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Financial Reporting in XBRL on the SEC's EDGAR System: A Critique and Evaluation

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ABSTRACT: This paper evaluates the implications of the proposed Securities and Exchange Commission (SEC) Rule (33-8496) which encourages companies to file reports in the eXtensible Business Reporting Language (XBRL) format. We examine the impact of the proposed rule in three domains: (1) the role of XBRL in financial reporting, (2) concerns with XBRL taxonomies, and (3) the impact of XBRL on the SEC's filing program. The paper adopts a descriptive approach to generate normative and prescriptive propositions with implications for research that will guide preparers, users, and regulators of XBRL-tagged information.

I. INTRODUCTION

In October 2004, the Securities and Exchange Commission (SEC) proposed a rule (33-8496)[1] that would allow registrants to voluntarily file certain mandated filings in the eXtensible Business Reporting Language (XBRL) format. According to the proposed rule, companies will also continue to submit filings, such as Forms 10-K, 10-Q, and 8-K, to the SEC's electronic data gathering, analysis, and retrieval (EDGAR) system in the existing plain text format (that conforms to either American standard code for information interchange [ASCII] or hypertext markup language [HTML] syntax). When the proposed rule was released, the SEC called for comments from the financial community "to help us evaluate the usefulness of data tagging in general and XBRL in particular, to registrants, investors, the SEC, and the marketplace."[2]

In response to the SEC's request, the chairs of the Information Systems and Artificial Intelligence/Emerging Technologies Sections of the American Accounting Association

[1] See http://www.sec.gov/rules/proposed/33-8496.htm.
[2] Ibid.

*The authors indicated with an asterisk were the primary adapters of this report for publication in *JIS*. All working party members participated equally in the original submission to the SEC.

(AAA) constituted a working party with a charge to comment on the proposed rule on behalf of the two sections. The working party's submission was one of 28 made on the proposed rule.[3]

In this context, this paper critically evaluates the implications and feasibility of the proposed SEC rule in three domains: the role of XBRL in financial reporting, the design and management of XBRL financial reporting taxonomies, and the impact of XBRL on the SEC's filing program. The paper adopts a descriptive approach to generate normative and prescriptive propositions with implications for research. Implications for education are also addressed. The descriptive approach leverages the core elements of the submission to the SEC.[4]

The purpose of the voluntary program is to gather and analyze data that will assist the SEC in assessing the feasibility and desirability of using XBRL-tagged data on a more widespread and, possibly mandated, basis in the future. *XBRL tags* are context-sensitive identifiers in the extensible markup language (XML) language prepared in accordance with the XBRL Specification published by XBRL International.[5] A computer program or search algorithm will use the tags to associate a particular item of information from a reporting entity with an external taxonomy. *Taxonomies* are essentially data dictionaries that associate metadata with each individual item of information.[6] The metadata in the taxonomy identifies the datatypes of the elements (including textual and a wide variety of numeric datatypes), describes the mathematical and definitional relationships between the elements, identifies the descriptive text labels that can be expressed in multiple languages, and refers to authoritative sources that support inclusion of the elements within the taxonomy.

Examples of elements within the U.S. generally accepted accounting principles (GAAP) XBRL taxonomy[7] include tags for "BankOverdrafts" or "BasicEarningsPerShareNetIncome" (Basic Earnings Per Share). Tags efficiently identify each individual item of data for a domain. The context-sensitive feature of XBRL tags distinguishes XBRL documents, known as *instance documents*, from traditional documents formatted in ASCII, HTML, or Portable Document Format (PDF). Presence of XBRL tags in instance documents allows the data to be extracted and subsequently exported across various software platforms into databases, financial reporting systems, and spreadsheets.

Standard or *core financial reporting taxonomies* contain metadata elements that apply to most or all reporting companies (e.g., "PropertyPlantEquipmentNet") within the particular reporting environment defined by the taxonomy (e.g., U.S. GAAP or International Financial Reporting Standards [IFRS]). These standard taxonomies cannot, however, accommodate all the richness of the financial reporting landscape. Different industry and company financial reporting requirements necessitate industry and company taxonomies. These taxonomies are known as *extension taxonomies* since they extend standard XBRL taxonomies to accommodate specific additional reporting needs. Industry taxonomies describe metadata elements that may apply to one particular industry. For example, an airline industry taxonomy may include metadata elements such as "Aircraft" or "Passenger Miles Flown." Finally, an individual company may develop its own extension taxonomy, known as a *company taxonomy,* to reflect metadata elements that are relevant only to its business environment.

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[3] A summary of all the submissions can be found at http://www.sec.gov/rules/extra/s73504comsum.htm.
[4] The full text of the submission is at http://www.sec.gov/rules/proposed/s73504.shtml.
[5] See http://xbrl.org/SpecRecommendations/.
[6] See XBRL International, "XBRL Taxonomies," http://www.xbrl.org/Taxonomies/ (accessed April 23, 2005).
[7] See http://www.xbrl.org/FRTaxonomies/.

Proponents argue that reporting in the XBRL format will enhance (1) the search capability of the SEC's EDGAR database to allow more efficient and effective extraction and analysis of specific data, (2) the capability to perform financial comparisons among registrants within industries, and (3) the ability to perform financial analysis of registrant financial data.

In the following sections, we have categorized the questions raised by the SEC into three logical groups: (1) the role of XBRL in financial reporting, (2) concerns with XBRL taxonomies, and (3) impact of XBRL on the SEC's filing program. For each question, we include our response to the SEC as well as identify research issues that merit further investigation. These research issues were not included in our original submission to the SEC. The paper concludes with a summary of the core elements of the working party's submission and implications for accounting research.

II. ROLE OF XBRL IN THE FINANCIAL REPORTING PROCESS

Since the SEC plans to test and evaluate the usefulness of XBRL data tagging, several questions examined the role of XBRL in the financial reporting process. Responses and research issues for each question follow.

