What Do Auditors' Opinions Tell Us about Long-Term Macroeconomic Activity?

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Abstract

This paper proposes and validates the macro-audit hypothesis, an equilibrium theory of a relationship between a form of default intensities | the aggregate frequency of going concern opinions | and the macroeconomy, where auditors' access to private information across rms (through exposure to accounting data across their client rms) provides superior information about long-term economic risk and growth. More speci cally, motivated by economic framework that builds on features of rms' audit processes and the corporate sector's role in the macroeconomy, we posit and show that going concern opinions from rms' nancial reports provide useful information not only about the likelihood and severity of rm default but also about long-term macroeconomic activity. We also show that key capital markets players do not fully incorporate predictive information embedded in going concern opinions. Overall, this paper is the rst to shed light on the link between audit information in rm-level nancial reports and the macroeconomy.

Keywords: *Disaster; Default Risk; Going Concern Opinions; Macro-Finance; Forecasting*

JEL Classi cation: *E1; E3; E17; M4; M49; N1*

1 Introduction

This paper examines the link between going concern opinions (GCOs) and long-term macroeconomic activity. Expectations regarding long-term macroeconomic activity{the salient measure of a nation's ability to advance its material living standard{a ect major decisions of rms, households, investors, and policymakers. For example, these expectations a ect rms' investment and operating decisions, householders' real estate decisions, long-term investors' decisions focusing on minimizing short-term volatility e ects on investment returns, the Congressional Budget O ce's public expenditures decisions, and the Fed's monetary policy (e.g., Yellen 2009; Bernanke 2011). Explaining or predicting long-term economic activity has thus been a major focus of decades of research in nancial economics (e.g., Fama 1981; Harvey 1989; Ang et al. 2005) and classic economics (e.g., Kuznets 1955, 1973), often manifested in Nobel Prizes in Economic Sciences (e.g., Kuznets in 1971; Solow in 1987; Sargent and Sims in 2011). Even a slight improvement in understanding long-term economic activity is of interest to researchers and decision makers.

Unlike short-term economic uctuations, which are a ected by temporary factors, extrinsic random variables, trends, and cyclical movements, long-term economic growth is driven by economic fundamentals such as technological and preference changes (e.g., Romer 1986; Woodford 1987; Romer 1994; Collard 1996; Beaudry and Portier 2014). As a result, long-term economic activity is substantially less noisy and volatile than short-term economic activity, highlighting the importance of long-term analysis. While predicting long-term macroeconomic activity is critical to a wide range of economic agents, related research nds that even the forecast accuracy of quarterly macro forecasts falls at horizons beyond one quarter (e.g., Zarnowitz and Braun 1993). Indeed, the Federal Reserve System's existence stems from the government's focus on long-term rather than short-term economic goals, and the Bureau of Economic Analysis (BEA), which measures economic activity in the U.S., has also distinguished the two since its establishment (e.g., BEA 1973).[1]

Whether an audit variable could predict long-term macroeconomic activity over the foreseeable future is of academic signi cance for research in nance, economics, accounting, and management. In particular, long-term economic growth, measured by Gross Domestic Product (GDP) growth

[1] Speci cally, the Federal Reserve Act of 1913, Section 2A states: \The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to promote e ectively the goals of maximum employment, stable prices, and moderate long-term interest rates."

over decades (10 to 40 years), is characterized by a straight line with a slope of about 2-3 percent per year and some imperceptible wiggles around this trend, apart from a dip representing the Great Depression. Even the recent U.S. economic crisis only reflects a marginal quiver around this trend. Therefore, predicting the tiny fluctuations around this trend{especially over future one-two years{is difficult and of high interest to a wide range of economic agents including long-term investors and policy makers such as the Fed. This is in contrast to predicting the decades-long trend in GDP growth, which is relatively straightforward (for related research see, e.g., Romer 1990; Aghion and Howitt 1992; Levine and Renelt 1992). Therefore, research contributions are often related to predicting fluctuations such as over future one-two years around this decades-long trend; as we do in this paper.

Nevertheless, decades of research in finance, economics, and related fields have largely evolved as if information in a firm financial statements were too granular to be informative about the macroeconomy. But drawing on a firm's investment, operating, and financing activities, an audit report provides a rich and forward looking set of information; and even substantially more than specific line items such as earnings. The idea that audit opinions, when aggregated across firms, possibly have the potential to provide macroeconomic inputs, inspires us to probe their predictive ability for the prospects of the macroeconomy. Moreover, if an audit variable can help predict macro fluctuations, such evidence will highlight a fresh role of firm-level financial statement information for macroeconomy. In this paper, we take the first initiative to hypothesize and investigate the informativeness of audit opinions for predicting long-term economic activity, as proxied by long-term GDP growth{the most widely used measure of economic activity (e.g., Henderson et al. 2012).

The first question we address is whether GCOs embed predictive content about long-term economic activity. We propose the macro-audit hypothesis, a theory of a relationship between the aggregate frequency of going concern opinions and the macroeconomy, where auditors' access to private information across firms (through exposure to accounting data across their client firms) provides superior information about long-term economic risk and growth. We hypothesize that aggregating information contained in audit opinions{the final output of the audit process{across firms in the economy can be informative about future long-term economic prospects.

From a theoretical economic perspective, why would audit opinions provide information about the future state of the economy? Further, if auditors simply use available macro forecasts when

evaluating their client firms' financial results, how could audit opinions provide an orthogonal signal to the set of available information? The answers to these questions are rooted in the audit process and the role of the corporate sector in the macroeconomy. Specifically, a GCO reflects an auditor's updated assessment of a firm's risk and its ability to continue operating as a going concern over the foreseeable future. When deciding about GCOs, auditors are exposed to private information about the future performance and risks of all of their client firms, often from different sectors of the economy. Indeed, prior research suggests that auditors gain private information across their clients through knowledge spillover within the same audit firm (e.g., Reichelt and Wang 2010). Prior research further suggests that auditors make use of proprietary private information during their audit. For example, Cahan et al. (2008) indicate that auditors benchmark a client's financial statement against their other clients, including auditors' direct knowledge about their own clients (e.g., Kwon 1996) and/or indirect knowledge obtained through the network of other partners in the firms of these auditors (e.g., Fontarine et al. 2013). Fontarine et al. (2013) also suggest that such networks contain information about clients from different and similar industries, located across various geographical areas.

To illustrate how firms' audit processes can generate valuable information about the future state of the economy, suppose that during the audit period an auditor observes, for example, drops in sales and in the collection of accounts receivable across many of her client firms. Such negative patterns across an auditor's client firms are likely to affect the auditor's assessment, resulting in increased likelihood to issue GCOs and especially for client firms severely affected by the deteriorating performance. While this example focuses on one auditor and two accounts (sales and allowance for uncollectible accounts), the economy comprises of multiple auditors and firms, where each firm's audit is based on multiple estimates across several accounts. Therefore, aggregating audit opinions across firms condenses a summary of the private information that auditors collectively hold regarding the aggregate future performance and risk of firms in the economy.

We conjecture that this aggregation of GCOs provides an informative signal about future economic activity because it represents the collective knowledge of a large number of economic agents who reveal in their mandatory reports to the Securities and Exchange Commission (SEC) their credible information about the long-term \going concern" prospect for the macroeconomy. Indeed, prior research suggests that auditors communicate incremental and private information

about their client rms (e.g., Chen et al. 2015), indicating that aggregate GCOs can provide private information that auditors hold regarding economic activity. Further, the aggregate performance of rms comprises the macroeconomy; by de nition of the national accounting. In particular, aggregate corporate performance in the National Income and Product Accounts (NIPA), as measured by the BEA, is a component of GDP that is likely to be correlated with other components of GDP, as well as a leading driver of economic activity (e.g., Fischer and Merton 1984; BEA 2004). Another reason that the aggregation of GCOs can provide an informative macroeconomic signal is that Generally Accepted Auditing Standards (GAAS), Generally Accepted Accounting Principles (GAAP), and the SEC advise auditors to consider all conditions and events when evaluating a rm's going concern status. Such conditions and events can be linked to the macroeconomy.[2] Notably, although the foreseeable future usually relates to going concern issues within the future one year, prior research suggests that GCOs can also deliver information about performance and risks{e.g., investment activities, delistings, and corporate performance success or failure{that extend beyond the one-year-ahead horizon (e.g., Kennedy and Shaw 1997; Willenborg and McKeown 2000). Therefore, in our empirical analysis we operationalize our prediction that aggregate GCOs can project into the long-term economic activity using horizons of one and two future years.

Together, these observations point to a theoretical link between GCOs and future long-term macroeconomic activity. However, auditors may not consider the e ects of the macroeconomy on a rm's outlook, as doing so is not mandated. Further, they may not accurately assess long-term economic activity.[3] These considerations suggest that audit opinions may have no macro information content. Our empirical analysis is designed to address this tension.

To address our rst question of whether GCOs embed long-term macro predictive content, we employ Audit Analytics to obtain a sample of audit opinions of all SEC registrants, which represents

[2]For example, GAAS rule AU 341.06 advises auditors to consider all conditions and events, including negative trends, and to actively seek and assess evidence pertinent to rms' going concern status (American Institute of Certi ed Public Accountants, AICPA 1981, 1988). Long-term economic activity can be part of such evidence. Similarly, the Public Company Accounting Oversight Board (PCAOB) advises auditors to consider general economic activity when making risk assessments, in particular when making going concern assessments (PCAOB 2011). Also, future macro conditions a ect both the likelihood that a rm will encounter events and conditions that trigger going concern matters (e.g., a decline in product demand/price) and the rm's ability to mitigate such di culties.

