THE JOURNAL OF FINANCE • VOL. XXXVII, NO. 5 • DECEMBER 1982

# The Impact of Merger Bids on the Participating Firms' Security Holders

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## ABSTRACT

This paper investigates whether merger bids have an impact on the wealth of the participating firms' bondholders and stockholders. Monthly and daily bond and stock returns are calculated relative to the announcement date of a merger bid for a sample of conglomerate mergers. The results show that while the stockholders of target firms gain from a merger bid, no other securityholders either gain or lose. To provide direct evidence on the existence of "diversification effects" and "incentive effects," we test whether the bondholders' returns are dependent upon the correlation between the returns of the merging firms and whether the size of the bondholders' and stockholders' returns in individual mergers are correlated. The results are consistent with a capital market that efficiently resolves conflicts of interest between stockholders and bondholders.


RECENT EMPIRICAL STUDIES BY Mandelker [22], Langetieg [18], Dodd [6], and Asquith [1] provide evidence that mergers have a favorable effect on the market value of the common stocks of merging firms: the acquired firms' stockholders earn large positive abnormal returns from the merger and the acquiring firms' stockholders are affected little if at all. Although these empirical studies provide extensive evidence concerning the effects of mergers on the stockholders of the merging firms, they still leave several important questions unanswered.

First, these studies examine the returns of only one group of the firm's claimants, the stockholders. It is possible that the positive abnormal returns reported come at the expense of other claimants. That is, mergers may impose a loss on some claimants of the merging firms, and the stockholders' positive abnormal returns may simply reflect negative abnormal returns to these other claimants. Jensen and Meckling [15] argue that there is an incentive for the stockholders of leveraged firms to expropriate the bondholders' wealth by undertaking investment projects which increase the firm's riskiness. Since a merger is also a corporate investment, it follows that there is an incentive for the stockholders to acquire firms which increase the variability of the firm's cashflow. That is, the stockholders may earn positive abnormal returns (even if there is no real synergy) at the expense of bondholders by increasing the firm's risk through merger. The bondholders lose because of the increase in the default risk of the

* Assistant Professor of Finance, Harvard University, and Professor of Finance, The University of Michigan, respectively. We wish to thank Michael Brennan, Eugene Fama, Bob Hamada, Bob Higgins, John Lintner, Larry Schall, Peter Dodd, and especially Michael Bradley for helpful comments, and Y. Yun for assistance in data collection. This research was supported by summer research grants from Harvard University and the University of Michigan Graduate School of Business Administration.

existing bonds. The positive abnormal returns to stockholders would, in this case, represent a wealth transfer from bondholders.

Higgins and Schall [13], Galai and Masulis [11], and Kim and McConnell [16] argue the opposite. They argue that mergers reduce the risk of default of the merging firms by combining two separate cash flows which are less than perfectly correlated. A reduction in the default risk in turn increases the market value of the merging firms' outstanding debt. Without any real synergies or pure financial effects, the market value of the postmerger firm is simply the sum of the premerger firms' market values. This means that the increase in the market value of outstanding debt leads to a concomitant decline in the market value of the merging firms' equity. That is, mergers have a diversification effect at the firm level, and this effect creates wealth transfers from stockholders to bondholders.[1]

These opposite predictions about the direction of the wealth transfers between stockholders and bondholders result from focusing on different facets of corporate mergers. The first approach focuses on the incentives inherent in the agency relationship between stockholders and bondholders, the "incentive effect," while the second approach focuses on the effect of firm diversification on securityholders, the "diversification effect." How these two effects interact and which one actually prevails cannot be answered by examining the stockholders' returns alone. Positive stockholders' returns do not necessarily mean negative bondholders' returns, because wealth transfers are not the only possible consequence of merger. Real synergies, for example, may generate positive stockholders' returns without imposing any wealth loss on bondholders. Thus, to provide more direct evidence on wealth transfers, it is necessary to examine the returns of both stockholders and bondholders.

Kim and McConnell [16] provide some evidence on bondholder returns. They examine monthly bondholders' returns around the merger date, and find no statistically significant abnormal bondholders' returns. However, they do not examine stockholders' returns, nor do they provide a direct test of the "diversification effect" or the "incentive effect." Furthermore, their results may be dictated by their methodology. First, monthly returns are not as sensitive in distinguishing changes in securityholders' wealth as are daily returns; second, as Brown and Warner [4] point out, the choice of event dates is crucial. While Kim and McConnell use the merger date as the event date, both Dodd [6] and Asquith [1] demonstrate that the merger date is not nearly as accurate as the announcement date in analyzing stock market reaction to mergers. Asquith shows that the time lag between the announcement date and the merger date varies widely from merger to merger. When the merger date is used for analysis, this variable time lag creates so much noise that even if there is a systematic movement in security prices, statistical tests may not detect it.[2] Therefore, to examine wealth transfers, it is necessary to examine not only the returns of both stockholders and bondholders, but also the daily returns of stockholders and bondholders at the

[1] This necessarily assumes that management has some discretionary power not to act in the stockholders' best interests. If stockholders are in complete control of the firm, mergers will never take place for the sole purpose of achieving diversification at the firm level.

[2] In the sample used by Kim and McConnell, the average lag between press date and merger date was 6 months, with a standard deviation of 5.29 months.

announcement date. Finally, the "incentive" and "diversification" effects may interact and cancel, and thus it is necessary to isolate the two effects and estimate them individually.

In addition to the question of whether wealth transfers arise, there is a debate in the merger literature over whether mergers increase firm value due to financial effects. Many authors (e.g. Myers [26], Schall [28], and Rubinstein [27]) argue that in a perfect capital market, there are no pure financial effects from merger. That is, although corporate mergers may generate real synergies which have value, in the absence of such real synergies a merger will not change the total market value of the merging firms. However, others (e.g., Lewellen [20], Lee and Barker [19], and Marshall, Yawitz, and Greenberg [23]) state that financial benefits will result if there are imperfections in the capital market. These financial benefits include reductions in corporate tax liability, reductions in agency costs, and reductions in expected bankruptcy costs.

This issue could be resolved unequivocally by examining a sample of mergers which have no real synergies. If firm value increases for these mergers, it would indicate the existence of financial benefits. Unfortunately, it is impossible to be certain that any class of mergers has no synergy. Nevertheless, it may be argued that since conglomerate mergers tend to result in less combination of real activities than nonconglomerate mergers, the amount of real synergy associated with conglomerate mergers is less than that associated with nonconglomerate mergers.[3] Consequently, one might argue that the securityholders' returns from conglomerate mergers are less than those from nonconglomerate mergers if there are no pure financial effects associated with mergers. Since a portion of the samples used in previous empirical studies (e.g., Mandelker [22], Langetieg [18], Dodd [6], and Asquith [2]) represents nonconglomerate mergers, examining the securityholders' returns from conglomerate mergers and comparing them with the previous empirical studies may shed some light on the existence of possible financial effects.

