

How Do Auditors Behave During Periods of Market Euphoria? The Case of Internet IPOs*

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When you get a “going concern” letter, the average investor says that’s a terrible thing. It doesn’t mean that at all. The Internet is a brand new thing, and we don’t know the rules yet.

C. E. Koop M.D., CEO of drkoop.com (Simmons 2000)

1. Introduction

The study of periods of market euphoria, such as Holland’s seventeenth-century tulip mania, England’s eighteenth-century South Sea Company, America’s nineteenth-century railroads, or, most recently, the U.S. housing market, is a topic of long-standing interest to economists. Theorists specify conditions under which market participants and institutions cause “bubbles” to arise and persist and empiricists test participant-centric or institution-centric explanations (Hong, Scheinkman, and Xiong 2008; Schultz 2008; Greenwood and Nagel 2009). In this paper, we study a different participant other than one that stands to gain from price fluctuations. We are interested in how auditors behave during periods of market euphoria. Given their gatekeeper responsibility to act in the public’s interest, along with the seeming inevitability of bubbles (Rampell 2009), it is important to study how auditors behave during euphoric market conditions. To address this question, we examine auditor going-concern (GC) opinions around the time of the wave of stressed Internet firms filing to go public on NASDAQ, the capital markets entry point for the companies that went on to constitute “dotcom mania”.

To some, the answer to this question is straightforward: auditors became acquiescent.

[B]ubbles . . . change the behavior of gatekeepers. . . . [I]n a bubble . . . auditors, and other gatekeepers may relax their usual skepticism amidst the market euphoria that a sustained bull market generates. . . . [I]n an atmosphere of market euphoria . . . investors generally rely less on gatekeepers Accordingly, if we assume that euphoric investors will largely ignore the auditor, the rational gatekeeper’s best competitive

* Accepted by Jere Francis. We thank Mark Bradshaw, David Erkens, Jere Francis, Srin Sankaraguruswamy, Ann Vanstraelen, Jonathan Weil, and participants at Boston College, Columbia University, Cornell University, George Mason University, Hong Kong University of Science & Technology, the Bauer Accounting Conference at the University of Houston, the 2009 International Symposium on Audit Research in Maastricht, University of Miami, Ohio State University, Singapore Management University, University of Queensland, University of Southern California, University of Technology – Sydney, University of Toronto, and Yale University.

strategy, at least for the short term, is to become as acquiescent and low cost as possible. (Coffee 2004: 278, 293)

However, while it may seem conventional wisdom to think auditors were compliant during the Internet bubble, there are reasons to question this conjecture. For one, the specter of litigation under the Securities Act of 1933 should discipline auditors when conducting an initial public offering (IPO) audit. For another, in contrast to other gatekeepers (attorneys, underwriters), independence rules that preclude auditors from benefiting from a client's stock price fluctuations and professional standards require they maintain a degree of skepticism. Perhaps most important, access to equity capital during the dotcom bubble was likely quite salient to auditor GC decisions. Given that standards require they evaluate management's plans if auditors have substantial doubt about GC status, if a client anticipates stock offerings to finance their operations it seems appropriate auditors should consider equity market conditions when making their GC decisions (e.g., IPO cash burn and the potential for seasoned equity offerings). As such, because professional standards direct auditors to consider "mitigating factors", such as future financing, what may appear to some critics as ex post consistent with auditor acquiescence may have been ex ante rational for auditors.

Despite these reasons in support of rational decision making during the Internet bubble, claims of less independence or skepticism on the part of auditors during this time period may also have merit (Weil 2001). While a hot market for IPOs implies a hot market for IPO audits, Internet IPO registrants were unique in terms of a very high volume of fledgling, stressed companies. Upon confronting this wave of registrants, and given the fees they were receiving and (perhaps more importantly) expecting to receive, there were arguably ample opportunities and incentives for auditors to accede to their client's wishes for a clean opinion. As with Schultz and Zaman's 2001 observation that the "hot issue market for Internet initial public offerings is an unprecedented phenomenon" (348), Internet IPOs were a hot audit market without precedent. Specifically, from the standpoint of the audit firms, Internet IPOs represented an *audit-market* bubble in terms of an abrupt increase in transaction volume of audits of stressed companies filing to go public; a market phenomenon distinct from the *equity-market* bubble these securities went on to represent in terms of a dramatic increase in stock prices.

The main empirical issue we face is identifying counterfactuals against which to assess the effect of euphoric audit market conditions on auditor decisions (i.e., benchmarks of auditor decisions during noneuphoric audit markets). Initially, we address this two ways. First, we compare the rate of GC opinions for Internet IPO versus non-Internet IPO registrants from 1996 to 2000. We document a sharp *decrease* in GC opinions for Internet IPO registrants filing to go public in 1999, at which time there was a sharp increase in the number of such companies trying an IPO, versus an *increase* in GCs for non-Internet IPO registrants at this time. Second, we examine the rate of GC opinions for stressed public companies with Big 5 auditors in COMPUSTAT for fiscal 1995 to 1999. As is the case with non-Internet IPO registrants, we report an *increase* in the rate of GC opinions for public companies with fiscal 1998 and 1999 financial statements.

Given these findings, we focus on the subset of Internet IPO registrants that are not spin offs, that file to go public on NASDAQ, retain domestic auditors, and manifest an obvious indicator of financial distress (negative net income, negative operating cash flow, or negative stockholders' equity). Upon sorting these registrants by the day the auditor signs the opinion in the registration statement, it is evident the Internet IPO *audit-market* bubble inflates quickly in January 1999 and bursts abruptly in April 2000. Accordingly, we examine auditor GC opinions during this audit-market bubble vis-à-vis the surrounding non-bubble periods.

It is important to emphasize that the 16-month Internet IPO audit-market bubble was a period during which the Big 5 were especially dominant, with a market share of 97 percent.¹ That is, due in part to the high fraction of registrants with venture backing and prestigious underwriting, the Internet IPO bubble was a Big 5 phenomenon (Megginson and Weiss 1991); as the non-Big 5 firms, most of which audit just a single registrant in our sample, did not experience a euphoric audit market. As such, the sharp decrease in GC opinions for Internet IPO registrants starting in January 1999 stems entirely from the Big 5. Aside from a few “strange cases”, such as PricewaterhouseCooper’s opinion in drkoop.com’s 1999 S-1 (opening quote),² the large majority of Big 5 opinions during the Internet IPO audit market bubble do not refer to substantial doubt regarding a stressed registrant’s GC status.

Our interest is whether auditor GC decisions vary with changes in external conditions towards euphoric markets. After controlling for characteristics that extant literature associates with GC opinions for public companies (e.g., financial distress, company size, and age), we test several influences that could lead auditors to shift their GC criteria in the Internet IPO bubble. Certain of these (IPO cash burn, equity-market conditions, prestige underwriting, venture capital backing) are proxies for client-specific mitigating factors; whereas others (recent fees from auditing such clients, dotcom mania, fear of client loss, pressure to rush-to-market) are proxies for auditor-specific explanations. We also consider the endogeneity of the IPO decision and assess costs to investors from the decrease in Big 5 GC opinions during the bubble.

Consistent with literature on stressed public companies, we find that the presence of a GC opinion in the IPO registration statement of a stressed Internet company varies positively with financial distress and negatively with company age (for Big 5 registrants) or startup status (for non-Big 5 registrants). In addition, a GC opinion for Big 5 registrants varies positively with IPO cash burn and negatively with the presence of a prestigious underwriter and venture backing. All three of these findings are new to the literature and provide support for “mitigating factors” to justify the absence of a GC opinion for a stressed Internet IPO registrant. Consistent with the descriptive statistics, regression results show that the Big 5 firms rendered significantly fewer GC opinions during the audit market bubble from January 1999 to April 2000 in comparison to the surrounding periods and to the non-Big 5. We also document negative associations between a GC opinion and the fees a given Big 5 firm received from auditing stressed Internet IPO clients during the three months prior to signing their opinion and whether the Securities and Exchange Commission (SEC) filing date follows soon after audit opinion date. These latter two findings, also new to the literature, are not reconcilable by appeal to professional audit standards and, instead, are suggestive of less independence or less skepticism on the part of the Big 5 during the Internet IPO bubble.

To assess costs to investors associated with the decrease in Big 5 GC opinions during the Internet IPO bubble, we use the Big 5’s GC decisions during the pre-bubble period to develop an expectation for their decisions during the bubble, which we contrast to their actual GC decisions during this latter period. Then, for the two-thirds of our registrants during the bubble that went public, we identify those that delist from the Center for Research in Security Prices (CRSP) for negative reasons within two, three, and four years of IPO date. Among registrants in the highest decile of expected GC opinions (of which over half of those

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1. Based on the audit opinion date, the number of stressed Big 5 (non-Big 5) NASDAQ Internet IPO registrants went from 2.4 (0.4) per month for January 1996 to December 1998 to 28.4 (1.0) per month for January 1999 to April 2000.
 2. drkoop.com went public in a NASDAQ IPO on June 8, 1999 for \$9 per share, raising gross proceeds of \$84,375,000, with opening and closing prices that day of \$12.63 and \$16.44, respectively. Within a month, the price rose above \$45. However, by its one-year anniversary the price was around \$1 and the shares delisted on April 27, 2001.

that went public delisted for negative reasons within four years), the actual GC rate is 9 percent versus an expectation of 33 percent. Therefore, if the Big 5 kept opining on Internet registrants during the bubble as during the pre-bubble, more IPOs would have had opinions providing investors with an early warning of eventual delisting. However, because these costs to investors are not visible at earlier post-IPO stages, we do not assert violations of audit standards.³ Having said this, we emphasize that an IPO can delist only if it goes public in the first place and, because the Internet bubble burst so abruptly, approximately one-third of our stressed registrants with clean opinions never went public.

Independent auditors play a crucial role in the capital-raising process, though this role is largely invisible. Indeed, from a financial statement user's perspective, the two visible aspects are the audit firm and their opinion. While these facets have ongoing value, they are of special value during periods of market euphoria because auditors are in arguably the best position among gatekeepers to be objective. We examine these aspects during a recent period of euphoria in the equity and audit markets, the Internet IPO bubble. Our findings suggest auditor GC decisions accord with both economic reasons or "mitigating factors" and less independence or skepticism.

In terms of contribution, a study of a market bubble and auditor GC decisions is new to the literature. Beyond this, our paper extends two streams of extant literature. One, by studying determinants of GC opinions for IPOs, we extend papers that take the presence of such opinions as exogenous and examine their information and predictive content (Willenborg and McKeown 2000; Weber and Willenborg 2003). In this regard, we report new results that support mitigating factors to justify the absence of a GC opinion for a stressed IPO registrant. Two, we contribute to literature that uses the propensity to issue a GC as a proxy for auditor independence in response to economic-based incentives such as client size (Reynolds and Francis 2000) or fees (DeFond, Raghunandan, and Subramanyam 2002; Craswell, Stokes, and Laughton 2002; Hope and Langli 2010). In contrast to this latter stream, our finding that the presence of a GC opinion is inverse with recent fees a given firm receives from auditing stressed Internet IPO clients seems consistent with less independence on the part of auditors during a period of market euphoria.

2. Background and motivation

By most accounts the Internet IPO market was a phenomenon without precedent, both in terms of the high volume of stressed and fledgling companies trying to go public and, for those that did, by their exceptional first-day returns (Schultz and Zaman 2001). Whereas some theory papers provide conditions under which the pricing of Internet stocks may have been rational (Schwartz and Moon 2000; Pástor and Veronesi 2006), most literature characterizes this period as a bubble (e.g., Ljungqvist and Wilhelm 2003). Accordingly, studies examine potential causes, such as a rush for market share (Schultz and Zaman 2001), a "get big fast" cascade (Goldfarb, Kirsch, and Miller 2007), stock analyst affiliation (Bradley, Jordan, and Ritter 2008), or misperceptions regarding the long-term benefits of investing in stocks (Brennan 2004).⁴

3. As for ex post consequences to auditor themselves, a check of the Stanford Securities Class Action database reveals no instances of litigation against audit firms pertaining to the IPOs of the Internet companies in our sample.

4. The finance literature also examines explanations for why, in Spring 2000, the Internet bubble burst so abruptly (Ofek and Richardson 2003; Schultz 2008) and for the high levels of Internet IPO underpricing (Ljungqvist and Wilhelm 2003). Accounting literature examines the valuation and returns of Internet stocks (Trueman, Wong, and Zhang 2000; Demers and Lev 2001; Bartov, Mohanram, and Seethamraju 2002; Davis 2002; Core, Guay, and Van Buskirk 2003; Rajgopal, Venkatatachalam, and Kotha 2002, 2003; Keating, Lys, and Magee 2003).

