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ABSTRACT

This paper investigates the effect of a going concern opinion (GCO) on the equity value of the announcing firm's competitors. On average, GCOs increase the value of a value-weighted portfolio of rivals by 0.37% at the event date. This positive effect is significantly larger when the announcing firm is relatively more profitable, the industry is more concentrated, and when rivals and event firms have distinct assets in place and growth opportunities. Additional tests reveal that such competitive effect is not a mere short-term phenomenon as investors can earn up to 1.54% on a risk-adjusted basis over the first postGCO month. This finding is especially interesting as we show that for the industry rivals the one-year and six-month preGCO risk-adjusted equity returns are, on average, strongly negative. Our results highlight the impact of mandatory accounting information on market prices at both the firm and industry levels.

Keywords: Audit reports, Going concern, Competitive effect, Contagion effect

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1. Introduction

This paper investigates to what extent the disclosure of a going concern opinion (GCO) report affects the stock price performance of the announcing firm's industry rivals. We find that, on average, GCOs lead to an important competitive effect, with investors earning around 0.37% on risk-adjusted basis at the event date and a further 1.54% over the first postGCO month. Our main contribution to the literature is showing that qualified audit reports significantly impact the risk/return characteristics of the announcing firm's publicly-traded competitors. A few other studies already show that GCO firms earn strong negative abnormal returns both in the short- and longer-run (e.g., Fleak and Wilson, 1994; Taffler, Lu and Kausar, 2004; Kausar, Taffler and Tan 2009; Menon and Williams, 2010). However, little is known about how such acute and unambiguous bad news event is priced on industry rivals. Indeed, the four previous studies examining parallel questions we are aware of consider only a small number of GCOs and focus explicitly on particular industries.[1] This, however, is an important area of research as it may help shed further light on the importance of audit opinions and mandatory accounting information for the timing of transactions in financial markets.

Whether the disclosure of a GCO report leads to an intra-industry pricing effect is clearly an empirical question. In fact, one can argue that such event should not be relevant for the pricing of the announcing firm's rivals as, by definition, it is firm-specific. However, we can also argue the opposite case. Indeed, costumers should have an incentive to shift their demand to competitors when one of the firms in the industry receives a GCO. In this case, nonGCO rivals should experience a sustainable increase in their market share and cash-flow generation potential, which would translate into higher market valuations. On the other hand, the market may penalize both the announcing firm and its industry rivals if it believes the GCO signals that the entire industry is financially distressed.

We explore this issue using a large sample 670 GCO events occurring in the U.S. between 01/01/1994 and 12/31/2005. In the first part of the paper, we show that the announcing firms lose, on average, 3.31% of their equity value on a risk-adjusted basis over a three-day window

1 Schaub, Watters and Lin (2003) study five GCO announcements in the computer industry, while Elliott and Schaub (2004) examine one GCO event in the home health care industry. Elliot, Highfield and Schaub (2006) and Schaub (2006) study four GCO cases in the real estate industry and seven GCO announcements in the electric services industry, respectively.

centered on the GCO date. Moreover, in an original contribution to the literature, we find that GCOs lead to an intra-industry competitive effect that is both statistically and economically significant. In particular, at the announcement date, the value of the value-weighted (equally weighted) portfolio of industry rivals increases, on average, 0.37% (0.24%) on a risk-adjusted basis. Using very conservative assumptions, we find that such small percentage increase in the rivals' market price actually amounts to over $171 billion, in 2009 constant dollars, clearly demonstrating the economic importance of our findings. We further show that the cross-sectional variation in the industry rivals' abnormal returns effect is stronger when industries are less competitive and when rivals have distinct assets in place and growth opportunities vis-à-vis those of the announcing firms. In addition, the GCO competitive effect is stronger when the announcing firm is more profitable but is mitigated when a positive earnings surprise is contemporaneous to the disclosure of the qualified audit report.

In the second part of the paper we explore the stock price performance of the announcing firms and their industry peers at longer horizons. Using size and book-to-market (SBM) risk adjusted buy-and-hold returns we find that, on average, the value of the value-weighted (equally weighted) portfolio of industry competitors decreases around 9.3% (9.6%) over the one year period leading up to the GCO date. The parallel figure for the announcing firms is -74.4%. Such abnormal returns, which are significant at conventional levels, suggest that both event firms and their nonevent competitors are penalized by the market before GCO is publicly known. Our results for the postevent period reveal a different pattern. In particular, our tests show that the value-weighted (equally weighted) industry portfolio actually earns, on average, a *positive* and statistically significant abnormal return of 1.5% (1.9%) over the first postGCO month; the announcing firms' average abnormal return computed over the same period is not significant. For the one-year period following the GCO disclosure, we find that GCO firms lose, on average, 15.9% of their market value; the parallel figure for the industry portfolio is not significant. The disclosure of the GCO thus seem to have an important impact on the pricing of both event and nonevent firms, contributing to minimize (at least) some of the preGCO uncertainty surrounding the industry members. Finally, additional tests show that, in the longer-run, competitors tend to

be more favorably affected if the announcing firm and its industry rivals have distinct assets in place and growth opportunities and when the GCO firm is relatively more profitable.

