

Market Implications of Voluntary Accounting Disclosures in the Absence of a Mandatory Disclosure Requirement: Evidence from the OTCBB

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Abstract

I examine the valuation role of accounting information in voluntary and mandatory reporting regimes by exploiting a regulatory change that mandated Over-the-Counter Bulletin Board (OTCBB) firms to comply with the reporting requirements of the 1934 Securities Exchange Act. Prior to this regulatory change, disclosure of financial statement information was voluntary for most firms. I study firms that start filing with the SEC after this regulatory change, and classify these firms as disclosing and non-disclosing firms based on whether they voluntarily disclosed financial statement information prior to the regulatory change. In these firms' initial SEC filings I am able to observe *ex post* the prior year financial statement information non-disclosing firms had previously withheld. I find evidence consistent with firms voluntarily disclosing financial statement information when the information is useful for valuation and not disclosing otherwise. My evidence also suggests that *non-disclosed* accounting information is reflected in stock prices.

* I thank the members of my dissertation committee: Hui Chen, Alan Jagolinzer, Bjorn Jorgensen (Chair), Nathalie Moyon and Steve Rock. I also thank Katherine Gunny, Greg Martin, Jeremy Michels, Naomi Soderstrom and University of Colorado workshop participants for their comments.

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1. Introduction

Public trading of securities in the US typically requires mandatory disclosure of financial statement information. Prior to 1999, however, disclosure of financial statement information was voluntary for most firms traded on the Over-the-Counter Bulletin Board (OTCBB).¹ Consistent with predictions from the analytical literature on voluntary disclosure, some firm managers disclosed financial statement information while others did not. Nevertheless, prices are observable for all firms regardless of disclosure. I exploit a regulatory change on the OTCBB to observe *ex post* the financial statement information non-disclosing firms previously elected to withhold. Specifically, on January 4, 1999, the U.S. Securities and Exchange Commission (SEC) approved the Eligibility Rule, which required firms to comply with the periodic disclosure requirements of the 1934 Exchange Act to continue trading on the OTCBB. Those firms that chose to remain on the OTCBB began filing with the SEC and were required to provide current year information as well as at least one prior year of information (i.e., accounting information for the voluntary disclosure period).

I use this setting, where disclosure is voluntary, to examine whether stock prices relate to disclosed and *non-disclosed* accounting information. Mandatory disclosure laws implicitly assume that: (1) financial statements provide useful information to investors, and (2) public disclosure of financial statement information is necessary for stock prices to reflect this information. In contrast, theoretical research suggests that in the absence of disclosure investors set prices that, on average, correctly infer non-disclosed information (e.g., Verrecchia 1983, Dye 1985). Further, alternative channels to public disclosure, such as insider trading, may partially or fully incorporate private information into stock prices (e.g., Kyle 1985, Manne 1966). Since

¹ Technically, SEC Rule 15c2-11 required firms to provide a balance sheet, income statement, and retained earnings statement to a market maker *once* to initiate a quotation, but with no obligation to update that information. I control for this in my research design.

many companies on the OTCBB are small, start-up enterprises, their financial statements may not provide useful information for investors' resource allocation decisions.

Understanding whether stock prices reflect accounting information in a voluntary disclosure setting provides insights about the effects of modern mandatory SEC disclosure regulation. Theoretical research suggests that the appropriate benchmark to evaluate the effects of mandatory disclosure is to first understand what firms would have voluntarily disclosed in the absence of regulation (e.g., Verrecchia 1983, Dye 1985). Thus, this setting provides an observable benchmark to evaluate the effects of mandatory disclosure regulation. For firms that did not disclose prior to this regulatory change, which I label "non-disclosing" firms, mandatory SEC disclosure requirements impose a significant shift in the firms' information environment. In contrast, this regulatory change should have an immaterial direct effect on "disclosing" firms because they voluntarily disclosed. Mandatory disclosure, however, may enhance the comparability and credibility of their disclosures since mandatory disclosure provides a credible commitment to reveal information independent of economic outcomes.

I find a weak association between prices and accounting information for non-disclosing firms both before and after the imposition of SEC disclosure requirements. The coefficient mapping book value into stock price becomes positive and significant during the period of mandatory disclosure and the adjusted R^2 increases consistent with mandatory disclosure providing some new information to investors. However, the overall weak association between stock prices and accounting information seems most consistent with accounting information playing a minimal role in valuation. In contrast, I find a strong association between prices and accounting information for disclosing firms both before and after the imposition of SEC disclosure requirements. Taken together, these results are consistent with firms voluntarily

disclosing financial statement information when it is useful for valuation, and not disclosing otherwise.

I further evaluate the non-disclosing firms and partition non-disclosing firms by whether they are classified as *Development Stage Enterprises (DSE)* (Willenborg 1999). As Willenborg notes, from an *ex ante* perspective accounting information is less likely to be relevant for pricing *DSEs*. Consistent with this expectation, I find no association between prices and accounting information for non-disclosing *DSEs* either before or after SEC disclosure requirements. In contrast, I find a weak association between prices and accounting information for non-disclosing non-*DSE* firms before and after the imposition of SEC regulation, but no increase in the association. These results are consistent with stock prices in the prior period reflecting non-disclosed accounting information. Further, the results of this partition are consistent with non-disclosing firms withholding accounting information because it is not useful in valuation.

This paper makes the following contributions. First, it provides new insights to the role of accounting information in unregulated markets. Prior research studying the role of accounting information in unregulated markets focuses on how substantial discretion in accounting method choice affects the credibility of accounting information (e.g., Sivakumar and Waymire 1993, Ely and Waymire 1999, Barton and Waymire 2004). Because I am able to *ex post* observe the information the non-disclosing firms withheld, I study how discretion over *whether* or not to disclose accounting information relates to stock prices.

