Do Regulatory Changes Affect the Informativeness of Firm Disclosures?

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ABSTRACT: We examine how regulatory changes to the Australian Continuous Disclosure Regime affect the informativeness of firm disclosures and in turn, whether disclosure informativeness aids price discovery. Three measures of informativeness based on textual characteristics of firm announcements such as readability, quantifiability and forward-looking information are used. While changes in regulation do not unanimously improve disclosure informativenesss, all three informativeness proxies accelerate the rate at which information is incorporated into share prices. The findings indicate that firm announcements that are easier to read, contain more numbers and are less forward-looking assist investors in the price discovery process.

KEYWORDS: continuous disclosure; disclosure informativeness; price discovery; textual analysis

I. Introduction

"It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest"

- Adam Smith

In capital markets where participants are free to interact with no consequences to their actions, investors will always be losers due to the principal-agent problem highlighted by Jensen and Meckling (1976). For example, in their role as information intermediaries, it is not clear that analysts produce earnings forecasts to facilitate investors' decision making or to produce forecasts in a bid to earn trading commissions. Adam Smith suggests the latter. It is not from the benevolence of the managers or the analysts that capital market participants expect earnings forecasts, but from their regard to their own interest. In this paper, we aim to examine the effectiveness of a regulatory environment using a novel approach to measure disclosure informativeness, that is textual analysis.

All of the major stock exchanges (NYSE, NASDAQ, London Stock Exchange, Tokyo Stock Exchange, Hong Kong Stock Exchange, New Zealand Stock Exchange and Australian Securities Exchange) have their relevant disclosure requirements. However, only Australia, the UK and New Zealand have statutory enforcement of their disclosure requirements. UK introduced its statutory enforcement in 2001, while the Securities Market Amendment Act was enacted in 2002 for New Zealand. The Australian Continuous Disclosure Regime (CDR) was introduced in September 1994. Being the forerunner of statutorily enforcing disclosure requirements and prior empirical studies showing mixed results, it is fitting for us to re-evaluate the effectiveness of CDR and its effects on the market.

Have the amendments made to the statutory-backed regime better improved listed entities' understanding of the obligations they have, or are they just a matter of the enforcer keeping things in check, ASIC and ASX in this instance? If listed entities do better understand their disclosure obligations, then has the market become more integrated and efficient? These two questions set the scene of our paper.

Empirical studies, such as Brown, Taylor, and Walter (1999) and Hsu, Lindsay, and Tutticci (2012), use analysts' forecasts to investigate the effectiveness of CDR and show mixed results. The shortcomings of using analyst forecasts as a measure of information asymmetry have been raised by O'Brien and Bhushan (1990). Beyer et al. (2010), in their review of the literature on the financial reporting environment, suggest that analyst forecasts may not be the most ideal measure of disclosure informativeness or information asymmetry.

Analysts are information intermediaries between firms and market participants, but are also self-interested individuals (Healy and Palepu 2001; Core 2001). For stocks that are expected to perform well (badly), analysts tend to provide precise (ambiguous) estimates to induce (decrease) trading volume (Hayes 1998). Beyer et al. (2010) report that analysts' forecasts only explain 22% of the variation in quarterly stock returns caused by accounting disclosures. On the contrary, information released directly by the firm explains the remaining 78% of the variation (Beyer et al. 2010). It would appear that market participants pay closer attention to firms' announcements. In addition, not all firms have an extensive analysts following. As analysts are more inclined to cover stocks that are expected to perform well (Hayes 1998), there can a selection bias away from small and 'bad news' firms.

In this paper, we recognise the limitations of using analysts' forecasts and use novel measures of disclosure informativeness through textual analysis. We propose three measures of disclosure informativeness: FOG Index (FOG), Quantifiability (QUAN) and Forward-looking Ability (FLAB). These three measures are attained from the examination of market announcements' textual characteristics. FOG gives an indication of the readability of a document. QUAN is the percentage of numbers in a given announcement file. FLAB calculates the percentage of forward-looking statements in a given announcement file.

Moving away from the use of analysts' forecasts, our first contribution to literature is the adoption of textual analysis. In recent years, there has been a growing number of accounting and finance studies that have used textual analysis. We use textual analysis to provide an alternative understanding to the effectiveness of CDR regulation changes. Another noteworthy contribution is the understanding of how capital market participants react to varying characteristics of disclosure informativeness. We shed light on whether investors prefer announcements that are easier to understand, easier to quantify or possess future expectations. Our third contribution to literature is the study of the effectiveness over the entire CDR period, from 1993 to 2014. This is an extension of Hsu, Lindsay, and Tutticci (2012) findings.

The results are mixed as to whether CDR amendments improve disclosure informativeness. We observe neither a unidirectional nor systematic effect on disclosure informativeness with the CDR amendments. Consistent with Brown, Taylor, and Walter (1999) and Hsu, Lindsay, and Tutticci (2012), we find that firms, and individuals behind the preparation of the disclosure announcements, improve their disclosure informativeness if the regulation change involves the introduction of civil penalty provisions that is during March 2002. With financial

penalty provisions, firms responded with more forward-looking information but provide disclosures that are tougher to understand. This seems to suggest a trade-off between informativeness and timeliness. We also find that FOG, QUAN and FLAB have persistent explanatory power on the rate at which information is incorporated into share prices. The findings indicate that announcements that are more readable, that contain more numbers and with less forward-looking statements aid in the price discovery process.

The remainder of our paper is structured as follow: We discuss the continuous disclosure regime in Australia in Chapter II, before developing our hypotheses in Chapter III. In Chapter IV, we illustrate the construction of our informativeness and timeliness variables and our research design. We discuss the results and its implications of our findings in Chapter V and provide concluding remarks in Chapter VI.

II. Institutional Setting

Australian CDR has been "widely regarded as among the world's best, striking an appropriate balance between the benefits of a fully informed market and the need for certain information to remain confidential, at least for a period of time" (Bloch, Weatherhead, and Webster 2011, p. 286). Introduced in September 1994, CDR aims to reduce information asymmetry between firms and capital market participants by statutorily enforcing them to immediately inform the market of any price-sensitive information. This statutory-backed regime has built on lessons learned from the past and been developed extensively and improved over the years.

It is regulated through two mechanisms - the requirements of Australian Securities Exchange (ASX) Listing Rule 3.1 and a statutory provision, s674 of the *Corporations Act 2001 (Cth)*.

The main objective of CDR is "to enhance the integrity and efficiency of Australian capital markets by ensuring that the market is fully informed" (ASX 2014, p. 6).

ASX and ASIC are the enforcers of CDR. Under Section 792A of the *Corporations Act 2001 (Cth)*, ASX, as the market operator, must do all things deemed reasonably practical to ensure a fair, orderly and transparent market. To do so, ASX must have adequate arrangements to monitor and ensure compliance with the market's listing rules.

ASX will issue a price query letter if it identifies any abnormal and unexplained movements in share price or trading volume of a listed entity's securities. This is the initial flag of a potential breach of continuous disclosure requirements. The purpose of a price query letter is to assure ASX that the entity is complying with ASX Listing Rules 3.1 (ASX 2014).

Under Section 792B of the *Corporations Act 2001 (Cth)*, ASX is required to give notice to ASIC based on its judgment as to whether the listed entity has significantly failed in its continuous disclosure obligations. ASIC will then decide if criminal or other regulatory actions are to be taken against the listed entity.

Amendments to CDR

Since the initial introduction of CDR in September 1994, the regime has undergone several amendments to refine disclosing entities' obligations. We highlight the amendments that include the introduction of either civil or financial penalties.

In March 2002, the implementation of the *Financial Service Reform Act 2001 (Cth)* extended the civil penalty regime to cover the market misconduct through the introduction of the financial services civil penalty provisions, which included the continuous disclosure obligations in s674(2) of the *Corporations Act 2001 (Cth)*.

In June 2005, ASX amended Guidance Note 8 to include amendments from the *Corporations Act 2001 (Cth)*. These amendments include giving ASIC the power to issue continuous disclosure infringement notices. Infringement notices are structured to provide a "fast and effective" remedy to breaches of continuous disclosure obligations, so that the "redress is proportionate and proximate in time to the alleged breach". (ASIC 2012) Issuance and subsequent conformation of infringement notices are not to be taken as admission of liability, nor do they represent that the *Corporations Act 2001 (Cth)* has been breached. ASIC, via the issuance of infringement notices, has the power to impose financial penalties for breaches of continuous disclosures. Depending on the severity of the alleged breach and the accompanying circumstances, financial penalties can be $33,000, $66,000 or $100,000 (ASIC 2013).

The other amendments are as follow chronologically. In September 2001, ASX amended Guidance Note 8- relating to the continuous disclosure obligations in Listing Rule 3.1 - to place greater emphasis on obtaining better disclosure for investors in certain circumstances. In January 2003, ASX introduced a false market rule under ASX Listing Rule 3.1B. The false market rule gives ASX the authority to request an entity to provide information required to correct or prevent a false market. In May 2013, the updated Guidance Note 8: Continuous Disclosure: Listing Rules 3.1 – 3.1A came into effect. The most significant change from the

previous continuous disclosure guidance was the clarification regarding ‘awareness’, ‘material information’ and ‘immediate disclosure’ (KPMG 2013).

