of the bond with its fixed coupon is reduced and the bond price will fall. Alternatively, a speculative-grade bond with a coupon of 10 percent, par value of $100 and a market price of $50 will react to both of these events. A doubling of interest rates to 20 percent will, like its effect on the investment-grade bond, cause downward pressure on the price for the speculative-grade bond. However, if the stock price doubles, sending a signal of an improved likelihood that the bond will be redeemed at $100, then in an efficient market, bond-pricing theory predicts there will be upward pressure on the speculative-grade bond price.

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[68] *See id.*

[69] See FABOZZI, *supra* note 56, ch. 32.

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This example also demonstrates an important observation about corporate bonds. Investment-grade bond prices are expected to be sensitive to only bond pricing factors, such as risk-free interest rates, the default premium and the term spread.[70] Speculative-grade bond prices are expected to be sensitive not only to these same bond pricing factors, but also to stock market pricing factors, such as stock returns for the underlying firm.[71]

A full understanding of the various covenants, provisions and restrictions associated with a particular bond (e.g., call terms, convertibility features, seniority in the event of default, maturity date, redemption terms, etc.) is required to evaluate bond price reactions to new information. For example, assume there is a bond covenant that that triggers an immediate repayment of a corporation's debt, should there be a delay in its SEC filings. In an efficient market a negative announcement by a company that it is delaying its SEC filing might, all else constant, be expected to lead to a rise in the bond price with the anticipation that the company will be forced to redeem its debt, while the stock price falls.[72] Without accounting for this important factor – i.e., the covenant – in the determination of the bond's price movements, a meaningful analysis of market efficiency cannot be carried out.

The AIG Debt Securities were convertible into AIG's common stock. This means that AIG bondholders had the right to exchange their bonds for a preset number of shares of AIG stock. Covenants, such as conversion rights, can cause the bond prices to react in different ways than stock prices when there are firm-specific disclosures. Furthermore, covenants, such as conversion rights, can cause the bond prices to react in different ways to firm-specific disclosures depending on the level of stock prices. The magnitude of the price reaction

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[70] *See id*. ch. 32.

[71] This dichotomy of variables that explain variations in bond prices is explained in Eugene F. Fama & Kenneth R. French, *Common Risk Factors in the Returns on Stocks and Bonds,* 33 J. FIN. ECON. 3 (1993).

[72] *See* FABOZZI, *supra* note 56, ch. 32.

associated with a firm-specific disclosure will differ depending on whether the bond's

conversion option is said to be "in-the-money" or "out-of-the money." The conversion option is

in-the-money if the price of the stock is above the conversion price for the bonds. The

conversion option is out-of-the-money if the price of the stock is below the conversion price for

the bonds. For bonds where the conversion option is in-the-money, in an efficient market, bond

pricing theory predicts there will be a close, almost one-for-one relationship between bond and

stock price movements.[73] For bonds with conversion options that are out-of-the-money, and

especially for investment grade debt, in an efficient market, bond pricing theory predicts that

firm-specific information will have little if any impact on the price of the bond and there will be

little relationship between stock and bond price movements.[74]

A hypothetical example will demonstrate how economic factors might differentially

affect the prices of bonds where the conversion option is in-the-money versus out-of-the-money.

Assume an investment-grade bond has a par value of $100 and a market price of $100, and is

convertible into one share of common stock. This means that if the price of the common stock is

above $100, the bond's conversion option is in-the-money. Thus, if the stock is trading at $120

bond pricing theory predicts that the bond will trade at or around $120, because the bondholders

can convert each of their bonds into one share of stock valued at $120. In this case should there

be a disclosure of firm-specific information that leads to a reduction in the stock price to $119, in

an efficient market bond pricing theory would predict that the bond price would also fall to about

$119. Alternatively, when the stock is trading at $50 per share, this hypothetical bond's

conversion option is out-of-the-money. Thus, the same disclosure that causes a stock price

reduction from $50 to $49 per share would not necessarily be expected to have any impact on the

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[73] *See id.*, chs. 59-60.
[74] *See id.*

bond price in an efficient market. In fact, if the disclosure does not lead to a change in the

likelihood of the company defaulting on its debt obligations, then in an efficient market bond

pricing theory would predict that there should be no change in the price of the bond.

In general, in an efficient market, bond pricing theory predicts that, all else constant, the

relationship between stock and bond price movements, and firm-specific disclosures, will be

stronger as the level of the stock price moves toward the conversion price – i.e., as the

conversion option gets closer to being in-the-money. In other words, all else constant, bond

pricing theory predicts that in an efficient market there will be a non-linear relationship between

bond and stock returns.[75]

Other *Cammer* factors such as turnover also require some adjustments when translating

from the stock market to the bond market. Corporate bonds will likely trade less frequently than

stocks because the outside influences and internal financial factors have less effect on pricing.[76]

Unlike common stocks, corporate bonds have predictable cash flows, predictable terminal

values, fixed upside opportunities – namely redemption at par value or $100 in our example –

and priority on the corporation's assets. As such, many corporate bonds are close substitutes for

each other. This is especially true for AAA-rated bonds such as the AIG Debt Securities. On the

other hand, corporate equity does not have predictable cash flows, predictable terminal values,

fixed upside opportunities, nor priority on the corporate assets.[77] These critical differences in the

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[75] A linear relationship suggests that as the stock price goes up by a certain percentage the bond price will, on average, go up by that percentage times some fixed constant. For example, if the fixed constant coefficient is 0.50, then a linear relationship means that when the stock price goes up by 10%, one would expect the bond price to go up by 5%. As established above, the relationship between bond and stock price movements will not have a fixed linear relationship.

[76] *See* S. Edith Hotchkiss & Gergana Jostova, *Determinants of Corporate Bond Trading: A Comprehensive Analysis*, *available at* http://ssrn.com/abstract=1001459.

[77] *See In re* HealthSouth, Inc. Sec. Litig., (after evaluating the differences between stocks and bonds, the court was "led to the conclusion that certainly some the differences [with stocks] must be considered when evaluating the efficiency of a bond market.") 261 F.R.D. 616, 630 (N.D. Ala. 2009).

characteristics of stocks and bonds lead to the differential influence of firm-specific and external economic factors. Thus, many fixed income investors tend to buy and hold bonds until maturity. Therefore, research has shown that few, if any corporate bonds, (i.e., fewer than one percent) will trade each business day in a given calendar year.[78] A large proportion of corporate bonds (greater than 40%) do not trade even once a year.[79] Less frequent trading in and of itself is not significant for a security to trade in an efficient market.

IV. Fraud on the Market: *AIG* and the Missing Empirical Analysis

A. Background Related to AIG Bonds

The Consolidated Third Amended Class Action Complaint brought in *AIG* describes five AIG bond offerings that took place between October 28, 1999 and April 1, 2005 (the "Class Period").[80] Four counts relating to the bond offerings were dismissed. The remaining count relating to bonds involved $210 million worth of 0.5% Cash Exchangeable Equity-Linked Senior Notes, due May 15, 2007 and issued on or about May 11, 2000 (0.5% Notes),[81] and $1.5 billion of Zero-Coupon Convertible Senior Debentures, due November 9, 2031 and issued on or about

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[78] Sriketan Mahanti, Amrut Nashikkar, Marti Subrahmanyam, George Chacko & Gaurav Mallik, *Latent Liquidity: A New Measure of Liquidity, with an Application to Corporate Bonds*, 88 J. FIN. ECON. 272, 278, 282 (2008).

[79] *Id.* at 282. ("For the median traded bond, the average time between trades varied between 12 days and 18 days within the sample period. (There are roughly twenty-two trading days in a calendar month._ For the median stock, in comparison, this value is more on the order of minutes. For the most liquid stocks, this statistic is in seconds.") The authors also found that, "Bonds in the financial services industry (the banks and the other financial categories) traded the most during the sample period. This is not surprising because the financial services industry is the biggest issuer of corporate debt." *Id.* at 280.

[80] Consolidated Third Amended Class Action Complaint at 2, *In re* American Int'l Group, Inc. Sec. Litig., 265 F.R.D. 157 (S.D.N.Y. 2010).

[81] American International Group, Inc., Prospectus Supplement (Form 424B5) (Mar. 4, 2001); Consolidated Third Amended Class Action Complaint, *supra* note 80, at 56.

November 9, 2001 (Zero-Coupon Debentures).[82] The Zero-Coupon Debentures and the 0.5%

Notes (collectively, the "AIG Debt Securities") are the primary focus of our analysis.
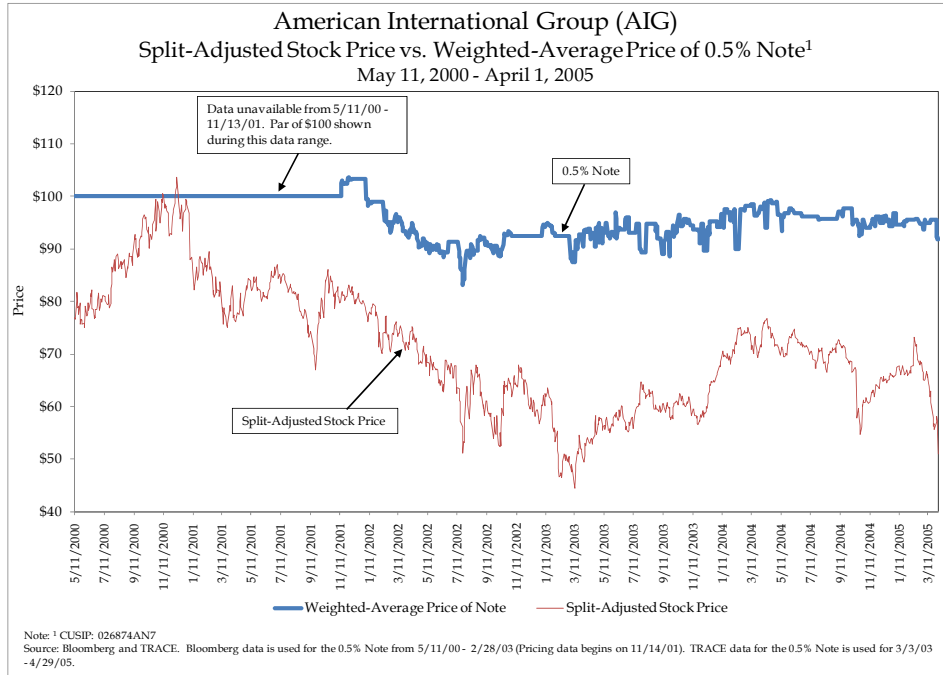
Throughout the Class Period the AIG Debt Securities were rated AAA by S&P

Corporation until March 30, 2005 when the rating was dropped to AA+. These securities were

also simultaneously rated Aaa by Moody's until March 31, 2005 when the rating was dropped to

Aa1. Therefore, the AIG Debt Securities were investment grade throughout the Class Period.