In terms of transaction volume, Ljungqvist and Wilhelm (2003) report the number of Internet IPOs increases from 19 in 1996 to 22 in 1997 to 39 in 1998 and then to 257 in 1999 and 135 in 2000; the majority of which in the first half of 2000. Moreover, the large majority of these issuers, particularly IPOs in 1999 and 2000, display obvious indicators of financial distress; the presence of which are well-known prerequisites to observing GC opinions (Hopwood, McKeown, and Mutchler 1994; DeFond et al. 2002).

Our interest is whether auditor decisions vary with changes in external market conditions. Due to the confluence of four facts, the Internet IPO bubble provides an opportune setting for this question. One, there are few facets of the audit market that are unambiguously attributable to auditors; most notably whether their opinion conveys substantial doubt regarding a company's ability to continue as a going concern. Two, we observe GC opinions only when companies exhibit obvious indicators of financial distress. Three, a dramatic increase in IPO filings (in absolute and relative terms) by financially stressed Internet companies took place during 1999–2000.⁵ And four, the SEC requires auditors to consent to inclusion of their opinion, which either does or does not refer to GC status, in a client's IPO registration statement. Taken together, the Internet IPO bubble provides a relatively clean context to study our research question.

To examine how auditors behave during a period of market euphoria, we test the following (non–mutually exclusive) influences that could lead auditors to shift their GC opinion criteria during the Internet IPO bubble. Certain of these (IPO cash burn, prevailing equity-market conditions, prestige underwriting, and venture backing) are proxies for client-centric mitigating factors. Others (participation in the market euphoria, dotcom mania, fear of client loss and pressure to facilitate a “rush to market”) are proxies for auditor-centric explanations.

IPO cash burn

Given audit standards regarding the assessment of GC status, it is appropriate that auditors should consider the rate of IPO cash burn when making their opinion decisions for companies that are planning to go public. The difficulty for an archival empirical study is that, while auditors were likely privy to cash flow forecasts, we can only observe actual pre-IPO operating and investing cash flows for IPO registrants and actual post-IPO operating and investing cash flows for those IPO registrants that successfully go public. Given our focus on the auditor's opinion decision for IPO *registrants*, we choose the former, pre-IPO perspective.

Following Keating, Lys, and Magee 2003, we specify *CashBurn* to measure the extent a registrant's IPO proceeds plus on-hand liquid assets could sustain its historical operating and investing cash flows. To compute this, we divide the sum of annualized pre-IPO operating and investing cash flows by the sum of IPO proceeds and pre-IPO cash and marketable securities and (because this numerator is negative more than 95 percent of the time) multiply this quotient by minus one. Because a more positive *CashBurn* suggests a

5. Schultz and Zaman (2001) report that over 90 percent of Internet companies going public from January 1999 through March 2000 were unprofitable. In addition, Ritter and Welch (2002: 1801) observe, “it was unusual for a prestigious investment banker in the 1960s and 1970s to take a firm public that did not have at least four years of positive earnings. In the 1980s, four quarters of positive earnings was still standard. In the 1990s, fewer and fewer firms met this threshold. Still, the investment banking firm's analyst would normally project profitability in the year after going public. During the bubble, firms with no immediate prospect of becoming profitable became common.”

registrant will use up its on-hand and IPO cash more quickly, we expect a positive association between *CashBurn* and a GC opinion.⁶

Equity-market conditions

If auditors have substantial doubt about a client's ability to continue as a going concern, audit standards require them to evaluate management's plans for dealing with this uncertainty. If the client is filing to go public and management foresees subsequent equity offerings to finance day-to-day operations, auditors likely consider future equity market conditions when formulating their IPO GC decision.⁷ Our primary proxy for auditor's equity market expectations is the cumulative return on the NASDAQ Composite Index for the three calendar months prior to the month the auditor signs the opinion in the IPO registration statement (*Nasdaq3*).⁸ If auditors expect equity market performance to increase, thereby increasing the availability of seasoned equity for their stressed clients, we would expect the frequency of GC opinions to decrease.

Prestige underwriting and venture backing

As Schultz and Zaman (2001) document, Internet IPOs were much more likely to have the backing of venture capital firms and underwriting of prestigious investment banks. Because these professional investors and intermediaries assist in monitoring, governance, development and financing (Sahlman 1990; Lerner 1995; Gompers 1995; Black and Gilson 1998; Kaplan and Stromberg 2003; Hochberg, Ljungqvist, and Lu 2007), all of which correlate with a company's status as a going concern, we expect inverse relations between the presence of a GC opinion and prestige underwriting and venture backing. To proxy these, we specify *PrestigeIB* equal to one if the lead underwriter has the highest Carter, Dark, and Singh 1998 / Loughran and Ritter 2004 rank and *VC* equal to one if the registrant has the backing of venture capitalists.⁹

Whether or not an audit firm participates in the market euphoria

Likely because of the high fraction of registrants with the backing of venture capital firms and underwriting of prestigious investment banks, the Internet IPO bubble was a period during which the Big 5 firms were especially dominant. Accordingly, because the

6. Our *CashBurn* measure is ex ante in nature in that its numerator is historical, pre-IPO operating and investing cash flows and its denominator assumes the proceeds are forthcoming. As such, it is a flawed measure. As one can infer from Table 3A, average *CashBurn* for Big 5 Internet IPO registrants is 0.143 which implies these companies, if they continue to burn cash at their most-recent historical rate and if they receive the IPO proceeds, have about 7 years of cash. However, of these 554 registrants, just 383 successfully went public within a year of initial SEC filing and file a Form 10-K or 10-Q on Edgar. For these 383, if we use their actual, post-IPO cash burn (instead of their most-recent historical rate), the mean value of cash burn is 0.680, which implies less than 1.5 years of cash. Our results do not change if we substitute this ex post measure of cash burn and estimate Equation 1c using these 383 observations, other than (not surprisingly) that this ex post measure has no statistical relation with *GCOpinion*.

7. Some assert auditors went too far in terms of their expectations of future equity market conditions. Per Weil 2001(C1): "if an auditor has substantial doubt about a client's ability to continue as a going concern, it must say so in its report on the company's financial statements. Investors often take those warnings to mean 'run for the hills' and the inclusion of one can kill a company's plans to go public . . . but rather than questioning the sustainability of the bubble at a time when some dot-coms had stock-market valuations at several hundred times their revenues, critics say many auditors appear to have presumed the capital markets would remain buoyant."

8. We also consider an alternative proxy pertaining to recent IPO underpricing (see footnote 26).

9. *PrestigeIB* underwriters are Credit Suisse First Boston, Deutsche Bank, Donaldson, Lufkin and Jenrette, Goldman Sachs, J. P. Morgan, Lehman Brothers, Merrill Lynch, Morgan Stanley Dean Witter, and Salomon Smith Barney. We use various sources (e.g., Securities Data Corporation (SDC) and Venture Capital Journal) to code the *VC* variable.

non-Big 5 did not participate in the bubble, smaller audit firms had little opportunity to vary their GC decisions with euphoric audit market conditions. Therefore, we can use the non-Big 5 as a benchmark to compare the opinion decisions of the Big 5 for the audit market bubble versus non-bubble. While auditor choice is endogenous, our test of the difference-in-differences potentially mitigates this concern. The test for the effect of euphoric audit market conditions on GC opinion decisions is $(\Pr(\text{GC})_{\text{Big 5, AuditBubble}} - \Pr(\text{GC})_{\text{Big 5, Non-AuditBubble}}) < (\Pr(\text{GC})_{\text{Non-Big 5, AuditBubble}} - \Pr(\text{GC})_{\text{Non-Big 5, Non-AuditBubble}})$. To conduct this test, we regress a GC opinion on an indicator variable if the opinion date is during the period of high audit transaction volume January 1999 to April 2000 (*AuditBubble*). We estimate this regression separately for Big 5 and non-Big 5 registrants and test if *AuditBubble*'s coefficient for the Big 5 minus *AuditBubble*'s coefficient for the non-Big 5 is less than zero.

The extent to which an audit firm gains from participating in the market euphoria

The above test hinges on whether an audit firm participates in the market euphoria, either before the bubble starts or in contrast to firms that do not participate. For three reasons, this is not a very strong test. One, our definition of the audit-market bubble (January 1999 through April 2000) is ex post in nature. Two, because other things took place alongside the surge in stressed Internet IPO audit volume, a simple time-period indicator variable is not a strong proxy. Three, because they were minor players in the Internet IPO market, using the non-Big 5 firms as a benchmark is not a high-power test. Because auditors are economic agents that clients hire and pay, it is important to consider the auditor's incentives (Antle 1982). As an ex ante proxy for the effect of auditor incentives during euphoric market conditions on GC decisions, we specify the fees from auditing stressed Internet IPO registrants a given Big 5 firm receives during the three months prior to the month they sign the opinion for a stressed Internet IPO registrant (*Fees3*).¹⁰

The throes of "dotcom mania"

With the benefit of hindsight, especially the vanishing returns on Internet stocks, it is possible that some market participants were in the grip of a "dotcom mania". One prominent example of this phenomenon is Cooper, Dimitrov, and Rau 2001, which documents large positive stock appreciation to companies that change to an Internet name. Cooper et al. conclude (2387), "our results are driven by a degree of investor mania — investors seem to be eager to be associated with the Internet at all costs". To test whether auditors were susceptible to a similar irrationality, we follow Cooper et al. 2001 and specify a variable equal to one if an Internet IPO registrant's name contains the words "dotcom", "dotnet", or "Internet" (*DotName*).

Fear of client loss

As a client's cost of an auditor switch decreases, this should increase the client's threat to replace their auditor, who may feel pressure to acquiesce so as to retain the client (Matsumura, Subramanyam, and Tucker 1997). We proxy for auditor switching costs

10. For example, prior to their March 1999 GC opinion for drkoop.com, PwC signed opinions for 23 other stressed Internet IPO clients from December 1998 through February 1999 and received cumulative fees of \$6.436 million. Overall, because this variable ranges from zero to over \$13 million, we logarithmically transform it for our regressions. In addition, because 15 of the 20 non-Big 5 firms audit just one registrant and another three firms audit two registrants (one "pre-bubble" and one "bubble"), specification of this variable is not feasible for the non-Big 5.

by whether their auditor's office is within 50 miles of San Francisco, California (*NorthCalif*).¹¹ Because of the high concentration of Internet companies in this geographic region, and the familiarity that auditors likely have with their business models, the costs of switching auditors should be lower.¹²

Pressure to facilitate a client's "rush to market"

Lerner (1994) provides support for the view that venture capitalists are adept at timing IPOs of biotechnology companies to go public at or near market peaks. Similarly, in a survey of chief financial officers, Brau and Fawcett (2006) report the presence of venture backing raises managerial awareness to time an IPO to coincide with high equity market conditions. Because a registration statement must contain audited financial statements, if a company is "rushing to market" auditors may feel pressure to render a clean opinion for inclusion in the prospectus. To test this, we specify indicator variables for whether the number of days from audit opinion date to IPO filing date is ten or fewer (*RushToMkt*) and for the interaction between this and whether the IPO has venture backing (*RushToMkt*VC*).¹³ We regress GC opinion on these variables, and test whether the coefficients for *RushToMkt* and *RushToMkt*VC* are less than zero.

3. Sample, variables and descriptive statistics

Sample

To obtain a sample of Internet IPO registrants, we use <http://www.alert-ipo.com> to identify 816 IPO filings from 1996 to 2000 by companies this Web site designates as "Internet-related", from which we eliminate 47 registrants without a registration statement on Edgar and 13 foreign issuers that file an F-1 registration statement.¹⁴ For the remaining 756 registrants, we code the opinion from the registration statement. To obtain a sample of non-Internet IPO registrants, we develop a Web application to search the Edgar database for registrants whose *initial* SEC filing is an S-1 or an SB-2, write a program to extract the opinion from the registration statement, and use keywords to code whether it refers to substantial doubt regarding the company's GC status.

GC reporting for all IPO registrants and stressed public companies

Panel A of Table 1 shows the frequency of GC opinions for IPO registrants that file their initial registration statement from 1996 to 2000, which we partition into Internet and non-Internet companies. Consistent with Yung, Colak, and Wang 2008, which categorizes this period as a "hot" IPO market, the number of registrants is high, ranging from 722 in

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11. The next closest audit firm office is in Woodland Hills, California, about 300 miles beyond our 50-mile radius.
 12. An alternative measure would be the number of audit firms near the IPO firm. However, because 97 percent of Big 5 observations (537 of 554) are registrants with an opinion signed by a firm in a major city or metropolitan area where all five firms are resident, it is not feasible to specify such an alternative proxy for auditor switching costs.
 13. Our rationale for specifying such a cutoff is due to the skewed nature of the filing lag between audit opinion date and SEC filing date. For example, for Big 5 registrants, the mean is 53 days and the median is 19 days, 39 percent of which have a filing lag of 10 days or fewer (see footnote 30 regarding the robustness of the 10-day cutoff).
 14. We use this data source because it better suits our research question by casting a broader net to identify Internet IPO *registrants*, in contrast to the subset of successful IPOs by Internet companies. As such, our screen of 816 IPO filings largely encompasses the Internet IPOs per Jay Ritter's Web site, SDC, or in extant literature (Trueman, Wong, and Zhang 2000; Ljungqvist and Wilhelm 2003). Having said this, we acknowledge the inherent subjectivity regarding classifying a company as Internet-related. To address this, per panel A of Table 2, we exclude registrants that are public company spinoffs to exclude brick-and-mortar retailers with Web sites (e.g., BarnesandNoble.com).