[3]Indeed, there are no clear guidelines indicating under what conditions auditors should have \substantial doubts" about a rm's ability to continue as a going concern. This results in auditor discretion and errors in issuing GCOs. Prior studies report that 80-90 percent of GCO rms do not go bankrupt whereas 40-50 percent of failed rms had

the U.S. economy and provides a powerful setting for our GCO-macroeconomy analysis. Our sample is consistent with that used in prior research, where about 80-90 percent of GCO rms survive and GCOs cannot be perfectly predicted, indicating that GCO rms are not the same as bankrupt rms and that GCOs embed valuable incremental information rather than simply con rming known information (e.g., Geiger et al. 2005; DeFond and Zhang 2014; Chen et al. 2015).

We then conduct three analyses. The rst analysis examines the long-term macro predictive content of GCOs by testing the link between GCOs and future GDP growth. We nd that GCOs are signi cantly negatively related to future GDP growth over horizons of one and two years, indicating that GCOs embed informative content about future long-term economic activity. Our second analysis separately examines di erent classes of GCOs. Auditors justify their going concern decisions with a variety of reasons (e.g., negative trends; internal and external matters), and we conjecture that GCOs related to negative trends will be strongly linked to long-term economic activity because of the systematic interaction between rms encountering negative trends and the negative macro trend derived from the e ect of corporate pro ts on GDP (e.g., Fischer and Merton 1984). Consistent with our conjecture, we nd that the predictive content of GCOs for long-term economic activity is especially strong for GCOs related to negative trends. Our third analysis examines whether the macro-predictive content of GCOs is incremental to other variables possibly associated with economic activity including current GDP growth, term spreads, Treasury yields, stock market returns, earnings growth, macro expectations, and aggregate distress risk. We nd that the strong performance of GCOs as a leading indicator of long-term macroeconomic activity is incremental to these variables. We also nd that this link is economically signi cant.

The second question we address is about the implications of our ndings for a key group of forecasters{professional macro forecasters. Given our evidence that GCOs embed incremental predictive content about future economic activity, macro forecasters are likely to bene t from incorporating the information contained in audit opinions. However, it is unclear ex ante whether macro forecasters incorporate GCO information into their long-term forecasts. To address this question, we construct measures of forecast errors using forecasters' projections conditioned on the availability of audit opinions prior to the forecast issuance, and then test for a link between current-period GCOs and future forecast errors. We obtain macro forecasts from the Survey of Professional Forecasters (SPF) available from the Federal Reserve Bank of Philadelphia. We

nd predictable forecast errors for economic activity using audit opinions information available for forecasting, indicating that macro forecasters do not fully incorporate GCO information into their forecasts. In an additional analysis, we investigate the informativeness of GCOs for the real, in ation-adjusted, economy over the long run. We nd that the macro predictive content of GCOs stems from their ability to predict the real economy rather than in ation.

Viewed as a whole, this paper probes the link between going concern information, aggregated across rms, and macroeconomic activity{a link that has been ignored since the formation of research in nance, economics, and related elds. This work is the rst to posit and document that the collective information embedded in rms' audit opinions provide predictive information about long-term economic activity{a central measure in research and for key decision-making. Given the importance of gauging the state of the macroeconomy and the substantial volatility embedded in short-run macro uctuations, such as over the next quarter, even a slight improvement in macro predictability represents an advancement of research on the usefulness of nancial information that has overwhelmingly focused on the rm level.

This paper contributes to a number of research veins in nance, economics, and accounting. It contributes to research on overall economic activity and the information re ected from rms' nancial reports by identifying a link between aggregate going concern opinions and subsequent real and nominal GDP growth up to two-years ahead. It also contributes to capital markets research in nancial economics because the future state of the economy has substantial e ects on rms' future cash ows and risk, and thus the predictive content of aggregate GCOs for future GDP growth is relevant for stock and bond valuation. It further contributes to macro forecasting by showing that professional macro forecasters can improve long-term GDP growth projections by incorporating audit opinions data from rms' nancial statements in a cost-e ective way. At a minimum, the evidence suggests that audit opinions are correlated with information incrementally useful for understanding long-term economic activity. As the rst to identify new, macro-related information in audit opinions from rms' nancial reports, this paper also contributes to a long line of nancial economics research, theoretical and empirical, on the information re ected from audit processes including from the opinions and values of going concern matters.[4] It also contributes

[4]E.g., Firth (1980); James (1991); Kofman and Lawarree (1993); Aldreson and Betker (1995); Khalil and Lawarree (1995); Berger et al. (1996); Stromberg (2000); Barzuza and Smith (2014).

to the growing research on Macro-Accounting (e.g., Shivakumar 2007; Konchitchki 2011, 2013, 2016; Kothari and Lester 2012; Konchitchki and Patatoukas 2014a, 2014b, 2016; Curtis et al. 2015; Konchitchki et al. 2016).

Indeed, by identifying macro predictive content in a previously unexplored construct from the corporate sector{audit opinions{this paper provides a fresh starting point for research that draws inferences about macroeconomic activity using audit information from rms' nancial reports. Whereas research in nancial economics and accounting often focuses on rms' nancial information at the rm level and using earnings, we highlight a new source of nancial statement information. Di erent from earnings, GCOs not only focus on the long run but also are a ected by a substantially larger set of information. Further, earnings-based questions are usually short-term focused, as any possible e ects of earnings shocks on macro variables depend on a variety of additional factors. In addition, this paper has practical implications for a wide range of decision makers interested in measuring and predicting macroeconomic activity, and should be of interest to investors, regulators, households, and standard setters. Relatedly, we identify an important group of nancial information users interested in assessing long-term economic activity, including the Fed, the White House, and professional macro forecasters. This group is often overlooked by standard setters and regulators (e.g., SEC) as users of accounting information in rms' nancial statements.

The paper proceeds as follows. Section 2 discusses background, research design, and predictions. Section 3 describes our data, timeline, and sample statistics. Section 4 reports the evidence. Section 5 concludes.

2 Background and analyses

2.1 Background

The Security Act of 1933 and The Investment Company Act of 1940 mandate annual audits of nancial statements for all rms that issue securities. Under GAAP, the continuation of a reporting entity as a going concern is presumed as the basis for preparing nancial statements. As part of the audit process, auditors are guided to assess a rm's long-term viability to continue as a going concern over the foreseeable future. For each reporting period, the auditor is responsible for assessing a rm's going-concern status based on all relevant conditions and events (e.g., AU 341

of AICPA 1988; Hahn 2011). Accordingly, a GCO reveals an auditor's updated assessment of a rm's ability to continue as a going concern for the foreseeable future as of the date of the nancial statements being audited.

Accordingly, GCOs, by their nature, are structured to focus on the long term. For example, nancial reporting rules guide auditors to consider all conditions and events when assessing whether there are substantial doubts about a rm's ability to continue as a going concern (e.g., AU 341.06, AICPA 1988). AICPA and PCAOB similarly guide auditors to actively seek and assess evidence that is pertinent to rms' going concern status in the aggregate and to attend to general conditions when making going concern risk assessments (AICPA 1981, 1988; Mutchler et al. 1997; AICPA 2009; PCAOB 2010, 2011). Auditors can further consider long-term conditions when evaluating managers' estimates of the e ect of the long-term economic outlook on, for instance, allowances for bad debts, loan losses, and lease losses, or when assessing a rm's going concern risk and management plans to address going concern matters.

Notably, although the foreseeable future usually relates to going concern issues within the future one year, prior research suggests that GCOs can also deliver information about performance and risks{e.g., investment activities, delistings, and corporate performance success or failure{that extend beyond the one-year-ahead horizon (e.g., Kennedy and Shaw 1997; Willenborg and McKeown 2000). Therefore, in our empirical analysis we operationalize our prediction that aggregate GCOs can project into the long-term economic activity using horizons of one and two future years.

2.2 Analyses of the predictive content of going concern opinions for long-term economic activity

Our rst analysis tests the link between GCOs and future long-term economic activity using the following equations:

$$LTGDP_{q\,!\,L} = \ _L + \ _L GCO_q + \ ''_L \tag{1}$$

$$LTGDP_{q\,!\,L} = \ _L + \ _L GCO_q + \ _L LTGDP_q + \ ''_L \tag{2}$$

where $LTGDP_{q\,!\,L}$ is future long-tern GDP growth (starting three months after the current calendar quarter q to allow availability of all annual audit opinions with scal year-end months within

calendar quarter *q*

class for future long-term economic activity:

$$LTGDP_{q\,!\,L} = \ _L + \ _L GCO_q^{CLASS} + \ "_L \tag{3}$$

$$LTGDP_{q\,!\,L} = \ _L + \ _L GCO_q^{CLASS} + \ _L LTGDP_q + \ "_L \tag{4}$$

where GCO_q^{CLASS} is one of the following going concern classes: negative trends GCO_q^{NG}, nancial di culties GCO_q^{FIN}, internal and external matters GCO_q^{MT}, extreme distress GCO_q^{DIST}, or start-ups GCO_q^{STUP}. We measure these classes in a similar manner to GCO_q, that is, as the ratio of all GCOs in a class using annual reports for calendar quarter q relative to all audit opinions in that quarter. For a forecast horizon L, a signi cantly negative (insigni cant) $_L$ suggests that the speci c going concern class is informative (uninformative) about future long-term GDP growth.