This is consistent with the trading prices of the AIG Debt Securities. As shown in Exhibit 1

below, the 0.5% Notes traded close to par value (or $100), while the Zero-Coupon Debentures

price slowly increased over the relevant time period. This slow incline would be expected from a

zero-coupon security where the return does not come from a coupon payment, but from a capital

gain.

In addition, Exhibits 1 and 2 also show that AIG's stock price varied substantially such

that the conversion options for the bonds would have also varied considerably. We discuss this

further below in Section C.

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[82] *AIG*, 265 F.R.D. at 175 ("because Lead Plaintiffs have standing for the § 10(b) and Rule 10b-5 bond claim, the Court must examine whether the members of the class can rely on the fraud-on-the-market presumption in bringing claims against AIG related to price decreases in its Zero-Coupon and 0.5% debt securities under Count Five of the Third Amended Complaint.").

Exhibit 1

American International Group (AIG)
Split-Adjusted Stock Price vs. Weighted-Average Price of 0.5% Note[1]
May 11, 2000 - April 1, 2005

Note: [1] CUSIP: 026874AN7
Source: Bloomberg and TRACE. Bloomberg data is used for the 0.5% Note from 5/11/00 - 2/28/03 (Pricing data begins on 11/14/01). TRACE data for the 0.5% Note is used for 3/3/03 - 4/29/05.

Exhibit 2

American International Group (AIG)
Split-Adjusted Stock Price vs.
Weighted-Average Price of Zero Coupon Debenture[1]
November 9, 2001 - April 1, 2005

Note: [1] CUSIP: 026874AP2
Source: Bloomberg and TRACE. Bloomberg data is used for the Zero Coupon Debenture from 11/9/01 - 6/28/02. TRACE data for the Debenture is used for 7/1/02 - 4/29/05.

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B.   Applying the *Cammer* Factors to the Bond Market

This section examines the important components of the operational and price-related *Cammer* factors and highlights the need for additional empirical analyses or background on bond pricing theory when differentiating between the stock and bond markets. The operational *Cammer* factors focus on the trading activity in the market and are primarily examined to answer the question of whether a security trades in an open and developed market.[83] An open capital market is one in which anyone can buy and sell securities.[84] A developed capital market is one that has a high level of trading activity, and for which trading information is readily available.[85] A developed capital market can be characterized as a liquid market that can absorb a reasonable amount of trading volume at relatively low trading costs.[86] The price-related *Cammer* factors are primarily used to examine whether the market price for a security rapidly reflects new information as would be expected in an open, developed and efficient market.[87]

The first subsection below focuses on the operational *Cammer* factors of turnover or market activity followed by a discussion of transaction size and frequency. In addition, because it is often confused with turnover, subsection 3 also examines what economists call

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[83] Cammer v. Bloom, 711 F.Supp. 1264 (D.N.J. 1989).

[84] *See* BROMBERG & LOWENFELS, *supra* note 9, § 8.6.

[85] BROMBERG & LOWENFELS, *supra* note 9, § 8.6 ("A developed market is one which has a relatively high level of activity and frequency, and for which trading information (e.g., price and volume) is widely available. It is principally a secondary market in outstanding securities. It usually, but not necessarily, has continuity and liquidity (the ability to absorb a reasonable amount of trading with relatively small price changes)."

[86] According to Bromberg and Lowenfels : "An efficient market is one which rapidly reflects new information in price. These terms are cumulative in the sense that a developed market will almost always be an open one. And an efficient market will almost invariably be a developed one." BROMBERG & LOWENFELS, *supra* note 9, § 8.6.

[87] *Cammer,* 711 F. Supp. at 1291 ("One of the most convincing ways to demonstrate [market] efficiency would be to illustrate, over time, a cause and effect relationship between company disclosures and resulting movements in stock price."); *see also* Krogman v. Sterritt, 202 F.R.D. 467, 477 (D. Tex. 2001) ("In an efficient market, a stock's price remains relatively stable in the absence of news, and changes very rapidly as the market receives new and unexpected information."); *In re* SCOR Holding (Switz.) AG Litig., 537 F. Supp. 2d 556, 574 (S.D. N. Y. 2008) (citing *Cammer*, 711 F. Supp. at 1286-87); *In re* Xcelera.com Secs. Litig., 430 F.3d 503, 511 (1st Cir. 2005).

"transparency."[88] The *AIG* court[89] and some economists[90] appear to rely on rhetorical arguments related to this ambiguous and undefined concept. Yet, this concept appears to be a straw man that, when used, virtually eliminates the possibility of certifying any bondholder class for the $7.4 trillion corporate bond market.   The Part concludes with subsection 4 on analyst coverage and corporate bonds.

1. Turnover and Corporate Bonds

In his report and testimony, Lead Plaintiffs' expert witness opined, with regard to the AIG Debt Securities that "[b]oth securities were actively traded."[91] He concluded, "Since bonds whose transactions are reported on TRACE tend to be liquid, the relatively high volume of trading is evidence that the markets for the Debt Securities were efficient during the Class Period."[92] The *AIG* court, however disagreed and instead concluded that, Lead Plaintiffs did not show "evidence of a free market based on volume of trading." [93] The court noted that the expert did not state his basis for opining that the AIG bonds have a large trading volume.[94]

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[88] *See* Amy K. Edwards., Lawrence E. Harris & Michael S. Pipowar, *Corporate Bond Market Transaction Costs and Transparency*, 62 J. FIN. 1421 (2007).

[89] *In re* American International Group, Inc. Sec. Litig., 265 F.R.D. 157, 179 (S.D.N.Y. 2010).

[90] See FINANCIAL SERVICES AUTHORITY, TRADING TRANSPARENCY IN THE UK SECONDARY BOND MARKETS (2005), *available at* http://www.fsa.gov.uk/pubs/discussion/dp05_05.pdf. ("we also recognize that transparency should be viewed as a facilitator of market efficiency and investor protection, not an end in itself. 'Maximum' transparency is not necessarily optimal.").

[91] Declaration of John D. Finnerty, Ph. D. in Support of Lead Plaintiff's Motion for Class Certification at ¶ 62, *In re* American Int'l Group, Inc. Sec. Litig., 265 F.R.D. 157 (S.D.N.Y. 2010) (No. 04 Civ. 8141 (DAB)).

[92] *Id.* at ¶ 63.

[93] *AIG*, 265 F.R.D. at 177.

[94] *Id.* (Although Dr. Finnerty has shown that the 0.5% and Zero-Coupon bonds trade at a higher average volume and in larger average dollar amounts than the majority of TRACE-reported bonds, this cannot support his claim that the AIG bonds trade in an efficient market without some further showing that these other bonds trade in an efficient market themselves. This Dr. Finnerty has not done. Nor has Dr. Finnerty compared the volume and value of trading in the AIG bonds to other securities for which studies or courts have found them to trade in efficient markets.)

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Unfortunately, regarding arguably one of the most critical factors demonstrating whether a market is open and developed – turnover to measure market activity – no measure of turnover was presented to the court.[95] The *Cammer* court is clear that this is an important benchmark for determining market efficiency - "average weekly trading of two percent or more of the outstanding shares would justify a strong presumption that the market for the security is an efficient one; one percent would justify a substantial presumption."[96]

A variety of turnover measures can be computed for each of the AIG Debt Securities. For example, utilizing information from the Defendants' expert report: "AIG estimates the daily trading volume of the Zero-Coupon Debentures between November 7, 2001 and November 9, 2006 was $12,156,000. AIG estimates the daily trading volume of the 0.5% Notes between May 8, 2000 and May 15, 2007 was approximately $11,000,334."[97] Based on these two estimates of trading volume of the AIG Debt Securities, the average weekly turnover for the Zero-Coupon Debentures and the 0.5% Notes can be calculated at approximately 4.05% and 26.19% per five-day week, respectively. If one conservatively assumes that these AIG estimates count both sides of each transaction – i.e., both seller and buyer activity – and thus represent double counting of transaction volume,[98] the estimates of turnover are still 2.0% and 13.1%, respectively. Moreover, these calculations represent the minimum levels because the estimates are based on market values of the bonds that traded rather than par values of $100 per bond. As shown in Exhibits 1 and 2, because the market values of the AIG Debt Securities were lower than par

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[95] *See* Krogman v. Sterritt, 202 F.R.D. at 474 (D.Tex. 2001) (citation omitted) (Weekly trading volume has been called possibly "one of the most important" of the *Cammer* factors.). .

[96] Cammer v. Bloom, 711 F.Supp. 1264, 1286 (D.N.J. 1989).

[97] Declaration of John D. Finnerty, Ph. D. in Support of Lead Plaintiff's Motion for Class Certification at ¶ 62, *In re American Int'l Group, Inc. Sec. Litig.*, 265 F.R.D. 157 (S.D.N.Y. 2010) (No. 04 Civ. 8141 (DAB)).

[98] Often both parties to a trade will report their activity so this number might be double-counting turnover.

values these turnover calculations are understated.[99] Therefore, simple calculations demonstrate

that turnover of the AIG Debt Securities was well in excess of the levels specified in *Cammer*.

