



Analytics in empirical/archival financial accounting research

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Abstract In this article, we describe various analytics in empirical/archival financial accounting research. We focus the discussion on research questions that are central to accounting research, analytics used to test hypotheses, and evidence. We also describe voice and text analysis, which is generating interesting new datasets and hypothesis tests, offering promising potential for future studies. Our study seeks to (1) inform business professionals about state-of-the-art analytics in accounting research and (2) trigger academics to pursue creative new research opportunities.

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1. What is financial accounting research?

In this article, we describe proven and exciting new analytics for testing hypotheses using empirical/archival financial accounting data.¹ Our study

seeks to (1) inform business professionals about state-of-the-art methods and evidence from accounting research and (2) trigger academics to pursue new creative cross-disciplinary research in business, economics, law, and related social science fields. We organize the discussion around various research questions that are focal points of accounting research and the analytics used to test hypotheses.

Financial accounting research is ultimately about how the measurement and communication of financial information affects capital allocation decisions. Major questions of interest include: How do different accounting measures affect the pricing of financial capital by investors and creditors? What information do investors and creditors obtain from accounting variables, such as earnings? What are the economic consequences of the release of accounting information in the capital markets?

Modern empirical accounting research is indebted to advances in analytics that began in the 1960s,

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¹ Empirical/archival financial accounting research is the largest literature within accounting. Other well-developed streams investigate important questions within managerial accounting, auditing, and tax. All the sub-disciplines within accounting test hypotheses using archival data, theoretical models, psychology and economics-based experiments, and field-based surveys and observations. It is beyond the scope of this article to encompass the analytics across all dimensions of accounting research, so we necessarily limit our discussion to analytics using empirical/archival financial accounting data.

including advances in technology for storing and analyzing machine-readable data. Two pioneering studies that shifted the paradigm of accounting research toward large dataset analysis appeared in 1968. [Ball and Brown \(1968\)](#) examined a sample of earnings changes reported by 261 firms—a modest sample size by today's standards—from 1957 to 1965. They found that firms reporting increases (decreases) in annual earnings experienced stock returns roughly 7% above (9% below) the market. [Beaver \(1968\)](#) examined 506 annual earnings announcements by 143 firms from 1961 to 1965 and found that during earnings announcement weeks, share trading volume was roughly 50% larger than normal. These path-breaking studies inspired a large and still growing stream of research.

Capital markets–based accounting research borrows from and contributes to finance. This literature helps explain the impact of financial accounting information on stock prices, stock returns, risk, costs of capital, trading behavior, and many other factors critical to finance. As a case in point, accounting research offered early and controversial challenges to the degree to which the capital markets are efficient with respect to earnings. [Bernard and Thomas \(1989, 1990\)](#) and others provide evidence that changes in quarterly earnings can be used to form portfolios that consistently generate abnormal stock returns. These and other results, which are seemingly anomalous in an efficient capital market, have triggered new trading strategies used by quantitative fund managers and have helped give rise to new lines of inquiry, such as behavioral finance.

Financial accounting research also sheds light on management incentives and compensation, corporate governance, debt contracting, regulation, voluntary disclosure, and litigation. Accounting scholars have contributed insights regarding the conditions that give rise to opportunistic behavior by managers, examining earnings management, fraud, and insider trading. These findings have been helpful in improving corporate governance, contracting, securities regulation, and accounting standard setting.

New developments in analytics are generating exciting research possibilities. Data-aggregation techniques that create new economic variables spanning wide panels of data across firms and years are shedding light on micro- and macroeconomic questions. For example, [Crawley \(2013\)](#) used an 80-year time series of aggregate earnings and presented evidence suggesting that accounting conservatism influences Federal Reserve interest-rate decisions. In addition, exciting new developments in text and voice analytics enable accounting scholars to address questions about how managers

communicate with stakeholders beyond the numeric information in financial statements (see [Li, 2010c](#)).

We believe that the analytics we describe in this article offer important methods and insights for business professionals and indicate great potential for future cross-disciplinary scholarship. These analytics enable social science researchers in business, economics, law, and related disciplines to test hypotheses and provide new insights regarding important questions by exploiting data and methods common in accounting research.

We organize the remainder of this article as follows. In the next section, we describe the central research questions in traditional streams of financial accounting research. We also describe challenges facing accounting researchers. We then describe new approaches that test hypotheses with aggregate data and voice and text analyses. Throughout, we note implications for business professionals and potential opportunities for future research.

2. What are the consequences of financial accounting information in the capital markets?

The primary objective of this section is to provide a brief introduction to the types of research questions examined within the empirical/archival financial accounting literature. This literature is broad, so we organize our summary into the following subsections: (1) the information content of reported financial information, (2) fundamental analysis and valuation, (3) tests of market efficiency, and (4) corporate governance and contracting. In [Table 1](#), we identify some of the common questions addressed in each of these lines of research.

A primary goal of any economic system is to allocate scarce resources to their most efficient uses. In market-based economies, two types of information problems can hinder efficient resource allocation. First, asymmetric information between firms and investors may result in a 'lemons' problem (i.e., adverse selection) such that the capital market breaks down because investors do not have the information they need to assess potential future cash flows and risk when valuing investment opportunities ([Akerlof, 1970](#)). As a result, many socially valuable investment opportunities go unconsummated.

The primary solution to the lemons problem is mandated financial reporting (i.e., following professional standards and principles for accounting and auditing) by firms that raise capital from the financial markets. The mandated supply of financial accounting information helps firms meet investors' demands

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