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Going concern opinions are not bad news:  
Evidence from industry rivals

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# Going concern opinions are not bad news: Evidence from industry rivals

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**ABSTRACT:** This paper examines whether going concern audit opinions (GCO) affect the stock price performance of the announcing firms and their industry rivals. Our original evidence clearly suggests that such accounting event is asymmetrically perceived by the market depending on whether the firm is qualified by the auditor or not. In particular, firms receiving a GCO earn negative abnormal returns at the audit report's disclosure date and over the following year whereas their industry rivals exhibit positive abnormal returns at the GCO date and in the subsequent one-month period. This is in contrast with the preevent abnormal returns, which, on average, are negative and significant for all firms operating within the industry. Overall, we highlight the relevance of audit opinions and mandatory accounting information for the timing of transactions in financial markets.

**Keywords:** Audit reports, going concern, competitive effect

**Data Availability:** The data used in this study are publicly available through sources identified in this study

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## I. INTRODUCTION

The going-concern principle is one of the most basic in accounting assuming that companies will continue to operate in the foreseeable future. SAS No. 59 (AICPA 1988) explicitly requires auditors to assess a client's going concern status. In particular, such sophisticated agents must modify their audit report when, after considering all relevant information, have substantial doubts about the entity's ability to continue as a going concern. Independent auditors generally have access to information not reported in the financial statements and thus new and important perspectives may be gleaned from the auditor's opinion.

Several studies explore how the disclosure of a going concern audit opinion (GCO) influences the announcing firm's stock price performance. For instance, Jones (1996) and Fleak and Wilson (1994) observe negative abnormal returns around the GCO announcement date. In a recent contribution, Menon and Williams (2010) show that the abnormal returns associated with a GCO are more negative when the audit report explicitly cites a problem with obtaining financing or when it triggers a technical violation of a debt covenant. In addition, Kausar et al. (2009) find that the market does not process the GCO signal on a timely basis in the U.S.. In particular, the authors document a significant postGCO announcement drift of -14 percent over the following 12-month period. Taffler et al. (2004) present similar evidence for the U.K. market, with their sample firms underperforming by between 24 percent and 31 percent over a one-year post-event period on a risk-adjusted basis.

In this paper, we contribute beyond this literature by examining whether GCOs affect the stock price dynamics of industry rivals both in the short and longer-run. The evidence on this issue is still very preliminary since only four studies have considered somewhat related

questions. Schaub et al. (2003) investigate five GCOs in the computer industry and find that the rivals' stock price tends to fall around the GCO announcement date. Schaub (2006) reaches a similar conclusion when investigating seven GCOs occurring in the electric services industry. In contrast, Elliot et al. (2006) and Elliott and Schaub (2004) find that, on average, the stock price of the rivals tends to increase around the GCO disclosure date when analyzing cases in the real estate and home health care industries, respectively.

Despite their importance and relevance, such studies usually employ very small samples, cover a limited number of industries, focus on the short-run and present conflicting results. Consequently, we argue that the extant literature does *not* provide a clear understanding on how GCOs influence the stock price performance of industry rivals. In general, there are three possibilities. First, the announcement of a GCO may lead to a competitive effect. Recall that going concern opinions signal that the firm is at risk of being forced into bankruptcy proceedings. Industry rivals can benefit from this if costumers refrain from doing business with the GCO firm (perhaps due to a reputational effect) and shift their demand towards the competition. This would boost rivals' sales, earnings and operating cash flows, which should drive their stock price up. The opposite, however, may also occur. This would be the case if investors believe the GCO signals that structural issues are likely to affect negatively the profitability and cash-flow generating potential of the entire industry. This would lead to a contagion effect, with both the rivals and announcing firm's stock price plunging in the short-run. Finally, one can argue that GCOs are clearly firm specific and, as such, have no impact on the fundamental risk/return characteristics of the industry. Under this alternative, no adjustment in the stock price of the rivals should occur around the GCO disclosure date.

We use a very large sample of 670 GCOs and 177 different industries occurring in the U.S. between 01/01/1994 and 12/31/2005 to conduct powerful tests that provide clear evidence on the importance of GCOs for the pricing of the announcing firms' industry rivals. In the first part of the paper, we consider the short-term market reaction to the disclosure of a GCO. In line with the previous literature, we show that the announcing firms lose, on average, 3.31 percent of their market value on a risk-adjusted basis over the three-day window centered on the event date. Our novel contribution to the literature, however, is showing that GCOs also lead to a significant intra-industry *competitive* effect, which seems driven by the biggest industry rivals. In particular, on average, the value-weighted (equally weighted) portfolio of competitors increases in value by 0.37 percent (0.24 percent) at the announcement date. Using very conservative assumptions, we estimate that such small percentage increases rivals' market value by \$171 billion, in 2009 constant dollars. Our tests also show that the GCO competitive effect is magnified when industries are more concentrated and when the GCO firm is more profitable and has distinct assets in place and growth opportunities vis-à-vis those of its rivals. Yet, such effect is mitigated when the disclosure of the going concern opinion is accompanied by a positive earnings surprise.

In the second part of the paper, we focus on the longer-run and provide further evidence that GCOs are key in helping investors adjust their expectations about the future prospects of all firms operating in the industry. In particular, in the preGCO period, investors seem to worry about both the announcing firms and their rivals. On average, the value-weighted (equally weighted) portfolio of competitors loses around 9.3 percent (9.6 percent) of its market value over the one-year period leading up to the GCO date. The parallel figure for the announcing firms is -74.4 percent. Such pattern changes after the disclosure of the audit report as industry rivals earn

positive abnormal returns whereas GCO firms continue to lose value on a risk-adjusted basis. Such pricing effect is statistically significant in the first postGCO month for the industry rivals but lasts at least one-year in the case of the announcing firms.

Our paper allows us to contribute to the accounting literature in a number of ways. First, we expand the studies focusing solely on GCO firms (Jones 1996; Fleak and Wilson 1994; Kausar et al. 2009; Menon and Williams 2010). Our results also augment the previous literature exploring somewhat related issues but does not address the same question as we do (Schaub et al. 2003; Elliott and Schaub 2004; Elliot et al. 2006; Schaub 2006). Second, we provide direct evidence on how public bad news events affect the market value of industry rivals. In this respect, our study differs from the existing literature exploring the intra-industry effects of bankruptcy announcements (Aharony and Swary 1983; Gay et al. 1991; Lang and Stulz 1992; Jorion and Zhang 2007), and bond downgrades (Jorion and Zhang 2010) as we consider an *accounting* event that is motivated by a mandatory requirement with cyclical nature. Finally, we also contribute to the body of research suggesting that the stock market takes time to assimilate bad news (Ball and Brown 1968; Foster et al. 1984; Bernard and Thomas 1989, 1990; Kausar et al. 2009). In particular, we show that events rooted in accounting information may generate market-pricing anomalies that not only affect the announcing firms but also their industry rivals.