As further stated by the *AIG* court, it would have been helpful had Lead Plaintiffs "compared the

[average weekly turnover,] volume and value of trading in the AIG bonds to other securities for

which studies or courts have found there exists an efficient market."[100] But, because no

calculation of turnover was presented, the court had no basis from which to compare the trading

of the AIG Debt Securities to the debt securities of other companies, such Enron,[101] Just-For-

Feet,[102] HealthSouth Corporation[103] or DVI.[104] In litigation concerning bonds issued by each of

these companies, the courts found sufficient evidence that all the bonds traded in efficient

markets.[105] For example, a comparison of the turnover rates of the AIG Debt Securities with the

bonds issued by these companies shows that the turnover of the AIG Debt Securities exceed

most of the Enron Notes,[106] and the two DVI Notes.[107] Average weekly turnover of the 0.5%

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[99] Each of the AIG Debt Securities had a face value of $1,000, (though par price is often stated in terms of $100 value). Exhibits 1 and 2 show the market value per security would be less as neither traded at or above par value. We also calculated turnover using information in the Plaintiffs' expert report (Exhibit P) which shows the Average Value of Daily Trading Volume for Morgan Stanley alone was $1,841,182 and $38,722,246 for the 0.5% Notes and the Zero-Coupon Debentures, respectively. Along with the total number of trades for Morgan Stanley, the report contains enough information to calculate Morgan Stanley's total volumes over the period of $2.3 billion and $33.2 billion, respectively. Finally, we also used the number of weeks the AIG Debt Securities traded over the Class Period to calculate yet another measure of average weekly turnover for the 0.5% Notes and the Zero-Coupon Debentures, of 4.2% and 12.5%, respectively. Additional data based on the transaction volume reported in TRACE is also presented in the report. Calculations using these alternative data sources also show that turnover of the AIG Debt Securities was well in excess of the levels specified in *Cammer*. *Cammer,* 711 F. Supp. at 1286; Declaration of John D. Finnerty, Ph. D. in Support of Lead Plaintiff's Motion for Class Certification at Exhibit P, *AIG*, 265 F.R.D. 157 (No. 04 Civ. 8141 (DAB)).

[100] *In re* American Int'l Group, Inc. Sec. Litig., 265 F.R.D. 157, 177 (S.D.N.Y. 2010).

[101] *In re* Enron Corp. Sec., Derivative & "ERISA" Litig., 529 F. Supp. 2d 644 (S.D. Tex 2006).

[102] AAL High Yield Bond Fund v. Ruttenberg, 229 F.R.D. 676, 685 (N.D. Ala. 2005).

[103] *In re* HealthSouth Corp. Sec. Litig., 261 F.R.D. 616, 634 (N.D. Ala. 2009).

[104] *In re* DVI, Inc. Sec. Litig., 249 F.R.D. 196 (E.D. Pa. 2008), *aff'd*, Nos. 08-8033, 08-8045, 2011 WL 1125926 (3d Cir. March 29, 2011).

[105] *In re* Enron Corp. Sec., Derivative & ERISA Lit., H-01-3624, 2005 U.S. Dist. LEXIS 41240 *91 (S.D.Tex. Dec. 22, 2005); *DVI,* 249 F.R.D. 196; *HealthSouth*, 261 F.R.D. at 634.

[106] Declaration of Suresh M. Sundaresan in Support of Deutsche Bank Entities' Opposition to Lead Plaintiffs' Amended Motion for Class Certification (#1445), *In re* Enron Corp., Derivative & ERISA Litig., 529 F. Supp. 2d 644 (S.D. Tex. 2006), dated Feb. 13, 2006.

[107] *DVI,* 249 F.R.D. at 214.

Notes exceeded not only the turnover levels of DVI and Enron, but also average weekly turnover of the Just-For-Feet Bonds.[108] Had these measures of turnover been presented to the court, it is conceivable that the *AIG* court may have reached a different conclusion.[109]

2.   Transactions Size and Frequency

Section III.A, above, discusses the characteristics of corporate bonds. These features and the forces of supply and demand in the corporate bond market make clear why corporate bonds will trade far less frequently than every day.[110] In fact, nothing in the economics literature nor in the case law suggests that in an efficient market a security must trade every day. The critical differences in the characteristics of stocks and bonds discussed above explain why there might be differences in the average transaction size and frequency of trades. Therefore, this is an area where it is important for courts to consider the differences in stock and bond market. to correctly assess whether a security trades in an efficient market.[111] It is critically important to adjust for the trading of bonds primarily by institutions, while stock trading has a much higher level of

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[108] *AAL High Yield Bond Fund v. Ruttenberg*, 229 F.R.D. 676, 684-85 (N.D. Ala. 2005). *See also* Supplemental Declaration of Edith S. Hotchkiss, *AAL High Yield Bond Fund v. Ruttenberg*, 229 F.R.D. 676, 684-85 (N.D. Ala. 2005) dated May 24, 2005, p.5 ("average weekly trading volume for the JFF Bonds (excluding the first week of trading) was 7.8%....").

The *Dynex* court minimized the importance of a precisely calculated turnover measure and suggested an "active" market for bonds was sufficient for a finding in favor of efficiency. *In re* Dynex Capital, Inc. Sec. Litig 05 Civ. 1897 (HB) (S.D.N.Y. 2011) at 5 ("This factor is not dispositive. First, even if a presumption based on 1% trading volume is not triggered, Dr. Ferri has shown that trading in the Bonds was active. Moreover, the *Cammer* presumption applied to stock trades, whereas the type of bonds at issue in this ease trade 'relatively infrequently' in general…A turnover rate below the 1% threshold established in *Cammer* for the stock market does not, without more, defeat a finding of an efficient bond market.").

[110] *See* Sriketan Mahanti, Amrut Nashikkar, Marti Subrahmanyam, George Chacko & Gaurav Mallik, *Latent Liquidity: A New Measure of Liquidity, with an Application to Corporate Bonds*, 88 J. FIN. ECON. 272 (2008). Also, according to the TRACE Fact Book for 2005, there were approximately 22,500 active publicly traded corporate bonds. Thus, this sample is very representative of the universe of corporate bonds. FINANCIAL INDUSTRY REGULATORY AUTHORITY, 2005 TRACE FACT BOOK (2005), *available at* http://www.finra.org/Industry/ContentLicensing/TRACE/P085342.

[111] *See DVI*, 249 F.R.D. at 215 ("However, the trading level of the Senior Notes must be viewed in the context of corporate bond market.").

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retail or individual participation. This is consistent with how the courts in *HealthSouth*,[112] *DVI*[113] and *Dynex Capital*[114] examined the issue.

Moreover, even when a bond does not trade or trades infrequently, it does not mean the market is shut down, the flow of information is restricted or that firm-specific and external economic information is not being disseminated throughout the market. Interested investors can simply contact bond dealers and learn about dealers' buying and selling (bid and ask) prices and quantities. That there may be no trade on a given day does not mean that interested investors are not communicating or do not or cannot generate transparency. The concept of transparency is discussed further below. Moreover, infrequent trading does not necessarily lead to a conclusion that "information (e.g., price and volume) is [not] widely available."[115]

Lead Plaintiffs' expert concluded that both the AIG 0.5% and Zero-Coupon bonds were actively traded during the period when the Trade Reporting and Compliance Engine ("TRACE"),[116] was in place. He observed that, "Trades of the 0.5% Notes were reported [o]n

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[112] *In re* HealthSouth Corp. Sec. Litig., 261 F.R.D. 616, 639 (N.D. Ala. 2009) ("[D]enying application of fraud on the market to the bond market because it does not operate in the same way as a national exchange or trade in the same volume, frequency, or manner as equity on those exchanges [would be like] throwing out oranges because they are not apples. The Court finds that the issue is not whether the market for equity is more efficient than the market for debt securities, but whether the market for debt securities is adequately informationally efficient (whether the price reflect[s] all publicly available information) to trigger the fraud-on-the-market presumption of reliance.").

[113] *DVI*, 249 F.R.D. at 214 ("[A] comparison between equity and bond markets is a comparison between the proverbial apple and orange…. [and] corporate bond investors cannot be categorically denied an opportunity to utilize the fraud on the market theory simply because of a structural difference in the way that debt securities are marketed and traded vis-a-vis equity securities.").

[114] *In re* Dynex Capital, Inc. Sec. Litig., 05 Civ. 1897 (HB), 2011 WL 781215, at *4 (S.D.N.Y. Mar. 7, 2011) ("Dr. Ferri [the plaintiff's expert] has shown that trading in the Bonds was active. Moreover, the *Cammer* presumption applied to stock trades, whereas the type of bonds at issue in this ease trade 'relatively infrequently' in general . . . A turnover rate below the 1% threshold established in *Cammer* for the stock market does not, without more, defeat a finding of an efficient bond market.").

[115] Cammer v. Bloom, 711 F.Supp. 1264, 1287 (D.N.J. 1989).

[116] "The Trade Reporting and Compliance Engine is the FINRA [Financial Institution Regulatory Authority] developed vehicle that [as of July 2, 2002] facilitates the mandatory reporting of over the counter secondary market transactions in eligible fixed income securities. All broker/dealers who are FINRA member firms have an obligation to report transactions in corporate bonds to TRACE under an SEC approved set of rules." Trade Reporting and

TRACE beginning March 3, 2003" while "[t]rades of the Zero-Coupon Debentures were reported beginning July 1, 2002."[117] He also observed that the 0.5% bonds averaged 239 trades per year and .95 trades per trading day, while the Zero-Coupon bonds averaged 1,506 trades per year and 5.98 trades per trading day.[118]

AIG's expert countered this testimony, claiming that the trading of the bonds did not support a conclusion of market efficiency, by noting that "the 0.5% Notes and the Zero-Coupon Debentures did not trade at all on approximately 283 days and 62 days [during the Class Period] respectively,"[119] and that this was true even though TRACE was active during the period in question. The court agreed. Yet, as discussed above, this rejection of market efficiency because the AIG Debt Securities failed to trade each day of the Class Period does not take into account the realities of the bond market. No benchmarks or accepted methodologies are described to determine how many days the securities need to trade before the market is found to be efficient. Thus if the number of trading days for the AIG Debt Securities when there was no activity was 282 or 141 or 70 or one, instead of 283, would that lead to a fact-based conclusion that the bond is more likely to trade in a more efficient market? Or alternatively, if the number of trading days in the Class Period when there was no activity was 300, 350 or more, would that lead to a fact-based conclusion it is less likely to trade in a more efficient market? The answer to both questions must be no. Otherwise, all bonds trading in the $7.4 trillion corporate debt market must trade in inefficient markets because few if any corporate bonds trade every day, year after year.