III. Literature Review and Hypotheses Development

Voluntary disclosures

The main benefit of disclosures is the reduction of agency costs arising from the separation of ownership and control in firms. Jensen and Meckling (1976) first introduced the principal-agent theory. They provide answers as to why managers are not engaging activities that will maximise the value of firms. Managers, who possess inside information that is unknown to investors, are able to choose when to communicate with stakeholders.

Early theoretical studies (Grossman and Hart 1980; Grossman 1981; Milgrom 1981) argue that managers will disclose all value-relevant information under the following conditions: (1) disclosures are costless, (2) investors know that firms possess private information, (3) all investors interpret the firms’ choice of disclosure in the same way, and (4) firms can credibly disclose their private information.

Later models suggest that partial disclosure equilibrium exists instead because of the violations of the aforementioned conditions. Empirical studies on voluntary disclosures have since been split into two competing hypothesis: informativeness perspective and opportunistic perspective. The informativeness perspective suggests managers use voluntary disclosures to reduce information asymmetry, while the opportunistic perspective suggests that managers disclose strategically to achieve certain goals at the cost of investors. These two perspectives are not mutually exclusive, that is both can co-exist within a firm’s disclosure policy.

ASX's decision to use statutory sanctions to ensure managers disclose material information on timely basis can be linked to both perspectives. Beyer et al. (2010), in their review of the financial reporting environment, highlights that there is room for disclosure regulation in capital markets when managers do not voluntarily disclose all their private information. Within the informativeness perspective, the literature suggests that firms may choose to either withhold certain proprietary information or be forthcoming with information so as to adjust market expectations and reduce litigation costs accordingly (Verrecchia 1983; Ajinkya and Gift 1984; Skinner 1994; Lang and Lundholm 1996; Hutton and Stocken 2009). The opportunistic perspective suggests that managers tend to create a false market, such as hyping share prices, in order to deceive market participants for their personal gain (Marquardt and Wiedman 1998; Lang and Lundholm 2000; Aboody and Kasznik 2000; Rogers, Van Buskirk, and Zechman 2011).

In the United States (US), much of the voluntary disclosure literature focuses on Management Discussion and Analysis (MD&A). Many researchers aim to show the effects of varying levels of voluntary disclosures on information efficiency (Henry 2008; Li 2010; Kwak, Ro, and Suk 2012; Muslu et al. 2014) and ultimately, the effects on cost of capital (Botosan 1997; Sidhu et al. 2008).

In Australia, Brown, Taylor, and Walter (1999), Hsu (2009) and Hsu, Lindsay, and Tutticci (2012) specifically investigate the effectiveness of CDR. In particular, Hsu (2009) investigates the 'materiality' component of CDR between 1995 to mid-2000, and finds that disclosure frequency and the magnitude of earnings news are positive related. Empirical studies are leaning towards the notion of CDR being effective in ensuring that the capital

market is integral and efficient (Brown, Taylor, and Walter 1999; Chan et al. 2007; Hsu 2009; Hsu, Lindsay, and Tutticci 2012). Recall that the main objective of CDR is "to enhance the integrity and efficiency of Australian capital markets by ensuring that the market is fully informed" (ASX 2014, p. 6). Assuming that regulation changes are put in placed with the aforementioned objective in mind, we expect them to have a positive effect on disclosure informativeness. Coupled with evidence from recent empirical studies, we propose the following as our first hypothesis, stated in the alternative form:

H1: CDR regulation changes have a positive effect on disclosure informativeness

Limitations of analysts' forecasts

Analysts are information intermediaries between firms and market participants. O'Brien and Bhushan (1990) raised the shortcomings of using analyst forecasts as a measure of information asymmetry. Beyer et al. (2010), in their review of the literature on the financial reporting environment, suggest that analyst forecast may not be the most ideal measure of disclosure informativeness or information asymmetry.

First, how neutral are analysts acting as information intermediaries? Analysts are self-interested individuals (Healy and Palepu 2001; Core 2001). O'Brien and Bhushan (1990) find that analysts prefer industries with growing numbers of firms, industries with regulation, while avoiding firms with high return volatility and high existing numbers of analysts. Empirical evidence also shows that analysts are more inclined to cover stocks that are expected to perform well (Hayes 1998). For stocks that are expected to perform well (badly), analysts tend to provide precise (ambiguous) estimates to induce (decrease) trading volume

(Hayes 1998). Empirical evidence by Groysberg, Healy, and Maber (2011) shows that analysts' compensation are not related to their forecast accuracy, but rather in their ability to generate business for their brokerage firm, ability to maximise trading commission or reputation in the industry. Therefore, we are skeptical to acknowledge that analysts are neutral with their forecasts.

Second, how informative are analysts' forecasts to market participants when making investment decisions? Early research has shown analysts' forecasts to affect share price (Givoly and Lakonishok 1979; Lys and Sohn 1990). However, Beyer et al. (2010) report that analysts' forecasts only explain 22% of the variation in quarterly stock returns caused by accounting disclosures. On the contrary, information released directly from the firm explains the remaining 78% of the variation (Beyer et al. 2010). It seems that market participants pay closer attention to firms' announcements.

Third, how representative of the entire market are firms with analysts following? Not all firms have an analyst following. Hsu, Lindsay, and Tutticci (2012) removed firms with less than three analysts from their sample. Brown, Taylor, and Walter (1999) show that small and 'bad news' firms are at the lower spectrum of disclosure quality. As analysts are more inclined to cover stocks that are expected to perform well (Hayes 1998), there may be a selection bias as small and 'bad news' firms are removed from the sample.

Measures of disclosure informativeness

These lead us to question if there are alternative measures of disclosure quality. Core (2001) and Beyer et al. (2010) suggest that textual analysis can better measure the quality of

disclosures over time. Analysing non-accounting information is likely to provide insights into managerial disclosure choice and its resulting economic consequences. Following their suggestion and to contribute to the growing accounting literature that uses textual analysis, we use three measures of disclosure informativeness that have recently appeared in the accounting literature (Li 2008, 2010; Lundholm, Rogo, and Zhang 2014; Muslu et al. 2014).

Our first measure of disclosure informativeness is the Fog Index (FOG), developed by Gunning (1952). FOG is a simple, yet effective warning system against drifting into unnecessary complexity in the mechanics of writing (Gunning 1969). FOG has been used in accounting empirical research, notably in Li (2008) and Lundholm, Rogo, and Zhang (2014).

The second measure of disclosure informativeness is Quantifiability (QUAN). QUAN is a measure of numerical intensity in a given announcement. Empirical studies are supportive of the idea that the ability to quantify improves informativeness, due to its universal meaning. Budescu, Weinberg, and Wallsten (1988) show that individuals make better judgments with numbers, as compared to words. Botosan (1997) argues that quantitative data aids investment decision-making. Mercer (2004) argues that managers can improve disclosure credibility with more precise forecasts with the provision of numbers. Henry (2008) reported that the market impact of unexpected earnings is reduced with numerically intensive disclosures.

The third measure of disclosure informativeness is Forward-looking Ability (FLAB). FLAB computes the amount of forward-looking sentences in an announcement. In recent literature, notably Li (2010) and Muslu et al. (2014), FLAB has been used to examine forward-looking characteristics of MD&As in annual reports or quarterly reports filings in the US. Li (2010) found that the tone of forward-looking statements in MD&As is positively associated with

future earnings. Muslu et al. (2014) observed that firms in a poor information environment make more forward-looking MD&As, improving the informational efficiency of stock prices for such firms.

Ball and Brown (1968) show that, leading up to an annual earnings report, a firm's share price will have begun to reflect the accounting figures of that report. Empirical studies support that managers manage earnings forecasts to prevent large negative earnings surprises (Kasznik and Lev 1995, Burgstahler and Eames 2006). These create the setting of our second hypothesis – how does the informativeness level of firm's announcements made prior to preliminary final statements (PFS) affect the rate value-relevant information incorporate into share price. This leads to our second hypothesis, stated in the alternative form:

H2a: In the lead up to an earnings announcement, value-relevant information incorporate into prices is faster when FOG Index is lower

H2b: In the lead up to an earnings announcement, value-relevant information incorporate into prices is faster when Quantifiability is higher

H2c: In the lead up to an earnings announcement, value-relevant information incorporate into prices is faster when Forward-looking Ability is higher

IV. Data and Method

Sample selection

ASX announcements, made between January 1993 and June 2014, by all ASX-listed companies are downloaded as text files from Securities Industry Research Centre of Asia Pacific (SIRCA) Australian Company Announcements (ACA). Relevant information on the

announcements' release dates and times, ASX reporting codes and market sensitivity tag are also provided.

Brown, Taylor, and Walter (1999) identify ASX Reporting Code 14 – Others as CDR-related announcements. However, announcements tagged under "14 – Others" have been declining over the years. We posit that ASX has made an effort in categorising announcements into its relevant categories, instead of consolidating it under "14 – Others". Therefore, we determine that CDR-related announcements should have the following characteristics:

1. The announcement cannot be pre-empted
2. The announcement usually contains information about the firm's business operations
3. The announcement is voluntarily disclosed by the firm

Table 1 tabulates the selection criteria and documents the various categories that fulfill the criteria.