TABLE 1

GC opinions for IPO registrants and stressed public companies with Big N auditors

Panel A: IPO registrants with GC opinions by SEC filing date						
	1996	1997	1998	1999	2000	Total
Internet IPO registrants	20.8% (5 of 24)	28.9% (11 of 38)	15.9% (10 of 63)	8.8% (34 of 385)	5.7% (14 of 246)	9.8% (74 of 756)
Non-Internet IPO registrants	11.8% (83 of 703)	9.3% (75 of 804)	7.1% (47 of 659)	16.2% (79 of 487)	18.8% (127 of 677)	12.3% (411 of 3,330)
Total IPO registrants	12.1% (88 of 727)	10.2% (86 of 842)	7.9% (57 of 722)	13.0% (113 of 872)	15.3% (141 of 923)	11.9% (485 of 4,086)

Notes:

We identify IPO registrants as those that file an S-1 or SB-2 registration statement (available on Edgar) as their *initial* SEC filing from January 1, 1996 to December 31, 2000. Internet IPO registrants are those <http://www.alert-ipo.com> designates “Internet related”. Non-Internet registrants are all other, excluding “blank check” IPOs (SIC 6770). Table cells depict the fraction (count) of IPO registrants with a GC opinion in any of their SEC registration statements, which we sort by the day on which registrants file their initial registration statement.

Panel B: Stressed Big N public companies with GC opinions by fiscal year end date

	1995	1996	1997	1998	1999	Total
Stressed public companies	12.6% (118 of 939)	11.8% (213 of 1,802)	11.9% (250 of 2,098)	13.9% (304 of 2,182)	12.9% (267 of 2,068)	12.7% (1,152 of 9,089)

Variable	E[sign]		
Constant		-0.49 (-2.74)***	-0.36 (-2.11)**
<i>Distress</i>	+	1.44 (29.81)***	1.44 (29.80)***
$\ln(\text{Assets})$	-	-0.22 (-19.18)***	-0.23 (-19.84)***
<i>GDPGrowth</i>	-	-2.17 (-0.62)	-4.96 (-1.52)
<i>FYE1998-1999</i>	+/-		0.10 (3.29)***
Observations		9,089	9,089
Pseudo R^2		22.6%	22.7%

Notes:

Observations are companies on COMPUSTAT with fiscal years 1995 to 1999 (i.e., likely to have audit opinion dates 1996 to 2000) with Big N auditors, any of our three financial distress indicators (negative net income, operating cash flow or stockholders' equity) and an audit opinion that is available on Edgar. We exclude companies in our Internet IPO sample, those with 6xxx SIC codes, those with a fiscal year end that precedes its first public year, and those without information to compute *Distress* and $\ln(\text{Assets})$. Dependent variable is *GCOpinion* (one if a going-concern opinion in an IPO registration statement and zero otherwise). Probit coefficients with *t*-statistics using standard errors clustered by both audit firm and company in parentheses. *Distress* and $\ln(\text{Assets})$ are defined in Table 3, *GDPGrowth* is the average growth in U.S. gross domestic product for the four quarters of the given fiscal year and *FYE1998-1999* equals one if the company's fiscal year is either 1998 or 1999.

***, **, * Significant at 1 percent, 5 percent, and 10 percent levels, respectively (one-sided tests where E[sign] is directional).

1998 to 923 in 2000.¹⁵ From 1996 through 1998, Internet registrants comprise a minor portion of the market, increasing from 3.3 percent in 1996 to 8.7 percent in 1998; and, for these three years, a higher fraction of Internet registrants have GC opinions than non-Internet registrants (i.e., 20.8 percent, or 26 of 125, for Internet registrants versus 9.5 percent, or 205 of 2,166, for non-Internet registrants). In 1999, however, as the number of Internet IPO registrants increases dramatically (in excess of 500 percent, from 63 in 1998 to 385 in 1999) to comprise 44.2 percent of the market, this pattern in the frequency of GC opinions reverses. Whereas the percentage of Internet registrants with GC opinions *decreases* from 15.9 percent in 1998 to 8.8 percent in 1999, for non-Internet registrants it *increases* from 7.1 percent to 16.2 percent.^{16,17}

The decrease in GC opinions for Internet IPO registrants is also inconsistent with the COMPUSTAT population of stressed companies with Big N auditors. As panel B of Table 1 shows, for public firms with Big N auditors and fiscal 1995–1997 financial statement dates (likely 1996–1998 audit opinion dates) and any of our three indicators of stress, the GC rate averages 12.0 percent (12.6 percent in 1995, 11.8 percent in 1996, 11.9 percent in 1997). Then, as with non-Internet IPO registrants, the GC rate for these companies *increases* to an average of 13.4 percent (13.9 percent in 1998, 12.9 percent in 1999) for 1998–1999 financial statement dates (likely 1999–2000 opinion dates).¹⁸ We pool these years and regress the presence of a GC opinion on the probability of bankruptcy (Zmijewski 1984), the natural logarithm of total assets, the annual growth in U.S. gross domestic product (GDP), and an indicator variable equal to one if the fiscal year is 1998 or 1999. We cluster standard errors on company and audit firm (Thompson 2011). As per panel B of Table 1, the coefficient on the 1998–1999 indicator variable is positive.

-
15. Of the 12 quarters during 1996–1998, Yung et al. (2008) categorize: 10 of them as a “hot” IPO market using their growth rate in real private nonresidential fixed investment heat index (*InvestGr*); 10 of them as hot using their number of new issues heat index (*NumIPO*); and 2 of them as hot using their equally weighted underpricing heat index (*EWU*). Of the 8 quarters that comprise 1999–2000, Yung et al. (2008) categorize: 2 of them as a hot IPO market using *InvestGr*; 1 of them as hot using *NumIPO*; and 8 of them as a hot IPO market using *EWU*.
 16. Using the same approach we follow to identify whether a non-Internet registrant has a GC opinion, we also identify a registrant’s audit firm. The same pattern that we document for all non-Internet IPO registrants (i.e., an *increase* in the rate of GC opinions for registrants filing an S-1 or SB-2 in 1999 versus 1998) is also present for non-Internet IPO registrants with both Big N (from 4.8 percent to 6.1 percent) and non-Big N audit firms (from 12.8 percent to 28.3 percent).
 17. To examine this using a different approach, we identify non-Internet companies new to COMPUSTAT for fiscal 1995 to 1999 with Big N auditors, any of our distress indicators (negative net income, operating cash flow, or stockholders’ equity) and data for total assets, net income, debt, current assets, and current liabilities. Of note, in contrast to other aspects of our analysis, these are companies that successfully went public. For those with IPO year 1995–1997 financial statement dates (likely to have 1996–1998 audit opinion dates), the GC rate is 5.6 percent; for those with IPO year 1998–1999 financial statement dates (likely to have 1999–2000 audit opinion dates), the GC rate is 4.9 percent. We combine these companies and regress the presence of a GC opinion on the probability of bankruptcy per Zmijewski 1984, the natural logarithm of total assets, the annual growth in GDP, and an indicator variable equal to one if the fiscal year is 1998 or 1999. We cluster standard errors on audit firm. The coefficient on the time-period indicator variable is insignificant. We note, however, that this analysis suffers from several limitations (e.g., it is subject to selection bias for companies that actually went public and it relies on the availability of COMPUSTAT data whose reliability, unlike the Internet IPO sample, we do not verify by examining the IPO prospectus).
 18. Arguably more important than the difference in the direction of change between stressed public companies and our stressed Internet IPO sample is the magnitude of the difference. During 1996–1998, the difference is –0.6 percent, or 12.0 percent for stressed, non-IPO companies minus 12.6 percent for stressed Internet IPO companies. During 1999–2000, the difference increases to 10.6 percent, or 13.4 percent for stressed, non-IPO companies minus 2.8 percent for stressed Internet IPO companies; which is a weighted average of 2.6 percent bubble and 7.7 percent post-bubble (see panel B of Table 2 for details).

These results are important because our initial test uses a time-period indicator variable to capture changes in auditor GC decisions. However, other factors may influence such decisions in a given time period. If these other factors affect auditor opinion decisions overall, we could also observe a decline in the rate of GC opinions in the general population. By documenting that this is not the case, we reduce concerns about the influence of these other factors.

GC reporting for stressed Internet IPO registrants

Given the above findings, we focus the remainder of our analysis on Internet IPOs. As per panel A of Table 2, of the 756 Internet IPO registrants in panel A of Table 1 we eliminate: 75 spinoffs from public companies (see footnote 14); 39 companies that do not file to go public on NASDAQ (OTC Bulletin Board, NQB Pink Sheets); 21 foreign registrants due to differences in international audit standards; and one company with a pre-1996 opinion date. Of the remaining 620, because of the importance of conditioning GC analysis on clear indicators of stress, we exclude 34 (just 5 percent) without negative net income, negative operating cash flow, or negative equity (excluding redeemable or convertible equity). Our sample consists of 586 stressed, stand-alone, domestic Internet companies filing to go public on NASDAQ from 1996 to 2000.

Panel B of Table 2 partitions these 586 registrants by audit opinion date, audit firm type, and audit opinion type. From the standpoint of the month the auditor signs the opinion for these registrants, the Internet IPO audit market bubble inflates quickly beginning in January 1999. During the previous three years, auditors signed off on 102 stressed, domestic Internet companies filing to go public on NASDAQ (i.e., 3 per month), of which 85.3 percent (87 of 102) have Big 5 auditors and 18.6 percent (19 of 102) have a GC in their registration statement. Consistent with clientele effects, the frequency of GCs varies by auditor type, at 12.6 percent for Big 5 versus 53.3 percent for non-Big 5 (z -statistic for the change in proportions of -3.95 , significant beyond 1 percent).

For the next 16 months, January 1999 through April 2000, auditors sign opinions for 470 stressed NASDAQ Internet IPO registrants (i.e., 30 per month), of which 96.6 percent (454 of 470) have Big 5 auditors and 4.3 percent (20 of 470) have GC opinions.¹⁹ The decrease in GCs stems from registrants with Big 5 auditors, as their GC rate drops from 12.6 percent during 1996–1998 to 2.6 percent during January 1999–April 2000 (z -statistic -4.24 , significant beyond 1 percent).²⁰ As Figure 1 depicts, the frequency of Big 5 GCs decreases abruptly to 2.5 percent (3 of 120) during the first quarter of 1999 (i.e., *prior* to the doubling of the NASDAQ Composite Index from April 1999 to March 2000) from 16.7 percent (3 of 18) in the first quarter of 1998. In contrast, the frequency of GCs for registrants with non-Big 5 auditors, which did not experience an increase in stressed Internet IPO audits, decreases to 50.0 percent (8 of 16) during January 1999–April 2000 from 53.3 percent (8 of 15) during 1996–1998 (z -statistic -0.19 , insignificant). For the remainder of 2000, May through December, auditors sign opinions for just 14 stressed NASDAQ Internet IPO registrants, of which 13 have a Big 5 auditor and one has a GC opinion. To accord with our regression framework, for which the intercept pertains to companies that auditors opine on during non-bubble periods, panel B of Table 2 provides results of tests

19. The time period we define as the Internet audit-market bubble is consistent with the empirical finance literature (e.g., Schultz and Zaman 2001; Ljungqvist and Wilhelm 2003; Bradley et al. 2008).

20. Other than Arthur Andersen, which did not render a single GC opinion for any of its eight pre-bubble stressed Internet clients, each Big 5 firm evidenced a decrease in GC frequency during the period from January 1999 through April 2000. There is also variation in auditor firm market share (e.g., PwC audits 33 percent of our overall sample while D&T audits just 7 percent) and whereas the market share of some firms expanded from pre-bubble to bubble (e.g., AA's went from 8 percent to 19 percent), the market share of other firms contracted (e.g., KPMG 23 percent pre-bubble to 14 percent bubble).