The purpose of this paper is to study these two issues in greater detail. Monthly and daily returns to both stockholders and bondholders are calculated for firms involved in mergers which were classified as "conglomerate" by the Federal Trade Commission. The returns of acquiring and acquired firms are then examined separately. To provide more direct evidence on the existence of a "diversification effect" and an "incentive effect," we test whether the bondhold-

[3] "Conglomerate merger" is a nebulous concept. Generally it is meant to describe a combination of firms with unrelated production functions. While synergistic gains from conglomerate mergers are not the result of horizontal or vertical production relationships, such gains may be the result of other real activities, e.g., economies of administrative and managerial functions.

There are several empirical studies which address this question of whether conglomerate mergers combine real activities. The most direct evidence is provided by the Federal Trade Commission Survey [9], which looks at postmerger changes in both administrative functions and management personnel. Their conclusion is that most conglomerate acquirers used a multidivisional structure and "made only minor changes in the operations of acquired companies, which had no discernible effect" [p. 85]. Lynch [21] reaches the same conclusion and states that there is "little integration of the operations of acquired subsidiaries" and that what integration took place "typically [consisted of] only some staff functions" [p. 282]. Gort [12], in a more indirect approach, finds little evidence that greater operating efficiencies are achieved through conglomerate mergers.

ers' returns are dependent upon the correlation between the returns of the merging firms and whether the size of the bondholders' and stockholders' returns in individual mergers are correlated. All of these returns are calculated around the announcement date rather than the merger date. The next two sections contain the data and methodology. They are followed by the results in Sections III, IV, and V and the conclusions in Section VI.

## I. Data

The sample of merging firms used in this study consists of the complete universe of firms which meet the following criteria:

(1) the merger is classified as "conglomerate" by the Federal Trade Commission;
(2) either the acquiring or the acquired firm engages in a complete merger between 1 January 1960 and 31 December 1978, in which the book value of the assets of the smaller firm is greater than 10% of the book value of the assets of the larger firm;
(3) the firm engages in only one such merger during the 48 months surrounding the merger; and
(4) the merging firm has publicly traded nonconvertible bonds outstanding from 24 months before the merger until 24 months after the merger and during the 12 months before the merger announcement.

These restrictions are severe, and from a potential list of 2,870 firms involved in a merger or acquisition classified by the FTC, only 50 firms satisfy these four criteria.[4] These 50 firms consist of 22 acquired firms with 24 bond issues and 28 acquiring firms with 38 bond issues. The first three criteria ensure a sample of conglomerate mergers free from partial, minor, and multiple mergers. The fourth criterion eliminates hybrid securities which have the characteristics of both equity and debt, and guarantees data availability. When there is a wealth transfer between stockholders and bondholders, its effect on the value of hybrid securities cannot be determined a priori.

The announcement date is defined as the day on which the news of the merger bid first appears in the *Wall Street Journal.* Announcement dates for this study are collected from the *Wall Street Journal Index.* Monthly bond prices are collected from the *Bank and Quotation Record* and daily bond prices are collected from the *Wall Street Journal.* The stock return data for the sample firms come from the monthly and daily CRSP files.[5]

[4] Thirty-nine of the merging firms come from the Kim and McConnell [16] study. Initial tests based on their sample show mixed results. Bondholders do obtain significant (at the 10% level) positive excess returns for several time periods, but these gains are not consistent over all time periods. Rather than report only these results, we feel it is necessary to expand the sample size and rerun our statistical tests. Two firms and two bonds are eliminated from Kim-McConnell's original sample. Canada Dry is eliminated because the firm has no bond outstanding 12 months before the press date. Tidewater Oil is eliminated because there is no press date. (Tidewater Oil had been a controlled subsidiary of Getty Oil since 1953 and the decision to acquire control could not be properly dated.)

[5] The monthly CRSP files do not have data for 2 of our sample firms, one bidder and one target, and this leaves a sample of 48 stocks. Of these 48 stocks, 27 are acquiring firms and 21 are acquired firms. All of the sample firms have daily stock returns data available.

## II. Empirical Methodology

Monthly abnormal returns are calculated for the sample bonds using a paired-comparison technique. Each sample bond is matched with a bond issued by a nonmerging firm with similar risk-return characteristics. The matching criteria used are: the bond rating as given by *Standard and Poor's Bond Guide*; the term-to-maturity; the coupon rate; and the classification of the bonds as industrial or utility bonds.[6]

Additionally, the issuing firm of a matching bond must not engage in any major merger during the 48-month interval which surrounds the merger of the corresponding sample firm.[7] Thus, each bond in the matching (or control) group may be thought of as a risk-adjusted index with which a similar bond issued by a merging firm can be compared. If the underlying risk-return characteristics of the two sets of bonds are identical except that the issuers of one set of bonds are involved in merger bids while the issuers of the other are not, then any difference in returns may be considered an abnormal return which is attributable to the merger bid. All data for the matching bonds were collected from *Standard and Poor's Bond Guide*.[8]

Monthly rates of return for each bond in the sample and the matching bond are computed for the twelve months before and after the announcement date using the formula:

$$R_t = \frac{\left(P_t + \frac{n}{12}C\right) - \left(P_{t-1} + \frac{n-1}{12}C\right)}{P_{t-1} + \frac{n-1}{12}C} \tag{1}$$

where

$P_t$ = the market price of the bond at the end of month $t$;
$C$ = the annual coupon payment per bond;
$\frac{C}{12}$ = the coupon earned for holding the bond one month; and
$n$ = the number of months accrued toward the next coupon payment at the end of month $t$

[6] This is the same paired-comparison technique used in Kim and McConnell [16] and Kim, McConnell, and Greenwood [17]. The Kim, McConnell, and Greenwood paper contains the theoretical and empirical justifications for matching bonds on the basis of these characteristics.

[7] A merger is classified as major if the book value of the assets for the smaller firm is greater than 10% of the book value of the assets for the larger firm. Ideally we would like to exclude all bonds which are involved in any merger during the 48-month interval. Adding such a restriction to the above four criteria, however, would make it virtually impossible to obtain a sample of publicly traded matching bonds.

[8] For the sample bonds which come from the Kim-McConnell study, the original matching bonds are used. The only exceptions are two matching bonds in the Kim and McConnell study which did not trade regularly during the period surrounding the press date. They are replaced with new bond issues selected in accordance to the criteria above.

All of our empirical tests are run twice, once using the new set of matching bonds and the second time using the original set of matching bonds. In both cases, the magnitude of the bondholders' abnormal returns and the $t$-statistics are similar. All the results reported in this paper are generated with the new set of matching bonds.

The return $R_t$ takes into account the fact that when a bond is sold, the buyer pays the seller both the current market price of the bond and the accrued interest.

The monthly rate of return for each matching bond is subtracted from the monthly rate of return for each corresponding sample bond. If a firm has several bonds outstanding, the return differences for all the bonds are averaged over each month.[9] The average of the firm differences is computed for each relative month $t$, from $t = -12$ to $t = +12$, where $t = 0$ designates the announcement month, by the equation

$$AD_t = \frac{1}{M} \sum_{i=1}^{M} (R_{it} - R^*_{it}) \tag{2}$$

where

$\mathrm{AD}_t$ = the average difference of rates of return for relative month $t$;
$R_{it}$ = the rate of return on firm $i$'s sample bonds in relative month $t$;
$R^*_{it}$ = the rate of return on firm $i$'s matching bonds in relative month $t$; and
$M$ = the number of firms in the sample

The measure $AD_t$ may be thought of as the average abnormal return to the bondholders of firms involved in a merger bid during month $t$.