Second, a vast literature considers the economic consequences of mandated changes in accounting standards (Watts and Zimmerman 1986, Fields et al. 2001). As Bushee and Leuz (2005) point out, these studies occur in the already-rich SEC disclosure environment. These studies focus on changes in how firms report accounting information. My study examines a

much more radical shift in financial reporting. I identify firms that did not disclose any financial statement information and then examine whether imposing SEC disclosure requirements enhances the association between stock prices and accounting information.²

Third, my study contributes to studies examining the OTCBB by providing specific evidence on the role of accounting in this market. Luft et al. (2001) and Luft and Levine (2004) focus on the market microstructure. They document that OTCBB securities yield lower returns with higher risk than securities on the major exchanges. They further document low liquidity and high volatility, which they attribute to a lack of financial information and third party research. Bushee and Leuz (2005) study the economic consequences of the Eligibility Rule. They document specific costs and benefits for affected firms in terms of market value and liquidity as well as some evidence of positive externalities (see Section 2 for a more detailed description). My study provides direct evidence on the relationship between stock prices and accounting information for OTCBB firms before and after the Eligibility Rule.

The paper proceeds as follows. Section 2 provides the historical background of US securities regulation and the institutional details of the OTCBB. Section 3 offers a literature review. I discuss Hypothesis development and research design in Section 4. Section 5 describes the data collection. In Section 6 I report on the association between stock prices and accounting information. Section 7 concludes.

² Sivakumar and Waymire (2003) study the impact of the first federal accounting rules in US history on earnings attributes. The accounting rules were passed in 1907 and 1908 for regulation of US railroads. My study is distinct from this in that I study the impact of modern SEC disclosure requirements and study both non-disclosing and disclosing firms.

2. History of US Securities Regulation and Institutional Setting of OTCBB

1.1 History of US Securities Regulation

Federal regulation of US securities began with the passage of the Securities Act of 1933 (1933 Act).³ Existing state-level securities laws were largely superseded by federal regulation. Congress and the President passed the 1933 Act and the 1934 Act to remedy the lack of reliable information about securities, which they perceived to be the primary cause of the stock market crash of 1929. Congress and the President premised the Acts based on the principle of “full and fair” disclosure. Together the 1933 and 1934 Acts required exchange-listed companies to disclose audited financial statements and details about the company’s business. Additionally, the Acts significantly increased civil liability for fraud.

The Acts pertained to exchange-listed companies, which left most firms in the OTC market free from federal regulation.⁴ Two subsequent regulatory changes expanded the periodic reporting requirements of the 1934 Act to a significant number of OTC firms. The first change was passed in 1964 in response to concerns about fraud and the growth of the OTC market. Congress passed the 1964 Securities Amendments Acts (1964 Acts), which subjected OTC firms above a size and shareholder threshold (\$1 million in assets and 500 shareholders, respectively) to the same disclosure requirements as exchange-listed firms. This resulted in a substantial change in the scope of firms required to comply with mandatory disclosure. The second change was also adopted in response to concerns about fraud in the OTC market as well. On January 4, 1999, the SEC approved Eligibility Rule requiring firms on the OTCBB to become reporting companies regardless of size or the number of shareholders.

³ Interstate railroads and public utilities had been subject to federal regulation prior to the 1933 Act and the 1934 Securities Exchange Act (1934 Act).

⁴ In 1936, Congress passed an amendment to the 1934 Act which required OTC firms to register with the SEC and begin filing periodic reports under the 1934 Act if the firms issued more than \$2 million in a securities offering.

Mandatory disclosure requirements and their enforcement are defining features of US securities markets. Many researchers question the necessity of mandatory disclosure to achieve well-functioning markets (e.g., Stigler 1964, Benston 1973). Others argue mandatory disclosure is essential to maintain efficient markets (e.g., Coffee 1984). For empirical researchers interested in understanding the impact of US federal securities regulation, the 1933 Act, the 1934 Act, the 1964 Acts, and the Eligibility Rule represent fertile research ground to gain such understanding.

1.2 Institutional Setting

To describe the OTCBB setting, I follow Bushee and Leuz's (2005) discussion of the salient features of the OTCBB market before and after the Eligibility Rule. In 1998, the OTCBB represented a sizable market segment with over 6,000 domestic issues, an average daily trading volume over \$200 million and an estimated market capitalization of over \$50 billion. Formed in response to the mandate of the Penny Stock Reform Act of 1990 to enhance price transparency in the OTC market, the OTCBB is an electronic quotation medium that collects and disseminates real-time quotes, transaction prices, and volume data for small-cap OTC securities.⁵

A key distinction between the OTCBB and the national exchanges is the absence of quantitative financial listing requirements (e.g., minimum net worth or market capitalization) for firms quoted on the OTCBB. Firms only need to find a broker/dealer willing to make a market in their stock to begin quotation and, in contrast to the national exchanges, firms do not have a formal relationship with the OTCBB. The National Association of Securities Dealers (NASD, now part of the Financial Industry Regulatory Authority) is entrusted with operating and regulating the OTCBB. During the period of this study, the NASD delegated the actual execution of operating and regulating this market to its subsidiary, NASDAQ. The OTCBB

⁵ In general, an OTC security is any security that is not listed or traded on a national exchange or NASDAQ.

differs from the Pink Sheets, which is another OTC market segment. The Pink Sheets are characterized by less price transparency during the period of this study because it started electronic quotations in 1999 and a supporting web portal in 2000.

Prior to January 1999, approximately 3,500 firms on the OTCBB were not required to file periodic financial reports with the SEC. These firms were exempt from SEC regulation because they: (1) never issued securities under the 1933 Act, and (2) were below the size or “owners of record” thresholds stated in Section 12(g) of the 1934 Act. Issuers registering an offering under the 1933 Act trigger periodic reporting requirements in accordance with Section 15(d) of the 1934 Act. Firms frequently avoid registering under the 1933 Act by qualifying for an exemption. For example, Regulation D Rule 504 exempts offering up to \$1 million in a 12-month period. Section 12(g) details the size and shareholder thresholds of the 1934 Act as firms exceeding \$10 million in assets and with a class of securities held by more than 500 owners of record on the last day of the fiscal year register their securities under the 1934 Act. The actual number of individual shareholders often exceeds the owners of record because shares held in “street name” by a brokerage firm or clearinghouse count only as one owner.