TABLE 2
Internet IPO sample

Panel A: Internet IPO sample of NASDAQ filings by standalone, domestic, stressed registrants										
Internet IPO registrants per panel A of Table 1										756
Less:										
Spinoffs from an already-public parent company (4 with GC opinions)										75
Companies that do not file to go public on NASDAQ (28 with GC opinions)										39
Foreign company registrants (2 with GC opinions)										21
Audit opinion date is prior to January 1, 1996 (0 with GC opinions)										1
Companies with no obvious indication of financial stress (0 with GC opinions)										34
Final sample										586
Panel B: Internet IPO sample by audit opinion date by audit firm type and by GC opinion										
Audit Opinion Date		Big 5 Auditors			Non-Big 5 Auditors			Overall		
		GC Opinion	Non- GC Opinion	Total	GC Opinion	Non- GC Opinion	Total	GC Opinion	Non- GC Opinion	Total
1996	Qtr1	0	2	2	0	0	0	0	2	2
	Qtr2	1	6	7	0	1	1	1	7	8
	Qtr3	1	2	3	1	1	2	2	3	5
	Qtr4	1	1	2	1	1	2	2	2	4
1997	Qtr1	2	9	11	1	0	1	3	9	12
	Qtr2	0	5	5	0	0	0	0	5	5
	Qtr3	0	4	4	0	0	0	0	4	4
	Qtr4	1	4	5	1	0	1	2	4	6
1998	Qtr1	3	15	18	1	1	2	4	16	20
	Qtr2	0	10	10	1	1	2	1	11	12
	Qtr3	0	9	9	1	1	2	1	10	11
	Qtr4	2	9	11	1	1	2	3	10	13
Pre-Bubble		11	76	87	8	7	15	19	83	102
		(12.6%)	(87.4%)		(53.3%)	(46.7%)		(18.6%)	(81.4%)	
1999	Qtr1	3	117	120	3	3	6	6	120	126
	Qtr2	2	77	79	0	1	1	2	78	80
	Qtr3	2	48	50	2	0	2	4	48	52
	Qtr4	1	48	49	1	1	2	2	49	51
2000	Qtr1	3	133	136	2	3	5	5	136	141
	April	1	19	20	0	0	0	1	19	20
Audit Bubble		12	442	454	8	8	16	20	450	470
		(2.6%)	(97.4%)		(50.0%)	(50.0%)		(4.3%)	(95.7%)	

(The table is continued on the next page.)

TABLE 2 (Continued)

Audit Opinion Date	Big 5 Auditors			Non-Big 5 Auditors			Overall			
	GC Opinion	Non- GC Opinion	Total	GC Opinion	Non- GC Opinion	Total	GC Opinion	Non- GC Opinion	Total	
2000	May	1	3	4	0	0	0	1	3	4
	Jun	0	3	3	0	1	1	0	4	4
	Qtr3	0	6	6	0	0	0	0	6	6
	Qtr4	0	0	0	0	0	0	0	0	0
Post-Bubble		1	12	13	0	1	1	1	13	14
		(7.7%)	(92.3%)		(0.0%)	(100.0%)		(7.1%)	(92.9%)	
Overall		24	530	554	16	16	32	40	546	586
		(4.3%)	(95.7%)		(50.0%)	(50.0%)		(6.8%)	(93.2%)	

Tests of difference in proportions:

- 2.6% Big 5 Bubble versus 12.0% Big 5 Non-Bubble: z -statistic = -4.16 (significant beyond 1%)
- 50.0% Non-Big 5 Bubble versus 50.0% Non-Big 5 Non-Bubble: z -statistic = 0.00 (insignificant)
- 2.6% Big 5 Bubble versus 50.0% Non-Big 5 Bubble: z -statistic = -9.23 (significant beyond 1%)
- 12.0% Big 5 Non-Bubble versus 50.0% Non-Big 5 Non-Bubble z -statistic = -3.74 (significant beyond 1%)

of differences in proportions between audit bubble and a combination of pre-bubble and post-bubble periods.²¹

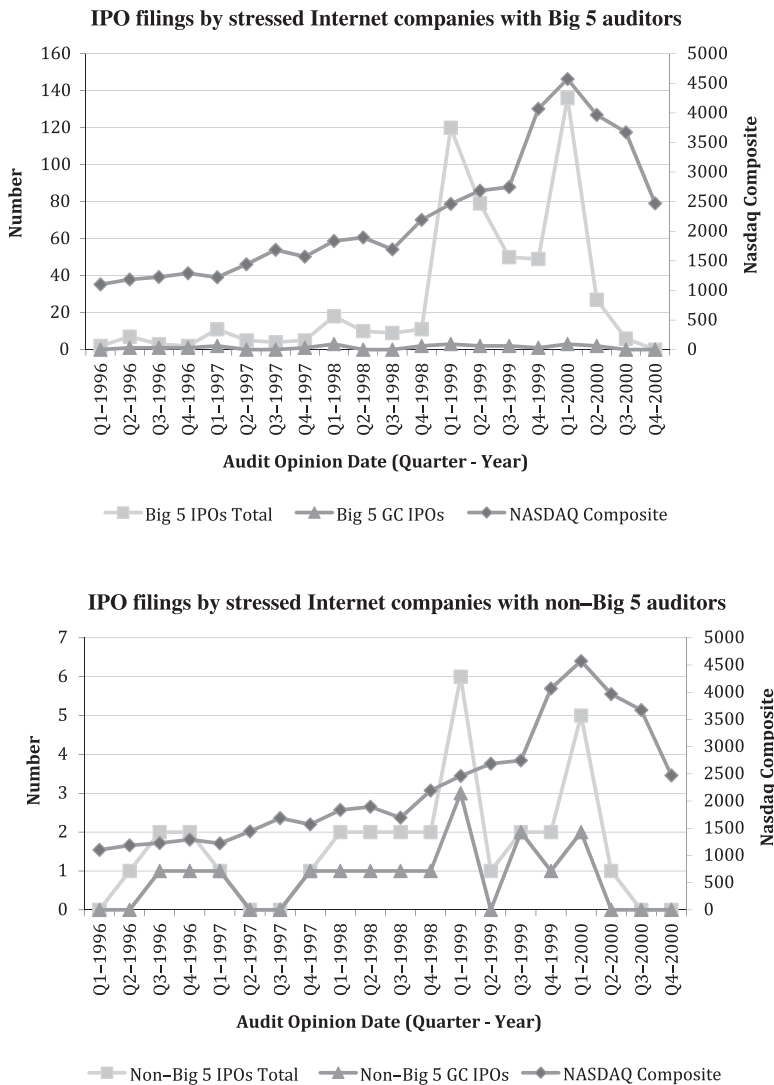
Independent variables for stressed Internet IPO registrants

Our independent variables comprise covariates and variables of interest. We specify five control variables. *Distress* is per Zmijewski 1984, and includes return on assets, leverage, and current ratio, all per the audited financial statements in the IPO registration statement. *Assets* is total assets, also from the audited balance sheet in the registration statement. Of note, *Distress* and *Assets* encompass four of the five major factors (i.e., profitability, leverage, liquidity, and size) extant literature associates with GC opinions.²² *Age* is the number of years from company founding (or incorporation, if founding date is unavailable) and IPO filing. *StartUp* equals one if annualized, pre-IPO revenues are less than \$1 million. *GDP3* is the average growth in the U.S. GDP for the three months prior to the month the auditor signs the opinion in the registration statement. We specify ten test variables of interest, four proxy for mitigating factors which are client or market determinants of GCs (*CashBurn*, *Nasdaq3*, *PrestigeIB*, *VC*) and six proxy for auditor determinants (*AuditBubble*, *Fees3*, *DotName*, *NorthCalif*, *RushToMkt*, *RushToMkt*VC*).

21. All these descriptive findings hold when comparing the 16-month bubble with the surrounding 44 months.

22. Following Chen and Church 1992 and Foster, Ward, and Woodroof 1998, we also specify a variable equal to one if a registrant has a debt footnote that discloses a payment default, covenant violation, or a default or violation has been waived/cured. In contrast to literature, but consistent with descriptive statistics, this variable's coefficient is negative in certain GC regression specifications. This is likely because the large majority of cases where this variable equals one are when a creditor waives a payment default or cures a covenant violation. Consequently, given a creditor's knowledge of a debtor's plans to go public, such waivers or cures are not an unambiguous negative signal for Internet IPO registrants. We exclude this variable from the results we table, as including it has no effect on our results or inferences. We also consider the number of days from financial statement date to opinion date. Again in contrast to literature but consistent with descriptive statistics, this variable's coefficient is negative in our GC regression specifications and including it has no effect on results that we table or inferences we advance.

Figure 1 NASDAQ IPO filings by stressed Internet companies by audit firm type



Descriptive statistics for stressed Internet IPO registrants

Table 3 presents descriptive statistics by audit opinion date and type. Panels A and B are for registrants with Big 5 and non-Big 5 auditors, respectively. In general, stressed Internet IPO registrants with GC opinions have higher *Distress*, lower *Assets*, are younger in *Age*, more likely in *StartUp* stage, less likely to have prestigious underwriters (*PrestigeIB*) and venture capital backing (*VC*) than stressed Internet IPO registrants with clean opinions.²³

23. The GC rate declines, from pre-bubble to bubble, for Big 5 registrants both with and without venture capital backing. For those registrants with venture backing, the GC rate declines from 4.9 percent pre-bubble (3 of 61) to 1.6 percent bubble (6 of 386); *z*-statistic for the change in proportions of -1.69, significant beyond 10 percent, two-tailed test. For registrants without venture backing, the GC rate declines from 30.8 percent pre-bubble (8 of 26) to 8.8 percent bubble (6 of 68); *z*-statistic for the change in proportions of -2.67, significant beyond 1 percent, two-tailed test.

TABLE 3
Descriptive statistics — Internet IPO sample by audit firm type, audit opinion date, and GC opinion

Variable	Total (Jan 1996–Dec 2000)		Pre-AuditBubble (Jan 1996–Dec 1998)		AuditBubble (Jan 1999–Apr 2000)		Post-AuditBubble (May 2000–Dec 2000)	
	GC Opinion	Non-GC Opinion	GC Opinion	Non-GC Opinion	GC Opinion	Non-GC Opinion	GC Opinion	Non-GC Opinion
<i>n</i> (%)	24 (3.8%)	530 (96.2%)	11 (12.6%)	76 (87.4%)	12 (2.6%)	442 (97.4%)	1 (7.7%)	12 (92.3%)
<i>Distress</i>	mean 0.589	0.288	0.632	0.302	0.545	0.288	0.643	0.167
	median 0.711	0.020	0.947	0.053	0.596	0.016	0.643	0.005
<i>Assets</i>	mean 11.103	28.472	11.197	16.728	10.858	29.936	13.009	48.913
	median 6.101	14.132	3.851	10.196	10.459	14.885	13.009	22.628
<i>Age</i>	mean 3.633	4.706	3.449	4.905	3.882	4.620	2.660	6.617
	median 3.010	3.540	2.760	3.325	3.170	3.590	2.660	4.435
<i>StartUp</i>	mean 0.333	0.217	0.364	0.211	0.333	0.222	0.000	0.083
<i>GDP3</i>	mean 0.064	0.070	0.061	0.056	0.069	0.073	0.043	0.073
	median 0.067	0.070	0.066	0.052	0.076	0.084	0.043	0.073
<i>CashBurn</i>	mean 0.163	0.142	0.168	0.153	0.146	0.139	0.330	0.202
	median 0.099	0.104	0.094	0.104	0.106	0.104	0.330	0.162
<i>Nasdaq3</i>	mean 0.110	0.196	0.012	0.070	0.208	0.224	0.010	-0.053
	median 0.106	0.181	0.016	0.040	0.157	0.181	0.010	-0.003
<i>PrestigeIB</i>	mean 0.250	0.623	0.182	0.487	0.250	0.643	1.000	0.750
<i>VC</i>	mean 0.417	0.845	0.273	0.763	0.500	0.860	1.000	0.833
<i>Fees3</i>	mean 3.352	5.349	3.323	4.465	5.952	6.238	5.460	3.535
	median 1.363	5.165	3.325	3.300	6.026	6.436	5.460	3.400
<i>DotName</i>	mean 0.333	0.258	0.273	0.197	0.333	0.276	1.000	0.000
<i>NorthCalif</i>	mean 0.208	0.319	0.273	0.303	0.167	0.319	0.000	0.417
<i>RushToMkt</i>	mean 0.292	0.392	0.182	0.237	0.417	0.414	0.000	0.583
<i>RushToMkt*VC</i>	mean 0.042	0.325	0.000	0.171	0.083	0.348	0.000	0.417

(The table is continued on the next page.)