These average differences ($AD$) in rates of return are then summed over several months to compute the cumulative average differences ($CAD$) by

$$CAD\text{-}K_T = \sum_{t=K}^{T} AD_t \tag{3}$$

where $CAD\text{-}K_T$ is the cumulative average differences of rates of return from relative month $K$ through relative month $T$. $CAD\text{-}K_T$ thus represents one measure of abnormal returns over time. Two different series of $CAD$s are computed in this paper. $CAD\text{-}12$ represents the $CAD$ series cumulated from relative month $-12$ forward (i.e., $K = -12$), with $-12 \leq T \leq +12$; and $CAD\text{-}2$ represents the $CAD$ series cumulated from relative month $-2$ forward (i.e., $K = -2$), with $-2 \leq T \leq +12$. The $CAD\text{-}12$ series is computed simply because the return data covers the period from $t = -12$ to $+12$ months. The $CAD\text{-}2$ series is computed because Dodd [6] and Asquith [1], using shareholders returns, found that the market's reaction started at $-2$ months. Thus, the series $CAD\text{-}2$ should capture the entire market reaction to a merger bid without including any unrelated effects which may show up in the series $CAD\text{-}12$.

Daily returns are also calculated for the sample firms over the period from 10 days before until 10 days after the merger announcement. This is done by modifying Equation (1) to compute returns for daily holding periods. Since many bonds did not trade more than once over this 20 day period, the number of merging firms for which daily returns could be calculated is reduced to 17; 11 acquiring firms and 6 acquired firms. The number of matching bonds is similarly reduced; consequently, more than half of the 17 sample firms lost their matching firms. Thus, to prevent a further reduction in sample size, all daily returns in this study are reported as raw returns, not risk adjusted. Returns of multiple bonds from the same firms are again combined and averaged.

[9] This is done so that multiple observations from some firms would not create interdependence in the sample. This leaves 50 observations, 28 from acquiring firms and 22 from acquired firms.

The method used to calculate monthly stockholder returns is similar to that used by Ibbotson [14] and Asquith [2]. This is based on Black's [3] capital asset pricing model, and uses the following cross-sectional regression to estimate one month excess returns:

$$(R_{it} - \gamma_{0t}) = \hat{\alpha}_t + \hat{\beta}_t(R_{mt} - \gamma_{0t}) + \hat{\eta}_{it} \tag{4}$$

where

$t$ = the relative month;
$R_{it}$ = the return on security $i$ during month $t$;
$\hat{\alpha}_t$ = the regression constant which is an estimate of the excess return to the sample firms during month $t$;
$\hat{\beta}_t$ = the regression coefficient for the independent variable $(R_{mt} - \gamma_{0t})$;
$R_{mt}$ = an estimate of the expected rate of return on the market portfolio;
$\gamma_{0t}$ = an estimate of the expected rate of return on the minimum variance portfolio whose return is uncorrelated with the market portfolio's return; and
$\hat{\eta}_{it}$ = the disturbance term during relative month $t$

The regression analysis calculates $t$-statistics for $\hat{\alpha}_t$ directly. $R_{mt}$ is the equal weighted average return on all NYSE stocks, and the $\gamma_{0t}$'s are calculated using the same procedure as the Fama-MacBeth [8] study. The month of the press day is indexed as $t = 0$ and the CRSP files provide $R_{it}$. To eliminate correlation between securities, all stocks which have press days during the same calendar month are formed into equally weighted portfolios and are considered a single security when estimates of $\hat{\alpha}_t$ are computed from Equation (4).

While Equation (4) can be used to measure abnormal stock performance over single month periods, it does not measure abnormal performance over holding periods of several months. Furthermore, aggregating $(R_{it} - \gamma_{0t})$ and $(R_{mt} - \gamma_{0t})$ for each security over the desired time period introduces another possible source of interdependence since security returns which are summed over several event time periods may overlap in calendar time periods.

The problem of overlapping calendar time periods is solved by forming a portfolio in each calendar time period that covers several relative time periods. That is, to calculate a three month abnormal return for the holding period from $t = -2$ to $t = 0$, in each calendar month a portfolio is formed of all securities whose relative event time is $t = -2$, $t = -1$, or $t = 0$ during that calendar month. This portfolio is held for one calendar month, and in the next calendar month a similar portfolio is formed. These portfolios, which measure performance over any given holding period, can be used in the following regression model to calculate abnormal returns.

$$(R_{p,n,r} - \gamma_0) = \hat{\alpha}_{nr} + \hat{\beta}_{nr}(R_m - \gamma_0) + \hat{\eta}_{p,n,r} \tag{5}$$

where

$p$ = portfolio of securities held during a calendar time period;
$n, r$ = the beginning and end of the relative time holding period, i.e., $n \leq t \leq r$;
$R_{p,n,r}$ = the calendar month return on the portfolio $p$ consisting of securities

with $n \leq t \leq r$ (this return is calculated directly from the CRSP files);

$R_m, \gamma_0$ = are identical to their definitions in Equation (4) but measured in the same calendar month as $R_{p,n,r}$;

$\hat{\alpha}_{nr}$ = the regression constant which serves as a measure of abnormal performance for the holding period from $n$ to $r$;

$\hat{\beta}_{nr}$ = the regression coefficient for the independent variable; and

$\hat{\eta}_{p,n,r}$ = the regression disturbance term for the *pth* portfolio

The regression analysis provides $t$-statistics for $\hat{\alpha}_{nr}$ directly.

Using Equations (4) and (5) we calculate a series of single month abnormal returns and two series of cumulative portfolio abnormal returns beginning at $t = -12$ and $t = -2$ respectively. They end at $t = +12$ for acquiring firms and at $t = 0$ for acquired firms. The series end earlier for acquired firms because, although most firms continued to exist after the announcement month, the period until the merger month varies widely and the number of stocks in the series does not remain constant after $t = 0$.

The daily excess return for each stock is estimated by

$$XR_{it} = R_{it} - E(\tilde{R}_{it}) \tag{6}$$

where

$t$ = the day measured relative to an event;

$XR_{it}$ = the excess return to security $i$ during day $t$;

$R_{it}$ = the return on security $i$ during day $t$; and

$E(\tilde{R}_{it})$ = the expected rate of return on security $i$ for day $t$

$E(\tilde{R}_{it})$ is estimated by grouping annually all securities listed on the NYSE and the AMEX into 10 equal-size control portfolios ranked according to a measure of their market risk. Each security is therefore assigned to one of 10 portfolios. The observed return to the control portfolio to which security $i$ is assigned is then used as the estimate of $E(\tilde{R}_{it})$. The excess return for each security, $XR_{it}$, is then calculated as the difference between the actual return to a security and the return to its control portfolio. These daily excess returns are averaged across firms and cumulated over the 20 day period surrounding the announcement date.