The balance of the paper is as follows. In the next section, we present our data. Sections 3 and 4 examine how GCOs influence the industry rivals stock price performance in the short and long-run, respectively. Section 5 concludes.

## II. DATA

We use 10k Wizard's free text search tool to identify all firms present in EDGAR that receive a GCO report from 01/01/1994 to 12/31/2005. Our combination of keywords is "raise substantial doubt" and "ability to continue as a going concern". From the initial 29,102 records, we exclude 16,866 cases because firms are not in the CRSP/COMPUSTAT merged file. Drawing on recent studies (Taffler et al. 2004; Ogneva and Subramanyam 2007; Kausar et al. 2009; Menon and Williams 2010), we consider only first-time GCOs cases in our final sample, i.e., firms receiving a GCO in year  $t$  but not in year  $t-1$ . In the next step, we delete 1,017 cases because we could not find accounting data on COMPUSTAT or because the firms do not trade common stock on the NYSE, AMEX or the NASDAQ during the 12-month period leading up to the GCO disclosure date. To ensure a consistent legal framework, utilities and financial firms are removed as well as foreign companies. Next, firms classified as "in a development stage" or that had already filed for bankruptcy when receiving the GCO are dropped from the sample.<sup>1</sup> In the last step, we look for the industry rivals. Following Lang and Stulz (1992), we use the four-digit SIC code to define industry affiliation on the year of the GCO report both for the announcing firm and its industry rivals. We exclude from the final sample all GCO cases for which we cannot find at least one industry rival on COMPUSTAT and/or the industry rivals do not have sufficient data on the CRSP daily file.

Table 1 shows that our final sample consists of 670 first-time GCOs and that our events are reasonably spread across our sample period, although there is a concentration of cases in 2001 and 2002, which coincides with the burst of the dot-com bubble.

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<sup>1</sup> In contrast to Lang and Stulz (1992), we do not impose a minimum debt level to include the GCO firms in the sample since Haensly et al. (2001) show that doing so biases the results in favor of finding an intra-industry effect.

Table 1 here

The 670 first-time GCOs cover 177 four-digit SIC industries. If a given industry has several GCO events in the sample, we keep each announcement so as to reflect the industry's shifting composition (Lang and Stulz 1992). Eighty-two industries have a single GCO case and a further 66 industries have between 2 and 5 cases. The services-prepackaged software industry (SIC code 7372), which has the highest relative frequency of GCOs, accounts for 55 first-time incidents, followed by the services-computer programming, data processing and similar industry (SIC code 7370), with 31 cases.<sup>2</sup> Importantly, we delete all GCO firms from the rival portfolios so as to eliminate any potential contamination in the results. On average, industry portfolios have 12.3 rival firms (standard deviation = 15.5) and the respective median is 6. The maximum (minimum) number of competitors in an industry portfolio is 69 (1).

Table 2 provides some descriptive statistics for the announcing and rival firms. On average, GCO firms are small (mean market capitalization = \$34.1 million; mean revenue = \$159.4 million), clearly unprofitable (mean ROE = -186.6 percent; median ROE = -88.1 percent)<sup>3</sup> and unable to generate positive cash-flow (mean cash-flow from operations = -\$10.7 million; median cash-flow from operations = -\$2.8 million). Not surprisingly, GCO firms are severely distressed one year in advance of receiving the qualified audit report. The mean Z-score is 0.6, which indicates a high risk of being forced into bankruptcy in the short-run. Around three-quarters of the GCO firms are audited by a Big 4 audit firm.

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<sup>2</sup> With the exception of the years 2001 and 2002 (2001), GCO events are evenly spread over our sample period for the services-prepackaged software industry (services-computer programming, data processing and similar). In untabulated results we drop these two industries/years and rerun our analysis. Our conclusions do not change.

<sup>3</sup> Firms with non-positive total equity are excluded from our ROE computations as not doing so would distort the results.



Table 2 here
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The typical industry is much bigger than the individual GCO firm (mean market capitalization = \$4,256.6 million; mean revenue = \$1,705.2 million). Industry rivals are also unprofitable (mean ROE = -39.5 percent) but enjoy a better financial position than that of the GCO firms (mean cash-flow from operations = \$224.9 million). The mean value for our bankruptcy likelihood proxy is -4.5, suggesting that the typical firm within our industries is *not* at risk of failing in the short-term.

### III. GCOS STOCK PRICE IMPACT: SHORT-TERM ANALYSIS

In this section, we investigate the short-term valuation effects associated with the disclosure of a GCO on both the announcing firm and their competitors.

#### Initial Evidence

We use standard event study methods to explore how GCOs affect market prices. In particular, for announcing firm  $j$ , we compute the abnormal return in day  $t$  ( $AR_{j,t}$ ) as:

$$AR_{j,t} = r_{j,t} - E(r_{j,t}) \quad (1)$$

where  $r_{j,t}$  is day  $t$  return for the announcing firm  $j$ , and  $E(r_{j,t})$  is the expected return for such firm/trading day.  $E(r_{j,t})$  is estimated using the market model. We use the CRSP value weighted portfolio as proxy for the market portfolio, and estimate the parameters of the market model over a 200 trading-day window, which ends 50 days before the disclosure date of the firm's GCO audit report. Moreover, we adjust the estimate for beta as in Scholes and Williams (1977) to overcome the bias arising from the infrequent trading of financially distressed firms.

Next, for event day  $t$ , the average abnormal return ( $\overline{AR}_t$ ) is defined as:

$$\overline{AR}_t = 1/n \sum_{j=1}^n AR_{j,t} \quad (2)$$

where  $AR_{j,t}$  is as in equation (1) and  $n$  is the number of firms. The significance of the average abnormal return is assessed using Z-statistics computed as in Boehmer et al. (1991).<sup>4</sup>

We broadly follow Lang and Stulz (1992) when computing the abnormal returns for the industry rivals. As mentioned in section 2, industry portfolios are comprised of all firms with the same four-digit SIC code as the announcing firm that have stock returns available on CRPS. To reduce survival bias, rivals are included in the industry portfolio even if they do not have reported returns for all days in the estimation or event period.<sup>5</sup> Abnormal returns are computed as prediction errors for the portfolio return, with Lang and Stulz (1992) noting that such procedure accounts for the cross-sectional dependence among companies in each portfolio. In practice, we employ equations (1) and (2) with one exception. We do not use the Scholes and Williams

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<sup>4</sup> Using cross-sectional  $t$ -statistics or Pattel's (1976) test statistic yields essentially the same results. These are available upon request from the first author.