While exempt from the 1934 Act reporting requirements, these 3,500 firms were required to provide financial statement information *once*, upon initial quotation on the OTCBB. Specifically, SEC Rule 15c2-11 required the initial broker/dealer making a market in these securities to obtain current financial statement information (with no audit requirement) from issuers.⁶ The market maker did not need to subsequently obtain updated information. Further, after thirty days, the “piggyback” exemption permitted other market makers to issue quotes

⁶ Paragraph (g)(1) of Rule 15c2-11 defines current as six months. If the balance sheet provided is more than six months old at the initial quotation, then the firm must provide an income statement and retained earnings statement updated to a more current date.

without obtaining updated financial information. As a result, financial statement information was generally not publicly available for these firms.⁷

However, these lax requirements created some challenges in the OTCBB market. An article published by the Wall Street Journal on September 4, 1997 documented a surge of fraud and a lack of financial information on the OTCBB that marked the first of several events that would lead to the Eligibility Rule. Shortly thereafter, on September 22, 1997, the US Senate held a committee meeting on fraud in OTC markets. SEC Chairman, Arthur Levitt, Jr., testified before the committee that fraud was a problem in the OTC markets (S. Hrg. 105-226 9/22/97). The NASD also expressed concern about the OTCBB. Both the SEC and the NASD worried that electronic quotation of real-time data provided on the OTCBB gave investors a misleading impression about the reliability of firms traded on the OTCBB. Additionally, the NASD was deeply concerned about damage to the reputation of NASDAQ as the OTCBB was often linked to NASDAQ.⁸

Ultimately, the NASD and SEC increased the disclosure requirements of the OTCBB. On December 9, 1997, the NASD Board of Governors indicated it was considering requiring firms to file with the SEC to remain on the OTCBB. On February 13, 1998, the NASD Board of Governors proposed limiting the OTCBB to firms that filed period reports with the SEC. After a brief period for public comment, the NASD approved this restriction by passing the Eligibility Rule in May 1998 as amendments to NASD rules 6530 and 6540. The SEC announced its approval of the Eligibility Rule on January 4, 1999.

⁷ Bushee and Leuz (2005) confirmed this in interviews with officials from NASDAQ, the SEC and several OTCBB market makers. I also conducted interviews with OTCBB market makers who confirmed that financial statement information was not generally available during this time.

⁸ For example, Bedford Holdings, Inc. disclosed the following, “The Company’s Common Stock is quoted under the symbol ‘BFHI’ on the NASDAQ Electronic Bulletin Board.” Clearly, this could confuse investors and blurs the line between NASDAQ and the OTCBB.

The Eligibility Rule required firms to file the periodic reports specified in Section 13 and 15(d) of the 1934 Act with the SEC. Banks and insurance companies were allowed to make filings with the appropriate regulatory authority rather than the SEC. The rule required firms to file a registration statement, Form 10, under the 1934 Act or a 10-K with equivalent information and the financial statements had to be audited. Each company's initial filing provided the current year's financial statement information and at least one year of prior information for small business filers and up to two years for non-small business filers. For firms that previously did not disclose financial statement information, it now became possible to observe the information they elected not to disclose. After the initial filing, the rule required firms to file current reports, 10-Qs and 8-Ks, as well as annual reports, 10-Ks, to maintain their quotation on the OTCBB. Investors could easily access the filings on the SEC's EDGAR database. For most firms, this dramatically increased the amount of publicly available financial statement information. The amount of public and private enforcement also increased following firms' registration with the SEC. Firms were now under the scrutiny of the SEC, while Section 18 of the 1934 Act significantly increased firms' civil liability, making private enforcement easier for investors.

The Eligibility Rule was phased in on a monthly basis starting in July 1999 and ending June 2000 based on firms' ticker symbols on January 4, 1999. This gave firms from 6 to 18 months to prepare their SEC filings. Each month, the OTCBB reviewed approximately 100-300 for compliance with the Eligibility Rule. The phase-in schedule provided the OTCBB with adequate time to review compliance. One month prior to each phase-in date, the OTCBB reviewed firms' compliance and appended an 'E' to non-compliant firms' ticker symbols. If firms subsequently complied with the Rule, then the 'E' was removed. If not, the firms were deleted from the OTCBB.

The OTCBB reviewed 5,402 firms for compliance (see Table 1). The Eligibility Rule did not affect 1,899 firms because they were already registered and filing with the SEC when the rule was passed (Already Compliant firms).⁹ Of the 3,503 firms affected by the Eligibility Rule, approximately three quarters of these firms did not comply and were forced off the OTCBB (Noncompliant firms). Most of these firms moved to the Pink Sheets (Bushee and Leuz 2005). The remaining firms complied with the Eligibility Rule and continued quotation on the OTCBB (Newly Compliant firms).

3. Literature Review

The guidance from theoretical research regarding the necessity of mandatory disclosure regulation is equivocal. The well-known “unraveling” result of early theoretical work predicts full disclosure of private information when disclosure is truthful and costless (Grossman 1981, Milgrom 1981). However, full disclosure is rarely observed in capital markets. Later work models a cost to truthful disclosure and predicts a partial disclosure equilibrium, where firms with unfavorable information do not disclose (Verrecchia 1983).¹⁰ In this framework, firms disclose information when the benefits exceed the costs and investors set prices that, on average, correctly infer non-disclosed information.

In addition, alternative information channels to public disclosure may result in stock prices reflecting non-disclosed information. Insiders trading in the stock will incorporate private information into their decisions to buy and sell (e.g., Manne 1966). Kyle (1985) suggests that without a public information signal, insiders reveal a portion of their private information.

⁹ To facilitate comparison with Bushee and Leuz (2005), I use the same labels.

¹⁰ Other work also predicts a partial disclosure equilibrium when investors are uncertain about whether management is informed (Dye 1985, Jung and Kwon 1988). In my setting, this is unlikely as firms typically have financial statement information.

Jorgensen and Kirschenheiter (2010) show that investors infer non-disclosed information from disclosure by comparable firms.

From the above theoretical work, the need for mandatory disclosure is not obvious. However, mandatory reporting regimes are observed around the world (Healy and Palepu 2001, Frost et al. 2006, Leuz 2010). The literature provides four main justifications for mandatory disclosure: (1) positive externalities, (2) market-wide cost savings, (3) insufficient private (or public) sanctions, and (4) dead-weight costs from agency conflicts and fraud (Leuz 2010).¹¹ Mandatory disclosure may create positive externalities, such as information transfers and liquidity spillovers (Dye 1990, Admati and Pfleiderer 2000). However, negative externalities may arise from mandatory disclosure (e.g., Fishman and Hagerty 1989). A mandatory disclosure regime can save costs to firms when it requires disclosures almost all firms would voluntarily provide anyway (Ross 1979). Further, mandatory disclosure may provide firms with a more credible commitment device than they could otherwise contract privately. A credible commitment device can benefit firms by increasing market liquidity (Verrecchia 2001). Finally, mandatory disclosure may reduce agency conflicts by minimizing controlling insiders' consumption of private benefits.