## III. Results on Bond Returns

### *A. Monthly Returns*

#### *A.1 The Total Sample*

Table I presents average differences ($AD$) and cumulative average differences ($CAD$) on the sample of 50 firms for the period from 12 months before until 12 months after the announcement month. $T$-statistics for each month are also calculated and displayed.[10] As discussed earlier, two different $CAD$ measures are presented in the results. $CAD-12$ cumulates average differences for each month

[10] The $t$-statistics are computed by the standard procedure for paired samples. For example, to compute the $t$-statistic for $CAD$-2, $CAD$-2 at Month $T$ is divided by the sample standard deviation of

**Table I**

Estimated Abnormal Bond Returns for all Firms

| Relative Month | Average Difference | T-Statistic | Cumulative Average Difference-12 | T-Statistic | Cumulative Average Difference-2 | T-Statistic |
|---|---|---|---|---|---|---|
| −12 | −.0040 | −0.75 | −.0040 | −0.75 | | |
| −11 | .0032 | 0.63 | −.0008 | −0.15 | | |
| −10 | .0046 | 0.98 | .0037 | 0.74 | | |
| −9 | .0006 | 0.11 | .0043 | 0.73 | | |
| −8 | −.0013 | −0.39 | .0030 | 0.49 | | |
| −7 | .0022 | 0.57 | .0051 | 0.74 | | |
| −6 | .0003 | 0.07 | .0054 | 0.74 | | |
| −5 | −.0040 | −0.66 | .0015 | 0.23 | | |
| −4 | .0031 | 0.76 | .0046 | 0.73 | | |
| −3 | −.0001 | −0.03 | .0044 | 0.70 | | |
| −2 | .0058 | 1.32 | .0103 | 1.71 | .0058 | 1.32 |
| −1 | −.0013 | −0.44 | .0090 | 1.49 | .0046 | 1.01 |
| 0 | .0107 | 1.66 | .0197 | 2.76 | .0153 | 1.95 |
| +1 | −.0052 | −0.85 | .0145 | 1.67 | .0101 | 1.37 |
| +2 | −.0036 | −1.10 | .0109 | 1.16 | .0065 | 0.83 |
| +3 | .0022 | 0.40 | .0131 | 1.13 | .0087 | 1.09 |
| +4 | −.0098 | −1.55 | .0034 | 0.34 | −.0010 | −0.13 |
| +5 | .0069 | 1.28 | .0103 | 1.02 | .0059 | 0.68 |
| +6 | .0041 | 0.76 | .0144 | 1.46 | .0100 | 1.23 |
| +7 | −.0058 | −1.00 | .0086 | 0.75 | .0042 | 0.41 |
| +8 | .0021 | 0.41 | .0108 | 1.03 | .0064 | 0.70 |
| +9 | .0011 | 0.22 | .0119 | 1.12 | .0075 | 0.82 |
| +10 | .0040 | 0.67 | .0159 | 1.30 | .0115 | 1.01 |
| +11 | .0028 | 0.38 | .0187 | 1.67 | .0143 | 1.41 |
| +12 | −.0058 | −1.12 | .0129 | 1.10 | .0085 | 0.76 |

from month $t = -12$, while *CAD*−2 cumulates average differences from month $t = -2$.

Table I indicates that the entire sample of bonds has a positive average abnormal return during the announcement month $t = 0$. The average difference

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the paired difference variable as follows:

Let $d_{iT} = \sum_{k=-2}^{T} R_{ik} - \sum_{k=-2}^{T} R_{ik}^{*}$ be the paired difference variable.

Then $t_T = \bar{d}_T / s_{\bar{d}_T}$,

where $\bar{d}_T = \frac{1}{M} \sum_{i=1}^{M} \left( \sum_{k=-2}^{T} R_{ik} - \sum_{k=-2}^{T} R_{ik}^{*} \right)$

$= \sum_{k=-2}^{T} \frac{1}{M} \sum_{i=1}^{M} (R_{ik} - R_{ik}^{*})$

$= \sum_{k=-2}^{T} AD_k$

$=$ *CAD*-2 at month $T$ [see Eq. (3)].

$$s_{\bar{d}_T} = \sqrt{\frac{1}{M} \left( s_1^2 + s_2^2 - \frac{2 \sum_{i=1}^{M} \left( \sum_{k=-2}^{T} R_{ik} \right) \left( \sum_{k=-2}^{T} R_{ik}^{*} \right)}{M - 1} \right)}$$

$s_1^2$ = sample variance of $\sum_{k=-2}^{T} R_{ik}$

$s_2^2$ = sample variance of $\sum_{k=-2}^{T} R_{ik}^{*}$

is +1.07% and the $t$-statistic is +1.66. Furthermore, Table I reports that the *CAD*-12 is +1.97% with a $t$-statistic of 2.76 and the *CAD*-2 is +1.53% with a $t$-statistic of 1.95. Taken alone, these results are quite different from those reported by Kim and McConnell [16]. In the merger month, Kim and McConnell report an *AD* of −.51% and a $t$-statistic of −0.13. At no time do their $t$-statistics for either the *AD*s or the *CAD*s ever exceed ±0.4. This difference in $t$-statistics is remarkable, given that the methodology for computing returns is identical and that a large fraction of the sample bonds in Table I are the same. Presumably, the use of the announcement month, which eliminates the time lag between announcement month and merger month, significantly reduces at least one source of noise in the bond results.

In the months following the announcement month, however, the *CAD*s in Table I diminish. No other month has a significant $t$-statistic, and at month $t = +4$, the *CAD*-2 is negative. Thus, while the results in Table I suggest that there may be a positive wealth effect during the announcement month, the evidence is not conclusive.

Certain effects may be hidden, however, when an entire sample is examined together. It may be that only certain categories of bonds earn the positive abnormal returns shown in Table I, while the rest earn either zero or negative abnormal returns. For example, bonds issued by the bidding firm may react differently to the announcement of a merger bid than bonds issued by the target firm. In fact, previous studies using stockholder returns found that there were important differences between acquired and acquiring firms. Stockholders of acquired firms earned substantial positive abnormal returns while stockholders of acquiring firms neither gained nor lost.

There are also reasons to believe that the financial effects discussed earlier impact differently on the acquiring firms' and the acquired firms' bondholders. Since the acquiring firm typically initiates a merger, the "incentive effect" may be stronger for acquiring firms. That is, stockholders of acquiring firms have the incentive to create wealth transfers from their bondholders to themselves by making risky acquisitions. The "diversification effect," however, would create the opposite wealth transfer, from stockholders to bondholders, and thus for acquiring firms the two effects may partially cancel.

If acquired firms are typically passive in a merger, the "incentive effect" would have little relevance for their bondholders. Only the "diversification effect" would exist, and consequently, the bondholders of acquired firms would be expected to earn positive abnormal returns. The size of these abnormal returns provides one measure of the strength of the diversification effect. Because of these potential differences between acquiring and acquired firms, it is necessary to examine both classes of bonds separately.