(INSERT TABLE 1)

The first criterion removes announcements that are considered periodic. Firms are required to make these announcements within a reporting period (e.g. the PFS report has to be released no later than three months after the end of the year). The second criterion removes announcements that are a mere formality under ASX listing rules. They are perceived to not contain any purposeful information regarding a listed firm's future prospects. The third criterion removes announcements that are not voluntarily disclosed by the firm. They are usually made in response to letters issued or actions imposed by ASX. Through this, we identify five ASX reporting codes that are required to be made under CDR. They are 01-Takeover Announcements, 07 – Asset Acquisition and Disposal, 11 – Progress Report, 14 –

Others and 16 – Letter to Shareholders. From here on, these five categories will be termed as CDR-related announcements. We therefore reach a final[1] sample of 298,005 CDR-related announcements.

Figure 1 shows the yearly number of ASX announcements made per year and Figure 2 shows the yearly number of firms listed on ASX.

(INSERT FIGURES 1 AND 2)

Overall, the number of ASX-listed firms has increased from 1,135 to 2,120 over the 21-year period[2]. The average number of announcements per firm has increased over the 21-years, from an average of 27 announcements per year in 1993 to 48 announcements per year in 2013. CDR-related announcements follow similar trends with the price-sensitive documents, other than in 2009. The proportion of price-sensitive documents has been on a gradual decline from 1993 to 2005 (with the exception of 2000 – 'dot-com' bubble). This decline provides preliminary evidence that CDR is effective as it shows that more non-price sensitive announcements are made, even if it may not be required.

Informativeness variables

[1] Two additional criteria are imposed before reaching the final sample. First, announcement text files that have a FOG Index score of less than 5 are removed. An investigation on the deleted files indicates that these announcement PDFs have not been converted properly into text files. Second, announcement text files should not have more than 50 words per sentence. A check on the deleted files indicates that these text files are usually PowerPoint slides, form-filling documents and legal documents. These types of files do not contain many full stops in general. Hence, the written JAVA codes are unable to accurately count the total number of sentences in that particular document.

[2] Excludes 2014, as the year is incomplete at time of writing.

Assuming that the text is well formed and logical, FOG captures text complexity as a function of syllables per word and words per sentence (Gunning 1952). It is calculated as:

$$FOG = 0.4 * (\text{average words per sentence} + \% \text{ of complex words in document}) \quad (1)$$

where complex words is defined as a word that has three or more syllables. FOG is an indication of the readability of a document. An announcement that has a low FOG indicates easy reading and comprehension. Hence, the announcement is perceived to be more informative.

QUAN gives the percentage of numbers in a given announcement file. A higher QUAN observed is an indication of a more informative disclosure. QUAN is calculated in the spirit of Lundholm, Rogo, and Zhang (2014). It is calculated as:

$$QUAN = (\text{number of numbers} \div \text{document length}) * 100 \quad (2)$$

FLAB gives the percentage of forward-looking statements in a given announcement file. An informative disclosure is expected to have a higher FLAB score. FLAB is computed as:

$$FLAB = \left(\text{number of forward-looking sentences} \div \text{total number of sentences}\right) * 100 \quad (3)$$

The full computation process of the informativeness variables is documented in Appendix I. In short, we downloaded the Lingua::EN::Fathom for JAVA and modified[3] certain codes to account for the differences in textual patterns in the announcement text files. The most intricate aspect of FLAB is identifying forward-looking statements. We adopt the process

[3]When Li (2008) and Lundholm, Rogo, and Zhang (2014) examined disclosures made in the U.S., they did not have this issue when using Lingua::EN::Fathom. This is because SEC EDGAR provides company announcements files in XML file format. XML file format defines a set of rules for encoding documents in a format which is both human and machine readable. However, SIRCA ACA provides announcements files in TXT format.

used previously by Li (2010) and Muslu et al. (2014). Using computer-intensive techniques, a sentence will be tagged as forward-looking if it contains futuristic words such as 'next fiscal', 'will', 'anticipate' and 'forecast'. A full list of futuristic words is provided in Appendix II.

Measures of price discovery

In the spirit of Beekes and Brown (2006), we adapt the deflated timeliness metrics (TIMELI_DEF[4]) to measure the rate of value-relevant information incorporating into a firm's market-adjusted share price from the first quarter of that financial year to the PFS date. The event of interest is the release of PFS. Beekes and Brown (2006) define P_0 as 14 calendar days after the release of PFS to allow prices to "settle". However, we remove the additional 14 calendar days. As discussed earlier, we are investigating the informativeness of announcements required to be made under CDR. Hence, the removal of the "settling" period allows me to examine how the informativeness of CDR-related announcements affects the speed of price discovery leading up to the PFS release date. Due to the intricateness of calculating the timeliness metrics, we only focus on firms that have a June fiscal year end. In addition, the first year that a firm changes its fiscal year-ends (example: from December to June) is dropped, as these PFS announcements are not one calendar year apart. TIMELI_DEF, is calculated as:

$$TIMELI\_DEF_n = \left(\frac{1}{365}\sum_{t=-364}^{0}|\ln(P_0) - \ln(P_t)|\right)/(1 + |\ln P_0|) \quad (4)$$

where P_t is the market-adjusted share price, which is observed at daily calendar intervals from day -364 until day 0 (PFS date). In instances where the PFS is released after the last trade of

[4] Idiosyncratic share price volatility tends to inflate the timeliness metrics when it is calculated at the individual firm-year level. Beekes and Brown (2006) introduced a deflated version of timeliness metrics.

the day, the event date will be the next trading day instead. The intuition behind TIMELI_DEF is simple. The longer it takes for a firm's share price to converge on the final price,P_0, the larger is the value of TIMELI_DEF. On the other hand, TIMELI_DEF is equal to 0 if price changes to P_o on the first trading day (day -249) and tracks the market index for the remaining 249 days. This can also be interpreted as the speed of price discovery being at its maximum. We downloaded daily share prices from SIRCA and an appropriate market index, ASXALLORDS, from DataStream.

Multiple regression models

We use multiple regression models to examine the relationship between CDR regulation changes and disclosure informativeness. Our measures of disclosure informativeness are FOG, QUAN and FLAB. The multiple regression models are as follow:

$$INFORM_{i,t} = \beta_1 + \beta_2 RC(94-01) + \beta_3 RC(01-02) + \beta_4 RC(02-03) + \beta_5 RC(03-05) + \beta_6 RC(05-13) + \beta_7 RC(13-14) + \beta_8 PB_{i,t} + \beta_9 ROE_{i,t} + \beta_{10} MKTCAP_{i,t} + \beta_{11} DE_{i,t} + \beta_{12} MKTSEN_{i,t} + fixed-effects + \varepsilon_{i,t} \quad (5)$$

where:

$INFORM_{i,t}$ = either FOG, QUAN or FLAB as defined in (1), (2) and (3) respectively, calculated on an announcement basis;

RC(94-01) = dummy variable takes on the value of 1 if ASX announcements are made between September 1994 to August 2001, 0 otherwise;

RC(01-02) = dummy variable takes on the value of 1 if ASX announcements are made between September 2001 to February 2002, 0 otherwise;

RC(02-03) = dummy variable takes on the value of 1 if ASX announcements are made between March 2002 to December 2002, 0 otherwise;

RC(03-05) = dummy variable takes on the value of 1 if ASX announcements are made between January 2003 to May 2005, 0 otherwise;

RC(05-13) = dummy variable takes on the value of 1 if ASX announcements are made between June 2005 to April 2013, 0 otherwise;

RC(13-14) = dummy variable takes on the value of 1 if ASX announcements made between May 2013 to June 2014, 0 otherwise;

$PB_{i,t}$ = price-to-book value for firm *we* at the end of year *t*;

$ROE_{i,t}$ = return on equity for firm *we* at the end of year *t*, scaled by 1/100;

$MKTCAP_{i,t}$ = natural logarithm of market capitalization for firm *we* at the end of year *t*;

$DE_{i,t}$ = debt-to-equity value for firm *we* at the end of year *t*, scaled by 1/100;

MKTSEN = dummy variable takes on the value of 1 if ASX announcement is tagged as price-sensitive, 0 otherwise;

We include PB in our regression models to control for the variation in disclosure patterns from firms' market valuation. We expect low PB firms to make more informative disclosures in order to prevent any litigation issues (Skinner 1994, 1997). According to Brown, Taylor, and Walter (1999), the increase in voluntary disclosures is confined to small firms and firms that are performing relatively poorly. As such, we include ROE and MKTCAP to account for

firms' performance and size respectively. We also include DE to control for firm's leverage. We downloaded the control variables (PB, ROE, MKTCAP, DE) from Morningstar DatAnalysis Premium.