Prior to mandatory disclosure, the empirical literature on the role of accounting information in unregulated markets focuses on how managerial discretion in financial reporting can affect its credibility and whether market forces enhance the credibility of reported numbers (e.g., Waymire and Sivakumar 1993, Ely and Waymire 1999, and Barton and Waymire 2004). For example, Waymire and Sivakumar (1993) study 51 NYSE industrials during 1905-1910 when managers had considerable flexibility in reporting earnings. They find negative earnings and dividend changes are associated with returns, but that positive earnings changes are only

¹¹ For a comprehensive discussion of these justifications, see Leuz and Wysocki (2008).

associated with returns for dividend-paying firms. The results are consistent with favorable earnings information being less credible than negative information. Collectively, these studies suggest financial reporting in a discretionary environment is informative to capital markets, but that the market discounts some favorable news (e.g., positive earnings changes and intangibles) as opportunistic reporting.

Empirical investigations of the impact of federal securities regulation began with Stigler (1964). He investigates whether investors are better off after the mandatory disclosure imposed by the 1933 Act. He examines two groups of NYSE issues: (1) new issues from 1923-1928 and (2) new issues from 1949-1955. He finds that the returns on new issues after mandatory disclosure are the same as the returns on new issues before mandatory disclosure. He also finds that the variance of stock returns decreases after mandatory disclosure. Overall, he concludes that mandatory disclosure had little beneficial effect for new issues, and may have had a detrimental effect by excluding risky, new companies from accessing public capital. While controversial, subsequent studies using modern empirical techniques support Stigler's findings (i.e., Jarrell 1981, Simon 1989).¹²

Studies of the 1934 Act fail to document significant benefits. Benston (1973) is the first empirical investigation of the impact of the Securities Exchange Act of 1934. His study relies on the observation that prior to the 1934 Act, some firms on the NYSE disclosed sales information and some firms did not disclose sales information. After the 1934 Act, all firms were required to disclose sales information. His main finding is that the stock return residuals are similar for both groups both before and after the 1934 Act. He concludes that the mandatory disclosure requirements of the 1934 Act provided no discernible benefit to investors. Subsequent research

¹² Simon (1989) argues the reduced variance of returns is more consistent with better information reducing investor forecast errors than with the Stigler's crowding out argument.

on the 1934 Act documents no significant benefits either (i.e., Chow 1983, Daines and Jones 2005, Mahoney and Mei 2006). Mahoney and Mei (2006) argue that the contractual-based disclosure system of the NYSE already provided investors with equivalent information to the mandatory disclosure requirements of the 1934 Act. Their final conclusion is that in the context of a strong legal system, a securities regulator may not yield substantial benefits above voluntary and contractual disclosure.

Although studies of the 1933 Act and 1934 Act fail to document significant benefits from federal regulation, recent work examining the 1964 Acts and the Eligibility Rule documents significant costs and benefits associated with mandatory SEC disclosure. One difficulty in studying the Securities Acts is that the volatile market conditions of the 1930s may impede researchers' ability to precisely measure the impact of the Acts. Studying the 1964 Acts and the Eligibility Rule provide less volatile settings and natural control groups (companies already filing with the SEC) to better measure the impact of mandatory SEC disclosure regulation.

Greenstone, Oyer, and Vissing-Jorgensen (2006) exploit the 1964 Acts to study the effects of mandatory SEC disclosure regulation. They estimate that OTC firms that went from no SEC reporting to full SEC reporting earned abnormal excess returns ranging from 11.5 to 22.1 percent in the period between the initial proposal of the legislation and when it became law. They suggest that mandatory disclosure causes managers to better focus on maximizing shareholder value. In a concurrent paper around the adoption of the 1964 Acts, Ferrell (2007) finds that mandatory disclosure results in a reduction in the volatility of OTC stock returns.

Bushee and Leuz (2005) study the Eligibility Rule. They document significant costs and benefits associated with mandatory disclosure regulation. First, as discussed in Section 2, they document that approximately three quarters of the 3,503 affected firms (those not previously

filing with the SEC) are forced into a less regulated market at a significant cost in terms of market value and liquidity. Second, stock returns suggest that the regulatory change was costly for the quarter of firms that chose to comply with the mandatory SEC disclosure obligations. These firms, however, did experience an increase in liquidity upon compliance. Finally, they find evidence of positive externalities that are likely due to liquidity spillovers or an enhanced reputation of the OTCBB. They are able to measure externalities by examining OTCBB firms already filing with the SEC that presumably should be unaffected by the Eligibility Rule, except for potential externalities.

The main justification for the 1933, 1934, 1964 Acts and the Eligibility Rule was a lack of current, reliable financial statement information about issuers. My study contributes to this literature by directly studying whether financial statement information is reflected in stock prices when disclosure of financial statement information is voluntary (i.e., no contractual or mandatory reporting obligations), and whether modern mandatory SEC disclosure requirements increase the association between stock prices and financial statement information.

4. Hypotheses Development and Research Design

My study focuses on the Newly Compliant firms that choose to begin filing periodic reports with the SEC. Prior to the Eligibility Rule, the costs of filing with the SEC exceeded the benefits, or these firms would have voluntarily filed with the SEC (Bushee and Leuz 2005). Forced to choose their second best alternative, these firms start filing with the SEC to remain on the OTCBB. My research design is similar to Berger and Hann (2003) and Botosan and Stanford (2005), who note that after mandatory change in segment reporting it is possible to observe *ex post* information firms chose not to disclose in real time. In my setting, I use Newly Compliant

firms' initial SEC filings to observe *ex post* financial statement information many firms chose not to disclose in real time. Regardless of disclosure, however, investors traded in both sets of firms' stocks and prices are observable for all firms during the voluntary disclosure regime. The Newly Compliant firms allow me to examine the role of accounting information in both voluntary and mandatory reporting regimes.

