Columbia Business School
Center for Excellence in Accounting
and Security Analysis

An Evaluation of the Current State and Future of XBRL and Interactive Data for Investors and Analysts

White Paper Number Three

Center for Excellence in Accounting & Security Analysis

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AN EVALUATION OF THE CURRENT STATE AND FUTURE OF XBRL AND INTERACTIVE DATA FOR INVESTORS AND ANALYSTS

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Professor Harris' research and practical experience has covered most areas of the use of accounting information for valuation, investment and management decisions, with a particular focus on global aspects. He originally joined the Columbia Business School faculty in 1983, and was the Jerome A. Chazen Professor of International Business, Director of the Chazen Institute of International Business and Chair of the Accounting Department, prior to joining Morgan Stanley as a Managing Director and Head of the Global Valuation and Accounting Team in 2000. He rejoined the faculty of Columbia Business School in July 2008 and was appointed as The Arthur J. Samberg Professor of Professional Practice. He has taught the core courses in financial and managerial accounting, and electives in corporate financial reporting and international financial statement analysis. He created a new elective course in Spring 2009 titled Fundamental Analysis for Investment & Management Decisions: A Practical Guide. He was the recipient of the Margaret Chandler Award for Commitment to Excellence in teaching EMBA class of 1998 and 2001, the Chazen Institute Prize for Innovation in Teaching, 1996, and the Singhvi Prize for Excellence in Teaching, 1985. He is co-Director of Columbia's Center for Excellence in Accounting and Security Analysis. He has published widely on valuation and accounting issues, in both academic and practitioner journals. He has made presentations at over 200 conferences, institutes and universities around the world.

Through September 2008, Professor Harris was a Managing Director and Vice Chairman at Morgan Stanley, working on special projects for Firm Management in all business areas. He became a Senior Advisor to Morgan Stanley in October 2008. In his time in Equity Research he was the primary author of the "Apples-to-Apples" research series focusing on global sector valuations and earnings quality issues, and led the development of Morgan Stanley's ModelWare project. He wrote extensively on earnings quality, company-specific investment ideas and global pension and retiree benefit issues and was voted to the Institutional Investor All American Team during his time in research. He has also worked with corporate and investor clients on disclosure and valuation issues, and capital raising situations. Working with senior management, he was responsible for developing strategic solutions, and enhancing the management information systems of the firm. He has served on the Standards Advisory Council to the International Accounting Standards Board, the Users' Advisory Council to the Financial Accounting Standards Board (current) and was a member of the International Capital Markets Advisory Committee at the New York Stock Exchange until its dissolution. He currently serves on the Financial Research Advisory Committee of the Office of Financial Research (OFR) of the U.S. Department of the Treasury.

Suzanne G. Morsfield, *CEASA Director of Research*

Suzanne Morsfield is the Director of Research at the Columbia Business School's Center for Excellence in Accounting and Security Analysis (CEASA). Prior to that, she co-developed a financial reporting regulation analysis product for Thomson Reuters. She also has held roles at major investment banks conducting both sell-side and the buy-side analysis. Suzanne was on a team that developed the XBRL-compatible internal taxonomy for use in a Morgan Stanley's proprietary analytic framework, ModelWare. Finally, she is an experienced financial reporting executive, who has served as a controller and VP of Finance for a global high-tech firm readying for a U.S. IPO, and as an audit professional at Ernst & Young. She holds a Ph.D. in accounting and has taught at New York University's Stern School of Business, the University of Arizona, University of Michigan--Dearborn, and at Baruch College. Her research to date focuses on empirical examinations of financial reporting and valuation issues that she has observed while working in various capacities in non-academic settings. It includes documenting unique reporting aspects in venture-capital-backed IPOs, and drawing attention to the role of synthetic leases in financial versus tax reporting trade-off decisions made by management.

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Overview

Since the U.S. Security and Exchange Commission's 2009 mandate that portions of 10Ks and 10Qs be submitted in a digitized format known as eXtensible Business Reporting Language (XBRL), issuers and others have questioned the usefulness of the resulting data now available. As early promoters of "interactive data," Columbia Business School's Center for Excellence in Accounting and Security Analysis (CEASA) undertook a review of the state of XBRL and interactive data with a focus on their utility for security analysis. This project involved interviews with representatives of the various stakeholders (i.e., preparers, regulators, analysts and investors, XBRL developers, data aggregators, and XBRL filing and consumption tool vendors), and an in-depth discussion with and survey of investors and analysts. The survey and interview questions, and our conclusions, were organized around the original vision for interactive data—i.e., that data in this format would provide incrementally more relevant, timely, and reliable information to more end users, who could then manipulate and organize the data according to their own purposes at a lower cost.

In our view, XBRL has succeeded in so far as the objective of providing users with free, interactively-available numerical data from portions of published financial statements and footnotes, as soon as they are filed with the SEC. Most of the analysts and investors we spoke with are interested in and tried to use the footnote data that are XBRL-tagged. However, this access has not translated into ongoing current use by investors and analysts for many reasons which the report articulates in more detail. With this in mind, we provide our general conclusions and make some recommendations.

Our general conclusions are:
1. We have no doubt that analysis of companies will continue to be based off increasing amounts of data that are structured and delivered to users in an interactive format.
2. However, we have numerous reservations about whether XBRL will succeed as that format.
    a. Unless the XBRL stakeholders—including filers, regulators, and developers—focus on the data's reliability and on value-added, easily integrated consumption tools, we doubt that the XBRL-tagged data will be used by a significant number of investors and analysts.
    b. Unless the FASB and SEC also ensure that the focus of the underlying taxonomy is on simplification and enhanced utility, improved data quality is not going to be sufficient for users to readily access and use the data.

c. Unless the XBRL format becomes integrated as the "language" to structure data in the underlying general ledger or MIS systems, we believe that it is unlikely to become the format for most of the firm-specific financial data that investors and analysts want to use.

d. We question whether it is necessary to have the data structuring provided by the issuer at the source of a regulatory filing versus by a data supplier or other end user, given the current state of technology. However, providing issuer-tagged information would be valuable, as long as it was tagged at the disaggregated source, rather than only at the aggregated level as reported in a periodic regulatory presentation.

Specific recommendations:

We believe there are several conditions for XBRL to be widely used:

1. The entire XBRL community must find a way to reduce significantly the error rate and unnecessary extensions (company-specific data tags). Some approaches that might achieve this are: providing greater regulatory oversight, potentially requiring an audit of the data, or requiring filers to resolve the error and quality checks communicated to them by XBRL US.

2. Filers should spend the effort they are investing in attempting to destroy the SEC's XBRL regulation on improving the quality of their own data, as well as on making their own data more useful and accessible to users.

3. XBRL technology development needs to be taken over and run by technologists, rather than accountants and regulators. An alternate and challenging approach to improving the underlying technology would possibly be to partner with the major business information system vendors (like IBM, Oracle and SAP), the key web-based financial information suppliers (like Google and Yahoo) and possibly even the major data aggregators (Bloomberg, CapitalIQ, FactSet and Thomson Reuters) not only to ensure the necessary mapping to the regulatory use of XBRL is as seamless as possible, but, more importantly, to get them to help improve the XBRL technology overall.

We still have some hope that XBRL data can become useful to investors and analysts. However, we also view XBRL as at a critical stage in its development. Without a serious reconsideration of the technology, coupled with a focus on facile usability of the data, and value-add consumption tools, it will at best remain of marginal benefit to the target audience of both its early proponents and the SEC's mandate—investors and analysts.

1. Introduction

Useful accounting data portray underlying economic positions and activity, and, if appropriately measured and reported, can be used for efficient decision-making and resource allocation. Accounting data originate from recording transactions and events, and possibly remeasuring the values over time. These data are aggregated into "accounts" of varying detail and then usually summarized into various reports for decision makers to use. Internal managers choose the level of aggregation to meet their needs, but others (external users) receive what managers choose, or regulators require them to report.

Data and the "information" that can be inferred from them are not equivalent. Recordkeeping, which is the initial source of accounting data, has evolved over centuries from a tedious manual process using journals, T-accounts with debits and credits, and bound ledgers to machine-readable data residing in various databases (warehouses) and in structures that then build off the traditions of journals and ledgers. Given the physical limitations of manual processing and paper-based communication, for many years the financial information provided to senior managers and external users was quite aggregated and in a physical paper-based "report". The report for most entities summarized the financial position of the firm and its performance in aggregated financial statements with some explanation and details of the more disaggregated underlying data that exists in the ledgers or other systems.

With the evolution of technology and data-management processes, internal management reporting has been evolving to provide interactive "dashboards" that allow managers to see through from high-level aggregated performance measures to the source elements of the underlying transactions and events. Importantly, the accounting system itself provides a logical system to move from the aggregated summary measures like earnings back to the transaction level detail as desired. Transforming legacy systems to take advantage of using the information opportunity from the detailed data can be difficult and expensive, so not all firms have evolved to this level of sophistication in the internal reporting systems, but the process is well under way.

Returning to external users, remarkably, the basic form and arguably the substance of external reports has hardly evolved over the decades (maybe even centuries)! Certainly some of the details that are reported have changed, but the current state of external reporting and its delivery is technologically archaic. Regulations generally require and companies usually provide the equivalent "paper-based" financial statements for external users, even if these are provided in a hypertext markup language (HTML) format that is machine-readable (in the sense that various

devices can read information published on the internet in this format).[1] Further, the reports for public (and many private) companies are based on regulatory (Generally Accepted Accounting Principles–GAAP) requirements with little additional data or information provided, partially because of a fear of a backlash from regulators or litigation risk.

The result of the fact that most accounting data are published as "paper-based", or are merely HTML versions of paper-based records that derive from regulatory mandates, is that many sophisticated analysts and users adjust these reported numbers and seek external information to supplement the reported data when making business and investment decisions. Most individual investors are forced to rely on the published regulatory financial reports or various service providers, the latter of which are growing in number and scope of data provided.

As illustrated in Figure 1, a key dilemma in making machine-readable data useful as information is how best to provide it with "structure" so that the data can easily be identified and aggregated. These notions are at the heart of traditional bookkeeping and charts of accounts, though this can vary across firms and in the choices made in aggregating and reporting the underlying data. But, there has always been a trade-off to be made between:

i. "uniformity," which maximizes perceived comparability after aggregation and that is considered to be a useful attribute by some, and
ii. "flexibility" that can allow for more relevant and meaningful firm-specific information.

As interactive data availability has grown, the technology solutions for structuring and standardization have become more important in terms of the utility of the data. The debate over the best structuring approach continues amongst technologists while most of us just consume more and more useful data and information. Tagging the underlying data facilitates the ease of its structuring, and the evolution of the Web saw increased use of XML (eXtensible Markup Language) as a tagging schema. XML moved the notion of "machine-readable" beyond enabling a machine to allow an end user simply to read data—whether text or graphic or video—to transmitting underlying metadata to another machine without human intervention.[2]

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[1]For an authoritative explanation of the role of HTML in communicating information, see the discussion at http://www.w3.org/TR/html401/intro/intro.html#idx-HTML.
[2]For additional information about the differences between HTML and XML, please see http://www.w3schools.com/xml/xml_whatis.asp.

Figure 1 - Applying Structure to Data: How is it applied, when, by whom, and does the structure provide true interactivity?
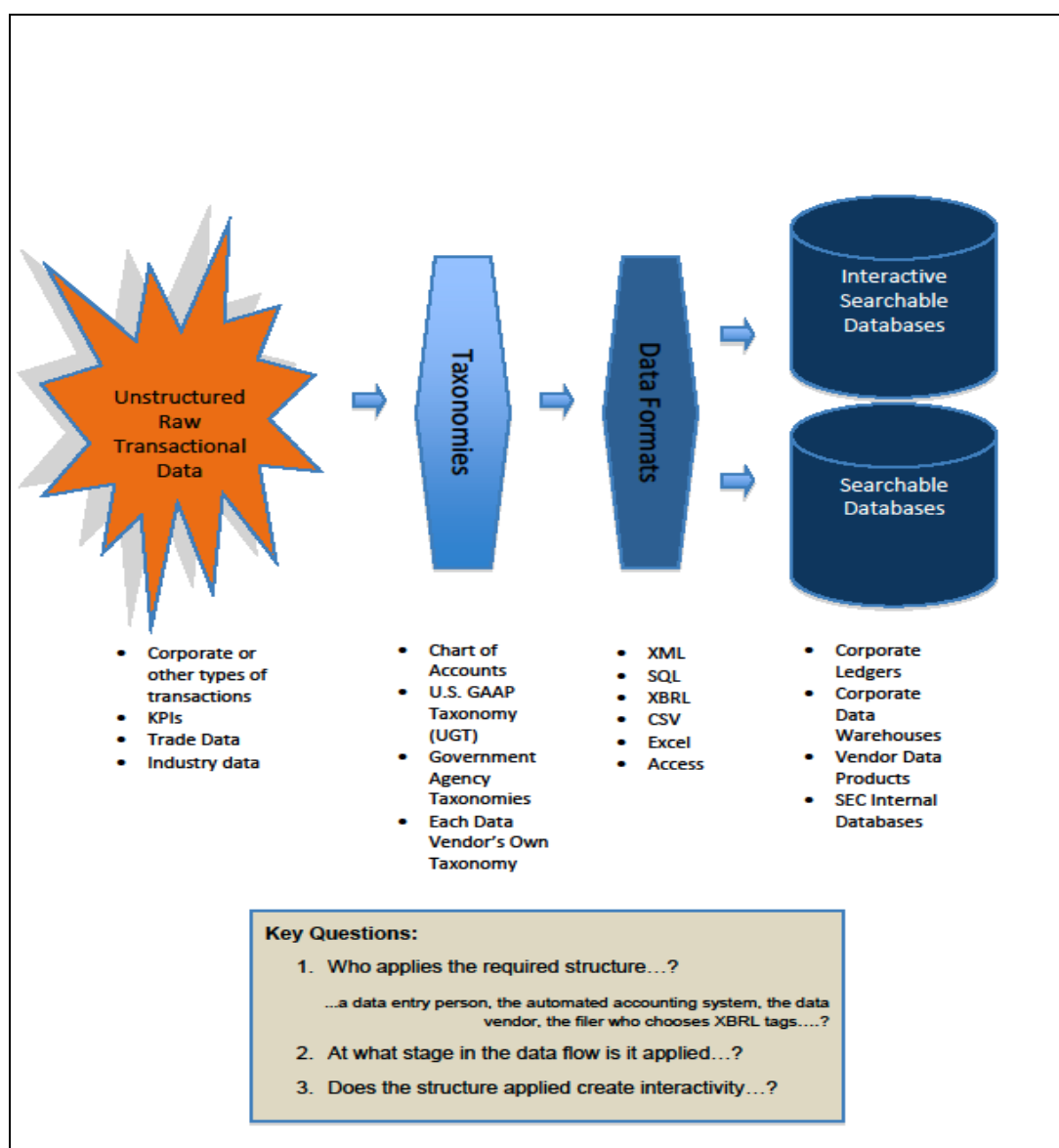
Many of us who were early proponents and supporters of XBRL (eXtensible Business Reporting Language) were motivated by a view that tagging the underlying accounting metadata (in an XML format) would facilitate the structuring of data that would, in turn, lead to more timely and more detailed information. This development would then allow users to look quickly and easily through to the underlying economic activity, subject to constraints of privacy of the firm-specific data. The tagged data could be searched and used interactively in an efficient and timely way that would make financial information easily available for all users. Our perception was that because the data would be tagged at the most primitive level, the presentational format

and the need for uniformity was almost irrelevant because various mapping schema could be easily facilitated to a user's own presentational structure—i.e., to whatever report style and level of content desired, whether a regulatory10K or an internal dashboard.

The growth of search engines and the availability of content from seemingly unstructured data, added to the perceived potential for financial information. The introduction of the proprietary ModelWare system at Morgan Stanley's research department with tagged analysts' models was partially done in anticipation of obtaining timely data from XBRL-based reports. Some companies appreciated the opportunity of how XBRL could increase efficiency in their internal reporting systems, and proponents, including the authors, sold the idea of the democratization of financial reporting for a broad set of users.

XBRL evolved as a result of the vision and effort of many people, and over many years reached a point where regulators, including the Federal Deposit Insurance Corporation (FDIC) and the U.S. Securities and Exchange Commission (SEC), mandated its use for certain data. However, in many ways this progress was quite slow because it was an open-source, non-commercial venture with a few well-intentioned stalwarts driving the evolution. Taxonomies were being created in multiple areas and jurisdictions and there was less coordination than originally envisioned. During this time the proliferation of machine-readable data and the ability to search and organize these data were also evolving, so the potential role for interactive financial data seemed even greater, yet we had seen little use of it outside of the major financial data vendors (like Bloomberg, CapitalIQ, FactSet and Thomson Reuters). This begged the question of what was happening with interactive financial data in general, and XBRL in particular? Addressing that question is the focus of this paper.

To gather relevant information, we at CEASA began with a roundtable discussion that included: representatives from various sized corporations who had to file their SEC financial statements under XBRL, sell-side research professionals and analysts and investors from some investment funds, data vendors, regulatory filing service providers, regulators, the XBRL technology and development community, and a large search engine provider. We followed this roundtable with more detailed written and verbal interviews of similar groups to expand the direct input we could bring together.

Our sampling was not scientific and the sample sizes are not large enough to make statistical inferences. However, we are confident that the perspective we have from these sources and the insights we have gleaned would hold up in a more extensive survey and analysis. As far as we are aware, this is also the most comprehensive survey of users that has been done to date about what financial and other information investors and analysts require.

The basic conclusion we draw from this analysis is that the potential for interactive data to democratize financial information and transform transparency remains stronger than ever, and many participants, including most investors and analysts, wish that the data were useful today.

From detailed conversations we had with investors and analysts, we know that most would like to have the U.S. regulatory filings tagged in a structured (e.g., XBRL) format that would meet their information requirements. Certain financial data vendors have begun to use XBRL-formatted SEC filings data, and others, such as SNL Financial, have been incorporating XBRL-tagged FDIC metadata into their financial reporting products for some time. Also, regulators are utilizing XBRL-tagged details into their own research and compliance efforts.

But, for a variety of reasons, which we discuss in the rest of the paper, XBRL has promised more than it has delivered to most investors/analysts, and it has the risk of becoming obsolete to them, at least for the SEC-filed financial reports. Ironically, a lot of effort in XBRL has shifted towards providing structured data in other areas like corporate actions and governmental databases where there is less competition in the provision of such data than there is in the world of corporate financial information.[3]

In the next section of the paper, we provide a brief discussion on the potential for interactive financial data and how XBRL has been implemented at least in the United States (U.S.). This sets the stage to better understand and interpret the findings of our roundtable and surveys, which we report in section 3. In section 4 we provide our views on assessing the current state of XBRL, including what went right, as well as what went wrong and why. Section 5 concludes with a summary and recommendations for moving forward.

2. Interactive data and XBRL in the U.S.

Our focus is on investors and other potential non-governmental users of a firm's financial information. One of the common themes of analysts' and investors' comments to accounting standard-setters and corporations is about their desire for more disaggregated information. They can then manipulate that data to perform their bespoke analysis. In 1986, at a conference of Controllers in Toronto, one of the authors did a presentation entitled "2001 An Accounting Odyssey" arguing that future technology would allow for investors to have real-time access to the ledgers and other firm databases, and that the regulators and firms would have to decide what details would be permitted to actually flow through to the investment community. This is the most extreme version of interactive data that is plausible today, and we characterize it as the potential nirvana for a true fundamental analyst.

[3]For example, the Digital Accountability and Transparency Act (DATA Act), proposed during the 112th Congress, would require the federal government to adopt an open source data reporting standard for reports by recipients of federal grants and contracts. The Data Transparency Coalition, a trade association representing technology companies, was organized in 2012 to pursue the passage of the DATA Act and similar mandates. Hudson Hollister, executive director of the Coalition, has suggested that XBRL would be a good candidate for the type of standard called for in the DATA Act, see http://hitachidatainteractive.com/2012/07/11/data-transparency-coalition-pushes-xbrl-as-solution-to-u-s-government-data-reform/).

A recently-publicized example that reflects the potential realization of this idea is Suncorp Bank, an Australian company. Suncorp incorporates the XBRL taxonomy to tag every transaction at the source (journal entry level) and then aggregates the details into whatever reporting format, internal or regulatory, is required. The company's financial controller, James Corner, is quoted as saying that this is saving the company significant time and costs, even after factoring in the initial setup and implementation time and expenditures.[4]

Some might argue that this is too much information to cope with. That may have been true in the days of paper delivery of information but we are aware of individual analysts who have made significant effort to get granular data to dig deep into certain questions they are trying to answer. The ability to query high levels of detail when desired is the power of interactive data. The important aspect of this is that the more primitive the data that can be interacted with, the more likely it is to yield differential value. This is not to say that every user wants to see all the inputs and expend significant effort on defining new aggregate metrics and terms. Nor are we arguing that we would want to lose the essence of the accounting system that links stocks and flows, especially if these follow the operating and funding logic of the business itself. Rather, what is important is providing the capability for any user of financial information to set up an analytical representation and dig deeper as desired, again subject to the limits of protecting proprietary information. Along these lines one starts at the highest levels of profitability analysis and goes backwards to the detailed data only as needed.[5]

To illustrate, consider the financial reporting of defined benefit pension plans in the U.S. The accounting is complex and equity analysts argued that the accounting had to be adjusted to better reflect the economic reality. Some argued that the interest cost and return on plan assets needed to be split out from operating income and that the funding surplus or deficit should be recorded on the balance sheet.[6] Others had differing views. Regardless, U.S. GAAP disclosures in Statement of Financial Accounting Standards (SFAS) No. 87 (1985) were incomplete for making these desired adjustments and for being able to forecast usefully future earnings and equity. While improvements were made in SFAS No. 158 (2006), the disclosures still provided too little information for those who understand the economic issues and need to delve deeper, for example, into information about the retiree versus active employees, the mortality assumptions, U.S. GAAP versus Employee Retirement Income Security Act (ERISA) reporting, and the mix of assets in more detail—arguably critical information to estimate future income and cash flows (via contributions). Full interactive data would allow interested users to go deeper into the underlying data, and uninterested users, who view this as too much detail, could just accept what

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[4]This was reported by Sally Rose in the December 5, 2012 online edition of The Australian Financial Review article, "Automating reporting worth it says Suncorp"
(http://afr.com/f/free/markets/capital/cfo/compliance_as_you_go_5E0weXWlaGZ68V2usv6hUK).
[5] As discussed in *Apples-to-Apples Earnings Monitor* (Harris, Huh, and Fairfield, December 8, 2000).
[6]For example, see *Apples-to-Apples: Accounting for Value in World Markets* (Harris, February, 1998) and *Pensions and the Cash Conundrum* (Harris, Huh, Peskin, and Loh, July, 2002).

they have at whatever level of aggregation is delivered to them by their data vendor or the regulators.[7]

An important aspect of this liberation of data would be that much less time would need to be spent on debating certain measurement, and especially disclosure and presentation issues, in the regulatory domain. Consider the recent debacle over the reconsideration of financial statement presentation by the Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB)—this project was shelved by the Boards, although many investors and analysts supported the direction in which it was moving with respect to presenting a meaningful separation of operating from financing activities in the body of all the financial statements, rather than only in the body of the cash flow statement. There have been many academic and practitioner proponents of a clearer separation between operating and funding classifications especially for financial analysis purposes,[8] while acknowledging the ambiguity of some classifications. There has also been demand by external users for getting more information on function and nature.