Appropriateness of Voluntary Filing in XBRL Format

SEC question: Is the proposed rule permitting volunteer filers to furnish financial information in XBRL appropriate? We strongly support the initiative by the SEC to allow volunteer filers to furnish financial information in the XBRL format. The Internet, with its attributes of low cost, immediacy, global reach, and alternative forms of information presentation, is clearly important for purposes of transparency, stewardship (Trites 1999; International Accounting Standards Committee [IASC] 1999; Financial Accounting Standards Board [FASB] 2000), and the smooth functioning of capital markets (Hunton et al. 2003). XBRL adds a vital attribute to financial reporting as it provides an explicit semantic and machine-readable representation of the information elements found in business reporting in general and in financial statements in particular (Debreceny and Gray 2001). Within the information supply chain, we expect that XBRL reports will assist information consumers, such as investors, analysts, researchers, and value-added information intermediaries, in their decision making process.

XBRL is vital in the democratization of markets. The flow of continuous information on significant changes in management or mergers and acquisitions is important to stakeholders and facilitates marketplace exchanges. Thus, we encourage the SEC to consider adopting XBRL for Form 8-K filings. Eventually, we suggest that the SEC move to requiring XBRL filings for financial statements for all filers. We also encourage the SEC to investigate employing XBRL extension taxonomies that incorporate both financial and nonfinancial performance information.[8]

Issues with Coding Printed Financial Statements

As researchers, we are aware that many problems occur when interpreting financial statements available only in printed form. Many academic researchers rely on financial reporting databases such as Compustat. The database developers code data from each company's financial statements to create normalized data. While this normalization process

[8] Later in this paper, we note with approbation the work of the American Institute of Certified Public Accountant's (AICPA) Jenkins Committee in the 1990s (Special Committee on Improving Business Reporting) and the current work of the AICPA Starr Committee that proposes the progressive incorporation of a wider set of performance measurements known as the *Enhanced Business Reporting Model.*

provides advantages for certain types of research, the coding process is a substantial simplification and is fraught with errors of interpretation and currency, as observed in a number of academic studies that compare the output from different databases. For examples, see Kern and Morris (1994) and Vasarhelyi et al. (2003). In contrast, XBRL-tagged reports present financial information as reported and coded by the financial statement preparers.

Information Systems Adoption

Research on the adoption of information systems innovations demonstrates the importance of a catalyst that brings together the disparate parties in the information supply chain. This volunteer filing program enables the SEC to become a catalyst for XBRL adoption. For example, since the proposed voluntary program is essentially a field experiment, the accounting and filer communities together with the academic and research community will be able to learn from the controlled application of XBRL in tagging complete financial statements for a relatively small number of filers. In addition, the voluntary program enhances the U.S.'s leadership role in the international financial reporting community where, to date, many of the major XBRL adoptions have been in Europe and in Asia-Pacific.

Research Issues

Economic justification for adopting XBRL disclosure is an important issue to regulators, the investing community, and participating companies. In this context, an initial research issue to examine is whether reporting in the XBRL format will provide positive net benefits for the investing community. As a related issue, researchers could examine whether companies realize positive net benefits from voluntarily including XBRL documents in their SEC filings. When positive net benefits are anticipated to result from participation in the program, regulators have more incentives to mandate such disclosure in the future, and companies will justify complying with such a mandated program. Additional research topics include the capital market implications of XBRL filings, the presentation choices made by the volunteer filers, the link between financial statements and taxonomies, the quality of the taxonomies, the ability of taxonomies to meet the needs of the filers, and the choices made in company-level extensions of the established U.S. GAAP taxonomies.

Alternatives to Testing and Analysis of XBRL Data

SEC question: Is there a better way to accomplish testing and analysis of XBRL data? The vision of the XBRL International consortium and vendors of XBRL compliant software is to provide a technology solution that supports coding a complete set of financial statements, including footnotes and Management's Discussion and Analysis (MD&A). While this represents the ultimate goal for the adoption of XBRL in respect of the traditional annual financial reporting cycle, there are many other types of disclosures that lend themselves to XBRL applications. In particular, we note that the recent extension of the range of events that trigger filing of Form 8-K. This is an ideal application for XBRL. Most of these time-sensitive disclosures of financial and nonfinancial information fall into clearly defined categories that could be readily represented in XBRL taxonomies. We believe that the market would find automated handling of tagged 8-Ks to be of more immediate value than fully coded financial statements that are essentially tombstone disclosures.

We also urge the SEC to consider how the important disclosures in the MD&A and other types of reporting should be accommodated within XBRL taxonomies. Bryan (1997) shows that certain MD&A disclosures, for instance the discussion of future operations and planned capital expenditures, are associated with future performance measures and investment decisions, after controlling for the information contained in financial-statement-based

ratios. We are not suggesting that the current proposal for voluntary XBRL filings incorporate this class of information; however, we encourage the SEC to include this information in later proposals.

We note the various classes of disclosure addressed in the Jenkins Report of the American Institute of Public Accountants (AICPA 1994) and in the more recent move toward an Enhanced Business Reporting Model, as laid out by the Starr Committee.[9] We believe that disclosures of the type envisaged by Jenkins and Starr are highly relevant for valuation and stewardship purposes. Given that these performance metrics vary by company and industry, they lend themselves to reporting in XBRL.

Research Issues

More research will be helpful in finding alternative ways to test and analyze XBRL data. One possible approach is to examine users' search strategies and search performance in dealing with open-ended information as compared with their strategies and performance dealing with the more defined information sets that accord with the predefined elements expressed in core XBRL financial reporting taxonomies. For example, researchers could compare investing decisions made by subjects using the open-ended disclosures in annual financial statements and MD&A versus the more defined set of XBRL data in the financial statements and MD&A.

Special Issues or Difficulties Raised by Providing Notes to Financial Statements in XBRL Format

SEC questions: For purposes of the program, volunteers can furnish in XBRL format, among other types of financial information, a complete set of financial statements. Are there special issues or difficulties raised by providing notes to financial statements in XBRL format? If so, should we permit volunteers to furnish financial statements in XBRL format if they omit the related notes? Should we allow volunteers to furnish in XBRL format some but not all financial statements (e.g., only a balance sheet)? In this early stage of XBRL adoption, we strongly recommend that filers be able to submit information at different levels of complexity. Given the much less developed state of taxonomies for financial reporting in respect of the footnotes and that the complexity of preparing footnotes is considerably greater than the body of the financial statements, some filers may wish to submit only the body of their financial statements. We believe that the SEC should encourage wide participation in this voluntary program. While footnotes are important, we suggest that financial statements have greater information value to our markets, investors, students, shareholders, and regulators. To require footnotes as tagged disclosures may significantly reduce the number of voluntary filers. This would be an unfortunate outcome of such a requirement.