Compliance Engine, http://www.finra.org/Industry/Compliance/MarketTransparency/TRACE/ (last visited Apr. 8, 2011).
[117] Declaration of John D. Finnerty, Ph. D. in Support of Lead Plaintiff's Motion for Class Certification at ¶ 60, *In re* American Int'l Group, Inc. Sec. Litig., 265 F.R.D. 157 (S.D.N.Y. 2010) (No. 04 Civ 8141 (DAB)).
[118] *Id.* at ¶¶ 62-63, Exhibit G.
[119] *AIG*, 265 F.R.D. at 177; Declaration of Charles C. Cox at ¶ 62, *In re* American Int'l Group, Inc. Sec. Litig., 265 F.R.D. 157 (S.D.N.Y. 2010) (No. 04 Civ 8141 (DAB)).

The *AIG* court's finding insufficient support for bond market efficiency on the basis of the number of trading days is also contrary to the economic theory of why parties trade in securities markets. Parties seek to trade to gain from informational advantages when they possess new information or have differences of opinions. Investors will enter into transactions only when there are differences of opinion based on changes in information. Thus, the finding in *AIG* could lead to the nonsensical conclusion that for a security to trade in an efficient market, it must trade each day even if there is no new information or changed investor circumstances. As discussed above, the differences between stocks and bonds suggest there will be on average fewer corporate bond transactions.[120] In fact, if information or opinions do not change each day, yet there is high frequency of trading, this might be a sign that that security actually trades in an inefficient market that possibly resembles a casino.

Unfortunately, the empirical analysis the *AIG* court relied on failed to compare measures of transaction size and frequency of trading to those measures observed for other debt securities where other courts found that the securities to trade in efficient markets.[121] The frequency of trading of the AIG Debt Securities is far greater when compared to the activity of the Just-for-

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[120] Stock market efficiency does not require that there be a trade all the time, only that when there is a trade that the price at which the trade takes place properly reflect all publicly available evidence. Some markets are simply less liquid than others, though this does not make them less efficient. Investors trade for different reasons, allocating their endowments, achieving better diversification, dealing with shocks to liquidity, or because of the differences in their beliefs or information. It is possible that some new information arrival results in such a stock price reaction where all potential buyers and sellers believe that there is no advantage to be gained by trading at the new stock price. In this case, there can be zero trade associated with news arrival. Such an occurrence is not inconsistent with market efficiency. Schwert finds that the market for New York Stock Exchange seats is highly efficient and it reflected rents available from the seat, even though the trading is highly illiquid. In fact, New York Stock Exchange seats traded less than once a year. *See* G. William Schwert, *Stock Exchange Seats as Capital Assets*, 4 J. FIN. ECON.51 (1977).

[121] *See, e.g., In re* DVI, Inc. Sec. Litig., 249 F.R.D. 196 (E.D. Pa. 2008), *aff'd*, Nos. 08-8033, 08-8045, 2011 WL 1125926 (3d Cir. March 29, 2011); *In re* Enron Corp. Sec. Derivative & "ERISA" Litig., 529 F. Supp. 2d 644, 756 (S.D. Tex 2006); *AAL High Yield Bond Fund v. Ruttenberg*, 229 F.R.D. 676, 684-85 (N.D. Ala. 2005).

Feet unregistered bonds;[122] the hundreds of Enron Notes[123] and the DVI Notes,[124] all of which were found to have traded in efficient markets. The Zero-Coupon Debentures traded on 90% of the trading days, while the 0.5% Notes traded on 36% of the trading days or about 2 days per week. For comparison, the Just-for-Feet unregistered bonds traded approximately 54% of the trading days or 2.7 days per week, thus less frequently than the Zero-Coupon Debenture.[125] Also, trading far less frequently than the Zero-Coupon Debenture were the DVI Notes, which were traded on 52% of trading days within the Class Period.[126] Finally, when compared to the frequency of trading of the Enron Notes, which also were found to be traded in an efficient market, it is clear that the AIG Debt Securities traded in a far more active market than the Enron Notes as the percentage of days on which the trades occurred for the AIG Debt Securities (90% and 36% for the Zero-Coupon Debenture and 0.5% Note, respectively) met or exceeded the percentages for all the Enron bonds.[127]

Finally, the average transaction size for the AIG 0.5% Notes and the Zero-Coupon Debentures were $881,146 and $16,190,369, respectively.[128] That the market was able to absorb trades of this magnitude on a regular basis without massive price movements, should by itself

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[122] *See AAL*, 229 F.R.D. at 684-85 (regarding the e Just for Feet bonds, the court concluded, "[t]he market for these bonds was informationally efficient notwithstanding that on some days the trading volume was low and on others, there was no trading at all."). This was partially based on the following facts, "The trading volume of the JFF high yield bonds *was not thin*. They traded on at least 75 of the 140 days between the initial offering and the Chapter 11 bankruptcy filing on November 3, 1999. Excluding the first week of trading, the average daily trading amount of JFF bonds was $3,245,107. The total face amount purchased by investors over the 140 days was $138,205,000, and the total sales were $316,110,000." *Id.* (citations omitted).

[123] *Enron,* 529 F. Supp. 2d at 756.

[124] *DVI*, 249 F.R.D. 196, 214-215.

[125] *HealthSouth*, 216 F.R.D. 616 (No. CV-03-BE-1500_S).

[126] *DVI*, 249 F.R.D. 196, 214-215.

[127] The *Enron* court noted, "The underwriter data reflect over 15,800 trades for Enron Registered Bonds throughout the Class Period. The number of transactions per issue during the Class Period ranged from 24 to 3,684 per issue, an average of 69, a median of 282. The percentage of days on which the trades occurred and the issue was outstanding falls between 1% (11 days) to 36% (132 days), with an average of 12.2% and a median of 9.71%." *Enron,* 529 F. Supp. 2d at 756.

[128] These figures are computed based on the data given in Declaration of John Finnerty, *supra* note 117, at Exhibit P.

suggest the AIG Debt Securities traded in an efficient market. Efficient markets, in the absence

of information releases, have sufficient liquidity to absorb large amounts of trading volume

without large price fluctuations. These average transaction sizes for the AIG Debt Securities are

relatively large when compared to other securities.[129]   This suggests that the AIG Debt

Securities market was open, developed, and efficient, because it had the necessary liquidity to

absorb these large transactions. This also shows there was substantial participation of

sophisticated institutional traders. The participation of these institutional traders helps in price

discovery and the efficiency of the market.[130] Moreover, as a proportion of the typical trade size

the typical search and other costs associated with these large transactions will be small, thus

reducing the costs of trading.

3. The Straw Man of Transparency

The *AIG* court relied heavily on the concept of market transparency to support its ruling

that the AIG Notes did not trade in or did not trade "consistent with" an efficient market.[131] The

court concluded, "that during the period in which AIG's bonds were reported on TRACE, there

was increased transparency in those markets."[132] That finding, however, begs the question of

whether those markets were efficient during the period when they were not reported on

TRACE.[133]

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[129] *See, e.g., In re* HealthSouth Corp. Sec. Lit. CV-03-BE-1500-S. (N.D. Ala. 2009) at 32. ("The average dollar value of a single note transaction ranged from $500,000 to $1.5 million.").

[130] *See* Ekkehard Boehmer and Eric Kelly, *Institutional Investors and the Informational Efficiency of Prices*, 22 REV. FIN. STUD. 3563-3594 (2009).

[131] *AIG*, 265 F.RD. at 180-81.

[132] *Id.* at 177.

[133] In contrast to the *AIG* court the court in *In re* Dynex Capital, Inc. Sec. Litig., 05 Civ. 1897 (HB), 2011 WL 781215, at *5 (S.D.N.Y. Mar. 7, 2011) stated: "The Second Circuit has approved the use of matrix [or derived] prices 'as long as they are shown to be consistent and reliable proxies for transaction prices." This court thus concluded that reporting on TRACE is not required and, in fact, reported transaction prices are not required when one is examining whether a bond trades in an efficient market.

There are several shortcomings to the court's analysis. To begin, transparency means readily available price and volume information. For exchange traded securities, exchanges collect and disseminate this information at a minimal cost to all interested parties. For over-the-counter traded bonds, price and volume information are not available at zero cost. At a given moment, however, this does not mean that interested investors are not communicating, or do not or cannot generate transparency (price and volume information for recently completed transactions or for future potential trades). As discussed above, an efficient market does not require that price and volume information be available at zero cost. Emails or a simple telephone call or, for that matter, twenty simultaneous emails or telephone calls from the trading floor or a view of the computer screen will supply sufficient transparency. As was shown above, the average dollar size of trade ranges from $818,000 for the AIG 0.5% Notes to over $16.0 million for the AIG Zero-Coupon Debentures. Hence, the cost of making a few, twenty or even hundreds of telephone calls relative to the dollar volume of typical trade is miniscule on a percent basis. Moreover, the substantial proportion of AIG Debt Security holders would be the most sophisticated institutional traders, including insurance companies, hedge funds, mutual funds and others who are generally active traders in the corporate bond market. It would not be too costly for bond traders to generate sufficient pricing information or transparency about the AIG Debt Securities by contacting the dealers[134] and negotiating their best deals with them.

This analysis is consistent with the findings of other courts. For example, in *Enron*, the court stated that, "transparency, has not been established as the standard for an informationally

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[134] *See, e.g.*, *In re* HealthSouth Corp. Sec. Litig., 261 F.R.D. 616, 639 (N.D. Ala. 2009) ("Bond traders at large institutions who make transactions of six figures or more simply do not trade on insufficient information, or information perceived to be unreliable, or on less than all publicly available information. To argue that the investors in HealthSouth bonds did not have sufficient publicly available information in making their decisions about buying and/or selling HealthSouth bonds, and what would be a reasonable price for those bonds, defies logic and ignores the realities of the bond market in which billions of dollars trade hands.").

efficient, over-the-counter bond market. Obviously 'transparency' is relative, involving

consideration of numerous factors. No standard of requisite transparency has been established

by the courts*.*"[135] Broad generalizations about the institutional structure of the over-the-counter

corporate bond market used to argue that the whole market is not transparent and thus is

inefficient[136] are nonsensical. Otherwise, this logic would lead to the fallacy that all corporate

bonds must trade in an inefficient market[137] and thus no class of bondholders would be certified

in class action litigation. As the *HealthSouth* court has said, "to exclude over-the-counter

transactions from the fraud-on-the-market presumption of reliance would severely limit the

public policy behind the securities laws."[138] The corporate bond market is $7.4 trillion in size

and compared to approximately $17.3 trillion in market capitalization of the equities traded on

NYSE and NASDAQ exchanges as of December 2010.[139] Arguments regarding the lack of

transparency in these markets are not well-founded.