### *A.2. Acquiring Firms*

Table II reports the *AD*, *CAD*−12, and *CAD*−2 series for the sample of 28 acquiring firms. Table II shows that the average difference during the announcement month for the acquiring firms is +1.08%. This gain, however, is immediately

**Table II**

Estimated Abnormal Bond Returns for 28 Acquiring Firms

| Relative Month | Average Difference | T-Statistic | Cumulative Average Difference-12 | T-Statistic | Cumulative Average Difference-2 | T-Statistic |
|---|---|---|---|---|---|---|
| −12 | −.0036 | −0.41 | −.0036 | −0.41 | | |
| −11 | .0011 | 0.17 | −.0025 | −0.29 | | |
| −10 | .0108 | 2.10 | .0083 | 1.21 | | |
| −9 | −.0002 | −0.04 | .0081 | 1.28 | | |
| −8 | −.0012 | −0.24 | .0069 | 0.88 | | |
| −7 | .0036 | 0.61 | .0105 | 1.05 | | |
| −6 | −.0090 | −1.71 | .0015 | 0.15 | | |
| −5 | .0052 | 0.59 | .0067 | 0.72 | | |
| −4 | .0054 | 1.26 | .0121 | 1.37 | | |
| −3 | −.0024 | −0.40 | .0097 | 1.08 | | |
| −2 | .0074 | 1.21 | .0170 | 2.52 | .0074 | 1.21 |
| −1 | −.0029 | −0.79 | .0141 | 1.99 | .0044 | 0.71 |
| 0 | .0108 | 1.15 | .0250 | 2.95 | .0153 | 1.20 |
| +1 | −.0106 | −1.21 | .0144 | 1.72 | .0047 | 0.45 |
| +2 | −.0020 | −0.51 | .0124 | 1.45 | .0027 | 0.25 |
| +3 | .0080 | 1.41 | .0203 | 1.81 | .0107 | 0.99 |
| +4 | −.0157 | −1.95 | .0047 | 0.52 | −.0050 | −0.55 |
| +5 | .0127 | 1.56 | .0173 | 1.71 | .0077 | 0.63 |
| +6 | .0002 | 0.03 | .0175 | 1.95 | .0079 | 0.83 |
| +7 | −.0053 | −0.61 | .0123 | 0.96 | .0026 | 0.19 |
| +8 | −.0051 | 0.68 | .0071 | 0.71 | −.0025 | −0.23 |
| +9 | .0096 | 1.15 | .0167 | 1.75 | .0070 | 0.71 |
| +10 | .0016 | 0.18 | .0183 | 1.51 | .0086 | 0.66 |
| +11 | .0001 | 0.01 | .0185 | 1.53 | .0088 | 0.66 |
| +12 | −.0072 | −0.90 | .0113 | 0.87 | .0016 | 0.11 |

negated during month $t = +1$. The $AD$ at $t = +1$ is −1.06%. This reversal is puzzling, and yet possibly illuminating. There is a methodological problem with using bond returns for time periods as short as a single month. That problem is the nontrading of securities. Many of the bonds issued by both the sample and the matching firms do not trade every month. This means that changes in equilibrium bond prices are not necessarily reflected in the month they occur, and that considerable noise can be introduced into the $AD$ series from both the sample and the matching bonds. Part of the function of the two $CAD$ series is to eliminate some of this noise and to capture any significant systematic movement.

The only noticeable $CAD$s in Table II are the +2.50% $CAD-12$ at the announcement month and the $CAD-12$s during the period $t = +9$ to $t = +11$ months. The +2.50% $CAD-12$ at the announcement month drops immediately to +1.44% in the following month, however, and becomes +0.47% by month $t = +4$. Furthermore, none of the $CAD-2$s in Table II (which, as we discussed earlier, may have less noise than the $CAD-12$ series) are statistically different from zero. With these results, we cannot reject the hypothesis that the acquiring firm's bondholders are unaffected by a merger bid. There is no evidence, therefore, to suggest that either the incentive effect or the diversification effect is dominant for the acquiring firms' bondholders.

### *A.3. Acquired Firms*

Table III gives the results for the acquired firms' bonds. Although the $CAD-12$ and $CAD-2$ series are positive throughout $t = -2$ months to $t = +12$ months, they are small and the $t$-statistics are not significant. While it is clear that the acquired firms' bondholders do not suffer abnormal losses as the result of a merger, it is also true that they do not receive significant abnormal gains.

### *B. Daily Bond Returns*

Table IV reports raw daily bond returns for 17 firms, 11 acquiring and 6 acquired, over the period from 9 days before until 10 days after the merger announcement. The number of firms is reduced because, as mentioned above, most bonds do not trade regularly. In order to obtain a daily return on a bond, the bond must trade at least twice during the period examined. Furthermore, to capture any reaction to the merger the bond must trade both before and after the announcement. Raw returns rather than risk adjusted returns are used because the intersection between the sets of matching bonds and sample bonds which trade at least twice during this period is less than 10.

The returns are small and the sum of Day −1 and Day 0 equals 0.325% for

**Table III**

Estimated Abnormal Bond Returns for 22 Acquired Firms

| Relative Month | Average Difference | T-Statistic | Cumultive Average Difference-12 | T-Statistic | Cumulative Average Difference-2 | T-Statistic |
|---|---|---|---|---|---|---|
| −12 | −.0046 | −0.86 | −.0046 | −0.86 | | |
| −11 | .0059 | 0.73 | .0013 | 0.20 | | |
| −10 | −.0034 | −0.42 | −.0022 | −0.29 | | |
| −9 | .0016 | 0.17 | −.0006 | −0.05 | | |
| −8 | −.0015 | −0.33 | −.0021 | −0.22 | | |
| −7 | .0004 | 0.09 | −.0016 | −0.17 | | |
| −6 | .0121 | 2.22 | .0105 | 0.96 | | |
| −5 | −.0157 | −2.19 | −.0052 | −0.67 | | |
| −4 | .0002 | 0.03 | −.0050 | −0.58 | | |
| −3 | .0027 | 0.43 | −.0023 | −0.26 | | |
| −2 | .0039 | 0.60 | .0016 | 0.16 | .0039 | 0.60 |
| −1 | .0009 | 0.20 | .0025 | 0.24 | .0048 | 0.71 |
| 0 | .0105 | 1.23 | .0131 | 1.06 | .0153 | 1.96 |
| +1 | .0016 | 0.18 | .0146 | 0.87 | .0169 | 1.65 |
| +2 | −.0055 | −1.02 | .0091 | 0.49 | .0114 | 0.98 |
| +3 | −.0051 | −0.57 | .0040 | 0.23 | .0062 | 0.51 |
| +4 | −.0022 | −0.22 | .0017 | 0.09 | .0040 | 0.29 |
| +5 | −.0003 | −0.05 | .0014 | 0.07 | .0037 | 0.29 |
| +6 | .0090 | 0.96 | .0104 | 0.53 | .0127 | 0.89 |
| +7 | −.0064 | −0.87 | .0040 | 0.19 | .0063 | 0.40 |
| +8 | .0114 | 1.74 | .0154 | 0.76 | .0177 | 1.18 |
| +9 | −.0096 | −1.93 | .0058 | 0.28 | .0081 | 0.48 |
| +10 | .0071 | 0.92 | .0129 | 0.55 | .0152 | 0.75 |
| +11 | .0062 | 0.65 | .0191 | 0.92 | .0213 | 1.34 |
| +12 | −.0040 | −0.66 | .0151 | 0.70 | .0173 | 0.98 |