The non-disclosing firms are of particular interest because they enable me to examine whether prices reflect non-disclosed accounting information. I consider four possibilities. First, the market may be strong-form efficient and incorporate the non-disclosed information fully into stock prices via alternative information channels to public disclosure such as insider trading (e.g., Manne 1966). Second, stock prices may only partially reflect non-disclosed information. In a model without public information (the period of nondisclosure in my setting), insiders are predicted to reveal only a portion of their private information (Kyle 1985). Investors may also be able to infer some accounting information from comparable firms that do disclose (Jorgensen and Kirschenheiter 2010). Third, insiders may withhold valuable accounting information and stock prices are not associated with financial information. Finally, managers may not disclose financial statement information because the information is not useful for valuation. Formally, I hypothesize (null form):

H1: Under the voluntary disclosure regime, stock prices for non-disclosing firms are not associated with accounting information.

It is important to note that OTCBB firms are small with low analyst coverage. The best source of information is the firm itself; the literature on voluntary disclosure documents that increased voluntary disclosure benefits firms in low information environments (e.g., Botosan 1997, Blankespoor et al. 2010). Compliance with the Eligibility Rule causes a significant shift in the amount of financial statement disclosure for non-disclosing firms. Presumably, the

imposition of mandatory disclosure should affect these firms the most. Further, studying the effects of mandatory disclosure should enable me to distinguish which of the four possibilities motivating Hypothesis 1 is most likely. This leads to my second hypothesis (null form):

H2: Mandatory disclosure does not increase the association between stock prices and accounting information for non-disclosing firms.

I also study the disclosing firms. Mandatory disclosure regulation may not have a material direct effect on disclosing firms because they voluntarily provided financial statement information in the voluntary regime. However, voluntary disclosure may not be credible because managers have incentives to issue self-serving disclosures. Voluntary disclosure of bad news is likely to be viewed as credible, but investors may be more skeptical of favorable news (e.g., Sivakumar and Waymire 1993). Mandatory disclosure may enable firm managers' to credibly commit to disclose both good and bad news (Verrecchia 2001). The addition of an audit requirement and increased civil liability under the 1934 Act may enhance the credibility of reported information as well. This leads to the following hypotheses (null form):

H3a: Under the voluntary disclosure regime, stock prices for disclosing firms are not associated with accounting information.

H3b: Mandatory disclosure does not increase the association between stock prices and accounting information for disclosing firms.

My research design follows prior research that examines the association of stock prices and accounting information (e.g., Francis and Schipper 1999, Ely and Waymire 1999, etc.). Specifically, I regress stock prices on book value and earnings in the following regression:

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 EARN_{it} + \varepsilon_{it} \quad (1)$$

Where P is the share price six months after the fiscal year-end, BV is the book value per share and $EARN$ is earnings per share. I adjust for stock splits as necessary. I use the price six months after the fiscal year-end to be consistent with how firms are classified as either disclosing or non-

disclosing firms in the voluntary reporting regime. The operational definition of current disclosure in this market was defined by SEC Rule 15c2-11 as six months from a fiscal year-end.¹³ Both the coefficients for BV and EARN as well as the adjusted R^2 from equation 1 provide information about how stock prices relate to accounting information.¹⁴

5. Data

5.1 Data Collection

Table 1 provides the details of my sample based on data obtained from the OTCBB.¹⁵ On January 4, 1999, there were 6,513 securities quoted on the OTCBB. Of those, 417 securities were multiple issues for the same firm and 283 were for foreign firms or firms with only warrants or preferred stock. Of the 5,813 domestic issuers, 411 firms delisted from the OTCBB prior to their phase-in date for various reasons including mergers and acquisitions, bankruptcy, failure to comply with Rule 15c, inactivity, and listing on NASDAQ or a national exchange. This leaves a final sample of 5,402 domestic firms that the OTCBB reviewed for compliance with the Eligibility Rule.

Of the 5,402 firms reviewed by the OTCBB for compliance, 1,899 firms filed with the SEC in 1998 while 3,503 firms did not. Of the Already Compliant firms, 539 firms do not comply with the Eligibility Rule because they are delinquent in their filings with the SEC or are terminated during 1999.

¹³ Results are similar if I use the price four months after fiscal year-end.

¹⁴ Brown et al. (1999) suggest deflating regression variables by past price to mitigate the effects of scale. I find qualitatively similar results to those presented when I scale by price as of six months after the preceding year-end.

¹⁵ The initial list of securities quoted on the OTCBB on January 4, 1999 is available on the OTCBB website: www.otcbb.com. I then used daily lists of additions, deletions and changes, also available on the website, to determine compliance.

The main sample of interest for my study is the set of firms who were not filing with the SEC, but initiate filing with the SEC to comply with the Eligibility Rule. Of the 3,503 firms that were not filing with the SEC in 1998, 2,677 firms chose not to comply with the Eligibility Rule, leaving 826 Newly Compliant firms. I exclude banks and insurance companies because they are in regulated industries. This results in 599 Newly Compliant non-bank and non-insurance companies.

Of these 599 firms, I am unable to locate SEC filings for 206 firms. After hand-collecting the remaining 393 firms' SEC filings, I discovered that some of the firms were not suitable for my study. Specifically, 167 firms were shell companies. These represent firms with minimal assets and no operations or specific business plan other than to identify suitable acquisitions. These companies likely choose to comply with the Eligibility Rule because the cost of compliance is low (i.e., minimal audit costs). Sixty-three firms completed reverse acquisitions prior to filing with the SEC. Under the accounting rules for reverse acquisitions, the reported financial statements are retroactively restated to reflect the financial statement information of the acquired firm. As such, the accounting information disclosed in these firms' filings is not what the firms would have disclosed in real time. Finally, for 40 firms, the current year of operations represented their first year of operations and so no data was available for the prior year. This leaves a final sample of 123 Newly Compliant firms with suitable data.

As noted earlier, disclosure of financial statement information prior to the Eligibility Rule was not entirely voluntary. SEC Rule 15c2-11 required firms to provide financial statement information to the initial market maker upon initiating quotation on the OTCBB. Thirty firms initiated quotation on the OTCBB at a time such that the year of prior period financial statement information that I am able to observe in their SEC filing is the same information they would have

provided to the market maker. I exclude these 30 firms for a final sample of 93 firms where disclosure of financial statement information is voluntary in the period prior to the Eligibility Rule and for which I am able to subsequently observe the information these firms would have had to disclose if under SEC disclosure during that period.

