



## Does XBRL adoption reduce information asymmetry?

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### ABSTRACT

This paper examines whether or not XBRL (eXtensible Business Reporting Language) adoption reduces information asymmetry in a stock market context. Student *t*-tests and multiple regression analysis were employed to examine the effect of XBRL adoption on information asymmetry in the capital market. A significant and negative association exists between XBRL adoption and information asymmetry, which implies that the adoption of XBRL may lead to the reduction of the information asymmetry in the Korean stock market. In addition, the effect of XBRL adoption on reducing information asymmetry is stronger for large-sized companies than for medium-sized and small-sized companies. Based on these findings, the demand for XBRL-enabled applications and services in the capital market is expected to grow while governments should promote XBRL adoption for business reporting.

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### 1. Introduction

Many companies use the World Wide Web (WWW or web) as one of the primary means for reporting corporate information (Debreceeny and Gray, 2001). The content of corporate information on the web is not very different from financial disclosures on paper-based documents. This content has been standardized for human review, not for automatic location, acquisition, arrangement and classification. Information is hard to find unless one knows which form to search and the data in those forms cannot be downloaded into spreadsheets or other application software (SEC (U.S. Securities and Exchange Commission), 2006). As a result, corporate information on the web cannot adequately meet the demand of stakeholders for various analyses of corporate data. Additional technical components must be deployed that support the decision-making capabilities of stakeholders and XBRL (eXtensible Business Reporting Language) is an approach to achieve this.

XBRL is one variant of XML (eXtensible Markup Language) for business reporting. XBRL defines financial data on the web with explicit semantics in a machine-readable format, making automated data analysis possible. Adopting XBRL facilitates communications among market players and enhances the quality of stakeholder decisions. Business reporting in the XBRL format is also important to

filling companies. If a company provides financial reports in a high-quality, standard format, investors are likely to appraise the company as less risky. This could lead to the decrease of capital cost and the increase of the firm's stock price. Diamond and Verrecchia (1991) report that if the level of disclosures is increased, the level of information asymmetry is decreased, resulting in more demand from investors. If the level of financial disclosures is increased by adopting XBRL, information asymmetry is expected to be reduced, which could lead to the decrease of the cost of capital and the increase of a firm's valuation.

This study examines whether the adoption of XBRL has reduced the level of information asymmetry in the Korean stock market. Korea is one of the leading countries that have developed a mandatory filing program in XBRL format. This policy has been in effect in Korea since October 2007, thus the Korean stock market is an appropriate target market to investigate the initial effect of XBRL adoption. The principal focus of this study is to empirically examine whether XBRL adoption can reduce information asymmetry in the capital market. While previous studies have primarily investigated the effects of the short-term provision of corporate information (e.g., earnings announcements) on information asymmetry, this paper focuses on the fundamental change of the technological environment affecting information asymmetry.

The next section of the paper describes the concept and benefits of XBRL and reviews the literature of corporate disclosures and information asymmetry. Hypotheses about the relationship of XBRL and information asymmetry are then developed followed by a description of the data used in the analysis and how information asymmetry is measured. The next sections contain findings of the analysis along with a discussion of the implications of this research.

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## 2. Literature review

### 2.1. XBRL

XBRL is a standard XML reporting language to enhance the efficiency, reliability and accuracy of financial reporting. Data in XBRL format does not need to be converted from one application to another because data are independent of applications by using standard tags for data items (Farewell, 2006). XBRL can support both financial and non-financial data contexts, which distinguishes XBRL from traditional financial documents (Debreceeny et al., 2005). The use of standard tags in XBRL documents allows for the specific identification, automatic exchange, and reliable extraction of financial information across different software applications.

Many businesses, regulators, and investors can benefit from XBRL. XBRL helps integrate disparate business reporting procedures across business reporting jurisdictions; reduces the costs of compliance with reporting regulations and data-quality assurance services; and facilitates the communication between businesses and financial markets. XBRL facilitates continuous reporting for investors on companies' operations by enabling the capture, integration, processing, and reporting of disparate information in common formats. XBRL reduces the cost associated with obtaining and assimilating information from businesses and the cost associated with international business reporting standards (Weber, 2003).

With the adoption of XBRL, financial information can be optimized for machine creation, publication, discovery, consumption, and reuse, and XBRL enables supply chains of information for business reporting to communicate among players more efficiently (Debreceeny et al., 2005). For example, the use of financial data in XBRL format can help enhance the effectiveness and efficiency of post-merger integration. In addition, the information flow between material providers and logistic companies can be streamlined, and this contributes to the increase of efficiencies in supply chains.