We also use multiple regression models to examine the relationship between CDR regulation changes and disclosure informativeness. Our measures of disclosure informativeness are FOG, QUAN and FLAB. The multiple regression models are constructed as follow:

$$TIMELI\_DEF_{i,t} = \beta_1 + \beta_2 FOG\_AVE_{i,t} + \beta_3 QUAN\_AVE_{i,t} + \beta_4 FLAB\_AVE_{i,t} + \beta_5 RTN\_VOL_{i,t} + \beta_6 PB_{i,t} + \beta_7 ROE_{i,t} + \beta_8 MKTCAP_{i,t} + \beta_9 DE_{i,t} + fixed - effects + \varepsilon_{i,t} \quad (6)$$

where:

$TIMELI\_DEF_{i,t}$= as defined in (4);

$FOG\_AVE_{i,t}$ = as defined in (1), calculated on firm-fiscal-year average;

$QUAN\_AVE_{i,t}$ = as defined in (2), calculated on firm-fiscal-year average;

$FLAB\_AVE_{i,t}$ = as defined in (3), calculated on firm-fiscal-year average;

$RTN\_VOL_{i,t}$ = daily market-adjusted return volatility for firm *we* at the end of year *t*;

$PB_{i,t}$ = price-to-book value for firm *we* at the end of year *t*;

$ROE_{i,t}$ = return on equity for firm *we* at the end of year *t*, scaled by 1/100;

$MKTCAP_{i,t}$ = natural logarithm of market capitalization for firm *we* at the end of year *t*;

$DE_{i,t}$ = debt-to-equity value for firm *we* at the end of year *t*, scaled by 1/100;

Despite using the deflated measure of timeliness, we still include RTN_VOL to capture any effects of idiosyncratic share price volatility. If an increase in informativeness levels improves the speed of price discovery, we expect FOG_AVE (QUAN_AVE and FLAB_AVE) to have a positive (negative) relationship with TIMELI_DEF.

V. Results and Its Implications

Descriptive statistics

Table 2 presents the descriptive statistics of the continuous variables examined in this paper. The continuous variables were winsorised twice, first at 99% then at two standard deviations around the respective means. We present descriptive statistics of the control variables for both population firms and sample firms in Panel A. Our sample firms consist of firms that have made CDR-related announcements during the year, which constitutes 91% of the population. A comparison of the mean and median between the population and sample firms show no differences with firms' characteristics. Hence, we are certain that there is no sample selection bias.

(INSERT TABLE 2)

Panel B of Table 2 presents the descriptive statistics for the informativeness variables. FOG provides an estimation of the number of years of formal education needed to understand the text on the first reading (Gunning 1969, Li 2008). Li (2008) examined the readability of the MD&A and the Notes sections of U.S firms' annual reports and reported median values of

17.98 and 18.83 respectively. Compared to Li (2008), the median FOG score is higher at 20.90. This can be explained by the nature of the Australia economy, which is heavily saturated with resource firms. Announcements made by these firms contain complex technical and industry jargon (Bird, Grosse, and Yeung 2013), hence pushing the median of FOG upwards.

QUAN measures the numerical intensity of a given document. Bozanic, Roulstone, and Van Buskirk (2014) study the attributes of informativeness disclosures and include numerical intensity as one of their measures. Investigating quarterly earnings announcements in the U.S, they reported a median numerical intensity of 5.3%. The median QUAN of 2.50 for our sample is significantly lower than Bozanic, Roulstone, and Van Buskirk (2014). The main reason is that their sample is made up of quarterly earnings announcements, while quarterly and other periodic reports are excluded from the set of CDR-related announcements that we have identified.

FLAB is expressed as the percentage of forward-looking sentences in a given document to the total number of sentences. Bozanic, Roulstone, and Van Buskirk (2014) report a median of 7.0%. We find a median of 14.29%, which is higher than Bozanic, Roulstone, and Van Buskirk (2014). Further (unreported) analysis shows a median of 6.25% for announcements categorised under Class 3 – Periodic Reports[5]. We argue that CDR-related announcements contain more forward-looking information, as compared to earnings announcements, thus our observation of a higher median.

[5] Includes announcements regarding annual reports, preliminary final statements and half-yearly reports

Table 3 reports the Pearson product-moment correlation matrix. A slight complication with current literature is the tendency to draw a link between numerical intensity and forward-looking ability (Mercer 2004, Muslu et al. 2014). QUAN and FLAB have a correlation coefficient of -0.1592, which is below the threshold of 0.7. This suggests that they measure different aspects of disclosure informativeness, and that they can be ran together in the same regression model.

(INSERT TABLE 3)

Effects of CDR regulation changes on disclosure informativeness

Panel A of Table 4 reports the regression results on whether CDR regulation changes affect disclosure informativeness. Disclosure informativeness is measured by three variables – FOG, QUAN and FLAB. Panel B of Table 4 reports the test of equality between the RC(t_0-t_1) dummy variables.

(INSERT TABLE 4)

In general, Panel B of Table 4 shows that FOG has gradually increased over the 22 years. This is in contrast with the expected effects of CDR. All five test of equalities between the RC(t_0-t_1) variables report the changes to be significant at the 1% level. Post regulation, FOG has only been below the pre-regulation score of 20.0023 once. This is during the period of 2003 to 2005, with the decline in the FOG starting in 2002. This decline can be attributed to two regulations changes made during that period - an extension of the civil penalty regime with the *Financial Service Reform Act 2001 (Cth)* in March 2002 and the introduction of the false market rules under ASX Listing Rule 3.1B in January 2003. This finding shows that firms respond to civil penalty provisions by improving the readability of their announcements

and is consistent with Brown, Taylor, and Walter (1999) and Hsu, Lindsay, and Tutticci (2012). Both studies find analyst forecast properties, as a proxy of disclosures' information content, improved with the introduction of civil penalties. Interestingly, the regulation change made in June 2005 causes FOG to increase the most by 1.4252. Recall that the June 2005's amendment was giving ASIC the power to issue continuous disclosure infringement notices. This increase in FOG seems to suggest that firms, in an attempt to provide timely disclosures, structure disclosure documents that may be tougher to understand. This suggests a trade-off between being timely and being informative.

The largest increase in QUAN is during the period 2003 to 2005, RC(03-05)-RC(02-03). The false market rule was introduced then, together with the clarification of ASX Listing Rule 3.1A. It is not clear how these changes explain the increase in QUAN. The introduction of the *Financial Service Reform Act 2001* in March 2002 sees an increase in QUAN. Similar to the findings for FOG, it seems that firms, and individuals behind the preparation of the disclosure announcements, responded to the introduction of civil penalties by improving the amount of numbers reported. The increase of 0.3236% during 2005 to 2013 may be due to two factors – ASIC was given the authority to issue infringement notices to entities and individuals who contravened continuous disclosure requirements were also held responsible under the *Corporation Act 2001 (Cth)*. However, with the 2013 amendment, there was a fall in QUAN, a reversal of the trend from the previous period. This suggests that firms' responses to the introduction of financial penalties are transitory.

Post regulation, FLAB remained above the pre-regulation score of 6.8235. The test of equality between RC(01-02)-RC(94-01) has a difference of 0.9660 (significant at 1% level). This can be attributed to the regulation in September 2001. ASX amended the regime to

prevent firms from making selective disclosures to analysts. All information presented in analysts' briefings must first be publicly released through ASX. The increase in FLAB for the period 2001-2002 may be due to firms adapting to the restriction on selective disclosures. Announcements made between 2003 and 2005 have the lowest FLAB score of 8.0906 since the implementation of CDR. It is the period where the false market rule was introduced. It is not clear how these changes explain the decline in FLAB. The FLAB score increment of 1.2260 (significant at 1% level) during 2005 to 2013 may be due to two factors – ASIC's power to issue infringement notices to entities and individuals who contravene continuous disclosure requirements are also held responsible under the *Corporation Act 2001 (Cth)*. Similar to the findings for FOG and QUAN, it appears that firms and individuals behind the preparation of the disclosure announcements respond to the introduction of financial penalty. However, with the 2013 amendment, there was a decline in FLAB, providing evidence that firms' reactions are transitory. Unlike FOG and QUAN, FLAB does not change in response to the introduction of the *Financial Service Reform Act 2001* in March 2002.

In conclusion, the results are mixed as to whether CDR amendments improve disclosure informativeness. We do not observe either a unidirectional or systematic effect on disclosure informativeness with the CDR amendments. Consistent with Brown, Taylor, and Walter (1999) and Hsu, Lindsay, and Tutticci (2012), we find that firms, and individuals behind the preparation of the disclosure announcements, improve their disclosure informativeness if the regulation change involves the introduction of civil penalty provisions. Similarly with financial penalty provisions, we find that firms improve their disclosure informativeness but also face a trade-off between being timely and being informative. This is observed as firms provide disclosures that contain more numbers and forward-looking information, but are

tougher to be understood. However, reactions are usually short-lived as we observe a reversal in direction with the next regulation change.

We re-examines the relationship between CDR regulation changes and disclosure informativeness. Earlier, our analysis is based on the full sample period of 22 years. For robustness, we break the sample into six different time periods and conduct a pre/post analysis. Pre/post analysis is proposed to overcome the varying time gaps between each regulation change and to examine the immediate effect of the regulation change. Each time period has a one-year period surrounding the effective month of a regulation change. Announcements made six months prior to the effective month of the regulation change are defined as "PRE". Announcements made six months into the effective month of the regulation change are defined as "POST". We then calculate the mean value of the informative variables for both the “PRE” and “POST” periods on a firm-level basis.

RegChange is a dummy variable that takes the value of 1 if the announcements are made in the “POST” period. The signs of RegChange should be similar to the respective test of equalities presented in Panel B of Table 4. Table 5 reports the results. We only include regression results for two time periods, March 2002 and June 2005. That is the introduction of civil and financial penalty provisions respectively.

(INSERT TABLE 5)

Similar to the findings discussed in Table 4, mean FOG decreased (significant at the 5% level) with the introduction of the *Financial Service Reform Act 2001* in March 2002. The granting of power to ASIC to issue continuous disclosure infringement notices in June 2005 sees an increase in FOG, compared to the PRE 6-months period.