TABLE 3 (Continued)

Variable	Total (Jan 1996–Dec 2000)				Pre-Audit Bubble (Jan 1996–Dec 1998)		Audit Bubble (Jan 1999–Apr 2000)		Post-Audit Bubble (May 2000–Dec 2000)	
	GC Opinion	Non-GC Opinion	GC Opinion	Non-GC Opinion	GC Opinion	Non-GC Opinion	GC Opinion	Non-GC Opinion	GC Opinion	Non-GC Opinion
	n (50.0%)	16 (50.0%)	8 (53.3%)	7 (46.7%)	8 (50.0%)	8 (50.0%)	8 (50.0%)	8 (50.0%)	0 (0.0%)	1 (100.0%)
<i>Distress</i>	mean 0.810	0.406	0.849	0.523	0.771	0.355	n/a	n/a	0.000	0.000
	median 1.000	0.159	1.000	0.666	1.000	0.140	n/a	n/a	0.000	0.000
<i>Assets</i>	mean 0.890	3.816	1.074	2.308	0.722	5.382	n/a	n/a	1.843	1.843
	median 0.473	1.243	0.825	0.746	0.142	1.244	n/a	n/a	1.843	1.843
<i>Age</i>	mean 3.575	3.424	4.620	3.633	2.530	3.511	n/a	n/a	1.270	1.270
	median 1.940	3.195	2.680	3.610	0.825	3.075	n/a	n/a	1.270	1.270
<i>StartUp</i>	mean 0.813	0.438	0.750	0.571	0.875	0.375	n/a	n/a	0.000	0.000
<i>GDP3</i>	mean 0.067	0.067	0.059	0.056	0.074	0.080	n/a	n/a	0.043	0.043
	median 0.068	0.069	0.057	0.048	0.084	0.084	n/a	n/a	0.043	0.043
<i>CashBurn</i>	mean 0.087	0.092	0.118	0.077	0.056	0.103	n/a	n/a	0.117	0.117
	median 0.040	0.088	0.099	0.088	0.018	0.081	n/a	n/a	0.117	0.117
<i>Nasdaq3</i>	mean 0.130	0.145	0.028	0.084	0.232	0.255	n/a	n/a	-0.301	-0.301
	median 0.114	0.168	0.009	0.046	0.181	0.271	n/a	n/a	-0.301	-0.301
<i>PrestigeIB</i>	mean 0.000	0.000	0.000	0.000	0.000	0.000	n/a	n/a	0.000	0.000
<i>VC</i>	mean 0.063	0.125	0.125	0.000	0.000	0.250	n/a	n/a	0.000	0.000
<i>DotName</i>	mean 0.438	0.500	0.125	0.286	0.750	0.625	n/a	n/a	1.000	1.000
<i>NorthCalif</i>	mean 0.063	0.063	0.125	0.143	0.000	0.000	n/a	n/a	0.000	0.000
<i>RushToMkt</i>	mean 0.438	0.125	0.375	0.143	0.500	0.125	n/a	n/a	0.000	0.000
<i>RushToMkt*VC</i>	mean 0.000	0.063	0.000	0.000	0.000	0.125	n/a	n/a	0.000	0.000

(The table is continued on the next page.)

TABLE 3 (Continued)

Notes:

Observations are 586 stressed (i.e., pre-IPO negative net income; or pre-IPO negative current ratio; or pre-IPO negative stockholders' equity), stand-alone, domestic Internet companies filing to go public as NASDAQ IPOs between March 1, 1996 and December 31, 2000 with audit opinions dates from January 1, 1996 to December 31, 2000. Of these 586 registrants, 554 have Big 5 audit firms and 32 have non-Big 5 audit firms. See Table 1 for more sample information.

Variables are as follows:

- GCOpinion* = One if audit opinion in IPO registration statement expresses substantial doubt about ability to continue as a going concern and zero otherwise
- Distress* = Zmijewski's 1984 index (see Table 3B 40:800 choice-based sample)
- Assets* = Pre-IPO total assets (in \$ millions); for purposes of our multivariate analysis, we use the natural logarithm of *Assets*
- Age* = Number of years from founding or incorporation to IPO filing; for purposes of our multivariate analysis, we use the natural logarithm of one plus *Age*
- StartUp* = One if annualized pre-IPO revenues are less than \$1 million and zero otherwise
- GDP3* = Average growth in gross domestic product for the 3 calendar months prior to the month of the audit opinion in the IPO registration statement
- CashBurn* = ((Annual pre-IPO operating cash flows + annual pre-IPO investing cash flows) ÷ (Pre-IPO liquid assets + expected IPO proceeds)) * (-1)
- Nasdaq3* = Cumulative return for the NASDAQ Composite Index for the 3 calendar months prior to the month of the audit opinion in the registration statement
- PrestigeIB* = One if underwriter has the highest Carter, Dark, and Singh 1998 rank (as Loughran and Ritter 2004 update) and zero otherwise
- VC* = One if the registrant has venture capital backing and zero otherwise
- Feex3* = Cumulative fees pertaining to stressed Internet IPO registrants for which a given Big 5 audit firm has signed opinions during the 3 calendar months prior to the month they sign the opinion for a stressed Internet IPO registrant; because of data limitations, *Feex3* is only for the Big 5 sample

(The table is continued on the next page.)

TABLE 3 (Continued)

<i>DotName</i>	= One if registrant's name contains "dot com", "dot net", or "Internet" and zero otherwise (Cooper, Dimitrov, and Rau 2001)
<i>NorthCalif</i>	= One if auditor's office is within 50 miles of San Francisco, California (i.e., Mountain View, Oakland, Palo Alto, San Francisco, San Jose or Walnut Creek offices) and zero otherwise
<i>RushToMkt</i>	= One if the number of days from audit opinion date to initial IPO registration statement filing date is ten or less and zero otherwise
<i>RushToMkt*VC</i>	= <i>RushToMkt*VC</i>
<i>AuditBubble</i>	= One if date of the audit opinion in the IPO registration statement is between January 1, 1999 and April 30, 2000 and zero otherwise
<i>Big 5</i>	= One if the registrant's auditor is one of the Big 5 firms and zero otherwise

In terms of differences among Big 5 registrants, mean and median *Distress* declines from pre-*AuditBubble* to *AuditBubble* (e.g., for non-GC registrants, average *Distress* goes from 0.302 to 0.288). This is likely due to the increase in venture-backed Big 5 registrants during the bubble, since venture capitalists often infuse pre-IPO companies with cash, which decreases *Distress*. During the pre-bubble period, mean (median) *Distress* for non-GC registrants without venture backing is 0.336 (0.040) versus 0.430 (0.148) for such companies during the bubble.

As for our main proxy for the effect of equity market expectations on auditor decisions, for both pre-bubble and bubble periods the lagged quarterly raw return on the NASDAQ Composite (*Nasdaq3*) is lower for IPOs with GC opinions. In terms of our proxy for “dot-com mania”, as one can discern from panel A of Table 3, *DotName* equals one for 18 of the 87 pre-bubble Big 5 registrants of which 83 percent (15 of 18) have a clean opinion; and equals one for 126 of 454 audit-bubble Big 5 registrants of which 97 percent (122 of 126) have a clean opinion. In addition, stressed Big 5 Internet IPO registrants with GCs are more likely to have an auditor with lower recent fees from auditing such clients (*Fees3*), and less likely to have venture backing, an audit firm from the San Francisco area (*NorthCalif*), and to file their first registration statement within ten days of audit opinion date (*RushToMkt*VC*).²⁴ As for our proxy for pressure on auditors to facilitate a registrant’s “rush to market”, for Big 5 registrants *RushToMkt* equals one for 20 of 87 pre-bubble IPOs of which 90 percent (18 of 20) have clean opinions and for 188 of 454 audit-bubble registrants of which 97 percent (183 of 188) have clean opinions. Lastly, *Nasdaq3*, *Fees3*, and *RTM*VC* are higher, some by orders of magnitude, during the *AuditBubble* than pre-*AuditBubble*.

Table 4 provides correlations, panel A for Big 5 and panel B for non-Big 5. Focusing on panel A, several covariates (*Distress*, $\text{Ln}(\text{Assets})$ and *GDP3*) and variables of interest (*Nasdaq3*, *PrestigeIB*, *VC*, $\text{Ln}(\text{Fees3})$ and *RushToMkt*VC*) vary predictably with a GC opinion.

4. Empirical analysis

GC reporting for stressed Internet IPO registrants

We begin by estimating (1a), (1b), and (1c) separately for registrants with Big 5 and non-Big 5, and then test *AuditBubble*’s coefficient in (1c) for equality between these sets of audit firms. Because GC opinion decisions by a given audit firm are not likely to be independent, we compute robust standard errors that we cluster by audit firm.²⁵

$$GCOpinion_{i,t} = \beta_0 + \beta_1 Distress_{i,t} + \beta_2 \text{Ln}(\text{Assets})_{i,t} + \beta_3 \text{Ln}(\text{Age})_{i,t} + \beta_4 StartUp_{i,t} + \beta_5 GDP3_{i,t} + \varepsilon_{i,t} \quad (1a),$$

$$GCOpinion_{i,t} = \beta_0 + \beta_1 Distress_{i,t} + \beta_2 \text{Ln}(\text{Assets})_{i,t} + \beta_3 \text{Ln}(\text{Age})_{i,t} + \beta_4 StartUp_{i,t} + \beta_5 GDP3_{i,t} + \beta_6 CashBurn_{i,t} + \beta_7 Nasdaq3_{i,t} + \beta_8 PrestigeIB_{i,t} + \beta_9 VC_{i,t} + \varepsilon_{i,t} \quad (1b),$$

$$GCOpinion_{i,t} = \beta_0 + \beta_1 Distress_{i,t} + \beta_2 \text{Ln}(\text{Assets})_{i,t} + \beta_3 \text{Ln}(\text{Age})_{i,t} + \beta_4 StartUp_{i,t} + \beta_5 GDP3_{i,t} + \beta_6 CashBurn_{i,t} + \beta_7 Nasdaq3_{i,t} + \beta_8 PrestigeIB_{i,t} + \beta_9 VC_{i,t} + \beta_{10} AuditBubble_{i,t} + \varepsilon_{i,t} \quad (1c),$$

24. Per panel A of Table 3, *NorthCalif* equals one for: 26 of 87 pre-bubble Big 5 registrants, of which 11.5 percent (3 of 26) have GC opinions; and 143 of 454 *AuditBubble* Big 5 registrants, of which just 1.4 percent (2 of 143) have GC opinions.

25. Our sample contains the following 27 audit firms: Arthur Andersen, Deloitte & Touche, Ernst & Young (E&Y), KPMG, PricewaterhouseCoopers, Coopers & Lybrand (pre-bubble period only), Price Waterhouse (pre-bubble period only), BDO Seidman, Grant Thornton, and 18 different non-national firms (only three of which audit more than one IPO).

TABLE 4
Correlations — Internet IPO sample

Panel A: Big 5 registrants

	<i>GC Opinion</i>	<i>Distress</i>	<i>Ln (Assets)</i>	<i>Ln (Age)</i>	<i>StartUp</i>	<i>GDP3</i>	<i>Cash Burn</i>	<i>Nasdaq3</i>	<i>Prestige IB</i>	<i>VC</i>	<i>Ln (Fees3)</i>	<i>Dot Name</i>	<i>North CA</i>	<i>Rush ToMkt</i>
<i>GCOpinion</i>	1.00													
<i>Distress</i>	0.15 (0.00)	1.00												
<i>Ln(Assets)</i>	-0.39 (0.00)	0.00	1.00											
<i>Ln(Age)</i>	-0.07 (0.12)	-0.01 (0.88)	0.08 (0.06)	1.00										
<i>StartUp</i>	0.06 (0.18)	0.11 (0.01)	-0.32 (0.00)	-0.31 (0.00)	1.00									
<i>GDP3</i>	-0.07 (0.09)	-0.06 (0.19)	0.21 (0.00)	-0.02 (0.61)	-0.01 (0.78)	1.00								
<i>CashBurn</i>	0.03 (0.55)	0.01 (0.84)	0.42 (0.00)	-0.04 (0.31)	-0.18 (0.00)	0.12 (0.00)	1.00							
<i>Nasdaq3</i>	-0.12 (0.00)	-0.08 (0.07)	0.21 (0.00)	-0.03 (0.49)	0.01 (0.72)	0.76 (0.00)	0.01 (0.87)	1.00						
<i>PrestigeIB</i>	-0.16 (0.00)	-0.14 (0.00)	0.26 (0.00)	-0.08 (0.07)	-0.02 (0.59)	0.09 (0.02)	0.19 (0.00)	0.11 (0.01)	1.00					
<i>VC</i>	-0.23 (0.00)	-0.13 (0.00)	0.29 (0.00)	-0.03 (0.46)	-0.12 (0.00)	0.07 (0.12)	0.13 (0.00)	0.14 (0.00)	0.28 (0.00)	1.00				
<i>Ln(Fees3)</i>	-0.14 (0.00)	-0.03 (0.47)	0.08 (0.05)	-0.01 (0.85)	-0.02 (0.70)	0.12 (0.00)	-0.02 (0.60)	0.20 (0.00)	0.17 (0.00)	0.11 (0.01)	1.00			
<i>DotName</i>	0.03 (0.41)	0.05 (0.24)	-0.16 (0.00)	-0.13 (0.00)	0.10 (0.02)	-0.07 (0.12)	-0.07 (0.11)	-0.05 (0.23)	-0.10 (0.02)	-0.22 (0.00)	0.05 (0.27)	1.00		
<i>NorthCalif</i>	-0.05 (0.25)	-0.07 (0.11)	0.15 (0.00)	-0.02 (0.61)	-0.04 (0.31)	-0.04 (0.35)	0.11 (0.01)	-0.01 (0.76)	0.14 (0.00)	0.17 (0.00)	0.02 (0.69)	-0.16 (0.00)	1.00	

(The table is continued on the next page.)