So, the stage was set for the Boards to act. Despite a useful discussion paper and a subsequent "Staff Draft of Exposure Draft on Financial Statement Presentation," after nine years, the project seems to have been eliminated, presumably because some constituents have argued that this is too costly, or because there are certain classifications that cannot be agreed upon.[9] Yet, if we had tagged data in the firms' underlying systems, it would be relatively trivial to make the disaggregated data available for those who wish to invest in a data aggregation analytical tool that would also provide different presentational options. If there was some structure to the tagging that allowed some standardization and also retained the flexibility for truly idiosyncratic

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[7] In a related example, when the FASB required an understanding of the range of expected return on assets rates utilized by SEC-filing companies, they were able to obtain that data much more quickly than would have been possible without those rates having been "tagged" in XBRL (as explained by Louis Matherne, the FASB's Chief of Taxonomy Development, in various public presentations).

[8] *Apples-to-Apples Earnings Monitor* (Harris, Huh, and Fairfield, December 8, 2000); *ModelWare (version 1.0): A Roadmap for Investors* (Harris, et al, August 2, 2004); *Ratio Analysis and Equity Valuation: From Research to Practice* (Nissim and Penman, 2001)

[9] A history of this discussion paper and subsequent staff drafts published by each Board is noted on the FASB's project page at:
http://www.fasb.org/cs/ContentServer?c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=900000011110. The original proposal for this project was issued in 2001. Phase A deliberations were completed in 2005 and a Phase B Exposure Draft was published for comment in October, 2008. Comments and findings from outreach activities were incorporated into the "Staff Draft of Exposure Draft on Financial Statement Presentation" prepared by the staffs of the IASB and FASB in July 2010; at that time, the Boards decided to conduct additional outreach prior to issuing a Board Exposure Draft. This project was then deemed an inactive joint FASB/IASB project as of late 2010. Certain elements of the original project, such as the presentation Other Comprehensive Income (OCI), currently are being deliberated by both Boards as separate topics. Recently, Paul Beswick, speaking as the then Acting Chief Accountant in the SEC's Office of the Chief Accountant (he is now the Chief Accountant), stated in his "Remarks Before the 2012 American Institute of CPAs (AICPA) Conference on Current SEC and Public Company Accounting Oversight Board (PCAOB) Developments" that the SEC would be hosting their own roundtable on the subject of financial reporting and disclosure
(**http://www.sec.gov/news/speech/2012/spch120312pab.htm**).

situations, then that would make the process even more efficient. This is what many of us envisioned as the role of XBRL (again, consider the Suncorp Bank example noted earlier).

   How does this relate to the investors and analysts who need to source and consume data/information in order to value and assess the future prospects of SEC-filing companies? Figures 2 and 3 illustrate a simplified schema for the analysis path of a generic fundamentals-driven analyst and investor. For this process, the outcome is usually financial measures of past performance and forecasts of future performance, including expected earnings, cash flows and other metrics, which are often used to assess value especially relative to price. Notably, the financial reports of the company being analyzed are a pertinent, but certainly not the only, source of information; and in many cases the details of the main financial statements are themselves inadequate, albeit they are used, especially for screening and comparative or benchmarking purposes.

Figure 2 – An Overview of Analyst/Investor Workflow Cycle: Information Collection, Adjustments, Analysis, and Updates in Investment Thesis Formation and Communication
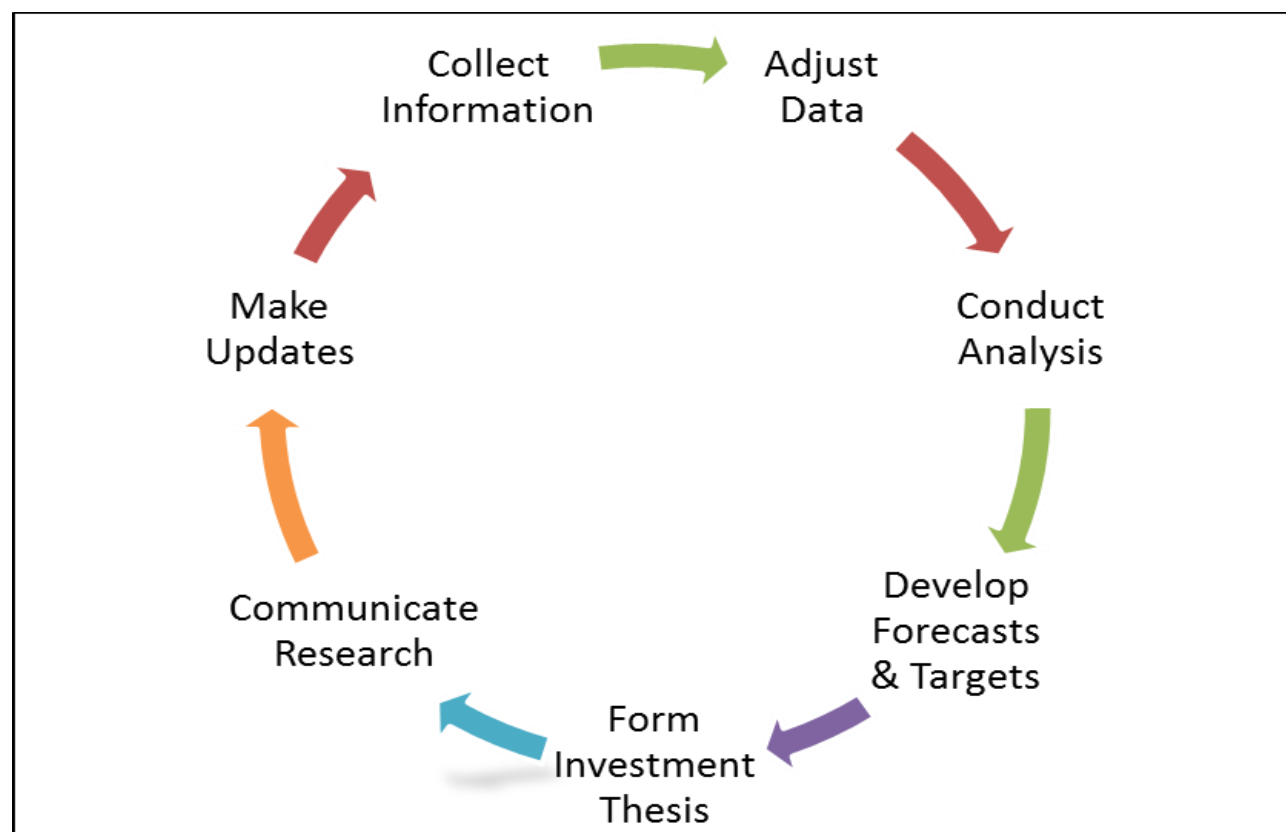
So, how are the financial reports issued by individual companies created, and then transformed into machine-readable data for analysts and investors? We recognize that the internal accounting and reporting processes can be very complex and may include a host of legacy accounting and enterprise resource planning (ERP) systems that are dispersed globally as well as functionally. In these cases, preparers often rely on a financial report management system (FRM) that is able to gather all the data together and provide a step along the way to the issuance of reports to management and to regulators. However, the reports for regulators and those for management are often generated in separate silos, along separate data flows, and by different teams.

Figure 4 illustrates a simplified version of an internal system that captures and records transactions and detailed data inputs, as well as the flow of data through to management and regulatory reports. In the most sophisticated ERP systems, like those offered by industry leaders such as Oracle, SAP, IBM, or PeopleSoft[10], there is almost real-time management reporting that can link aggregate performance measures, like return on equity (ROE), for example, to the underlying raw data from the accounting portion of the reporting workflow and system.

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[10]A PeopleSoft diagram is utilized in Figures 4 and 5 for no other reason than it was publically-available online and was a good representation of the often circuitous data flows in a typical accounting/ERP system.

Figure 3 – Basic Steps in Fundamentals-based Sell-side Analysis
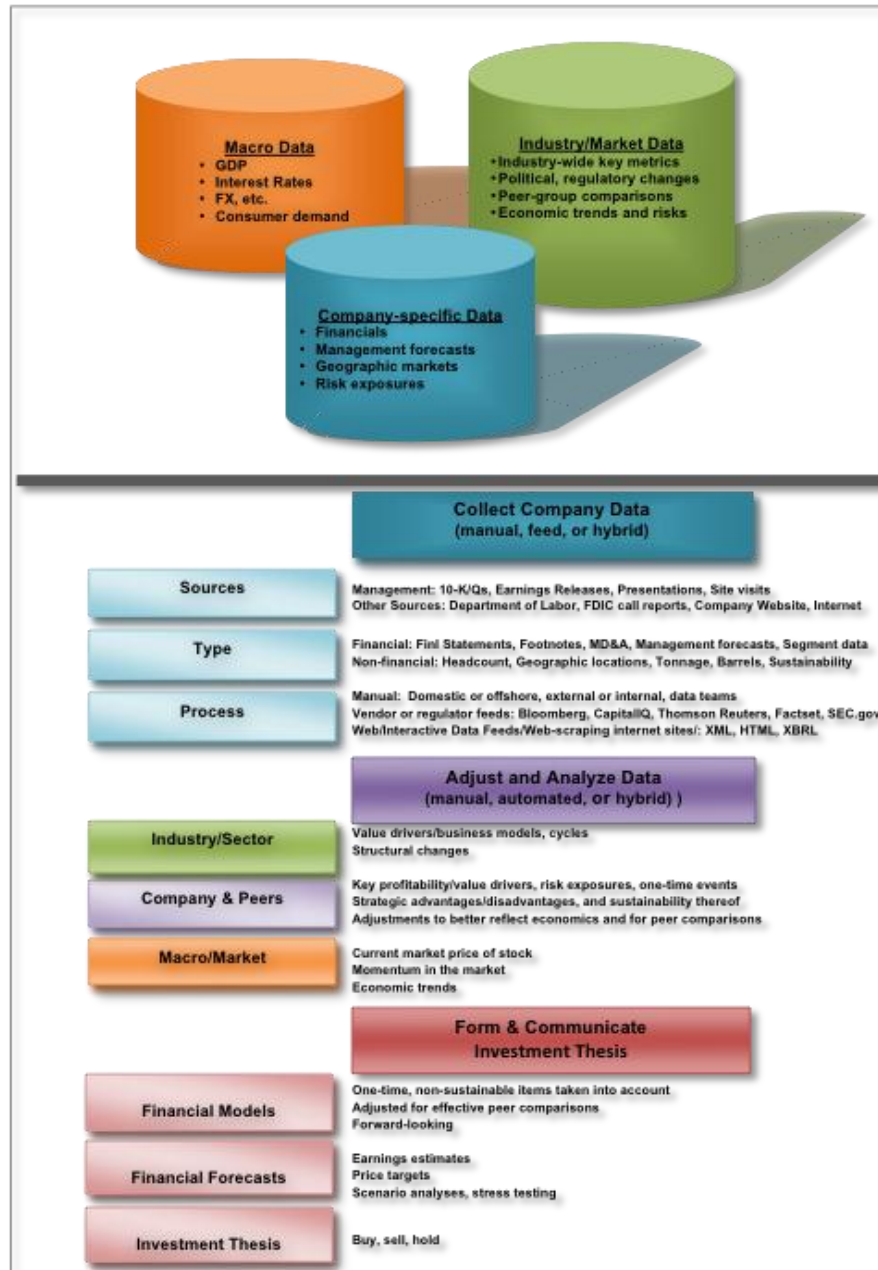
These internal performance measures are defined and calculated by a set of rules within the reporting tools, which can be based on either a standard/textbook definition of the measure, or on a company-specific definition. The technology available today allows management to have reporting "dashboards" which not only display important key performance indicators (KPIs), but also permits management to literally "drill back" to the original raw data that underlie the KPIs.

With respect to the formal financial statements and other reports required by various regulatory bodies, other sets of rules can exist in these reporting tools that then produce the required regulatory financial measures and relevant statements. These should be traceable to the raw data as well (this is, after all, the logic of the journal entry to record financial statement information via the ledger systems that underlie accounting management information systems (MIS)).

If we look at Figure 5, we see a revised version of Figure 4, which now illustrates where the XBRL tagging occurs at present for most companies. However, it should be quite clear where the tagging source *should* be in order to capture the potential of a structured taxonomic application for reporting. It should be integrated into the workflow of the management information systems ideally at the transactional level. These tagged raw data items could then populate any type of report—whether an MIS dashboard or an external regulatory filing—and the end user could drill back to the source data from all types of reports (subject to corporate proprietary information constraints). Unfortunately, this is not the reality of what has happened in the case of XBRL in the U.S.

The structured data (in structured query language (SQL) data bases) exist in many cases, and these feed a separate general ledger/corporate reporting process that has as its focus a document that has to be registered and published in many cases still in print format. The SEC initially forced the financial statements into a machine-readable format via their online Electronic Data-Gathering, Analysis, and Retrieval (EDGAR) system, and many companies provide their reports in an HTML format allowing for a machine readable version accessible to all. So, under the current requirement, the XBRL-tagged filing can easily be perceived as just another regulatory filing in a new technology. This is made worse because, although filings services software can generate all the regulatory reports at the same time via the software's financial closing and regulatory reporting tools, the XBRL-tags are still applied at the end of the closing and consolidation process.

Figure 4 – Overview of Corporate Accounting and Reporting Workflow: Multiple Systems, Manual Inputs, Non-integrated, Reporting Silos
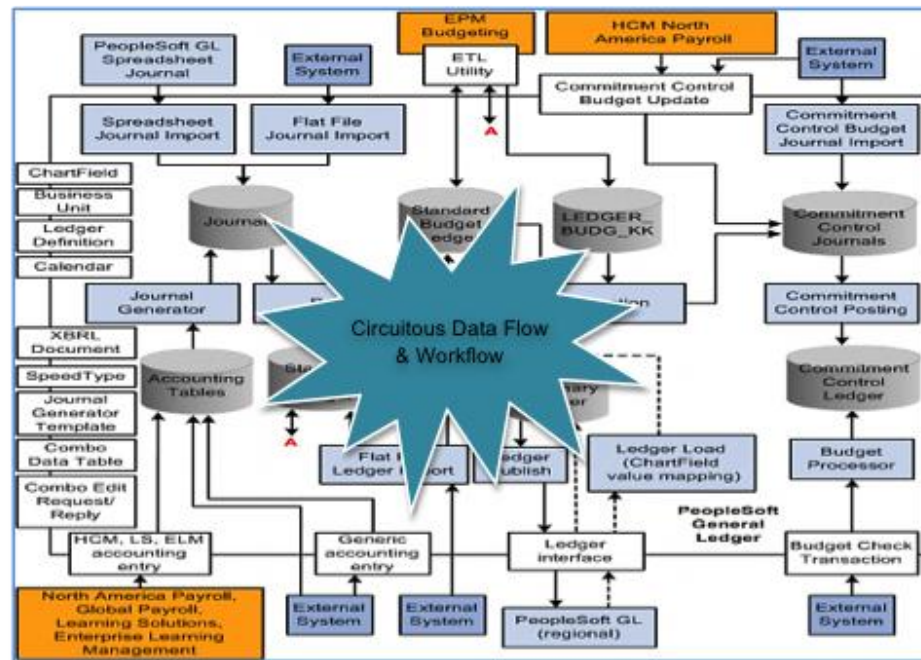
(Source above: PeopleSoft Enterprise Commitment Control 8.9)

Figure 5 – Corporate Data Flow with XBRL Implementation:
Best practice versus what most preparers do

(Source above: PeopleSoft Enterprise Commitment Control 8.9)

With tagging at the source, the data can seamlessly populate any type of report

Most firms apply XBRL tags here & only here

External Reports:
- Regulatory filings
- Loan facility applications

Internal Reports:
- Dashboards
- Board packages
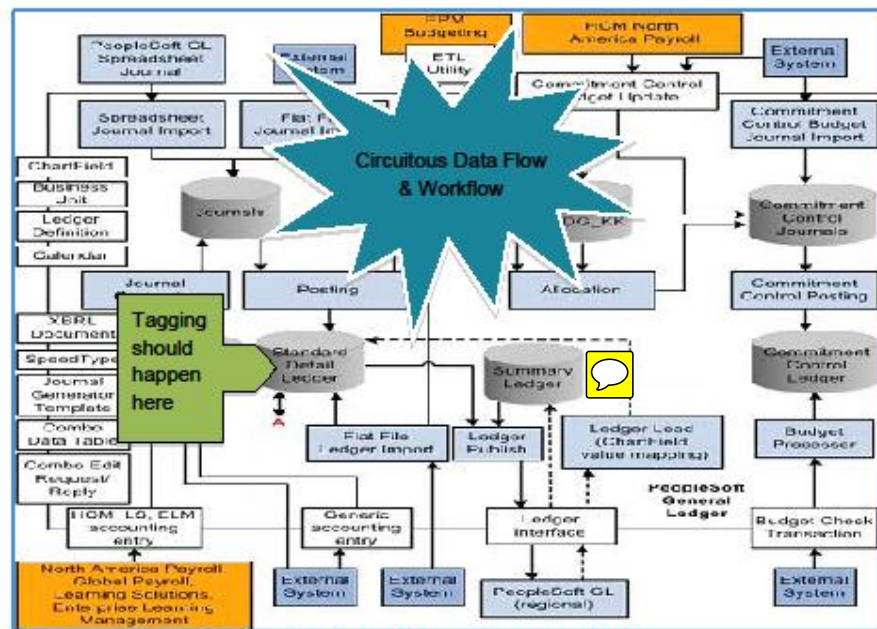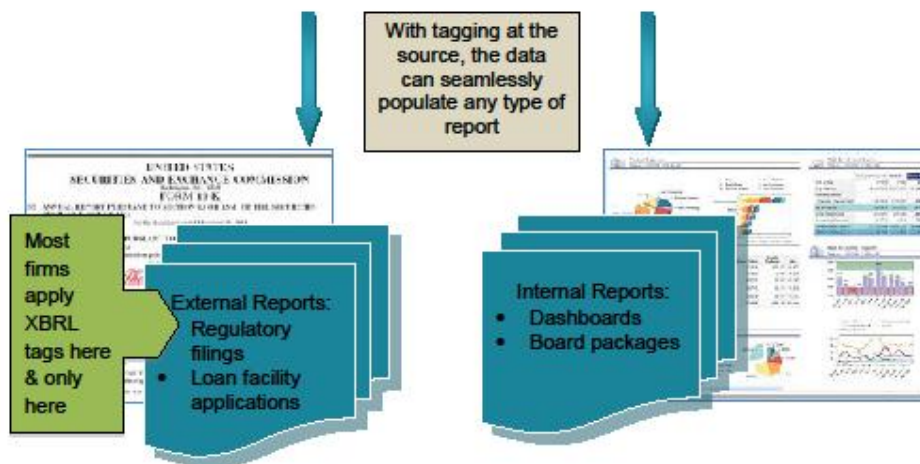
What the SEC mandate requires and most corporate applications of XBRL stop at is the tagging and publication of the annual and quarterly filings, starting with the basic financial statements and moving to the numbers in the footnotes.[11] That is, the focus is on tagging to mimic a certain regulatory filing, and only a portion of one at that.[12] From the outset, expectations were set very high by proponents of interactive data and XBRL for both filers and end-users about what XBRL-tagged data would be like and how it would enable users to immediately benefit, yet it presumed that the tagged data would begin deeper in the internal data systems, thus allowing for more relevant, reliable, timely and potentially more detailed, data. Again, as we see in Figure 5, the majority of companies are applying XBRL only at the last part of their data chain and only for external reporting (and for only a portion of a filing). Moreover, the XBRL taxonomies for accounting are now in the hands of the very standard setters who are struggling to get consensus on many accounting issues and who get caught up arguing about presentational format.[13]

One of the many issues this approach creates is that as the data available in XBRL are so limited, it begs the question of what its marginal value can be. There are two primary reasons for this. First, it presumes that the financial reporting as presented in GAAP quarterly and annual financial statements is the critical data set for analysts and investors, and second, that the marginal value of getting these data in a timely **structured** format is high relative to the costs of other sources of this data and of changing existing workflows.