Once again, we observe an increase in QUAN for the amendment made in March 2002. For the amendment made in June 2005, the QUAN score has increased by 0.0595%. However, this is not significant at the 10% level. We question if firms will only respond at the issuance of the first infringement notice. The first infringement notice was issued in 1 August 2005, two months after the regulation became effective. However, further (unreported) analysis did not show any significant results when we adjust the window to the one-year period surrounding August 2005.

The largest increase in FLAB score occurs with the June 2005 amendment. RegChange has a coefficient of 0.8515 and is significant at the 1% level. This increase is consistent with our earlier findings. Firms and individuals behind the preparation of the disclosure announcements respond to civil penalty provisions. Similar to findings reported in Table 4, FLAB has no significant change in response to the March 2002's amendment

Overall, our results are robust for two out of the three variables. In response to civil penalty provisions, firms improved the readability of disclosure announcements and also included more quantifiable information in them. With financial penalty provisions, firms responded with more forward-looking information but provide disclosures that are tougher to understand. This seems to suggest a trade-off between informativeness and timeliness.

Relationship between disclosure informativeness and price discovery

Table 6 reports the descriptive statistics of June fiscal year-end firms examined in the second hypothesis.

(INSERT TABLE 6)

In total, we have a sample of 9,179 firm years. Comparing the informative variables reported earlier in Table 2, we show that the median FOG and QUAN values are relatively similar. However, it seems that the sample of June fiscal year-end firms have a higher FLAB median value (17.55 versus 14.29). The control variables reported indicate that the price-to-book values of June fiscal year-end firms are relatively similar to the sample firms. However, compared to the sample, June fiscal year-end firms earn higher return on equity, are larger in size and have higher leverage. This can be explained by the fact that mining exploration firms are not required to make PFS announcements under ASX Listing Rule 4.1. Mining exploration firms generally are small in size and have no debt. Their absence in the sample of June fiscal year-end firms is the main reason why June fiscal year-end firms have a higher return on equity, larger market capitalisation and higher leverage.

Table 7 examines the relationship between disclosure informativeness and the rate information gets incorporated into prices. The event of interest is the release of the preliminary final statement (PFS) by an ASX-listed firm with a 30th June fiscal year end. The event date is defined as the release date of the PFS announcement. In instances where the PFS is released after the last trade of the day, the event date will be the next trading day. The event window is 365 calendar days leading up to the PFS announcement date.

(INSERT TABLE 7)

The multi-faceted aspects of disclosure informativeness (FOG_AVE, QUAN_AVE and FLAB_AVE) and their effects on TIMELI_DEF are analysed using OLS regressions.

Columns (1), (2) and (3) examine the effects of FOG_AVE, QUAN_AVE and FLAB_AVE on TIMELI_DEF individually, while column (4) shows the results collectively.

The slope coefficient of FOG_AVE is 0.0011 (t-stat: 2.80) and is significant at the 1% level when regressed against TIMELI_DEF. This is consistent with our expectation. A higher FOG score means that the disclosure announcements are more difficult to understand. When firms produce announcements that are more difficult to comprehend, this slows down the rate that information gets incorporated into prices. The statistical significance of FOG_AVE persists when regressed collectively with both QUAN_AVE and FLAB_AVE.

QUAN_AVE also explains the variation of TIMELI_DEF. It has a coefficient of -0.0014 and is significant at the 5% level. Hence, numerical intensity in disclosure announcements has no effect on the rate by which information is incorporated into prices. This is in line with our expectation on how numerical intensity will affect the rate by which information is incorporated into prices. Quantitative disclosure announcements improve disclosure credibility (Mercer 2004) and aid investors in their decision-making (Botosan 1997), thus improving the rate of information incorporation. In addition, QUAN_AVE has consistent explanatory power with the inclusion of FOG_AVE and FLAB_AVE in the regression model.

We expect forward-looking information to improve the rate of information incorporation and thus for FLAB_AVE to have a negative sign when regressed against TIMELI_DEF. However, we obtain a positive coefficient of 0.0003 (significant at 5%) for FLAB_AVE. This means that forward-looking information, in fact, slows down the rate by which information is incorporated into prices. The release of more forward-looking information may actually cause investors and analysts to disagree on the fundamental value of the firm, resulting in slower

information incorporation. This explanatory power of FLAB_AVE persists when both FOG_AVE and QUAN_AVE are included in the regression model.

An examination of the controls shows that firms with higher PB ratios have slower price discovery rate (coefficient: 0.0009, significant at 5%). Higher ROE improves the rate of information incorporation into prices (coefficient: -0.0036, significant at 5% level). This is consistent with Beekes and Brown (2006) findings, but is in contrast with the current literature that underperforming firms disclose value-relevant information prior to an earnings announcement so as to prevent any earnings surprise or face litigation. Large firms, in general, have a faster rate of price discovery (coefficient: -0.0037, significant at 1% level). This may be due to large firms having more institutional traders and analyst following. A higher debt-to-equity ratio slows down the rate of information incorporation into prices (coefficient: 0.0036, significant at 1% level).

In conclusion, we find that all three informativeness variables (FOG_AVE, QUAN_AVE and FLAB_AVE) have persistent explanatory power on the rate at which information is incorporated into share prices. The findings indicate that announcements that are more readable, that have more numbers and that are less forward-looking aid in the price discovery process.

We re-examines the relationship between disclosure informativeness and the rate at which information gets incorporated into prices by allowing 14 days for share price prices to ‘settle’ after the release of an earnings announcements. This robustness test is conducted in the spirit of Ball and Brown (1968), Beekes and Brown (2006) and Brown, Dobbie, and Jackson (2011). In essence, value-relevant information from the latest earnings announcement should

be incorporated into prices within 14 calendar days (or two trading weeks). The new event date is defined at the release date of the PFS announcement + 14 calendar days. Hence, the new event window will be -351 to +14 calendar days, surrounding the PFS announcement date (day 0). Table 8 presents the regression results.

(INSERT TABLE 8)

The only difference in Table 8 is that ROE becomes insignificant when we re-define the event window. This seems to suggest that a firm's earnings performance has actually no impact on price discovery. The three informative variables show a stronger explanatory power on TIMELI_DEF. We find that our primary findings, reported in Table 7, are insensitive to the way we define the event window when constructing the timeliness metrics. Overall, we still find that FOG and QUAN to have persistent explanatory power on the rate at which information is incorporated into share prices. Disclosure announcements that are more readable, that have more numbers and that are less forward-looking aid in the price discovery process.

VI. Concluding Remarks

The main motivation of this paper is the investigation of whether the objective of CDR has been met. That is "to enhance the integrity and efficiency of Australian capital markets by ensuring that the market is fully informed" (ASX 2014, p. 6). Empirical research have found contrasting results. Brown, Taylor, and Walter (1999) show that following the implementation of CDR, improvements in voluntary disclosures were confined to smaller firms and those that performed relatively poorly. They highlight that their findings are restricted to the short period examined, between 1992 and 1996. However, their findings were

challenged by Hsu (2009) and Hsu, Lindsay, and Tutticci (2012), who report positive results on the effectiveness of CDR over longer time periods. Hsu, Lindsay, and Tutticci (2012) examined a longer period of the CDR and find that analysts' forecast accuracy and dispersion improved in response to CDR. In this paper, we introduce three novel measures of disclosure informativeness, that is FOG, QUAN and FLAB. FOG is an indication of the readability of a document. QUAN gives the percentage of numbers in a given announcement file. FLAB gives the percentage of forward-looking statements in a given announcement file.

First, we examine the effects of CDR regulation changes on disclosure informativeness. The results are mixed as to whether CDR amendments improve disclosure informativeness. We observe neither a unidirectional nor systematic effect on disclosure informativeness with the CDR amendments. Consistent with Brown, Taylor, and Walter (1999) and Hsu, Lindsay, and Tutticci (2012), we find that firms, and individuals behind the preparation of the disclosure announcements, improve their disclosure informativeness if the regulation change involves the introduction of civil penalty provisions. However, reactions are usually short-lived as we observe a reversal in direction with the next regulation change. In addition, consistent with Verrecchia (1983), we find firms that are small or performing poorly attempt to produce announcements to mask their true position by producing announcements that are tougher to read. Lastly, prior to the ban on selective disclosures, it seems to suggest that mid-cap firms were actively seeking more analysts' coverage.

Next, we examine the effects of disclosure informativeness on price discovery. We adapt the deflated timeliness metrics introduced by Beekes and Brown (2006). We find that all three informativeness variables have persistent explanatory power on the rate at which information is incorporated into share prices. The findings suggest that capital market participants prefer

announcements that are more readable, that have more numbers and that are less forward-looking aid in the price discovery process.

The findings of this paper are useful to regulators, firms and capital market participants. When revising future ASX Listing Rules, ASX and ASIC can look at imposing stricter civil or financial penalties for breaching the listing requirements. Firms, assuming that they are maximising shareholder value, can better know how to structure disclosure documents to be more readable, contain more numbers and are less forward-looking to aid in the price discovery process. Capital market participants can better understand how firms vary their disclosing strategies to hide certain proprietary information.

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APPENDIX I: Calculate Informative Variables

This appendix details the process of applying textual analysis to calculate the informative variables.

When Li (2008) and Lundholm, Rogo, and Zhang (2014) examined disclosures made in the U.S., they did not have this issue when using Lingua::EN::Fathom. This is because SEC EDGAR provides company announcements files in XML file format. XML file format defines a set of rules for encoding documents in a format which is both human and machine readable. However, SIRCA ACA provides announcements files in TXT format.

