ARE CONVERTIBLE BOND CALLS HARBINGERS OF BAD NEWS?

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Abstract

Two decades after Harris and Raviv's (1985) article, a definitive answer to the question of whether convertible bond calls signal bad news remains elusive. Our study overcomes the limitations of previous studies by examining the operating performance of calling firms. We find strong evidence that firms calling their convertible bonds experience a significant decline in operating performance over the three years subsequent to the announcement of the call. This result is independent of mean reversion and other factors that affect operating performance. Our findings provide a resolution to the current puzzle associated with the information content of convertible bond calls.

Keywords: convertible bond calls; Information content of convertible calls; Long-run post-call underperformance

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Introduction

While the information content of different types of securities issuance has been the focus of much research, a definitive answer to the question of whether convertible bond calls signal bad news remains elusive. Almost two decades since Harris and Raviv's (1985) article and several studies in the interim, there is mixed evidence on the signaling implications of conversion-forcing bond calls. Consistent with Harris and Raviv's prediction, a significant adverse stock price response to call announcements is well established in the literature (see e.g. Mikkelson (1981), Ofer and Natarajan (1987), and Datta and Iskandar-Datta (1996)). Other studies provide mixed evidence on Harris and Raviv's proposition, using different approaches such as the examination of post-call stock price performance and analysts' earnings forecast revisions following the call. By documenting a stock price reversal over a short period following the call, Mazzeo and Moore (1992), Byrd and Moore (1996), and Ederington and Goh (2001) conclude that convertible calls do not convey a negative signal. Puzzled by the post-call price recovery, Byrd and Moore (1996) contend that the adverse market reaction to the call announcement may be due to some short-term phenomenon, such as liquidity demand. The conclusions drawn in these studies are intriguing because they not only challenge the theoretical predictions of Harris and Raviv but also question the underlying notion of market efficiency. Datta, Iskandar-Datta, and Raman (2003) use a longer post-call time horizon and document a significant stock price underperformance following the call and conclude that convertible bond calls convey bad news.

A critical drawback of using post-call stock price performance to test the information content of convertible bond calls, whether one month following the call or a longer post-call horizon, is that it entails a joint test of market efficiency and the underlying model assumed to measure expected returns (See Fama (1998) for an elaborate discussion of the bad model problem).[1] While, these previous studies claim to test Harris and Raviv's signaling model, any post-call stock price performance is really not a prediction of the model. Therefore, any long-horizon post-call price drift that is in the same direction as the announcement effect does not further confirm the prediction of the signaling model, just as any short-horizon post-announcement stock price reversal does not refute the prediction of the signaling model. One way to unambiguously test the information content of

[1] Mazzeo and Moore (1992), Byrd and Moore (1996), and Ederington and Goh (2001) draw their conclusions based on a one month horizon following the call, while, Datta, Iskandar-Datta, and Raman (2003) and Ofer and Natarajan (1987)) examine a longer (five-year) post-call horizon.

convertible bond calls is to examine the post-call operating performance of the calling firms.

The information content of forced conversions has also been examined using analysts' earnings forecast revisions following the convertible call (see Byrd and Moore (1996) and Ederington and Goh (2001)). However, it is well documented that analysts tend to be overoptimistic. Rajan and Servaes (1997) examine a sample of IPOs and conclude that, "firms perform poorly in the long run when analysts are more optimistic about their long run growth projections." La Porta (1996) documents an inverse relation between analysts' predicted growth rates and future stock price performance. A similar pattern is reported by Lewis, Rogalski, and Seward (2001) for convertible debt offerings. Thus, the conclusion based on analysts' forecast revisions is also unreliable. We propose that a more powerful test of the information content of convertible bond calls that is free of the bad-model problem and the well-established bias associated with analysts' forecasts, is to examine the operating performance surrounding the call.

Our methodology overcomes the limitations of previous studies that examine the post-call firm performance to infer information content of conversion-forcing bond calls. Specifically, we follow Barber and Lyon (1996) and choose control firms matched by size, industry, and pre-call operating performance to measure abnormal performance around the call announcement. For completeness, we also analyze post-call stock price performance using the cumulative abnormal returns methodology suggested by Fama (1998) in combination with the control firm approach recommended by Lyon, Barber and Tsai (1999). These methodological improvements enable us to unambiguously determine the information content of conversion forcing bond calls.