Our paper allows us to make several contributions to the accounting literature. First, we explore how the disclosure of a GCO impacts the market value of the announcing firm's industry rivals thus complementing previous studies focusing exclusively on GCO firms (Jones, 1996; Fleak and Wilson, 1994; Kausar et al., 2009; Menon and Williams, 2010) and studies that, although exploring similar issues, are limited in both depth and breadth (Schaub et al., 2003; Elliott and Schaub, 2004; Elliot et al., 2006; Schaub 2006). Second, we add to the literature examining how public bad news events impact industry rivals' shareholder value. For instance, Lang and Stulz (1992) and Jorion and Zhang (2007) look at the announcement of bankruptcy while Jorion and Zhang (2010) examine the intra-industry effects of bond downgrades. Our study differs from the existing literature as we focus on an accounting event that is motivated by a mandatory requirement with cyclical nature. As such, we are able to shed light on the importance of accounting regulations for the functioning of financial markets. Finally, we also contribute to the body of research suggesting that the stock market takes time to assimilate public bad news events (e.g, Ball and Brown, 1968; Foster, Olsen and Shevlin, 1984; Bernard and Thomas, 1989, 1990; Kausar et al., 2009) by showing that a market pricing anomaly, resulting from the disclosure of a public bad news, may affect both the announcing firm and its industry competitors.

In the next section we briefly resume the relevant literature and in section 3 we present our data. Sections 4 and 5 discuss the short and long-term impact of a GCO report on the industry's market price, respectively. Section 6 concludes.

2. Related literature and research hypothesis

The going-concern principle is one of the most important accounting assumptions in the preparation of financial statements. This principle assumes that a company is ordinarily viewed as continuing in business for the foreseeable future. SAS No. 59 (AICPA 1988) requires auditors to assess a client's going concern status. In particular, the auditor is required to modify the audit report when, after considering all relevant information, has substantial doubts about the entity's

ability to continue as a going-concern. Because these independent auditors generally have access to information not reported in financial statements, new and important perspectives may be gleaned from audit opinions.

Prior studies have examined the stock return performance GCO companies. For instance, Jones (1996) observes negative returns around the announcement date for 68 firms receiving a GCO. Similarly, Fleak and Wilson (1994) find that 144 GCO firms experience negative returns when compared with distressed firms receiving unmodified opinions. Very recently, Menon and Williams (2010) show that the abnormal returns associated with a GCO are more negative when the audit report cites a problem with obtaining financing or when it triggers a technical violation of a debt covenant. Additionally, Kausar et al. (2009) find that the market does not process the GCO signal on a timely basis in the U.S., leading to a significant market underreaction of -14% over the following 12-month period. Similar evidence is presented by Taffler et al. (2004) for the U.K. market, with their sample firms underperforming on a risk-adjusted basis by between 24% and 31% over a one-year post-event period.

While the recent evidence supports the belief that firms announcing GCOs typically suffer negative abnormal returns, the effects of GCO announcements on industry rivals are ill explored. We specifically address this issue by shedding light on how mandatory public accounting information impacts the market price of the industry competitors. In general, abnormal returns of rivals reacting to the unfavorable news of the announcing firm may be either negative, positive or there may be no abnormal returns at all. The absence of abnormal returns suggests that the negative news being relayed to the market does not affect the fundamental risk/return characteristics of the industry. When stock prices of industry rivals adjust in the same direction as the stock price of the announcing firm, a contagion effect is said to occur. This suggests that the information being released is interpreted by market participants to reveal new, industry-wide economic conditions. When prices of industry rivals adjust in the opposite direction to that of the announcing firm, a competitive effect is said to occur. For these cases, the market perceives the event as being specific to the announcing firm leading to a transfer of wealth from the announcing firm to its industry rivals. Prior empirical studies suggest that these three scenarios are likely to occur. For instance, Laux, Starks and Yoon (1998) find that rivals of firms

announcing large dividend revisions post statistically insignificant abnormal returns. Aharony and Swary (1983) and Gay, Timme and Yung (1991) find evidence of a contagion effect in the banking industry as a result of bank failure while Lang and Stulz (1992) and Jorion and Zhang (2007) reach similar conclusions for a general sample of bankrupt firms. Sun and Tang (1998) report negative and significant abnormal returns for rival in the industry after downsizing announcements. Finally, Jorion and Zhang (2010) find that an intra-industry competitive effect exists following bond downgrades when firms are previously classified as being speculative-grade.