**Table IV**

Daily Bond Returns around Merger Announcements

| Relative Day | All Firms | N | Acquiring Firms | N | Acquired Firms | N |
|---|---|---|---|---|---|---|
| | | | A. Daily rates of return | | | |
| −9 | −.00019 | 6 | −.00027 | 5 | .00022 | 1 |
| −8 | .00333 | 15 | .00149 | 10 | .00701 | 5 |
| −7 | .00013 | 15 | .00050 | 10 | −.00061 | 5 |
| −6 | .00088 | 16 | −.00115 | 11 | .00536 | 5 |
| −5 | .00247 | 16 | .00133 | 11 | .00497 | 5 |
| −4 | .00030 | 16 | .00181 | 11 | −.00302 | 5 |
| −3 | −.00002 | 17 | .00019 | 11 | −.00039 | 6 |
| −2 | −.00134 | 17 | −.00064 | 11 | −.00263 | 6 |
| −1 | −.00103 | 17 | .00230 | 11 | −.00714 | 6 |
| 0 | .00275 | 17 | .00095 | 11 | .00604 | 6 |
| +1 | .00347 | 17 | .00108 | 11 | .00787 | 6 |
| +2 | .00130 | 17 | .00055 | 11 | .00268 | 6 |
| +3 | .00130 | 17 | .00161 | 11 | .00074 | 6 |
| +4 | .00245 | 17 | .00390 | 11 | −.00023 | 6 |
| +5 | .00288 | 16 | .00136 | 10 | .00542 | 6 |
| +6 | −.00243 | 16 | −.00207 | 10 | −.00302 | 6 |
| +7 | .00160 | 15 | .00093 | 9 | .00259 | 6 |
| +8 | .00077 | 13 | .00290 | 8 | −.00265 | 5 |
| +9 | −.00009 | 9 | −.00408 | 6 | .00787 | 3 |
| +10 | −.00014 | 8 | .00360 | 5 | −.00636 | 3 |

B. T-statistics on Mean Announcement Period Returns

| Announcement Period | t-statistic All Firms | t-statistic Acquiring Firms | t-statistic Acquired Firms |
|---|---|---|---|
| −1 day to Announcement Day | −0.06 | +0.61 | −0.59 |
| −2 days to +1 day | +0.09 | +0.12 | −0.10 |
| −3 days to +2 days | +0.11 | −0.22 | −0.11 |

C. Initial Post Announcement Mean Return

| All Firms | N | Acquiring Firms | N | Acquired Firms | N |
|---|---|---|---|---|---|
| .00257 | 17 | .00495 | 11 | −.00178 | 6 |

acquiring firms and −0.11% for acquired firms. A $t$-statistic, identical to that used by Masulis [24] and applied to bonds by Dann [5], is calculated with

$$t = (\bar{R}_{pa} - \bar{R}_{p0})\left[\left(\frac{n_a S_a^2 + n_0 S_0^2}{n_a + n_0 - 2}\right)\left(\frac{1}{n_a} + \frac{1}{n_0}\right)\right]^{-1/2} \tag{7}$$

where $R_{pa}$ is the mean daily portfolio return for the announcement period and $R_{p0}$ is the similar return for the nonannouncement period. $S_a^2$ and $S_0^2$ are the sample variances for the portfolio daily returns for the announcement and nonannouncement periods. Part B of Table IV gives these $t$-statistics, which are small for each announcement period examined and which confirm that the bondholder announcement period return is not significantly different from the nonannouncement period return.

As discussed above, bonds do not trade frequently. This means that the market's reaction to a merger, which is measured by the change in bond prices, is often not recorded until several days after the announcement. To measure this reaction accurately, it is necessary to calculate the initial postannouncement return for each bond. These returns are computed by using the last price reported prior to Day −1 and the first price reported subsequent to Day 0. The returns calculated are holding period returns, not daily returns, and they cover a different number of days for each bond. The averages for the initial postannouncement return are reported in Section C of Table IV. The average return is 0.495% for acquiring firms and −0.178% for acquired firms. These results are consistent with the daily returns and confirm that there is little change in the wealth positions of bondholders as the result of a merger announcement.

## IV. Results on Stock Returns

Since this study restricts the firms used in the sample to only those involved in conglomerate mergers, it is possible that our sample is unique. One way to test

**Table V**

Stockholder Abnormal Returns and Cumulative Portfolio Abnormal Returns for 27 Acquiring Firms

| Relative Month | Abnormal Return | T-Statistic | Portfolio Abnormal Return from t = −12 | T-Statistic | Portfolio Abnormal Return from t = −2 | T-Statistic |
|---|---|---|---|---|---|---|
| −12 | −.0024 | −0.17 | −.0024 | −0.17 | | |
| −11 | −.0134 | −0.79 | −.0082 | −0.65 | | |
| −10 | +.0185 | +1.83 | +.0164 | +0.94 | | |
| −9 | −.0204 | −2.11 | +.0013 | +0.07 | | |
| −8 | +.0092 | +0.65 | +.0054 | +0.31 | | |
| −7 | +.0051 | +0.42 | +.0083 | +0.29 | | |
| −6 | −.0056 | −0.36 | +.0022 | +0.18 | | |
| −5 | +.0118 | +0.71 | +.0127 | +0.45 | | |
| −4 | +.0144 | +1.13 | +.0296 | +0.91 | | |
| −3 | +.0297 | +1.65 | +.0421 | +1.32 | | |
| −2 | +.0119 | +0.78 | +.0447 | +1.18 | +.0119 | +0.78 |
| −1 | −.0185 | −1.32 | −.0181 | −0.62 | −.0191 | −0.99 |
| 0 | +.0154 | +0.96 | −.0081 | −0.28 | +.0061 | +0.19 |
| +1 | +.0285 | +2.03 | +.0179 | +0.81 | +.0361 | +1.45 |
| +2 | −.0032 | −0.16 | +.0045 | +0.07 | +.0254 | +0.89 |
| +3 | −.0165 | −1.26 | +.0062 | +0.11 | +.0187 | +0.54 |
| +4 | +.0397 | +2.01 | +.0452 | +0.71 | +.0759 | +1.47 |
| +5 | −.0185 | −1.14 | +.0241 | +0.27 | +.0575 | +1.23 |
| +6 | +.0173 | +1.37 | +.0456 | +0.43 | +.0771 | +1.51 |
| +7 | −.0019 | −0.12 | +.0291 | +0.26 | +.0496 | +1.14 |
| +8 | −.0135 | −0.71 | +.0039 | +0.11 | +.0522 | +0.96 |
| +9 | −.0063 | −0.24 | −.0139 | −0.20 | +.0451 | +0.71 |
| +10 | +.0040 | +0.28 | −.0177 | −0.36 | +.0335 | +0.47 |
| +11 | −.0210 | −1.11 | −.0245 | −0.34 | +.0321 | +0.41 |
| +12 | +.0050 | +0.34 | −.0099 | −0.18 | +.0183 | +0.36 |