Our third analysis evaluates whether possible macro predictive content in GCOs, if there is any, is incremental to other variables. Speci cally, we use a state-of-the-art macro prediction model to test whether our baseline analysis of the possible macro-informativeness of GCOs is incremental to other variables potentially associated with economic activity. Accordingly, we estimate the following equation by adding additional controls to Equation (2):

$$\begin{aligned} LTGDP_{q\,!\,L} = \ & _L + \ _L GCO_q + \ _L LTGDP_q + \ _L SPREAD_q \\ & + \ _L YIELD_q + \ '_L RET_q + \ _L EG_q \\ & + \ \$_L EDF_q + \ "_L \end{aligned} \tag{5}$$

Equation (5) includes two types of additional control variables that we measure three months after the end of the current quarter q to ensure the availability of data prior to the beginning of the period over which we calculate future long-term GDP growth. First, we include variables that have been discussed in prior research as potentially related to the macroeconomy (e.g., Fama 1981; Harvey 1989; Ang et al. 2005). These variables are as follows: $SPREAD_q$, the yield di erence between the

nancing or to dispose of substantial assets; internal matters, including work stoppages or other labor di culties, dependence on the success of particular projects, uneconomic long-term commitments, and the need to signi cantly revise operations; and external matters, including legal proceedings, legislation, or similar matters that might jeopardize an entity's ability to operate, loss of key franchises, licenses or patents, loss of principal customers or suppliers, and uninsured or underinsured catastrophes such as droughts, earthquakes, or oods. We generate a detailed appendix table, available from the authors upon request and untabulated for brevity, that includes comprehensive information about the going concern classes and several examples for each class from nancial statements of rms in our sample.

ten-year Treasury bond and the one-year Treasury bill with constant maturities; $YIELD_q$, the yield on the one-year Treasury bill with constant maturity; and RET_q, the three-month buy-and-hold stock market return. Although earnings are backward looking and often focus on short-term prospects, we also include aggregate quarterly earnings growth, EG_q, to control for possible information in earnings.[8] Second, we include an aggregate distress risk measure as a control for the possibility that macro content in GCOs, if any, is incremental to distress risk. We use the ranking of the aggregate level of the expected default frequency (EDF) calculated following Merton (1974), EDF_q, where a higher value indicates higher aggregate distress risk.[9] These controls construct a comprehensive and non-noisy collection of possible explanatory variables of long-term GDP growth.

2.3 Implications for macroeconomic forecasts

Even if audit opinions are informative about macroeconomic activity, it is ex ante unclear whether professional macro forecasters incorporate this information into their long-term GDP forecasts for two reasons. First, given that there is no prior evidence that GCOs can be useful for forecasting long-term economic activity, macro forecasters may be unaware of this signal of future economic activity. Second, macro forecasters may perceive a rm's GCO information as too noisy or granular to draw reliable inferences about overall economic activity. Accordingly, it is an empirical question whether macro forecasters fully incorporate aggregate audit opinions into their long-term GDP projections. If they do not (do) fully incorporate relevant auditing data into their projections, then future long-term GDP growth forecast errors will (will not) be related to current-period GCOs. We

[8] We calculate EG following Konchitchki and Patatoukas (2014a). In particular, rst we obtain year-over-year changes in a rm's quarterly net income (Compustat: NIQ) scaled by sales (Compustat: SALEQ). We then aggregate time series of earnings growth using value-weighted cross-sectional averages with weights based on the market capitalization at the beginning of each quarter. We obtain quarterly earnings and sales data from the Compustat Fundamental Quarterly File on WRDS.

[9] Two points regarding this analysis. First, we employ alternative measures to proxy for distress risk, and we also conduct additional analyses that adding other variables as controls; these additional tests are discussed in Section 4.4. Second, we calculate EDF in the manner of Hillegeist et al. (2004), Bharath and Shumway (2008), and Campbell et al. (2008) by solving a system of two nonlinear equations. More speci cally, we follow the exact steps described in the appendix of Campbell et al. (2008, pages 2935{2937).

test this prediction using the following equation:

$$FE\_GDP_{q\,!\,L} = {}_0 + {}_1GCO_q + {}_2LTGDP_q + {}_3SPREAD_q + {}_4YIELD_q + {}_5EG_q + {}_6RET_q + {}_7EDF_q + "_L \quad (6)$$

where $FE\_GDP_{q\,!\,L}$ refers to $FE\_GDP1_{q\,!\,L}$ and $FE\_GDP2_{q\,!\,L}$, de ned as the realization of future annual GDP growth L-year ahead minus the corresponding median or mean GDP growth consensus forecasts, respectively.

We use the SPF as our expectation of future economic activity. The SPF is a publicly available quarterly survey of macroeconomic forecasts that is widely used in macroeconomics research (e.g., Zarnowitz and Braun 1993; Sims 2002; Ang et al. 2005) and practice (e.g., the SPF consensus forecasts of GDP growth are used by the White House when developing the U.S. Federal Budget and by the Board of Governors of the Federal Reserve when preparing the \Greenbook" before each Federal Open Market Committee meeting). The SPF consensus forecast captures all of the observable and unobservable inputs that professional macro forecasters use to form their macroeconomic projections. Regarding the loss function of the macroeconomic forecasters, we note that SPF panelists have incentives to provide accurate forecasts because their reputation with the Fed is at stake. Further, they report to the survey the same forecasts that they sell on the market (e.g., Baghestani and Kianian 1993).

This analysis focuses on the one-year-ahead horizon, i.e., $L = 1$. GCO_q in Equation (6) refers to either GCO_q or GCO_q^{NG}, as previously de ned. We also consider the negative-trend class of GCOs, GCO_q^{NG}, because it is likely to contain more highly relevant and reliable information for predicting future long-term economic activity than other going concern classes. In addition, as we explain in detail in the data/timeline section, our macro forecast errors employ the most recent Fed's consensus forecasts issued prior to the point in time at which we begin the calculation of future GDP growth. This research design ensures that GCO_q is available for macro forecasters when making their forecasts. In predicting macro forecast errors, we include in Equation (6) the same set of controls as in Equation (5). Also, because the GCO measures are expected to be most informative when they are either relatively high or low, we employ the subsample of the top and

bottom quintiles of GCO_q or GCO_q^{NG} to enhance the power of the statistical tests. We re-estimate the models in this analysis after constructing subsamples using the entire sample as well as the top and bottom terciles or deciles of GCO_q or GCO_q^{NG}. Our inferences are similar to those reported in the text.

If professional macro forecasters underreact (overreact) to the macro predictive content of GCOs, $_1$ will be signi cantly negative (positive); otherwise, $_1$ will be insigni cant. For example, high frequency of GCOs, which indicates a deteriorating macro prospects, will manifest in a higher reduction in actual future GDP growth than that incorporated in macro forecasts if professional macro forecasters underreact to the macro predictive content of GCOs, resulting in a signi cantly negative $_1$.

2.4 Going concern opinions and the real economy

We examine whether GCOs are informative for the real, in ation-adjusted economy, and the associated in ation e ects. Speci cally, it is possible that any predictive content of GCOs for long-term economic activity is attributable to that of audit opinions for future in ation. Our analysis sheds new light on whether the link between auditors' opinions and future economic activity stems from in ation or real-economic e ects.

In ation has been relatively low and highly stable over our sample period, making nominal and real economic activities move in lockstep during our sample period. Therefore, we predict that the possible informative content of GCOs for future long-term economic activity is driven by its predictability for the real economy. Indeed, we nd statistically signi cant correlations of 0.935 (Spearman) and 0.960 (Pearson) between real and nominal GDP growth over our sample period, indicating an almost perfect correlation between real and nominal economic activity and supporting our prediction. To execute our analysis, we use future long-term real GDP growth as the dependent variable in the following equation, which is the real counterpart of Equation (5):

$$\begin{aligned} LTGDPR_{q\,!\,L} = {} & {}_L + {}_L GCO_q + {}_L LTGDPR_q + {}_L SPREAD_q \\ & + {}_L YIELD_q + '_L RET_q + {}_L EG_q \\ & + \$_L EDF_q + "_L \end{aligned} \tag{7}$$

where $LTGDPR_{q\,!\,L}$ is future long-term real economic activity measured as subsequent real GDP growth, starting three months after the current calendar quarter q to allow for the availability of all annual audit opinions with fiscal year-end months that fall within calendar quarter q; horizons are one-two years ahead, thus $L = \{1; 2\}$; and $LTGDPR_q$ is contemporaneous real economic activity, measured as long-term real GDP growth over the past year. The other variables are the same as in Equation (5).

3 Data

We extract all of our data from public sources. To facilitate replication, we provide the precise variable names and datasets for the variables used throughout the paper.

3.1 Audit opinions

Audit opinions data

We obtain audit opinions from the Audit Analytics dataset, Audit and Compliance{Audit Opinions File. This dataset tracks audit opinions disclosed since 2000 for all SEC registrants required to have their financial statements audited and filed with the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. Our sample represents the U.S. economy because Audit Analytics includes all firms required to have their financial statements audited by the 1933 Security Act and the 1940 Investment Company Act.