There are good reasons to expect a GCO report to impact the market price of the industry rivals. GCOs are an unequivocal signal that the announcing firm is at risk of becoming insolvent in the short-run. Industry rivals may benefit from this situation as costumers refrain from doing business with the announcing firm (perhaps simply due to a reputational effect) and shift their demand to its competitors. If industry rival's market share increases, a positive impact in the stock prices is expected to occur as a consequence of an increase in sales, earnings and operating cash-flows. However, the opposite situation may also occur if investors believe that the GCO report is just the first of many to come because of structural issues affecting the profitability and cash-flow generation potential of the entire industry. In this case, each GCO report should have a cumulative negative impact on the industry. Finally, GCO may have no meaningful impact on industry competitor's market price if investors believe that such event is simply firm-specific.

Interestingly, and to the best of our knowledge, only four studies investigate the impact of GCOs on industry rivals. Schaub et al. (2003) explore five GCOs in the computer industry and document the existence of a contagion effect. In contrast, Elliott and Schaub (2004) examine one GCO case in two industries within the home health care sector and conclude that a competitive effect dominates. Similarly, Elliot et al. (2006) investigate the intra-industry pricing effects of four GCO events in the real estate industry and find modest evidence supporting a competitive effect among competitors. Finally, Schaub (2006) considers seven GCOs in the electric services industry and reports that a contagion effect dominates in half of the cases he considers. Despite the interest and relevance of these previous studies, the matter of fact is that all of them are

limited in both breadth and depth, and yield conflicting results. As such, and drawing on the above discussion, below we explore the following main research hypothesis:

There is no competitive or contagion effect on industry rivals following the announcement of a GCO report.

3. 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. The combination of keywords employed is "raise substantial doubt" and "ability to continue as a going concern". From the 29,102 initial results, we exclude 16,866 cases because firms are not found in the CRSP/COMPUSTAT merged file. Drawing on recent studies addressing GCOs firms (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 and that did not receive a GCO in the previous year. We delete another 1,017 cases because we could not find accounting information on COMPUSTAT or because the firms do not trade common stock on the NYSE, AMEX and NASDAQ during the 12-months that predate the GCO report. Next, utilities and financial firms are removed as well as foreign companies, so as to ensure a consistent legal framework. Firms classified as "in a development stage" or that had already filed for bankruptcy are also dropped from the sample.[2]

In the last step we look for the industry rivals. Following Lang and Stulz (1992), we define industry affiliation using the four-digit SIC code present in the COMPUSTAT file, which is assessed on the year of the GCO report both for the announcing firm and its industry rivals. We exclude from the final sample the GCO cases for which we cannot find at least one industry rival on COMPUSTAT and/or the industry rivals do not have sufficient data available on the CRSP daily file.

As shown in panel A of Table 1, our final sample includes a total of 670 first-time GCOs, which correspond to 630 individual firms. Our GCO firms trade mainly on the Nasdaq (75.6%);

[2] In contrast to Lang and Stulz (1992), we do not impose a minim 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.

an additional 15.9% trade on the AMEX, and the remaining 8.5% on the NYSE. In addition, panel B of Table 1 shows that our GCO events are reasonably spread across our sample period although we do see a concentration of cases in 2001 and 2002, which coincides with the burst of the dot-com bubble.

Table 1 here

The 670 first-time GCOs cover 177 four-digit SIC industries. Hence, 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), that with the highest relative frequency of GCOs, accounts for 55 first-time incidents, followed by the services-computer programming, data processing and similar (SIC code 7370), with 31 cases. Portfolios from the same industry may include some of the same companies but usually have financial data from different fiscal years.[3] 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); the respective median is 6. The maximum (minimum) number of rival firms 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%; median ROE = -88.1%)[4] and unable to generate positive operational cash-flow (mean cash-flow from operations = -$10.7 million). Not surprisingly, GCO firms are highly financially distressed one year in advance of receiving the qualified audit report. In fact, the mean Z-score is 0.6, which puts them at 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 accounting firm.

[3] With the exception of the years 2001 and 2002 (2001), the 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.

[4] Firms with non-positive total equity are excluded from our ROE computations as not doing so would distort the analysis of the results.

Table 2 here

The typical industry is much bigger than the individual GCO firm (mean market capitalization = $4,256 million; mean revenue = $1,705.2 million). Industry rivals are also unprofitable (mean ROE = -39.5%) but enjoy a better financial position than the GCO firms (mean cash-flow from operations = 224.9%). 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.

4. Valuation effects of the announcement of a GCO: short-term analysis

In this section we investigate the short-term valuation effects associated with GCOs for both the announcing firms and their industry rivals.