**Table VI**

Stockholder Abnormal Returns and Cumulative Portfolio Abnormal Returns for 21 Acquired Firms

| Relative Month | Abnormal Return | T-Statistic | Portfolio Abnormal Return from t = −12 | T-Statistic | Portfolio Abnormal Return from t = −2 | T-Statistic |
|---|---|---|---|---|---|---|
| −12 | −.0297 | −1.84 | −.0297 | −1.84 | | |
| −11 | −.0018 | −0.41 | −.0242 | −1.45 | | |
| −10 | −.0254 | −1.69 | −.0443 | −1.67 | | |
| −9 | +.0104 | +0.76 | −.0272 | −1.24 | | |
| −8 | −.0060 | −0.09 | −.0218 | −1.18 | | |
| −7 | +.0269 | +1.47 | −.0143 | −0.69 | | |
| −6 | −.0246 | −1.63 | −.0337 | −1.12 | | |
| −5 | −.0049 | −0.17 | −.0332 | −1.01 | | |
| −4 | +.0073 | +0.32 | −.0296 | −0.88 | | |
| −3 | +.0189 | +0.87 | −.0048 | −0.12 | | |
| −2 | +.0269 | +1.21 | +.0126 | +0.67 | +.0269 | +1.21 |
| −1 | +.0142 | +1.64 | +.0363 | +1.25 | +.0432 | +1.94 |
| 0 | +.1829 | +4.34 | +.2129 | +3.49 | +.2044 | +4.78 |

this possibility is to see if the stockholders in our sample experience different returns from those in the earlier studies. This was done for monthly stock returns by calculating single month abnormal returns with Equation (4) and cumulative abnormal returns with Equation (5). Daily excess returns were calculated by Equation (6).

Table V shows that the acquiring firm's stocks do not display significant abnormal returns for the announcement month and that the portfolio abnormal returns are never significant. Table VI, on the other hand, demonstrates that the acquired firms' stockholders experience significant positive abnormal returns for the announcement month across all portfolios. Table VII, which reports daily excess returns, confirms this result for both categories of firms.

The two-day announcement period (Day −1 and Day 0) excess returns are +1.0% for the 26 acquiring firms and +11.0% for the 22 acquired firms. The *t*-statistics are +1.43 and +7.21. These results are consistent with earlier findings, and are directly comparable with Asquith [1], who uses the same daily methodology and finds the two-day announcement excess return for successful merger bids to be +0.2% for acquiring firms and +6.2% for acquired firms. Dodd [6], using a slightly different methodology, finds excess returns of −1.09% and 13.41%, respectively.

This result has two implications: first, the restrictions which were used to reduce the contaminating influences of partial, minor, and multiple mergers do not introduce any significant new influences into the stockholders returns. Second, our sample includes only firms involved in conglomerate mergers; therefore, if conglomerate mergers result in less real synergies than nonconglomerate mergers (see Footnote 3), then the similarity of our results to previous studies suggests that operating synergies are not the only cause of stockholders' gains.

**Table VII**

Daily Excess Returns (ER) and Cumulative Excess Returns (CER) for Stockholders of Merging Firms

| Relative Day | 26 Acquiring Firms | | 22 Acquired Firms | |
|---|---|---|---|---|
| | ER | CER | ER | CER |
| −10 | .008 | .008 | .007 | .007 |
| −9 | −.004 | .004 | −.000 | .007 |
| −8 | .005 | .009 | .000 | .007 |
| −7 | −.002 | .007 | .004 | .011 |
| −6 | −.002 | .005 | .000 | .011 |
| −5 | −.002 | .003 | .008 | .019 |
| −4 | −.001 | .002 | −.003 | .016 |
| −3 | −.001 | .001 | −.003 | .013 |
| −2 | −.003 | −.002 | .016 | .029 |
| −1 | .007 | .005 | .057 | .086 |
| 0 | .003 | .008 | .053 | .139 |
| 1 | .002 | .010 | .011 | .150 |
| 2 | −.003 | .007 | −.011 | .139 |
| 3 | .004 | .011 | .002 | .141 |
| 4 | .002 | .013 | .000 | .141 |
| 5 | −.006 | .007 | −.002 | .139 |
| 6 | .004 | .011 | −.001 | .138 |
| 7 | .001 | .012 | .005 | .143 |
| 8 | .006 | .018 | .006 | .149 |
| 9 | −.000 | .018 | −.002 | .147 |
| 10 | −.000 | .018 | .002 | .149 |

## V. Other Tests

Several other tests are done in addition to examining the average abnormal returns for bondholders and stockholders. If a diversification effect exists, it should be more pronounced for those mergers where the merging firms' cash flows are less correlated. By using stock returns as a proxy for this relationship, a correlation coefficient is calculated for each pair of merging firms. This is done using daily stock returns over the period from 280 days before until 40 days before the merger announcement. Since a number of the firms acquired by our sample of acquiring firms are not on the CRSP files, the sample is reduced to 33 correlation coefficients.

These correlation coefficients are then matched with the monthly bondholder abnormal returns,[11] and Spearman rank order coefficients are calculated for three different holding periods: the announcement month, −2 months to 0 month, and −2 months to +1 month. These Spearman coefficients test whether those firms with the lowest correlation between stock returns are also the firms whose bondholders have the largest abnormal returns. A statistically significant negative coefficient would support the existence of a diversification effect.

[11] Monthly instead of daily bond returns are used to maximize the number of mergers remaining in the sample.

**Table VIII**

Spearman Correlation Coefficients between the Merging Firm's Stock Returns Correlation and the Monthly Abnormal Returns to Bondholders

| Firms | Bondholder Holding Period | Spearman Correlation | Significance Level | N |
|---|---|---|---|---|
| All Firms | Announcement Month (0) | −.0807 | .328 | 33 |
| | Months −2 to 0 | .1738 | .167 | 33 |
| | Months −2 to +1 | .2237 | .105 | 33 |
| Acquiring Firms | Announcement Month (0) | .2840 | .143 | 16 |
| | Months −2 to 0 | .4382 | .045 | 16 |
| | Months −2 to +1 | .2471 | .178 | 16 |
| Acquired Firms | Announcement Month (0) | −.3333 | .096 | 17 |
| | Months −2 to 0 | .0245 | .463 | 17 |
| | Months −2 to +1 | .0294 | .455 | 17 |

Table VIII shows that the Spearman correlation coefficients do not support a diversification effect. For all 33 firms, the Spearman correlations are insignificant. For the 16 acquiring firms, the Spearman correlations are positive (suggesting that the higher the correlation of the stock returns, the more the acquiring bondholders gain) and insignificant at the 10% level for two of the three holding periods. The −2 to 0 month correlation is significant, but in the opposite direction to what the diversification effect would predict. The 17 acquired firms have a Spearman correlation coefficient of −.3333 for the announcement month, but the probability level is only marginally significant at 9.6%. The two longer holding periods are insignificant and positive in both cases.