<sup>5</sup> Nevertheless, rivals have to have at least 60 observations in the estimation period to be kept in the industry portfolio.

(1977) adjustment technique as, in this case, the prediction errors are for *portfolios* of competitor companies, not the GCO firms' themselves (see also Haensly et al. 2001). As such, for the rival portfolios,  $E(r_{j,t})$  is estimated using the ordinary least squares (OLS) betas from our market model regression. For completeness, we present results using both equal and value-weighting schemes for the industry portfolios.

Table 3 summarizes our results. Panel A shows that, on average, the market price of the announcing firms falls by 1.69 percent ( $p < 0.001$ ) on a risk-adjusted basis at the event date and a further 1.92 percent ( $p < 0.01$ ) and 1.14% ( $p = 0.035$ ) on event days +1 and +2, respectively. None of the preevent abnormal returns are statistically significant at conventional levels. Our evidence is in line with the recent findings of Menon and Williams (2010) and shows that GCOs clearly provide investors with new and important value-relevant information.

Table 3 here
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Our original results are, however, reported in panel B of Table 3. As can be seen, the average abnormal return for both the value-weighted (VW) and equally weighted (EW) rival portfolios are *positive* and statistically significant at the event date: 0.37 percent ( $p < 0.001$ ) and 0.24 percent ( $p = 0.023$ ), respectively. Given our results for the announcing firms, such evidence clearly suggests that the disclosure of a GCO report leads, on average, to an intra-industry *competitive* effect, which seems to be driven by the biggest rival firms operating within the industry.

As Lang and Stulz (1992) emphasize, in general, the market capitalization of any individual firm is considerably smaller than that of its industry. As such, in practice, the relatively small percentage gain we document for our industry rivals may actually correspond to a very significant dollar amount. We infer about the economic importance of the GCO competitive effect assuming that the market value of each of our rival firms (announcing firm) increases (decreases) by 0.24 percent (1.69 percent) at the GCO disclosure date. Using such conservative assumption, we estimate the GCO competitive effect to be worth around \$171.6 billion (the announcing firms' shareholders lose \$480 million), in 2009 constant dollars.

In Table 4, we re-examine our results using cumulative abnormal returns (CARs). For each announcing firm  $j$ , the cumulative abnormal return over period  $\tau$  is:

$$CAR_{j,\tau} = \sum_{\tau=t_1}^{t_2} AR_{j,\tau} \quad (3)$$

where  $AR_{j,t}$  is defined as in equation (1). Individual CARs for a given time interval  $\tau$  are averaged cross-sectionally as follows:

$$\overline{CAR}_\tau = 1/n \sum_{j=1}^n CAR_{j,\tau} \quad (4)$$

where  $CAR_{i,\tau}$  is defined as in (3), and  $n$  is the number firms.<sup>6</sup> We compute CARs for industry rivals using a comparable method.

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<sup>6</sup> Using buy-and-hold abnormal returns does not alter the nature of our conclusions. Results are available upon request from the first author.

In line with the previous literature, panel A of Table 4 shows that GCO firms sustain a risk-adjusted loss in market value around the audit report disclosure date. In particular, the average CAR for the announcement period ranges from -1.39 percent ( $p < 0.01$ ) to -3.31 percent ( $p < 0.01$ ), depending on the event window one considers. The one-week average preevent CAR is *not* significant at conventional levels. However, its postevent equivalent is *positive* and significant at better than the 1 percent level. Our results thus suggest the market *overreacts* to the announcement of a GCO report, with Dawkins et al. (2007) reporting similar evidence for their sample of bankrupt firms.

Table 4 here
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In panel B of Table 4, we focus on the rival firms and again show that, on average, the GCO leads to a competitive effect. The average VW industry CAR for the (-1;0) window is 0.41 percent ( $p = 0.01$ ) and is 0.36 percent ( $p = 0.07$ ) for the more extended (-1;1) period. Results computed using equal weights are similar, albeit somewhat weaker both statistically and in magnitude. This supports the idea that the GCO competitive effect is driven by the largest industry rivals.

### **Multivariate Evidence**

Short-term industry effects may vary significantly due to industry or firm characteristics, as suggested by Lang and Stulz (1992), Jorion and Zhang (2007) and Zhang (2010) among others. We analyze this issue with the help of equation (5):

$$CAR_i = \alpha_0 + \sum_{m=1}^4 \lambda_m Ind_{i,m} + \sum_{k=1}^3 \delta_k Firm_{i,k} + \varepsilon_i \quad (5)$$

where  $CAR_i$  is industry  $i$ 's CAR over the (-1;0) window,  $Ind_{i,m}$  represents a set of industry related characteristics,  $Firm_{i,k}$  stands for a set of GCO firm-specific characteristics, and  $\varepsilon_i$  is the error term, assumed to be white noise.<sup>7</sup>

The first industry characteristic we consider is leverage ( $Ind\_Lev$ ). A priori, the relation between the GCO competitive effect and industry leverage is ambiguous. On the one hand, all else being equal, the competitive effect should be more pronounced in highly levered industries. This is because debt magnifies the impact on return on equity resulting from the (potential) increase in net earnings accruing to the nonGCO firms. On the other hand, increased leverage also reduces firms' ability to invest and, consequently, to exploit changes in their competitive position (Bolton and Scharfstein 1990). Following Haensly et al. (2001), we compute the ratio of total debt to total assets at the firm level and then use the industry's average to estimate equation (5).<sup>8</sup>

Concentration is the second industry characteristic we consider ( $Ind\_Conc$ ). In less than fully competitive industries, an increase in demand should translate into higher equity valuations as firms can raise the price they charge for their current output. It is plausible that receiving a GCO leads to a negative reputational effect, which should result in costumers shifting their demand to nonGCO firms. Consequently, industry concentration should magnify the GCO competitive

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<sup>7</sup> We use eleven year-dummies and five industry-dummies when estimating equation (5) to overcome potential problems of omitted variables. Industry dummies are defined according to Professor Keneth French's five industry portfolios. See [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data\\_Library/det\\_5\\_ind\\_port.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_5_ind_port.html) for more details (accessed on 06/09/2011).