We measure GCOs for all firms in a calendar quarter q, GCO_q, as the ratio of the total number of GCOs (Audit Analytics: `GOING_CONCERN`) issued to all firms to the total number of audit opinions issued in the same quarter for all firms whose fiscal-year-end falls in that calendar quarter. For a firm-quarter to be included in our sample, we require at least one non-missing audit opinion for the calendar quarter that corresponds to the firm's fiscal-year end. We construct the aggregate quarterly time series of GCO_q using 234,771 audit opinion data available in Audit Analytics over our sample period. In addition, Audit Analytics identifies and codes in its Data Dictionary{Audit Opinion File 49 matters that can lead an auditor to issue a GCO. AU 341.06 classifies conditions and events that lead to GCOs into the following classes: negative trends, financial difficulties, internal matters, and external matters. We combine internal matters and external matters into one class because they all relate to

operational matters and their occurrence is relatively low. We also add classes of extreme distress and start-up stage, due to their importance and distinctive nature. A firm-year could receive a GCO for one or more going concern classes. In sum, we use the following going concern classes to classify all of the Audit Analytics going concern matters (Audit Analytics: GOING_CONCERN_ISSUE_KEY_LIST and GOING_CONCERN_ISSUE_PHRASE_LIST): negative trends, financial difficulties, internal and external matters, extreme distress, and start-ups.[10]

Our research design utilizes the fact that Audit Analytics provides audit opinions for all SEC registrants. In particular, the going concern decision is dichotomous{yes (i.e., a GCO) or no (i.e., a non-GCO){and does not disclose the expected probability that a firm will fail to continue as a going concern. This treatment masks considerable variability across firms regarding the probabilities associated with GCOs. For example, listed firms on average are larger and more stable than non-listed firms, and are often more likely to continue as going concerns. Therefore, a sample that combines all firms not only allows us to represent the entire economy, but it also enables us to increase the cross-sectional variance and therefore the informativeness of GCOs and the statistical power of our tests.[11]

Our sample employs GDP growth until the beginning of 2015, with quarterly observations of GCOs starting in Q1:2000 and ending in Q4:2013 because these are the respective first and last quarter for which audit opinions data in Audit Analytics can be matched to at least one-year ahead GDP growth required for our analyses (see timeline in Figure 1). In terms of the number of time-series quarters available for the analyses, our sample employs 56 and 52 quarterly observations when we respectively use as the dependent variable long-term GDP growth over one and two years ahead.

[10] We also externally validate the accuracy of Audit Analytics' GCO data. First, among the 40,070 GCOs in our dataset, only one observation (ZS Pharma Inc. 12/31/2013) does not identify the going concern matter; we check the going concern paragraph in the audit report of this firm's 10-K and find that the firm received a GCO because it was in the development stage and had operating losses since inception. Second, we validate the coding of GCOs by randomly selecting 100 audit reports coded by Audit Analytics as GCOs and find that all of our randomly selected GCO observations are coded consistently with AU 341.

[11] Indeed, we investigate the variability embedded in GCOs of listed versus non-listed firms. We find that the time-series variability of non-listed firms is higher than that of listed firms over our sample period, consistent with increased informativeness using the more comprehensive Audit Analytics sample. We note that, stemming from our motivation, we focus on the predictive content of GCOs of all firms in the economy (listed and non-listed). Further, the audits of these two groups of firms are performed according to the same auditing standard (AU 341 of AICPA 1988), and the going concern issues in audits are reported by auditors following the same guideline (AU 508 of AICPA 1989).

A better understanding of our audit opinions data: are GCO rms simply bankrupt rms?

Firms receiving GCOs do not necessarily face impending bankruptcies. The vast majority of GCO rms, around 90 percent, do not le for bankruptcy during the year subsequent to the issuance of a GCO (e.g., Geiger et al. 2005; DeFond and Zhang 2014). Although some GCO rms are more likely to le for bankruptcy in the initial year after receiving the opinion, this risk declines sharply in subsequent years (Louwers et al. 1999; Geiger et al. 2005). To investigate the GCO-bankruptcy link in our sample, we randomly select 100 GCO observations and nd that 99 observations remain viable and receive clean, non-GCOs in subsequent years, consistent with prior research and highlighting that GCO rms are not bankrupt rms. To shed more light on the link between GCOs and bankruptcies, we conduct a rm-level correlation analysis using EDF derived from Merton (1974) to proxy for bankruptcy risk. The information content of EDF can be either orthogonal or similar to that of an audit opinion, and correlation analysis examines their overlap. We nd that the correlations between EDF and an indicator for whether an observation is a GCO or not are economically insigni cant (Pearson = 0.017, Spearman = 0.010), indicating that GCOs capture information distinct from bankruptcy, as further examined below.

GCOs embed timely, relevant, and private information rather than simply con rming known information, such as that captured by distress risk measures (e.g., DeFond and Zhang 2014). A GCO also cannot be perfectly predicted by variables in the public domain identi ed to be GCO determinants, whose explanatory power for GCOs is 30 to 40 percent (e.g., DeFond et al. 2002; Li 2009). The reason is that GCOs communicate auditors' private information about their clients' nancial health including evidence that is both contrary to the rm's continuation as a going concern (such as debt default) and can mitigate failure (such as nancing sources). Such private information is valuable and carries incremental information content, not simply information that is redundant to and predictable by publicly available information. Further, a GCO is a ected by auditors' characteristics and related litigation, regulation, and market environments (e.g., Carcello and Palmrose 1994; Carcello et al. 1995; Geiger et al. 2005). Indeed, studies on market reactions to GCOs document that a GCO results in a negative market reaction, which attenuates the market reaction to bankruptcy, reduces earnings-response coe cients, shifts valuation focus from income to

liabilities, and increases the likelihood of delisting (e.g., DeFond and Zhang 2014).[12]

3.2 Long-term GDP growth

We obtain time-series data of GDP growth with annual realizations at quarterly frequencies from the Economic Data (FRED) website of the Federal Reserve Bank of Saint Louis.[13] We calculate time *t* long-term GDP growth over the current and future one-two years as the respective growth from time *t* over the current and subsequent one and two years. We employ long-term GDP data in both nominal and real terms in all of the analyses. We begin our analyses using nominal GDP data because financial statements are not adjusted for inflation and because nominal economic activity measures attract high attention from the media and investors.[14] We then use real GDP data to investigate the implications of our findings for the real economy over the long run.

[12] We comment on the relation between GCOs and management's going-concern-related disclosures. In particular, managers often choose to disclose information regarding firms' prospects in the Management Discussion & Analysis (MDA) section of financial statements. Unlike the mandated auditors' GCOs, such disclosure is at the management's discretion; managers are not required to evaluate their firm's going concern status over our sample period. However, U.S. auditing standards and federal security laws require an auditor to (a) assess whether there is substantial doubt about a firm's ability to continue as a going concern and (b) determine the need for and the extent of management's going concern disclosures in MDA and financial statement footnotes (AU 341 of AICPA 1988; Venuti 2004). Therefore, it is not surprising that previous studies document that when an auditor issues a GCO, the firm's management discusses going concern uncertainties in its MDA 58 percent of the time, whereas when an auditor does not issue a GCO, the firm's management discusses going concern uncertainties in its MDA only about 0.2 percent of the time. Hence, a GCO almost perfectly subsumes a management's discussion of going concern uncertainties in the MDA. In general, a GCO includes three pieces of information about a firm's ability to continue as a going concern: 1) the auditor's conclusion of substantial doubt about a firm's ability to continue as a going concern; 2) the conditions or events that raised the substantial going concern doubt; and 3) a management's mitigation plan (AU 341). Therefore, a GCO contains not only the auditor's analysis of the firm's situation, but also almost all of the information disclosed by management about the firm's ability to continue as a going concern.

[13] Specifically, we download from FRED data files for seasonally-adjusted annual nominal and real GDP growth data based on billions of chained 2009 dollars; the variables are, respectively, GDP and GDPC1. The online addresses are https://research.stlouisfed.org/fred2/series/GDP and https://research.stlouisfed.org/fred2/series/GDPC1.

[14] For example, a monetary policy targeting nominal GDP growth that keeps nominal income on a smooth path has been discussed by economists for decades (e.g., Hayek 1935; McCallum 1985; Hall and Mankiw 1994; Bernanke and Mishkin 1997). A focus on nominal GDP growth has the advantage of putting weight on output as well as prices (e.g., Bernanke and Mishkin 1997). Capital market groups also advocate nominal GDP, especially in adverse economic conditions indicating that when recessions hit, real outputs fall but prices tend to adjust more slowly, thus focusing on nominal GDP helps smooth output fluctuations (e.g., "The case for a nominal GDP level target," Goldman Sachs Global ECS Research 2011). See also, e.g., "The man who occupied the Fed: how Charles Evans saved the recovery," The Atlantic 2012; "What is NGDP?" Wall Street Journal 2011. As an empirical matter, we repeat all analyses using real GDP growth and find similar inferences relative to those using nominal GDP growth, as reported below in tabulated and untabulated analyses.

3.3 Macro forecasts

We use long-term macro forecasts from the SPF available from the Federal Reserve Bank of Philadelphia. We first obtain files for the median and the mean macro forecasters' consensus projections of GDP levels in nominal and real terms predicted for the future five quarters. Then, we calculate the SPF consensus forecast for the future annual GDP growth at quarter q starting from quarter $q + 1$ as the forecasted GDP level for the future quarter $q + 5$ minus that for the future quarter $q + 1$, deflated by that for the future quarter $q + 1$. This method follows the Fed's GDP growth calculation. We calculate the median (mean) macro forecast errors of long-term GDP growth in quarter $q + 1$ as the actual GDP growth for the year starting at that quarter minus the corresponding-period SPF median (mean) consensus forecast for annual GDP growth calculated as of quarter q.

The timeline for our SPF macro forecast error analysis carefully attends to the timing of the Philadelphia's Fed. Specifically, as described in Federal Reserve (2011), the timing of the SPF is based on the release of the BEA's advance report on the National Income and Product Accounts (NIPA). This report is released at the end of the first month of each calendar quarter and contains the first (i.e., advance) GDP growth realization for the previous quarter. The survey questionnaires that collect these data are sent to macro forecasters by the end of the first month of each quarter. Responses are due in the middle of the second month of each quarter. To ensure a fair test of possible information content in GCOs that is incremental to that in macro forecasts, we employ the most recent SPF forecast prior to the beginning of the period over which future GDP growth is calculated. Further, to ensure that GCO information can feasibly be available to macro forecasters when they form their forecasts, we lead the forecast-making period of SPF forecasts by one quarter after constructing the GCO variable.