4.1. Initial evidence

We use a standard event study to explore how a GCO report impacts market prices. For announcing firm *j*, we compute the abnormal return in day *t* ($AR_{j,t}$) as:

$$AR_{j,t} = r_{j,t} - E\left(r_{j,t}\right) \qquad (1)$$

where $r_{j,t}$ is day *t* return for the announcing firm *j*, and $E\left(r_{j,t}\right)$ is the expected return for such firm/trading day. $E\left(r_{j,t}\right)$ is estimated using the market model. In our application, the proxy for the market portfolio is the CRSP value weighted portfolio, and the parameters of the model are estimated over a 200 trading-day window ending 50 days before the disclosure date of the firm's GCO report. Moreover, the beta estimate is adjusted as in Scholes and Williams (1977) so has 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:

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

where $AR_{j,t}$ is given by equation (1) and n is the number of firms. The significance of the average abnormal returns is accessed using Z-statistics computed as in Boehmer, Musumeci, and Poulsen (1991).[5]

We broadly follow Lang and Stulz (1992) when computing the abnormal returns of the industry rivals. As mentioned in section 3, 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 periods.[6] Industry portfolio 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 the method above to compute the rivals' portfolio abnormal returns but with one exception. Indeed, using the Scholes and Williams (1977) technique is unnecessary since, in this case, the prediction errors are for *portfolios* of competitor companies, not the GCO firms' themselves (see also Haensly et al., 2001). Hence, for the rival portfolios, $E\left(r_{j,t}\right)$ is estimated using the 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% ($p<0.001$) on a risk-adjusted basis at the event date and a further 1.9% ($p<0.01$) and 1.1% ($p=0.035$) on event days +1 and +2, respectively. None of the pre-event abnormal returns are statistically significant at conventional levels. This suggest that the market is unable to anticipate the release of the GCO but reacts very negatively once the audit report becomes publicly known. Our evidence is in line with the recent findings of Menon

[5] 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.

[6] Rivals have to have at least 60 observations in the estimation period to be kept in the industry portfolio.

and Williams (2010) and shows that GCO reports clearly provide new and important value-relevant information for market participants.

Table 3 here

Our original results are, however, reported in panel B of Table 3. As can been seen, the average abnormal returns for both the value-weighted (VW) and equally weighted (EW) rival portfolios are *positive* and statistically significant at the event date: 0.37% ($p<0.001$) and 0.24% ($p=0.023$), respectively. Hence, the announcement of a GCO report leads to an intra-industry competitive effect, which seems to be driven by the biggest rival firms in the industry.

As Lang and Stulz (1992) emphasize, in general, the market capitalization of any individual firm is considerably smaller than that of the industry it belongs to. As such, in practice, the relative small percentage gain we document for our industry rivals may actually correspond to a very significant dollar amount. We examine the economic importance of the GCO competitive effect by assuming that the equity market value of each of our rival firms increases by 0.24% at the GCO date. Using this conservative assumption, we estimate the GCO competitive effect to be worth around $171.6 billion, in 2009 constant dollars. We also estimate the loss sustained by announcing firms' shareholders assuming that each firm loses 1.69% of its equity market value at the GCO date. This translates into an aggregate loss of $26.6 billion, in 2009 constant dollars. In other words, industry rivals gain, on average, $0.52 for each dollar lost by the GCO firms at the announcement date.

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

$$CAR_{j,\tau} = \sum_{\tau=\tau_1}^{\tau_2} AR_{j,\tau} \qquad (3)$$

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

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

where $CAR_{i,\tau}$ is defined as in (3), and n is the number firms.[7] A similar framework is used for the industry rivals.

Panel A of Table 4 shows that the GCO negatively affects the market price of the event firms on a risk-adjusted basis. In effect, the average CAR for the announcement period ranges from -1.39% ($p<0.01$) to -3.31% ($p<0.01$), depending on the event window we consider. Importantly, the one-week average preevent CAR is *not* significant at conventional levels; its postevent equivalent is, however, *positive* and significant at better than the 1% level. This suggests the market is unable to anticipate the GCO but seems to *overreact* once it becomes publicly known. Dawkins et al. (2007) document a very similar stock return pattern in their sample of bankrupt firms.

Table 4 here

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

To summarize, this sub-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% on a risk-adjusted basis at the event date, with a cumulative loss of around 3.31% being document for the full (-1;1) period. Our evidence also suggests that such decline in the stock price may be excessive since the one-week postGCO average CARs is positive and significant, a clear indication of market overreaction. Our main concern, however, is with the pricing implication of GCOs on the industry rivals. We find that such event leads to a competitive intra-

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

industry effect, which is both economically and statistically significant. At the GCO date, the VW stock price of the industry rivals increases, on average, 0.37% on a risk-adjusted basis, which we conservatively estimate to be worth around $171.6 billion, in 2009 constant dollars. Moreover, our results suggest that the GCO competitive effect is concentrated on the largest rival firms, as our VW results are always greater in magnitude than their EW counterparts.