<sup>8</sup> Haensly et al. (2001) show that using only long-term debt to define industry leverage as in Lang and Stulz (1992) bias the results in favor of finding a contagion effect in the case of bankruptcy announcements. In untabulated results, however, we rerun our analysis defining leverage as the ratio of long-term debt to total assets or total liabilities to total assets. Our findings do not change and are available upon request from the first author.

effect. We use the Herfindahl ratio to proxy for the degree of industry concentration (Lang and Stulz 1992), which is computed as the squared sum of the fractions of the industry sales by the nonGCO firms.<sup>9</sup>

The GCO competitive effect should be smaller (or even inexistent) when the industry shares a similar cash-flow pattern vis-à-vis that of the announcing firm. Indeed, when this is the case, investors are less likely to perceive the GCO as being firm-specific, which in turn, should negatively affect the market price of *all* the other firms in the industry. Drawing on Lang and Stulz (1992), we assess the level of cash-flow similarity (*Ind\_CF*) by computing the correlation between the raw stock returns of the industry and its respective announcing GCO firm over the one-year period preceding the GCO disclosure date.

Lang and Stulz (1992) mention a potential interaction between industry leverage and concentration. As argued above, high industry concentration should magnify the intra-industry GCO competitive effect. However, the extent to which this is actually reflected on stock prices depends on the industry's leverage ratio. The average indebtedness of the industry constraints competitors' ability to expand their business and influences the response of the return on equity to fluctuations in market share. Following Haensly et al. (2001), we include an interaction term between industry leverage and concentration in our regression model to explicitly capture this joint effect (*Lev\_Con*).

Three GCO firm specific characteristics are also considered in our regression model. The first is size, which captures the information environment surrounding the announcing firms (*GCO\_Size*). In a recent paper, Ittonen (2010) shows that size mitigates the negative stock

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<sup>9</sup> Our results, however, do not change if we include the sales of the GCO firms in the computation of the Herfindahl ratio.

returns associated with the disclosure of an audit report, a result he attributes to the lower levels of information asymmetry associated with the biggest GCO firms. It follows that investors are less likely to be surprised by the GCO as the size of the announcing firm increases. This, in turn, should lead the GCO competitive effect to be concentrated around the smallest announcing firms. Size is measured as the log of the GCO firm's total assets, collected from COMPUSTAT one calendar year before the GCO year.

It is well-established that the market is inefficient when dealing with earnings surprises, especially when they are negative (Bernard and Thomas 1989, 1990; Fama 1998). This is important as investors are likely to become aware and react to earnings figures at the same time they learn about the going concern audit report. Drawing on Foster et al. (1984), we define earnings surprise as the ratio of the difference of the current quarterly earnings figure and the earnings figure reported by the firm in the previous quarter to the absolute value of the firm's current quarter earnings. We then use a dummy variable (*SUE<sub>d</sub>*) to separate cases where a positive earnings surprise occurs at the 10k's disclosure date (dummy equals one) from all the other cases.

Profitability is the last GCO firm specific variable we consider in equation (5). We proxy for firm profitability (*GCO\_ROA*) using the return on assets ratio, which we compute as earnings before interest and taxes to total assets.<sup>10</sup> This ratio captures the ability of the firm to use its assets to generate earnings, with higher values usually indicating increased levels of economic efficiency and managerial talent. We expect the GCO competitive effect to be stronger when the

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<sup>10</sup> Both figures collected from the 10k report published one year prior to the GCO disclosure year.



announcing firm is relatively more profitable as this is akin to saying that a more able competitor is likely to be forced out of the market shortly.

Panel A of Table 5 presents summary statistics for the independent variables. As can be seen, on average, our industries do not carry much debt on the balance sheet (mean = 21 percent; median = 15 percent) and seem relatively concentrated (*Ind\_Conc* for = 0.56; median = 0.50). In addition, rivals' preevent raw returns are not strongly correlated with those of the announcing firm, which suggests that typical event and nonevent firms have distinct assets in place and/or investment opportunity sets. Panel A of Table 5 again shows that the GCO firms are small, with mean (median) total assets of \$201.4 (\$21.9) million and are not profitable, with mean and median return on assets of -49 percent and -26 percent, respectively. Panel A of Table 5 also shows that going concern audit reports are very often accompanied by a contemporaneous negative earnings surprise, emphasizing the need for controlling for the impact of such effect in our results.

Panel B of Table 5 resumes the Pearson correlation coefficients. The largest is 29.1 percent for *GCO\_Size* and *Ind\_CF*, ( $p < 0.01$ ) but many are *not* significant at normal levels. This suggests that our independent variables proxy for distinct underlying factors and, as such, our regression results should be free of problems of serious multicollinearity.

Table 6 presents our cross-sectional regression results. We run a Reset test to exclude problems of incorrectly omitted variables and/or incorrect functional form, and we conduct a Breush-Pagan and a White test to control for heteroscedasticity. As shown in Table 6, the Reset test is never significant at normal levels; the opposite holds for the Breush-Pagan and White tests. As such, although we do not seem to face specification problems, our estimation must

account for heteroskedasticity. Consequently, and drawing on Lang and Stulz (1992) and Haensly et al. (2001), we estimate equation (5) using weighted least squares (WLS), with weights equal to the reciprocal of the standard deviation of the market model residual for the industry portfolio.<sup>11</sup>

We now analyze our VW results. Table 6 shows that the coefficient estimated for *Ind\_Lev* and *Ind\_Conc* is positive and significant while the parallel figure for the interaction term is negative and significant at better than the 1 percent level. It follows that, ceteris paribus, the GCO competitive effect for the largest industry rivals is driven by the more highly levered and concentrated industries. However, for a given level of industry concentration, an increase in the industry's average debt ratio mitigates the impact of the GCO on the industry rivals' market price. In addition, the coefficient associated with *Ind\_CF* is negative and significant at conventional levels. Hence, our regression results indicate that similarity of cash-flows between rivals and announcing firms reduces the magnitude of GCO competitive effect. Table 6 also shows that the announcing firms' specific characteristics influence the magnitude of the GCO competitive effect. In particular, all else being equal, rivals' abnormal performance around the GCO date is less negative as the size of the announcing firm increases. In line with our initial expectations, there is also evidence suggesting that the GCO competitive effect is more acute when the event firm is relatively more profitable. Finally, Table 6 suggests that a positive earnings surprise mitigates the intra-industry effect under analysis: the coefficient estimated for *SUE\_d* is -0.004, with p-value of 0.067.

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<sup>11</sup> In untabulated results we use two-step generalized least squares (Green, 2002, pp. 227-228) and Ordinary Least Squares (OLS) with heteroskedasticity-robust *t*-statistics (Zhang 2010) to estimate equation (5). In general, the estimated coefficients have the same sign and magnitude as reported below. Nevertheless, some of the estimates are no longer significant at conventional levels when we employ these alternative estimators.