However, we encourage the SEC to require filers to at least create tags for the entire footnote for classification purposes (e.g., accounting policy, compensation, etc.). At a minimum, tagging mandated key fields (e.g., interest assumptions and unfunded pension liabilities) should be encouraged.

Footnotes can be tagged at a variety of levels of detail. We encourage the voluntary program to allow companies to tag their notes even at the level of one tag per footnote. This would allow automated information retrieval and discovery software to identify the types of footnotes within the filing. While not a complete answer to the analytical needs of analysts, investors, researchers, and students, it would be a considerable improvement over the raw text supplied as part of a Form 10-K from EDGAR.

[9] See http://www.aicpa.org/innovation/scebr.htm and http://www.ebrconsortium.org.

In the future, detailed tagging of footnotes will be an integral part of the SEC's efforts to encourage XBRL filings. We believe that the information contained in footnotes has high information relevance for investors. The highest quality of disaggregated tagging of the notes is desirable for smooth functioning of the capital markets. Analysts and capital market researchers often have to spend considerable time in hand-coding important information that is contained within the notes. Having this data available in an automated form will assist the work of analysts and academic researchers. In the future, detailed tagging of relevant nonfinancial information, such as intellectual property and human resources, will be highly valuable and provide information that is consistent with the user-oriented frameworks proposed by Penman (2003), Schipper and Vincent (2003) and the SEC in its goal-oriented principles (Wallman 1997).

Research Issues

Footnote content provides valuable information for investors yet how investors incorporate such information into their decision models is unclear. One reason may be the difficulty of processing footnote information when investors consider a large number of companies as a potential investment. XBRL-tagged content provides an organized and consistent structure to footnotes. The hierarchical nature of XBRL could potentially organize footnotes into various levels of aggregation. Therefore, future research could investigate the effect of such organized footnotes on the nature and quality of investment decisions.

Further, researchers could examine whether current XBRL taxonomies are adequate for tagging footnotes and work with industry leaders to expand existing taxonomies to incorporate any deficiencies identified. Research may also explore the economic impact of timely footnote disclosures on stock prices since XBRL-tagged footnotes should provide information processing efficiencies. Additional research could examine differences within and across industries in the use of XBRL-tagged footnotes.

Value in Tagging Other Items Such as Management Discussion and Analysis

SEC question: Should we also allow tagging for other items, such as Management's Discussion and Analysis (MD&A) or Management's Discussion of Fund Performance that are part of existing taxonomies? We strongly support the tagging of items such as the MD&A or Management's Discussion of Fund Performance that are a part of existing taxonomies. Academic research has consistently shown the value relevance of such disclosures, as we noted in the previous comment. Taxonomy development in respect of such items is still relatively undeveloped. Nonetheless, we believe that filers should be encouraged to tag these elements. At a minimum, tagging these elements will allow automated information retrieval and discovery software to categorize efficiently all parts of the financial statements and ancillary reports. We also support a progressive route of taxonomization and coding of the nonfinancial data in annual reports.

Research Issues

The MD&A describes management's perception of the company's present and future operations. Such strategic and long term perspective is qualitative, textual and inherently subjective. Such information is, however, value relevant. Users are more likely to discover the content of the MD&A faster and more efficiently if the MD&A is XBRL-tagged. This increase in transparency reduces information asymmetry. Specialist search engines may be able to efficiently retrieve the contents of MD&As instantly in a manner similar to the earnings information.

In such a scenario, it can be postulated that preparers of MD&As would respond to the added transparency that XBRL brings. As a result, the content of tagged MD&As can be expected to be more focused, precise, and objectively verifiable. Long term forecasts are error prone and can prove costly when the actual outcomes differ materially from the expected values. Therefore, research is needed to test the differential effects of tagged and nontagged MD&As. Guidance is also needed on which part of the MD&A may not be feasible for XBRL tagging.

Also, research could examine whether management is more cautious about revealing sensitive information in the MD&A, knowing that stock markets would be significantly affected by the speed and efficiency of disseminating MD&A's disclosure through XBRL requirements. As a result, the researchers may engage in substance and contents analysis of comparing two groups of companies: (1) those that disclose MD&A voluntarily through the SEC's XBRL program, and (2) all remaining nondisclosers.

Finally, some items in the open-ended parts of SEC filings may be more time-sensitive and make a more significant economic impact than others. Research examining which items are relatively more time-sensitive could provide guidance to the SEC as they evaluate the feasibility of tagging additional financial information.

Encouraging Participation in the Voluntary Program

SEC question: What specific steps can we take to encourage registrants to participate in the voluntary program? The SEC may consider the following incentives as motivators to encourage participation:

- Safe harbor from litigation
- Encouragement from the SEC in the form of discussion with the SEC prior to any SEC action on ALL company statements, not only the XBRL ones
- Some form of SEC "good citizen" seal
- Participation in an SEC XBRL Advisory Board

Research Issues

Research that examines the effectiveness of the above incentives in encouraging participation may assist the SEC as it evaluates participation rates and examines whether to expand its voluntary XBRL filing program to mandated XBRL disclosures.

Usefulness of Tagged Data to Users

SEC question: How should we determine how useful the tagged data is to users of the information? Academic research has recently begun to examine whether tagged data impacts investor decision making. Hodge et al. (2004) find that XBRL enhances investors' cognitive abilities to analyze financial statement information and make judgments based upon this information.

Research Issues

There are several ways researchers may examine the usefulness of XBRL data. Researchers could develop new algorithms for efficient use of tagged data, anticipating the future compliance of other sections of the Sarbanes-Oxley Act, including Section 409, in distributed and globally networked computing environments. Also, researchers may examine how extension taxonomies and the migration to standard sector taxonomies may impact investors' perception of XBRL usefulness. Finally, the timeliness of XBRL releases may impact investors' perception of XBRL usefulness.