TABLE 4 (Continued)

	<i>GC</i>	<i>Distress</i>	<i>Ln</i> <i>(Assets)</i>	<i>Ln</i> <i>(Age)</i>	<i>StartUp</i>	<i>GDP3</i>	<i>Cash</i> <i>Burn</i>	<i>Nasdaq3</i>	<i>Prestige</i> <i>IB</i>	<i>VC</i>	<i>Ln</i> <i>(Fees3)</i>	<i>Dot</i> <i>Name</i>	<i>North</i> <i>CA</i>	<i>Rush</i> <i>ToMkt</i>
<i>RushToMkt</i>	-0.04 (0.32)	-0.02 (0.59)	0.04 (0.36)	-0.07 (0.12)	-0.02 (0.57)	-0.02 (0.71)	-0.06 (0.12)	0.03 (0.51)	-0.02 (0.67)	-0.05 (0.27)	0.07 (0.09)	0.01 (0.73)	0.04 (0.31)	1.00
<i>RushToMkt*VC</i>	-0.12 (0.00)	-0.08 (0.05)	0.15 (0.00)	-0.05 (0.21)	-0.06 (0.16)	0.01 (0.82)	-0.00 (0.97)	0.07 (0.11)	0.07 (0.09)	0.31 (0.00)	0.11 (0.01)	-0.06 (0.19)	0.09 (0.04)	0.85 (0.00)

Notes:

Observations are the 554 Big 5 Internet IPO registrants. See Tables 1 and 2 for sample information and variable definitions.

Panel B: Non-Big 5 registrants

	<i>GC</i>	<i>Distress</i>	<i>Ln</i> <i>(Assets)</i>	<i>Ln</i> <i>(Age)</i>	<i>StartUp</i>	<i>GDP3</i>	<i>Cash</i> <i>Burn</i>	<i>Nasdaq3</i>	<i>Prestige</i> <i>IB</i>	<i>VC</i>	<i>Dot</i> <i>Name</i>	<i>North</i> <i>CA</i>	<i>Rush</i> <i>ToMkt</i>
<i>GCOpinion</i>	1.00												
<i>Distress</i>	0.47 (0.01)	1.00											
<i>Ln(Assets)</i>	-0.07 (0.72)	-0.20 (0.26)	1.00										
<i>Ln(Age)</i>	-0.09 (0.62)	-0.08 (0.63)	0.12 (0.52)	1.00									
<i>StartUp</i>	0.39 (0.03)	0.37 (0.04)	-0.51 (0.00)	-0.33 (0.07)	1.00								
<i>GDP3</i>	-0.02 (0.90)	0.09 (0.63)	0.07 (0.70)	-0.07 (0.70)	0.11 (0.55)	1.00							
<i>CashBurn</i>	-0.03 (0.88)	0.16 (0.39)	0.19 (0.29)	0.23 (0.21)	-0.35 (0.05)	-0.05 (0.78)	1.00						
<i>Nasdaq3</i>	-0.05 (0.78)	0.08 (0.66)	-0.15 (0.42)	0.01 (0.96)	0.10 (0.57)	0.66 (0.00)	-0.18 (0.33)	1.00					

(The table is continued on the next page.)

TABLE 4 (Continued)

	<i>GC</i>	<i>Distress</i>	<i>Ln</i> <i>(Assets)</i>	<i>Ln</i> <i>(Age)</i>	<i>StartUp</i>	<i>GDP3</i>	<i>Cash</i> <i>Burn</i>	<i>Nasdaq3</i>	<i>Prestige</i> <i>IB</i>	<i>VC</i>	<i>Dot</i> <i>Name</i>	<i>North</i> <i>CA</i>	<i>RushTo</i> <i>Mkt</i>
<i>PrestigeIB</i>	—	—	—	—	—	—	—	—	1.00	—	—	—	—
<i>VC</i>	-0.107 (0.56)	-0.07 (0.68)	0.25 (0.16)	0.10 (0.59)	-0.19 (0.29)	-0.07 (0.69)	0.39 (0.03)	-0.01 (0.96)	—	1.00	—	—	—
<i>DotName</i>	-0.06 (0.73)	-0.23 (0.21)	0.03 (0.87)	-0.02 (0.93)	0.08 (0.66)	0.15 (0.41)	-0.18 (0.33)	0.14 (0.45)	—	-0.09 (0.63)	1.00	—	—
<i>NorthCalif</i>	0.00 (1.00)	-0.03 (0.86)	0.02 (0.90)	0.38 (0.03)	0.20 (0.27)	-0.13 (0.48)	-0.04 (0.82)	-0.27 (0.14)	—	-0.08 (0.65)	0.27 (0.13)	1.00	—
<i>RushToMkt</i>	0.35 (0.05)	0.34 (0.06)	-0.05 (0.80)	-0.20 (0.28)	0.34 (0.06)	0.15 (0.40)	0.15 (0.41)	0.09 (0.64)	—	0.04 (0.84)	-0.03 (0.87)	0.13 (0.49)	1.00
<i>RushToMkt*VC</i>	-0.18 (0.33)	-0.02 (0.93)	0.26 (0.16)	0.17 (0.34)	-0.23 (0.20)	0.22 (0.23)	0.55 (0.00)	0.20 (0.26)	—	0.56 (0.00)	-0.17 (0.36)	-0.05 (0.80)	0.29 (0.11)

Notes:

Observations are the 32 non-Big 5 Internet IPO registrants. See Tables 1 and 2 for additional sample information and variable definitions.

where:

- GCOpinion* = One if audit opinion in IPO registration statement expresses substantial doubt about ability to continue as a going concern and zero otherwise
- Distress* = Zmijewski's (1984) index (see Table 3B 40:800 choice-based sample)
- Ln(Assets)* = Natural logarithm of pre-IPO total assets (in \$ millions)
- Ln(Age)* = Natural logarithm of one plus number of years from founding / incorporation to IPO filing
- StartUp* = One if annualized pre-IPO revenues are less than \$1 million and zero otherwise
- GDP3* = Average Gross Domestic Product growth for the 3 calendar months prior to the month of the audit opinion in the IPO registration statement
- CashBurn* = ((Annual pre-IPO operating cash flows + annual pre-IPO investing cash flows) ÷ (Pre-IPO cash and marketable securities + actual or expected IPO proceeds)) * (-1)
- Nasdaq3* = Cumulative return for the NASDAQ Composite Index for the three calendar months prior to the month of the audit opinion in the IPO registration statement
- PrestigeIB* = One if underwriter has the highest Carter, Dark, and Singh 1998 rank (as Loughran and Ritter 2004 update) and zero otherwise
- VC* = One if the registrant has venture capital backing and zero otherwise
- AuditBubble* = One if date of the audit opinion in the IPO registration statement is between January 1, 1999 and April 30, 2000 and zero otherwise

The first three columns of Table 5 present results of estimating (1a), (1b), and (1c) using the 554 stressed Internet IPO registrants with Big 5 auditors. In terms of variables standard in extant GC studies, the coefficients for *Distress* and *Ln(Age)* are significant in the directions we expect. Column two presents results after specifying additional variables specific to our IPO context. Of these, *CashBurn*, *PrestigeIB*, and *VC* are significant in the directions we expect, and their inclusion doubles the regression's explanatory power.²⁶ Of note, as per column 3 of Table 5, *AuditBubble*'s coefficient is negative and significant with a marginal effect of about 4 percent. Therefore, consistent with the test of difference in proportions in Table 2 panel B, the 2.6 percent rate of GC opinions for Big 5 registrants during the audit-market bubble is significantly less than the 12.0 percent GC rate during the surrounding pre- and post-bubble periods.²⁷

26. We also specify, as an alternative proxy for the influence of equity market conditions, average IPO underpricing for the three calendar months prior to the month the auditor signs the opinion in the IPO registration statement. However, likely due to its collinearity with *Nasdaq3* (Pearson correlation 0.64), this underpricing variable is insignificant and specifying it instead of *Nasdaq3* has no effect on any results we table or inferences we advance.

27. We also estimate the following regression separately for non-bubble and bubble periods (of note, because during the bubble period the correlation between *GDP3* and *Nasdaq3* is 0.83 we exclude these two time-period variables):

$$GCOpinion_{i,t} = \beta_0 + \beta_1 Distress_{i,t} + \beta_2 Ln(Assets)_{i,t} + \beta_3 Ln(Age)_{i,t} + \beta_4 StartUp_{i,t} \\ + \beta_5 CashBurn_{i,t} + \beta_6 PrestigeIB_{i,t} + \beta_7 VC_{i,t} + \varepsilon_{i,t}$$

The pseudo *r*-squared is 27.8 percent for the 100-observation non-bubble regression and 13.9 percent for the 454-observation bubble regression. Upon conducting *t*-tests of equality of coefficient estimates between non-bubble and bubble, we cannot reject a null hypothesis of no difference beyond 10 percent for any variables (the coefficient closest to changing is that for *Distress*, which goes from 0.958 non-bubble to 0.394 bubble — a *t*-statistic for a test of equality of -1.56).

TABLE 5
GC opinions for NASDAQ IPO filings by stressed Big 5 and Non-Big 5 Internet registrants

Variable	E[sign]	Big 5 IPO Registrants			Non-Big 5 IPO Registrants		
		Eq (1a)	Eq (1b)	Eq (1c)	Eq (1a)	Eq (1b)	Eq (1c)
Constant		0.07 (0.07)	-0.23 (-0.18)	0.26 (0.18)	-2.39 (-1.27)	-2.47 (-1.30)	-2.52 (-1.34)
<i>Distress</i>	+	0.63 (13.58)***	0.56 (3.27)***	0.57 (3.10)***	1.35 (1.91)**	1.31 (1.92)**	1.52 (2.37)**
<i>Ln(Assets)</i>	-	-0.08 (-1.43)*	-0.03 (-0.37)	-0.04 (-0.49)	0.11 (0.90)	0.11 (0.84)	0.10 (0.74)
<i>Ln(Age)</i>	-	-0.27 (-4.65)***	-0.27 (-5.04)***	-0.26 (-3.78)***	0.04 (0.11)	0.03 (0.09)	0.19 (0.51)
<i>StartUp</i>	+	-0.04 (-0.21)	-0.02 (-0.08)	-0.04 (-0.16)	1.17 (1.84)**	1.19 (1.69)**	1.18 (1.78)**
<i>GDP3</i>	-	-6.28 (-1.02)	-1.95 (-0.25)	-2.88 (-0.41)	-10.33 (-0.62)	-9.19 (-0.41)	-12.51 (-0.61)
<i>CashBurn</i>	+		0.94 (3.13)***	0.95 (2.64)***		0.54 (0.21)	0.13 (0.05)
<i>Nasdaq3</i>	-		-1.06 (-0.88)	0.02 (0.02)		-0.27 (-0.14)	-2.06 (-0.77)
<i>PrestigeIB</i>	-		-0.42 (-1.78)**	-0.42 (-1.70)**		n/a	n/a
<i>V/C</i>	-		-0.78 (-6.88)***	-0.76 (-6.13)***		-0.32 (-0.37)	-0.43 (-0.48)
<i>AuditBubble</i>	+/-			-0.59 (-2.43)**			0.87 (1.33)
Observations		554	554	554	32	32	32
Pseudo R ²		8.9%	20.9%	23.3%	25.0%	25.3%	28.0%

Notes:

The dependent variable is *GCOpinion* (one if a going-concern opinion in an IPO registration statement and zero otherwise). Probit coefficients with *t*-statistics using standard errors clustered by audit firm in parentheses. See Tables 2 and 3 for sample information and variable definitions. The marginal effect of *AuditBubble*'s coefficient for Big 5 IPO registrants is -0.041 and an asymptotic *t*-test of equality of *AuditBubble*'s coefficient between Big 5 and non-Big 5 registrants is -2.09, significant beyond the 5 percent level, two-tailed.