Panel B of Table 2 details that of the 93 firms where disclosure was voluntary, 66 (71%) firms chose not to publicly disclose financial statement information while 27 (29%) firms publicly disclosed financial statement information. I classify firms as disclosing and non-disclosing firms based on a Lexis-Nexis search using each company's name. I then examined each article to determine whether a company disclosed financial statement information. I also searched S&P Daily News, a low-cost method commonly used in the OTC markets to disseminate financial statement information. SEC Rule 15c2-11 Paragraph (g)(1) defines current financial statement information as six months. As this was the operating definition of "current" in this market, I adopt six months as my cut off for voluntary disclosure. Specifically, I classify any firm that publicly disclosed financial statement information within six months of its fiscal year-end as a disclosing firm, and as a non-disclosing firm otherwise.

As implied in the above description, I collect all financial information from each firm's SEC filings. I obtain price data from FactSet. FactSet provides information about dividends and stock splits as well.

5.2 Descriptive Statistics

Table 3 presents descriptive statistics for the 93 firms I study. The information is based on each firm's final year of information prior to mandatory disclosure, except for the information for *Auditor*, *GC*, and *Ownership* which are only available for the mandatory disclosure period. Both the non-disclosing and disclosing firms are small firms, whether measured by assets or

market value. Both non-disclosing and disclosing firms' operations on average generate negative earnings and operating cash flows. Disclosing firms are larger in terms of sales, gross margin, and selling, general, and administrative expenses. Non-disclosing firms invest more in research and development, which is consistent with a larger portion of the non-disclosing firms being *DSEs* (47%) than the disclosing firms (26%). *SFAS No. 7* classifies a company as a *DSE* when its efforts are focused on establishing new business and either its primary operations have not yet begun, or no significant revenues have been earned. Thus, a significant portion of these firms are start-up companies working on implementing their business plan.

Disclosing firms are better capitalized as evidence by higher stockholders' equity. Disclosing firms also have larger market values. However, when I compare lagged market values, they are not significantly different. This suggests firms with better news disclose that information. *Ownership*, which represents the total ownership of both insiders and blockholders with more than 5% ownership of the company, is higher for non-disclosing firms. This likely reflects less demand for public disclosure in non-disclosing firms since insiders and blockholders own a larger portion of the firm. Only a small percentage of non-disclosing and disclosing firms employ a Big N auditor. The high incidence of going concern opinions (55% and 44% for non-disclosing and disclosing firms, respectively) indicates many firms are distressed and in need of additional capital for survival. Overall, the descriptive statistics paint a picture of non-disclosing and disclosing firms as small start-up companies pursuing new business ideas in an effort to become profitable.

6. Analysis of Stock Prices and Accounting Information

Column 1 of Table 4 presents results for the regression of stock prices on book value and earnings for the non-disclosing firms before and after mandatory SEC disclosure. In the period prior to mandatory disclosure, the coefficients on book value and earnings indicate accounting information lacks a strong association with stock prices. The adjusted R^2 of 1% corroborates this as well. Thus, I am unable to reject the null for Hypothesis 1. In isolation these results are difficult to interpret because the weak association could be due to nondisclosure of the accounting information or because accounting information is not useful for valuation. Using the period during mandatory disclosure provides insights to the likely answer.

In the period when public disclosure is mandatory for these firms (Column 2), the coefficient on book value is positive and significant at the 5% level (formal tests indicate the difference is statistically significant at the 10% level). The coefficient is larger than one, which is consistent with conservative accounting wherein the market values certain expenses, such as research and develop expenses and selling expenses, as assets (Hand 2003). The coefficient on earnings is not statistically significant, which is not surprising given the high proportion of loss firms (Hayn 1995). The adjusted R^2 increases to 6%, which is a statistically significant increase at the 5% level (-2.20 Z-Statistic).¹⁶ Accordingly, I reject the null of Hypothesis 2.

However, this is a low adjusted R^2 for a regression of price on book value and earnings. In economic terms this low association suggests that accounting information is of limited use in valuing these firms. These results appear consistent with mandatory disclosure marginally

¹⁶ The statistical tests of differences in adjusted R^2 are based on Cramer (1987), which assumes asymptotic normal distributions. I perform boot-strap based tests of differences, which do not rely on distributional assumptions. These tests reveal some of my results are sensitive to this choice. Specifically, my boot-strap based tests indicate that the difference in adjusted R^2 is different between non-disclosing and disclosing firms in the voluntary disclosure regime and the mandatory disclosure regime; otherwise, the bootstrap tests indicate the other differences in adjusted R^2 s are not statistically different.

increasing the amount of information in the market. One interpretation is that these firms did not disclose financial statement information prior to mandatory disclosure because the benefits were small relative to the perceived costs.

Column 3 of Table 4 presents results for the regression of stock prices on book values and earnings for disclosing firms before and after mandatory SEC disclosure. The coefficient on book value is positive and significant at the 1% level. As explained above, the coefficient greater than one is consistent with conservative accounting. The coefficient mapping earnings to stock prices is not significant, which again is not surprising given that a majority of these firms are loss firms. The adjusted R^2 is significant at 68%. Therefore, I reject the null of Hypothesis 3a. These results are consistent with investors interpreting the voluntary disclosures of these firms as value-relevant in the unregulated environment. These findings do not suggest, however, that all firms would receive similar benefits from voluntarily disclosing financial statement information. The decision to disclose financial statements and any resulting differences in association between stock prices and financial statement information are determined by firm-specific characteristics of a non-randomly selected group of firms.¹⁷

After mandatory SEC disclosure (Column 4), the coefficient mapping book value to prices continues to be positive and significant at the 5% level, but decreases from 2.26 to 0.87 (difference statistically significant at the 1% level). The change in the coefficient relating stock prices and book values provides evidence of a different relationship, not necessarily a stronger one. The adjusted R^2 provides better evidence about the strength of the association between

¹⁷ To mitigate potential bias due to self-selection, in unreported results I adjust for selectivity between disclosing and non-disclosing firms by using a first-stage probit model. The first-stage probit regression models the decision to voluntarily disclose financial statement information as a function of growth opportunities (book-to-market ratio), leverage (total liabilities/total assets), profitability (return on assets), size (log of assets), and DSE status. I then calculate the inverse Mill's ratio, which represents the probability of firms choosing to voluntarily disclose financial statement information, and include it in my regression of price on book value and earnings both for non-disclosing and disclosing firms. The results are similar to those reported in Table 4.

stock prices and accounting information. The adjusted R^2 decreases to 28%, a significant drop from 68% in the period prior to the Eligibility Rule (statistically significant at the 1% level). The association is still quite strong, though, relative to the adjusted R^2 for non-disclosing firms (statistically different at the 1% level).