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[135] *In re* Enron Corp. Sec. Litig., 529 F.Supp. 2d 644, 767 (S.D. Tex. 2006); *see also In re* DVI, Inc. Sec. Litig., 249 F.R.D. 196 (E.D. Pa. 2008), *aff'd*, Nos. 08-8033, 08-8045, 2011 WL 1125926 (3d Cir. March 29, 2011).

[136] *See also HealthSouth*, 261 F.R.D. at 639 ("Transparency has not to date been recognized as a requirement for an efficient market. In any event, transparency is relative and relative matters should be compared like to like. In terms of the bond market the court, therefore, concludes that the HealthSouth bond market traded on all the publicly available information and thus meets the test for informational efficiency.").

[137] *See In re* HealthSouth Corp. Sec. Litig., 261 F.R.D. 616, 638-39 (N.D. Ala. 2009) ("The Defendants then argue that, unlike stock, bonds do not trade on a formal, impersonal, centralized exchange, like the NYSE; that over-the-counter transactions are conducted over the phone or by computer; that an investor has to seek out a dealer to get a quote on a bond and may in fact receive different quotes from different dealers; and that an investor would thus have difficulty determining the prevailing price for a specific corporate bond . . . In effect, the Defendants argue that the market for *all* bonds is inefficient because it does not function like the stock market. If the court were to accept these challenges, it would be '[d]enying application of fraud on the market to the bond market because it does not operate in the same way as a national exchange or trade in the same volume, frequency, or manner as equity on those exchanges [and would be like] throwing out oranges because they are not apples. The Court finds that the issue is not whether the market for equity is more efficient than the market for debt securities, but whether the market for debt securities is adequately informationally efficient (whether the price reflect[s] all publicly available information) to trigger the fraud-on-the-market presumption of reliance.''')) (citations omitted).

[138] *HealthSouth*, 261 F.R.D. at 639. *Cf.* DiRienzo v. Philip Servs. Corp., 294 F.3d 21, 33 (2d Cir. 2002) (quoting Securities Exchange Act of 1934 §2, 15 U.S.C. §78b (2006) ("As the statute explaining the need for regulation and control of transactions in securities exchanges and over-the-counter markets states, these transactions are 'affected with a national public interest.'").

[139] In December 2010 the market capitalization of the U.S. stocks traded on the NYSE was $13.394 trillion, while on the NASDAQ the value was $3.889 trillion. World Federation of Exchanges Year-To-Date Monthly Statistics, http://www.world-exchanges.org/statistics/ytd-monthly (last visited April 8, 2011).

In *AIG,* there appears to be no direct connection between discussion of transparency in the general state of trading in corporate bonds and the activity in AIG Debt Securities in particular. Unfortunately, the discussion of transparency related to the AIG Debt Securities does not offer a meaningful standard. Without a meaningful and quantifiable benchmark, the issue of transparency reverts to subjective views.[140]

Other courts have determined that the measurable *Cammer* factors are the appropriate benchmarks for both over-the-counter common stocks and corporate bonds.[141] These factors are important because no standard of requisite measure of transparency has been established by either judicial precedent or academic research to define when a security trades in an efficient market.

4. Analyst Coverage and Corporate Bonds

Regarding the relevance of the *Cammer* factor concerning analyst coverage of bonds, the *AIG* court concluded that, "the mere fact that a rating agency rates a bond is not indicative of it trading in an efficient market. Further, . . . none of the industry analysts who examined AIG's debt securities discussed either the 0.5% or the Zero-Coupon bonds specifically, but rather analyzed AIG's bond ratings and financial performance generally. . . . Accordingly, the second

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[140] Here, too, the *Enron* court's findings are instructive, and demonstrate an unwillingness to jettison longstanding and well-accepted standards for unsupported personal preferences: "The central question under the fraud on the market theory is whether the stock price, *at the time a plaintiff effected a trade,* reflected the 'misinformation' alleged to have been disseminated." *Enron*, 529 F. Supp. 2d at 767 (citing Cammer v. Bloom, 711 F. Supp. 1264, 1282 (D.N.J. 1989)).

[141] *See, e.g.,* AAL High Yield Bond Fund v. Ruttenberg, 229 F.R.D. 676, 684-85 (N.D. Ala. 2005); *Enron,* 529 F. Supp. 2d 644; *In re* DVI, Inc. Sec. Litig., 249 F.R.D. 196 (E.D. Pa. 2008), *aff'd*, Nos. 08-8033, 08-8045, 2011 WL 1125926 (3d Cir. March 29, 2011); *HealthSouth*, 261 F.R.D. 616; Krogman v. Sterrit, 202 F.R.D. 467, 477 (N.D. Tex. 2001); *In re* SCOR Holding (Switz.) AG Litig., 537 F. Supp.2d 556, 574 (S.D. N. Y. 2008); *Xcelera.com,* 430 F.3d 503, 511 (1st Cir.2005); Freeman v. Laventhol & Horwath, 915 F.2d 193 (6th Cir. 1990).

Cammer factor provides little support to the claimed efficiency of the market for AIG's 0.5% and Zero-Coupon bonds."[142]

Financial information for a company will impact the prices of both its stock and bonds. An important concern to the bondholders is the overall financial health of the firm, which determines the ability of the firm to pay the promised series of coupons and the principal amount. Equity reports provide information on many other financial factors, as well as the outlook for stock prices and earnings. Thus, the equity reports provide vital information on the overall health of the firm.[143] Although positive equity reports do not necessarily imply higher prices for the AIG Notes, negative equity reports could imply lower prices. In particular, a substantial decline in stock prices could serve as an early warning sign for the bondholders. To this extent, both equity and credit reports provide important and useful information for AIG Debt Security holders.

The finding of the *AIG* court that the analysts' coverage of the AIG bond ratings and general financial performance did not support the claim that the bonds traded in an efficient market is inconsistent with the conclusions reached by other courts finding that similar debt

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[142] *AIG*, 265 F.R.D. 157, 177 (S.D.N.Y. 2010). The idea that only analyst reports that analyze the individual securities that are being evaluated are relevant is dismissed in a recent court ruling where there were no analyst reports on the specific bonds, only general reports on the industry. *In re* Dynex Capital, Inc. Sec. Litig., 05 Civ. 1897 (HB), 2011 WL 781215, at *5 (S.D.N.Y. Mar. 7, 2011) ("Nonetheless, Defendants' expert is unable to rebut the assertion that, in the context of the market for manufactured home bonds, there were enough reports throughout the Class Period to provide a sufficient amount of information to satisfy this factor.").

[143] *See In re* DVI, Inc. Sec. Litig., 249 F.R.D. 196, 215 (E.D. Pa. 2008), *aff'd*, Nos. 08-8033, 08-8045, 2011 WL 1125926 (3d Cir. March 29, 2011) ("Though equity analyst coverage is not a perfect substitute for debt analyst coverage, the equity reports nevertheless provided substantial information to the Senior Notes investors. Such information, particularly forecasts of DVI's financial prospects and condition, would likewise have allowed bond investors to better understand DVI's risk profile and its potential for default."); s*ee also HealthSouth*, 261 F.R.D. at 635 ("The coverage by analysts of HealthSouth's equities also provided information of interest to the bond market when concerned with the overall financial health of the issuing firm. …The extensive coverage of HealthSouth in general and its bonds in particular by investment professionals, public media, and institutional investors reflects that HealthSouth notes traded in an efficient market.").

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securities traded in efficient markets.[144] In *AIG*, twenty analysts followed the company.[145]

Throughout the *Enron* Class Period, spanning from October 19, 1998 to November 27, 2001, for

example, twenty-nine to thirty-one different analysts prepared reports.[146] In *HealthSouth,* twenty

different analysts prepared over 300 reports.[147] In *DVI* only three analysts provided continuous

coverage, issuing over 80 reports.[148] Thus, based on this *Cammer* factor, when compared to the

findings of other courts, the evidence supports the conclusion that the AIG Debt Securities

similarly traded in an efficient market.

C. Applying the Price-Related Factor to the Bond Market

The fifth factor listed by the *Cammer* court relating to whether securities trade in an

efficient market involves a showing of empirical facts demonstrating a cause and effect

relationship between unexpected corporate events and a response in the stock price.[149]

According to the U.S. Supreme Court in *Basic,* "the fraud on the market theory is based on the

hypothesis that, in an open and developed securities market, the price of a company's stock is

determined by the available material information regarding the company and its business." [150] As

described above, bond pricing theory asserts that in an efficient market factors other than

information regarding the company and its business are important determinants of the price of a

company's corporate bond.

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[144] *See, e.g., Enron,* 529 F. Supp. 2d at 768 (concluding that plaintiffsmade a *prima facie* showing that Enron
Registered Bonds and Preferred Securities did trade in an efficient secondary market"); DVI, 249 F.R.D. at 216
(finding that "DVI's Senior Notes traded in an efficient market); *AAL*, 229 F.R.D. at 685 (holding that "Plaintiffs
have made a sufficient showing of market efficiency to invoke the rebuttable presumption of reliance under [the
'fraud on the market' theory]").
[145] Declaration of John D. Finnerty, Ph. D. in Support of Lead Plaintiff's Motion for Class Certification at ¶ 20, *In re
American Int'l Group, Inc. Sec. Litig.*, 265 F.R.D. 157 (S.D.N.Y. 2010) (No. 04 Civ. 8141 (DAB)).
[146] *Enron*, 529 F.Supp. 2d at 760 (S.D. Tex. 2006).
[147] *HealthSouth,* 261 F.R.D. at 635.
[148] *DVI*, 249 F.R.D. 196.
[149] Cammer v. Bloom, 711 F. Supp. 1264, 1287 (D.N.J. 1989).
[150] Basic Inc. v. Levinson, 485 U.S. 224, 241-42 (1988) (quoting Peil v. Speiser, 806 F.2d. 1154, 1160-1161 (3d Cir.
1986)).