Cost-Benefit Analysis

SEC question: We request comment on all aspects of this cost-benefit analysis, including identification of any additional costs or benefits of, or suggested alternatives to, the proposed rules. Costs: The costs of XBRL-based financial reporting fall into two broad classes: tangible and intangible. The tangible class includes infrastructure costs, training costs, and out-of-pocket costs pertaining to the software and personnel expenses to plan, implement, and support the XBRL reporting requirements. As learning improves and the knowledge base matures within each company, we expect the tangible costs to fall.

The intangible costs include the potential productivity losses when personnel either shift from their regular job responsibilities to XBRL-related duties or add XBRL-related duties to their current work load. For example, in the initial years, companies may incur parallel reporting costs if they produce two sets of financial statements: one in regular formats and another tagged in XBRL.

Currently, there are no known empirical studies that examine the effect of XBRL reporting on the cost of capital. The lack of any empirical research to corroborate the claimed arguments stated above is primarily due to the absence of data. Few companies have voluntarily provided XBRL-tagged financial statements on either the SEC's or their own websites. These structural limitations constrain conducting any scientifically reliable studies to test cost-benefit hypotheses. Hopefully, this situation will change due to the SEC voluntary XBRL filing program.

The benefits of XBRL to regulators such as the SEC are effectively summarized in a recent commentary by Professor Ron Weber, who notes in part:

> In many countries, regulators concerned with business reporting have already shown a keen interest in XBRL. Many are participating in the development of XBRL and the dissemination of knowledge about XBRL. For regulators, XBRL offers at least two major benefits. First, it reduces the costs associated with their obtaining and assimilating information from businesses. Regulators are not forced to reenter information or expend resources on dealing with the problems that arise as a result of incompatibilities between their own information technology platforms and those of the businesses that fall within their jurisdiction. Second, the existence of XBRL allows them to argue more strongly for the standardization and harmonization of international business reporting standards. Use of XBRL mitigates some of the costs that businesses would otherwise incur in complying with such standards. Thus, any arguments made by businesses against proposed standards on the basis of the costs of compliance are undermined. (Weber 2003)

Furthermore, this new mandate for external reporting may significantly affect the internal reporting processes. Companies may find XBRL-tagged internal reporting processes a convenient and internally consistent way to comply with XBRL-tagged external reporting. Also, such internal reporting processes may reduce internal inefficiencies and the potential for fraud. Finally, expanding XBRL usage may facilitate important changes in how new accountants in the 21st century are trained. Accounting education has, thus far, been driven primarily by transaction cycles. As new technologies, including XBRL, allow companies to disseminate information on a timely basis, the gap between accounting risk measures and market risk measures, examined by Beaver et al. (1970), may be reduced. As this gap is reduced, accounting education will need to adapt to produce qualified accounting graduates to meet the skill sets demanded by stakeholders. These skills, as they relate to XBRL, include the economics of information creation, distribution, and use of accounting information both within entities and in broader information supply chains; ontological and metadata concepts; knowledge of underlying XML and XBRL technologies; taxonomy design; creation of taxonomies, extension taxonomies, and instance documents; assurance

concepts and dealing with the inevitable uncertainty in defining entity-specific information and relating that information to standard financial reporting taxonomies.

Research Issues

In addition to the issues discussed above, researchers may engage in creating cost-benefit analytical tools that companies can use for participating in the voluntary program. In the meantime, research analyzing the costs and benefits of voluntary XBRL filing participation and developing tools for such participation is important. Furthermore, researchers may engage in studies on how to extend external XBRL reporting into internal XBRL/XML reporting for more timely data dissemination, data retrieval, and overall, higher productivity through a seamless XBRL/XML data flow.

Furthermore, researchers may use this unique window of opportunity available during the voluntary filing period to study the effects of XBRL on the filers, SEC, and investors. These effects could include the examination of issues related to the diffusion of the filing process in adopting XBRL disclosure, SEC's responses to the diffusion processes, and investors' usage of XBRL-based financial reporting.

III. CONCERNS WITH XBRL TAXONOMIES

Since XBRL taxonomies are still evolving, the SEC raised several questions regarding the status and adequacy of current taxonomy development.

Completeness of the Standard Taxonomies in the Voluntary Program

SEC question: Are the standard taxonomies in the voluntary program sufficiently developed? We believe that the processes employed in taxonomy building and the quality assessment adopted by XBRL-U.S. have resulted in relatively high quality taxonomies. The SEC proposal provides an opportunity to determine how well taxonomy building has advanced. We encourage open communication channels between the taxonomy builder community and filers during the volunteer program. When building instance documents, the filer must specify disclosures that are not in a standard taxonomy in extension taxonomies. Open communication will facilitate modifications to the taxonomies; a preferable alternative to forcing each volunteer company to create its own taxonomy extensions. This process of extending the standard taxonomies will both serve to motivate filers to standardize their reporting, as well as to help the XBRL community to create better taxonomies.

The academic community has researched taxonomy building and automating taxonomy construction (Bovee et al. 2005). Results suggest that the details required in footnote disclosure are particularly challenging for taxonomy design. We are much less confident about the quality of taxonomies in respect of footnote disclosures than we are with data in the body of the financial statements.

Research Issues

Research examining the degree to which current XBRL standard taxonomies are able to meet the needs of the financial community is needed. Also, are there better ways to optimize the continuous improvement of taxonomies? In addition, researchers could explore the relationship between accounting standard-setting; the nature of financial reporting; taxonomy design, and end-user functionality. Another important consideration is accounting harmonization in the world business community and how the U.S. XBRL taxonomy standardization efforts embrace developments in other countries. Thus, research comparing XBRL efforts in the U.S. to other countries and reporting environments such as the International Financial Reporting Standards (IFRS) is important.