I further examine the non-disclosing firms by partitioning the firms on *DSE* status.¹⁸ Willenborg (1999) argues that from an *ex ante* perspective, accounting information is likely to play a less useful role in valuing *DSE* firms than non-*DSE* firms. Table 5 presents the results. Consistent with expectations, stock prices of *DSE* firms exhibit almost no association with book value and earnings in either period. In both periods, the coefficients on book value and earnings are not significant and the adjusted R^2 is only 1% (and not statistically different).

In contrast, stock prices of non-*DSE* firms exhibit a low association with book value and earnings both before and after mandatory disclosure with adjusted R^2 s of 7% and 8%, respectively (that are not statistically different). The significant association in the prior period provides evidence that stock prices do reflect non-disclosed accounting information. In fact, the association between non-disclosed accounting information and stock prices in the prior period (adjusted R^2 is 7%) is as strong as the association between disclosed accounting information and stock prices in the period of mandatory disclosure (adjusted R^2 is 8%). The low adjusted R^2 indicates accounting information plays a minimal role in valuation for these companies. The coefficient relating book value to stock prices does increase, but this only provides evidence of a different relationship, not necessarily a stronger one. Even after partitioning the non-disclosing firms to identify firms where accounting information is likely to play a more significant role, the evidence still suggests that accounting information only plays a modest role in valuation for non-

¹⁸ I also partition disclosing firms on *DSE* status. For non-*DSE* firms, I find similar results to those presented in Columns 3 and 4 of Table 4. For *DSE* firms, there are only 8 firm-year observations and the estimates are not reliable with so few observations.

disclosing firms. I tentatively conclude that firms did not disclose this information in the prior period because it was not particularly beneficial to do so. Further, it appears that stock prices do incorporate financial statement information even in the absence of disclosure.

I note two main caveats in interpreting my results. First, I study firms that chose to comply with the Eligibility Rule. I am unable to conduct the same study for the Noncompliant firms that choose to leave the OTCBB. Thus, I identify a local effect that may not generalize more broadly. Specifically, my results might be different if the firms that opted out of complying with the SEC disclosure requirements had instead been forced to comply. Second, my sample is small and the low association between stock prices and accounting information for non-disclosing firms could be due to insufficient power in my tests.

7. Conclusion

I examine the role of accounting information in capital markets under voluntary and mandatory disclosure regimes for a sample of firms traded on the OTCBB. For the set of firms that choose to comply with the Eligibility Rule and begin filing periodic reports with the SEC under the 1934 Act, I observe at least one prior year of accounting information in their initial SEC filings. This enables me to observe the accounting information that non-disclosing firms previously withheld.

In the voluntary disclosure regime, I examine how disclosure versus non-disclosure of accounting information impacts its association with stock prices. I find evidence consistent with firms voluntarily disclosing financial statement information when it is useful for valuation and not disclosing that information otherwise. Specifically, accounting information and stock prices are weakly associated both before and after mandatory regulation for non-disclosing firms. In

contrast, stock prices are strongly associated with accounting information before and after mandatory disclosure regulation for disclosing firms. I find some evidence that the association between stock prices and accounting information increases after mandatory SEC disclosure requirements for non-disclosing firms.

When I partition the non-disclosing firms based on an *ex ante* classification (*DSE* status) that likely identifies firms where accounting information is more or less useful, I find evidence that non-disclosed accounting information is incorporated into stock prices. In fact, for non-*DSE* (firms where accounting information is likely more useful), I find a similar association both before and after mandatory disclosure regulation. This is consistent with stock prices reflecting accounting information even though the information was not publicly disclosed.

This study focuses on one aspect of the impact of mandatory disclosure regulation – the relationship between stock prices and accounting information. I focus on financial statement information because the lack of reliable and current financial information about issuers was the main justification cited by the SEC in approving the Eligibility Rule. Future research might examine if my results are robust to the inclusion of banks and insurance companies, which largely began filing with their respective industry regulatory authorities rather than the SEC. Future research might also examine the value relevance of accounting information for *DSEs* more generally using a broader sample of firms.

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Table 1
Sample Selection

Panel A: Firms Reviewed by OTCBB at Phase-in Date	
Number of securities listed on OTCBB as of 1/4/99	6,513
Multiple issues for the same firm	(417)
Foreign firms and firms with only warrants or preferred stock on OTCBB	(283)
Number of firms with primary issues listed on OTCBB as of 1/4/99	5,813
Firms leaving OTCBB prior to phase-in date	(411)
Number of firms reviewed by OTCBB at phase-in date	<u>5,402</u>
Panel B: SEC Filing Status of Firms Reviewed by the OTCBB	
Non-SEC Filers in 1998	3,503
SEC Filers in 1998	1,899
	<u>5,402</u>
Panel C: Newly Compliant Firms with Data	
Non-SEC Filers in 1998	3,503
Noncompliant with Eligibility Rule	(2,677)
Newly Compliant firms	826
Less banks and insurance companies	(227)
Number of non-bank and non-insurance companies	599
Less firms without an electronic registration statement or 10-K filing	(206)
Less shell companies	(167)
Less firms completing reverse acquisitions	(63)
Less firms with no prior year data in filings	(40)
Newly Compliant firms	<u>123</u>

Newly Compliant firms consist of non-SEC filers in 1998 that begin filing with SEC.

Table 2
 Newly Compliant Firms' Disclosure Prior to Eligibility Rule

Panel A: Voluntary vs. Mandatory Disclosing Firms		
Disclosure is voluntary		93
Disclosure is mandatory per SEC Rule 15c2-11		30
		<u>123</u>

Panel B: Voluntary Firms Public Disclosure Choices		
	<u>Number</u>	<u>Percent</u>
Non-Disclosing firms	66	71%
Disclosing firms	<u>27</u>	<u>29%</u>
	93	100%

I classify those firms in the mandatory disclosure per SEC Rule 15c2-11 group if the prior period information I observe *ex post* in a firm's SEC filing would have been provided to the initial market maker based on the date the firm initiated quotation on the OTCBB. I classify any firm that publicly disclosed financial statement within six months of its fiscal year-end as a disclosing firm, and as a non-disclosing firm otherwise.