Understanding cause-effect in the bond market is not intuitive and it can be source of confusion. First, establishing *a priori* the market expectations is difficult for any securities market, let alone the bond market. What is generally considered to be good news in the stock market may be neutral or even bad news in the bond market. Similarly, what is generally considered to be bad news for the stock market may again be neutral or even good news for the bond market. Moreover, for a given event the courts have understood, bond market reaction will generally be less responsive and may depend on the content and importance of the event.[151]

For example, in *HealthSouth,* the court found, "The price of bonds reacts differently to unexpected new information than does the price of stocks. Information that may be material to a stock price, such as the announcement of a dividend, may not be material for a bond investor whose fixed return would not be affected. In contrast, the price of bonds may be affected by general, non-company specific information, such as changes in risk-free interest rates that would not affect stock prices."[152]

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[151] *See In re* DVI, Inc. Sec. Litig., 249 F.R.D. 196, 216 (E.D. Pa. 2008), *aff'd*, Nos. 08-8033, 08-8045, 2011 WL 1125926 (3d Cir. March 29, 2011) ("Lead Plaintiffs have established a sufficient cause and effect relationship to support a finding that the release of new public information affected the price of the Senior Notes. This finding is strengthened by the fact that, though debt securities are typically less responsive to new public information, there exists a high level of correlation between the Senior Notes' price changes and identifiable news events."). *See also* Jonathan R. Macey and Geoffrey P. Miller, *Good Finance, Bad Economics: An Analysis of the Fraud-on-the-Market-Theory,* 42 STANFORD L.REV. 1059, 1085 (April 1990) (noting that "not all corporate information will affect all securities of a given issuer in the same way. Debt securities will be more insulated from the shocks associated with bad news than will equity securities.").

[152] *HealthSouth,* 261 F.R.D. at 635-36. *See* Robert C. Merton, *On the Pricing of Corporate Debt: The Risk Structure of Interest Rates,* 29 J. FIN. 449-70 (1974). The key element to stock and bond pricing theory is that both common stock and bonds may be viewed as options on the underlying assets of the corporation. Given limited liability, common shareholders have the option to default or pay off the bondholders in full when debt becomes due. If, when the debt matures, the value of the assets is less than the payment required to the bondholders, then shareholders will prefer to default and leave the assets to the bondholders. Otherwise, the shareholders will prefer to pay off the bondholders (by repaying the principal amount of the debt) and 'purchase' the assets from the bondholders. Hence, we can view the common shareholders' claims on the firm as a call option on the assets with an exercise price equal to the face value of the bonds (i.e., the amount it takes to repay the principal amount of the debt). Similarly, the value of the bonds can be viewed as the value of the assets minus a call option on the assets. Viewed from this perspective, stock price and bond prices need not move in the same direction. As stated by Moody's which has commercialized Dr. Merton's model, this theory suggests that "the default probability of the firm determines the default probability for all of the firm's debt or counterparty obligations. However, the loss in the

Two examples will clarify this point. If a firm is doing well and therefore the probability that it will default on its debt obligations is negligible, good news for the stock may be neutral news for the bonds because there is no upside earnings potential for the bonds. Similarly, bad news for the stock may be neutral news for the bonds if it does not affect the probability the firm will default on its debt obligations. Also, although the stock market would likely react positively to unexpected dividend increases, bond market prices may react positively to small dividends, but negatively to large dividends.[153] Hence, every announcement may be unique (small dividends being good news but large dividends being bad news for bondholders) and, therefore, confounding events with ambiguous offsetting effects make it difficult to isolate and predict *a priori* the specific effects on bond prices of a specific news announcement.

There are two widely accepted hypotheses regarding the differential impact on bond and stock prices: (1) the information-effect hypothesis and (2) the wealth redistribution hypothesis. First, "[a]ccording to the information-effect hypothesis, changes in financial leverage convey management's expectations about the firm's prospects."[154] The information-effect hypothesis, sometimes referred to as the information-content hypothesis or the signaling theory, suggests that disclosures by firms that indicate improved prospects, all else constant, indicate greater cash flows. This suggests that stock prices and bond prices will move in tandem.

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event of default for each of the classes of obligations can vary widely depending on their nature (security, collateral, seniority, etc.)." *See* PETER CROSBIE & JEFF BOHN, MODELING DEFAULT RISK: MODELING METHODOLOGY 5 (Moody's KMV Company 2003), *available at* http://www.moodyskmv.com/research/singleObligor_wp.html.

[153] George Handjinicolaou & Avner Kalay, *Wealth Redistributions or Changes in Firm Value: An Analysis of Returns to Bondholders and Stockholders Around Dividend Announcements,* 13 J. FIN. ECON. 35 (1984). Also, Dhillon and Johnson find that stock prices and bond prices react in the opposite directions to dividend announcements. Stock prices increase by 0.98% while bond prices decline by 0.37% for dividend increases. For dividend decreases, stock prices decline by 2.01% while bond prices increase by 0.69%. *See* Uphinder S. Dhillon & Herb Johnson, *The Effect of Dividend Changes on Stock and Bond Prices,* 49 J. FIN. 281(1994).

[154] Marcia Millon Cornett & Nickolaos G. Travlos, *Information Effects Associated with Debt-for-Equity and Equity-for-Debt Exchange Offers*, 44 J. FIN. 451, 453 (1989).

Second, "[t]he wealth redistribution hypothesis . . . differs from the information content hypothesis by stating that an increase (decrease) in the equity market value is accompanied by a decrease (increase) in the debt market value."[155] Thus, "the wealth redistribution hypothesis predicts offsetting changes in the values of individual classes of securities and no change in firm value."[156] This means that stock and bond price movements will be inversely related.

Thus, in general, any corporate disclosure must be carefully examined to determine whether it is negative for both bonds and stocks. An extreme hypothetical example will make this clear. Suppose Company A stock trades for $100 and its bonds trade at $50. There are $1.0 million in bonds that are expected to mature in five years and upon maturity bondholders will be paid $100 per bond. Next assume that after some period of time the Company announces it is really a shell corporation with only $1.0 million in cash. Further, assume that this triggers a violation in the bond covenants and requires immediate repayment of the debt at face value (i.e., $100). In this case, assuming no litigation, in an efficient market bond pricing theory would predict that the bond price would shoot up toward $100 and that the stock price would fall toward $0. That they move in opposite directions is a sign that the two securities trade in efficient markets.

As it relates to the *AIG* matter, consider the following extreme hypothetical situation. Assume Company B, a large company with assets of $1.0 billion has equity worth $100 per share with its $1.0 million of AAA-rated bonds trading at par value or $100. For each of the next four quarters the company's performance exceeds expectations and when it discloses the positive news the stock increases by 10%. Would a bondholder be concerned that the price of the bond

[155] George Handjinicolaou & Avner Kalay, *Wealth redistributions or changes in firm value: an analysis of returns to bondholders and stockholders around dividend announcements*, 13 J. FIN. ECON. 35, 38 (1984) (citations omitted).
[156] Ronald W. Masulis, *The Effects of Capital Structure Change on Security Prices: A Study of Exchange Offers*, 8 J. FIN. ECON.139, 143 (1980).

trading at par value did not increase upon these disclosures? Would we conclude that the bond

traded in an inefficient market? The answers are no to both of these questions. In an efficient

market bond pricing theory would not predict that the bond price would increase upon the

positive disclosures. Furthermore, that the firm-specific information has no impact on the bond

price is not an indication that the bond trades in an inefficient market.

This example can be taken a step further. Assume that the Federal Reserve Bank

announces an effort to generate higher interest rates, which leads to a large increase in Treasury

rates. This will result in Company B's bonds falling in value as investors are able to secure

higher returns from Treasury instruments. That the bond prices fall and the stock price goes up

or does not change is not an indication that the bond trades in an inefficient market.

Finally, assume that Company B discloses that it is going bankrupt and will not be

repaying the principal on its bonds. In this case the bond and stock prices will both fall, likely to

zero. That up until that disclosure date the bond did not respond to firm-specific information, yet

with this disclosure it does respond to firm-specific information, does not suggest the bond trades

in an inefficient market. Instead the losses to the bondholders can be directly linked to the

bankruptcy disclosure even though bond prices failed to react to prior firm-specific disclosures.

The relationship between price movements of the AIG Debt Securities and the AIG stock

was also affected by the bond covenants. Holders of AIG's 0.5% Notes had the right to

exchange each of their Notes with a face value of $1,000 for the cash value of 7.17523 shares of

AIG stock.[157] The 0.5% Notes were initially issued with a 20.6% conversion premium. This

value corresponds to a conversion price of $139.37 for the Notes. Following a 3-for-2 stock split

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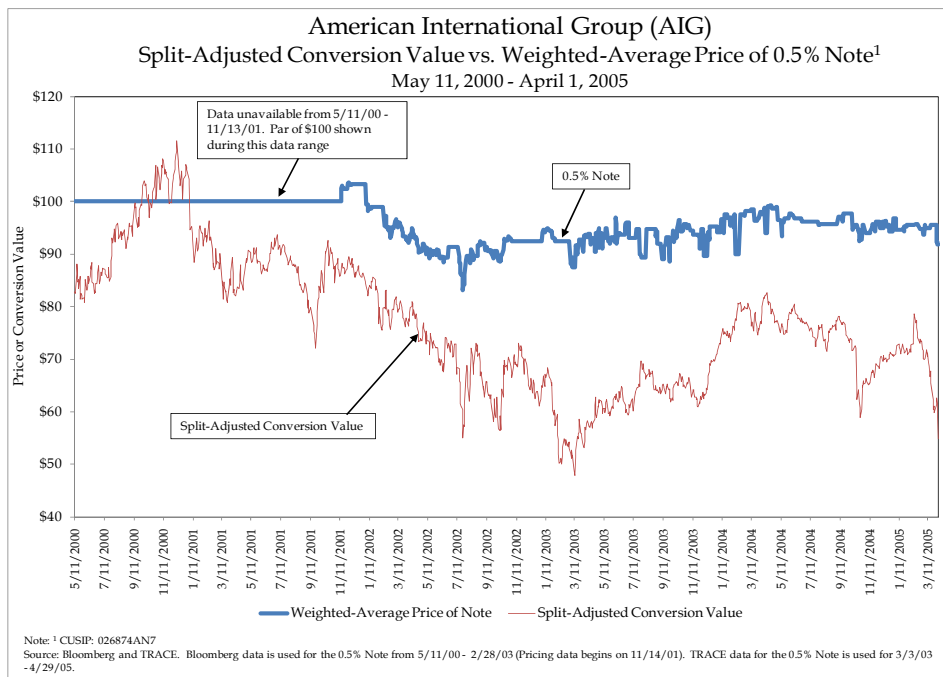[157] Hence, conversion ratio for the 0.5% Notes is 7.17523.

on July 31, 2000, the conversion price was adjusted to a price of $92.91 and the conversion ratio was increased to 10.7628, thus reaching a cash value equivalent to 10.7628 shares of AIG stock. The AIG Zero-Coupon Debentures were initially priced at 65.801% of the face value. These debentures had a conversion ratio of 6.0627, thus convertible into 6.0627 shares of AIG common stock, which was increased to 9.0942 shares of AIG common stock after the 3-for-2 stock split on July 31, 2000. Thus, the initial conversion price for the Zero-Coupon Debentures was $108.53 (or a post-split conversion price of $72.35).