***, **, * Significant at 1 percent, 5 percent, and 10 percent levels, respectively (one-sided tests where E[sign] is directional).

The next three columns of Table 5 present results of estimating (1a), (1b), and (1c) using the 32 stressed Internet IPO registrants with non-Big 5 auditors. The coefficients for *Distress* and *StartUp* are significant in the directions we expect. In contrast to the Big 5, but consistent with the test of difference in proportions in Table 2, *AuditBubble*'s coefficient is insignificant. An asymptotic *t*-test of equality for *AuditBubble*'s coefficient between the Big 5 and non-Big 5 is -2.09 , significant beyond the 5 percent level (Ben-Akiva and Lerman 1985). Taken together, these results show a significant decrease in Big 5 GC opinions during the Internet IPO audit-market bubble, using both the Big 5 non-bubble and the non-Big 5 as counterfactuals.

Examining the decrease in Big 5 GC opinions during the Internet IPO audit-market bubble

In this section, we conduct tests of auditor-specific determinants that could lead the Big 5 to shift their GC criteria during the Internet IPO audit-market bubble. To do this, we estimate (2), which augments (1c) by replacing *AuditBubble* with the variables we discuss in Section 2: $\text{Ln}(\text{Fees3})$, *DotName*, *NorthCalif*, *RushToMkt* and *RushToMkt*VC*.

$$\begin{aligned} \text{GCOpinion}_{i,t} = & \beta_0 + \beta_1 \text{Distress}_{i,t} + \beta_2 \text{Ln}(\text{Assets})_{i,t} + \beta_3 \text{Ln}(\text{Age})_{i,t} + \beta_4 \text{StartUp}_{i,t} \\ & + \beta_5 \text{GDP3}_{i,t} + \beta_6 \text{CashBurn}_{i,t} + \beta_7 \text{Nasdaq3}_{i,t} + \beta_8 \text{PrestigeIB}_{i,t} + \beta_9 \text{VC}_{i,t} \\ & + \beta_{10} \text{Ln}(\text{Fees3})_{i,t} + \beta_{11} \text{DotName}_{i,t} + \beta_{12} \text{NorthCalif}_{i,t} + \beta_{13} \text{RushToMkt}_{i,t} \\ & + \beta_{14} \text{RushToMkt} * \text{VC}_{i,t} + \varepsilon_{i,t} \quad (2), \end{aligned}$$

where:

- $\text{Ln}(\text{Fees3})$ = Natural logarithm of cumulative fees pertaining to stressed Internet IPO registrants for which a given Big 5 audit firm has signed opinions during the three calendar months prior to the month they sign their opinion for a stressed Internet IPO registrant
- DotName* = One if registrant's name contains "dot com", "dot net", or "Internet" and zero otherwise
- NorthCalif* = One if auditor's office is within 50 miles of San Francisco, California and zero otherwise
- RushToMkt* = One if the number of days from audit opinion date to initial IPO registration statement filing date is ten or less and zero otherwise
- RushToMkt*VC* = *RushToMkt*VC*

For exposition, column 1 of Table 6 repeats column 2 of Table 5. Columns 2 through 5 of Table 6 present results of specifying these variables separately and column 6 presents the results of estimating (2). For all specifications, the signs and magnitudes of covariates common to estimating (1b) do not change. In terms of our variables of interest, the coefficients for *DotName* and *NorthCalif*, while negative, are insignificant.²⁸ These findings do not support inferences of dotcom mania or fear of client loss by the Big 5. In contrast, the coefficients for $\text{Ln}(\text{Fees3})$ and *RushToMkt*VC* are negative and significant. Neither of these findings can be explained by appealing to auditing standards. Rather, the inverse relation between *GCOpinion* and $\text{Ln}(\text{Fees3})$ is consistent with less auditor independence, in that as the recent magnitude of a given Big 5 firm's fees from auditing stressed Internet IPO registrants was increasing that firm became less likely to render a GC opinion.

28. Excluding these variables has no effect on our results (e.g., if we omit *DotName* and *NorthCalif* from (2) in the last column of Table 6, the coefficient on $\text{Ln}(\text{Fees3})$ remains at -0.06 and its *t*-statistic goes from -2.96 to -3.13 and the coefficient on *RushToMkt*VC* remains at -0.61 and its *t*-statistic goes from -2.86 to -2.75).

TABLE 6
GC opinions for NASDAQ IPO filings by stressed Big 5 Internet registrants

Variable	E[sign]	Eq (1b)				Eq (2)
Constant		-0.23 (-0.18)	0.02 (0.01)	-0.25 (-0.21)	-0.28 (-0.23)	-0.15 (-0.10)
<i>Distress</i>	+	0.56 (3.27)***	0.55 (3.27)***	0.56 (3.29)***	0.52 (2.77)***	0.54 (2.68)***
<i>Ln(Assets)</i>	-	-0.03 (-0.37)	-0.03 (-0.42)	-0.03 (-0.37)	-0.02 (-0.26)	-0.02 (-0.26)
<i>Ln(Age)</i>	-	-0.27 (-5.04)***	-0.30 (-4.49)***	-0.27 (-5.02)***	-0.30 (-4.35)***	-0.34 (-3.63)***
<i>StartUp</i>	+	-0.02 (-0.08)	-0.02 (-0.10)	-0.02 (-0.09)	-0.04 (-0.18)	-0.06 (-0.33)
<i>GDP3</i>	-	-1.95 (-0.25)	-1.23 (-0.27)	-1.88 (-0.24)	-1.70 (-0.20)	-1.73 (-0.21)
<i>CashBurn</i>	+	0.94 (3.13)***	0.95 (3.15)***	0.94 (3.09)***	0.83 (2.87)***	0.84 (2.74)***
<i>Nasdaq3</i>	-	-1.06 (-0.88)	-1.00 (-0.82)	-1.07 (-0.91)	-1.04 (-0.86)	-0.76 (-0.62)
<i>PrestigeIB</i>	-	-0.42 (-1.78)**	-0.44 (-1.76)**	-0.42 (-1.83)**	-0.46 (-1.91)**	-0.42 (-1.66)**
<i>VC</i>	-	-0.78 (-6.88)***	-0.83 (-6.24)***	-0.78 (-6.10)***	-0.63 (-3.47)***	-0.67 (-3.53)***
<i>Ln(Fees3)</i>	-	-0.07 (-3.45)***				-0.06 (-2.96)***
<i>DotName</i>	-		-0.22 (-0.86)			-0.20 (-0.69)
<i>NorthCalif</i>	-			-0.05 (-0.24)		-0.04 (-0.18)
<i>RushToMkt</i>	-				-0.02 (-0.11)	-0.01 (-0.07)
<i>RushToMkt*VC</i>	-				-0.61 (-2.64)***	-0.61 (-2.86)***
Observations		554	554	554	554	554
Pseudo R ²		20.9%	21.3%	20.9%	22.4%	23.9%

Notes:

The dependent variable is *GCOpinion* (one if a going-concern opinion in an IPO registration statement and zero otherwise). Probit coefficients, with *t*-statistics using standard errors clustered by audit firm in parentheses. See Tables 2 and 3 for sample and variable information.

***, **, * Significant at 1 percent, 5 percent, and 10 percent levels, respectively (one-sided tests where E[sign] is directional).

The inverse relation between *GCOpinion* and *RushToMkt*VC* is consistent with auditors yielding to pressure from venture capitalists to ensure that the companies they are rushing to market have clean audit opinions.^{29,30}

Endogeneity of the going-public decision

Because owners and managers likely condition their decision to file to go public in part on the type of audit opinion they receive, and auditors likely make their decision to render a GC opinion conditional in part on owners' or managers' plans to try to go public, the endogeneity of the going-public decision is a concern. As a consequence, it is hard to look at the empirical relation between the abrupt change to euphoric audit-market conditions that took place in January 1999 for stressed Internet IPO registrants and the presence of a Big 5 GC opinions and draw strong casual inferences. From an econometric perspective, our findings may be subject to a selection problem because our sample is censored since it contains only companies that nonrandomly file to go public. Such a sample can bias estimates if the decision to try to go public is correlated with errors in the GC regressions because the conditional expectation of the error term is not zero and parameter estimates are not consistent (Heckman 1979).

Although we emphasize that our analysis is conditional on the population of stressed Internet companies that attempt to go public, and do not extend our inferences to the population of all Internet companies, ideally we would obtain data for all private Internet companies and estimate first-stage (file-to-go-public) and second-stage (going-concern) regressions with adjustment for sample selection. However, because of issues with data availability (Pagano, Panetta, and Zingales 1998), we cannot estimate the first-stage regression. Nevertheless, because the impact of censoring depends on the sample selection rule, the issue distills to whether there are motivations for going public that plausibly correlate with the auditor's going-concern decision. As Brau and Fawcett (2006) summarize, the finance literature posits four primary motivations for going public: to minimize the cost of capital, to facilitate takeover activity, to serve strategic motives, and to allow insiders to "cash out". Among these, the last reason may pertain to the GC decision and have an association with our findings. If a stressed Internet company files to go public to facilitate a venture capitalist investors' exit strategy, then the sharp decrease in the frequency of Big 5 GC opinions starting in January 1999 could be endogenous with the client's going-public decision.³¹

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29. It is possible that the relation between a GC opinion and the *RushToMkt*VC* variable runs in the other direction in that a "clean" opinion may lead to a shorter lag between audit opinion date and SEC filing date. For two reasons, the likelihood the causality runs in this direction is low: one, the coefficient for *RushToMkt*VC* of -0.61 for the full sample of 554 Big 5 registrants in the Table 6, column 6 regression decreases to -0.86 for the subsample of 454 Big 5 registrants during the 16-month audit-market bubble; and two, during the Big 5 audit market bubble, the GC rate between Internet IPO registrants with a filing lag of 10 days or fewer and those with a filing lag of more than 10 days is very similar, at 2.7 percent (5 of 188) and 2.6 percent (7 of 266), respectively. Moreover, as we discuss in footnote 22, when we specify an additional covariate for audit lag (i.e., the number of days from fiscal year end to audit opinion date), the *t*-statistic on *RushToMkt*VC* in column 6 of Table 6 goes from -2.86 to -3.37 .
30. Our results are robust to specifying cutoffs of 5 days (which, because not a single registrant with venture backing and a filing lag less than 5 days has a GC opinion, is the minimum value we can specify and estimate the regression parameter) and 15 days (e.g., for 15 days, the coefficient on *RushToMkt* goes from -0.01 (*t*-statistic -0.07) to 0.09 (*t*-statistic of 0.27) and on *RushToMkt*VC* goes from -0.61 (*t*-statistic of -2.86) to -0.85 (*t*-statistic -3.08)).
31. From pre-bubble to bubble, the increase is 1300 percent for stressed Internet IPO Big 5 registrants *with* venture backing (1.7 per month for 1996–1998, of which 4.9 percent have GCs, to 24.1 per month for January 1999 to April 2000, of which 1.6 percent have GCs) versus 500 percent for stressed Internet IPO registrants *without* venture backing (0.7 per month for 1996–1998, of which 30.8 percent have GCs, to 4.3 per month for January 1999 to April 2000, of which 8.8 percent have GCs).

To examine this, we partition the Big 5 sample into subsamples by whether the registrant has venture capital backing and estimate (3) for each of these two sub-samples:

$$\begin{aligned}
 GCOpinion_{i,t} = & \beta_0 + \beta_1 Distress_{i,t} + \beta_2 \ln(Assets)_{i,t} + \beta_3 \ln(Age)_{i,t} + \beta_4 StartUp_{i,t} \\
 & + \beta_5 GDP3_{i,t} + \beta_6 CashBurn_{i,t} + \beta_7 Nasdaq3_{i,t} + \beta_8 PrestigeIB_{i,t} \\
 & + \beta_9 \ln(Fees3)_{i,t} + \beta_{10} DotName_{i,t} + \beta_{11} NorthCalif_{i,t} \\
 & + \beta_{12} RushToMkt_{i,t} + \varepsilon_{i,t} \quad (3).
 \end{aligned}$$

Table 7 presents the results (for exposition, the first column repeats the last column of Table 6). $\ln(Fees3)$'s coefficient derives its sign and significance from IPO registrants without venture backing and *Distress* and *PrestigeIB* (and *RushToMkt*) derive theirs from registrants with venture backing. Though insignificant in the full sample, *NorthCalif*'s coefficient is positive (negative) for registrants without (with) venture backing. One interpretation, consistent with our argument in section 2, is because of the high concentration of Internet companies *with* venture backing in this region and the familiarity auditors likely have with their business models the costs of changing auditors are lower. Alternatively, if auditors view stressed Internet registrants in northern California *without* the backing of venture capital firms as portending higher failure risk, then a higher frequency of GC opinions is consistent with auditor risk assessment.