Figure 6 highlights what we call "the universe of information" that analysts and investors scour in search of relevant data that are already transformed into useful information, or can be easily transformed into the information they need. This universe of information is expanding quickly. What is also advancing is the underlying technology to turn large amounts of unstructured data captured from the Web or social media into structured useable information and

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[11]XBRL has been introduced by various regulatory and private sector bodies around the globe (SEC, IASB, Japan, China, Denmark, others). In the U.S., the SEC added reporting regulations in 2009 that required XBRL-tagging of certain elements of some of the required filings, along with the related HTML filings. All financial statement and footnote numerical information for the largest SEC filers is available currently in XBRL format for free to the general public; the rest will have provided all such data by the time they file their respective 2013 annual10Ks.
[12]The SEC published guidance to attempt to clarify that replicating the look and feel of the paper financial statements was not the intent of the original mandate. However, given that tagging generally occurs only at the end of the financial close and in the middle of SEC-filing process, it is still reasonable to state that tagging in the U.S. is presentation-centric, even if that was not the intent of regulators or the XBRL community.
[13]Dedicated taxonomy teams exist for the various jurisdictions, including the FASB and International Financial Reporting Standards (IFRS) taxonomies. These teams "own" their respective taxonomies, and any changes to them, to varying degrees. These teams also give input to and challenge the Boards' perspectives on these matters, when necessary. The IFRS taxonomy team, for example, has a disciplined and public due diligence approach for making changes to their taxonomy, which includes IASB consultations and approval, as well as a public exposure and comment period. The FASB taxonomy team process was recently described in an interview with Louis Matherne, Chief of Taxonomy Development, and Donna Johaneman, XBRL Project Manager (see http://merrillcompliancesolutions.wordpress.com/2012/12/11/qa-with-an-expert-view-from-the-fasb-on-us-gaap-taxonomy-and-xbrl-part-1/). Board consultations, votes, and exposure and comment periods are similar in spirit, if not in exact detail, however, the U.S. GAAP Taxonomy (UGT) must also be approved by the SEC.

analytics. While these ex-post structures can rarely replicate the precision of a structured tag at the source data, they are increasingly proficient and will in many cases be sufficient especially for data that is as comparable as regulated financial reports.[14] If one refers back to the illustration of a typical fundamentals-based analyst's workflow in Figures 2 and 3, then it is easy to see that, given the vast sources of information and the amount of work to be done in the course of their research, a typical analyst will be resistant to adapting to a new data source, unless it provides significant incremental value at a reasonable cost, including time and effort.

Note in Figure 7 that one of the likely sources of information for users are the data aggregators, especially those who have created sticky interfaces with user workflows (Bloomberg, FactSet, Standard & Poor's CapitalIQ and Thomson Reuters are the most common in the US and European capital markets). Over the last 10 to 15 years we have seen these platforms provide a proliferation of information beyond the basic financial statements made available, making the data providers "sticky" in the user's workflow for the financial reporting and other relevant data. Much of the financial reporting data has been manually input by the vendors, but usually in a relatively short time after they are published. While some of the details are interpreted or edited by the vendors, and thus are potentially distorted in the process, most vendors also provide the data on an "as reported" basis with a drill-down to the actual filings.

So, in principle, there is some potential for XBRL to be of help in structuring the business reporting data in the vast universe of information we have mentioned. However, these XBRL-structured data are also available to these large data aggregators, and they have the comparative advantage over new XBRL-consumption providers in extracting any value from the XBRL data for most investors, given that they supply the well-developed or sticky interfaces already. Hence, it is a high hurdle to expect much direct analyst or investor access to XBRL data if the only data in XBRL is that available in SEC financial report filings (again, and in only a portion of these filings, at that).

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[14]If there was a drill-down to the source data available to users then it would increase the benefit of having the structured data at the input level, but this is not where we are currently with XBRL and financial reporting data in the U.S.

Figure 6 – Universe of Information Available to Investors and Analysts: Link to their Workflow

Figure 7 – The Market for Data/Information:
Sources and Methods of Collection
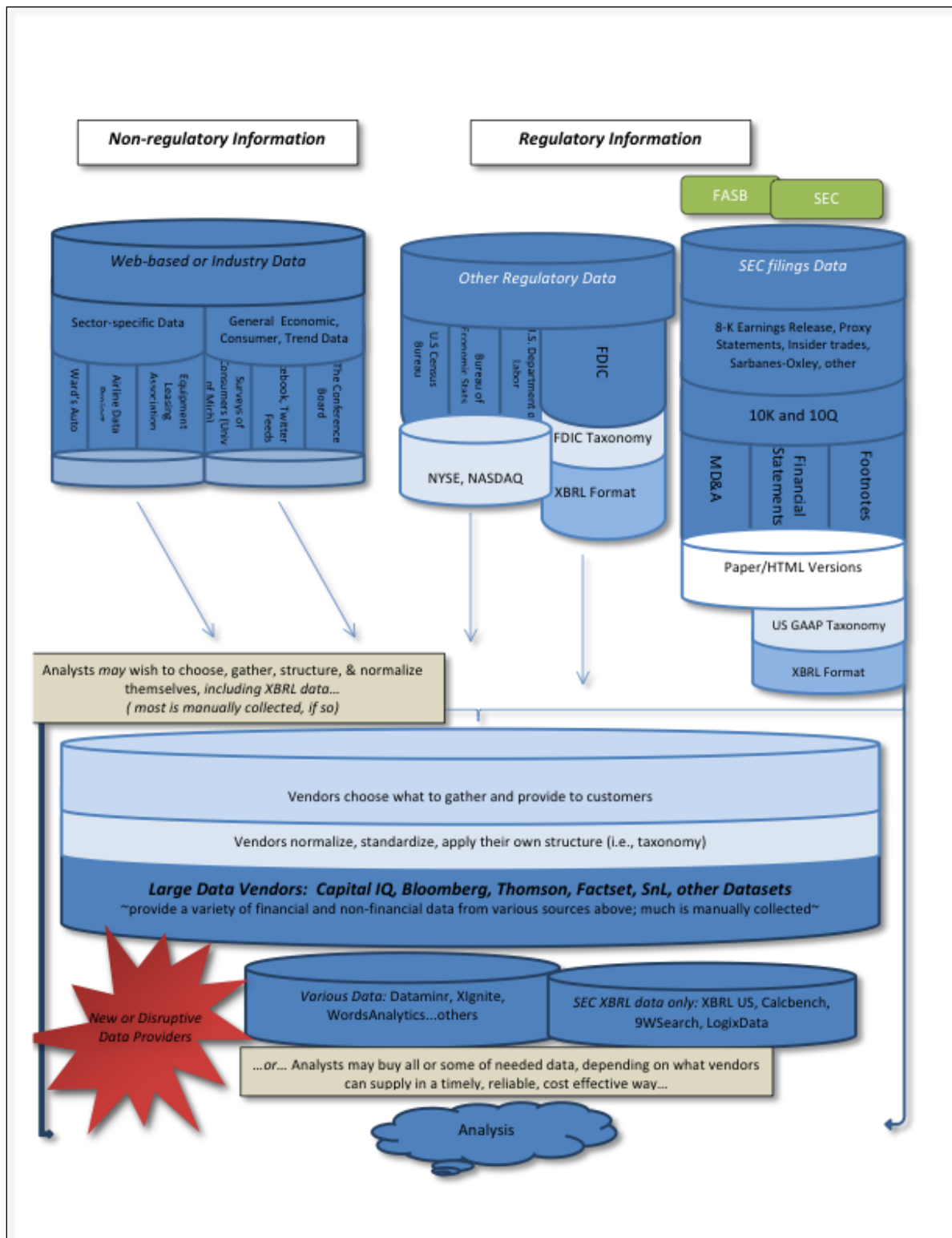
That said, for the broader investing population, it is still plausible that XBRL can provide improved financial reporting data to those who cannot afford the cost of data aggregators. The key to this being the case is the existence of user interfaces which provide or use financial information, and that can convey the XBRL-tagged data in a truly user-friendly format, via user-centric interfaces. Today, many individuals use products supplied by services like Yahoo and Google, especially the "Finance" applications, and new XBRL data and analytics providers are starting to emerge, and they could meet individual user needs with XBRL data.[15] Yet, we still question whether XBRL data that is focused solely on published financial statements can provide sufficient incremental value in terms of improved detail, quality, timeliness or standardization of data to warrant its use?

So, what have we learned by directly speaking to and surveying the various constituents?

3. Summary of Constituents' Views

Our approach to learning constituents' views

a. To assess the use of XBRL and understand the related issues, we:
- Held a closed-door roundtable that included representatives from: regulators, academia, preparers, preparer SEC filings service providers, data aggregators, sell-side analysts and buy-side investment or portfolio managers, search engine providers, and XBRL organizations. The roundtable participants exchanged their views on the aspirational usefulness of XBRL data, and more significantly, on the actual usability and use at present.
- Conducted one-to-one interviews with additional representatives from each of the groups on the use and usability of interactive data and XBRL.
- Gathered detailed information from a variety of investors and analysts about their numerical data requirements and sources, which included responses to questions in interviews or in a survey about their knowledge and use of available XBRL data.

b. For the investor and analyst survey portion of our study we:
- Held scores of interviews and conducted surveys of representatives of a variety of firms:
    - Large, medium, and small research and investment entities.

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[15]XBRL US co-sponsors a competition each year to provide important seed money to any individual or team that develops a winning XBRL data consumption and analytics tool that is open source and free to the public. Last year's winner, was Calcbench.com; further information about last year's competitors, and this year's competition which is still in progress at the time of publication of this report may be found at http://xbrl.us/research/pages/challenge.aspx.

- Buy-side and sell-side analysts, strategists and investors, as well as other types of end-users.
- Conducted a more formal detailed survey/interview of a smaller group of 26 individuals, representing 20 institutions, and the following types of end users of financial information:
  - Sell-side equity analysts and strategists
  - Sell-side fixed income analysts
  - Buy-side analysts and portfolio/asset managers of long only, long-short, or hybrid investment strategies.
c. The focus of our questions in all these settings was to:
  - Understand their use of financial and other data, as well as their data sources and timeliness requirements.
  - Learn about their knowledge of, use of, or interest in using XBRL-tagged data.

Several of those we surveyed had had some involvement with Morgan Stanley's research department during the development and implementation of ModelWare,[16] a proprietary analytical framework which was built to take advantage of XBRL tags. We included these respondents in our discussions and survey results to ensure that we heard the views of an informed set of users, in addition to those who had not necessarily been exposed to XBRL directly, or at all. In addition to the full sample results, for all the analyses we evaluated the findings of the subsample of current or former ModelWare users and note when they differed from the main results.

Our approach to the issues and questions used in the analysis

The reported findings, and charts in Appendix A highlight the views of the group of 26 investors and analysts who represent a variety of geographies, firm sizes, analysis methods, and investment styles. We also had conversations on the questions of interest with scores of other investors and analysts and included some additional insights from these conversations in the notes to each chart.

Our survey questions and responses were organized around the original vision for interactive data—i.e., that interactive data would provide relatively more relevant, timely, reliable information to relatively more end users, who could then manipulate and organize the data according to their own purposes. With that in mind, the outline of the questions and responses presented is as follows:

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[16]ModelWare is a proprietary analytic framework that is used internally in Morgan Stanley, and is powered by the data in sell-side analysts' models, as well as an XBRL-compatible taxonomy (http://www.morganstanley.com/institutional/research/). These data, and the accompanying proprietary analytics, are also marketed and sold to external customers of Morgan Stanley. See *ModelWare (version 1.0): A Roadmap for Investors* (Harris, et al, August 2, 2004).

a. Questions about the need for certain types of data or data attributes in general:
- *Relevance*
  - Use of financial data found only in the footnotes or MD&A of SEC filings
  - Use of financial data from sources other than SEC filings
  - Use of data that are not directly comparable with a company's peers
  - Use of non-financial, numerical data
- *Timeliness*
  - Timeliness requirements for SEC-mandated Information
- *Reliability*
  - Perceived reliability of data purchased from large vendors/aggregators
- *Information gathering and processing—Current sources, data quality, and constraints*
  - Footnote and MD&A data acquisition process
  - Non-SEC data acquisition constraints

b. Questions about XBRL-tagged data in particular:
- Familiarity with XBRL-formatted financials
- Direct Use of XBRL-tagged data—i.e., not indirectly via a large data vendor/aggregator
  - If using, for which type of analyses
  - If not, reasons for not using XBRL data
- Openness to using XBRL data in the future, if current issues adequately addressed.

Summary of our investor/analyst survey and interview findings

The core finding is that there is clear demand for timely, structured, machine-readable data including information in financial reports, and that this need can be met via XBRL *as long as* the XBRL-tagged data can reduce the total processing costs of acquiring and proofing the data, and that the data are easily integrated (mapped) into current processes.

Users are not enticed simply by the notion that the data are "free". Data quality, reliability, and the availability of easily accessible analysis tools are key drivers of their interest in incorporating new data or methods into their existing workflow, and of their technology-driven uses of information. The XBRL-tagged data provide access to information that otherwise would be difficult or expensive to acquire and manipulate, but as much of it is currently focused on financial reporting data available from vendors or is already somewhere on the web, the marginal benefits make it harder to justify costs or effort to create applications to access and exploit the data, especially given the extensive use of unique extensions for similar items, and other data quality issues.

With respect to SEC filings information, users view access to the full array of footnote, management discussion and analysis (MD&A), and earnings release numerical data as the main reason to consider adapting their workflow to incorporate XBRL-tagged filings. However, it remains pent-up demand because many investor/analysts are concerned about:

a. The reliability of the XBRL-tagged data provided by filers at present.
b. The potential disruption to their current workflow, especially if the XBRL data does not provide a clear timeliness, accuracy and processing advantage.
c. The difficulty of gathering, processing, and consuming the data at present, except in very limited use cases.

Many investors and analysts value the fact that the filer is applying a structured approach to the data. Some believe that the choice of tag will contain information not available otherwise. But, most are also concerned that many filers are not providing reliable data or structure. They are especially hesitant about using the data until they are comfortable that the XBRL data matches the HTML data in SEC filings. For those who have explored the XBRL data, they observe a large number of seemingly unnecessary company-specific tags ("extensions"). Also, numerous analysts/investors we spoke with also stated that they would not consider using XBRL-tagged financial filing information unless it was audited.

Finally, we found that less than 10% of our sample utilizes XBRL-tagged SEC data directly from the SEC or one of the "freemium" consumption tool providers, for the reasons listed above. However, most of the respondents have looked at the of XBRL-formatted financial filings via a software product on the SEC or XBRL US's websites that provides a "rendered version" (i.e., makes the XBRL tagged documents readable); none of the respondents have accessed XBRL files from a company's website.

We summarize below some of our key findings across the different types of XBRL constituents and then across the data attributes we discussed earlier. For several key findings, a graphical representation and related notes from responses the survey and our discussions, can be found in the Appendix A.

Detailed findings by type of constituents[17]

The types of constituents for which we present results are filers, analysts and investors, regulators, and academia as follows:

a. *Filers*

Most filers we surveyed doubt whether any investors are using their XBRL data and believe they are bearing an unnecessary incremental cost with any benefits going to data aggregators who resell the data and can reduce their own data collection costs. They also

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[17]When we discuss survey findings in this section of the paper, we include the results of the roundtable, others we interviewed, as well as anyone responding to the structured survey itself.

want to limit the quantity of data being tagged and filed because of their concerns that no one demands certain data at present.

The XBRL filings are additional to the existing EDGAR filings, and given that most preparers use XBRL only for their regulatory reporting, the incremental cost is considered too high, by many preparers. We found that most filers are not using their own XBRL-tagged data for their internal decision-making nor are they using their peers' tagged data for external benchmarking.[18]

However, we also spoke with filers for whom XBRL implementation had provided incremental benefit to their internal data analysis and financial closing/reporting processes; their views may not be represented by the Financial Executives International's (FEI) Committee on Corporate Reporting (CCR) letters to regulators about their XBRL concerns, or reported on in the popular press.[19] These filers indicated a significant increase in the efficiency of their reporting and filing processes over time as the required XBRL processing has continued beyond the initial implementation. This result is consistent with surveys of preparers produced by Financial Executives Research Foundation (FERF), the research arm of the FEI. [20]

While we sought to learn whether any companies were using XBRL-tagged data internally for their own MIS purposes, we did not ask filers how and if they were using interactive data in their management information systems as a result of having sophisticated ERP-type systems.

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[18]In our opinion, there is a possible link between the three reasons for the pent-up demand in a) through c) above, and the quality of the data that exists in the XBRL-tagged data already filed with the SEC. The quality of XBRL data has been so poor (as discussed below) that the data quality can be both the cause and the effect of these first three findings. This data quality is also influenced by the fact that for most filers the XBRL process is an "after-thought" rather than being part of an integrated process.

[19]See Emily Chasan's CFO Report blog in the online version of the Wall Street Journal, dated November 13, 2012, "Companies Grow Weary of XBRL." Mike Starr, formerly a Deputy Chief Accountant in the SEC's Office of the Chief Accountant, has publicly taken issue with some of the facts in the letter and the CFO Report when he was the keynote speaker at the recent XBRL and Corporate Actions Forum in New York. Separately, in an on-the-record email statement to the authors, Mr. Starr also noted the following, "Two letters from the CCR to the SEC dated November 4, 2011 and October 5, 2012, reference findings from investor outreach they conducted jointly with the SEC staff. As the SEC's Deputy Chief Accountant who was involved with this outreach to investors, there are two points I would like to clarify. While the SEC staff and the CCR did the outreach as part of an effort to understand the extent to which investors used the detail tagged information in the footnotes, the outreach was conducted independently. The SEC staff in the Office of Interactive Data and I concluded that investors were interested in using computer-readable financial information, including the detailed tagged information in the footnotes, but that it was premature to conclude on the extent or benefits of such usage. There was simply insufficient information to reach any conclusion because of the limited number of companies that had filed detail tagged footnotes at that time."

[20]The two surveys are authored by William Sennett, Senior Director of Research, under the auspices of the Financial Executives Research Foundation of Financial Executives International. They are titled, "SEC Reporting and the Impact of XBRL: 2011 Survey," and "SEC Reporting and the Impact of XBRL: 2012 Survey," respectively.

b. Analysts and Investors

It is always dangerous to generalize when talking about users, as there are many types, with varying approaches, skills and knowledge bases. Because we have a statistically small sample it is not possible to provide statistical significance to any of our results. That said, there were some clear and consistent themes that came through in the surveys and discussions. We also note that despite claims in other recent publications or settings, the only other report that we are aware of that systematically surveyed a broad set of actual investors and users about XBRL was that of the CFA Institute, the most recent of which was published in the summer of 2011.[21] Where our survey questions overlap or are reasonably similar, we find compatible results. However, CEASA took a slightly different approach by both surveying and interviewing analysts and investors, so that we could learn as much as possible about how the information required by investors and analysts mapped into how useful XBRL ultimately might be to them.[22]

Most users utilize data in financial reports as well as other sources of data, and there are varying amounts of detail desired, depending on the level of analysis being performed. For example, sell-side sector analysts covering equities generally cover fewer companies and have less of an open universe to consider as they are sector specialists, so they desire more varied and detailed data. Strategists and many portfolio managers, as well as some buy side analysts and sell-side fixed income analysts, consider a broader set of firms and perform "screens" and historical analyses. As a result, they need more comparable data on a larger set of companies and will only go deeper as the need arises. Once the universe of interest is selected, some buy-side analysts want even more detailed data than the sell-side sector analysts.

Based on the comments at the roundtable, as well as separate interviews or structured surveys with numerous investors and analysts, we found the following:

  i. The *majority* of survey respondents and the analyst/investors we have spoken with:
   - Wanted and used information in the MD&A and footnotes, and for around half of them this was their main source of useful data from the financial statements.
   - Extensively used non-financial data outside the financial reports.

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[21] See the CFA Institute website for additional details (http://www.cfainstitute.org/ethics/topics/Pages/our_take_on_xbrl.aspx).
[22] It is important to learn the views from investors and analysts who have experimented with or attempted to consume the detailed-tagged data, because these data are of a high interest to most of them for a variety of purposes in their analyses; for example, key sources of the adjustments that analysts and investors often make to "as-reported" financials are often taken from the numerical data in the footnotes, MD&A, and earnings releases.

- Utilized data they deem to be useful even if it is not directly comparable across firms.
- These results stand in contrast to other statements about analysts and investors that have been discussed or reported. For example:
    - We did not find a standard or limited number of data items required by investors as indicated by various commentators on the subject of what kinds and amounts of data investors and analysts require (either from financial statements or from other sources).[23]
    - We found an interest in the structured tagging of the detailed items in financial statements, in contrast to the claims in the two comment letters from Financial Executive International's (FEI) Committee on Corporate Reporting (CCR).[24]
- *None* of those we spoke with had attempted to access XBRL data from corporate websites.
- Virtually all of those who had tried to use XBRL data for larger sample research had a negative view of the data usability and data quality at the point of time at which they attempted to use it.
- There is demand for interactive data that captures the information in the footnote, MD&A, or earnings release data. However, this is generally pent-up demand due to current data quality and usability concerns.
- End users are also looking for easy-to-use XBRL consumption and analysis tools that do not require programming or query language knowledge. In general, these users are not willing or able to incur the significant disruption to their workflow that they perceived would be required to incorporate XBRL data without state-of-the-art consumption and analytics tools.
ii. What *varies by type* of analyst or analyst in our sample includes:
- Type of financial filing that is most important. For example, earnings releases (filed as a Form 8-K) were relatively more important to sell-side analysts compared to sell-side strategists or buy-side analysts.

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[23]This view was brought up by issuers at the roundtable and in an open discussion at the Suffolk University's April 2012 conference, "*Structured Financial Data in the Age of Complexity:* Exploring XBRL use and application Today and into the Future." In the latter event it was stated in a session that investors and analysts in the IFRS market only require 300 tagged items for their analyses.

[24]FEI's Committee on Corporate Reporting (CCR) letter to the SEC, dated November 4, 2011, or in their recent letter, dated October 5, 2012 as summarized on the FEI website (http://www.financialexecutives.org/KenticoCMS/Knowledge-Center/Comment-Letters/FEI---CCR-XBRL-Rulemaking-Request.aspx#axzz2DYGECpdG and http://www.financialexecutives.org/KenticoCMS/Communities/Committees/Corporate-Reporting-(CCR)/news/CCR-Files-Comment-Letter-with-the-SEC-Responding-t.aspx#axzz2Eoy6BHNg), respectively.

- Type of financial data that are most important. For example, a larger scope of footnote and MD&A data were relatively more important to the buy-side.
- Knowledge of the existence and specifics of XBRL for the survey respondents varied by size of firm. For example, 80% of those at small firms we interviewed had never heard of XBRL, while 100% of those at large firms knew about it.
- Interest in XBRL-tagged financial filing data at this point. For example, sell-side strategists and larger buy-side investors expressed relatively more interest in or use of XBRL.

iii. Investors and analysts who were previously employed by Morgan Stanley and had *used or designed its ModelWare* data tools showed unique data consumption and XBRL knowledge trends in some instances (see the notes in the accompanying tables for all details of these differences). For example, these Morgan Stanley alumni were more likely to use non-financial and non-SEC data than their counterparts. With respect to XBRL, Morgan Stanley participants were consistently more aware of the data, and were more positive about its likely benefits for their analyses. These respondents were well-acquainted with structured data and its potential uses because of their exposure to ModelWare (ModelWare is a platform for providing detailed, interactive data that can be manipulated by the end user at will, but that also powers a comprehensive analytical framework with ready-to-consume analytical metrics and insights, if that is preferred).