Exhibits 3 and 4 show both bond prices as well as conversion values, which represent the value of common shares the bonds were convertible into. In the early part of the Class Period, the conversion values of the AIG Debt Securities based on AIG's split-adjusted common stock price stayed near or above these conversion prices, thus the conversion options for AIG Debt Securities were in-the-money. For instance, as shown in Exhibit 3, AIG common stock prices averaged $94.79, $96.75 and $98.33 during October, November and December 2000, respectively (post-split period). Thus, the conversion option for the 0.5% Note was significantly in-the-money during this three-month period. For this reason, bond pricing theory predicts that in an efficient market the 0.5% Note would be expected to be sensitive to AIG common stock price movements in this early part of the Class Period. In fact, the prices of both AIG Debt Securities would be expected to reflect most of the changes in the stock price of AIG when they were close to or in-the-money.
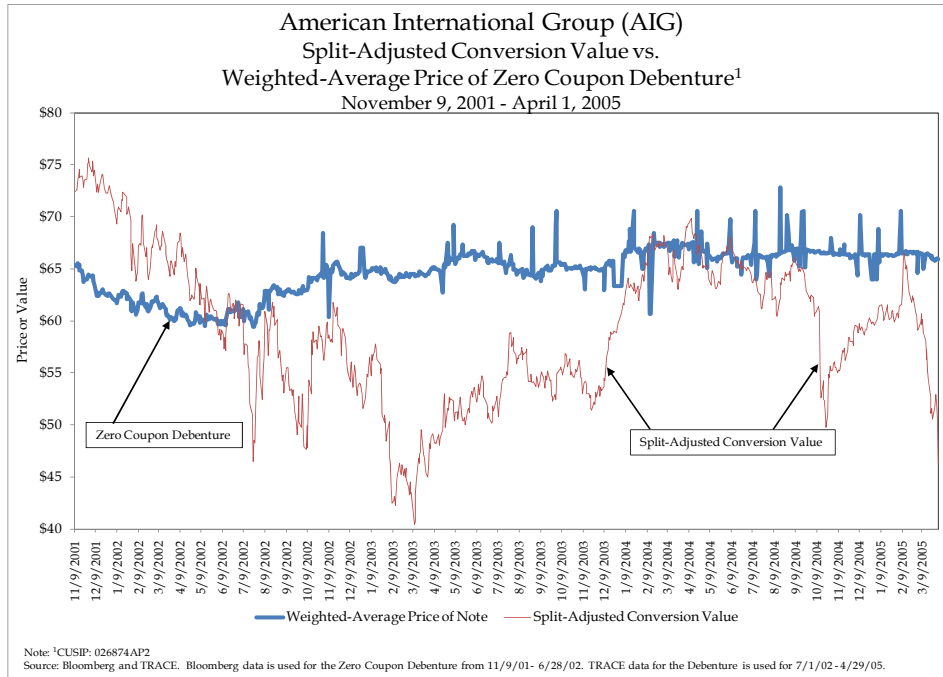
As shown in Exhibit 3, during the period of Corrective Disclosures starting on October 14, 2004 to April 1, 2005, the conversion values on the 0.5% Notes based on AIG's split-adjusted common stock price (trading around $60 or less) remained well below the 0.5% Note prices, thus the conversion options for these Notes were out-of-the-money. As shown in Exhibit

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4, during the period of Corrective Disclosures starting on October 14, 2004 to April 1, 2005 (the

"Corrective Disclosure Period"), the conversion values on the Zero-Coupon Debentures based on

AIG's split-adjusted common stock price (trading around $60-$65) generally remained at or

below the Debenture prices, thus the conversion options for these Debentures were mostly out-

of-the-money. In the ten months prior to the Disclosures, the conversion option on the Zero-

Coupon Debenture was mostly at- or in-the money, and would be expected to have exhibited

sensitivity to AIG stock price movements and disclosures to firm-specific information.

However, bond pricing theory would predict that in the Corrective Disclosure Period, in an

efficient market, the prices of the AIG Debt Securities would behave similar to straight, non-

convertible, investment grade Debentures, and therefore they would not exhibit as much

sensitivity to AIG stock price movements and disclosures to firm-specific information that did

not affect AIG's likelihood of default.

Exhibit 3

American International Group (AIG)
Split-Adjusted Conversion Value vs. Weighted-Average Price of 0.5% Note[1]
May 11, 2000 - April 1, 2005

Note: [1] CUSIP: 026874AN7
Source: Bloomberg and TRACE. Bloomberg data is used for the 0.5% Note from 5/11/00 - 2/28/03 (Pricing data begins on 11/14/01). TRACE data for the 0.5% Note is used for 3/3/03 - 4/29/05.

Exhibit 4

American International Group (AIG)
Split-Adjusted Conversion Value vs.
Weighted-Average Price of Zero Coupon Debenture[1]
November 9, 2001 - April 1, 2005

Note: [1]CUSIP: 026874AP2
Source: Bloomberg and TRACE. Bloomberg data is used for the Zero Coupon Debenture from 11/9/01- 6/28/02. TRACE data for the Debenture is used for 7/1/02 - 4/29/05.

1. Bonds Versus Stocks in Event Studies and Examining Returns

Even though there were distinctly separate periods where bond pricing theory would predict different relationships between the price movements of the AIG Debt Securities and AIG stock prices, Lead Plaintiffs presented a simple, linear regression analysis in an attempt to demonstrate that returns to the AIG Debt Securities reacted to value-relevant or firm-specific information.[158] Lead Plaintiffs' expert witness separately regressed each of the returns of the two AIG Debt Securities against AIG stock returns during the entire Class Period.[159] For both of the AIG Debt Securities, he found strong positive correlations between the returns of the AIG Debt Securities and the returns to AIG's stock. The adjusted R-square, used to measure the

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[158] *In re* American Int'l Group, Inc. Sec. Litig, 265 F.R.D. 157, 182-85 (S.D.N.Y. 2010).

[159] In the expert reports, there is no description of the data used in the regression analysis. Therefore, it is unclear what sources of price and return data were used. It is also unclear whether the analysis utilized transaction prices for the AIG Debt Securities with variable holding periods or whether the analysis relied upon matrix prices and daily returns of the AIG Debt Securities.

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proportion of the stock returns that explain the returns to the debt, was 50%. In other words, he

concluded that AIG's stock returns explained half of the AIG Debt Securities returns. The t-

statistics for the regression coefficients on the stock return variable, used to measure their

statistical significance, ranged between 22.5 and 29.4, leaving no doubt about their statistical

significance or importance for explaining the variation in the returns of the AIG Debt Securities.

Thus, using a simple linear regression, it was demonstrated that the returns of the AIG Debt

Securities reacted to firm-specific disclosures or value-relevant information during the Class

Period.

Without, however, an understanding of why stock and bond prices might move in the

same direction or inversely or why certain information might have a significant effect on one of

the securities and not the other, it is easy to see why the court concluded these results did not

warrant a finding of market efficiency. What was not incorporated into the analysis was the

critical role the convertibility of the AIG Debt Securities played in the regression analysis.

Because, as discussed above, the convertibility option moved in- and out-of-the-money during

the Class Period, careful analysis would have required an explicit modeling of the convertibility

option to be included in the regression. Thus, on October 14, 2004, the AIG stock price was

$60.19 per share, while the bond prices of the 0.5% Note and the Zero-Coupon Debentures were

$95.625 and $66.60, respectively. On October 14, 2004, the 0.5% Note was out-of-the-money

with a conversion value of $64.78, while the Zero-Coupon Debenture was in-the-money with a

conversion value of $54.74. Therefore, there was no reason that the 0.5% Note should have

traded, unless the disclosure had an impact on AIG's likelihood of defaulting on its debt

obligations. Lead Plaintiffs' evidence omitted this critical feature by presenting a simple, linear

regression.

Because the changing values of the conversion option were not incorporated in the regression analysis presented to the court, the overly-simplistic linear regression results are not applicable to the required statistical tests for the entire Class Period. The linear regression results suggest that on average AIG Debt Securities prices reacted in a similar way as AIG stock prices to firm-specific information, due to the convertibility of the AIG Debt Securities. As described above, when the AIG stock price traded above the conversion prices of the AIG Debt Securities (as it did early in the Class Period), the conversion option was in the money and AIG Debt Securities prices would be expected to move almost one-to-one with the AIG stock price movements. Moreover, when AIG stock prices traded significantly below the conversion prices of the AIG Debt Securities (as they did starting with the Disclosure Period), the conversion option is out-of-the-money and, especially for investment grade bonds, bond prices would not be expected to move much if at all in unison with the AIG stock price movements. In other words, during the Disclosure Period, the AIG Debt Securities were similar to straight, investment grade, non-convertible bonds. Thus, the average relation between Common Stock price and Note prices measured over the entire Class Period is not a good estimate of the dynamic relation between prices of Notes and Common Stock during the Disclosure Period.[160]

Thus, bond pricing theory predicts that in an efficient market, economy-wide factors rather than firm-specific factors would have had a greater impact on bond returns on October 14, 2004. Given that the firm-specific information disclosed on October 14 would not have affected

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[160] We did not have access to price data for the AIG Debt Securities for the Class Period used by the experts so we have not run appropriately specified regressions, which would include the impact of changes in the conversion option.