Adequacy of Instance Document and Taxonomy Preparation Software

SEC question: Is the taxonomy builder software sufficiently developed that volunteers would be able to create extensions as needed? Many preparers of instance documents discover they need to create an extension taxonomy to meet the particular reporting requirements of their company. We have used the taxonomy builder software currently available. Several products have sufficient functionality to create both instance documents and extension taxonomies for purposes of this trial. These products do not yet have fully satisfactory end-user functionality for widespread adoption among filers. As inadequate as these products have been, they are, however, acceptable for this proposed first round of efforts. Taxonomy builder software has improved significantly over the past year and we expect considerable improvement over the coming year.

Research Issues

Collectively, the academic community may provide important feedback to the SEC and the filer community by experimenting with taxonomy builder software and reporting how users react to the software. Furthermore, researchers may engage in designing and developing better computer algorithms and taxonomy builder software for general business use. If the taxonomy builder software can be extended for internal purposes and productivity enhancements, then the software may attract a wider user base. In this regard, researchers could consider extending the XBRL GAAP taxonomies to accommodate better managerial accounting and decision making with recent information technologies of data warehousing and data mining. Researchers could consider using the XBRL General Ledger (GL) taxonomy as a platform for capturing accounting transactions that will eventually roll up into external financial reporting. XBRL GL could also be explored as a system to feed into other internal reporting requirements.

Factors Determining the Adequacy of the Standard Taxonomies

SEC question: What specific criteria should be applied to determine the adequacy of the standard taxonomies? There are a number of criteria that can be applied to determine whether standard taxonomies are adequate. Interestingly, some of these criteria may conflict. For example, a principle taxonomy criterion is end-user functionality. A taxonomy that attempts to allow all possible permutations and combinations of filing disclosures would be essentially unfathomable. Such taxonomy would fail the functionality test. Taxonomy builders must make wise choices between the depth of taxonomy and its ability to be implemented by accountants, auditors, and other users who are not skilled in database and schema design. Taxonomies that might on the surface seem to have an inadequate number of tags may be kept deliberately small so that filers can easily develop valid XBRL extensions. Factors to consider when evaluating taxonomy adequacy include:

- *Technical:* Compliance with XBRL International's XBRL *Specification 2.1.*
- *Employ Taxonomy Construction Best Practice:* Technical compliance with XBRL International's *Financial Reporting Taxonomy Architecture.*
- *Usability:* The taxonomies can be matched to two-digit Standard Industrial Codes (SICs). A high proportion of companies within those SICs should be able to use the matched taxonomy without extension or with minimal extensions.
- *Completeness:* The collection of standard taxonomies should tag over 90 percent of the information to be filed with the SEC.
- *Accessibility:* Taxonomies should be available at any Internet accessible location.

- *Consistency:* Reference to standard taxonomies must not degrade over time. If the taxonomies change, the change must be backwardly compatible or the taxonomies must accommodate versioning.
- *Comparability:* Taxonomies should facilitate comparability across firms and industries. Taxonomies for different industries should be derived from a common foundation.
- *Continuous Reporting:* The taxonomy should support near continuous financial reporting. Such reporting should include statements of material events and quarterly reports, as well as annual financial statements.
- *Understandability:* The taxonomy design should support human readability and understandability.
- *Authority:* The foundation of the taxonomy from financial reporting standards and general practice should be clear in both taxonomy design and the references to particular taxonomy elements.

Research Issues

Research may explore the selection of conceptual factors that satisfy various requirements discussed above. Furthermore, researchers may examine whether the current list of factors is sufficient to satisfy the adequacy of the standard taxonomies. If it is not, researchers may propose and evaluate additional factors. For example, as mentioned earlier, XBRL disclosure may have implications beyond national borders. If this is the case, researchers could examine other factors that consider the globalization of financial information. Furthermore, researchers may consider other aspects of the Sarbanes-Oxley Act such as Section 409 that requires real-time disclosure. Studies comparing similar companies who elect to tag financial data according to industry standard taxonomies to companies who create custom XBRL tags could be important if researchers find clear advantages for one methodology over the other.

Extensions to the Standard Taxonomy

SEC question: What is the role of company-level extensions to standard financial reporting taxonomies? Extension taxonomies codify industry- and company-specific classifications of data or alternative labels for a concept. We expect that extensions will be necessary until the taxonomies are fully developed. In their current stage of development, taxonomies still leave many data items untagged due to either lack of standardization, unclear definitions, and/or inconsistent usage. Individual companies argue that taxonomy extensions improve their disclosure. However, we expect that the need for company-specific extensions will taper off as taxonomies mature and industry-level extension taxonomies are developed.

SEC question: What is the need for extensions to the standard taxonomy? In the beginning, many companies will file extensions to standard taxonomies. Given the variation in business models adopted by companies and the resulting dissimilarity in the materiality of financial reporting elements between companies, no standard taxonomy can incorporate all of the elements required by all voluntary filers. Indeed, as was discussed above, we consider that a primary advantage of XBRL adoption is that extension taxonomies are prepared and published by individual companies. The extension taxonomies will provide considerable information value on the divergence of a company's published financial statements from the standard taxonomy.

One issue that the SEC could consider in assessing the creation of company or industry-sector extension taxonomies is the quality of those taxonomies. The XBRL International

Financial Reporting Taxonomy Architecture (FRTA) provides a set of quality standards that governs taxonomy preparation. Either at this early stage or at a later stage in the voluntary filing program, the SEC could either recommend or mandate that extension taxonomies meet the requirements of the FRTA since poorly designed extension taxonomies may negatively impact users' perceptions regarding the value of XBRL disclosures.

SEC question: Would there be some companies that do not expect to file extensions? If not, explain why. Initially, we expect several companies to file extensions. Eventually, with the proliferation of industry taxonomies that map to standard taxonomies and constant adaptations and extensions, the number of companies filing extensions will decrease substantially.

SEC question: Would the use of extensions harm the comparability that otherwise would exist among volunteers that use the same standard taxonomy? Extension taxonomies codify variation in financial data and practice that is currently observed in other disclosures, notably print-based. We recommend that the SEC eventually work with key industry groups to develop industry-level extension taxonomies. For example, allowing individual airlines to build their own company-level extensions instead of developing industry-level extensions reduces comparability between the airlines—although such comparability in an XBRL environment is still higher than in a print-based environment.