3.4 Control variables

We obtain yields on Treasury bills and Treasury bonds from the Federal Reserve Board's H15 Report. We obtain stock market returns from the CRSP Monthly Index File. We measure yields at the end of the first month after a quarter ends. We use the value-weighted CRSP index (including distributions) to proxy for the stock market return, measured over the three months leading to the

one month after a quarter ends. We also include aggregate quarterly earnings growth, *EG*, as a control to test the incremental content of GCOs beyond that embedded in earnings, if any. We also calculate the ranking of the aggregate level of quarter-end EDF following Merton (1974), EDF_q, to capture aggregate distress risk.

3.5 Timeline

We align audit opioimes with economic activity and control data to avoid possible look-ahead bias and to ensure real-time data availability of audit opioimes. Speci cally, we rst construct GCO_q for each quarter using the audit opioions for all rms with scal-year-end months falling within the calendar quarter; then, for every quarter we calculate the frequency of GCOs relative to all audit opioimes in the quarter. Next, we focus on future economic activity by allowing three months after the end of the calendar quarter for which we calculate GCO_q. Figure ?? provides timeline details for the quarter ending in September 2009 as an example. To construct GCO_q for this period, we use audit opioimes for rms with scal-year-end months falling within Q3:2009. GCOq is the ratio of all GCOs for that period relative to all audit opioimes during this same period. The subscript *q* on a variable indicates the variable is related to the most recently available GCO_q. In our analysis of these variables, we do the following: (a) measure GCO_q using audit opioimes for the scal-year-end months falling within the calendar quarter Q3:2009, which ends in September 2009; (b) measure future economic activity beginning in January 2010, to allow availability of audit opioimes for Q3:2009; (c) we gauge the past economic activity, which is used as a control variable, from the end of Q2:2009 to allow for the lag in the o cial publication of GDP data, as we use the timeline described on the BEA's website and in Federal Reserve (2011); and (d) to ensure data availability to calculate other control variables for future economic activity, we measure them based on the most recent information available as of the end of Q4:2009.[15]

[15] An audit process may consider future economic activity over months until the audit is completed. Theoretically, using these months without waiting three months in our measurement until the audit process nishes could enhance our ability to predict economic activity. However, we choose to be conservative in our research design to allow time for audit processes to end, ensuring that all audit opioimes are available for calculating GCO prior to our predictime tests. We repeat our predictime tests by calculating long-term GDP growth beginning one to three months after the calendar-quarter end, with inferences unchanged.

3.6 Descriptive statistics

Table 1 shows the distribution of the ve classes of going concern matters in our sample by calendar year and by calendar quarter. Each going concern opinion is backed up by at least one going concern class. Among all these classes, the negative trend class is the highest (15.55 percent of all audit opinions), indicating that it is the major reason for GCOs. The nancial di culty class ranking is the second major reason (8.14 percent of all audit opinions). The negative trend class in a quarter is also the highest, 15.76 percent.

Table 2 reports the distribution of audit opinions and GCOs over time. Panels A, B, and C present their distribution by calendar year, calendar quarter, and calendar month, respectively. Panel A indicates that the average number of audit opinions issued for all rms is 16,769, with the highest number in 2000 (20,524), and the lowest in 2013 (14,372). On average, 17.15 percent of audit opinions every year are GCOs. There is an increase in GCOs in the 2008-2009 economic crisis period, which is a preliminary indication that GCOs capture negative trends in the economy.[16] Panel B shows that there are the most audit opinions in the fourth calendar quarter (148,785) and the least in the rst calendar quarter (26,944). Panel C reports that audit opinions are reported every month throughout the entire year, with a spike in December; this is consistent with a December scal-year end for many rms. The table also indicates that our sample statistics are consistent with those reported by Audit Analytics (2014; see also Hahn 2011).[17]

4 Empirical results

4.1 Predictive content in going concern opinions for long-term economic activity

growth over all forecast horizons. These results are also economically signi cant. For example, a one standard deviation increase in GCOs, which is 0.035, is associated with a 155.40 basis points

Analysis 3. Incremental long-term macro predictive content in going concern opinions

Table 6 reports results of our analysis examining the incremental predictive content of GCOs for future long-term GDP growth following Equation (5). Panels A and B focus on the one- and two-years-ahead horizons, respectively.

Panel A reveals interesting findings and provides new insights to extant research in accounting and financial economics. Specifically, columns 1 through 3 show that the estimated coefficients on the previously identified, well-known macro indicators for the subsequent year, *SPREAD*, *YIELD*, and *RET* are all significant and in the direction consistent with prior research (e.g., Fama 1981; Harvey 1989; Ang et al. 2005). For example, our finding regarding *RET* is consistent with Fama (1981) who identifies the predictive content embedded in stock market returns for one-year-ahead GDP growth. Column 4 shows results when *SPREAD*, *YIELD*, and *RET* are added with current GDP growth, and column 5 reveals that *GCO* is informative for predicting future GDP growth over the one-year ahead incremental to current GDP growth, term spreads, yields, and stock market returns. Column 6 focuses on the long-term macro predictive content of aggregate earnings growth, *EG*, when added as a single predictor. This column indicates the insignificance of *EG* for future long-term economic activity (*t*-statistic = 1.18). This result is consistent with our expectation given that, while there is a direct theoretical link between earnings and *short-term* economic activity, there is not such a direct link between earnings and *long-term* economic activity. Our findings also are in line with Konchitchki and Patatoukas (2014a) who find a macro effect of earnings only over the short run, quickly dissipating and entirely eliminated within three quarters, consistent with the backward-looking nature of earnings.[18] In contrast, GCOs are forward-looking and deliver long-term predictive information. Column 7 adds all control variables together.

Column 8 includes our variable of interest together with all the control variables. It shows that *GCO* is significantly negative even when added with all control variables (*t*-statistic = -2.49). Together, given the high consistency of our findings with those in prior research, this evidence provides comfort in our analysis. Panel A also provides new insight to the literature by demonstrating the incremental information content embedded in GCOs for predicting long-term macroeconomic activity. In addition, two points worth noting on Table 6, Panel B. First, GCO remains significantly

[18] In additional analysis we confirm the short-term predictability of EG using one-quarter-ahead GDP growth, in both nominal and real terms.

negatively related to long-term GDP growth after adding all control variables, across all models and future horizons. Second, we do not have predictions for the control variables over the two-years-ahead horizon because (a) prior studies either focus on the short-term only (less than one year; i.e., with respect to *EG*) or on the one-year-ahead horizon (e.g., with respect to *SPREAD*, *YIELD*, and *RET*), as well as (b) there is no prior research on the long-term macro predictive content of aggregate distress risk (*EDF*), which we construct for investigating the distress risk effect given that our setting focuses on going concern cases.

The informativeness of GCOs is also economically significant across all models. For example, after controlling for variables possibly related to economic activity, a one standard deviation increase in *GCO* (0.035) is associated with a remarkable decrease of 65.10 to 122.85 bps across all models. We also note that the results after adding *EDF* as a control for the possibility that *GCO* captures dimensions of distress risk, are consistent with our inferences: *GCO* continues to be significantly negatively linked to long-term GDP growth across all models, further highlighting the incremental macro information content of GCOs. Finally, the table shows that *EDF* is insignificantly associated with one-year-ahead and significantly positively related to two-years-ahead GDP growth. This finding is interesting and consistent with documented patterns in business cycle fluctuations, where macroeconomic expansions often occur a few years after periods with high frequency of defaults.

Overall, the evidence in Table 6 shows that GCOs provide incremental information content for long-term macroeconomic activity. Taken together, findings from the three analyses in this section can be summarized as follows: (a) GCOs are significantly negatively related to long-term GDP growth over future horizons of one and two years, indicating that GCOs embed informative content about future long-term economic growth; (b) the long-term predictive content of GCOs is especially strong for GCOs related to negative trends; and (c) the strong performance of GCOs as a leading indicator of long-term macroeconomic activity is incremental to other variables that are possibly related to economic activity.

4.2 Implications for macroeconomic forecasts

Table 7 reports results from estimating the regression models of future annual GDP growth forecast errors on GCOs following Equation (6). Our findings reveal that GCO_q and the negative-trend GCOs, GCO_q^{NG}, are significantly negatively related to the median and mean future GDP

growth forecast errors, $FE1\_GDP_q$ and $FE2\_GDP_q$. Specifically, in the model using $FE1\_GDP_q$ as the dependent variable, the estimated coefficients for GCO_q and GCO_q^{NG} are significantly negative (*t*-statistics of -2.50 and -2.11, respectively); in the model using $FE2\_GDP_q$ as the dependent variable, the estimated coefficients for GCO_q and GCO_q^{NG} are also significantly negative (*t*-statistics of -2.41 and -2.06, respectively). The table also shows that this predictability is incremental to the inclusion of control variables. Overall, the findings reveal that professional macro forecasters do not fully incorporate the macro predictive content in GCOs. This underreaction to available information with macro predictive content on part of forecasters is consistent with the fact that this paper is the first to identify going concerns as an incrementally informative leading indicator of macroeconomic activity.

4.3 Going concern opinions and the real economy

Table 8 reports results from estimating regression models following Equation (7). The table reveals that GCOs are significantly negatively linked to future real GDP growth across all models. This link is also economically significant; for example, after controlling for variables possibly associated with economic activity, a one standard deviation increase in *GCO* (0.035) is associated with a respective decrease of 60.55 to 96.95 bps in the one- and two-years-ahead real GDP growth. The evidence thus indicates that the predictive content of GCOs for future macroeconomic activity is not driven by these opinions' ability to predict future inflation. Therefore, the macro predictive content of GCOs pertains to the real, i.e., inflation-adjusted, economic activity over the long run.