Campbell, Ederington, and Vankudre (1991) examine earnings growth rates of calling firms around conversion-forcing calls. Using the industry median as their benchmark they show (in their Table V) that the calling firms significantly outperform their industry benchmark in each of the five years preceding the call as well as the call year. In the post-call period the authors show that the performance of calling firms reverts to the industry levels. Based on this evidence, Campbell et. al. conclude that calls indicate the end of a high growth period and are not harbingers of poor subsequent performance. However, Barber and Lyon (1996) point out that the tendency for mean reversion can lead researchers to draw incorrect inferences about abnormal operating performance. They find that test statistics are misspecified when sample firms exhibit unusual performance prior to the event. In the case of convertible calls, the strong pre-call operating performance is well documented (see Ofer and Natarajan (1987) and Campbell et. al. (1991)). An appropriate methodology should therefore control for the strong pre-call performance.

Campbell, Ederington, and Vankudre (1991) improve on Ofer and Natarajan's (1987) methodology by using industry median performance to control for the pre-call superior performance of calling firms.

However, using only the industry median as the benchmark is subject to potentially serious limitations. First, given that calling firms outperform their respective industries (see e.g. Campbell, et. al.'s Table V), using the industry median as the benchmark does not alleviate the problem arising from mean reversion in the operating performance of calling firms. Second, Fama and French (1995) show that not only does operating performance vary by firm size, but the tendency for mean reversion is greater for small firms.

Therefore, it is crucial to control for variations in firm size among calling firms when drawing inferences on post-call operating performance. Using the industry median does not account for size-related variations in operating performance. Third, if the industry median firm changes each year, then Campbell et. al.'s control firms may not be constant over time. Barber and Lyon (1996) show that time-varying control firms yield less powerful test statistics, which could lead to the failure to detect abnormal post-call performance. Therefore, it is important that the comparison group be held constant over time.

In addition to these benchmark related issues, the use of percentage changes in earnings as a measure of firm performance (as in Ofer and Natarajan (1987) and Campbell et. al. (1991)) further reduces the power of the statistical tests used to detect abnormal performance around convertible calls (see Barber and Lyon (1996)). Hence, we reason that weak statistical tests may have contributed to the puzzling conclusion in some studies that convertible calls do not convey any information about future firm performance.

Following the appropriate methodological framework suggested by Barber and Lyon (1996), we overcome the abovementioned limitations and examine the abnormal operating performance of firms around convertible bond calls. On the important question of whether conversion-forcing bond calls are harbingers of bad news, we provide strong empirical evidence indicating a significant deterioration in operating performance following the call. Consistent with Harris and Raviv's (1985) prediction and the evidence in event studies, we conclude that conversion-forcing bond calls convey bad news. This conclusion is in sharp contrast to recent evidence that challenges the theoretical predictions of signaling models of convertible calls.

The rest of the paper is organized as follows. In the next section, we describe the sample selection process and the data sources. Section II details the research design. Empirical findings are presented in Section III. Section IV concludes the paper.

I. Sample Formation Process and Data Sources

We identify a sample of convertible bond calls made during the period January 1, 1981 to December 31, 1998 from various issues of Standard and Poor's Bond Guide and from announcements documented online in Lexis Universe. Calls of more than one convertible issue on the same day are treated as a single call. We use the following criteria to select the sample. Calls are excluded when they are related to a merger or an acquisition. Because we also investigate common stock price performance, American Depository Receipts (ADRs), closed-end funds, and Real Estate Investment Trusts (REITs) are excluded from the sample. All out-of-the-money calls are also eliminated. To determine if a convertible bond is in-the-money or not, we require that CRSP daily returns be available prior to the call. Using CRSP, we classify a convertible bond as being in-the-money if, following the call protection expiration date, the conversion value exceeds the sum of the call price plus accrued interest. The exact date of the call announcement must be identifiable from the Wall Street Journal Index or Lexis. This process yields an initial sample of 326 call announcements. To be included in the sample, calling firms must have data available on Compustat for the year in which the call is announced (year 0). The final sample is composed of 211 calls with Compustat data available on various operating performance measures. In addition, for some of our analysis, daily common stock returns must be available from the CRSP master tapes for the time period following the call announcement. Therefore, for this part of our analysis we lose an additional 10 firms, leaving us with 201 firms for analyzing the stock price performance. We collect the characteristics of the called issue such as the offer date, call price at conversion, coupon rate, call protection expiration date, shares issued upon conversion, and the conversion value from various issues of Moody's Manuals.

In Table 1, we provide the distribution of asset size and market-to-book ratios for our sample firms. The median (mean) total asset is $680 million ($3,070 million). In comparison, Ederington and Goh (2001) report a mean total assets of $4,359 million for their sample of calling firms. The median (mean) market-to-book asset ratio is 1.48 (1.72), which indicates that convertible bond calls are typically announced by firms with high growth opportunities. These characteristics are comparable to those reported in previous studies.