In general, EW and VW results are largely consistent. There is, however, one important exception. The coefficient estimated for *Ind\_Lev* and for the interaction term is *not* significant at normal levels in our EW regression. This is at odds with our VW evidence and suggests that industries' indebtedness is only important for explaining the cross-sectional variation of the GCO competitive effect for the largest rivals.

## **Summary**

This section shows that GCOs convey important information to the market. Our computations indicate that, on average, the market price of the announcing firms falls by 1.69 percent on a risk-adjusted basis at the event date, with a cumulative loss of around 3.31 percent being documented for the full (-1;1) period. Our evidence also suggests that such decline in the stock price may be an indication of market overreaction since the one-week postGCO average CARs is positive and significant. Our main contribution, however, is with the pricing implication of GCOs on the industry rivals. We find that such event leads to a competitive intra-industry effect, which is both economically and statistically significant and driven by the largest competitors. At the GCO date, the VW stock price of the industry rivals increases, on average, 0.37 percent on a risk-adjusted basis, which we conservatively estimate to be worth around \$171.6 billion, in 2009 constant dollars.

Further tests show that such intra-industry effect is stronger in more concentrated industries and when competitors and announcing firms have distinct assets in place and growth opportunities. Firm-specific characteristics are also important. In particular, the GCO competitive effect is magnified when the announcing firm is relatively more profitable but is

lessened when a positive earnings surprise accompanies the disclosure of the going concern audit report. Finally, industry leverage seems relevant for explaining the extent of the GCO competitive effect only in the case of largest industry rivals.

#### **IV. GCOS STOCK PRICE IMPACT: LONGER-TERM ANALYSIS**

In an efficient market, the GCO signal should be priced as soon as the audit report becomes publicly known (Fama 1970). Previous studies, however, show that the market is less than fully efficient in many situations, and especially so when dealing with public bad news events. For example, Womack (1996) finds that new sell recommendations are associated with a post-recommendation drift of -9 percent over a 6-month period. Dichev and Piotroski (2001) show negative abnormal returns of between -10 percent to -14 percent following Moody's bond downgrades in the first year alone, with a further decline of -3 percent to -7 percent in the second and third years, respectively. In addition, Chan (2003) reports that stocks associated with bad news stories display a negative drift for up to 12 months.

In a recent paper, Kausar et al. (2009) find that the U.S. market underreacts by no less than -14 percent over the 12-month period following the disclosure of a GCO report, with Taffler et al. (2004) reporting similar evidence for the U.K.. These two studies thus suggest the market is unable to impound on a timely basis the impact of a going concern audit report on the announcing firm's market price. This section investigates to what extent a similar anomaly equally occurs at the industry level.

There is much discussion in the literature regarding long-term event studies. Researchers usually employ one of two methods for assessing and calibrating postevent risk-adjusted stock

returns: 1) the calendar time portfolio method (Fama 1998; Mitchell and Stafford 2000), and 2) the buy-and-hold method (Barber and Lyon 1997). Fama (1998) and Mitchell and Stafford (2000) argue that event-time returns, as employed by the buy-and-hold method, are an inappropriate metric for computing long-term abnormal returns since they present cross-sectional dependence. Barber and Lyon (1997), however, show that the arithmetic summation of returns, as is done with calendar time returns, does not precisely measure investor experience. Moreover, Lyon et al. (1999) demonstrate that the calendar time method is generally misspecified in nonrandom samples, and Loughran and Ritter (2000) show that such technique has low power. After reviewing the literature, Kothari and Warner (2007) conclude that we still lack an undisputable method for conducting long-term event studies. Therefore, below we use both the buy-and-hold and the calendar portfolio methods to examine the longer-term market reaction of industry rivals to the disclosure of a GCO report.

### **Buy-and-Hold Risk Adjusted Abnormal Returns**

We compute buy-and-hold abnormal returns (BHARs) as Barber and Lyon (1997). In particular, for period  $\tau$ , industry  $i$ 's BHAR is given by:

$$BHAR_{i,\tau} = \prod_{\tau=t_1}^{t_2} (1 + r_{i,t}) - \prod_{\tau=t_1}^{t_2} [1 + E(r_{i,t})] \quad (6)$$

where  $r_{i,t}$  is the VW or EW return for industry  $i$  at period  $\tau$ , and  $E(r_{i,t})$  is the expected return for industry  $i$  at period  $\tau$ .  $E(r_{i,t})$  is estimated using the returns of firms matched on size and book to market since Barber and Lyon (1997) show that the market model is subject to mean

reversion. Our matching procedure is very similar to that of Zhang (2010). In particular, we first assign each stock present in the CRSP database to one of ten size deciles based on its market capitalization at the end of June. Next, for each GCO industry firm, we define the control firm as that firm in the same size decile with the closest book-to-market ratio. Such ratio is computed as the most recent book value of equity at the end of December divided by the market value of equity at the end of the same month. Once we identify a control firm for all our GCO industry firms, we construct both VW and EW portfolios with the returns of the control firms and generate our measure for  $E(r_{i,t})$ . Individual industry BHARs for period  $\tau$  are then averaged cross-sectionally as follows:

$$\overline{BHAR}_{\tau} = \frac{1}{n} \sum_{i=1}^n BHAR_{i,\tau} \quad (7)$$

where  $BHAR_{i,\tau}$  is defined as in equation (6), and  $n$  is the number of industries with data for period  $\tau$ . Drawing on Lyon et al. (1999), we compute bootstrapped skewness-adjusted  $t$ -statistic for inferring about the statistical significance of mean BHARs.<sup>12,13</sup> A month is defined as a twelve 21-trading day interval (Michaely et al. 1995), and we restrict our analysis to a one-year postevent period as considering longer horizons is methodologically challenging (Brown and Warner 1980; Lyon et al. 1999; Kothari and Warner 2007). For completeness, we also compute BHARs for the announcing firms using essentially the same procedure as for the industry rivals.

Table 7 presents our results. Panel A summarizes the preevent stock abnormal performance and shows that, on average, the VW (EW) industry portfolio loses 9.3 percent ( $p < 0.01$ ) (9.6

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<sup>12</sup> We winsorize our results at the top and bottom 1% to reduce the impact of extreme observation in our results.

<sup>13</sup> Standard cross-sectional  $t$ -tests yield similar results. These are available upon request from the first author.

percent;  $p < 0.01$ ) of its market value on a risk-adjusted basis over the one-year period preceding the GCO announcement date. Results for the six-month preevent period are qualitatively similar, although of smaller magnitude. Furthermore, panel A of Table 7 shows that, on average, the GCO firms earn significant and negative risk-adjusted returns over the same two compounding windows (74.4 percent for the one-year period and 43.9 percent for the six-month period). Taken together, our results suggest the market suspects of the future prospects of *both* the announcing firms and their industry rivals *before* the GCO disclosure date.