4.4 Additional analyses

In addition to the sensitivity tests that we report throughout the paper, we conduct several additional analyses. In particular, similar to our analysis in Table 8, we first re-estimate all of the models in this paper using long-term real GDP growth. Second, we include additional control variables in Tables 5 and 7.

That is, we examine whether possible macroeconomic content in GCOs is incremental to measures of distress risk other than the distance to default measure based on the structural default model of Merton (1974). More specifically we add the following alternative aggregate distress risk measures. One alternative measure is the periodic frequency of quarterly stock returns lower than -10 percent

(using the CRSP Monthly Stock File). The second measure is the negative one times Altman's (1968) Z-score, aggregated periodically across all firms using value-weighted average based on lagged market capitalization, whose higher value indicates higher aggregate distress risk. The third alternative measure is calculated by first estimating a firm-level distress risk through the implementation of a reduced-form econometric model to predict corporate bankruptcies and failures, closely following Campbell et al. (2008; see their "best model," model 2, table III, page 2910), and then each period aggregating firm-level distress risk observations across all firms using value-weighted average based on lagged market capitalization. The merit of this measure is that financial accounting variables are shown to be incrementally useful in predicting defaults (e.g., Campbell et al. 2008); thus the frequency of GCOs may be reflecting this otherwise publicly available information.

Third, we repeat our analyses throughout the paper after deleting observations from the recent crisis, where we identify the crisis period using National Bureau of Economic Research (NBER) data available through `http://www.nber.org/cycles.html`. Fourth, we repeat all regression models throughout after including an indicator variable that is equal to one for observations during (a) the recent recession as classified by NBER, (b) year 2007 only, or (c) year 2008 only; and is equal to zero otherwise. We include this variable in each of the regression models as an intercept and as an interaction variable with the applicable GCO variable in the model.

Findings from all these additional analyses, untabulated for brevity, reveal unchanged inferences regarding the strong predictive ability of GCOs for future long-term GDP growth.

5 Conclusion

We conduct the first interdisciplinary analysis examining the link between the state of the macroeconomy and aggregate audit information across firms' financial statements. We identify going concern opinions as a setting in which firms' financial information can deliver long-term prospects, and probe the information content embedded in such opinions for macroeconomic activity. Specifically, we hypothesize and document that going concern opinions embed predictive information about long-term economic activity over future horizons of one and two years. We also document that this predictability is especially strong for going concern opinions associated with negative trend matters, and that the predictive content embedded in going concerns is incremental to other

variables including current GDP growth, term spreads, Treasury yields, stock market returns, earnings growth, macro expectations, and aggregate distress risk. Further, we find that available information in current audit opinions is strongly negatively related to future forecast errors of long-term macroeconomic activity, indicating that professional macro forecasters do not fully incorporate macro information embedded in audit opinions that are available in real time.

In addition, we show that the predictive content of GCOs for future economic activity corresponds to the real, i.e., inflation-adjusted, economy, indicating that the macro-predictive content is not driven by these opinions having predictive content for future inflation. At a minimum, our evidence suggests that audit opinions are correlated with information that is incrementally useful for understanding the future state of the economy. Looking ahead, we believe that our work has the potential to serve as a starting point for a new line of research in finance, economics, and related fields on the informational role of audit data from firms' financial reports for the macroeconomy.

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Table 1: Annual and quarterly distribution of going concern classes

Panel A. Distribution of going concern classes by calendar year						
Year	GCO_q^{NG}	GCO_q^{FIN}	GCO_q^{MT}	GCO_q^{DIST}	GCO_q^{STUP}	$NOEX$
2000	12.41	7.11	0.42	0.74	6.36	0.00
2001	13.96	8.45	0.38	1.03	6.59	0.01
2002	14.48	8.81	0.39	0.99	6.01	0.00
2003	12.91	7.56	0.43	0.72	3.47	0.11
2004	13.75	8.16	0.37	0.50	2.86	0.03
2005	14.32	8.48	0.38	0.82	3.22	0.06
2006	15.46	8.77	0.28	0.94	3.36	0.10
2007	17.90	9.19	0.24	0.90	4.04	0.16
2008	19.09	8.31	0.42	0.89	4.18	0.30
2009	18.15	8.83	0.49	0.49	6.63	0.21
2010	17.79	8.48	0.25	0.20	9.58	0.00
2011	16.51	7.82	0.38	0.29	8.74	0.00
2012	16.33	7.48	0.51	0.26	8.43	0.00
2013	14.59	6.48	0.40	0.24	7.31	0.00
Avg.	15.55	8.14	0.38	0.64	5.77	0.07

Panel B. Distribution of going concern classes by calendar quarter						
Quarter	GCO_q^{NG}	GCO_q^{FIN}	GCO_q^{MT}	GCO_q^{DIST}	GCO_q^{STUP}	$NOEX$
1	13.8	7.15	0.28	0.55	5.57	0.11
2	19.04	9.13	0.32	0.51	7.88	0.14
3	15.08	7.71	0.18	0.53	6.52	0.08
4	15.11	8.22	0.46	0.73	5.17	0.05
Avg.	15.76	8.05	0.31	0.58	6.28	0.09

This table reports the annual and quarterly distributions of the mean of ve going concern classes in Panels A and B, respectively. Variables GCO_q^{NG}, GCO_q^{FIN}, GCO_q^{MT}, GCO_q^{DIST}, and GCO_q^{STUP} refer to each of the ve going concern classes: negative trends, nancial di culties, internal and external matters, extreme distress, and start-ups, respectively. They are measured as the ratio of total number of going concern matters in each class to that of the total number of audit opinions of all rms in a calendar year or in a quarter, respectively. $NOEX$ is the type of going concern matters unable to classify into any of the above ve classes, and it is measured as the total number of di cult-to-classify going concern matters to that of audit opinions of all rms in a calendar year or in a quarter, respectively. All variables are in percentage. The sample employs GDP growth until 2015, with quarterly observations of GCOs starting in Q1:2000 and ending in Q4:2013, the respective rst and last quarter for which audit opinions data in Audit Analytics can be matched to at least one-year ahead GDP growth required for the analysis.

Table 2: Distribution of audit opinions and going concern opinions over time

Panel A. Annual distribution				
Year	AUO	AUO (% of Total AUO)	GCO	GCO (% of Periodic AUO)
2000	20,524	8.74	2,906	14.16
2001	18,941	8.07	3,034	16.02
2002	17,213	7.33	2,869	16.67
2003	17,683	7.53	2,582	14.60
2004	16,757	7.14	2,577	15.38
2005	16,979	7.23	2,735	16.11
2006	16,656	7.09	2,895	17.38
2007	16,713	7.12	3,333	19.94
2008	15,943	6.79	3,410	21.39
2009	15,937	6.79	3,140	19.70
2010	16,229	6.91	3,053	18.81
2011	15,649	6.67	2,731	17.45
2012	15,175	6.46	2,587	17.05
2013	14,372	6.12	2,218	15.43
Total	234,771	99.99	40,070	240.09
Avg.	16,769	7.14	2,876	17.15

Panel B. Quarterly distribution				
Quarter	AUO	AUO (% of Total AUO)	GCO	GCO (% of Periodic AUO)
1	26,944	11.48	4,071	15.11
2	28,876	12.3	5,989	20.74
3	30,166	12.85	4,926	16.33
4	148,785	63.37	25,085	16.86
Total	234,771	100	40,071	69.04
Avg.	58,693	25	10,130	17.26

Panel C. Monthly distribution				
Month	AUO	AUO (% of Total AUO)	GCO	GCO (% of Periodic AUO)
1	7,122	3.03	798	11.20
2	6,004	2.56	872	14.52
3	13,818	5.89	2,402	17.38
4	6,358	2.71	1,174	18.46
5	7,023	2.99	1,241	17.67
6	15,495	6.6	3,575	23.07
7	7,180	3.06	1,116	15.54
8	7,887	3.36	1,069	13.55
9	15,099	6.43	2,742	18.16
10	11,985	5.1	1,166	9.73
11	5,310	2.26	726	13.67
12	131,490	56.01	23,195	17.64
Total	234,771	100	40,076	190.59
Avg.	19,564	8.33	3,107	15.88

This table reports annual, quarterly, and monthly distributions of audit opinions and going concern opinions means in Panels A, B, and C, respectively. AUO (AUO (% of Total AUO)) is the periodic number (percentage relative to periodic total number) of audit opinions. GCO (GCO (% of Total AUO)) is the periodic number (percentage relative to the periodic number of all audit opinions) of GCOs. The sample employs GDP growth until 2015, with quarterly observations of GCOs starting in Q1:2000 and ending in Q4:2013, the respective first and last quarter for which audit opinions data in Audit Analytics can be matched to at least one-year ahead GDP growth required for the analysis.