TABLE 7

GC opinions for NASDAQ IPO filings by stressed Big 5 Internet registrants by venture capital (VC) backing

Variable	E[sign]	Eq (2)	Without VC backing Eq (3)	With VC backing Eq (3)
Constant		-0.15 (-0.10)	0.42 (0.17)	-2.84 (-2.60)***
<i>Distress</i>	+	0.54 (2.68)***	0.26 (0.67)	1.16 (3.14)***
$\ln(Assets)$	-	-0.02 (-0.26)	-0.15 (-1.16)	0.16 (2.08)
$\ln(Age)$	-	-0.34 (-3.63)***	-0.31 (-1.61)*	-0.33 (-2.19)**
<i>StartUp</i>	+	-0.06 (-0.33)	-0.19 (-0.66)	0.11 (0.36)
<i>GDP3</i>	-	-1.73 (-0.21)	16.10 (1.28)	-24.87 (-2.79)***
<i>CashBurn</i>	+	0.84 (2.74)***	2.22 (1.79)**	1.23 (3.22)***
<i>Nasdaq3</i>	-	-0.76 (-0.62)	-2.74 (-1.66)**	2.17 (2.53)
<i>PrestigeIB</i>	-	-0.42 (-1.66)**	0.01 (0.08)	-0.78 (-2.95)***
<i>VC</i>	-	-0.67 (-3.53)***	n/a	n/a
$\ln(Fees3)$	-	-0.06 (-2.96)***	-0.16 (-4.32)***	0.03 (0.34)
<i>DotName</i>	-	-0.20 (-0.69)	0.20 (0.58)	-0.54 (-0.98)
<i>NorthCalif</i>	-	-0.04 (-0.18)	0.79 (2.99)***	-0.44 (-1.73)**
<i>RushToMkt</i>	-	-0.01 (-0.07)	0.11 (0.35)	-0.68 (-7.55)***
<i>RushToMkt*VC</i>	-	-0.61 (-2.86)***	n/a	n/a
Observations		554	96	458
Pseudo R^2		23.9%	20.6%	28.8%

Notes:

The dependent variable is *GCOpinion* (one if a going-concern opinion in an IPO registration statement and zero otherwise). Probit coefficients, with *t*-statistics using robust standard errors that we cluster by audit firm in parentheses. See Tables 2 and 3 for sample and variable information.

***, **, * Significant at 1 percent, 5 percent, and 10 percent levels, respectively (one-sided tests where E[sign] is directional).

Benefits and costs associated with the decline in Big 5 GC opinions

In terms of benefits to auditors, as the results of estimating (2) in Table 6 show, we document a negative relation between the presence of a Big 5 GC opinion and the cumulative fees a given firm recently receives from auditing stressed Internet IPO registrants. Moreover, because they average \$358 thousand per IPO, or a total of about \$200 million, these fees seem economically important. It also may have been the case that expectations of future fees influence auditor GC decisions during the bubble, though this is difficult to test or otherwise assess.³²

In terms of costs to investors, we examine the association between a pre-IPO Big 5 GC audit opinion and post-IPO negative delistings.^{33,34} As panel A of Table 8 shows, for all ex post horizons, the predictive content of a pre-IPO Big 5 GC opinion declines from pre-*AuditBubble* to *AuditBubble* (e.g., whereas 26.7 percent of pre-*AuditBubble* IPOs that delist within four years had a GC opinion in their registration statement, this percentage drops to 9.5 percent for *AuditBubble* IPOs).

To conduct an ex ante test, we use the Big 5's GC decisions during the pre-bubble as a benchmark to assess their decisions during the bubble. To do this, we estimate (1b) using the 87 pre-bubble Big 5 registrants and use the coefficients to specify the variable $E(GCOpinion)$ for the 454 bubble Big 5 registrants. We then sort $E(GCOpinion)$ by decile. Panel B of Table 8 shows: the actual GC decisions for these 454 Big 5 bubble registrants and the 300 (of these 454) that went public within one year of initial filing; for these 300 IPOs, how many delist from CRSP for negative reasons within two, three, and four years of their IPO date; and how many of those IPOs that delist had a GC opinion in their registration statement.

In terms of predictive accuracy, the model fits reasonably well as eight of the twelve Big 5 GC opinions during the audit-market bubble reside in the top two deciles of $E(GCOpinion)$. In addition, consistent with the negative coefficient for *AuditBubble* in column three of Table 5, average $E(GCOpinion)$ exceeds average $GCOpinion$, 4.0 percent versus 2.6 percent, respectively. Lastly, while Andersen's bubble registrants have the highest average $E(GCOpinion)$ of 7.8 percent, their average $GCOpinion$ is 2.2 percent. No other firm exhibits a disparity of this direction and magnitude.³⁵ One explanation for this is that Andersen experiences the largest percentage increase, from pre-bubble to bubble, of stressed Internet IPO registrants of any Big 5 firm (see panel C Table 2).

Of the 300 of these 454 Big 5 audit-bubble registrants that went public within a year of initial IPO filing, 35 (11.7 percent), 57 (19.0 percent) and 74 (24.7 percent) delist off CRSP for negative reasons within two, three, and four years of their IPO date, respectively.³⁶ Of these delistings, for each post-IPO horizon, only about one in ten has a GC opinion in their IPO registration statement.

32. Amazon.com is among the most prominent companies in our stressed Internet IPO sample. The accounting fees and expenses to E&Y for the Amazon.com IPO, as per their May 14, 1997 S-1/A, were \$150,000. Subsequent to this, for the eight years from 2000 to 2007, E&Y received in excess of \$20 million in audit fees from Amazon.com.

33. Following Beatty 1993 and Schultz 1993, we use CRSP codes 550–572 and 574–585 to classify IPOs that delist for negative reasons. Of these codes, the most common are: 552, Delisted by current exchange — price fell below acceptable level; 574, Delisted by current exchange — bankruptcy, declared insolvent; and 584, Delisted by current exchange — does not meet exchange's financial guidelines for continued listing.

34. We emphasize that we are not able to directly measure costs to investors but rather are suggesting that there could be consequences to investors from underreporting of GC opinions for IPOs that subsequently delist.

35. Of the 23 Big 5 registrants in the top 5 percent of $E(GCOpinion)$, Andersen audited 10 (none of these 10 had a GC opinion).

36. These delisting rates accord with those in Goldfarb et al. 2007.

TABLE 8
Post-IPO negative delistings and pre-IPO Big 5 GC opinions

Panel A: Post-IPO delistings with a GC Opinion in the IPO registration statement							
Pre-AuditBubble IPOs (81 IPOs of 87 registrants)							
			Delist within 1 year of IPO	Delist within 2 years of IPO	Delist within 3 years of IPO	Delist within 4 years of IPO	
<i>GCOpinion</i> in IPO registration statement	Yes		1 (100.0%)	3 (60.0%)	3 (25.0%)	4 (26.7%)	
	No		0 (0.0%)	2 (40.0%)	9 (75.0%)	11 (73.3%)	
AuditBubble IPOs (300 IPOs of 454 registrants)							
			Delist within 1 year of IPO	Delist within 2 years of IPO	Delist within 3 years of IPO	Delist within 4 years of IPO	
<i>GCOpinion</i> in IPO registration statement	Yes		0 (0.0%)	3 (8.6%)	6 (10.5%)	7 (9.5%)	
	No		1 (100.0%)	32 (91.4%)	51 (89.5%)	67 (90.5%)	
Panel B: Big 5 registrants in Internet audit-market bubble by pre-bubble expected GC							
Decile	PreBubble <i>E(GCOpinion)</i>	Big 5	Bubble IPO filings with a GC Opinion	Bubble IPO issues with a GC Opinion	Delist with a GC Opinion within		
					2 years of IPO date	3 years of IPO date	4 years of IPO date
10th	32.7%		8.9% (4 of 45)	12.1% (4 of 33)	2 of 8	3 of 13	4 of 17
9th	5.3%		8.7% (4 of 46)	8.3% (3 of 36)	1 of 2	3 of 4	3 of 8
8th	1.5%		2.2% (1 of 45)	0.0% (0 of 32)	0 of 2	0 of 6	0 of 7
7th	0.5%		0.0% (0 of 46)	0.0% (0 of 32)	0 of 2	0 of 3	0 of 4
6th	0.2%		0.0% (0 of 45)	0.0% (0 of 31)	0 of 7	0 of 7	0 of 8
5th	0.1%		2.2% (1 of 45)	0.0% (0 of 32)	0 of 8	0 of 9	0 of 9
4th	0.0%		2.2% (1 of 45)	3.2% (1 of 31)	0 of 1	0 of 3	0 of 4
3rd	0.0%		0.0% (0 of 46)	0.0% (0 of 30)	0 of 2	0 of 5	0 of 7
2nd	0.0%		0.0% (0 of 45)	0.0% (0 of 25)	0 of 1	0 of 1	0 of 2
1st	0.0%		2.2% (1 of 46)	5.6% (1 of 18)	0 of 2	0 of 6	0 of 8
Total	7.8%	AA	2.2% (2 of 89)	1.7% (1 of 60)	0 of 7	1 of 13	1 of 17
	1.9%	D&T	3.1% (1 of 32)	5.0% (1 of 20)	0 of 4	0 of 5	1 of 6
	2.7%	E&Y	1.8% (2 of 112)	1.4% (1 of 69)	1 of 4	1 of 9	1 of 14
	2.4%	KPMG	1.6% (1 of 64)	0.0% (0 of 44)	0 of 6	0 of 9	0 of 12
	3.9%	PwC	3.8% (6 of 157)	5.6% (6 of 107)	2 of 14	4 of 21	4 of 25
	4.0%		2.6% (12 of 454)	3.0% (9 of 300)	3 of 35	6 of 57	7 of 74

Notes:

Observations are 87 (454) stressed, stand-alone, domestic Internet companies filing to go public on NASDAQ with Big 5 opinion dates January 1996 to December 1998 (January 1999 to April 2000) (see Table 2). Of these 87 (454) registrants, 81 (300) went public within one year of initial SEC filing; and, of these 81 IPOs, 1, 5, 12, and 15 (300 IPOs, 1, 35, 57, and 74) delist from CRSP for negative reasons (delisting codes 550–572 and 574–584) within one, two, three, and four years of IPO date, respectively. PreBubble *E(GCOpinion)* is the probability of a GC opinion using coefficients from estimating (1b) using the 87 pre-audit-market bubble Big 5 IPO registrants.

Among IPO registrants in the highest decile of *E(GCOpinion)*, the actual GC rate is 8.9 percent versus an expectation of 32.7 percent. Of the 33 (of 45) registrants in this 10th decile that actually went public within a year of their first registration statement, over half of which delisted for negative reasons within four years of IPO (i.e., 17 of 33), all those with a GC in their initial filing delisted for negative reasons within four years of IPO date. It therefore appears that had the Big 5 kept opining on stressed Internet IPO registrants during the bubble as during the pre-bubble, a higher fraction of the registrants in this decile would have audit opinions providing an early warning to investors. We emphasize though, that because this early-warning enhancement is less apparent at earlier post-IPO stages, we do not assert violations of professional audit standards. Having said this, though, we also emphasize that an IPO can delist only if it goes public in the first place and, because the Internet bubble burst so abruptly, approximately one-third of stressed Internet IPO registrants with clean opinions never went public (e.g., 12 of the 45 registrants in the 10th decile) and could not pose negative consequences to outside investors.

5. Conclusion

We study auditor GC opinion decisions around the time of the wave of stressed Internet companies filing to go public on NASDAQ. We find that from January 1999 to April 2000, a time of very high volume of stressed Internet companies filing to go public, the Big 5 became less likely to render GC opinions. Upon conducting tests for determinants that could lead auditors to shift their GC decision criteria during this euphoric market, we find the presence of a GC opinion varies with variables that proxy for both economic reasons (“mitigating factors”) and for less independence and skepticism by the Big 5. It is important to emphasize that, while we report some evidence of costs to investors associated with the decrease in Big 5 GC opinions during the bubble, we do not assert reporting inaccuracies in terms of violations of audit standards or whether a GC opinion should or should not have been issued. Overall, though, while we do not suggest the Big 5 were a major cause of the Internet IPO bubble, it does seem these largest audit firms did little to slow it from inflating.³⁷ Because of the potential for future bubbles, our findings may be of interest to audit regulators and standard setters.

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37. For example, had the rate of Big 5 GCs not decreased, auditors may have helped rational arbitrageurs abate the mispricing by synchronizing their exit strategies (Abreu and Brunnermeier 2003; Griffin, Harris, Shu, and Topaloglu 2011).

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