Panel B of Table 7, however, shows a different pattern in the postevent period. In particular, the (2, 21) mean VW and EW industry BHARs are *positive* and significant (1.5 percent and 1.9 percent respectively), while most of their longer-term equivalents are *not* significant at normal levels. The converse occurs with the GCO firms, with the mean abnormal return for the first postGCO month not statistically significant but all the others strongly negative and significant. These results suggest the market prices the announcing firms and their industry rivals *differently* once the audit report is disclosed. In particular, there is evidence that GCO firms' shareholders (continue to) lose value on a risk-adjusted basis in the postGCO period whereas investors in their industry rivals earn positive abnormal returns in the first postGCO month.

### **Calendar-time Portfolios**

As mentioned above, Fama (1998) and Mitchell and Stafford (2000) highlight some potential pitfalls with the BHAR method, and favor the use of calendar-time portfolios. For robustness, we also employ this alternative method focusing on the rival firms (see also Eberhart et al. 2004 and Zhang 2010). For this test, we compute VW and EW returns for our industry competitors using

data collected from the CRSP monthly database. Each GCO industry is included in a rolling-calendar portfolio at the GCO report disclosure month, and is held there up to a maximum of 6- or 12-months.<sup>14</sup> Industries are given the same weight in the calendar portfolio in all months (Zhang 2010), and following Mitchell and Stafford (2000) and Ikenberry and Ramnath (2002), we drop all months where the calendar portfolio has fewer than 10 industries.

The calendar portfolio abnormal performance is assessed using the Fama and French's (1993) three- and the Carhart's (1997) four-factor model. We use a Breusch-Pagan and a Breusch-Godfrey serial correlation LM test to check for heteroskedasticity and autocorrelation, respectively. The Breusch-Pagan test is never significant, an indication that heteroskedasticity is not an issue. However, the LM test suggests that serial correlation is present in almost all of our regressions using VW industry returns. As such, below we present OLS *t*-statistics corrected for autocorrelation when appropriate.

Table 8 summarizes our findings. In panel A we examine what happens before the announcement of the going concern audit report. As can be seen, all VW intercepts are negative and significant. While the results for the EW industry returns are similar, they are not statistically significant when one considers the 12-month holding period. However, in general, there is evidence to conclude that our calendar time results suggest that the industry rivals lose value on a risk-adjusted basis in the preGCO period. Panel B of Table 8 presents the postevent results, which are in line with the BHAR evidence reported above. In particular, we find that most intercepts are *not* statistically significant at normal levels, which implies that, in the longer-run, one cannot earn risk-adjusted excess returns by investing in the GCO firm's industry rivals.

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<sup>14</sup> We do not attempt to compute abnormal returns using the calendar time method for shorter holding periods to avoid methodological issues.



Overall, this section shows that GCO firms and their competitors experience negative and significant returns in the one-year period preceding the publication of a going concern opinion. However, postevent, such return pattern changes and critically depends on whether the auditor qualifies the firm or not. In particular, we find that GCO firms continue to lose market value within the one-year period following the announcement date whilst their rivals earn positive abnormal returns in the subsequent month.

## **V. CONCLUSION**

We use a large sample of 670 firms receiving a going concern opinion in the U.S. between 1994 and 2005 and show that such accounting event helps investors adjust their expectations about the future prospects of both the announcing firms and their industry rivals. In particular, in the preevent period, all firms in the industry lose value on a risk-adjusted basis. We observe an intra-industry competitive effect at the GCO disclosure date as rivals (GCO firms) earn average excess returns of 0.37 percent (-1.69 percent). Postevent, we find that the announcing firms continue to exhibit negative mean excess returns over the one-year window following the GCO date whereas buying-and-holding their industry competitors, on average, yields positive abnormal returns in the first postGCO month.

Our evidence adds to the literature in two important ways. First, we show that GCOs clearly have market pricing implications for industry rivals. This constitutes an original contribution as the previous studies typically focus on the announcing firms. Second, we demonstrate the market does not process the GCO signal on a timely basis. Our results are particularly interesting in that

they suggest such accounting event is bad news for the GCO firms yet good news for their industry rivals.

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**Table 1**  
**Sample Selection and Distribution by Year**

This table summarizes the sample construction strategy and the distribution of cases by year.

Panel A: Sample selection

We start by identifying on EDGAR all 10k reports that mention the words “raise substantial doubt” and “ability to continue as a going concern” between 01/01/1994 and 12/31/2005. Conditional on a firm having data in the CRSP/COMPUSTAT merged database, we manually verify if the company has a GCO audit report in that fiscal year and if the previous fiscal year is clean in order to identify the first-time GCO companies. We then exclude all cases that filed Chapter 11 before the audit report publication date, all firms classified as foreign or as development stage enterprise, and cases with insufficient CRSP/COMPUSTAT data. Next, utilities and financials are deleted. Finally, we exclude all GCO cases for which we cannot find at least one industry rival (defined as having the same four-digit SIC CODE) on COMPUSTAT and/or the industry rivals do not have return data available on the CRSP daily file.

Sample	Frequency
Firm-year observations identified through 10k wizard	29,102
Firm-year observations not found in CRSP/Compustat merged	16,866
Firm-year observations that do not constitute First-time GCM	9,940
Firm-year observations with insufficient CRSP/COMPUSTAT data	1,017
Firm-year observations classified as utilities or financials	142
Firm-year observations classified as foreign or as in a development stage	168
Firm-year observations filing Chapter 11 before audit report publication date	45
Firm-year observations without at least one valid industry rival	254
Final sample size	670

Panel B: Sample Distribution by Year

Year	Frequency	Percentage
1994	15	2.2%
1995	37	5.5%
1996	49	7.3%
1997	68	10.1%
1998	68	10.1%
1999	70	10.4%
2000	48	7.2%
2001	95	14.2%
2002	101	15.1%
2003	69	10.3%
2004	22	3.3%
2005	28	4.2%
Total	670	100.0%

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**Table 2**  
**Summary statistics**

This table presents summary statistics relating to the GCO firms and their industry rivals. Industry rivals are defined as firms sharing the same 4-digit SIC code as the announcing firm and that have data available on both CRSP and COMPUSTAT. Size is the equity market capitalization in \$m, measured one month before the GCO date. Revenue is total revenues in \$m. ROE is the return on equity, computed as the ratio of net income to book value of equity. CF Operations is the cash-flow from operations in \$m. Z-score is a composite measure of financial distress based on Zmijewski (1984). Big 4 is a dummy that assumes the value 1 if the firm is audited by a Big 4 audit firm or one of its predecessors and zero otherwise. All accounting data is collected from the 10k report disclosed one year before the GCO announcement date.