Some extension taxonomies address the creation of labels for taxonomy elements. Companies may use standard labels in the standard taxonomies and insert their own descriptive labels. While descriptive labels assist end-users when presenting financial data, they do not change the underlying semantic meaning of the information. In other words, not all extension taxonomies are created equally.

Research Issues

Future research to facilitate XBRL codification or representation of industry-specific data and to examine the economic impact of differential disclosure is needed. Differential information disclosure from XBRL extensions may affect the stock prices of companies that opt for differential disclosure; yet it is unknown at this point how significant the effects would be.

Extensions and Confidentiality Concerns

SEC question: Are there any confidentiality concerns regarding submitting extensions? If so, what are they? We do not foresee any confidentiality concerns regarding company- or industry-level extension taxonomies. Extensions are only necessary when a company needs to report about categories that are not in the standard taxonomies. The extensions must be XBRL compliant, so there should be no confidentiality concerns with them. Filing of extension taxonomies may provide market participants with additional evidence to distinguish companies that want to be transparent from those that want to remain opaque. Preliminary research indicates that footnotes without clear common tags may be the result of opacity by design. We believe the availability of extension taxonomies will increase inter-company comparability.

We note that confidentiality concerns may pertain to the exchange of data between stakeholders in a supply-chain framework. However, supply-chain-specific information is generally not open to the public and thus, would not fall within the ambit of SEC-mandated filings.

Research Issues

Researchers could identify industry-specific competitive variables that companies may elect not to disclose because of strategic reasons. Study results may assist the SEC as it considers whether to allow companies to exclude certain competitively disadvantageous information in XBRL extensions.

Other research issues include investigating behavioral implications for preparers and users of taxonomy extensions. For example, preparers may try to use this extension opportunity to possibly manage their relationship with the financial markets. Users may, or not, be aware of such possible manipulation. The preparers may deliberately delay the inclusion of relevant information in the original text-based SEC filing, expecting that they have an opportunity to include the information in future extensions. This may create information asymmetry in the financial markets. Thus, the researchers could examine the incentive mechanisms that prevent the preparers from abusing the XBRL extensions for information manipulation, and give assurance to users that the extension is made only for the original purpose of extending the submission.

IV. IMPACT OF XBRL ON SEC FILINGS

Since the rule proposes that companies may supplement their current filings with financial information tagged in the XBRL format, the SEC raised several questions regarding the impact of XBRL on SEC filings.

Differential Detail of XBRL vis-à-vis HTML or ASCII Version of Filings

SEC question: We have proposed that XBRL data furnished by volunteers must be the same financial information as in the corresponding portion of the HTML or ASCII version. Should we allow volunteers to present less detailed financial information in their XBRL data? During the trial period, we suggest that participating companies be allowed to limit or expand the details of their voluntary XBRL filings. For example, companies may focus on a separate filing without footnotes since the taxonomies for footnotes are not currently as well developed. Providing piecemeal information to users is a departure from the traditional perspective that focuses on financial statements as a whole, including footnotes (Cohen et al. 2003). Therefore, the limited details of the XBRL filings need to be noted as a warning to all users. The SEC could consider providing a safe-harbor for expanded voluntary information.

Research Issues

Research on economic implications of differential disclosure may provide valuable information to companies that choose to selectively disclose financial information in XBRL format.

XBRL as an Amendment to Filings

SEC question: Should volunteers be required to submit XBRL data at the same time or within a specified number of days from the time they submit their official filing? Given the nature of this voluntary filing program, we recommend that the SEC allow the companies to file their data in XBRL format after they submit their plain text EDGAR reports. At the same time, we recommend that a reasonable number of days after the initial filing date, maybe 60 or 90, be mandated as a maximum for XBRL filings.

The academic research on voluntary disclosure is complex, but provides some theoretical justification for viewing delayed XBRL format filings as beneficial to users. Because the XBRL-formatted data enhances the ability to study the company's reporting, a delayed

XBRL filing creates a form of self-imposed discipline. XBRL reports, which are easier to investigate, give confirmatory evidence about the company's initial filings. Thus, the delayed XBRL filing tells the market that the company is willing to have its original filing scrutinized. Such information is useful as long as it arrives prior to the next quarter's official filing. This idea parallels the arguments made for mandatory disclosures as validating voluntary disclosures, as studied by Gigler and Hemmer (1998) and relates to the model of post-decision information set out by Dye (1983). There is also support for these constructs in the economics literature (see, for example, Abreu et al. 1991).

SEC question: Would this present difficulty for volunteers? We believe that requiring volunteers to submit XBRL filings at the same time as their reports would present more difficulties than allowing volunteers to have additional time. In this early stage of XBRL adoption, filers need to expend time and effort in mapping their filings to existing taxonomies, developing extension taxonomies, learning how to publish their instance documents in extension taxonomies to the EDGAR site, and working with their results to ensure that reporting is compatible with the appropriate mapping of the financial statements to both standard and extension taxonomies. To require the XBRL documents be filed at the same day a company submits their official filings would be stressful and may dissuade many potential voluntary filers. Eventually, companies may be able to file their XBRL documents at the same time as the official filings since (1) an XBRL-based disclosure is by essence just a different "format," (2) despite the taxonomy mapping and extensions, an XBRL-based disclosure is just a manipulation of the same data, and (3) tools exist to provide the basic skeleton. We expect that an experienced accountant supported by appropriate software could complete the basic XBRL financial statements without complicated notes in less than 60 hours.

SEC question: Should volunteers be required to submit XBRL data only as an exhibit to the filing to which the XBRL data relates (i.e., remove the option to submit the XBRL data as an exhibit to an otherwise unrelated Form 8-K or Form 6-K)? We believe that filers should be able to submit their XBRL data as an exhibit to an otherwise unrelated Form 8-K. This makes the XBRL data very evident in the marketplace and provides a practical and economic way for filers to submit their XBRL data later than the original filings. The possible exception to this rule during the voluntary process should be the Form 8-K itself. As we previously discussed, we believe that the investing community would benefit greatly from XBRL filings of 8-Ks. These filings can be made simultaneously since these documents are relatively small and straightforward.