4.2. 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 the importance of such effects in our research setting with the help of equation (5):

$$CAR_i = \alpha_0 + \sum_{m=1}^{4} \lambda_m Ind_{i,m} + \sum_{n=1}^{3} \delta_n Firm_{i,n} + \sum_{t=1}^{11} yeardum_{i,t} + \sum_{j=1}^{4} Indum_{i,j} + \varepsilon_i \qquad (5)$$

where $CAR_{i,\tau}$ is industry *i´*s CAR over the (-1;0) period, $Ind_{i,m}$ represents a set of industry related characteristics, $Firm_{i,n}$ stands for a set of GCO firm-specific characteristics, $yeardum_{i,t}$ and $Indum_{i,j}$ represent year and industry dummies, respectively and ε_i is the error term, assumed to be white noise.[8]

The first industry characteristic we consider is leverage (*Ind_Lev*). A priori, the relation between the GCO competitive effect and industry leverage is ambiguous. In effect, on the one hand, all else being equal, an increase in the industry's debt ratio should strengthen the GCO competitive effect since leverage magnifies the impact on the 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 debt level when estimating equation (5).[9]

[8] 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 for more details (accessed on 06/09/2011).

[9] 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

Competition is the second industry characteristic we consider in our analysis (*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 audit report leads to a negative reputational effect, which should result in costumers shifting their demand to the nonGCM firms. Consequently, industry concentration should magnify the GCO competitive effect. We use the Herfindahl ratio to proxy for the degree of industry competition (Lang and Stulz, 1992), which is computed as the squared sum of the fractions of the industry sales by the nonGCO firms.[10]

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 returns of the industry and its respective announcing GCO over the one period preceding the GCO disclosure date.

Lang and Stulz (1992) mention a possible interaction between industry leverage and competition. 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 competition in our regression model to explicitly capture this joint effect (*Lev_Con)*, which we compute as *Ind_Lev* times *Ind_Conc*.

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*).[11] In a recent paper, Ittonen (2010) shows that size mitigates the negative returns

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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.

[10] Our results, however, do not change if we include the GCO firms in the computation of the Herfindahl ratio.

[11] Size is measured as the log of the GCO firm's total assets, collected from COMPUSTAT one calendar year before the GCO disclosure year.

associated with the going concern information around the audit report date, a result he attributes to a decrease in the information asymmetry affecting the GCO firms. It follows that investors are less likely to be surprised at the GCO date as the size of the announcing firm increases. This, in turn, should lead to the GCO competitive effect being concentrated on the smallest of the announcing firms.

It is well-established that the market has problems assimilating earnings surprises, especially when they are negative (e.g., Bernard and Thomas, 1989 and 1990; Fama, 1998). This is important as investors are likely to become aware and react to the earnings figures at the same time they learn about the qualified 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_d*) 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). In our application, 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.[12] 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 announcing firm is relatively more profitable as this amounts to a more able competitor being likely to be forced out of the market within a short period of time.

Panel A of Table 5 present summary statistics for the independent variables. As can be seen, on average, our industries do not carry much debt on their balance sheet (mean = 0.21; median = 0.15) and seem to relatively concentrated (*Ind_Conc* for = 0.56; median = 0.50). In addition, rivals' pre-event raw returns are not strongly correlated with those of the announcing firms, which suggests that 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

[12] Both figures collected from the 10k report published one year prior to the GCO disclosure year.

return on assets is -0.49 and -0.26, respectively. Finally, panel A of Table 5 shows that GCOs 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 correlations coefficients estimated for our main independent variables. The largest coefficient we find is 29.1% for the pair *GCO_Size* and *Ind_CF*, and many are *not* significant at conventional levels. This suggests that the explanatory variables proxy for distinct underlying factors and that our regression results should not be biased due to a potential problem of serious multicollinearity among regressors.

The cross-sectional regression results are presented in Table 6. 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 the presence of heteroscedasticity. As shown in Table 6, none of the Reset tests is significant at conventional levels; the opposite result holds for the Breush-Pagan and White tests. As such, although we do not seem to face specification problems, our estimation must account for the presence of 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.[13]

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 coefficient estimated for the interaction term between these two industry characteristics is negative and significant at better than the 1% level. It follows that, ceteris paribus, the GCO competitive effect as measured for the largest of the industry rivals is driven by the more highly levered and concentrated industries. However, for a given level of industry competition, an increase in the industry's average debt ratio seems to mitigate the impact of the GCO on the industry rivals' market prices. In addition, the coefficient associated with *Ind_CF* is negative and significant at conventional levels. Hence, in line with our initial expectations, 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

[13] 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.

the specific characteristics of the announcing firms impact the GCO competitive effect's magnitude. In particular, all else being equal, rival's abnormal performance around the GCO date is reduced as the size of the announcing firm increases, a result we attribute to the lessening of the surprise associated with the disclosure of the GCO report for the larger event firms. 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.