Not surprisingly then, investors and analysts who had known about XBRL prior to the SEC mandate, and were waiting for XBRL-tagged data to become available, thought that the data would be much more usable and of a higher quality than they currently are; these respondents expressed disappointment at the regulators, filers, and the XBRL development community for the poor quality of the underlying data.

c. *Regulators*

Several regulators have publicly stated that they are actively using the XBRL-tagged data. For example:

i. The SEC has begun to review the data to identify filer-wide, as well as individual company filing and financial reporting issues. XBRL data could significantly enhance the efficiency of the Division of Corporate Finance's review of filings and facilitate a "red-flag" ex-ante approach to regulatory oversight.[25]

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[25]Mike Starr, formerly a Deputy Chief Accountant in the SEC's Office of the Chief Accountant, questioned how effectively the XBRL data were being used at the SEC in recent comments to the audience at the "XBRL and Corporate Actions Forum" in New York, on December 10, 2012. He stated that the SEC should develop an

ii.   The Financial Accounting Standards Board (FASB) took over responsibility for the U.S. GAAP Taxonomy (UGT) in 2010 and has utilized the tagged data for various analyses that are useful in their standard-setting and deliberation processes.

iii. The Financial Accounting Foundation (FAF) in the U.S. has also reported publicly that as part of their post-implementation reviews of recent accounting standard changes they have analyzed relevant XBRL-tagged information in SEC filings.[26]

iv.   The Federal Deposit Insurance Corporation (FDIC) requires and utilizes XBRL-tagged call report data for their own analyses and has claimed that its adoption brought significant cost and time-savings to the agency (http://www.fdic.gov/news/news/speeches/archives/2006/chairman/spdec0406.html).

v.   Outside the U.S., examples of other uses of XBRL-tagged data include a variety of regulatory bodies, as well as those interested in global sustainability metrics. For a recent list of the global entities that either require or utilize XBRL-tagged information, see the XBRL Projects Map on the website of XBRL International (http://www.xbrl.org/knowledge_centre/projects/map).

Representatives from the FASB and the SEC have both stated on the record that, in their opinions, the amount of time that it takes them to conduct their respective analyses has been reduced significantly by their use of the XBRL-tagged data.

d. Data aggregators

Data aggregators have developed different data gathering strategies. However, for the information available in financial statements and reports, the current market leaders have been using labor-intensive input processes to capture the information quickly and deliver it to their clients on their broad platforms. Each has "as reported" and standardized (using their own standardization choices) and the user can quickly drill down to the actual data sources. The last decade has seen a proliferation in the quantity and type of data made available by many of these providers. Given the labor-intensive aspect and the potential for some delay and errors in the process of extracting data from the financial reports, data aggregators are a natural potential beneficiary of XBRL data. Based on the comments at the roundtable and

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implementation plan to enhance the efficiency and effectiveness of its oversight by making greater use of computer-readable financial information.

[26]See the FAF's "*Post-implementation Review Report on FASB Interpretation No. 48, Accounting for Uncertainty in Income Taxes*." In additional to being present at a conference where this was publically stated, we confirmed with a FASB representative that this statement is accurate.

separate interviews with representatives of most of the main aggregators we found the following:[27]

      i.   They have considered or are experimenting with using U.S. XBRL data, but given that the full set of companies have not yet reported detailed-tagging under XBRL, it cannot replace their current process. Some also commented that the data reliability and consistency was going to be an ongoing concern and they were more comfortable with their own data quality processes.

      ii.   Some acknowledged the opportunities to lower their own data gathering costs, while others hinted that XBRL is still perceived as a threat to their own company's products. However, given their service of normalizing and standardizing the raw data to make them more usable and comparable, as well as adding additional data and calculating analysis-related metrics they generally believe that XBRL, in its current state, will not hurt their business.

e. Academia[28]

Many accounting academics that stay in touch with professional activities are aware of XBRL, but the degree of understanding varies significantly.[29] Groups with particular focus on or knowledge of XBRL include: those who comment on accounting regulation, those interested in disclosure and its use, those who evaluate MIS and technology platforms for information delivery, and those that perform archival empirical research and are dependent on data from vendors, but do not have the resources to get the data from data aggregators. Some of the issues we have found with XBRL in our work were anticipated in earlier academic descriptive reviews, in particular Debreceny, et al (2004) and Plumlee and Plumlee (2008).

More recently, empirical academic research has been performed (but not yet published in peer-reviewed journal) on the utilization or market effects of XBRL data. Two empirical papers based on archival data we are aware of—Blankespoor (2012) and Li, et al (2012)—perform a series of tests and conclude that the availability of XBRL data has enhanced the information quality of financial reporting. In contrast, another study (Blankespoor, et al, 2012) suggests that XBRL adoption has had a negative impact on reporting firms. While these are carefully done studies, we find no evidence in our work that is consistent with these inferences. It is possible that it is simply too early in the adoption process to make strong claims about the effects of the SEC's XBRL mandate on reporting firms.

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[27]Like many of our interviewees, the data aggregators chose to keep their names private.

[28]For the summary of the academic view we added a literature search to the roundtable and interview process.

[29]Representatives from the FASB's taxonomy team made a detailed presentation to academics via a webinar sponsored by Financial Accounting Standards Research Initiative (FASRI) in May, 2012. At the 2012 American Accounting Association's (AAA's) Annual Meeting, representatives from the SEC, the AICPA, XBRL International, and from a Big 4 accounting firm participated in a panel discussion for the Strategic and Emerging Technologies Section of the AAA.

Finally, we are also aware of some academics who have written their own programs to make use of the XBRL data as a complement or substitute for other databases they have used in their research (e.g. Standard & Poor's Compustat). They praise the enhanced data and its timeliness, but indicated the significant effort in writing the program and cleaning the data to make them useful.

Having considered the views of various users of XBRL data, next we summarize our findings in terms of the primary attributes of financial reporting that interactive data, in general, and XBRL data, specifically, should provide to the end user of any type.

Detailed findings by critical data attribute
   a. *Relevance*
      i.   The data that are required by the SEC to be XBRL-tagged are all relevant in varying degrees to some subset of the investor/analyst population, but more data are required than currently mandated—e.g., earnings release, MD&A, etc.
      ii. If anything, users require more, not less, types of machine-readable data to be made available, because a significant amount of information they require are not from SEC filings or financial statements.
      iii. The primary focus on data in the SEC filings of annual and quarterly financial statements seriously limits the perceived ongoing usefulness and relevance of the data.
   b. *Timeliness*
      i.   XBRL-tagged SEC data are provided via an RSS feed instantly upon filing to anyone who has subscribed to the feed, which can be done at zero monetary cost to the consumer (ignoring additional processing costs described below).
      ii. Given that the XBRL-tagged filing can be done after the regular EDGAR filing and is not done any earlier, there is no real advantage from a timeliness perspective, unless the end user utilizes the XBRL filings data automatically, at the time of release. Because, if a user has mapped the tags to an application, then once the XBRL tagged document is filed, the update is virtually instantaneous. So, the key to meeting the timeliness goal will be when the XBRL filing fully substitutes for the HTML filings.
   c. *Reliability*
      i.   XBRL-tagged SEC data are generally perceived by investors as unreliable, either due to the numbers themselves or the choice of tag/extension; we could not identify any users or potential users who were comfortable with the reliability of the XBRL-tagged data currently available.

ii.   In our view, the reliability of the data has been compromised by the way filers have approached their XBRL filings, and by the absence of any external audit of the numbers and the tags. We acknowledge that this may be part of the phasing-in process as liability for error was given a safe haven initially. That said, we view it as also a symptom of the approach most preparers have taken of having the XBRL-tagging being an additional task in the financial reporting documentation process rather than as a part of the internal data systems.

d. *Information gathering and consumption costs*
i.   Currently, XBRL-tagged SEC data require significant additional processing in order to be easily consumed, especially if trying to use the data for many companies in a comparative analysis.
ii. The demand for machine-readable data is extremely high, but the RSS data currently cannot be used "as is" for the type of searches and analyses conducted by most users of large data sets. Most analysts and investors purchase data from vendors and aggregators with the understanding that a good part of what they are purchasing is the third-party's normalization, standardization, and data enhancement/usability capabilities. They have often built their work processes around that (Figures 2 and 3), so to add in data from different sources, the data have to have significant marginal content and not too high a cost of integration, neither of which exists with XBRL-tagged financial reports at this stage.
iii. The information gathering and consumption costs are lower in certain cases, such as when costs are measured on a purely monetary basis and when the data are consumed in small quantities directly from the SEC.gov website into an Excel spreadsheet, or from early-stage consumption tools like Calcbench.com. However, the net benefit is currently low if the type of analysis that the end user conducts implies that significant programming and data processing skills are required in order to create and maintain an easy-to-search and use data set.

4.   Assessing the Current State of XBRL: What Went Right, What Went Wrong and Why

In evaluating XBRL it is important to emphasize that XBRL is not only for financial statements of SEC registrants, but that it can also provide a structured approach for many types of data. Structured data has particular benefits in areas like corporate actions, government

statistics, and other important, but potentially obscure, data used in the financial system overall, and for which there is not a set of alternative commercial sources available.

On the internet today, there is a proliferation of information on companies and their businesses that any user can obtain, mostly for free or for varying fees. Sources include the companies' own websites, as well as a variety of content providers and financial institutions that are increasingly attracting customers. So, proliferation of data that can be used interactively seems to be a continuous process. XBRL-tagged financial statements have evolved to provide some standardization to data in regulated filings, as well as some other data outside financial reports; but, this has happened over a long period of time and in an environment of constantly evolving interactive data availability.

Our emphasis is on XBRL's use in security analysis and investment decisions, and this must be seen in the context of what alternatives exist or are likely to exist in the near future.

What Has Gone Right
  a. The imposition of XBRL-tagged reports for SEC registrants for the primary financial statements has meant that, in principle, any user can interactively access the numerical data in published financial statements and footnotes as soon as they are filed with the SEC.
  b. Some of the detailed-tagged data are difficult to find elsewhere in a machine-readable format, and this information is desired by a majority of investors and analysts we interviewed, though their specific demand varies by type of investor or analyst.
  c. These data can be incorporated with some effort into standard spreadsheet files (which is the analysis tool used by many investors and analysts), or into SQL databases, using the SEC's website or from open source tools such as Calcbench or 9WSearch.
  d. With the right skills, time and resources, the data can also be constructed and manipulated according to the end users' own requirements and needs—that is, the sometimes obscuring presentation and disclosure choices made by a filer or required by regulators can be ignored, and investors and analysts can focus on the data themselves.

So, at this basic level, XBRL has been successful, however we found no ongoing current usage to date (as defined by using the data in a direct, current, and ongoing way for their investment theses or decisions) by analysts and investors, which begs the question of what went wrong. [30]

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[30] Some investors and analysts reported to us as "use" of the data the fact that they have been **trying** to use the data in this manner, or that they have **experimented or currently are experimenting** with utilizing the data this way.

What Has Gone Wrong and Why

While the description of what has gone wrong is quite long, there are two considerations to keep in mind. First, in the introduction of new technologies, especially if imposed by regulation, there will be mistakes and learning so that further improvements and enhancements are expected to occur. Second, for XBRL-tagged data of financial statements to be useful for investors and analysis, it is necessary that the financial reporting system provides information that is deemed to be critical for investment decisions. To the extent that the financial measures and disclosures in the statements are not useful or sufficient for this analysis, then the XBRL data will not be useful, because it is so closely associated with the GAAP-based external reporting system. This implies a judgment on GAAP, rather than on XBRL technology or a particular taxonomy, or the usefulness of interactive data, in general.

That said, there are several issues in the application and implementation of XBRL that bring into question its long-term future as a basis for providing interactive data for investors and analysts, in particular:

a. *The reliability of the data* is poor and this is a potentially fatal shortcoming of the execution of the SEC's mandate, if not addressed quickly and meaningfully. The data quality issues and excessive use of extensions have been mentioned in various public articles or venues.[31] As we see in Figures 8 and 9, in the early stages of application of the SEC mandate the proportion of errors and extensions was very high, making use of XBRL implausible without significant additional effort.

b. *Skepticism about data quality has a significant impact on end users' decisions to utilize XBRL data directly from the SEC.* With respect to the detailed-tagged footnote data, in particular, several investors and analysts have communicated to us that they view XBRL data as potentially an excellent solution to manually collecting the data they need (as shown in Figure 2). Of those who have tried to utilize XBRL-tagged data for a relatively large sample of firms and filings (such as the S&P 500, for example), we found that they uniformly had a very negative view of the usability and usefulness of those data at present. This negativity was due in large part to errors they saw in the data as they attempted to use it, and perhaps more importantly, was due to the fact that these researchers were trying to utilize detailed-tagged footnote data that had been tagged with extensions instead of with standard tags that were available in most cases.[32]

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[31]For example: in an interview by Tammy Whitehouse with Alex Rapp, a co-founder of Calcbench, in the Hitachi Interactive blog at http://hitachidatainteractive.com/2012/09/26/calcbench-readies-improved-user-application-for-unveiling-soon/; in a panel discussion on XBRL at the AICPA National Conference on Current SEC and PCAOB Developments, December 5, 2012; and in a panel discussion at the XBRL and Corporate Actions Forum, New York, December 10, 2012.

[32]In one striking case, only two filers out of the S&P 500 had utilized the correct standard tag, and most had created an extension unnecessarily. Yet, this was for an uncomplicated accounting concept, with very limited standard tags to choose from.

Figure 8 – No. of Filings by Standard Industrial Classification Grouping
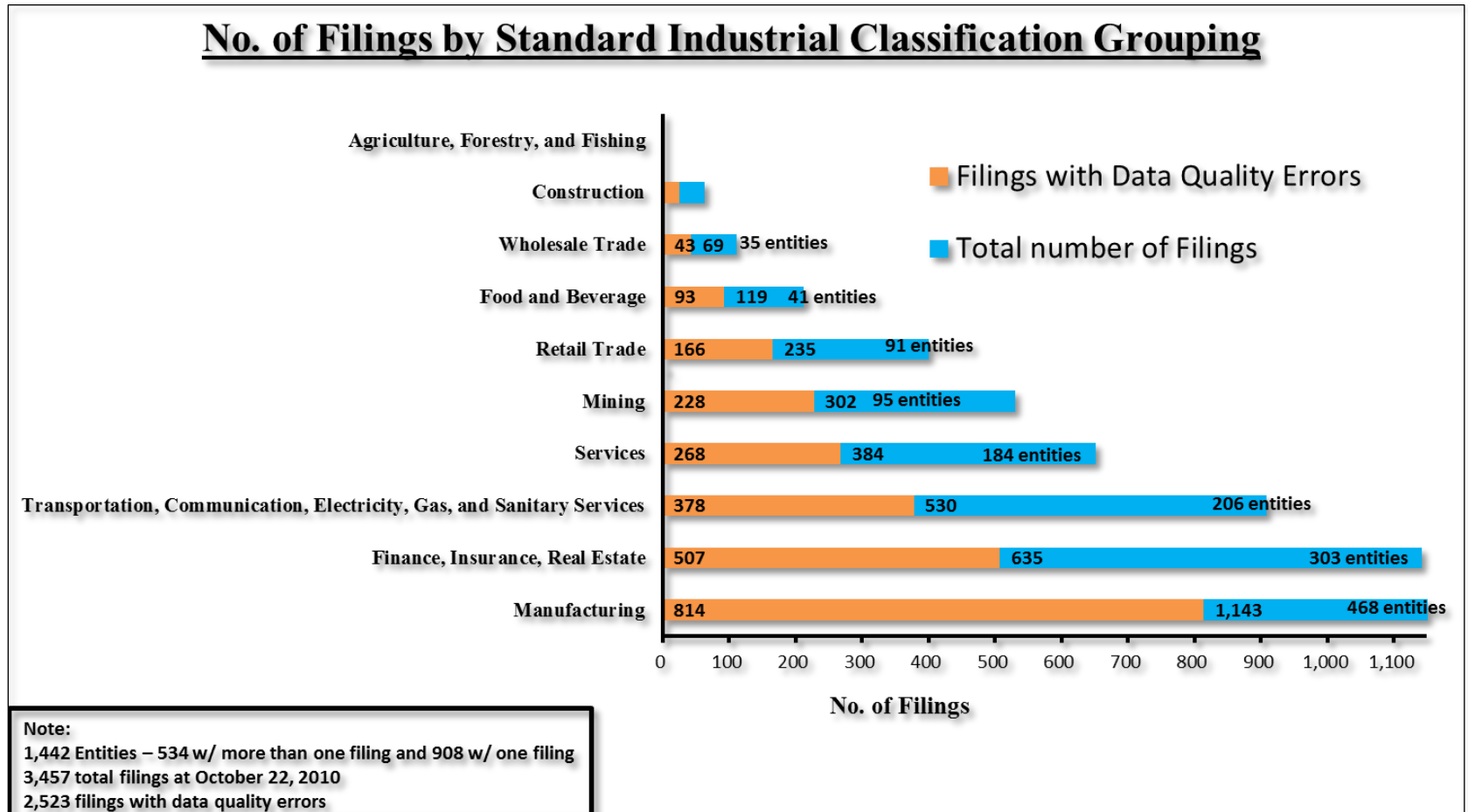
(Source: XBRL US as presented in "Democratizing Transparency" Trevor S. Harris, November 2010)

Figure 9 – Extensions as a % of Total Elements Used by SIC

Extensions as a % of Total Elements Used by SIC

Note:
Based on 3,475 filings as of October 24, 2010

Agriculture, Forestry, and Fishing — 13 extensions or 5.1% of 257 total elements

Construction — 892 extensions or 16.3% of 5,477 total elements

Wholesale Trade — 1,060 extensions or 11.0% of 9,624 total elements

Food and Beverage — 3,102 extensions or 15.7% of 19,704 total elements

Retail Trade — 3,300 extensions or 11.0% of 29,874 total elements

Mining — 39,287 — 6,818 extensions or 14.8%

Services — 49,556 — 7,554 extensions or 13.2%

Transportation, Communication, Electricity, Gas, and Sanitary Services — 16,241 — 70,228 — 18.8% extensions

Finance, Insurance, Real Estate — 26,500 — 93,074 — 22.2% extensions

Manufacturing — 22,104 — 146,756 — 13.1% extensions

■ Extension Elements (87,584 extensions or 16.1%)

■ Base Taxonomy Elements (455,470 elements or 83.9%)

0   25,000   50,000   75,000   100,000   125,000   150,000   175,000   200,000

(Source: XBRL US as presented in "Democratizing Transparency" Trevor S. Harris, November 2010)

c. Some of the analysts and investors we spoke with also noted that the *excessive use of unnecessary extensions* left them wondering about the filer—was the filer not yet competent in XBRL, did the filer not care that their filings were incorrect, or was the filer trying to hide something from end users or regulators?

A leading equity research analyst from Credit-Suisse provided the following on-the-record comments:

1. *"The tagging is inconsistent, for example, you might have five different companies use five different tags for the exact same data or the same company using different tags for the same item over multiple periods.*
2. *I thought, the XBRL documents were created to promote the mass consumption of financial reporting data, but that's not the case because of the inconsistent tagging. If I have to collect the data for handful of companies, I still find it easier to hand collect it from the HTML document.*
3. *Both the XBRL tagging software providers & filers need to be educated on how to find the correct tag and use it consistently to produce quality, well-tagged XBRL documents."*
-Amit Varshney, VP Equity Research, Credit-Suisse

Many sell-side teams specializing in theme-based research wished to use the XBRL-tagged footnote data, but found that since standard tags were not available for the key data items they required for their research, they had to manually collect the data. This analysis setting was the perfect opportunity for the usefulness of XBRL tagging to become clear to the analysts, yet it become a lost opportunity and led to a serious credibility loss about the future usefulness of XBRL for these analysts.

A serious issue with the type of errors in the XBRL-tagged data is that they can be difficult to identify, and often require that someone know XBRL as well as accounting and reporting to sort out what is going on. In fact, to fully identify them, one often has to look at the instance document[33] tagged items and then compare them to the HTML filing. This is a big ask to insert into the workflow of users, and calls even more into question the usefulness of the data at present.

In assessing the use of XBRL for analysis purposes, the data quality issue cannot be overemphasized. Most investors and analysts we interviewed or surveyed who knew about and were interested in XBRL conveyed that they wished to stand on the sidelines until they felt that these concerns had been addressed adequately by the filers and regulators. In the

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[33]An "instance document" is defined by the SEC as an"XML file that contains business reporting information and represents a collection of financial facts and report-specific information using tags from one or more XBRL taxonomies" (see the SEC glossary at http://www.sec.gov/spotlight/xbrl/glossary.shtml).

meantime, their interest in and demand for detailed-tagged items whether in the footnotes or in the MD&A or earnings releases remains, but it would best be described as pent-up demand until their concerns are alleviated. For the most part, in the current economic environment, they do not feel they have the capacity to disrupt their current workflow for data that appear unusable and inaccurate. This conclusion should be obvious given the many data sources they have and the limited time available to perform the analysis.

When we contemplated why the data quality is so poor, we came to several conclusions:

- First and foremost is that many preparers consider this to be a costly regulatory burden, and, given that it is incremental to their existing HTML EDGAR filings, they do not perceive any user need. The XBRL-specific filing technology is incremental to their existing approaches and applications, creating not only additional cost, but also room for additional error, in their opinions.[34] They also had an extended period of limited liability, during which it appears that many did not take this additional filing as seriously as the HTML filing, including filers that showed an unwillingness to correct errors pointed out to them in private by XBRL US. These views about redundant filings should partially change because existing filer software eliminates the need to create separate filing formats, and some of this software can literally shorten the closing process as well, in the right circumstances. The seriousness with which filers take the XBRL filings should also improve because limited liability is beginning to expire.