Panel A: GCO firms

Variables	Mean	Std. Dev.	Low. Quart.	Median	Upp. Quar.
Size	34.1	65.8	6.1	14.4	35.4
Revenue	159.4	957.3	4.2	17.3	70.3
ROE (N=600)	-186.6%	244.3%	-239.0%	-88.1%	-30.4%
CF Operations	-10.7	68.8	-10.0	-2.8	-0.1
Z-Score	0.6	7.2	-3.7	-1.2	2.7
Big 4	72.4%	-	-	-	-

Panel B: Industry rivals

Variables	Mean	Std. Dev.	Low. Quart.	Median	Upp. Quar.
Size	4,256.6	9,692.0	195.3	1,067.1	5,159.2
Revenue	1,705.2	3,236.0	165.5	827.5	2,323.8
ROE	-39.5%	101.8%	-49.2%	-13.8%	7.4%
CF Operations	224.9	513.8	5.7	71.5	275.7
Z-Score	-4.5	2.3	-6.2	-4.7	-3.2
Big 4	95.8%	-	-	-	-

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**Table 3**  
**Abnormal returns associated with GCO announcements**

This table presents the short-term industry effect associated with GCOs. The abnormal return (AR) is the market model residual (estimated over the -250, -50 day interval). The sample includes all GCOs between 01/01/1994 and 12/31/2005 for which a primary 4-digit SIC code is available from the COMPUSTAT data file (670 GCOs). An industry portfolio is a value-weighted (VW) or an equally weighted (EW) portfolio of firms with the same primary 4-digit SIC code for which returns are available from the CRPS files. *N* denotes the number of abnormal returns to compute the average abnormal return. The significance of the AR is computed as in Boehmer et al. (1991).

Panel A: Announcing firms' average abnormal returns around the GCO announcement date

Event Day	N	Mean	Sign.
-5	669	0.40%	0.505
-4	668	0.29%	0.802
-3	668	-0.38%	0.283
-2	668	0.12%	0.835
-1	668	0.30%	0.497
0	666	-1.69%	0.000
1	667	-1.92%	0.000
2	669	-1.14%	0.035
3	669	0.81%	0.152
4	669	1.98%	0.013
5	668	0.65%	0.100

Panel B: Industry rivals' average abnormal returns around the GCO announcement date

Event Day	N	VW Mean	VW Sign.	EW Mean	EW Sign.
-5	670	0.03%	0.769	0.07%	0.797
-4	670	0.22%	0.193	0.15%	0.351
-3	670	0.21%	0.348	0.35%	0.001
-2	670	0.01%	0.557	0.12%	0.148
-1	670	0.15%	0.209	0.13%	0.448
0	670	0.37%	0.008	0.24%	0.023
1	670	-0.01%	0.587	-0.01%	0.650
2	670	0.14%	0.112	0.00%	0.908
3	670	0.20%	0.008	0.09%	0.183
4	670	-0.16%	0.054	-0.11%	0.179
5	670	0.09%	0.955	0.15%	0.166

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**Table 4**  
**Cumulative abnormal returns associated with GCO announcements**

This table presents the cumulative short-term industry effect associated with the disclosure of GCO report. The cumulative abnormal return (CAR) is the market model residual (estimated over the -250, -50 day interval) in. The sample includes all GCOs between 01/01/1994 and 12/31/2005 for which a primary 4-digit SIC code is available from the COMPUSTAT data file (670 GCOs). An industry portfolio is a value-weighted (VW) or an equally weighted (EW) portfolio of firms with the same primary 4-digit SIC code for which returns are available from the CRPS files. *N* denotes the number of abnormal returns to compute the average abnormal return. The significance of the AR is computed as in Boehmer et al. (1991).

Panel A: Announcing firms' average cumulative abnormal returns

Period	N	Mean	Sign.
(-6; -2)	669	0.03%	0.639
(-1; 0)	668	-1.39%	0.005
(-1; 1)	668	-3.31%	0.000
(2; 6)	670	3.37%	0.002

Panel B: Industry rivals' average cumulative abnormal returns

Period	N	VW Mean	VW Sign.	EW Mean	EW Sign.
(-6; -2)	670	0.34%	0.136	0.47%	0.021
(-1; 0)	670	0.41%	0.010	0.23%	0.091
(-1; 1)	670	0.36%	0.066	0.14%	0.428
(2; 6)	670	0.16%	0.803	-0.02%	0.803

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**Table 5**  
**Summary statistics of independent variables**

This table presents descriptive statistics for the independent variables used to explore the determinants of the short-term industry effect associated with the disclosure of a GCO report. Panel A reports the summary statistics for such variables, and Panel B presents the Pearson correlation coefficients. Ind\_Lev is measures the industry's level of indebtedness (total debt to total assets). Ind\_Conc is the Herfindahl ratio, computed as the squared sum of the fractions of the industry sales (higher values indicate a more concentrated industry). Ind\_CF is a proxy for the degree of similarity in cash flows between the industry and the announcing firm (measured as the coefficient of correlation of raw returns over the one year period preceding the event date). LGCO\_Size is the announcing firm's log of total assets (in \$m, computed with data collected from the 10k report disclosed one year prior to the GCO report date) and is used to capture the information environment surrounding the event firms. GCO\_ROA is the ratio of earnings before earnings and taxes to total assets and measures the pre-event profitability of the announcing firm. SUE\_d is a dummy variable assuming the unit value the GCO report is accompanied by a positive earnings surprise, and zero otherwise. *P*-values are presented in parentheses.

Panel A: Summary statistics

Variable	Mean	StdDev	Min	Median	Max
Ind_Lev	0.21	0.16	0.00	0.15	0.72
Ind_Conc	0.56	0.29	0.13	0.50	1.00
Ind_CF	0.08	0.12	-0.26	0.06	0.70
LGCO_Size	201.43	1484.00	0.66	21.9	30267.00
GCO_ROA	-0.49	0.67	-5.90	-0.26	0.38
SUE_d	0.4	0.5	0	0	1

Panel B: Correlation table

Variable	Ind_Lev	Ind_Conc	Ind_CF	GCO_Size	GCO_ROA	SUE_d
Ind_Conc	0.131 (0.001)	1.000				
Ind_CF	-0.099 (0.010)	-0.263 (<.0001)	1.000			
GCO_Size	0.144 (<.0001)	-0.032 (0.402)	0.291 (<.0001)	1.000		
GCO_ROA	0.290 (<.0001)	0.168 (<.0001)	-0.070 (0.072)	0.077 (0.047)	1.000	
SUE_d	-0.114 (0.003)	-0.024 (0.529)	-0.057 (0.141)	-0.060 (0.123)	-0.202 (<.0001)	1.000