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 between industry's debt level and concentration is *not* significant at conventional levels in our EW regression. This is at odds with our VW evidence and suggests that the indebtedness of the industries is only important to explain the cross-sectional variation of the GCO competition effect for the largest rivals.

In short, this section examines the cross-sectional determinants of the short-term impact of GCOs on the industry rivals. 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 qualified audit report. Finally, industry leverage seems relevant for explaining the extent of the GCO competitive effect only in the case of largest industry rivals. Ceteris paribus, such effect is concentrated on the more highly levered industries; however, for a given degree of industry competition, higher levels of industry indebtedness reduce rivals firms' ability to exploit the GCO.

5. Valuation effects of the announcement of a GCO: longer-term analysis

In an efficient market, the GCO should be priced as soon as the audit report becomes publicly known (Fama, 1970). Previous studies, however, show that the market is less then fully efficient

in many situations, and especially so when it has to deal with bad news events. For example, Womack (1996) finds that new sell recommendations are associated with a post-recommendation drift of -9% over a 6-month period. Dichev and Piotroski (2001) show negative abnormal returns of between -10% to -14% following Moody's bond downgrades in the first year alone, with a further decline of -3% to -7% in the second and third years. Chan (2003) reports that stocks associated with bad public news stories display a negative drift for up to 12 months.

In a recent paper, Kausar et al. (2009) find that the market does not process the going-concern opinion signal on a timely basis in the U.S., leading to a significant market underreaction of -14% over the following 12-month period. Parallel evidence is presented by Taffler et al. (2004) for the U.K. market. These two papers show that the market does not fully and quickly reflect the impact of the GCO on the announcing firm's market price. Below we extent these results by investigating to what extent a similar market pricing anomaly equally occurs at the industry level.

5.1 Initial evidence

There is much discussion in the literature regarding long-term event studies. Two main methods for assessing and calibrating postevent risk-adjusted performance are usually employed: 1) the buy-and-hold model (Barber and Lyon, 1997) and 2) the calendar-time portfolio approach (Fama, 1998; Mitchell and Stafford, 2000). 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, while Loughran and Ritter (2000) argue that such technique has low power. Not surprisingly, Kothari and Warner (2007) conclude that we still lack an undisputable method for conducting long-term event studies after reviewing the literature. Therefore, below we use both methods to examine the longer-term market reaction of industry rivals to the disclosure of a GCO report.

5.1.1 Buy-and-hold risk adjusted returns

We broadly follow Barber and Lyon (1997) when computing buy-and-hold abnormal returns (BHARs). Hence, for period τ, industry i's BHAR is:

$$BHAR_{i,\tau} = \prod_{t=\tau_1}^{\tau_2}\left(1+r_{i,t}\right) - \prod_{t=\tau_1}^{\tau_2}\left[1+E\left(r_{i,t}\right)\right] \tag{6}$$

where $r_{i,t}$ is the VW or EW return for industry i at time τ and $E\left(r_{i,t}\right)$ is the expected return for industry i at time τ. In our application, $E\left(r_{i,t}\right)$ 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 the issue of mean reversion. Our matching procedure is similar to that of Zhang (2010) and is defined as follows. First, each stock present in CRSP is assigned to one of ten size deciles based its market value of equity at the end of June. Next, we choose the firm in the same size decile as the firm in the industry portfolio that has the closest book-to-market ratio, which 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 December. Finally, both VW and EW portfolios are constructed with the returns of the matched firms thus generating our measure for $E\left(r_{i,t}\right)$ in equation (6) above. Individual industry BHARs for a given time interval τ are averaged cross-sectionally as follows:

$$\overline{BHAR_{\tau}} = \frac{1}{n}\sum_{i=1}^{n} BHAR_{i,\tau} \tag{7}$$

where $BHAR_{i,\tau}$ is defined as in (6), and n is the number of industries available data for the period. Drawing on Lyon et al. (1999), we compute bootstrapped skewness-adjusted *t*-statistic for inferring about the statistical significance of the average BHARs.[14,15] A month is defined as a twelve 21-trading day interval (e.g., Michaely et al., 1995) and we restrict our analysis to a one-year postevent period as considering longer horizons is methodologically challenging (e.g.,

[14] We winsorize our results at the top and bottom 1% to reduce the impact of extreme observation in our results.
[15] Standard cross-sectional *t*-tests yield similar results to those reported below. These are available upon request from the first author.

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 portfolios described above.

Table 6 presents our results. Panel A summarizes the preevent stock abnormal performance. As can be seen, industry rivals do particularly *poorly* prior to the disclosure of the GCO report. Indeed, on average, the VW (EW) industry portfolio loses 9.3% ($p<0.001$) (9.7%; $p<0.001$) of its market value on a risk-adjusted basis over the one year period preceding the GCO date. Results for the shorter six-month preevent period are qualitatively similar. As argued in section 4 and shown in Table 2, on average, industry rivals generate a negative return on equity in the fiscal year that precedes the announcement of the GCO report, which could help explain why the market penalizes the industry rivals in the preGCO period. Panel A of Table 6 also shows that the announcing firms earn strong negative average SBM risk-adjusted returns in the preevent period. Our results thus show that *both* the GCO firms and their nonGCO industry peers sustain a considerable loss in equity value on a risk-adjusted basis before the GCO report is publicly known.