Codes are modified from Lingua::EN::Fathom - straight port from Perl package by Kim Ryan. Rules are first introduced to work around the usage of TXT files. When calculating QUAN, rules are also imposed to ignore numbers that do not provide any quantitative information. These include dates (e.g. 31/10/2014), telephone numbers (e.g. 64882780), and postal codes (e.g. 6000).

Additional rules required:

New pattern will always start with UPPERCASE (remove decimals that are read as full stops)

Took out non-ASCII characters

Numbers have to contain {, . numeric characters}

Length of numbers cannot be more than 4 (e.g.: 4329 will not be considered as a number, but 4,329 will be recognised as a number)

APPENDIX II: Futuristic Words

This appendix contains the futuristic words used to tag sentences as ‘forward-looking’.

Keywords

will	following quarter	but aim
future	following year	but anticipate
next fiscal	we aim	but assume
next month	we anticipate	but commit
next period	we assume	but estimate
next quarter	we commit	but expect
next year	we estimate	but forecast
incoming fiscal	we expect	but foresee
incoming month	we forecast	but hope
incoming period	we foresee	but intend
incoming quarter	we hope	but plan
incoming year	we intend	but project
coming fiscal	we plan	but seek
coming month	we project	but target
coming period	we seek	do not aim
coming quarter	we target	do not anticipate
coming year	and aim	do not assume
upcoming fiscal	and anticipate	do not commit
upcoming month	and assume	do not estimate
upcoming period	and commit	do not expect
upcoming quarter	and estimate	do not forecast
upcoming year	and expect	do not foresee
subsequent fiscal	and forecast	do not hope
subsequent month	and foresee	do not intend
subsequent period	and hope	do not plan
subsequent quarter	and intend	do not project
subsequent year	and plan	do not seek
following fiscal	and project	do not target
following month	and seek	company aims
following period	and target	company anticipates

Keywords

company assumes
company commits
company estimates
company expects
company forecasts
company foresees
company hopes
company intends
company plans
company projects
company seeks
company targets
corporation aims
corporation anticipates
corporation assumes
corporation commits
corporation estimates
corporation expects
corporation forecasts
corporation foresees
corporation hopes
corporation intends
corporation plans
corporation projects
corporation seeks
corporation targets
firm aims
firm anticipates
firm assumes
firm commits
firm estimates
firm expects
firm forecasts
firm foresees
firm hopes
firm intends
firm plans
firm projects
firm seeks
firm targets
management aims
management anticipates
management assumes
management commits
management estimates
management expects
management forecasts
management foresees
management hopes
management intends
management plans
management projects
management seeks
management targets
and aims
and anticipates
and assumes
and commits
and estimates
and expects
and forecasts
and foresees
and hopes
and intends
and plans
and projects
and seeks
and targets
but aims
but anticipates
but assumes
but commits
but estimates
but expects
but forecasts
but foresees
but hopes
but intends
but plans
but projects
but seeks
but targets
does not aim
does not anticipate
does not assume
does not commit
does not estimate
does not expect
does not forecast
does not foresee

Keywords

does not hope
does not intend
does not plan
does not project
does not seek
does not target
is aiming
is anticipating
is assuming
is commiting
is estimating
is expecting
is forecasting
is foreseeing
is hoping
is intending
is planing
is projecting
is seeking
is targeting
are aiming
are anticipating
are assuming
are commiting
are estimating
are expecting
are forecasting
are foreseeing
are hoping
are intending
are planing
are projecting
are seeking
are targeting
not aiming
not anticipating
not assuming
not commiting
not estimating
not expecting
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not intending
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not intended
not planed
not projected
not seeked
not targeted

Keywords

normally aim
normally anticipate
normally assume
normally commit
normally estimate
normally expect
normally forecast
normally foresee
normally hope
normally intend
normally plan
normally project
normally seek
normally target
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normally anticipates
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TABLE 1:
Identifying CDR-related Announcements

This table outlines the selection criteria taken to identify which announcements are CDR-related. Criteria used are as follow:
1. The announcement cannot be pre-empt
2. The announcement usually contains information about the firm's business operations
3. The announcement is voluntarily disclosed by the firm

Ticks in the respective columns symbolise whether the announcement class fulfils the criteria. An announcement class is considered CDR-related if the class fulfils all three criteria.

	Criteria		
ASX Reporting Code	1	2	3
01 Takeover Announcement	□	□	□
02 Security Holder Details	□		
03 Periodic Report		□	
04 Quarterly Activities Report		□	
05 Quarterly Cash Flow Report		□	
06 Issued Capital	□		
07 Asset Acquisition & Disposal	□	□	□
08 Notice of Meeting			
09 ASX Announcement	□	□	
10 Dividend Announcement		□	
11 Progress Report	□	□	□
12 Company Administration	□		
13 Notice of Call (Contributing Shares)	□		
14 Other	□	□	□
15 Chairman's Address		□	□
16 Letter to Shareholders	□	□	□
17 ASX Query	□		
18 Structured Products	□		
19 Commitments Test Entity Quarterly Reports		□	