Table 3
Descriptive Statistics for Newly Compliant Firms where Disclosure is Voluntary

Variable	Non-Disclosing Firms (N=66)			Disclosing Firms (N=27)			*	###
	Mean	Median	Std Dev	Mean	Median	Std Dev		
<i>Sales</i>	546	51	1,622	5,034	542	12,171	*	###
<i>GM</i>	207	7	727	1,641	176	3,892	*	##
<i>SG&A</i>	625	367	810	1,648	1,115	1,891	***	###
<i>R&D</i>	75	0	219	8	0	37	**	#
<i>Earnings</i>	(684)	(339)	987	(456)	(589)	2,098		
<i>Loss</i>	0.89	1.00	0.31	0.85	1.00	0.36		
<i>CFO</i>	(391)	(180)	557	(255)	(426)	1,354		
<i>Assets</i>	953	259	2,309	5,650	1,162	10,453	**	###
<i>SE</i>	(936)	(51)	5,680	2,303	284	7,351	**	##
<i>MV</i>	7,655	3,040	9,134	19,343	12,969	25,621	***	###
<i>BM</i>	-0.35	0.00	1.80	0.25	0.01	1.15	*	#
<i>ROA</i>	-1.41	-0.65	1.92	-0.94	-0.58	1.79		
<i>D-to-A Ratio</i>	1.64	0.85	2.01	0.71	0.66	0.51	***	
<i>DSE</i>	0.47	0.00	0.50	0.26	0.00	0.45	*	#
<i>Auditor</i>	0.05	0.00	0.21	0.11	0.00	0.32		
<i>GC</i>	0.55	1.00	0.50	0.44	0.00	0.51		
<i>Ownership (%)</i>	51	55	23	43	41	26	*	#

***, **, * indicates *t*-test of means statistically different at the 1%, 5%, and 10% level, respectively (two-tailed). ###, ##, # indicates Wilcoxon test statistically different at the 1%, 5%, and 10% level, respectively (two-tailed).

The descriptive statistics are based on each firm's final year of information in the voluntary disclosure regime. Variables are in thousands of dollars except for indicator variables and ratios. *GM* is *Sales* minus cost of goods sold. *SG&A* is selling, general and administrative expenses. *R&D* is research and development expense. *Earnings* is net income. *Loss* is one if net income is negative, and zero otherwise. *CFO* is cash flows from operations. *SE* is stockholders' equity. *MV* is market value calculated as the price at the fiscal year-end times common shares outstanding. *BM* is stockholders' equity divided by market value. *ROA* is net income divided by total assets. *D-to-A Ratio* is total liabilities divided by total assets. *DSE* is one if the entity is a *Development Stage Enterprise*, and zero otherwise. *Auditor* is one if the auditor is a Big N auditor, and zero otherwise. *GC* is one if the audit opinion is a going concern opinion, and zero otherwise. *Ownership* is the combined ownership of officers and directors and blockholders holding greater than 5%.

Table 4
Regression Analysis of Share Price on Book Value and Earnings

$$P_{i,t} = \alpha_0 + \alpha_1 BV_{i,t} + \alpha_2 EARN_{i,t} + \varepsilon_{i,t}$$

Variable	Non-Disclosing Firms		Disclosing Firms	
	Before (1)	After (2)	Before (3)	After (4)
<i>Intercept</i>	1.08 *** (6.22)	1.64 *** (5.10)	1.63 *** (3.92)	1.43 *** (3.89)
<i>BV</i>	0.16 (0.67)	4.21 ** (2.44)	2.26 *** (4.16)	0.87 ** (2.36)
<i>EARN</i>	-0.30 (-0.81)	-0.53 (-0.40)	-0.84 (-0.45)	0.30 (0.43)
N	87	87	34	34
Adjusted R ²	0.01	0.06	0.68	0.28
Z-Statistic:				
1 vs. 2, 3 vs. 4		2.20 **		-3.59 ***
1 vs. 3, 2 vs. 4			-7.52 ***	-3.15 ***

***, **, * indicates statistical significance at the 1%, 5%, and 10% level, respectively, based on robust standard errors. *t*-statistics in (*italics*). Z-Statistic based on Cramer (1987).

Before and After represent the periods before and after mandatory SEC reporting, respectively. $P_{i,t}$ is the price six months after the fiscal year-end t . $BV_{i,t}$ is the book value divided by the common shares outstanding at fiscal year-end t . $EARN_{i,t}$ is earnings per share for fiscal year-end t .

Table 5

Regression Analysis of Share Price on Book Value and Earnings of Non-Disclosing firms
Partitioned on DSE

$$P_{i,t} = \alpha_0 + \alpha_1 BV_{i,t} + \alpha_2 EARN_{i,t} + \varepsilon_{i,t}$$

Variable	DSE		Non-DSE	
	Before (1)	After (2)	Before (3)	After (4)
<i>Intercept</i>	0.96 *** (4.14)	1.55 *** (3.37)	1.28 *** (4.84)	1.76 *** (3.73)
<i>BV</i>	-0.02 (-0.20)	2.72 (1.31)	1.30 ** (2.06)	4.37 ** (2.44)
<i>EARN</i>	-0.28 (-0.59)	0.34 (0.25)	-0.44 (-0.71)	-1.21 (-0.52)
N	43	43	44	44
Adjusted R ²	0.01	0.01	0.07	0.08
Z-Statistic:				
1 vs. 2, 3 vs. 4		0.10		0.24
1 vs. 3, 2 vs. 4			-1.75 *	1.90 *

***, **, * indicates statistical significance at the 1%, 5%, and 10% level, respectively, based on robust standard errors. *t*-statistics in (*italics*). Z-Statistic based on Cramer (1987).

Before and After represent the periods before and after mandatory SEC reporting, respectively. $P_{i,t}$ is the price six months after the fiscal year-end t . $BV_{i,t}$ is the book value divided by the common shares outstanding at fiscal year-end t . $EARN_{i,t}$ is earnings per share for fiscal year-end t .