Research Issues

Currently, the XBRL-tagged filing is voluntary. This offers a unique opportunity for researchers to measure the incremental benefit of the XBRL tags over traditional formatted statements. Once XBRL-tagged financial statements are made mandatory by the SEC and the traditional format is not used, the research opportunity will cease to exist to compare investor reactions in the field to both formats. Such a line of investigation could also provide information on value-added benefits of each component of financial reports since only certain filings with SEC are covered by the proposed voluntary program.

Value in Providing an XBRL Application for a Standard Template

SEC question: What are the advantages and disadvantages of our requiring the use of such a standard template? We are concerned with the concept of a standard reporting template. We recognize that human readable presentations of XBRL data may be beneficial. We also see that a standard SEC template would add emphasis to those reporting elements

contained within the template. We believe, however, that the overriding value of XBRL information is the many and varied ways in which market participants will use the XBRL filings. Some users will extract key information from XBRL filings and indeed place them in a standard template. Others will take full advantage of the XBRL filings and download all the data into their own database(s). Other users will focus on the exceptions and variances to standard taxonomies. Finally, some users will take an intermediate role and extract key information directly into end-user productivity tools.

For the SEC to develop a standard template supports the concept of creating a standard template for reporting itself. This is a contradiction in terms. We believe the market will quickly fill the need for such standard templates. Indeed, we envision that student groups,[10] as well as information intermediators, will work with professors and software developers to create several end-user productivity tools to analyze XBRL data. The SEC could provide pointers (with appropriate language that waives the SEC's liability on end-user adoption of these tools) to these productivity tools.

Further, if standard templates were developed, companies would be dissuaded from providing extension taxonomies, since these taxonomies would not be visible from the standard template. We believe that XBRL is valuable to capital markets since it allows users to analyze the complete richness of financial statements. As we discussed previously, the databases currently utilized by analysts and the academic community tend to conceal such richness. While we expect progressive convergence to a set of accepted taxonomies incorporating the current semantic part of financial statements, the mere existence of the extensions will help develop better and more robust, future taxonomies.

SEC question: Instead, should we allow each volunteer to submit its own template for rendering the XBRL data? If the XBRL community develops a standard template, based perhaps on the XML XSL technology, this might be an appropriate approach. We encourage allowing volunteers to submit their own templates. Template guidelines could be established to ensure overall presentation consistency. The SEC may consider developing a template(s) for its own internal use of tagged data. Volunteer filers could have access to this template(s).

Research Issues

A standard template enforced by SEC would provide consistency and reduce ambiguity. Therefore, research is needed to examine the differential impact of a SEC enforced standard template versus several industry- or company-specific templates to file company filings. Another interesting research question is to investigate the trade-off between the benefits of compatibility from standardizing XBRL templates and the costs of limiting data provided by the XBRL filing from such standardization. This research may lead decision makers to find the data items and structures of the templates that optimally balance benefits and costs.

Another area that researchers may add value in relates to the effect of SEC's XBRL program on Web Services. Even after the SEC was to require publicly-traded companies to file their reports in XBRL, individual investors may experience difficulties processing company financial reports on a large scale in an efficient manner (e.g., large scale comparison of earnings per share from multiple XBRL documents). XBRL allows investors to retrieve particular information more efficiently than HTML. Yet, almost simultaneously accessing multiple web documents and retrieving information may still be problematic. Research into the application of Web Services to the distribution of XBRL information will be a rich area of somewhat more technical research.

[10] Several productivity tools have been submitted to the Bryant University XBRL student competition in recent years.

Exclusion of XBRL-Formatted Documents from SEC Certification Requirements

SEC question: For purposes of the voluntary program, should officers of the company certify the XBRL data? For legal liability purposes, corporate officers generally want to certify as few documents as possible. Since XBRL reporting is an output format and PDF formatted reports are not certified, we do not feel that certification is currently necessary. However, when all companies are required to present XBRL data, we recommend that officers certify the XBRL data, since investors may rely on this data to make significant investment decisions.

SEC question: If so, what should the certification criteria be? We recommend SysTrust-type criteria on corporate systems with increased emphasis on integrity and security concepts. The certification process should provide reasonable assurance that the company's financial information has been mapped accurately into XBRL data. In addition, security has been maintained to prevent unauthorized parties from making changes to XBRL data.

We wonder if it makes sense for auditors to certify the instance documents, since this would involve essentially technical matters such as certifying the taxonomy selection, tagging of data, etc. The certification that really matters is the basic financial statements. Eventually, however, the balkanization of data ensuing not only from XBRL but mainly from the multitude of XML standards will need both data level assurance and some form of control tags that provide information on the validity and reliability of the specific datum.

SEC question: Should auditors be required to attest to the data? While opinions in our working party varied somewhat on this point, the consensus was that we recommend that the SEC not require auditors to attest to the data. The auditors' report on the overall financial statements can be carried into the instance documents. The auditors would not need to express an opinion on the document, but they would be under an obligation to ensure that the financial statements on which they reported are carried accurately into the XBRL instance document. This accomplishes most of the attestation needed and, at the same time, gives the auditors a break in terms of putting an additional report into the process. We anticipate that the ability to produce statements in XBRL will be progressively impounded into enterprise resource planning and financial reporting preparation software. Production of reports will be performed more or less automatically, following an initial tagging process. Unless management deliberately departs from printed financial statements, the XBRL versions will be correct. Accuracy (mechanical) checks between the electronic financial statement files and XBRL files are easy and mechanically possible to perform.

SEC question: What are the advantages and disadvantages of requiring certification and attestation? One advantage would be that the auditors would be required to review the process used to prepare the XBRL documents. However, we question how much value certification and attestation add to the process, given that the financial statements that form the primary content would already be audited. In addition, the cost of certification and attestation may be significant.

SEC question: If so, what should their attestation requirements be? There should be no attestation requirement but a disclosure of how the filing was prepared and an assertion of management to that effect. Attestation that the XBRL statement is identical to the paper versions is inappropriate.