- The persistence of errors and extension excess also partly results from initial lack of oversight, enforcement, and accountability. This will change as the safe harbor period is ending for large filers, but it may take a formal external audit review or serious usage to resolve some of the small, but impactful errors, such as having inaccurate dates or units, which we understand occur with great frequency.[35] But this is only part of the reason for the errors, and other reasons are reflected in our other explanations of what went wrong and why.

d. *The technological approach is too complex and potentially outdated.* We had several discussions with people who understand the technology and alternatives. While all acknowledge the benefits of structured data, the particular approach taken in XBRL is considered to be too complicated and cumbersome. As one participant from a large technology-based information provider indicated to us:

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[34]As a reminder, survey data from the FEI's FERF for both 2011 and 2012 contradicted these beliefs. That is to say, XBRL implementation was either not as costly as believed above, or had become significantly less costly over time to most filers. And, as we noted earlier, filing software technology is progressing so rapidly that the duplicative filing creation is generally a considered thing of the past for the leading filing services providers.
[35]Interviews with the XBRL US and the founders of CalcBench have indicated that these are two common and highly frustrating errors.

"The machinery is far more complex than it needs be. Precisely why is not obvious to us geeks.

- *The schemas that exist so far are primarily accounting machinery. Information of broader interest is not fleshed out in the schemas, so we tend to be disappointed in what we get in exchange for a significant development effort.*
- *The abuse of the extension facilities by the filers is pretty extreme.*
- *Adoption appears to be proceeding in fits and starts. The FDIC call report data are interesting, in addition to the various SEC filings that are required in XBRL.*
- *The ecosystem around XBRL is weak. At least two pieces are missing:*
  - *A good open-source tool suite.*
  - *A technical plus business organization, ideally hosted in a strong academic institution. This institution would maintain the tools, write papers about the machinery and about the data, sponsor technical meetings (the XBRL meeting is far too nontechnical to meet the broader needs), and help the larger community navigate the XBRL data space.*
- *There are initiatives … that might take advantage of this sometime in the next couple of years, though the focus of the data published in XBRL needs to be more about consumer utility and broader economic interest than about either finance or accounting per se."*

Several interviewees echoed these comments expressing frustration that XBRL's technology had been "captured" by the accountants. Preparers' frustration also arises around this notion that XBRL is an add-on technology imposed on them that does not fit with their existing technologies.

One important conclusion we have reached as a result of our all of our conversations and background research, is that all of things that "went wrong" were anticipated and vocalized prior to the SEC mandate and on many occasions since then, and many of these problems were avoidable.[36] So why did we get to this point? We answer this in two broad categories:

1. Detrimental decisions made by various parties that arguably could have been avoided, and
2. The evolution and current state of technology for structuring useful data.

1. Detrimental decisions

We acknowledge that most of the decisions made along the path of design and implementation were driven by events and dynamics for each of the stakeholders in XBRL, and

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[36]For a sample of some of the prescient insights, see the Debreceny, et al. (2005), and Plumlee and Plumlee (2008).

that these choices were not made in a vacuum or with bad intent. The last two decisions described hinder the current usefulness of XBRL-tagged information to the point that they render the data not only unusable at present, but potentially irrelevant, if not remedied as soon as possible.

The three most detrimental decisions were, in our opinion:

a. **The decision to frame the regulation so that it appeared to many filers and to the XBRL development community that filers had to create an XBRL-tagged reproduction of the paper or HTML presentations of their filings:**

   - We believe this presentation-centric step hindered or diverted what should have been an important evolution from a paper presentation-centric view of financial reporting information to a far more transparent and effective data-centric one.
   - Valuable resources were spent on learning the details of a technology rather than on its use for enhanced financial reporting processes, leading to better analysis and decision-making, both within the filing firms and for end users of their data.

b. **The design of XBRL filing and consumption technology such that it requires extensive and detailed technical knowledge to input or to extract data:**

   - We are not technologists and we believe that one should not have to become a technologist to the level required by XBRL in order to either input or extract financial data.
   - We believe this contributes to data and tagging errors by filers, as well as to lack of interest on the part of investors and analysts to date.

c. **The reticence (or inability) of regulators and filers to ensure that the interactive filings data are accurate and correctly-tagged from day one of their release to the public and forward (or, to communicate to the market for this information that they were not insisting on this and why):**

   - We believe this is a key reason that the data are not being used as much as their potential would suggest.
   - The regulation, as written, provided numerous loopholes that permitted filers to submit filings with low-quality data and tagging
     - Limited liability for filers
     - No external auditor requirement.
   - Filers were unwilling or unable to ensure the quality of their data
     - Interactive filings data did not match the related EDGAR filing data
     - Incorrect tags were utilized
     - Unnecessary and extensive custom tags were used.

2. Technology has advanced significantly since XBRL was first designed

What is often surprising to those outside of financial functions directly involved in reporting, especially given current technology opportunities, is that preparation of financial (and some management) reports is often done as an additional process or even in a different system with varying technological sophistication (as noted above and in Figures 4 and 5). Then, the regulatory filings (paper or HTML) are prepared as a separate process, sometimes by a separate team, often through standard word-processing and spreadsheet programs (like Microsoft Word and Excel).[37] Meanwhile, the technology has been evolving towards an integrated approach in which reporting is a natural outflow linked to the original inputs, facilitating the ability to interact in close to real time with the source disaggregated data. As Charles Hoffman, one of the originators of XBRL articulated in a recent white paper:

> *"There are others taking a structured authoring approach to creating financial statements. SAP, Oracle, and IBM to name three. All of these companies are working to change the "last mile of finance" as are others. Many of these companies started down this path long before XBRL even existed. Disclosure management software is replacing Microsoft Word for creating financial reports." (Hoffman and van Egmond, 2012)[38]*

But why would we need XBRL if the data system providers already provide a structured language (or languages)? The answer traditionally given is found in "XBRL for Dummies" (Hoffman and Watson (2009))[39] which states: "XBRL is, fundamentally, a language that helps businesses to bridge effectively and efficiently the current gap between business systems by crossing these artificial boundaries." So in principle, if all the different business reporting systems are not standardized, then XBRL will facilitate this. But, the rather controversial question we keep asking ourselves, as we have heard the feedback, is whether any of this is still actually necessary?

In evaluating this question, it is useful to consider how XBRL has been used, starting with where XBRL has been mandated. An early example was for FDIC filings. In this case, the filings were not already available in a web-based database, requiring extensive manual processing to be useful for analysis (as was true with financial filings stored in the publically-accessible EDGAR system on sec.gov). Rather than forcing filers to tag their filings, the FDIC provided pre-approved software vendors, whose tagging tools were embedded in the data

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[37]In many organizations the management reports will also be managed through manual spreadsheet based processes.
[38]See the excerpt from *Digital Financial Reporting (Draft Version .8, September 2012, p.50)* at http://www.xbrl.org/sites/xbrl.org/files/resources/digital_financial_reporting-using_an_xbrl_model.pdf.
[39]Hoffman, Charles; Watson, Liv *XBRL For Dummies.* (October16, 2009). John Wiley and Sons. (Kindle Locations 775-776)

submission filing process, so that the software tagged the reports invisibly, i.e., without any additional work on the part of the filer.[40]

In contrast, for financial reports, the SEC had mandated filings through the EDGAR system and went through the multi-year pain of getting issuers onto a web-based filing platform (in HTML format). Yet, even with this there was potentially a need for structuring the data in a way that it could be easily used interactively. This was the presumed motivation of the SEC mandating that filings were also done in XBRL. But, as articulated above, this is one of the problems. The SEC's XBRL mandate had a presentation (filing)-centric focus rather than a data-centric focus. That is, the focus became that of formatting data to accommodate a specific filing or presentation, rather than on making individual data points available for the end user to utilize or present as they required.

In our view, the fact that the FASB and IASB now own the taxonomies epitomizes the incorrect focus. If accounting regulators argue for years about a presentational format for financial reports (without any conclusion), how can they reasonably be expected to appreciate a data-centric approach to financial reporting?[41] The fact that there have been so many nuanced revisions to the US GAAP taxonomy argues that it is going to be difficult for a user to justify the investment of using the XBRL data.[42]

This still leaves us with two big questions: is the technology underlying XBRL truly necessary to structure the financial reporting data that are already provided in HTML form, and why is it superior to alternative solutions? A related nagging question we have is why the large vendors like SAP, Oracle and IBM have not integrated XBRL technology as their own business reporting language in their underlying products—we know that they have products to help filers submit their XBRL filings, but that is a different point than the fact that, as far as we can tell, SAP, Oracle, or IBM have not actually written products with XBRL as the underlying structuring code (syntax)? If they did use XBRL at the source, then the quality issues would

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[40]"Key to these successes was the minimal disruption to banks. Bankers did not know they were using XBRL in the new system — it was transparent to them. This was due to our work with the software vendors that provided the bank filing software. In short, XBRL has helped us achieve significant efficiencies and reduce operating costs. The standard has enabled us to improve the immediate quality of the data we receive. Our data quality standards are conveyed efficiently, requiring significantly less intervention from agency staff to reconcile and validate. The data are more timely and accurate, allowing us to make better-informed decisions every day." For additional background, see the comments in 2006 by Walter Gruenberg, Vice Chair of the FDIC on the subject of this agency's XBRL implementation for Call Reports at http://www.fdic.gov/news/news/speeches/archives/2006/chairman/spdec0406.html. There are obviously other differences between how FDIC data are reported and utilized, especially as regards to the lack of latitude given to filers to utilize their own judgment with respect to the amount, type, and value of the data filed. We do not believe that those differences explain away the issues with the implementation of the SEC's XBRL mandate.

[41]While Louis Matherne, the Chief of Taxonomy Development for the FASB, has discussed publicly that in an XBRL world, the importance of geography of financial statement information changes, in looking at the recent Disclosure Framework Comment paper, and in listening to public Board discussions, we are not convinced that the Board itself has this perspective.

[42]However, in a very recent interview, Louis Matherne, stated that the stability of the U.S. GAAP Taxonomy is a key goal going forward (http://merrillcompliancesolutions.wordpress.com/2012/12/11/qa-with-an-expert-view-from-the-fasb-on-us-gaap-taxonomy-and-xbrl-part-1/).

presumably disappear and the usability would be improved. One answer to these questions is that XBRL just needs time for people to use it and its value will be clear. We are not convinced that this is indeed the case. As XBRL is currently applied and even enhanced, we still do not see it being easily taken up by the data system vendors as their own business reporting language.

The next step is to acknowledge that the XBRL standardization will not take place at the point of data entry, and then to ask whether structuring of data that are provided in financial *filings* is even necessary at the provider (issuer) stage? We do not question the value of tagging the raw transactional data in a filers' general ledger, which, in turn, would feed any type of report, including a regulatory filing. It is the preparer's tagging of a filing (and only a portion of one, as we keep reminding ourselves), that may not provide as much incremental value to end users, other than regulators, as some have contended.

We do not profess to be experts in all the available technology, but anecdotally we observe that there are an increasing set of services that take unstructured data on the web and from other sources, then through the creation of taxonomies analyze and structure the data and provide user-friendly outputs. Examples of this include: [43]

- *Recorded Future* which "continually scan tens of thousands of high-quality, online news publications, blogs, public niche sources, trade publications, government web sites, financial databases and more… to identify references to events and entities..(allowing users to).. explore the past, present and predicted future of almost anything in a matter of seconds. Our powerful interactive tools facilitate analysis of temporal patterns and better understanding of complex relationships and issues."[44]

- *Dataminr* whose "analytics engine transforms… (using proprietary filtering and classification) …social media streams ..(400 million tweets processed daily in real-time).. into actionable signals, providing clients in the financial and government sectors with one of the earliest warning systems for market-relevant information, noteworthy events, and emerging trends."[45]

- Mobile applications like Google goggles, Leafsnap, Meal Snap and Skin of Mine recognize images and transform them into information. Analogously, some searches on Google yield references and explanations as a sidebar to a search. These are drawn from various sources on the web.[46]

These examples, and there are undoubtedly many more, illustrate how quite complex unstructured data can be structured and transformed into useful information by pulling in or

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[43]There are several initiatives to create more structure to web-based information, which would reduce the relevance of XBRL and be more generic. These include, the "Semantic Web" by the W3C consortium and Object Management Group or OMG whose objective is to develop enterprise integration standards (see http://www.omg.org/).
[44]https://www.recordedfuture.com/this-is-recorded-future/how-recorded-future-works/
[45]http://www.dataminr.com/index.php. One of the authors has a financial interest in Dataminr.
[46]One can see an example of this by searching for: "adenosine triphosphate".

"reading" the data, rather than forcing the providers of the data to provide the structure. Clearly, there should be more precision and accountability if the providers of information do the structuring for us, but the core question for financial reporting is how necessary this is (beyond an HTML EDGAR filing). If it is considered necessary for some reason (e.g., for regulation), then it has to be accurate and provided in a manner where it is trivial to read/use the data and integrate it into a user's processes or workflow—which implies significant change for XBRL itself, and not just for preparers and consumption tool developers, if XBRL is to continue in its current mandated role. These observations lead to our thoughts about the future path for interactive data for investors and analysts.

5. Looking Ahead

Given some of the above concerns and issues, there are valid questions about whether the full promise of XBRL and interactive data has been or even can be met. Our view is that some of what we have observed is a natural part of a change process, and that, given time and a continuing mandate, the issues will be reduced. There is no doubt in our minds that analysis of companies will be based off increasing amounts of data that are structured and delivered in a manner that users will be able to interact with and adjust in an increasingly effective and efficient manner.

So it is not a matter of *whether* a method for structuring and communicating interactive, machine-readable data will arise, but more a matter of *which* method of collecting and consuming such data will both arise and remain relevant, in light of ever-advancing technological changes, as well as ever-growing demands for data by consumers. Finally, it is also a question of *who* will apply the structure to company-specific data—i.e., the company, or the data providers/integrators in the data market place. As we illustrated earlier, diverse data must be structured, either by the preparer or by a third-party aggregator/vendor of the data. XBRL, and its related taxonomies, such as the US GAAP taxonomy, are just one method for applying structure to financial reporting and other data required by investors and analysts. One aspect of the SEC's mandate that certain U.S. filings be provided in XBRL format was that this method ensured that the reporting company apply the structure to their own data. However, for a given structure to be useful and usable, and to succeed ultimately, it must be user-friendly, as well as consistent on both the input and the consumption ends of the structuring process. Whether the fact that these data are "tagged" by the company or by a third-party is actually valuable to investors/analysts is an open question, and one that may only be answered over time.[47]

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[47]As noted earlier in the paper, some investors believe that the tags chosen by filers may provide valuable information that is either not already available or not as easy to include in their models. An example of this includes their questions

Our current view is that XBRL is unlikely to be the format for most of the financial data that investors desire to use about a company, because it has not and seems unlikely to be integrated as the "language" to structure the data in the underlying general ledger and other management information systems. That said, *IF* financial reporting under U.S. GAAP continues to be of use to security analysis (which we do not see as a foregone conclusion given the current path of standard setting), there will be a benefit to having as much detailed data from the GAAP filings in a structured form that can be manipulated interactively. XBRL could potentially still play this role because it is still mandated and it will have some lingering stickiness. The primary competition initially remains from the data aggregators who are supplying more and more detailed data in an as-published format, and in machine-readable systems that easily integrate into workflows, but they are expensive. One potential advantage XBRL will have is if it becomes the primary format for standardizing other regulatory filings or data like earnings reports and corporate actions. This will lower the incremental processing costs for both producers and some users of the data.

If issuers want to eliminate XBRL, which we sense is the case, they can help their cause by creating a delivery platform that produces more standardized data, or work with vendors who can deliver the data in a more structured way. Alternatively, they should spend the effort they are investing in destroying XBRL to help improve the quality of their own data, as well as to make their own data more useful and accessible to users.[48] Preparers who argue that no users want the details in footnotes or the MD&A tagged in XBRL but just the "common items" in the core financial statements, are basically arguing that users do not want the information in the disclosures. As anyone who has participated in the standard-setting process can attest, the standard request from users is for more detailed disclosures not less. It is these added disclosures that provide the most benefit (in financial reports) to users from being made easily extractable and manipulated. Unfortunately this ease of use, XBRL does not yet provide. But, it is absurd to argue that investors who use financial reports at all do not want any or most of the numerical disclosures in the footnotes that are in the reports.[49]

For the entire XBRL community, which includes the regulators and many vendors, as well as the developers and filers, to ensure the continued relevance of XBRL, it is critical that they find a way to reduce the error rate and extensions significantly. One way to achieve this is by greater regulatory oversight and potentially requiring the audit of this data, or to require filers to adjust their

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about why certain otherwise similar filers would choose to create an extension for an item that their peers tagged with a standard tag.

[48]One way this can be done is for issuers to move to "Inline XBRL" which ensures that XBRL and HTML data are the same, and which can ease the preparation burden for filers. According to Susan Yount, of the SEC, their office is considering this an option for filers. Alternatively, as noted earlier in the paper, several filings services providers already have products which ensure that only one base file is created, from which XBRL and HTML filings formats are automatically submitted, without redundancy.

[49]As our survey data illustrate and as we know from practice, different types of investors and analysts consume different types and amounts of disclosure information, or may even look at the same data in a different way. There is no "one size fits all" approach to what data are required, and there is no one type of investor or analyst.

filing to pass the error and quality checks communicated by XBRL US, especially if no other detailed monitoring is provided.[50]

Once the SEC is serious about using the data in its Corporate Finance function and even for enforcement, as it should, then they will appreciate why it is in their interest to get better data accuracy. But even improved quality of the data is unlikely to be sufficient. In our view it is also critical that the focus for the taxonomy has to shift to simplification and enhanced utility.

We close by suggesting some challenging possibilities to achieve these goals:

- Partner with the major business information system vendors (like IBM, Oracle and SAP), the key web-based financial information suppliers (like Google and Yahoo) and possibly even the major data aggregators (Bloomberg, CapitalIQ, FactSet and Thomson Reuters) not only to ensure the necessary mapping to XBRL is as seamless as possible, but, more importantly, to get them to help improve the XBRL technology, ensuring that it is state of the art. Stated differently, let's get the accountants out of the technology of XBRL. This step will enhance both the relevance and reliability of XBRL and make it more cost efficient for everyone. If these parties are not interested, then maybe one group can be encouraged to come up with an alternative. We may be too late for this improvement, with respect to the usability of the XBRL-tagged data for a wide swath of investors and analysts, but if that is true, then we should give up on issuer-based structuring of the data, and find a way to perform the structuring of the filed data via a commercial utility and make it easily accessible (like a smartphone application) to users.[51]

- Focus on getting a utility/consumption tool that can be available to the investor community done. The limitation of creating a utility, which XBRL proponents have discovered, is that it is not enough to build some application that simply delivers the financial reports in their current form, even if it is in an interactive way. To be successful, the application has to

[50]At the time of publication of this study, we know of no other consistent direct monitoring mechanism of the tagged amounts and tags chosen in the mandated SEC filings other than that by XBRL US, which includes communicating back to individual filers their filing errors. That said, XBRL US has no enforcement capacity, does not change the entries in their own database, and does not monitor for accuracy breaks between the HTML and the XBRL versions of the same filing. Consumption tool providers (such as the open source Calcbench.com, and fee-based LogixData, Rivet Software, and EDGAR Online (recently acquired by R.R. Donnelley), for example) provide varying degrees of data correction to their respective databases. The amount and types of errors reported by Calcbench.com to the audience of a December 5, 2012, XBRL panel at the AICPA Conference on SEC and PCAOB Updates, were disappointing at this late date in the implementation—with errors of scale and document and entity mistakes being prevalent. An SEC representative, Susan Yount, Associate Chief Accountant, Office of Interactive Data, also commented on the ongoing issue with errors, including that the SEC hears from users that they complain directly to companies about errors, with no response. She then hinted that the SEC was playing close attention. One of the authors also presented information from this paper about role of data errors in hindering the current utilization of XBRL-tagged data by investors and analysts. Given the amount and types of current errors, it seems clear that filers are not correcting mistakes, even after being notified about them by XBRL US or end users.

[51] Even if issuer-tagged XBRL data were not being consumed en masse by investors and analysts because they had found other, equally relevant, and more reliable data in the meantime, the usefulness of these data to regulators and enforcement/compliance agencies is a likely and potentially desired method. That is, digital filing of regulator-required information with filer-tagging is not an unreasonable societal expectation in the 21st century.

provide some additional value and usefulness, and easily fit into the workflow (for example, as shown in Figure 1).

We still have some hope that XBRL data can be useful to investors and analysts. However, we also view XBRL as at a critical stage in its development. Without a serious reconsideration of the technology, coupled with a focus on facile usability of the data, and value-add consumption tools, it will at best remain of marginal benefit to the target audience of both its early proponents and the SEC's mandate—investors and analysts.

Appendix A: Investor and Analyst Survey and Interview Findings

"A Survey of the Uses and Sources of Numerical Information By Varied Types of Investors and Analysts:
Moving Toward an Understanding of End-User Demand for and Use of XBRL Data"

- The questions are available upon request from the contact author
- They were a starting point for further discussion.
- Not every question discussed is represented verbatim in the graphs, paper, or questionnaire.
- Not all investors and analysts were willing to answer every question.

Survey of Analysts and Investors

1. Respondent Background Information

A1.1 – Type of Analyst or Investor

All respondents

From the choices provided, please indicate what type of investor or analyst you are.