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AIG's likelihood of default, in an efficient market bond pricing theory would predict that there would not be linear price movements for AIG Debt Securities – exactly what was observed.[161]

Finally, the AIG court's conclusion that, "on two of the four dates that he measured the change in bond prices, the 0.5% bonds did not trade at all; a finding that Dr. Cox opined, and the Court agrees, is not indicative of market efficiency"[162] was reached without sufficient background information.[163] As demonstrated above, if there was disclosure of firm-specific information, but that information did not impact the firm's probability of default on that instrument, then unless there was additional information or changes in investors' opinions related to the firm's fixed income securities, there would be no trading, on average, in the bonds in an efficient market.[164] Without an analysis of the probability of default, there is no empirical or theoretical support from which to reach a conclusion regarding efficiency.

Conclusion

There are important differences between the stock market and the bond market when analyzing the fraud-on-the-market theory. Although the *Cammer* factors can be used to analyze bond market efficiency, they require adjustments to account for differences between stock and

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[161] During the early part of the Class Period, while the AIG Debt Securities were close-to or in-the-money, their prices would have been sensitive to common stock prices, and thus the return volatilities of AIG Debt Securities would have been directly driven by the volatility of the AIG common stock returns. During the later Corrective Disclosure Period, because the conversion options for AIG Debt Securities were out of the money, AIG Debt Securities returns would no longer be driven by AIG Common Stock returns, and the return volatility, as investment grade bonds, AIG Debt Securities would have been substantially less. A proper regression analysis would have adjusted the standard errors of the regression used to estimate the statistical significance of the AIG Debt Securities excess returns during the Disclosure Period (such as on October 14, 2004, etc.).

[162] *AIG,* 265 F.R.D. at 179.

[163] In reaching the opposite conclusion, the *Dynex* court observed there was no trading for at least 57 days after the corrective disclosure, however, based on the subsequent movements of the matrix prices (not necessarily transaction prices) that followed 57 days later, it held that there was support for *immediate* cause-and-effect. *In re* Dynex Capital, Inc. Sec. Litig., 05 Civ. 1897 (HB), 2011 WL 781215, at *7 (S.D.N.Y. Mar. 7, 2011).

[164] We believe it was error to conclude that "[t]he lack of sales [was] inconsistent with the theory of an efficient market, and thus . . . that [Lead Plaintiffs' expert had not] provided a credible explanation for the reason that no 0.5% bonds were sold on two of the AIG-related news days." *AIG,* 265 F.R.D. at 180.

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bond markets, such as the domination of institutional trading activity in bond markets and bond covenants that complicate simple pricing models. Failure to account for these and other differences will lead to significant confusion about the application of the *Cammer* factors when evaluating market efficiency in class certification.

After its examination of the five factors listed by the court in *Cammer* and the bid-ask spread, identified by a court subsequent to *Cammer*,[165] as well as the alleged lack of transparency in the market, the *AIG* court determined the evidence did not support a conclusion that the AIG Debt Securities traded in open, developed and efficient markets.[166] The court thus ruled against certification of the class of AIG bondholders.[167] Unfortunately, this analysis failed to account for the critical distinctions between the market for corporate stocks and corporate bonds. Careful application of bond pricing theory requires adjustments to a *Cammer*-type examination of turnover and the relative transaction sizes, frequency of trade, as well as analyst reporting and cause-and-effect to accommodate the salient differences between bonds and stocks. Taking into account these differences yields a contrary conclusion than that reached by the *AIG* court – namely, that the AIG Debt Securities traded in open, developed and efficient markets. Furthermore, as demonstrated above, with proper adjustments, the *Cammer* factors can and should be applied to the corporate bond market.

The impending inclusion in the class action litigation arena of hundreds of billions of dollars of new and more complex securities, for instance, such structured products as mortgage

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[165] *Krogman* supplements the five-factor test from *Cammer* with an analysis of the bid-ask spread of the security in question. Krogman v. Sterritt, 202 F.R.D. 467, 474 (D. Tex. 2001) (citing Serfaty v. Int'l Automated Sys., 180 F.R.D. 418, 423 (D. Utah 1998); O'Neil v. Appel, 165 F.R.D. 479, 503 (W.D. Mich. 1996)).
[166] *AIG,* 265 F.R.D. at 181, 188.
[167] *Id.*

backed securities,[168] credit default swaps,[169] and collateralized debt obligations (CDOs),[170]

makes even more important a rigorous theoretical analysis describing the economic and financial

factors determining the relationship between stock and bond price movements, as well as bond-

to-bond price movements.[171] This is because, with these instruments, the complexity of the

analysis is accentuated relative to corporate bonds. Furthermore, each structured product is

unique.[172] Thus, even more so than with corporate bonds, it is incumbent upon the courts to

appropriately adjust application of the *Cammer* factors to account for how these markets differ

from the markets for corporate stocks when determining whether to certify a class of security

holders. To make their case, it also becomes incumbent on the parties claiming that the

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[168] The Securities and Exchange Commission defines mortgage-backed securities as follows: "Mortgage-backed securities (MBS) are debt obligations that represent claims to the cash flows from pools of mortgage loans, most commonly on residential property. Mortgage loans are purchased from banks, mortgage companies, and other originators and then assembled into pools by a governmental, quasi-governmental, or private entity. The entity then issues securities that represent claims on the principal and interest payments made by borrowers on the loans in the pool, a process known as securitization." http://www.sec.gov/answers/mortgagesecurities.htm (last visited Apr. 8, 2011).

[169] "Credit Default Swaps are contingent claims with payoffs that are linked to the credit risk of a given entity. The buyer of the CDS receives protection from default risk in exchange for periodic payments (usually quarterly but sometimes semi-annually) until the expiration of the contract or until a predefined credit event occurs which, for our data, is default by the given entity. In the event of default, the buyer of the CDS spread receives a payoff equal to the difference between the face value and the market value of the underlying debt minus the CDS premium which has accrued between the default date and the last periodic payment date. In practice, buying a CDS contract is tantamount to buying insurance against default where the quarterly premium payments are determined from the CDS spreads." SANJIV DAS, PAUL HANOUNA & ATULYA SARIN, FUNDAMENTALS-BASED VERSUS MARKET-BASED CROSS-SECTIONAL MODELS OF CDS SPREADS (2006), *available at* http://www.fdic.gov/bank/analytical/cfr/2006/sept/hanouna_p.pdf (2006).

[170] *See* Securities and Exchange Act of 1934 § 3(a), 15 U.S.C. § 78c (2006) (providing a definition of the term "asset-backed security"). Nomura Securities defines CDOs as follows: "A CDO is similar to a regular mutual fund that buys bonds. However, unlike a mutual fund, most of the securities sold from a CDO are themselves bonds, rather than shares. In simplest terms, a CDO is an arrangement that raises money primarily by issuing its own bonds and then invests the proceeds in a portfolio of bonds, loans, or similar assets. Payments on the portfolio are the main source of funds for repaying the CDO's own securities." *See* NOMURA SECURITIES INTERNATIONAL, INC., CDO'S IN PLAIN ENGLISH (2004), *available at* http://www.vinodkothari.com/Nomura_cdo_plainenglish.pdf.

[171] According to Bank for International Settlements (BIS), the notional principal of outstanding over-the-counter derivatives issued in G10 countries in 2010 exceeded $600 trillion. The market value of these derivatives is estimated to be around $25 trillion (of which about $7 trillion is issued in the U.S.) Both of these amounts would easily dwarf most other capital markets. *See* BANK FOR INTERNATIONAL SETTLEMENTS, AMOUNTS OUTSTANDING OF OVER-THE-COUNTER (OTC) DERIVATIVES, *available at* http://www.bis.org/statistics/otcder/dt1920a.pdf; BANK FOR INTERNATIONAL SETTLEMENTS, STATISTICAL ANNEX, *available at* http://www.bis.org/publ/qtrpdf/r_qa1103.pdf#page=104.

[172] For instance, it is unlikely there are analysts' reports describing the financial conditions of specific structured products.

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securities trade in efficient markets to present a thorough theoretical analysis in combination with reporting, explaining and interpreting their empirical results. Litigation related to CDOs and other structured investment products is well underway.[173] The size of these markets are comparable to the $7.4 trillion corporate bond market[174] points to the importance of properly adjusting the *Cammer* factors based on the underlying financial theory.

The *AIG* decision also raises significant issues of public policy. As described by the U.S. Supreme Court, private securities-fraud class actions are "an essential supplement to criminal prosecutions and civil enforcement actions,"[175] that "deter[] fraud" and "maintain public confidence in the marketplace."[176] Thus, the decision in *AIG* has much broader implications than simply failing to allow the AIG Debt Securities holders to have their day in court. It may negatively affect a significant mechanism to deter fraud in the market place for all debt instruments.

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[173] *See generally* Wells Fargo Mortgage-Backed Certificates Litig., No. 09 Civ. 1376 (LHK) (N.D. Cal. filed Dec. 27, 2010); *In re* Wachovia Corp. Preferred Sec. & Bond/Notes Litig., No. 09 Civ. 6351 (S.D.N.Y. filed Mar. 23, 2011); *In re* Morgan Stanley Mortgage Pass-Through Certificates Litig., No. 09 Civ. 2137 (LTS) (S.D.N.Y. filed Nov. 22, 2010); Pub. Employees' Ret. Sys. of Miss. v. Merrill Lynch & Co. Inc., No. 08 Civ. 10841 (JSR) (S.D.N.Y. filed Dec. 1, 2010); Pub. Employees' Ret. Sys. of Miss. v. Goldman Sachs Group, Inc., No. 09 Civ. 01110 (HB) (S.D.N.Y. filed Jan. 12, 2011); Bear Stearns Mortgage Pass-Through Litig., No. 08 Civ. 8093 (LTS) (S.D.N.Y. filed Dec. 23, 2009); Dodona I, LLC v. Goldman, Sachs & Co. No. 10 Civ. 7497 (JM) (S.D.N.Y. filed Sept. 30, 2010).

[174] BANK FOR INTERNATIONAL SETTLEMENTS, AMOUNTS OUTSTANDING OF OVER-THE-COUNTER (OTC) DERIVATIVES, *available at* http://www.bis.org/statistics/otcder/dt1920a.pdf.

[175] Tellabs, Inc. v. Makor Issues & Rights, Ltd., 551 U.S. 308, 313 (2007).

[176] Dura Pharm., Inc. v. Broudo, 544 U.S. 336, 345 (2005).