Table 3: Descriptive statistics

Panel A. Summary statistics					
Variables	Mean	STD	Q1	Median	Q3
GCO_q	0.174	0.035	0.149	0.170	0.194
GCO_q^{NG}	0.159	0.033	0.136	0.157	0.181
GCO_q^{FIN}	0.081	0.013	0.072	0.080	0.090
GCO_q^{MT}	0.003	0.002	0.002	0.003	0.005
GCO_q^{DIST}	0.006	0.003	0.003	0.006	0.008
GCO_q^{STUP}	0.063	0.030	0.039	0.057	0.079
$LTGDP_{q\to L=1}$	0.038	0.023	0.032	0.039	0.052
$LTGDP_{q\to L=2}$	0.079	0.042	0.066	0.081	0.111
$LTGDPR_{q\to L=1}$	0.018	0.018	0.014	0.020	0.030
$LTGDPR_{q\to L=2}$	0.036	0.030	0.025	0.043	0.056

Panel B. Pearson (Spearman) correlations are below (above) the diagonal									
	1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*
1. GCO_q	1	0.984***	0.720***	-0.020	-0.098	0.275***	-0.256*	-0.327**	-0.435***
2. GCO_q^{NG}	0.984***	1	0.660***	-0.032	-0.203	0.364***	-0.278**	-0.347**	-0.453***
3. GCO_q^{FIN}	0.747***	0.693***	1	-0.049	0.281**	-0.056	-0.054	-0.202	-0.375**
4. GCO_q^{MT}	0.045	0.010	-0.022	1	0.145	0.065	0.062	0.094	0.147
5. GCO_q^{DIST}	-0.062	-0.187	0.264**	0.126	1	-0.461	-0.045	-0.050	0.024
6. GCO_q^{STUP}	0.300**	0.413***	0.020	-0.042	-0.534***	1	-0.241	-0.050	0.149
7. $LTGDP_{q\to L=1}$	-0.382***	-0.376***	-0.187	0.112	-0.081	-0.059	1	0.865***	0.632***
8. $LTGDP_{q\to L=2}$	-0.388***	-0.385***	-0.270*	0.137	-0.041	0.021	0.838***	1	0.886***

The table presents summary statistics (Panel A) and correlations (Panel B) for key variables used in our analysis. GCO_q is the ratio of all going concern opinions in annual reports referring to scal year-end months falling in the calendar quarter q relative to all audit opinions in that quarter. Variables GCO_q^{NG}, GCO_q^{FIN}, GCO_q^{MT}, GCO_q^{DIST}, and GCO_q^{STUP} refer to each of the ve classes of matters leading to GCOs: negative trends, nancial di culties, internal and external matters, extreme distress, and start-ups, respectively. They are measured as the ratio of total number of each going concern class in a quarter to that of the total number of audit opinions in a quarter. $LTGDP_{q\,!\,L=1}$ and $LTGDP_{q\,!\,L=2}$ are future nominal long-term GDP growth one and two years ahead, respectively, starting three months after current calendar quarter q to allow availability of audit opinions for all annual opinions with scal year-end months falling within calendar quarter q. $LTGDPR_{q\,!\,L=1}$ and $LTGDPR_{q\,!\,L=2}$ are future real long-term GDP growth one and two years ahead, respectively, starting three months after current calendar quarter q to allow availability of audit opinions for all annual opinions with scal year-end months falling within calendar quarter q. ***, **, and * indicate statistical signi cance at the 1, 5, and 10 percent levels, respectively. The sample employs GDP growth until 2015, with quarterly observations of GCOs starting in Q1:2000 and ending in Q4:2013, the respective rst and last quarter for which audit opinions data in Audit Analytics can be matched to at least one-year ahead GDP growth required for the analysis.

Table 4: Going concern opinions and future long-term macroeconomic activity

$$LTGDP_{q\,!\,L} = \quad_{L} + \quad_{L} GCO_{q} + "_{L} \tag{1}$$

$$LTGDP_{q\,!\,L} = \quad_{L} + \quad_{L} GCO_{q} + \quad_{L} LTGDP_{q} + "_{L} \tag{2}$$

	L=1		L=2	
	(1)	(2)	(1)	(2)
Intercept	0.082	0.087	0.157	0.187

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Table 5: Dissecting macro information content in going concern classes

$$LTGDP_{q+L} = \alpha_L + \beta_L GCO_q^{CLASS} + \varepsilon_L \quad (3)$$

$$LTGDP_{q+L} = \alpha_L + \beta_L GCO_q^{CLASS} + \gamma_L LTGDP_q + \varepsilon_L \quad (4)$$

Panel A. Going concern classes and one-year-ahead economic activity

	Negative Trends		Financial Difficulties		Internal and External Matters		Extreme Distress		Start-ups	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Intercept	0.08	0.084	0.066	0.063	0.033	0.028	0.042	0.038	0.041	0.037
t-stat	(4.48)***	(4.07)***	(2.70)***	(2.57)**	(3.12)***	(2.31)**	(8.19)***	(6.91)***	(3.66)***	(3.18)***
GCO_q^{NG}	**-0.262**	**-0.276**								
***t*-stat**	**(-2.22)****	**(-2.18)****								
GCO_q^{FIN}			-0.34	-0.341						
t-stat			(-1.03)	(-1.01)						
GCO_q^{MT}					1.702	1.87				
t-stat					-0.81	-0.87				
GCO_q^{DIST}							-0.575	-0.67		
t-stat							(-0.53)	(-0.59)		
GCO_q^{STUP}									-0.047	-0.036
t-stat									(-0.44)	(-0.36)
$LTGDP_q$		-0.048		0.094		0.106		0.105		0.088
t-stat		(-0.39)		-0.75		-0.83		-0.85		-0.76
Adj. R^2	0.124	0.109	0.016	0.006	-0.007	-0.015	-0.013	-0.022	-0.016	-0.029

Panel B. Focusing on Negative Trends, for two-years ahead economic activity

	L=2	
	(1)	(2)
Intercept	0.154	0.183
t-stat	(5.61)***	(5.93)***
GCO_q^{NG}	**-0.472**	**-0.569**
***t*-stat**	**(-2.82)*****	**(-3.25)*****
$LTGDP_q$		-0.339
t-stat		(-1.71)*
Adj. R^2	0.13	0.148

The table reports results from estimating models of future long-term GDP growth on classes of going concern opinions. $LTGDP_{q+L}$ is the future long-term GDP growth, starting three months after the current calendar quarter q to allow availability of all annual audit opinions for fiscal year-end months falling within quarter q. Horizons are subsequent one and two years, $L = 1; 2$. GCO_q^{CLASS} refers to the following going concern classes: negative trends GCO_q^{NG}, financial difficulties GCO_q^{FIN}, internal/external matters GCO_q^{MT}, extreme distress GCO_q^{DIST}, and start-ups GCO_q^{STUP}. We measure these classes similar to GCO_q (where GCO_q is the ratio of all GCOs in annual audit reports referring to fiscal year-end months falling in calendar quarter q relative to all audit opinions in that quarter), except that we use only observations in the specific class. Thus, GCO_q^{CLASS} is the ratio of all GCOs in the class in annual reports for calendar quarter q relative to all audit opinions in quarter q. $LTGDP_q$ is contemporaneous economic activity, measured as long-term GDP growth over the past year. The *t*-statistics are based on two-sided tests using the Newey and West (1987) heteroskedasticity- and autocorrelation-consistent standard errors. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively. The sample employs GDP growth until 2015, with quarterly observations of GCOs starting in Q1:2000 and ending in Q4:2013, the respective first and last quarter for which audit opinions data in Audit Analytics can be matched to at least one-year ahead GDP growth required for the analysis.

Table 6: Incremental long-term macro predictive content in going concern opinions

$$LTGDP_{q+L} = \alpha_L + \beta_L GCO_q + \gamma_L LTGDP_q + \delta_L SPREAD_q + \varepsilon_L YIELD_q + \zeta_L RET_q + \eta_L EG_q + \theta_L EDF_q + \varepsilon_L \quad (5)$$

Panel A. Going concern opinions and one-year-ahead economic activity								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.026	0.046	0.037	-0.004	0.041	0.039	-0.014	0.039
t-stat	(3.23)***	(8.24)***	(6.70)***	(-0.30)	(2.24)**	(7.18)***	(-0.60)	(1.95)*
GCO_q					-0.186			-0.191
t-stat					(-2.12)**			(-2.49)**
$LTGDP_q$				0.392	0.277		0.459	0.275
t-stat				(2.89)***	(2.11)**		(2.52)**	(1.84)*
$SPREAD_q$	0.75			1.295	1.028		1.32	1.075
t-stat	(2.46)**			(3.27)***	(3.19)***		(3.24)***	(3.02)***
$YIELD_q$		0.312		0.143	0.004		0.161	0.015
t-stat		(2.08)**		(0.92)	(0.03)		(0.96)	(0.09)
RET_q			0.069	0.056	0.045		0.059	0.044
t-stat			(2.08)**	(2.01)**	(1.78)*		(1.93)*	(1.62)
EG_q						0.004	0.004	0.007
t-stat						(1.18)	(0.73)	(1.25)
EDF_q							0.012	0.006
t-stat							(0.85)	(0.44)
Adj. R^2	0.129	0.048	0.078	0.282	0.334	-0.015	0.358	0.416

Panel B. Going concern opinions and two-year-ahead economic activity								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.043	0.103	0.077	-0.052	0.043	0.078	-0.085	-0.001
t-stat	(3.09)***	(8.51)***	(7.67)***	(-1.67)	(1.52)	(7.09)***	(-2.74)***	(-0.01)
GCO_q					-0.351			-0.287
t-stat					(-4.60)***			(-3.63)***
$LTGDP_q$				0.588	0.393		1.003	0.742
t-stat				(2.93)***	(2.05)**		(3.96)***	(2.81)***
$SPREAD_q$	2.104			4.424	3.666		4.075	3.561
t-stat	(3.46)***			(4.83)***	(4.70)***		(5.27)***	(4.89)***
$YIELD_q$		0.973		1.23	0.756		1.022	0.689
t-stat		(2.44)**		(2.66)**	(2.19)**		(2.25)**	(1.73)*
RET_q			0.086	0.041	0.024		0.061	0.041
t-stat			(1.63)	(1.25)	(0.71)		(1.71)*	(1.19)
EG_q						-0.007	0.001	0.005
t-stat						(-0.72)	(0.13)	(0.53)
EDF_q							0.053	0.044
t-stat							(3.08)***	(2.60)**
Adj. R^2	0.373	0.178	0.028	0.539	0.606	-0.156	0.612	0.652