Legend:
- Sell-side equity analyst
- Sell-side equity strategist
- Sell-side Equity Support (IT, Data, etc)
- Sell-side fixed income
- Buy-side long only
- Buy-side long/short
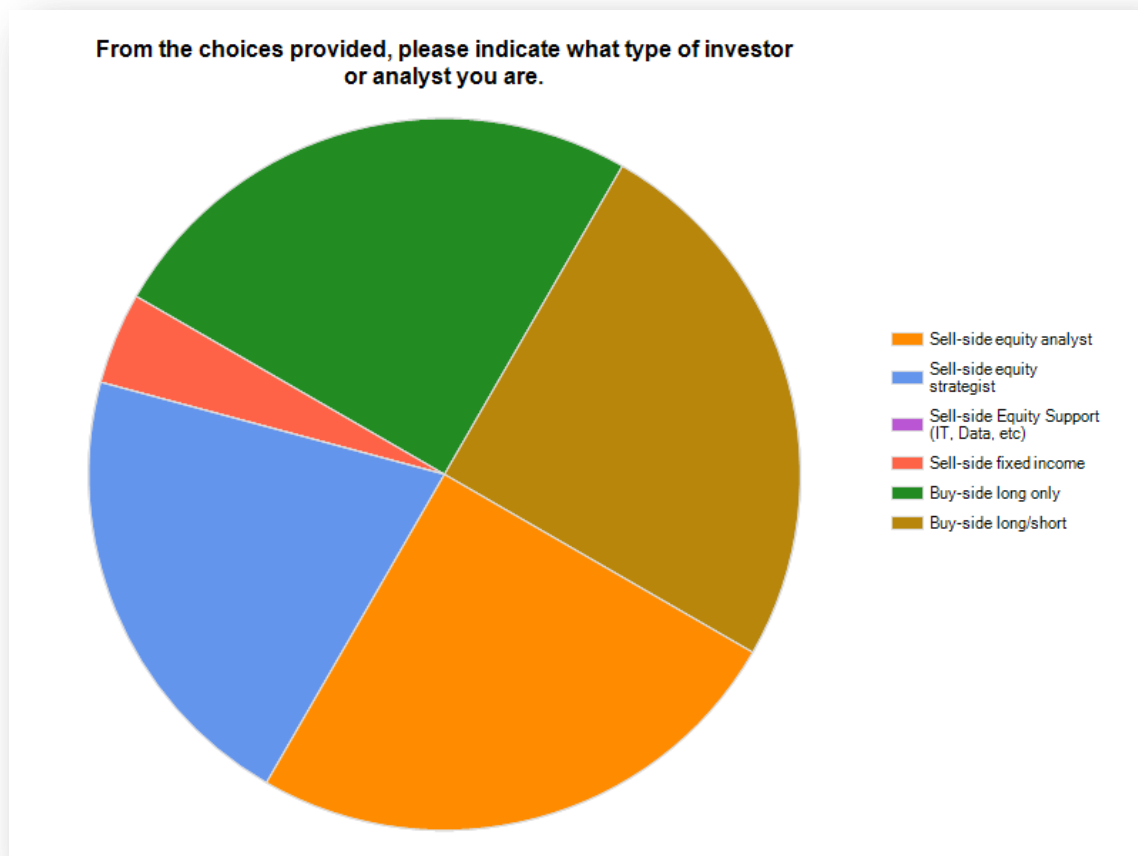
Notes:
- Sample size is split relatively evenly between sell-side and buy-side participants
- The sell-side is further split into equity strategists, equity analysts, and fixed income analysts—the latter category represents a very small portion of respondents.
- The buy-side is further divided into those who pursue long only investments and those who make both long and short investments.

A1.2 – Varying methods of analysis

All respondents

Which of the following best describes the primary approach to analysis that you or your firm follows?

Notes

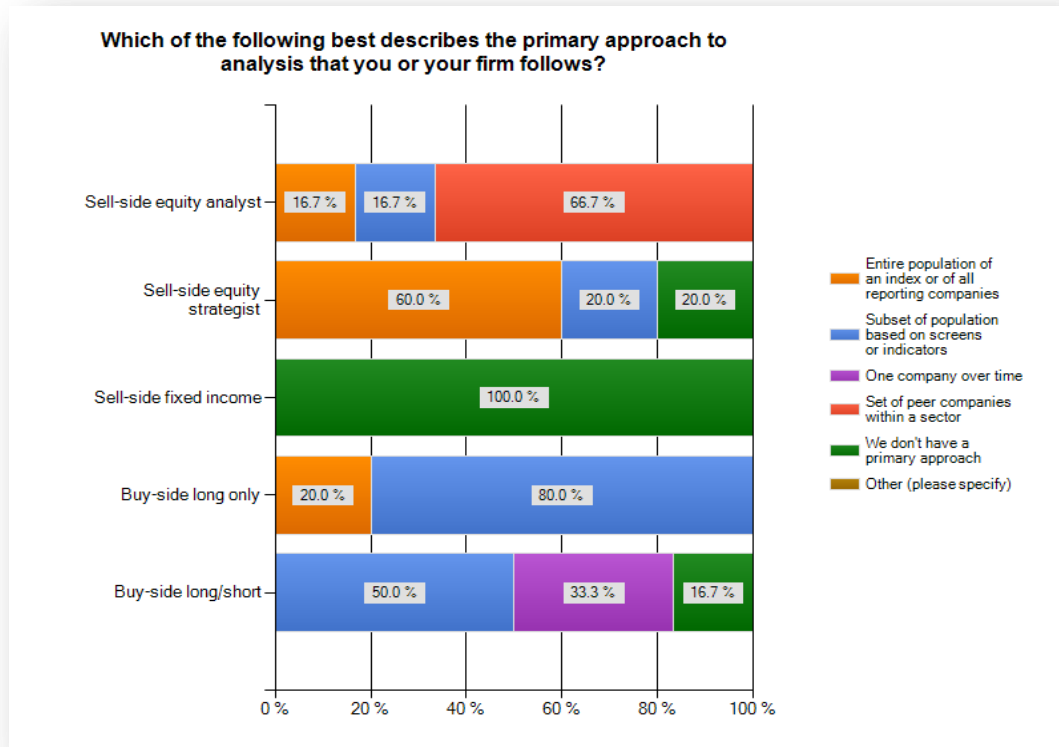- Understanding the type of investor/analyst is significant because they tend to employ different approaches to analysis, and thus may have differing data requirements.
- The type of data analysis employed is important to know because it provides a window into the workflow of the investors or analysts that one is attempting to reach with a particular data or analysis product.
- This does not mean that the data analysis method identified is the best one for a particular decision, but its identification is still a key step for understanding the data needs and requirements of one's target audience.
- Sell-side generalizations:
    - Equity *strategists* tend to examine an entire population.
    - Equity *analysts* tend to study a set of peer companies within a specific sector.
    - Fixed income analysts utilize a variety of approaches.
- Buy-side generalizations:
    - *Long-only* investors have a strong tendency to follow a subset of firms based on the use of screens.

2. Demand for Data for Analysis

A2.1 – Demand for Data: Frequency of use of Footnote numerical data

All respondents

How often would you say that you utilize numerical data *only* found in a company's footnotes in your analysis or investment decisions?
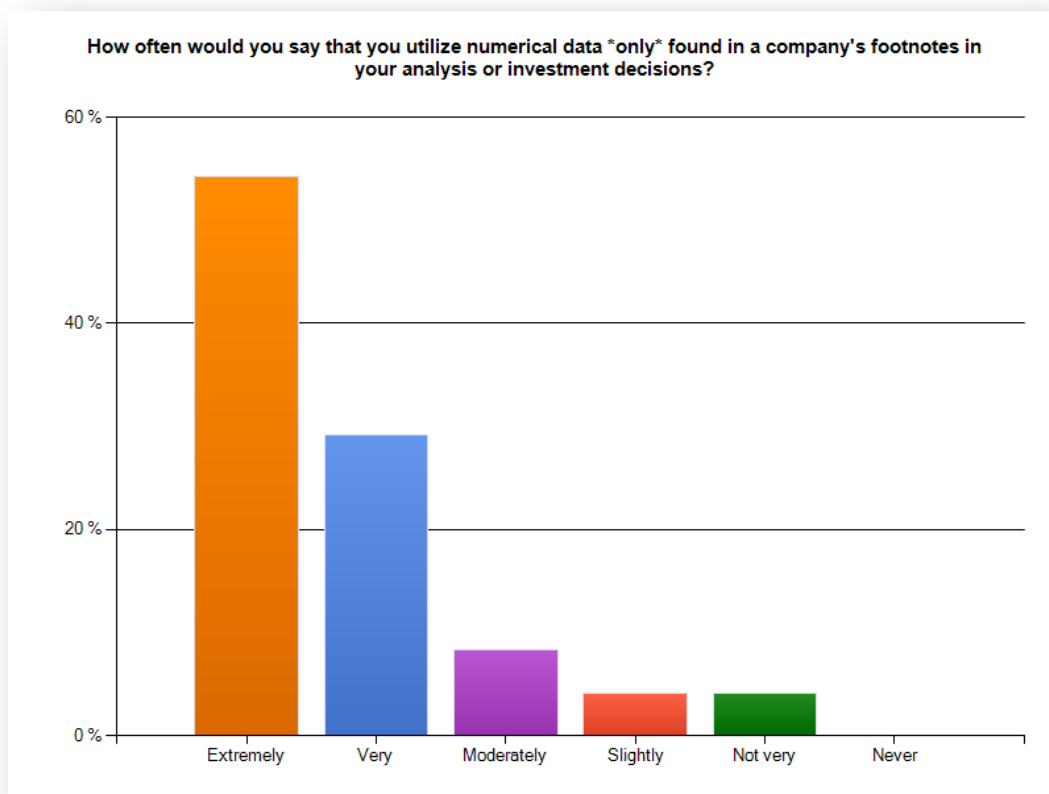
Notes:
- Virtually all investors and analysts say that they require data found only in the footnotes "extremely" or "very" often.

A2.2 – Demand for Data: Frequency of use of Footnote numerical data

By Type of Analysis Approach
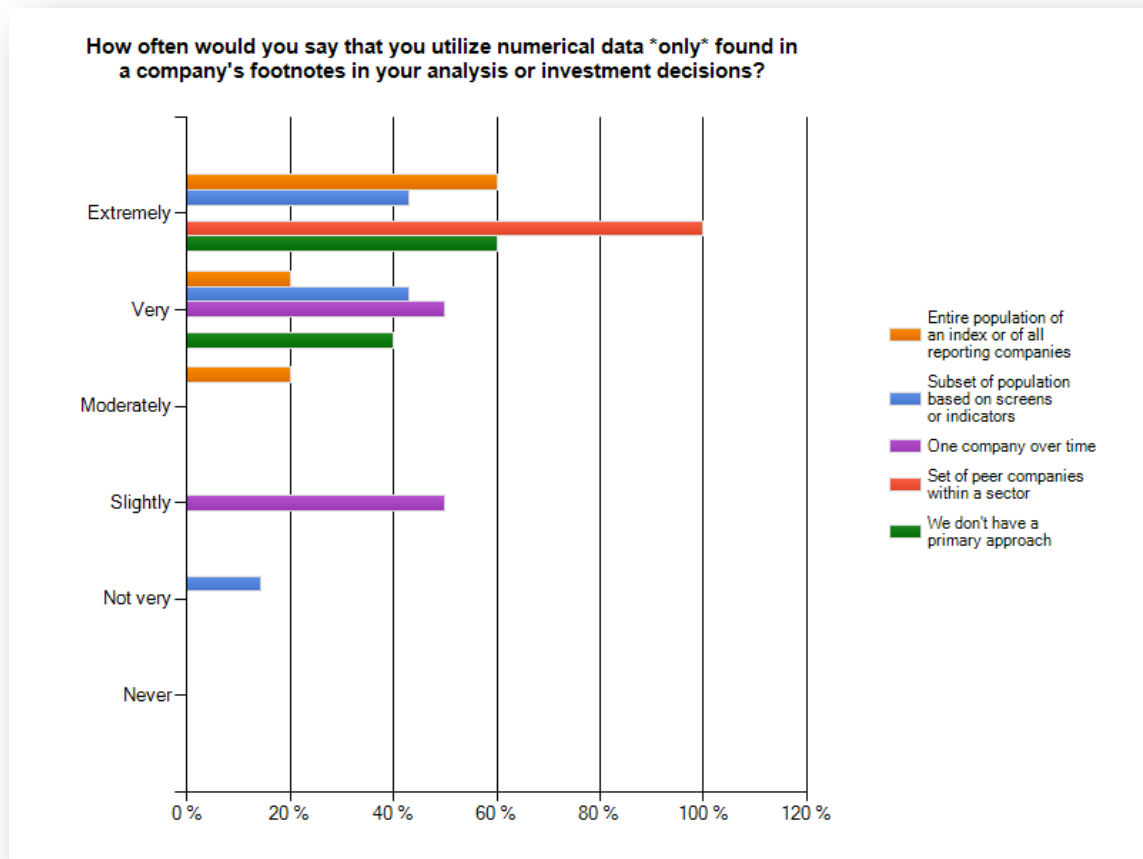
Notes:

- However, the findings of "extremely often" are further understood by the type of analysis being conducted, with the most emphasis placed by those whose analysis comprises "A set of peers within the same sector."

A2.3 – Demand for Data: Frequency of use of MD&A numerical data

All Respondents

How often would you say that you utilize numerical data found *only* in the MD&A in your analysis or investment decisions
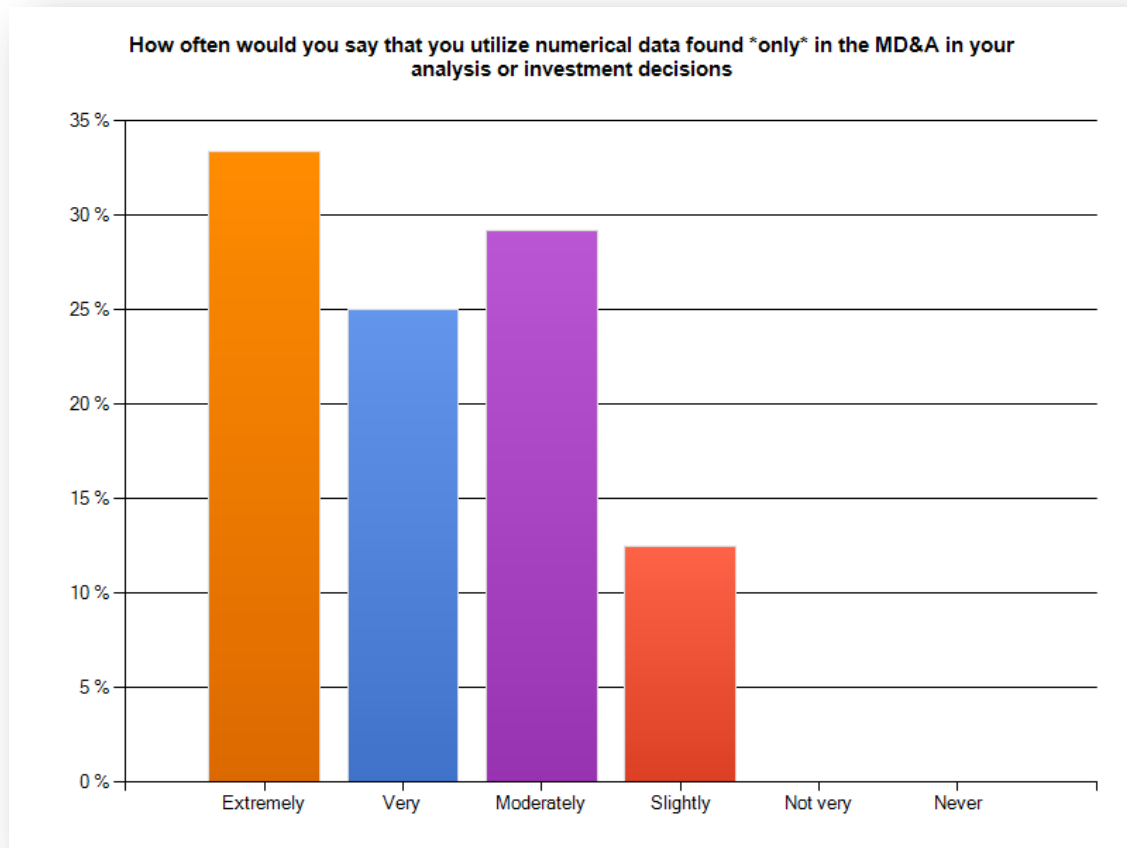
Notes:

- Investors and analysts are more evenly split between "extremely", "very", and" moderately often" when describing numerical information found only in the MD&A.

A2.4 – Demand for Data: Frequency of use of MD&A numerical data

By type of Analysis Approach

How often would you say that you utilize numerical data found *only* in the MD&A in your analysis or investment decisions

Legend:
- Entire population of an index or of all reporting companies
- Subset of population based on screens or indicators
- One company over time
- Set of peer companies within a sector
- We don't have a primary approach
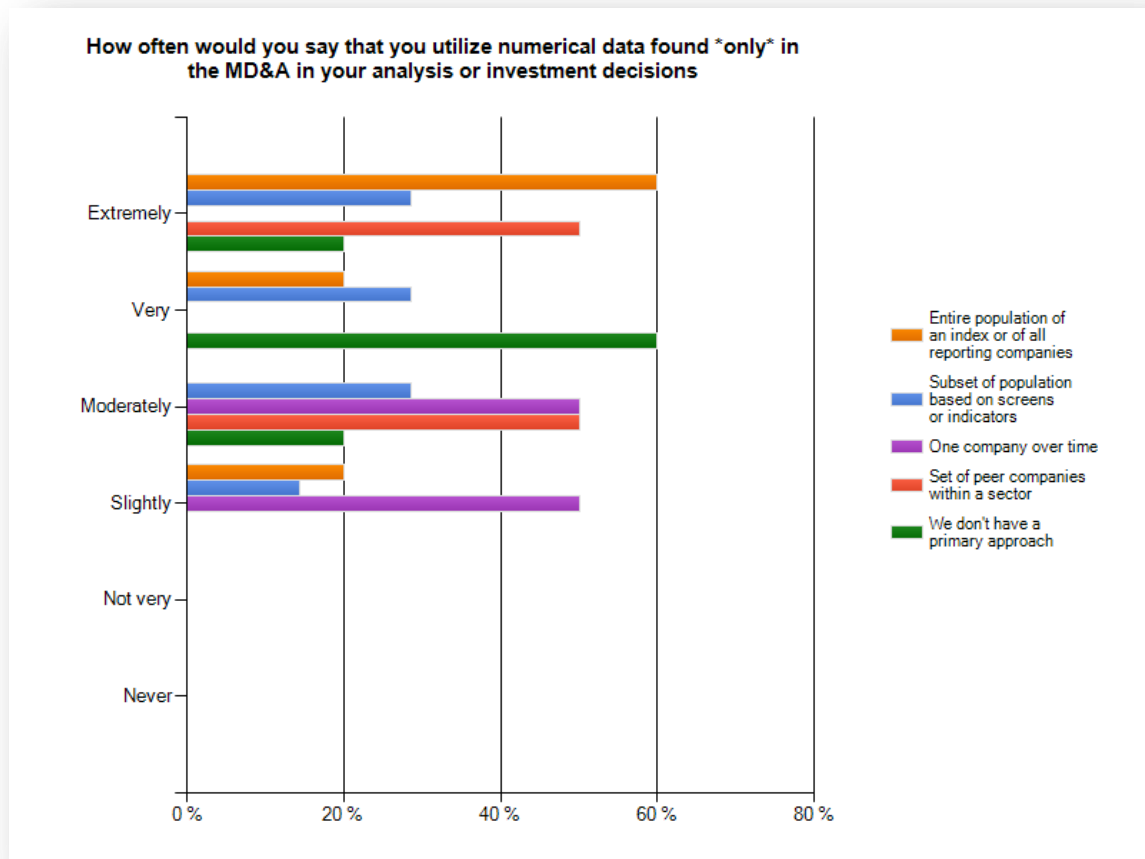
Notes:

- The findings of "extremely" and "very often", in the case of MD&A information, are more heavily dominated by those whose analysis comprises either the "the entire population of an index…" or those who "do not have a primary approach."

A2.5 – Demand for Data: Quantity/Significance of use of Footnote and MD&A numerical data

All respondents

How much of your analysis is dependent on *numerical* items found *only* in the footnotes or MD&A?

~2/3 sample

Legend:
- 91-100%
- 81-90%
- 71-80%
- 61-70%
- 51-60%
- 41-50%
- 31-40%
- 21-30%
- 11-20%
- 1-10%
- 0
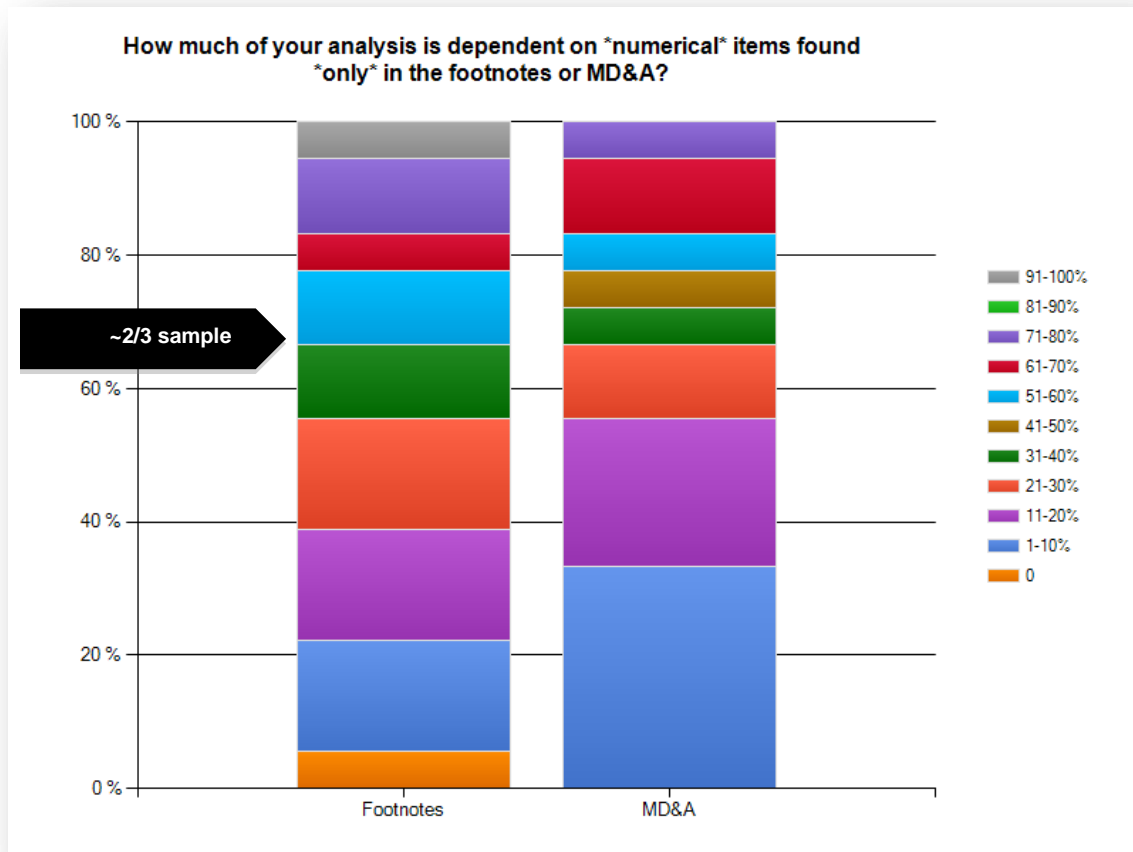
Notes:

- This chart provides additional confirmation about the relative importance of the information in the footnotes and MD&A, when the question is asked a slightly different way than "how often do you rely on those data:"
- ~1/3 of investors and analysts would quantify the percent of their analysis that is powered by only footnote data as at least 51% of their total analysis.
- ~1/3 of investors and analysts would quantify the percent of their analysis that is powered by only MD&A data as at least 31% of their total analysis.