II. Research Design

A. Control Firms to Measure Abnormal Operating Performance

All calling firms in our sample have data available on Compustat for the fiscal year in which they announce the call (year 0). Matching firms are chosen using the procedure outlined by Barber and Lyon (1996) and followed by Loughran and Ritter (1997) for their sample of equity offerings.[2] Specifically, each calling firm is matched with a firm that has neither issued equity nor called its convertible bonds during the prior three years using the following algorithm: (1) From the pool of non-issuing and non-calling firms, if there is at least one firm with the same two-digit SIC code with end of year 0 assets within 25 percent to 200 percent of the calling firm, the firm with the closest operating income before depreciation, amortization, and taxes (OIBD)/Assets is used as the matching firm; (2) if no matching firm is found in the same two-digit SIC category that meets the asset size criterion, then from among the firms in the same industry classification, the firm with the closest operating income before depreciation, amortization, and taxes (OIBD)/Assets is used as the matching firm; (3) if no non-issuing and non-calling firm meet these criteria, then all firms with year 0 assets between 90 percent and 110 percent of the calling firm are ranked and the firm with the closest OIBD/Assets is used. If a calling firm is delisted from Compustat in a given year, the matching firm is also removed from the analysis in the same year. If a matching firm is delisted from Compustat, then the next closest matching firm (based on year 0 two-digit SIC code, Assets, and OIBD/Assets, or SIC and OIBD/Assets, or Assets and OIBD/Assets, as the case may be) that has not issued equity or called its convertible bonds in the three years prior to the replacement year is spliced in from the replacement year. Fifteen firms (seven percent) require one replacement for their matching firms. The Compustat data items for the variables are: operating income before depreciation/assets (OIBD (item 13)/ Assets (item 6) [our results are similar when we include interest income in OIBD. However we lose many observations due to missing values for interest income. Therefore, our reported results exclude interest income], profit margin (net income excluding extraordinary items (item 172)/sales (item 12), return on assets (net income (item 172)/assets (item 6)), and OIBD/sales (OIBD (item 13)/sales (item 12)).

[2] Our use of Barber and Lyon's methodology follows Loughran and Ritter (1997) as convertible bond calls, being "backdoor" equity offerings, are very similar to seasoned equity offerings.

B. Control Firms for Abnormal Stock Price Performance

For our post-call performance measurement we use a benchmark of control firms matched by size, book-to-market equity ratio, and one-year pre-call stock price run-up. We match by pre-call run-up in addition to size and book-to-market ratio to control for the systematic pre-call stock price run-up documented in previous studies (see Lyon, Barber and Tsai (1999)). For comparability and to be consistent with recent research on post-call stock price performance, we follow the control firm selection process outlined in Datta, Iskandar-Datta, and Raman (2003).

To evaluate the long-run stock price performance of calling firms using cumulative abnormal returns (CARs), as prescribed in Fama (1998), we follow the procedure outlined in Ritter (1991). Fama (1998) argues that the use of buy-and-hold returns compounds the skewness bias in stock returns and that cumulative abnormal return is the appropriate return metric to use in formal tests of abnormal returns.

III. Empirical Findings

A. Operating Performance of Calling Firms and their Matched Controls

In Table 2 we present various operating performance measures of calling firms and their matched (non-calling) firms for a six-year period surrounding the year of the call. As documented in Panel A of Table 2, it is clear that the operating performance of calling firms deteriorates significantly in the post-call period. For instance, the median operating income as a percentage of total assets (OIBD/Assets) for the calling firms is 12.71% in Year –3, peaks in Year 0 at 14.96%, and then drops sharply to 11.92% in Year +3. This pattern of operating performance peaking in the year of the call and subsequently declining sharply is also evident if performance is measured in terms of profit margin, return on assets (ROA), and operating income as a percentage of total sales (OIBD/Sales). It is worth noting that, for all measures of operating performance, the performance in Year +3 does not merely revert back to the pre-call level but drops even below the level in Year –3.

As discussed earlier, following Barber and Lyon (1996), we select matching firms based on operating performance (OIBD/Assets) in order to control for the well-documented superior pre-call performance of calling firms. The median OIBD/Assets of matching firms clearly indicate that the control firms display similar performance to that of calling firms in Years –2, -1, and 0. In Panel B of Table 2, the insignificant Wilcoxon Z-statistics for the difference between the distributions of OIBD/Assets for the calling firms and the control firms indicate that the control firms are appropriate benchmarks to measure post-call abnormal operating performance as prescribed by Barber and Lyon (1996). In sharp contrast, however, the post-call performance of the calling firms and the control firms diverge noticeably. As illustrated in Figure 1, while the median OIBD/Assets for calling firms drops from 14.96% in the year of the call to 11.92% in Year +3, the corresponding ratio for the control firms increases from 14.81% to 16.10% over the same time period. As shown in Panel B of Table 2, the Z-statistic is significant at conventional levels for each year following the call. This evidence indicates that the calling firms significantly underperform their matched counterparts for at least three years following the call. At the end of three years following the call, it is clear that the other measures of operating performance, such as the profit margin (see Figure 2), return on assets (ROA) (see Figure 3), and OIBD /Sales (see Figure 4), confirm the underperformance of calling firms relative to their benchmarks.