It is also possible to test for the existence of an incentive effect. If the incentive effect is important in mergers, then a significant portion of the gains to the stockholders should come at the expense of the bondholders. Comparing the stockholders' excess returns with the bondholders' excess returns will provide evidence of any wealth transfers. The Spearman correlation coefficients, which measure whether the stockholders gain most in those mergers where the bondholders gain most, is calculated for the 46 firms where data are available. Stockholder excess returns are measured by the two-day announcement excess return calculated with Equation (6), and monthly bondholder abnormal returns are calculated by Equations (1) through (3).[12]

Table IX shows that the Spearman correlation coefficients are largely positive. This is the opposite direction from what the incentive effect would suggest. For the 26 acquiring firms, none of the holding periods generates a significant Spearman correlation. The 20 acquired firms also provide no evidence of a wealth transfer or "incentive effect."

Many other tests were run on bond returns that are not reported above. Abnormal returns for the entire bidding period, from announcement date to merger date, were calculated and tested over various subsets to determine if the bidding period returns were significantly different from zero.[13] They were not.

[12] It would be better to compare daily stock returns with daily bond returns, but again this would restrict the sample size severely.

[13] Merger bids are of varying duration. Thus, some merger bids are completed before others, and a *CAD* series may mix ongoing and completed bids. To eliminate this possibility, an abnormal return

**Table IX**

Spearman Correlation Coefficients between the Stockholders' Excess Return and the Bondholders' Abnormal Returns

| Firms | Bopndholder Holding Period | Spearman Correlation | Significance Level | N |
|---|---|---|---|---|
| All Firms | Announcement Month (0) | .1445 | .169 | 46 |
| | Months −2 to 0 | .1777 | .119 | 46 |
| | Months −2 to +1 | .1913 | .101 | 46 |
| Acquiring Firms | Announcement Month (0) | .0103 | .480 | 26 |
| | Months −2 to 0 | .0728 | .362 | 26 |
| | Months −2 to +1 | −.1234 | .274 | 26 |
| Acquired Firms | Announcement Month (0) | .2602 | .134 | 20 |
| | Months −2 to 0 | .2135 | .183 | 20 |
| | Months −2 to +1 | .3113 | .091 | 20 |

Other hypotheses that were tested and which produced similar results (i.e., they could not be rejected with a 10% level of confidence) include the hypothesis that the mean bidding period returns across subsets of firms are equal, and the hypothesis that the percentage of firms in each subset displaying positive bidding period returns is equal to 50%. Finally, by using bond ratings as a proxy for risk, comparisons of abnormal returns between different risk classes of bonds were made. Again, no significant relationship could be found.

To summarize, none of our tests provide any evidence that the bondholders of firms engaged in mergers either gained or lost from the merger. This is true for the bondholders of both acquiring and acquired firms. Furthermore, there is no evidence that there are any wealth transfers between stockholders and bondhold-

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over the entire bidding period is calculated for each firm. For each pair of sample and matching bonds, a bidding period return is calculated as follows:

$$R_B = [\prod_{t=0}^{E} (1 + R_t)] - 1 \tag{8}$$

where

$R_t$ = the return for relative month $t$ given by Equation (1), and
$E$ = the number of months between the press date and the merger date

The bidding period return for each matching bond is subtracted from the bidding period return for each corresponding sample bond, and (after first averaging within each firm if the sample firm has multiple bonds) the differences are averaged across all firms by

$$AD_B = \frac{1}{M} \sum_{i=1}^{M} (R_{iB} - R^*_{iB}) \tag{9}$$

where

$AD_B$ = the average difference in rates of return for the entire bidding period from press month to merger month;
$R_{iB}$ = the rate of return for firm $i$'s bonds during the bidding period;
$R^*_{iB}$ = the rate of return for firm $i$'s matching bonds during the bidding period; and
$M$ = the number of firms in the sample

Thus, $AD_B$ serves as a measure of average abnormal returns for the entire merger period between the press date and the merger date without mixing complete and incomplete bids.

ers, and no evidence that either diversification effects or incentive effects are important in mergers.

## VI. Commentary and Conclusions

In this paper we have examined the effect of merger announcements on both the stockholders and the bondholders of merging firms. We restricted our investigation to those mergers which were classified as "conglomerate" by the Federal Trade Commission and to those firms which did not engage in multiple mergers. Even for these firms, the securityholders of the merging firms gained as a whole. Furthermore, the changes in stockholders' wealth are similar in both direction and magnitude to those reported by previous authors. These findings show that the total synergistic gains of merger (whether they are real or financial) do not depend on whether the merger is conglomerate or not.[14]

A closer examination of the securityholders' returns could not reject the hypothesis that bondholders on average do not earn positive or negative abnormal returns. Thus, if wealth transfers do occur, they are offset by other effects. The only claim holders to show abnormal gains were the acquired firm's stockholders, and their gains do not come at the expense of other securityholders. This finding by itself does not necessarily imply that there are no "incentive effects" or "diversification effects"; it is possible that the two effects exist and simply cancel each other.

To provide more direct evidence on the existence of these effects, further tests were attempted to isolate the "diversification effect" and the "incentive effect." Rank correlation tests were run to see whether bondholders' returns are a function of the correlation between the stock returns of the merging firms, and whether the size of the bondholders' and stockholders' returns in individual mergers are correlated. These tests could not reject the hypotheses that the bondholders' returns are unrelated to either the correlation between the merging firms' stock or the stockholders' returns for the same merger. These findings are consistent with the hypothesis that mergers do not generate a "diversification effect," nor are they motivated by the "incentive effect."

Finally, the results are consistent with a market that efficiently resolves conflicts of interest between stockholders and bondholders. Stockholders may negate the "diversification effect" by engaging in financial rearrangements such as increasing financial leverage (e.g., Kim and McConnell [16] and Melicher and Rush [25]), or by calling outstanding bonds prior to the merger and reissuing them at lower interest rates (e.g., Higgins and Schall [13]). Bondholders may effectively prevent "incentive effect" type wealth transfers from themselves to stockholders by writing restrictive bond covenants (e.g., Smith and Warner [29]). For whatever reason, we can conclude that mergers generate no noticeable impact on bondholders and no noticeable wealth transfers between bondholders and stockholders.

[14] Since we have no direct evidence about the source of these synergistic gains, it is not clear whether some of the gains are attributable to financial effects. However, if conglomerate mergers generate less real synergies than other types of mergers (see Footnote 3), then these findings are consistent with the existence of financial benefits. On the other hand, if conglomerate mergers generate the same amount of real synergies as nonconglomerate mergers, it is impossible to determine whether financial benefits exist.

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