XBRL supports the decision-making process for investments by enabling a powerful search capability for various financial data. Novice through expert investors are able to easily search and compare data items which have similar or the same tags. Hodge et al. (2004) argues that although the information in the footnote of financial statements is important, novice investors have a difficult time thoroughly analyzing the data due to their lack of experience and the relative position of the data. XBRL-enabled searching technology resolves this problem.

The tags of XBRL provide additional information to investors because these metadata describe the meaning of data items. Russo (1977) reports that information should be presented in a usable display format, illustrated through an experimental study finding that information organized in a single list format enhances the decision-making capabilities of users. Hodge et al. (2004) applies those results to a comparative analysis of alternative accounting choices across companies and found that users could easily identify the differences of discretionary accounting choices so search-facilitating technology like XBRL can improve the transparency of financial reporting. A recent survey indicates that additional XBRL benefits include cost savings due to an increased data processing capability, decreased data redundancy, increased efficiency, and decreased cost of bookkeeping (Pinsker and Li, 2008).

### 2.2. Financial reporting process and XBRL in Korea

All publicly-held firms electronically file their periodic and other financial reports through the DART (Data Analysis, Retrieval and Transfer) system in Korea. Most financial report filings, including periodic financial statements, are mandatory while others are voluntary. Annual reports must be submitted within 90 days after the end of the fiscal year while semi-annual and quarterly

reports must be submitted within 45 days after the end of each fiscal quarter.

The DART system, which is equivalent to the EDGAR (Electronic Document Gathering and Retrieval) system in the U.S., was developed in August 1998 with the initial pilot service of the system in April 1999. Paper filings have not been allowed since January 2001 so most data in important corporate disclosure reports are freely available online. In addition, more than 60% of transactions in the Korean stock market are executed via electronic transaction systems. Most investors in Korea can get information related to their investment decisions and trade stocks electronically.

The Korean stock market complies with all international standards of financial disclosure and was incorporated into the FTSE (Financial Times Stock Exchange) global equity index series in September 2008. The Korean stock market does not have designated market makers, which is different from the U.S. stock market. Most transactions are executed directly between sellers and buyers via computerized trading systems.

Korea is a leader in adopting and deploying XBRL in financial reporting, ahead of the U.S., Japan, and the EU, by having a mandatory filing program in XBRL format. All publicly-held firms in Korea have been required to report financial statements in XBRL format since October 1, 2007 (FSS (Financial Supervisory Service), 2007). The companies listed in the KOSPI (Korea Composite Stock Price Index) and the KOSDAQ (Korean Securities Dealers Automated Quotations) must file their financial reports, including annual, semi-annual, and quarterly reports, to the DART system using XBRL format.

### 2.3. Corporate disclosure and information asymmetry

Corporate disclosure is mandatory or voluntary activities for providing information about a firm's performance and governance to outside investors and is one of the fundamental elements for the efficiency of the capital market (Healy et al., 1995; Shaw, 2003). Efficiencies in the capital market are achieved when financial information, including statements, footnotes, management discussion, analysis and forecasts, are circulated seamlessly among various stakeholders. Government agencies require public companies to disclose their financial statements (SEC (U.S. Securities and Exchange Commission), 2009) to enable these efficiencies. Corporate disclosure provides investors with a common pool of knowledge for investment decisions.

Insufficient corporate disclosure is closely related to the problem of information asymmetry as information asymmetry creates inefficiencies in the capital market. Information asymmetry occurs when one party in a transaction has more or better information than another (Biswas, 2004; Grewala et al., 2003; Kulkarni, 2000). Frankel and Li (2004) report that the request for reducing information asymmetry in the capital market led to the creation of the 1934 Securities Act. Benston (1973) explains that the rationale behind the disclosure requirements of the 1934 Securities Act was to build a fair and efficient capital market. Benston (1973) insists that fairness is a significant issue to the capital market, and that all investors should have the same level of access to corporate financial information. Lev (1988) emphasizes the need for public regulation mandating the disclosure of corporate financial information to reduce information asymmetry in the capital market. Diamond (1985) argues that the disclosure of corporate information can serve as an incentive for producing private information, and companies can raise the welfare of their security holders through the disclosure of financial information.

The increased level of corporate disclosure can reduce proxies of information asymmetry, including bid-ask spread. Research examining mandatory disclosure (Greenstein and Sami, 1994; Hagerman and Healy, 1992; Leuz and Verrecchia, 2000) as well as voluntary disclosure (Healy et al., 1999; Hefflin et al., 2005; Welker, 1995) has found similar effects on information asymmetry in the capital market.

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