These results provide direct and conclusive evidence, consistent with the market's response at the time of the call announcement, that convertible bond calls are harbingers of bad news. In contrast to the studies that reject the hypothesis that convertible bond calls signal bad news, implying that the market's response to convertible calls is puzzling (e.g Mazzeo and Moore (1992), Byrd and Moore (1996), and Ederington and Goh (2001)), our results indicate that the bad news associated with the adverse stock price response at the time of the call is not just short-lived and transitory but is reflected in the long-term operating performance of the calling firms.

B. Is Post-call Underperformance Driven by Firm Size and Growth Prospects?

Convertible bonds are typically issued by smaller firms with higher market-to-book ratios than firms that issue equity or straight debt (Lewis, Rogalski, and Seward (1999)). For a sample of seasoned equity offers (SEOs), Loughran and Ritter (1997) document that post-SEO deterioration in operating performance is more prominent for smaller firms. Moreover, Datta, Iskandar-Datta, and Raman (2003) report that poor post-call stock price performance is more pronounced for high-growth firms. These studies document a relation between firm performance, firm size and growth prospects of firms issuing either common stock or 'backdoor equity' through conversion forcing calls. We check the robustness of our results documented in the previous section by examining the operating performance of calling firms and their matched control firms after partitioning the sample based on

firm size (total assets) and growth prospects (market-to-book assets ratio). The sample is partitioned based on the median asset size of $680 million (in 1998 dollars, using the CPI) and the median market-to-book assets of 1.48 in the year of the call. To measure operating performance we focus on OIBD/Assets and profit margin. The results are presented in Table 3.

As documented in Panel A and Panel B of Table 3, the general pattern of superior pre-call operating performance and deteriorating post-call performance is robust for both small and large firms. For instance, we find that the median OIBD/Assets for small firms increases from 12.83% in Year –3 to a peak level of 15.22 % in Year 0 and then declines substantially to 11.73% in Year +3. When this performance is compared to that of the control firms, the insignificant pre-call abnormal performance is in sharp contrast to the significant post-call underperformance by calling firms. This finding is similar for large firms and when median profit margin is used to measure operating performance. Our results are comparable to the pattern observed by Loughran and Ritter (1997) for small and large firms for their sample of SEOs. For 'backdoor equity' issues, in contrast to the conclusion drawn by Campbell, Ederington, and Vankudre (1991), our results indicate that the poor performance of the calling firms is not attributable to mean reversion in calling firms' performance in the post-call period.

It is expected that high-growth firms typically exhibit a tendency for a more pronounced mean reversion in performance. Since conversion-forcing calls follow a period of high growth, we examine whether there is any difference in post-call operating performance between high-growth and low-growth firms. Campbell et. al. conclude that the poor post-call operating performance is the result of mean reversion to industry level of performance following a period of high growth prior to the call and is not attributable to the call, per se. Their conclusion implies that the underperformance following the call should be more pronounced for high-growth firms. To test this assertion we partition the sample firms by high and low growth opportunities at the call and examine post-call operating performance using appropriately matched control firms. The results are presented in Panel C and Panel D of Table 3. The median OIBD/Assets for low M/B calling firms drops from 12.82% in the year of the call to 10.56% in Year +3, while high M/B calling firms experience a greater decline from 19.06% to 14.25% during the same period. In the post-call period, the difference in performance between calling firms and control firms is economically and statistically significant for both subsamples. It is also important to note that low M/B firms underperform their benchmarks by at least as much as their high M/B counterparts. The results are similar when we use profit margin as a measure of operating performance. The fact that the underperformance of the calling firms is not driven solely by a subset of high-growth firms indicates that it is not just a manifestation of calls occurring at the end of a high growth period. In conjunction with the event-study results in earlier studies, our results provide strong support for Harris and Raviv's (1985) signaling explanation.