A2.6 – Demand for Data: Frequency of use of numerical data other than SEC filings

All respondents

Are there any numerical items that you use from sources other than SEC-filings, e.g. FDIC call reports, Dept of Labor reports, trade/industry data sources? If so, please list a few examples.

- 33.3 %
- 66.7 %
- Yes (please specify)
- No
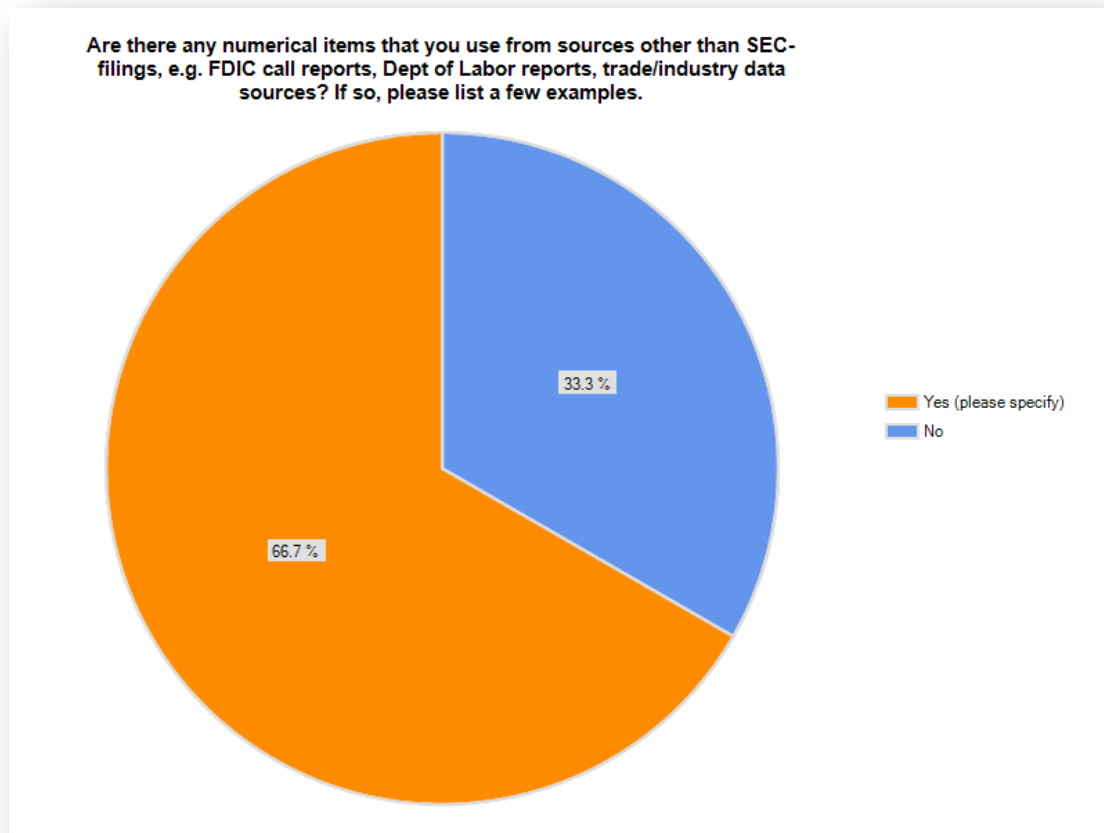
Notes:

- A majority of investors and analysts utilize numerical data—either financial or non-financial—other than that in the SEC filings for their analyses.
- Of those who utilize non-SEC information, there is little variation by type of analysis performed, with one exception:
  - Those who report that they do not have a primary analysis method also reported were more likely *not* to use non-SEC data.
- Examples cited included, but were not limited to: FDIC Call reports, Department of Labor headcount statistics, trade/industry data sources (which cannot be disclosed for confidentiality reasons).

A2.7 – Demand for Data: Frequency of use of "non-comparable" numerical data

All respondents

Do you use numerical data even if the data or transaction is not directly comparable to that of the company's peers?

- Yes: 72.2 %
- No: 27.8 %
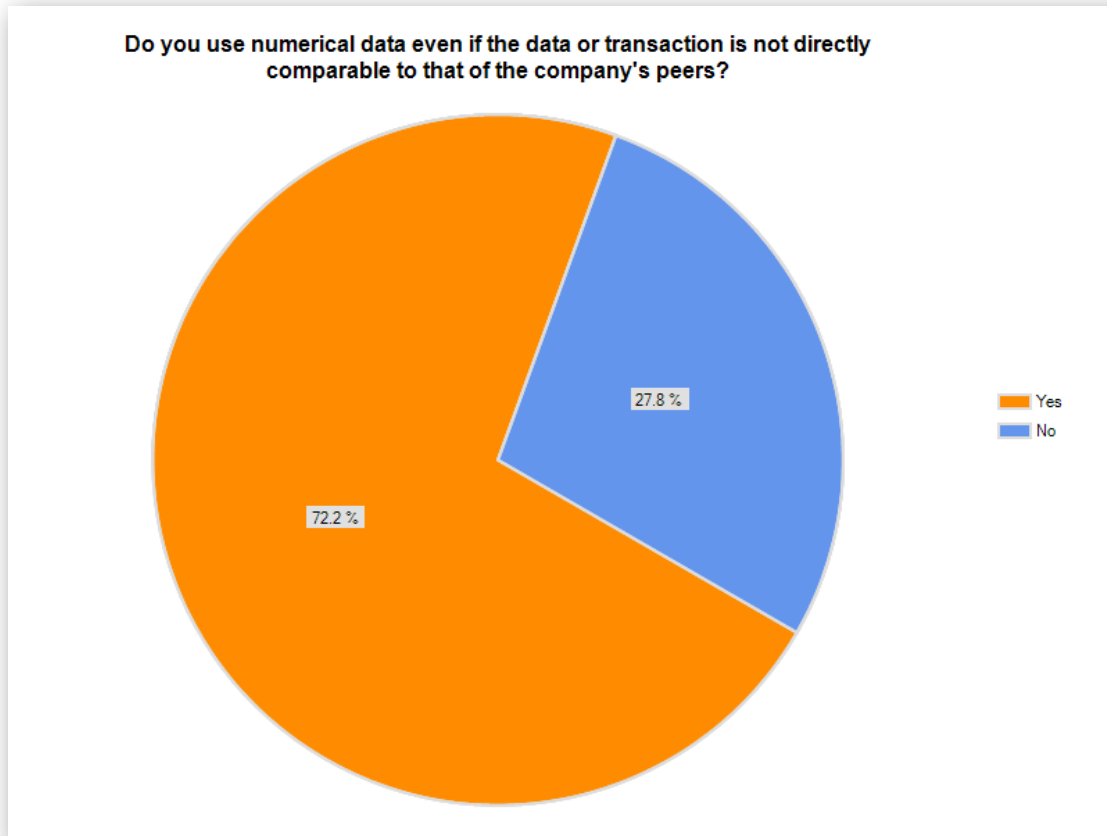
Notes:
- A strong majority of investors/analysts require information that is not directly comparable from one peer company to another:
  - Analysts and investors noted that indicators of liquidity, legal action, efficiency, pipeline, commitments and contingencies, to name a few, can all be transformed into a "comparable" concept, as needed, in their analyses. These items can also populate trend analyses models for an individual company. Finally, these measures can be used for various adjustments of reported numbers, according to a specific analyst or investor view.
- Strategists and Buy-side Long/short Investors:
  - Possible explanations for their use of these data include:
    - They follow companies over time and therefore "within company" trends are important, or they "short for alpha."

A2.8 – Demand for Data: Frequency of use of non-financial numerical data from any source, whether SEC filings or non-SEC filings

All respondents

Do you use non-financial, numerical items (e.g., headcount, number of locations, etc) in your analysis? Please provide some examples in the box below, if so.

87.5 %

12.5 %

Yes (please provide examples below)

No
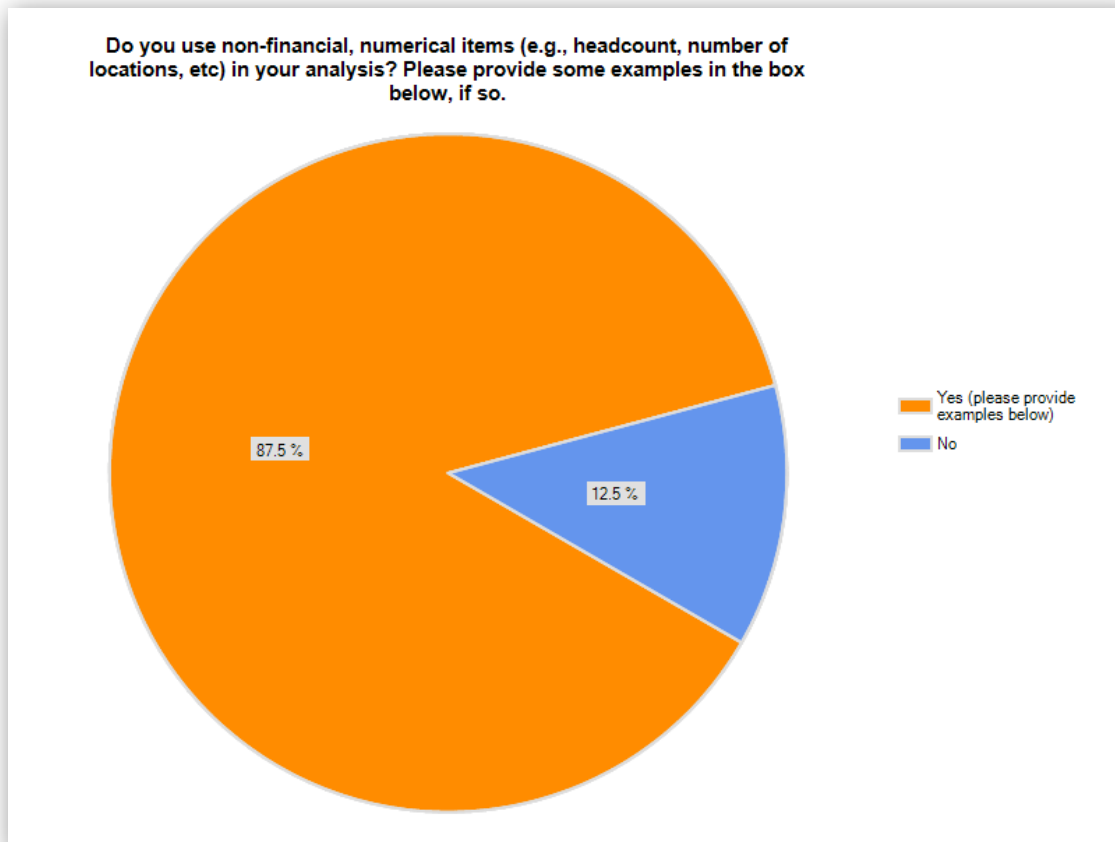
Notes:
- This chart further demonstrates the importance to investors/analysts of information that may be found only in the footnotes or MD&A, or from sources other than SEC filings.
- Examples cited included, but were not limited to: headcount, number of international locations, square feet, other.
- Among those participants who identified a predominant analyst method, the demand for this type of data originates primarily from those whose main method is to analyze a:
  - Set of peer companies within a sector or
  - Subset of population based on screens.

A2.9 – Demand for Data: Non-SEC Data Acquisition Constraints

Respondents who do not use non-SEC data

If you do not use data from sources other than the SEC filings, then what is the primary reason you do not use such data?

Legend:
- Not available in a machine-readable format
- Too costly or time consuming to acquire
- Not needed currently
- Cannot acquire it for the companies I am analyzing
- I only use SEC numerical data
- Other (please specify):
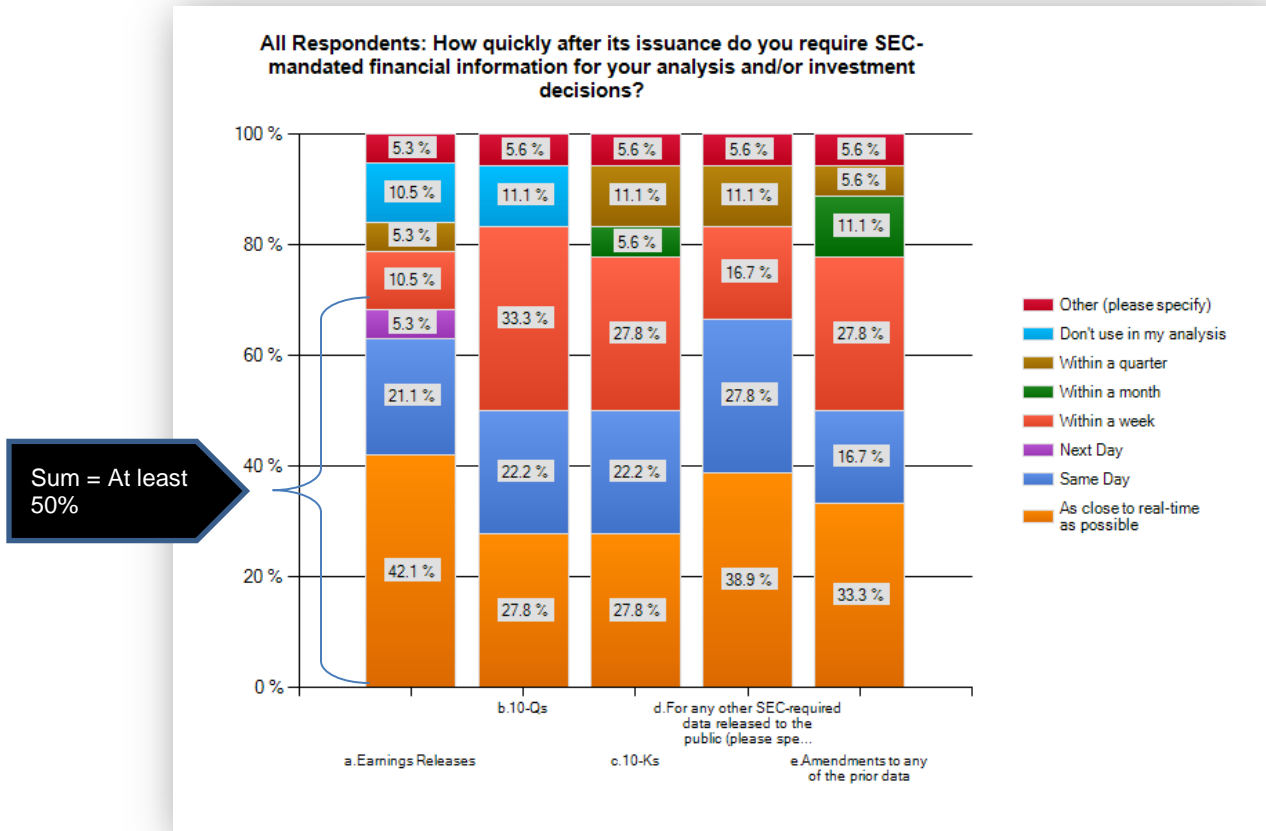
Pie chart values: 66.7 %, 33.3 %
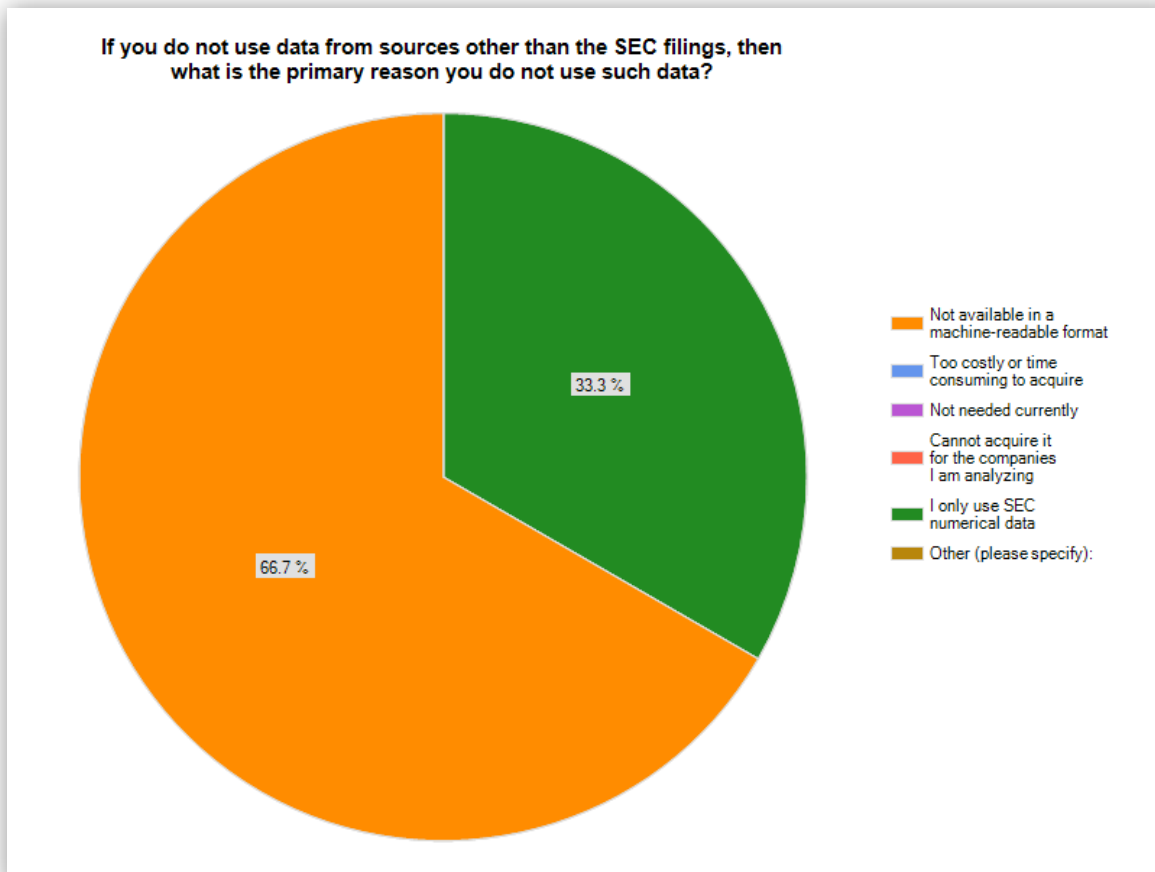
Notes:

- The primary reason for not using non-SEC data was that it was not available to the participant in machine-readable form, implying the information would be used if less problematic to acquire.
- This result suggests there is potential demand for interactive data that relates to an investment decision, but that it needs to be easy to use.

A2.10 – Demand for Data: Timeliness needs for SEC-Mandated Information

All respondents

All Respondents: How quickly after its issuance do you require SEC-mandated financial information for your analysis and/or investment decisions?
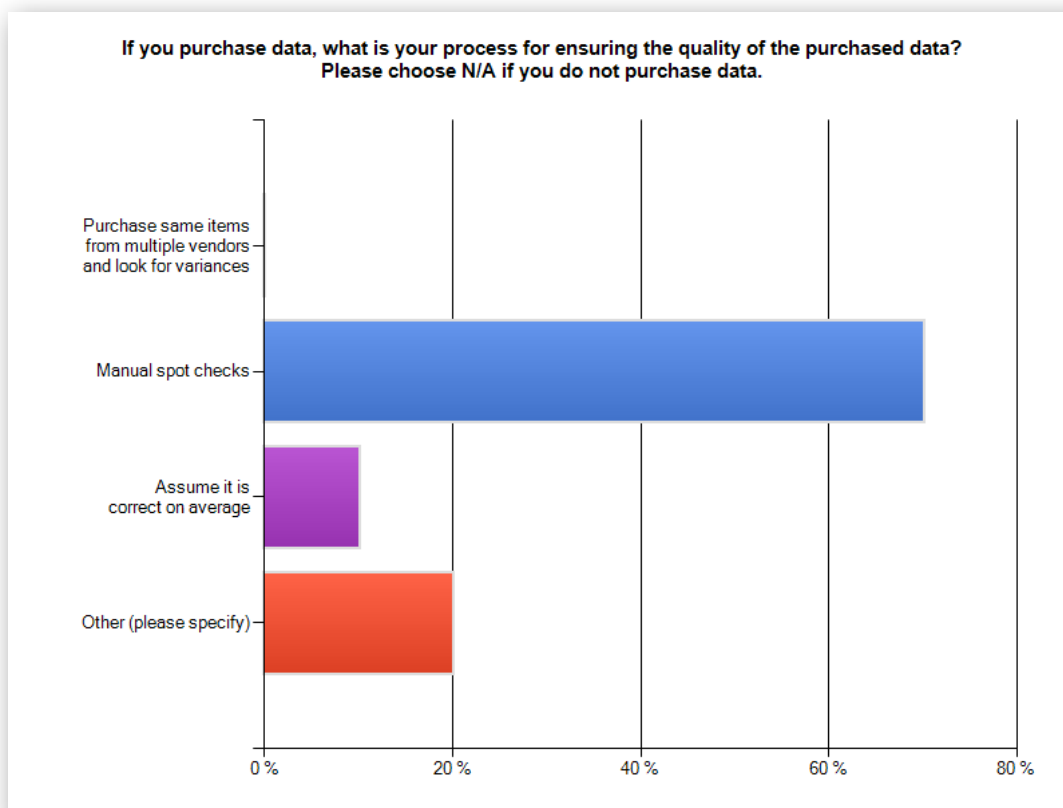
Notes:

- The demand for timely SEC filings data is highest for data reported in earnings release filings. However, earnings release data are not currently required by the SEC XBRL mandate.
  - An important postscript to this finding is that, in the course of our research, we learned that several newswire services provide XBRL-tagged earnings release data via a fee-based feed (see BusinessWire, http://www.businesswire.com/news/home/20120503006265/en, for an example of a retail XBRL-tagged industry report they issued, based on earnings release data). Other news services, such as PR Newswire, can also provide XBRL-tagged earnings release data for a cost.
- At least 50% of the respondents would like all filings data within the same day of the filing and most of these would prefer it real time as interactive data is intended to be.