Panel B summarizes our postGCO results. We find that both the average VW and EW industry BHAR computed for the first postGCO month is positive and significant; most of the subsequent industry BHARs are, however, not significant at conventional levels.[16] In contrast, the postGCO average BHARs for the announcing firms are mostly negative and statistically significant. These results clearly show that the market fails to promptly impound the full impact of the GCO report into stock prices.

Kausar et al. (2009) already document such market pricing anomaly but focus exclusively on the announcing firms. Our original results allow us to question the degree of market efficiency in the GCO context but now at the industry level. This is particularly puzzling given that we deal with industry portfolios and not with single, small, neglected and very distressed firms. It follows that it is hard to rationalize our findings simply by drawing on the usual argument that limits to arbitrage impede prices to converge rapidly to fundamentals.

[16] The average EW post-event BHAR computed for the (+2,+63) window is also positive and significant. However, the same does apply to its VW counterpart.

It is also interesting to note that prior to the GCO announcement, both the event firms and their industry competitors are penalized by the market on a risk-adjusted basis. Accordingly, on average, investors seem to worry similarly about the future prospects of all the firms in the industry. This changes once one of the industry firms receives qualified audit report. In particular, shareholders of such firm continue to lose money on a risk-adjusted basis over at least a full one-year postevent period. In contrast, the nonCGO industry competitors earn positive (in the short-term) or not statically significant (in the longer-run) abnormal returns. Hence, our results suggest that GCOs are a powerful public signal that helps resolve market uncertainty.

5.1.2 Calendar-time portfolios

As mentioned above, Fama (1998) and Mitchell and Stafford (2000) highlight some potential pitfalls when computing BHARs, and favor the calendar-time portfolio approach. As an additional robustness test, we also employ this alternative method here (see also Eberhart et al., 2004 and Zhang, 2010). For this test, we compute VW and EW industry returns for our industry competitors using data collected from the CRSP monthly tape. Each rival industry is included in a rolling-calendar portfolio at the GCO report disclosure month, and is hold there up to maximum of 6- or 12-months. Industries are given the same weight in the calendar portfolio in all months (Zhang, 2010). Following Mitchell and Stafford (2000), and Ikenberry and Ramnath (2002), we drop from the analysis all months where the rolling 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. A Breush-Pagan and a Breusch-Godfrey Serial Correlation LM test are employed to test for the presence of heteroskedasticity and autocorrelation, respectively. None of the Breush-Pagan tests are significant, an indication that heteroskedasticity is not an issue in our application. However, the LM test indicates that serial correlation is present in almost all of our regressions using VW industry returns. As such, below we present the usual OLS *t*-statistics, which are corrected for the presence of autocorrelation when appropriate.

Table 8 summarizes our findings. In panel A we examine the preGCO period. As can be seen, all VW intercepts are negative and significant at conventional levels. Results for the EW industry returns are, however, somewhat weaker. Indeed, we can only find negative and significant intercepts when we analyze the shorter 6-month preevent window. Nevertheless, our calendar-time results do seem to suggest that industry rivals are doing poorly before the GCO report becomes publicly known. In panel B of Table 8 we examine what occurs once the GCO is disclosed. In line with the evidence presented in the previous sub-section, most intercepts are not statistically significant suggesting that we are *not* able to earn risk-adjusted excess returns in the postGCO period by investing in the industry portfolios.

In a nutshell, our calendar-time results are in line with our BHAR evidence presented above. In particular, we find that GCO industries earn negative excess returns prior to the GCO announcement date on a calendar-time basis. Moreover, postevent the market seems to correctly price the stock of the GCO firm's rivals as the risk-adjusted industry portfolios' excess returns are no longer statistically significant. We thus conclude that GCOs help investors resolve some of the market uncertainty.

5.2 Multivariate evidence

In this section we test which industry and firms characteristics can help explain the cross-sectional difference in the postGCO equity returns to the industry portfolio. Our regression model is again given by equation (5) but now the dependent variable is the 21-day post-event size and book-market industry BHARs.