C. Stock Price Performance Following Convertible Calls

For completeness and comparability with previous studies, we examine the post-call stock price performance for our sample of calling firms. Following Lyon, Barber, and Tsai (1999), we use control firms matched by size, book-to-market ratio, and pre-call stock price runup to measure cumulative abnormal returns (CARs) for five years following the call. We use CARs because Fama (1998) argues that they are superior to buy-and-hold returns as a measure of abnormal stock price performance. The methodology used to compute CARs and the associated t-statistics is similar to Ritter (1991). The results are presented in Table 4 and illustrated in Figure 5. Similar to the decline in post-call operating performance, we find that calling firms significantly underperform their matched controls by 27.38% over a sixty-month period following the call. In sharp contrast to the conclusions drawn in Mazzeo and Moore (1992), Byrd and Moore (1996) and Ederington and Goh (2001), our results indicate that the post-call stock price underperformance is not transitory and short-lived but sustains over at least a five-year period following the call. If the post-call horizon is restricted to a one-month period, then our results are similar to those reported in previous studies. However, our results diverge significantly when we examine a post-call time horizon longer than one month. For example, Ederington and Goh (2001) report, based on market model parameters, CARs of 9.25% over a one-year period following the call and conclude that the negative effect of the call announcement on the stock price is transitory. Following Barber and Lyon (1997) and Lyon, Barber, and Tsai (1999), we overcome the inherent limitations of using the market model over a long horizon and use control firms based on size, book-to-market, and pre-call stock price performance. In contrast to Campbell, Ederington, and Vankudre (1991) and Ederington and Goh (2001), we document a significant negative abnormal return of 10.52% over the corresponding one-year post-call period for our sample firms. These substantially different results are perhaps because the effects of the bad model problem are more severe over longer intervals (see Fama (1998)). In the context of Daniel, Hirshleifer, and Subrahmanyam (1998), our

results indicate that conversion-forcing bond calls indeed convey bad news. The market's underreaction to convertible bond call announcements is similar to the phenomenon documented for other corporate announcements.

IV. Summary and Conclusion

The information conveyed by convertible bond calls remains an intriguing issue even though two decades have elapsed since Harris and Raviv's (1985) article. While event-studies clearly support Harris and Raviv's prediction that convertible calls convey bad news, some recent studies have questioned the validity of this conclusion. The conclusions drawn in these recent studies not only challenge the theoretical predictions of Harris and Raviv but also question the underlying notion of market efficiency.

This study contributes to the literature by providing a definitive answer to the question of whether convertible bond calls signal bad news. By using a more powerful methodology, as suggested by Barber and Lyon (1996), we avoid the pitfalls associated with the approaches used in prior studies and document that convertible calls are followed by deteriorating operating performance of the calling firms.

Our approach does not rely on analysts' biased forecasts or on the controversies surrounding long-horizon abnormal stock returns to draw inferences.

Moreover, we employ benchmarks that appropriately control for the mean reversion in operating performance of calling firms. In contrast to the conclusions in Campbell, Ederington, and Vankudre (1991), we find that the underperformance following the call is not just a manifestation of calls occurring at the end of a high growth period.

Our results of deteriorating operating performance following convertible calls, which are viewed as 'backdoor' equity offerings, parallel the findings of Loughran and Ritter (1997) for their sample of seasoned equity offerings.

Our study provides a resolution to the current debate on the information content of convertible calls by unambiguously documenting that convertible bond calls are harbingers of bad news.

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Appendices

Table 1. Distribution of Convertible Bond Calls by Firm Characteristics, 1981-1998

The sample consists of 211 firms that call convertible bonds between January 1, 1981 and December 31, 1998. Total assets (Compustat data item 6) are measured in dollars of 1998 purchasing power using the CPI. Market-to-book ratio is measured as [shares (item 54) times price (item 199) + assets (item 6) – book value of equity (item 60)] / [assets (item 6)].

Quantiles	Total assets ($ millions)	Market-to-book ratio
Minimum	33.48	0.78
10%	131.39	1.02
Q1	290.59	1.17
Median	680.34	1.48
Q3	1,870.36	2.17
90%	5,201.40	2.78
Maximum	102,522.90	5.77
Mean	3,070.33	1.72

Table 2. Median (Mean) Operating Performance Measures and Market-to-Book Ratios for Firms Calling Convertible Bonds and their Matching Firms from 1981 to 1998

This table reports median (mean) ratios for 211 firms that call convertible bonds between January 1, 1981 and December 31, 1998. All calling firms have data available on Compustat for their calling year (year 0). Matching firms are chosen using the procedure followed by Loughran and Ritter (1997). Specifically, each calling firm is matched with a firm that has neither issued equity nor called its convertible bonds during the prior three years using the following algorithm: (1) From the pool of non-issuing and non-calling firms, if there is at least one firm with the same two-digit SIC code with end of year 0 assets within 25 percent to 200 percent of the calling firm, the firm with the closest operating income before depreciation, amortization, and taxes (OIBD)/assets is used as the matching firm; (2) if no non-issuing and non-calling firm meets this criteria, then all firms with year 0 assets between 90 percent and 110 percent of the calling firm are ranked and the firm with the closest OIBD/assets is used. If a calling firm is delisted from Compustat in a given year, the matching firm is also removed from the analysis in the same year. If a matching firm is delisted from Compustat, then the next closest matching firm (based on year 0 two-digit SIC code, Assets, and OIBD/assets, or Assets and OIBD/assets as the case may be) that has not issued equity or called its convertible bonds in the three years prior to the replacement year is spliced in from the replacement year. Fifteen firms (seven percent) require one replacement for their matching firms. The Compustat data items for the variables are: operating income before depreciation/assets (OIBD (item 13)/ assets (item 6) [our results are similar when we include interest income in OIBD. However we lose many observations due to missing values for interest income. Therefore, our reported results exclude interest income], profit margin (net income excluding extraordinary items (item 172)/sales (item 12), return on assets (net income (item 172)/assets (item 6)), OIBD/sales (OIBD (item 13)/sales (item 12)), CE/assets (capital expenditures (item 128)/assets (item 6)), market-to-book assets ([shares (item 54) times price (item 199) + assets (item 6) – book value of equity (item 60)]/ assets (item 6)), market-to-book equity (shares (item 54) times price (item 199) / book value of equity (item 60)).