A2.11 – Demand for Data: Reliability Requirement

All respondents

If you purchase data, what is your process for ensuring the quality of the purchased data? Please choose N/A if you do not purchase data.
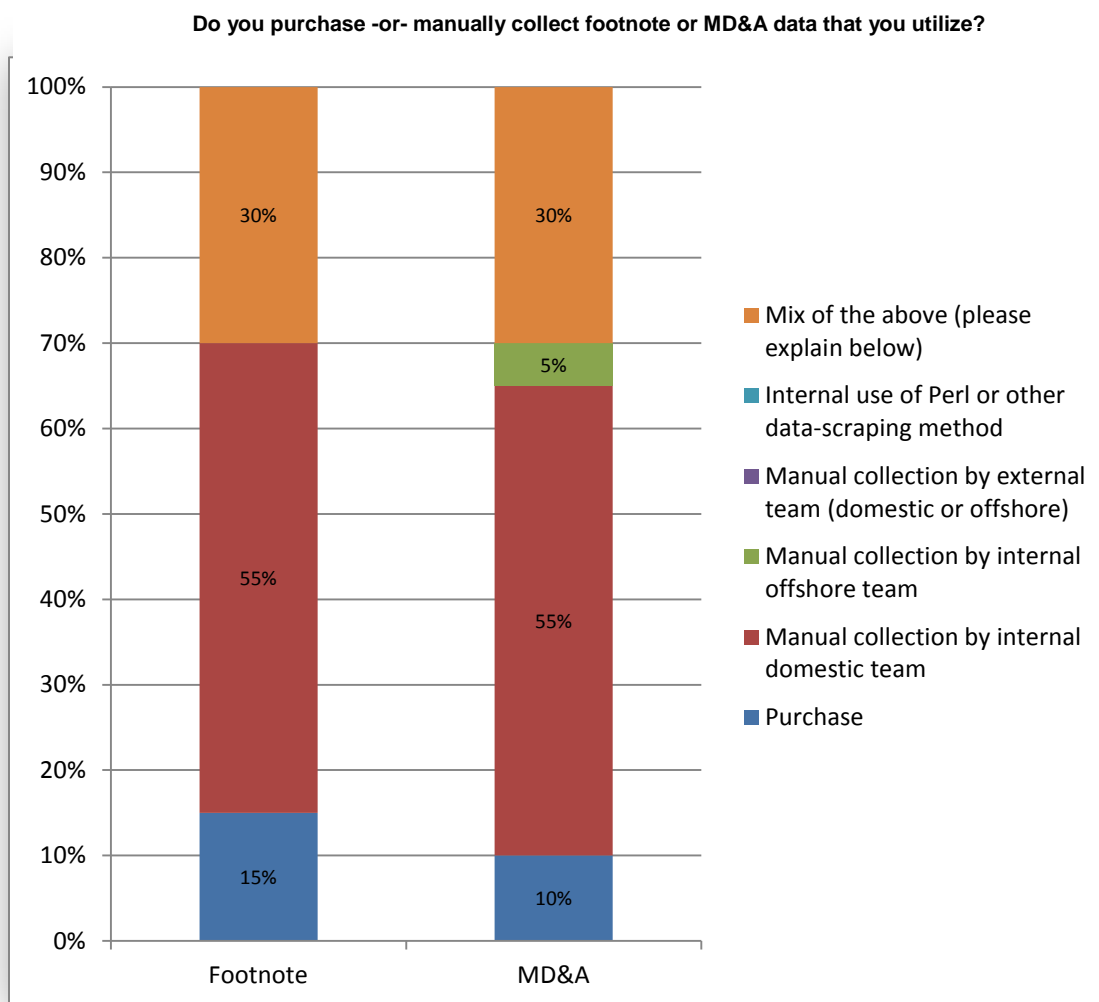
Notes:

- Most analysts and investors perform manual spot checks of their purchased data, regardless of the method of analysis. The exception is for those who analyze a subset of companies based on screens etc.
- The "Other" response was provided as an option, but those responders would not divulge their methods for ensuring data quality.
- All analysts and investors acknowledged data quality issues with purchased data, and, of those who continued to use purchased data, the consensus is that the data are, on average, reliable; of the subset who manually collected data from the footnotes and MD&A that were otherwise available for purchase, 100% stated that they used this data collection method because of their lack of trust in the quality of the data products from the large data aggregators.

A2.12 – Information gathering and processing—Current sources, data quality, and constraints

Of the respondents who utilize footnote or MD&A data

Do you purchase -or- manually collect footnote or MD&A data that you utilize?

Legend:
- Mix of the above (please explain below)
- Internal use of Perl or other data-scraping method
- Manual collection by external team (domestic or offshore)
- Manual collection by internal offshore team
- Manual collection by internal domestic team
- Purchase

Footnote: Purchase 15%, Manual collection by internal domestic team 55%, Mix of the above 30%

MD&A: Purchase 10%, Manual collection by internal domestic team 55%, Manual collection by internal offshore team 5%, Mix of the above 30%
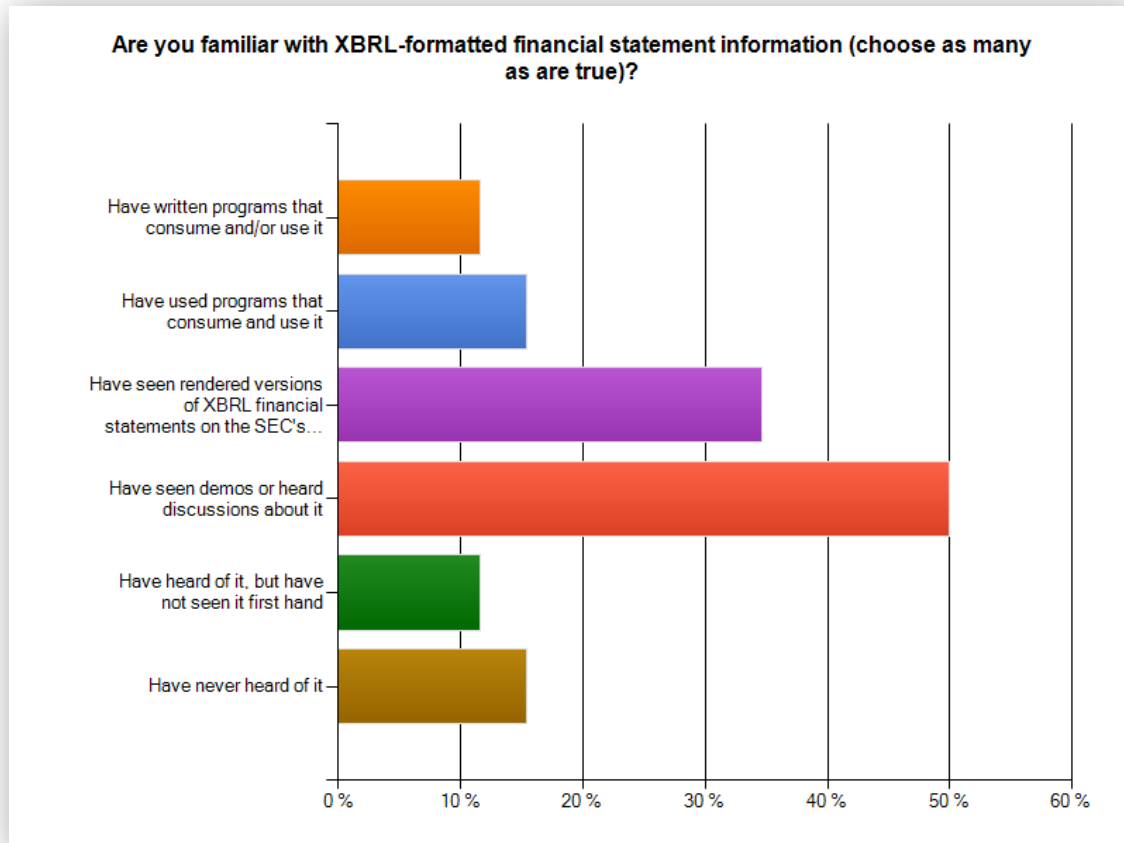
Notes:

- A majority of investors/analysts manually collect their required footnote or MD&A data:
- Given the relative frequency and high reliance on this information, this fact implies that non-trivial cost of data collection and processing, or that they do not have or use this disclosure provided by the data aggregators.
- Most of those interviewed mentioned the following reasons for the manual process:
  - They did not trust the quality of the purchased data when it comes to footnote and MD&A measures.
  - The specific data items they required were not available from the typical data vendors.

3. Familiarity with and use of XBRL:

A3.1 – Familiarity with XBRL-formatted Financial Statements

All respondents

Are you familiar with XBRL-formatted financial statement information (choose as many as are true)?
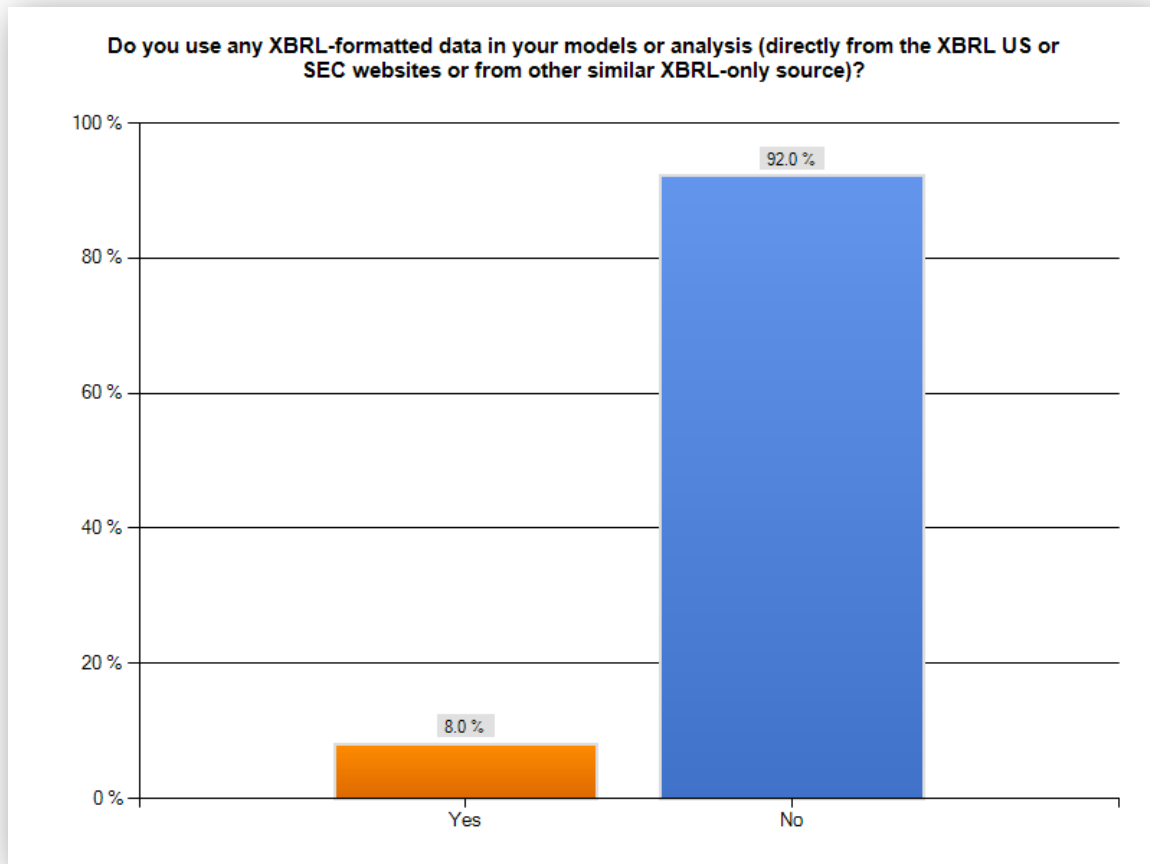
(These percents may add to more than 100% because respondents could choose as many as are true, these may add to more than 100%)

Notes:

- Most respondents have not only heard of XBRL, but have seen it firsthand in some way, even if by demonstration.
- There was little variation between type of analysis or type of analyst, except that all sell-side analysts we spoke with had heard of XBRL, and of those who responded that they had never heard of XBRL, 100% were the relatively small buy-side investors.

A3.2 – Direct Use of XBRL-tagged Data

All respondents

Do you use any XBRL-formatted data in your models or analysis (directly from the XBRL US or SEC websites or from other similar XBRL-only source)?
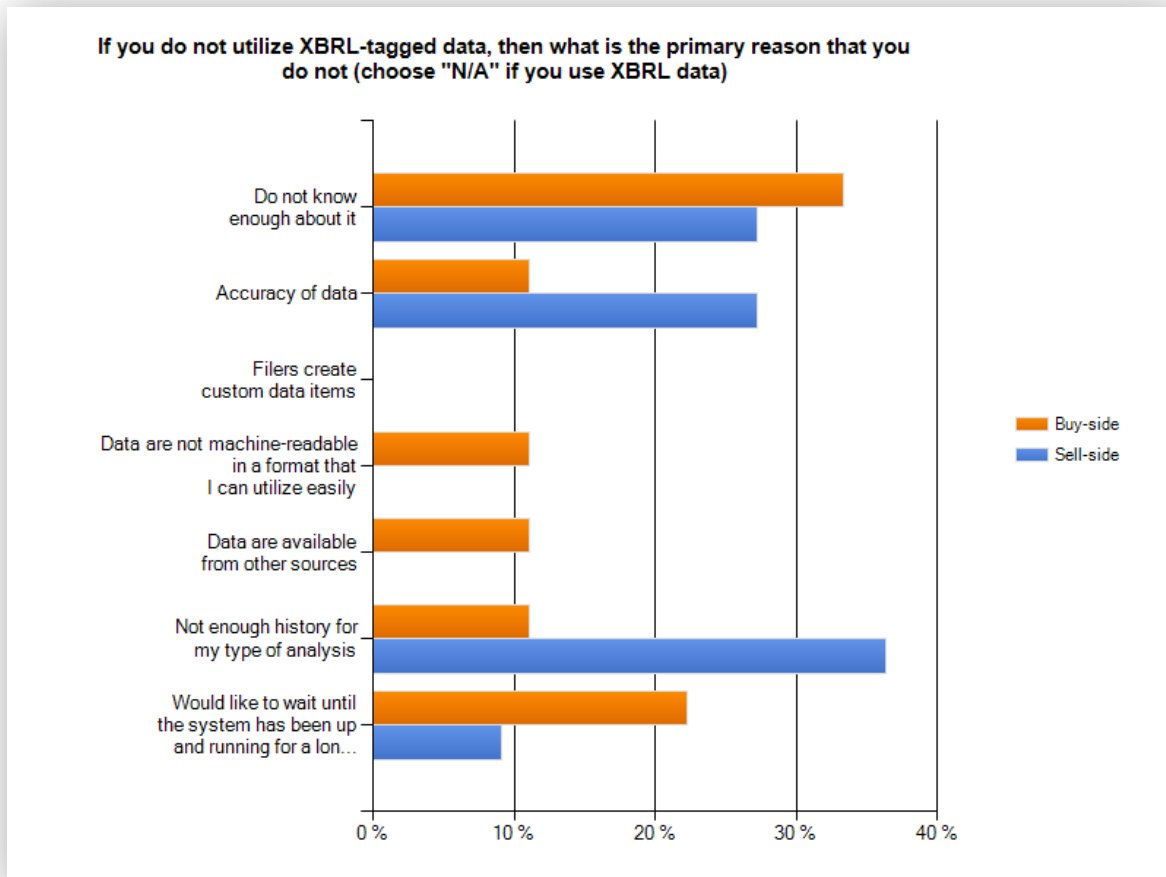
Yes: 8.0 %
No: 92.0 %

Notes:

- Of our sample, few analyst/investors are utilizing XBRL data directly from the SEC website/RSS feed or other direct sources.
  - This percent drops to 5% if one takes those with a Morgan Stanley/ModelWare background out of the findings. As discussed in paper, the former ModelWare team members stated that they were favorably disposed to using XBRL data based on that experience.
  - Those using XBRL data are using it for the perceived informational advantage they have by having interactive access to certain types of data that they believe they cannot collect elsewhere with the same effectiveness and efficiency.
- This measures whether they are using directly XBRL, as opposed to a data vendor's product with XBRL-supplied data in it.
- The question did not define what the word "use" means; it may be interpreted as experimenting with accessing the data or utilizing them in one's models/decisions, or it may also be interpreted as actual utilization in one's models/decisions.

A3.3 – Reasons for Not Using XBRL data

Respondents who do not use XBRL data

If you do not utilize XBRL-tagged data, then what is the primary reason that you do not (choose "N/A" if you use XBRL data)
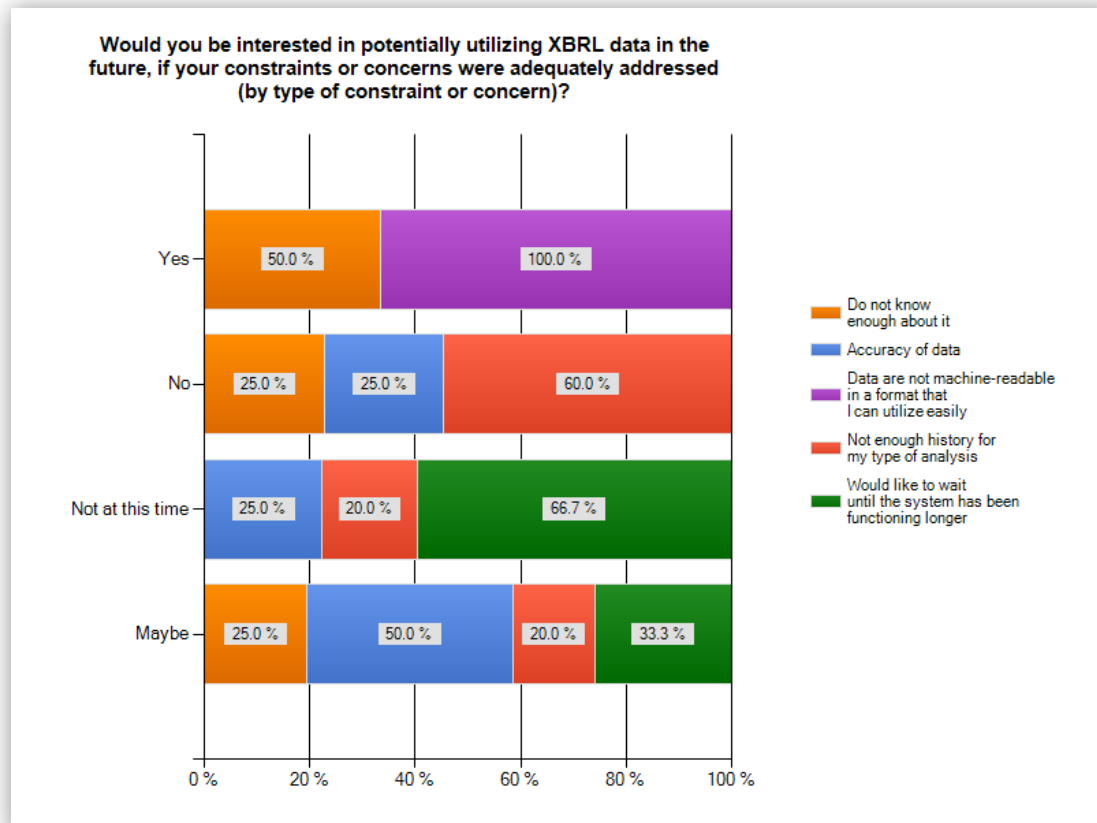
Notes:

- The reasons for not utilizing XBRL data vary between the buy-side and sell-side participants.
- Sell-side research and analysis participants were primarily constrained by the lack of history, and then equally by their data accuracy concerns and their own lack of knowledge.
- However, the "do not know enough about it" response is further explained by the fixed income sell-side participants, who responded 100% with this response.
- The explanation, "accuracy of the data" is driven primarily by the sell-side equity strategists; their research is mainly across large sample sizes and looks at trends over time. Buy-side participants, on the other hand, were not using the data mainly due to their own lack of knowledge, and then due to their concerns over the relative infancy of XBRL data and reporting system.

A3.4 – Willingness to Use XBRL Data When Concerns or Constraints Are Addressed

Respondents who do not use XBRL data

Would you be interested in potentially utilizing XBRL data in the future, if your constraints or concerns were adequately addressed (by type of constraint or concern)?

Legend:
- Do not know enough about it
- Accuracy of data
- Data are not machine-readable in a format that I can utilize easily
- Not enough history for my type of analysis
- Would like to wait until the system has been functioning longer

Notes:

- A strong majority of those we spoke with stated that they would be interested in the potential of utilizing XBRL-tagged business reporting data in the future if their issues were successfully resolved. This held even within the subset of those respondents who replied "Maybe" or "Not at this time."
  - We found in a separate split of the data that Morgan Stanley's ModelWare users or alumni were more likely (30.8% "yes", as opposed to only 9.1% "yes" answer from non-ModelWare users or alumni). As noted earlier, Morgan Stanley's ModelWare users or alumni appeared most interested in XBRL-tagged data; this appears to be consistent with that observation.
- However, many had strong reservations about the likelihood of their issues being adequately addressed in the foreseeable future
- The most "optimistic" groups of respondents were those who simply did not know enough about XBRL at the time of the survey, or did not know how to utilize effectively the SEC's RSS data feed.
- The most "pessimistic" group was those who required a longer period of data than would likely be available for quite some time, followed by those who had seen XBRL data already and had serious concerns about data quality.

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