SEC question: What are the advantages of requiring certification and attestation? We see only limited benefits from attestation of the XBRL filings—assurance on the individual data points themselves (as distinct from the technical tagging) would be a different matter entirely that goes far beyond this proposed rule.

SEC question: What are the disadvantages of requiring certification and attestation? There are several disadvantages including costs in company resources needed, audit fees, and reduced timeliness of data released unless the auditor employed continuous auditing type techniques.

SEC question: What complications would arise if a volunteer presented an audit or review report in its XBRL-related documents? The potential complications depend on what the auditor's report states. There should not be any serious complications, but there are advantages and disadvantages as outlined above.

Research Issues

We note that our response to the SEC pertains only to the trial period. Should XBRL be adopted as the mandated means of communicating with the SEC so that traditional formats for financial statements disappear, then the type and extent of assurance needed on XBRL documents becomes an important question. Research opportunities examining legal ramifications of liabilities associated with partial or selective certifications of XBRL documents filed in the EDGAR and incorrect mapping of XBRL documents that correspond to the non-XBRL documents exist. Further, researchers could examine the extent that the auditors' certification should cover XBRL documents, what data should be covered in the domain of the auditors' attestation, and how much of XBRL data management would be responsible under the Sarbanes-Oxley Act, including Sections 404 and 409, among others. New research is also needed on the use of continuous auditing techniques to enable data level assurance.

Liability Issues in the Voluntary Program

SEC question: To encourage participation in the voluntary program, should liability protections be increased beyond that proposed? We recommend the SEC create a safe harbor provision.

SEC question: For the protection of investors, should liability protection be decreased from that proposed? No.

SEC question: Is there any reason to provide liability protections under the Securities Act if, as proposed, volunteers cannot submit XBRL data with Securities Act filings and XBRL data is deemed not incorporated by reference? We do not expect any major problems as XBRL data is the data from published financial statements and any variations in this first level of disclosure are easily detectable. If the SEC is concerned, a log of data downloaded could be kept with registration and any discrepancies detected could be broadcasted. This is an inexpensive and reasonable precaution using extant technology.

Research Issues

Researchers could examine whether the presence of a safe harbor provision will increase voluntary participation. Further studies may explore whether companies with the safe harbor have incentives to provide accurate information in the voluntary XBRL documents and how extensively investors would utilize such information that may not have been audited. Additional research issues include examining the extent to which the SEC should provide protection from legal liability resulting from potentially large discrepancies of information between XBRL documents and non-XBRL documents, and to identify preventive measures that SEC can take to discourage companies from engaging in the possible abuse of the safe harbor provision.

Voluntary Program vis-à-vis the Official Filing Program

SEQ questions: As proposed, the liability protection provisions require that information in the XBRL-related documents be the same as the corresponding information in the official filing and that information in the official filing not be materially false or misleading. Also as proposed, to the extent information in the XBRL-related documents differs, it would be deemed the same if the volunteer had made a good faith and reasonable attempt to make it the same and, as soon as reasonably practicable after the volunteer becomes aware of the difference, the volunteer amends the XBRL-related documents to make the information the same. Is it appropriate to deem the information the same under these conditions? Under what, if any, conditions should the information be deemed the same? Naturally, all filings with the SEC should be free from misstatements whatever the format. As unofficial attachments, giving the XBRL "documents" limited liability is a necessity to encourage active participation during this experimental period. However, while the information content will be the same, we do not propose that the level of detail be necessarily the same. This is an important distinction that must be made clear when discussing legal liabilities. Appropriate disclaimers and warnings should be prominently displayed on all XBRL documents making it clear that these do not represent official SEC filings.

Amendment to Filing

One concern for the working party appears on page 15 of the SEC document, which says, "If a volunteer wants to amend XBRL-related documents it submitted earlier, it should amend the filing with which the XBRL-related documents appeared as an exhibit." This is unclear. This could imply very little work or conversely, it could imply much work, involving a great deal of time, effort, and money. This should be clarified. We have suggested previously that the information content be the same but that the detail and even the format are different. A "good faith and reasonable attempt" to make the XBRL documents the same as the official filings when the detail and format are different seems a standard that would be difficult to objectively measure.

Mechanics of Subsequent Change

It is not clear in the proposed rule change how the SEC will be storing the XBRL document (e.g., in raw XML files, database, etc.) We assume, however, that in case of subsequent changes in financial statements submitted, a new XBRL document should replace the old one to make it less complex during the trial period. The expertise level within the filer's organization will be a critical factor affecting companies' abilities to react on a timely basis to updating the XBRL-related documents. We encourage access logging and change broadcast to meet these concerns.

Research Issues

Researchers could examine: (1) the correspondence between XBRL and official filings, (2) amendment issues to filing, and (3) the mechanics to subsequent filings. For example, to examine the first issue, researchers can consider one-to-one mapping of two identical documents with only the difference that XBRL documents are tagged and the official documents are not tagged as one extreme case. In the other extreme case, two documents may contain all of the essential data but be organized in a markedly different fashion. Researchers may study different mapping of these two corresponding documents and work on producing an optimal organization of XBRL documents and corresponding mapping that satisfy the various criteria for taxonomy quality as discussed earlier. In similar ways, there are a

host of issues that researchers may be interested in examining in the two latter areas of amendment and mechanics.

V. CONCLUSION

This paper provided a critical evaluation of the SEC's proposed rule 33-8496 to allow voluntary filings of financial information in XBRL-tagged format. We draw from academic, professional, and research perspectives to examine how this proposed rule will impact the financial reporting process, the current status and future direction of XBRL taxonomies, and the SEC filing process. We examined the questions posed by the SEC in three domains relating to the economics of financial reporting, design, and management of XBRL taxonomies, and the effect of XBRL on the SEC's filing program. Our goal is to contribute to the development of a research agenda. We believe that the research issues identified in this paper provide a valuable opportunity for the academic community to make a significant contribution to the regulatory process as it unfolds in the near future. Many of the issues are also valuable for discussion in accounting classes across the curriculum.

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