The table reports results from estimating models of future long-term GDP growth on GCOs and other controls. $LTGDP_{q+L}$ is future long-term GDP growth, starting three months after the current calendar quarter q to allow all annual audit opinions for fiscal year-end months falling within calendar quarter q. Horizons are one- and two-years ahead, $L = 1; 2$, in Panels A and B, respectively. GCO_q is the ratio of all going concern opinions in annual audit reports referring to fiscal year-end months falling in calendar quarter q relative to all audit opinions in that quarter. $LTGDP_q$ is contemporaneous economic activity, measured as GDP growth over the past year. $SPREAD_q$ is the yield difference between the ten-year Treasury bond and the one-year Treasury bill with constant maturities. $YIELD_q$ is the yield on the one-year Treasury bill with constant maturity. RET_q is the three-month buy-and-hold stock market return. EG_q is aggregate quarterly earnings growth. EDF_q is the aggregate level of distress risk calculated following Merton (1974). We measure the additional variables added as controls three months after the end of current quarter q to enable availability of data prior to the beginning of the period during which we measure future long-term GDP growth. The *t*-statistics are based on two-sided tests using the Newey and West (1987) heteroskedasticity- and autocorrelation-consistent standard errors. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively. The sample employs GDP growth until 2015, with quarterly observations of GCOs starting in Q1:2000 and ending in Q4:2013, the respective first and last quarter for which audit opinions data in Audit Analytics can be matched to at least one-year ahead GDP growth required for the analysis.

Table 7: Implications for macroeconomic forecasts

$$FE\_GDP_{q\,!\,L} = {}_0 + {}_1 GCO_q + {}_2 LTGDP_q + {}_3 SPREAD_q + {}_4 YIELD_q + {}_5 EG_q + {}_6 RET_q + {}_7 EDF_q + "_L \quad (6)$$

	$FE1\_GDP_q$		$FE2\_GDP_q$	
	(1)	(2)	(1)	(2)
Intercept	0.128	0.057	0.129	0.052
t-stat	(2.43)**	(0.95)	(2.42)**	(0.93)
GCO_q	-0.309		-0.295	
t-stat	(-2.50)**		(-2.41)**	
GCO_q^{NG}		-0.26		-0.235
t-stat		(-2.11)*		(-2.06)*
$LTGDP_q$	-0.397	0.058	-0.243	0.24
t-stat	(-1.40)	(0.18)	(-0.87)	(0.83)
$SPREAD_q$	-1.162	-0.29	-1.086	-0.13
t-stat	(-2.17)**	(-0.41)	(-1.93)*	(-0.19)
$YIELD_q$	-1.106	-0.784	-1.099	-0.727
t-stat	(-3.51)***	(-1.58)	(-3.41)***	(-1.54)
RET_q	0.024	0.032	0.041	0.05
t-stat	(1.33)	(1.96)*	(2.70)**	(3.16)***
EG_q	0.003	0.043	0.004	0.048
t-stat	(0.57)	(0.95)	(0.76)	(1.07)
EDF_q	-0.04	-0.005	-0.039	-0.002
t-stat	(-2.89)**	(-0.26)	(-2.80)**	(-0.13)
Adj. R^2	0.383	0.393	0.446	0.461

The table reports results from estimating models of SPF future annual GDP growth forecast errors on GCOs. $FE\_GDP_{q\,!\,L}$ refers to $FE1\_GDP_{q\,!\,L}$ and $FE2\_GDP_{q\,!\,L}$, de ned as the realization of future annual GDP growth L-year ahead minus the corresponding median or mean annual GDP growth forecasts by SPF forecasters, respectively. This analysis focuses on the one-year-ahead horizon, i.e., L = 1. GCO_q in the equation refers to either GCO_q (columns 1 and 3) or GCO_q^{NG} (columns 2 and 4), which are respectively de ned as the ratio of all GCOs or negative trend classes of GCOs relative to all audit opinions with scal year-end months of their annual reports falling in calendar quarter q. Other control variables are the same as described in Table 6. The models employ samples of the top and bottom quintiles of GCO_q or GCO_q^{NG} when GCO_q or GCO_q^{NG}, respectively, is used as the independent variable. ***, **, and * indicate statistical signi cance at the 1, 5, and 10 percent levels, respectively, using two-tailed tests.

Table 8: Going concern opinions and the real economy

$$LTGDPR_{q+L} = \alpha_L + \beta_L GCO_q + \gamma_L LTGDPR_q + \delta_L SPREAD_q + \varepsilon_L YIELD_q + \zeta_L RET_q + \eta_L EG_q + \theta_L EDF_q + \varepsilon_L \quad (7)$$

Panel A. Going concern opinions and one-year-ahead economic activity								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.006	0.026	0.017	0.001	0.042	0.018	-0.009	0.034
t-stat	-0.89	(7.01)***	(3.77)***	-0.06	(3.40)***	(4.30)***	(-0.57)	(2.76)***
GCO_q					-0.178			-0.173
t-stat					(-2.52)**			(-2.89)***
$LTGDPR_q$				0.191	0.06		0.28	0.105
t-stat				(1.71)*	(0.64)		(1.86)*	(0.92)
$SPREAD_q$	0.704			0.763	0.543		0.759	0.583
t-stat	(2.93)***			(2.19)**	(2.01)*		(2.32)**	(2.10)**
$YIELD_q$		0.357		0.015	0.157		0.015	-0.123
t-stat		(2.88)***		(0.1)	(1.11)		(0.1)	(-0.83)
RET_q			0.039	0.027	0.016		0.03	0.018
t-stat			(1.47)	(1.17)	(0.77)		(1.27)	(0.82)
EG_q						0.001	0.005	0.007
t-stat						(0.23)	(1.1)	(1.71)*
EDF_q							0.016	0.011
t-stat							(1.37)	(1.15)
Adj. R^2	0.209	0.193	0.125	0.031	0.203	0.097	0.318	0.397

Panel B. Going concern opinions and two-year-ahead economic activity								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.007	0.057	0.035	-0.04	0.03	0.034	-0.057	0.002
t-stat	(0.67)	(7.97)***	(4.75)***	(-1.73)*	-1.57	(4.37)***	(-2.73)***	(0.1)
GCO_q					-0.277			-0.226
t-stat					(-5.11)***			(-4.63)***
$LTGDPR_q$				0.262	0.079		0.613	0.397
t-stat				(1.75)*	(0.63)		(3.40)***	(2.24)**
$SPREAD_q$	1.695			2.992	2.476		2.551	2.226
t-stat	(3.92)***			(4.14)***	(4.11)***		(4.59)***	(4.49)***
$YIELD_q$		0.845		0.804	0.451		0.628	0.374
t-stat		(2.82)***		(1.98)*	(1.57)		(1.83)*	(1.42)
RET_q			0.038	0.001	-0.012		0.016	0.002
t-stat			(1.1)	(0.06)	(-0.55)		(0.74)	(0.09)
EG_q						-0.01	0.002	0.005
t-stat						(-1.18)	(0.28)	(0.74)
EDF_q							0.044	0.038
t-stat							(3.90)***	(3.70)***
Adj. R^2	0.487	0.476	0.271	-0.003	0.536	0.074	0.654	0.705

This table reports results from estimating models examining the links of GCOs to the future real economy over the long run. $LTGDPR_{q+L}$ is future long-term real economic activity, measured as subsequent real GDP growth, starting three months after the current calendar quarter q to allow availability of all annual audit opinions for fiscal year-end months falling within calendar quarter q. Horizons are one- and two-years ahead, $L = 1; 2$, in Panels A and B, respectively. GCO_q is the ratio of all going concern opinions in annual audit reports referring to fiscal year-end months falling in calendar quarter q relative to all audit opinions in that quarter. $LTGDPR_q$ is contemporaneous real economic activity, measured as long-term real GDP growth over the past year. Other control variables are the same as described in Table 6. The t-statistics are based on two-tailed tests using the Newey and West (1987) heteroskedasticity- and autocorrelation-consistent standard errors. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively. The sample employs GDP growth until 2015, with quarterly observations of GCOs starting in Q1:2000 and ending in Q4:2013, the respective first and last quarter for which audit opinions data in Audit Analytics can be matched to at least one-year ahead GDP growth required for the analysis.

Figure 1: Timeline, an example
We use Audit Analytics to obtain rms' annual audit opinions. Consider the end of September 2009, denoted as quarter q:
We use audit opinions for rms with scal-year-end months falling within calendar quarter Q3:2009. We construct GCO_q as the frequency of all GCOs for rms with scal-year-end months falling within Q3:2009 relative to all audit opinions during this same period. All variable notations are with subscript q to re ect that these variables are related to the most recently available GCO_q.

In our analysis:
(a) we measure GCO_q using audit opinions for year-ends months falling in the calendar quarter that ends in September 2009.
(b) we measure future economic activity beginning January 2010 to allow availability of audit opinions for Q3:2009.
(c) to ensure data availability to calculate past economic activity as a control variable, we measure it as of the end of June 2009 (i.e., Q2:2009) to allow for o cial publication of GDP data.
(d) to ensure data availability to calculate other control variables, we measure these variables based on the most recent information available when we measure future economic activity, thus as of the end of December 2009 (i.e., Q4:2009).