Panel A: Performance measures for Calling Firms and their Matched Controls

Fiscal Year relative to Bond Call	N	OIBD/Assets		Profit Margin		ROA		OIBD/Sales	
		Calling Firm	Matched Control	Calling Firm	Matched Control	Calling Firm	Matched Control	Calling Firm	Matched Control
-3	151	12.71 (12.80)	14.91 (15.00)	4.17 (3.57)	4.79 (4.81)	4.74 (4.00)	5.68 (4.23)	12.95 (14.80)	12.36 (18.33)
-2	184	13.22 (12.47)	13.77 (13.97)	4.27 (-6.29)	3.93 (4.00)	4.79 (3.54)	4.51 (4.29)	12.22 (3.70)	12.22 (16.47)
-1	200	14.75 (14.10)	14.44 (14.23)	4.86 (-0.65)	4.05 (4.22)	5.20 (4.30)	5.07 (4.83)	13.71 (14.88)	11.48 (14.91)
0	211	14.96 (15.36)	14.81 (14.54)	5.84 (7.38)	4.24 (4.71)	5.89 (6.36)	5.53 (4.93)	15.16 (18.16)	12.19 (16.39)
+1	203	14.63 (14.83)	15.86 (16.16)	5.80 (8.33)	4.98 (4.91)	5.50 (12.08)	6.21 (5.53)	14.57 (17.03)	12.87 (17.13)
+2	191	14.22 (13.31)	16.72 (17.56)	4.83 (4.70)	5.47 (5.69)	4.91 (4.63)	6.12 (6.10)	13.39 (15.24)	13.24 (17.33)
+3	176	11.92 (11.56)	16.10 (16.58)	3.57 (-0.55)	5.35 (5.73)	3.71 (1.61)	6.17 (6.08)	11.69 (12.24)	13.46 (17.23)

Panel B: Test Statistics for Difference Between the Distribution of Performance measures for Calling Firms and their Matched Controls

Wilcoxon Z-statistics are presented above with t-statistic of difference between means in parentheses.

Fiscal Year relative to Bond Call	*OIBD/Assets*	Profit Margin	ROA	OIBD/ Sales
-3	-2.29 (-2.49)	-0.27 (-0.86)	-1.44 (-0.25)	-0.77 (-1.76)
-2	-1.15 (-1.68)	0.77 (-1.16)	-0.39 (-0.96)	-0.16 (-1.23)
-1	0.28 (-0.18)	1.84 (-1.26)	0.24 (-0.77)	2.81 (-0.01)
0	0.81 (1.21)	3.40 (1.97)	1.83 (2.05)	2.91 (1.19)
+1	-2.05 (-1.68)	1.59 (0.95)	-1.02 (0.94)	1.04 (-0.07)
+2	-4.83 (-5.11)	-0.84 (-0.99)	-2.77 (-2.09)	-1.23 (-1.45)
+3	-5.70 (-5.66)	-3.95 (-2.89)	-5.41 (-4.58)	-2.19 (-2.38)

Table 3. Median Operating Ratios for Calling and Matching Firms: Categorized by Asset Size and Market-to-Book Assets for 211 Convertible Bond Calls from 1981 to 1998

Sample firms are classified as small or large based on the median total assets (Compustat item 6) at the end of fiscal year (year 0) in which the firms called their convertible bonds. To classify firms, assets are measured in dollars of 1998 purchasing power using the CPI. The median total asset size is $680 million in 1998 dollars. Similarly, calling firms are classified as low or high M/B firms based on the median market-to-book assets ratio (M/B). M/B is measured as [shares (item 54) times price (item 199) + assets (item 6) – book value of equity (item 60)]/ assets (item 6).