**Table 6**  
**Cross-sectional analysis of industry rival's short-term abnormal equity returns**

This table presents the coefficient estimates of cross-section regressions for the short-term industry abnormal returns for a sample of 670 events. The dependent variable is the cumulative abnormal stock returns for the industry portfolio from a market model for the (-1,+0) daily interval, where Day 0 is the disclosure of the GCO report. Ind\_Lev is measures the industry's level of indebtedness (total debt to total assets). Ind\_Conc is the Herfindahl ratio, computed as the squared sum of the fractions of the industry sales (higher values indicate a more concentrated industry). Ind\_Lev\_Conc is an interaction variable, computed as Ind\_Lev times Ind\_Conc. Ind\_CF is a proxy for the degree of similarity in cash flows between the industry and the announcing firm (measured as the coefficient of correlation of raw returns over the one year period preceding the event date). LGCO\_Size is the announcing firm's log of total assets (in \$m, computed with data collected from the 10k report disclosed one year prior to the GCO report date) and is used to capture the information environment surrounding the event firms. GCO\_ROA is the ratio of earnings before earnings and taxes to total assets and measures the pre-event profitability of the announcing firm. SUE\_d is a dummy variable assuming the unit value the GCO report is accompanied by a positive earnings surprise, and zero otherwise. An industry portfolio is a value-weighted (VW) or an equally weighted (EW) portfolio of firms with the same primary 4-digit SIC code for which returns are available from the CRPS files. Models are estimated using weighted least squares and include both year and industry dummies.

Independent Variable	VW		EW	
	Estimate	Sig.	Estimate	Sig.
Intercept	-0.031	<.001	-0.021	0.001
Ind_Lev	0.089	<.001	-0.015	0.221
Ind_Conc	0.026	<.001	0.009	0.077
Ind_Lev_Conc	-0.115	<.001	0.014	0.478
Ind_CF	-0.021	0.053	-0.039	0.001
LGCO_Size	-0.002	0.003	0.002	0.630
GCO_ROA	0.003	0.068	0.006	0.001
SUE_d	-0.004	0.067	-0.005	0.024
Reset ( <i>F</i> -Stat. Sig.)	0.546		0.386	
White ( <i>F</i> -Stat. Sig.)	<.0001		<.0001	
B.-P. ( <i>F</i> -Stat. Sig.)	<.0001		<.0001	
R-Squared	26.8%		23.2%	

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**Table 7****Longer-term industry abnormal equity returns associated with GCO announcements**

This table presents long-term abnormal equity returns for the industry portfolios and announcing firms for the sample of 670 GCO events using the size and book-to-market matched model (SBMM). The SBMM calculates the abnormal equity returns for a value-weighted (VW) or equally weighted (EW) industry portfolio in excess of the returns of a value-weighted (VW) or equally weighted portfolio (EW) matching portfolio constructed with size and book-to-market firms. The match firm is in the same size decile as the firm in the industry portfolio and has the closest book-to-market ratio. Panel A (B) reports the average SBMM BHARs for the preevent (postevent) period. *P*-values are computed using bootstrapped skewness-adjusted *t*-statistics as in Lyon et al. (1999).

## Panel A: Preevent returns

Period	VW		EW		GCO firms	
	Mean	Sign.	Mean	Sign.	Mean	Sign.
(-252; -2)	-0.093	<0.001	-0.096	<0.001	-0.744	<0.001
(-126; -2)	-0.035	0.032	-0.027	0.071	-0.439	<0.001

## Panel B: Postevent returns

Period	VW		EW		GCO firms	
	Mean	Sign.	Mean	Sign.	Mean	Sign.
(2; 21)	0.015	0.036	0.019	0.001	-0.003	0.831
(2; 63)	0.013	0.262	0.013	0.018	-0.079	0.002
(2; 126)	0.003	0.851	0.025	0.121	-0.138	<0.001
(2; 189)	0.008	0.710	0.073	0.112	-0.166	<0.001
(2; 252)	-0.044	0.149	0.069	0.240	-0.159	0.012

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**Table 8****Longer-term industry abnormal equity returns associated with GCO announcements - robustness**

This table presents long-term abnormal equity returns for the industry portfolios for the sample of 670 GCO events using the calendar-time portfolio model. An industry portfolio is a value-weighted (VW) or an equally weighted (EW) portfolio of firms with the same primary 4-digit SIC code for which returns are available from the CRPS files. Industries are added to the calendar portfolio at the GCO disclosure month and held for 6- or 12-months. Portfolio returns are computed assuming an equally weighted investment strategy. Months where the portfolio holds less than 10 stocks are deleted. The abnormal performance of the industry portfolio is assessed using Fama and French's (1993) three-factor and Carhart's (1997) four-factor model. The parameters are estimated using OLS. The  $p$ -value of standard (autocorrelation robust)  $t$ -statistics is reported in parentheses (brackets).  $N$  is the number of calendar portfolios considered in the estimation.

## Panel A: Preevent returns

Value-Weighted industry returns					
Holding Period	N	Intercept	Sig.	R <sup>2</sup>	Pricing model
6 Months	119	-0.0028	[<.001]	71.0%	Carhart
6 Months	119	-0.0027	[<.001]	71.6%	FF
12 Months	140	-0.0024	[<.001]	62.3%	Carhart
12 Months	140	-0.0025	[<.001]	62.0%	FF

  

Equally Weighted industry returns					
Holding Period	N	Intercept	Sig.	R <sup>2</sup>	Pricing model
6 Months	119	-0.0096	(<.001)	86.0%	Carhart
6 Months	119	-0.0048	(0.016)	81.3%	FF
12 Months	140	0.0030	(0.206)	88.2%	Carhart
12 Months	140	-0.0001	(0.962)	84.4%	FF

## Panel B: Postevent returns

Value-Weighted industry returns					
Holding Period	N	Intercept	Sig.	R <sup>2</sup>	Pricing model
6 Months	119	-0.0017	(0.654)	56.7%	Carhart
6 Months	119	-0.0017	(0.226)	56.9%	FF
12 Months	140	-0.0031	[0.452]	48.8%	Carhart
12 Months	140	-0.0032	[0.314]	71.7%	FF

  

Equally Weighted industry returns					
Holding Period	N	Intercept	Sig.	R <sup>2</sup>	Pricing model
6 Months	119	0.0122	(0.041)	80.9%	Carhart
6 Months	119	0.0073	(0.101)	76.4%	FF
12 Months	140	0.0011	(0.527)	85.3%	Carhart
12 Months	140	0.0057	(0.189)	77.8%	FF