As shown in Table 9, none of the Reset tests is significant, which suggests that our specification is robust to problems of omitted variables and incorrect functional form. However, all Breush-Pagan and White tests are significant at conventional levels. A such, we estimate regression (5) using WLS, with weights equal to the reciprocal of the standard deviation of the market model residual for the industry portfolio.[17]

We find that the coefficient estimated for *Ind_CF* is negative and significant at the 5% level, a result that holds for both VW and EW abnormal returns. Thus, ceteris paribus, shareholders of

[17] Using a two-step generalized least squares approach or OLS with heteroskedasticity-robust *t*-statistics does not alter the nature of our conclusions.

the nonevent firms benefit more from the disclosure of a GCO report when the industry rivals have assets in place and investment opportunities that are different from those of the announcing firms. In addition, Table 9 shows that the coefficient associated with *GCO_ROA* is positive and significant when both VW and EW BHARs are used as dependent variables in our regression. In line with our initial predictions, this suggest that, all else being equal, industry rivals are likely to enjoy a superior longer-term risk-adjusted abnormal performance when the announcing firm is more profitable.

6. Conclusion

This paper explores whether the disclosure of going-concern audit report significantly affects the market returns of other publicly-trade rival firms. Using a sample of 670 firms receiving a qualified audit report in the U.S. between 1994 and 2005, we provide original evidence suggesting that GCOs lead to an important intra-industry competitive effect. In particular, the equity market value of a value-weighted (equally-weighted) portfolio of industry rivals increases by 0.37% (0.24%) on a risk-adjusted basis at the GCO date. This small percentage increase in market value is nevertheless very interesting from an economic standpoint as we conservatively estimate it to be worth in excess of $171 billion, in 2009 constant dollars. Further analysis reveals that, in the short-term, the GCO competitive effect depends on some industry (degree of competition and cash-flow similarity) and GCO firm-specific characteristics (profitability and earnings surprise effect at the 10k disclose date).

In the second part of the paper we explore the longer-term stock price performance around the GCO date. We find that competitors lose, on average, around 9% of their market value over the one year period preceding the GCO date. This compares to an average loss of 77% for the announcing firms and suggests that investors worry about the future prospects of both event and nonevent firms before the GCO report is publicly known. The postGCO returns of the announcing firms and their respective competitors are, however, quite different. The former continue to earn negative and statistically significant abnormal returns for at least a full year after the GCO date. In contrast, industry rivals enjoy positive and significant (not significant) risk-adjusted abnormal returns in the first postGCO month (subsequently). Taken together, these

results have two main implications. First, they show that the market is unable to correctly price the impact of GCOs on both the announcing firm and its industry peers on a timely fashion. Second, GCOs seem important for resolving at least some of the uncertainty surrounding industries.

Overall our results add to the literature exploring the pricing implications of GCOs and the literature analyzing how negative public news impacts the market prices of industry rivals. More generally, our findings help shed light on how mandatory accounting regulations influence the workings of financial markets.

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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 on 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%

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. Assets is total assets in $m. 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%	-	-	-	-

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) in percent. 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

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 percent. 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

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_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. *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
Pre_CAR	0.00	0.06	-0.29	0.00	0.31
GCO_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	1.000				
	(0.001)					
Ind_CF	-0.099	-0.263	1.000			
	(0.010)	(<.0001)				
GCO_Size	0.144	-0.032	0.291	1.000		
	(<.0001)	(0.402)	(<.0001)			
GCO_ROA	0.290	0.168	-0.070	0.077	1.000	
	(<.0001)	(<.0001)	(0.072)	(0.047)		
SUE_d	-0.114	-0.024	-0.057	-0.060	-0.202	1.000
	(0.003)	(0.529)	(0.141)	(0.123)	(<.0001)	

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.

	VW		EW	
Independent Variable	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 (*F*-Stat. Sig.)	0.546		0.386	
White (*F*-Stat. Sig.)	<.0001		<.0001	
B.-P. (*F*-Stat. Sig.)	<.0001		<.0001	
R-Squared	26.8%		23.2%	

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

	VW		EW		GCO firms	
Period	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

	VW		EW		GCO firms	
Period	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

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.	R2	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.	R2	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.	R2	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.	R2	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

Table 9: Cross-sectional analysis of industry rival's short-term abnormal equity returns

This table presents the coefficient estimates of cross-section regressions for the long-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 (+2,+21) 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.

	VW		EW	
Independent Variable	Estimate	Sig.	Estimate	Sig.
Intercept	-0.120	0.021	-0.113	0.029
Ind_Lev	0.058	0.537	0.080	0.394
Ind_Conc	0.030	0.395	0.032	0.349
Ind_CF	-0.165	0.008	-0.149	0.015
Ind_Lev_Ind_Conc	0.027	0.833	-0.009	0.946
LGCO_Size	0.005	0.324	0.004	0.359
GCO_ROA	0.016	0.016	0.020	0.070
SUE_d	0.003	0.786	0.001	0.980
Reset (*F*-Stat. Sig.)	0.591		0.188	
White (*F*-Stat. Sig.)	0.067		<.0001	
B.-P. (*F*-Stat. Sig.)	<.0001		<.0001	
R-Squared	5.7%		6.5%	