FIGURE 1:
Yearly number of ASX announcements

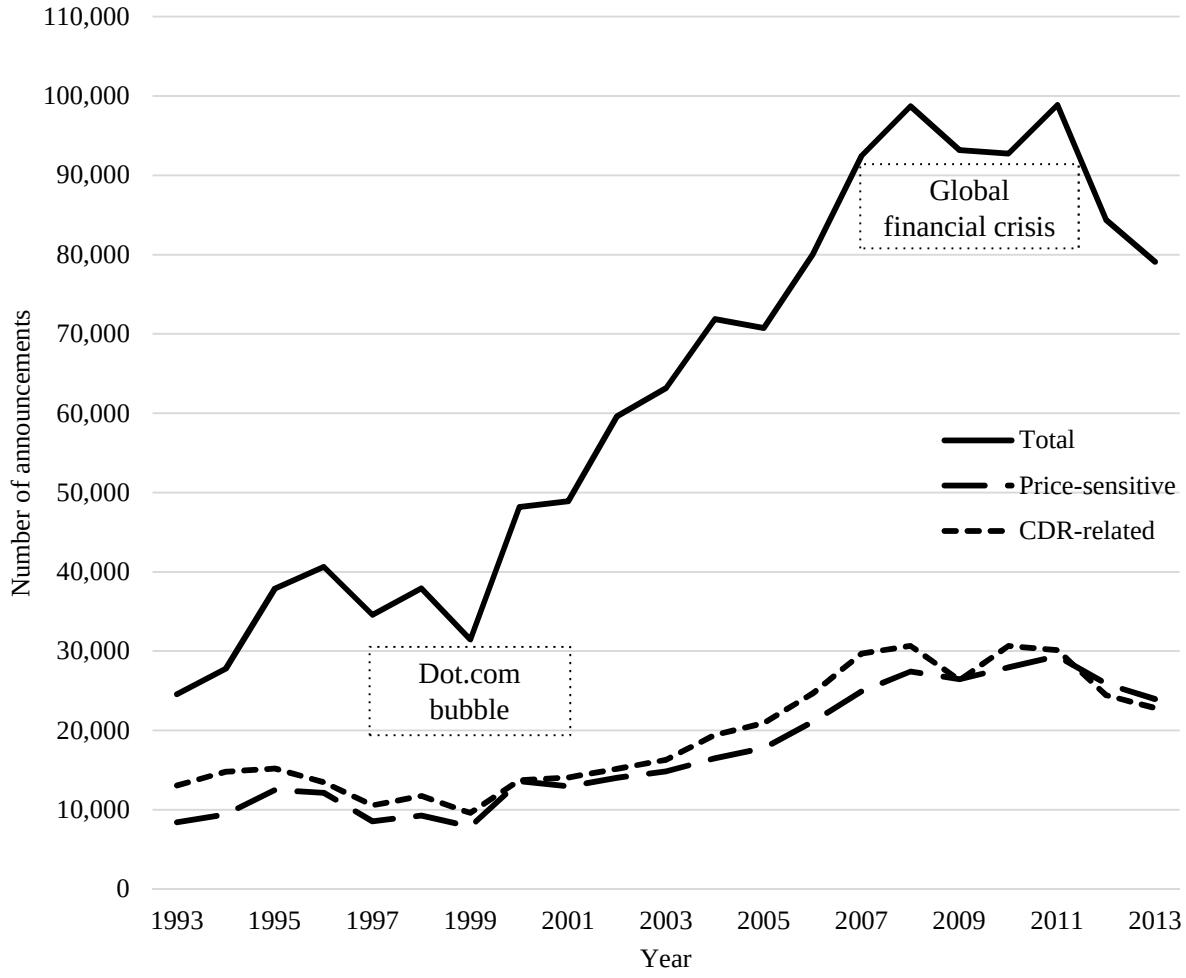

FIGURE 2:
Yearly number of firms

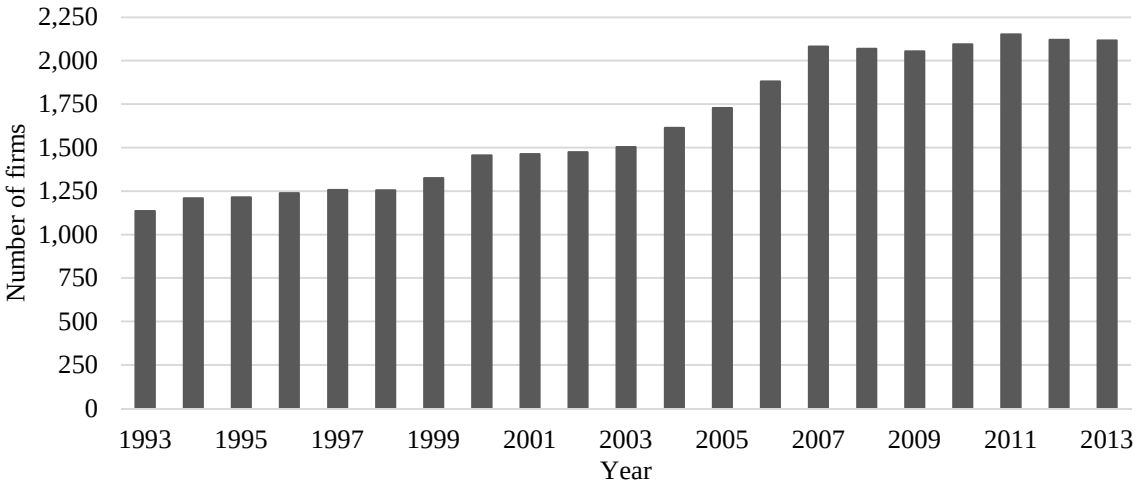

TABLE 2:
Descriptive Statistics - All Firms

This table provides descriptive statistics of the sample firms examined in this paper. Descriptive statistics on the population of firms listed between 1993 to 2014 are also reported. Winsorising has been performed on the continuous variables twice, first at 99% then at two standard deviations around the respective means. Panel A and B report the relevant descriptive statistics for the controls and informativeness variables used respectively. The control variables in Panel A are reported on a firm-year basis. The informativeness variables in Panel B are reported on a per-document basis.

Panel A: Controls	**I. Population**				**II. Sample**			
	PB	ROE	MKTCAP	DE	PB	ROE	MKTCAP	DE
Mean	2.08	-0.14	17.35	0.28	2.18	-0.16	17.40	0.29
Median	1.36	-0.01	17.02	0.03	1.40	-0.02	17.07	0.03
Maximum	10.01	1.88	21.70	2.34	12.45	2.69	21.79	2.98
Minimum	-5.35	-2.28	13.50	-1.64	-7.60	-3.16	13.11	-2.24
Std.Dev.	2.50	0.62	2.06	0.61	2.84	0.74	2.06	0.69
Skewness	1.27	-1.20	0.45	1.24	1.42	-1.36	0.45	1.40
Kurtosis	6.40	8.06	2.43	7.33	8.25	10.89	2.48	9.70
No.of Obs	30,400	30,400	30,400	30,400	27,539	27,539	27,539	27,539

Panel B: Informativeness	**II. Sample**		
	FOG	QUAN	FLAB
Mean	21.04	3.14	16.03
Median	20.90	2.50	14.29
Maximum	28.52	9.78	45.24
Minimum	13.61	0.00	0.00
Std.Dev.	3.51	2.41	13.27
Skewness	0.14	1.21	0.62
Kurtosis	2.67	3.90	2.46
No.of Obs	298,004	298,004	298,004

TABLE 3:
Pearson Product-Moment Correlation Matrix

This table provides the pair-wise Pearson product-moment correlation coefficients for all continuous variables used in this dissertation. Student t-statistic is reported in the parenthesis.

	Variables					
	FOG	QUAN	FLAB	PB	ROE	MKTCAP
QUAN	-0.0259					
	(-14.14)					
FLAB	0.1359	-0.1592				
	(74.86)	(-88.04)				
PB	0.0066	0.0154	-0.0080			
	(3.58)	(8.42)	(-4.39)			
ROE	-0.0325	0.0220	0.0110	-0.4358		
	(-17.76)	(12.03)	(6.02)	(-264.29)		
MKTCAP	0.0271	0.0562	0.0555	0.1210	0.2938	
	(14.82)	(30.73)	(30.36)	(66.54)	(167.78)	
DE	0.0173	-0.0246	0.0573	0.1924	-0.1626	0.2349
	(9.47)	(-13.43)	(31.34)	(107.01)	(-89.96)	(131.94)

TABLE 4:
Relationship between CDR regulation changes and disclosure informativeness

This table examines the relationship between CDR regulation changes and disclosure informativeness. Multi-faceted aspects of disclosure informativeness (*FOG*, *QUAN* and *FLAB)* are analysed using OLS regressions. *FOG* is FOG Index developed by Guning (1952) and it measures the text complexity as a function of syllables per word and words per sentences. *QUAN* is the numerical intensity percentage in a given document. *FLAB* calculates the percentage of forward-looking statements in a given document. $RC(t_0\text{-}t_1)$ is a dummy variable that takes a value of 1 if the announcements are made from the effective month of the (amended) regulation to the month before the next revised amendment comes into effect. *PB* is the firm's price-to-book value at each fiscal year end. *ROE* is the firm's return on equity at each fiscal year end. *MKTCAP* is the log of the firm's market capitalization at each fiscal year. *DE* is the firm's debt-to-equity ratio at each fiscal year end. *MKTSEN* is a dummy variable that takes the value of 1 if ASX tags the announcement as market sensitive. Student t-statistic is reported in the parenthesis. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

Panel A: Regression Results	**Informativeness Variable**					
	FOG		QUAN		FLAB	
Intercept	20.0023	***	1.3767	***	6.8235	***
	(55.33)		(6.02)		(4.71)	
RC(94-01)	0.0921	***	-0.4570	***	3.4051	***
	(2.95)		(-23.13)		(27.21)	
RC(01-02)	0.3789	***	-0.4329	***	4.3711	***
	(7.22)		(-13.05)		(20.80)	
RC(02-03)	0.1383	***	-0.3591	***	4.2243	***
	(3.18)		(-13.07)		(24.28)	
RC(03-05)	-0.2262	***	1.5656	***	1.2656	***
	(-6.32)		(69.27)		(8.84)	
RC(05-13)	1.1991	***	1.8893	***	2.4916	***
	(34.94)		(87.11)		(18.14)	
RC(13-14)	1.6195	***	-0.2039	***	2.1735	***
	(35.82)		(-7.14)		(12.01)	
PB	-0.0522	***	0.0366	***	-0.0483	***
	(-16.33)		(18.11)		(-3.78)	
ROE	-0.1270	***	0.1193	***	-0.1727	***
	(-10.57)		(15.71)		(-3.59)	
MKTCAP	0.1610	***	0.0065		0.1571	***
	(22.31)		(1.43)		(5.44)	
DE	0.0043		-0.0306	***	0.2198	***
	(0.32)		(-3.55)		(4.02)	
MKTSEN	-0.3866	***	-0.0014		2.9808	***
	(-31.62)		(-0.18)		(60.89)	
Number of obs	298,005		298,005		298,005	
Adjusted R^2	0.191		0.315		0.094	
Industry-fixed effects	YES		YES		YES	
Firm-fixed effects	YES		YES		YES	

Panel B: Test of Equality	**Informativeness Variables**					
	FOG		QUAN		FLAB	
RC(01-02)-RC(94-01)	0.2868	***	0.0240		0.9660	***
	(40.40)		(0.71)		(28.60)	
RC(02-03)-RC(01-02)	-0.2406	***	0.0739	**	-0.1468	
	(20.97)		(4.95)		(0.49)	
RC(03-05)-RC(02-03)	-0.3644	***	1.9247	***	-2.9587	***
	(104.40)		(7,290.14)		(429.40)	
RC(05-13)-RC(03-05)	1.4252	***	0.3236	***	1.2260	***
	(4,415.83)		(570.07)		(203.90)	
RC(13-14)-RC(05-13)	0.4204	***	-2.0932	***	-0.3181	**
	(181.12)		(11,239.50)		(6.47)	

TABLE 5:
Relationship between CDR regulation changes and disclosure informativenes - Pre/Post Analysis

This table examines the relationship between CDR regulation changes and disclosure informativeness. Multi-faceted aspects of disclosure informativeness are analysed using OLS regressions. Announcements made one year prior to the effective month of the (amended) regulation is defined as "PRE". Announcements made one year into the effective month of the (amended) regulation is defined as "POST". *FOG* is FOG Index developed by Guning (1952) and it measures the text complexity as a function of syllables per word and words per sentences. *QUAN* is the numerical intensity percentage in a given document. *FLAB* calculates the percentage of forward-looking statements in a given document. *RegChange* is a dummy variable that takes a value of 1 if the announcements are made from the effective month of the (amended) regulation to the month before the next revised amendment comes into effect. *PB* is the firm's price-to-book value at each fiscal year end. *ROE* is the firm's return on equity at each fiscal year end. *MKTCAP* is the log of the firm's market capitalization at each fiscal year. *DE* is the firm's debt-to-equity ratio at each fiscal year end. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