The median M/B ratio is 1.48. OIBD/TA and Profit Margin are defined in Table 2. The Z-statistic is based on the Wilcoxon Rank-sum test of the equality of distributions of performance measures between the calling firms and their corresponding matching firms.

Panel A: Median OIBD/TA							
	-3	-2	-1	0	+1	+2	+3
Small Firms (Post-call assets less than or equal to $680 million)							
Calling Firm	12.83	13.75	14.92	15.22	13.75	12.77	11.73
Matched Firm	14.40	13.75	14.82	15.08	15.97	17.43	16.37
Z-statistic	-1.93	1.07	0.05	0.43	-2.03	-4.70	-5.12
Large Firms (Post-call assets greater than $680 million)							
Calling Firm	12.55	13.21	14.59	14.54	14.82	14.90	12.70
Matched Firm	15.14	13.80	13.84	14.47	15.78	16.04	16.05
Z-statistic	-1.26	-0.59	0.32	0.67	-0.87	-2.08	-2.95

Panel B: Median Profit Margin							
	-3	-2	-1	0	+1	+2	+3
Small Firms (Post-call assets less than or equal to $680 million)							
Calling Firm	4.21	4.14	4.59	6.22	5.81	3.95	2.70
Matched Firm	5.21	4.31	3.77	4.24	4.75	5.13	5.34
Z-statistic	-0.41	-0.38	1.70	2.78	1.57	-0.52	-3.59
Large Firms (Post-call assets greater than $680 million)							
Calling Firm	4.08	4.30	5.02	5.49	5.80	5.33	4.17
Matched Firm	4.79	3.42	4.23	4.41	5.32	5.48	5.54
Z-statistic	-0.04	0.63	0.90	2.01	0.60	-0.68	-2.01

Panel C: Median OIBD/TA							
	-3	-2	-1	0	+1	+2	+3
Low M/B Firms (Post-call M/B assets less than or equal to 1.48)							
Calling Firm	11.22	11.28	12.20	12.82	12.71	11.20	10.56
Matched Firm	14.04	12.56	12.89	12.95	14.72	15.88	15.35
Z-statistic	-2.80	-1.71	-1.24	-0.16	-2.55	-4.58	-5.29
High M/B Firms (Post-call M/B assets greater than 1.48)							
Calling Firm	14.25	15.59	17.49	19.06	17.44	15.54	14.25
Matched Firm	15.50	14.87	15.79	17.43	17.36	18.72	17.28
Z-statistic	-0.50	0.09	1.49	1.54	0.33	-2.48	-2.95

Panel D: Median Profit Margin							
	-3	-2	-1	0	+1	+2	+3
Low M/B Firms (Post-call M/B assets less than or equal to 1.48)							
Calling Firm	3.44	3.10	3.57	4.95	4.15	3.51	2.51
Matched Firm	5.18	3.75	4.00	3.95	4.85	4.91	4.71
Z-statistic	-2.16	-0.72	-0.49	1.08	-0.72	-2.15	-3.40
High M/B Firms (Post-call M/B assets greater than 1.48)							
Calling Firm	5.42	5.82	6.15	7.79	7.18	6.09	4.00
Matched Firm	4.76	4.39	4.39	4.65	5.09	5.55	5.77
Z-statistic	1.74	1.77	3.01	4.10	3.06	0.93	-2.15

Table 4. Five-Year Post-Call Cumulative Abnormal Stock Returns
Using Size, Book-to-Market, and Pre-Call Stock Return Based Matching Firms

The sample consists of 211 firms that call convertible bonds between 1981 and 1998. To evaluate the long-run performance of calling firms using CARs, we follow the procedure outlined in Ritter (1991). The returns are computed for the five-year period starting the day after the conversion-forcing call announcement. Monthly returns are computed using successive 21-trading-day periods. The matching-firm adjusted return for stock *i* in event month *t* is defined as $ar_{it} = r_{it} - r_{mt}$, where r_{it} is the monthly raw return on stock *i* in month *t*, and r_{mt} is the monthly return on the size, book-to-market, and pre-call runup based matching-firm in month *t*. Size is defined as market value of equity (shares outstanding times price) on the day prior to the call date (from CRSP), book-to-market is defined as book value of equity for the most recent fiscal year as of the month-end preceding the call date (from Compustat) divided by the CRSP market value of equity on the day prior to the call date, pre-call runup is defined as the buy-and-hold stock return during the one-year period immediately preceding the call date. For the month in which a sample firm is delisted, the return on both the sample firm and the matching-firm includes only the days from the start of the month until delisting. The average matching-firm adjusted return on a portfolio of *n* stocks for event month *t* is the equally-weighted arithmetic average of the matching-firm adjusted returns: $AR_t = (1/n)\sum_{i=1}^{n} ar_{it}$. When sample firms are delisted from CRSP, the portfolio return for the next month is an equally-weighted average of the remaining firms in the portfolio. If a matching firm is delisted, CRSP value-weighted index returns are spliced in for the remainder of the 60 month period or until the sample firm is delisted, whichever is earlier. The t-statistic for the average matching-firm adjusted return is computed as: $t = AR_t * \sqrt{n_t}/SD_t$, where AR_t is the average matching-firm adjusted return for month *t*, n_t is the number of observations in month *t*, and SD_t is the cross-sectional standard deviation of the adjusted returns for month *t*. The matching-firm adjusted cumulative average return (CAR) from event month *j* to event month *k* is the summation of the average matching-firm adjusted returns: $CAR_{j,k} = \sum_{t=j}^{k} AR_t$. The t-statistic for the cumulative average return in month *t* is computed as in Ritter (1991). The number of firms changes due to sample firms delisting from CRSP.

Month	N	$CAR_{(1,t)}$	T-stat for CAR
1	201	2.14	1.98
6	201	-0.42	-0.16
12	199	-10.52	-2.80
18	196	-11.95	-2.58
24	193	-14.05	-2.60
30	189	-13.92	-2.28
36	182	-18.07	-2.65
42	176	-16.20	-2.17
48	171	-18.34	-2.26
54	164	-24.24	-2.76
60	161	-27.38	-2.93

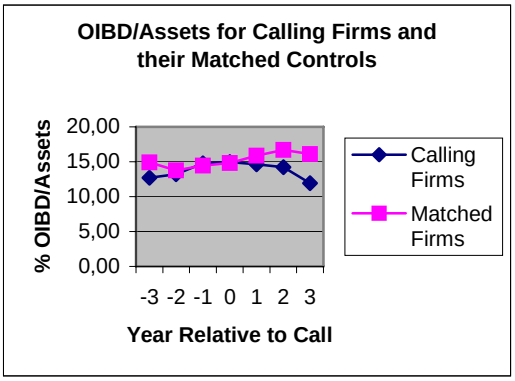

Figure 1

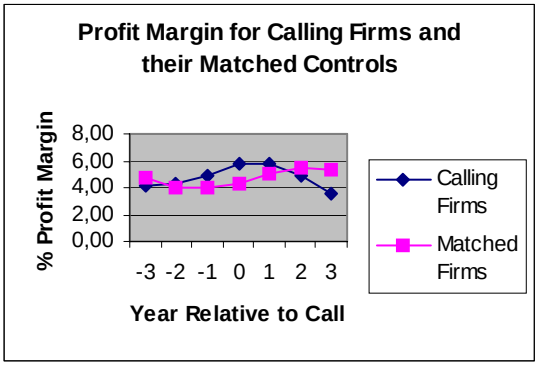

Figure 2

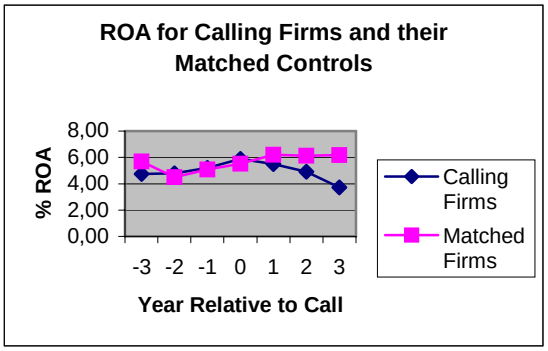

Figure 3

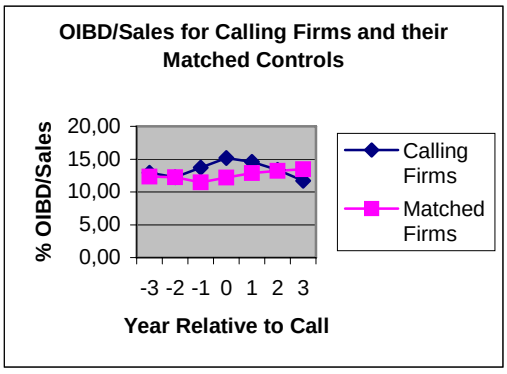

Figure 4

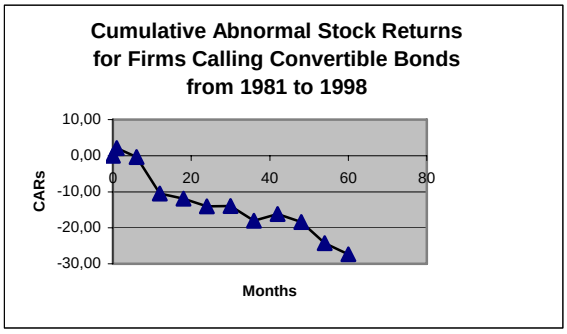

Figure 5