	Month that Regulation Change Becomes Effective											
	FOG			**QUAN**			**FLAB**					
	MAR-02		JUN-05	MAR-02		JUN-05	MAR-02		JUN-05			
Intercept	22.4062	***	19.8208	***	0.6334	**	3.7683	***	19.0325	***	10.0714	***
	(29.19)		(30.41)		(2.38)		(7.51)		(5.79)		(4.14)	
RegChange	-0.2580	**	0.4106	***	0.0977	***	0.0812		-0.5448		0.7126	**
	(-2.48)		(4.33)		(2.70)		(1.11)		(-1.22)		(2.01)	
PB	-0.0049		-0.0379	*	-0.0031		-0.0486	***	-0.2275	**	-0.1133	
	(-0.22)		(-1.9)		(-0.41)		(-3.16)		(-2.4)		(-1.52)	
ROE	-0.2158	***	-0.3541	***	0.0069		0.0601		-0.2143		-0.5292	*
	(-2.73)		(-4.38)		(0.25)		(0.97)		(-0.63)		(-1.75)	
MKTCAP	-0.1005	***	0.0764	***	0.0664	***	0.0572	***	-0.0823		0.3474	***
	(-3.43)		(2.85)		(6.53)		(2.78)		(-0.66)		(3.47)	
DE	-0.3518	***	-0.1084		-0.0330		0.1481	**	-0.0511		0.0537	
	(-4.17)		(-1.45)		(-1.13)		(2.57)		(-0.14)		(0.19)	
Number of obs	2,127		2,462	2,127		2,462	2,127		2,462			
Adjusted R^2	0.079		0.040	0.116		0.118	0.009		0.043			
Industry-fixed effects	YES		YES	YES		YES	YES		YES			

TABLE 6:
Descriptive Statistics - June Fiscal Year-end Firms

This table provides descriptive statistics of June fiscal year-end firms examined in Hypothesis 2. Winsorising has been performed on the continuous variables twice, first at 99% then at two standard deviations around the respective means. Panel A, B and C report the relevant descriptive statistics for the controls, informativeness and timeliness variables used respectively. The variables in Panel A and C are reported on a firm-year basis. The informativeness variables in Panel B are reported on a firm-year average basis.

Panel A: Controls	**June FYE Firms**			
	PB	ROE	MKTCAP	DE
Mean	2.17	-0.10	17.99	0.43
Median	1.40	0.06	17.84	0.19
Maximum	10.31	2.14	22.35	3.13
Minimum	-5.39	-2.50	13.90	-2.07
Std.Dev.	2.54	0.68	2.12	0.79
Skewness	1.37	-1.35	0.25	1.39
Kurtosis	6.47	8.57	2.30	7.65
No.of Obs	9,179	9,179	9,179	9,179

Panel B: Informativeness	**June FYE Firms**		
	FOG	QUAN	FLAB
Mean	21.31	2.91	17.55
Median	21.33	2.64	17.21
Maximum	25.87	6.30	33.70
Minimum	16.74	0.36	1.64
Std.Dev.	2.19	1.55	7.55
Skewness	-0.05	0.57	0.15
Kurtosis	2.53	2.49	2.64
No.of Obs	9,179	9,179	9,179

Panel C: Timeliness	**June FYE Firms**	
	TIMELI_DEF	RTN_VOL
Mean	0.17	0.04
Median	0.15	0.03
Maximum	0.41	0.09
Minimum	0.03	0.01
Std.Dev.	0.10	0.02
Skewness	0.72	1.01
Kurtosis	2.65	3.15
No.of Obs	9,179	9,179

TABLE 7:
Relationship between disclosure informativeness and rate of information incorporating into prices

This table examines the relationship between disclosure informativeness and rate of information incorporating into prices. The dependent variable is *TIMELI_DEF*. *TIMELI_DEF* adjusts for the idiosyncratic share price volatility that tend to inflate the timeliness metrics when it is calculated at the individual firm level. In essence, a higher timeliness value represents a slower rate of information incorporating into share prices. Multi-faceted aspects of disclosure informativeness (*FOG*, *QUAN* and *FLAB*) and its effects on timeliness are analysed using OLS regressions. They are calculated on a firm's fiscal-year average. The event of interest is the release of the preliminary final statement (PFS) by an ASX-listed firm with a 30th June fiscal year end. Event date is defined as the release date of the PFS announcement. In instances where the PFS is released after the last trade of the day, the event date will instead be the next trading day. The event window is 365 calendar days leading up to the PFS announcement date.

FOG is FOG Index developed by Gunning (1952) and it measures the text complexity as a function of syllables per word and words per sentences. *QUAN* is the numerical intensity percentage in a given document. *FLAB* calculates the percentage of forward-looking statements in a given document. *RTN_VOL* is the firm's monthly return volatility. PB is the firm's price-to-book value at each fiscal year end. *ROE* is the firm's return on equity at each fiscal year end. *MKTCAP* is the log of the firm's market capitalization at each fiscal year. *DE* is the firm's debt-to-equity ratio at each fiscal year end. Year-fixed effects and industry fixed effects are included. Student t-statistic is reported in the parenthesis. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

	TIMELI_DEF			
	(1)	**(2)**	**(3)**	**(4)**
Intercept	0.1302 ***	0.1515 ***	0.1485 ***	0.1311 ***
	(4.77)	(5.76)	(5.65)	(4.81)
FOG_AVE	0.0011 ***			0.0010 **
	(2.80)			(2.49)
QUAN_AVE		-0.0014 **		-0.0012 *
		(-2.16)		(-1.90)
FLAB_AVE			0.0003 **	0.0002 *
			(2.50)	(1.91)
RTN_VOL	2.5548 ***	2.5669 ***	2.5581 ***	2.5506 ***
	(49.83)	(50.21)	(49.95)	(49.69)
PB	0.0010 **	0.0009 **	0.0010 **	0.0009 **
	(2.51)	(2.29)	(2.54)	(2.44)
ROE	-0.0037 **	-0.0038 **	-0.0038 **	-0.0036 **
	(-2.51)	(-2.56)	(-2.54)	(-2.42)
MKTCAP	-0.0038 ***	-0.0035 ***	-0.0037 ***	-0.0037 ***
	(-6.89)	(-6.40)	(-6.80)	(-6.70)
DE	0.0035 ***	0.0036 ***	0.0034	0.0036 ***
	(3.17)	(3.24)	(3.04)	(3.18)
Number of obs	9,178	9,178	9,178	9,178
Adjusted R^2	0.437	0.437	0.437	0.438
Year-fixed effects	YES	YES	YES	YES
Industry-fixed effects	YES	YES	YES	YES

TABLE 8:
Relationship between disclosure informativeness and rate of information incorporating into prices

This table examines the relationship between disclosure informativeness and rate of information incorporating into prices. The dependent variable is TIMELI_DEF. TIMELI_DEF adjusts for the idiosyncratic share price volatility that tend to inflate the timeliness metrics when it is calculated at the individual firm level. In essence, a higher timeliness value represents a slower rate of information incorporating into share prices. Multi-faceted aspects of disclosure informativeness (*FOG*, *QUAN* and *FLAB*) and its effects on timeliness are analysed using OLS regressions. They are calculated on a firm's fiscal-year average. The event of interest is the release of the preliminary final statement (PFS) by an ASX-listed firm with a 30th June fiscal year end. Event date is defined as the release date of the PFS announcement + 14 calendar days. Beekes and Brown (2006) argue that the addition of 14 calendar days will allow prices to "settle". The event window is -351 to +14 calendar days surrounding the PFS announcement date. *FOG* is FOG Index developed by Gunning (1952) and it measures the text complexity as a function of syllables per word and words per sentences. *QUAN* is the numerical intensity percentage in a given document. *FLAB* calculates the percentage of forward-looking statements in a given document. *RTN_VOL* is the firm's monthly return volatility. PB is the firm's price-to-book value at each fiscal year end. *ROE* is the firm's return on equity at each fiscal year end. *MKTCAP* is the log of the firm's market capitalization at each fiscal year. *DE* is the firm's debt-to-equity ratio at each fiscal year end. Year-fixed effects and industry fixed effects are included. Student t-statistic is reported in the parenthesis. The symbols *, ** and *** denote statistical significance at the 10%, 5% and 1% levels respectively.

	TIMELI_DEF			
	(1)	**(2)**	**(3)**	**(4)**
Intercept	0.1414 ***	0.1664 ***	0.1627 ***	0.1429 ***
	(5.19)	(6.34)	(6.19)	(5.24)
FOG_AVE	0.0013 ***			0.0011 ***
	(3.31)			(2.88)
QUAN_AVE		-0.0020 ***		-0.0018 ***
		(-3.18)		(-2.82)
FLAB_AVE			0.0004 ***	0.0003 **
			(3.26)	(2.48)
RTN_VOL	2.5170 ***	2.5324 ***	2.5200 ***	2.5109 ***
	(48.84)	(49.31)	(48.96)	(48.68)
PB	0.0009 **	0.0008 **	0.0009 **	0.0009 **
	(2.43)	(2.13)	(2.46)	(2.30)
ROE	-0.0019	-0.0019	-0.0019	-0.0017
	(-1.26)	(-1.29)	(-1.29)	(-1.16)
MKTCAP	-0.0036 ***	-0.0033 ***	-0.0036 ***	-0.0035 ***
	(-6.54)	(-5.89)	(-6.44)	(-6.28)
DE	0.0038 ***	0.0040 ***	0.0036	0.0039 ***
	(3.34)	(3.48)	(3.19)	(3.39)
Number of obs	9,146	9,146	9,146	9,146
Adjusted R2	0.427	0.427	0.427	0.428
Year-fixed effects	YES	YES	YES	YES
Industry-fixed effects	YES	YES	YES	YES