

INFORMATION LEAKAGE AND INFORMED TRADING AROUND UNSCHEDULED EARNINGS ANNOUNCEMENTS

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Abstract

While there has been much judicial discussion regarding the competency of Australia's continuous disclosure regime with reference to contemporaneous international standards, there has to date been limited empirical analysis of the Australian system's effectiveness in preventing selective disclosure and information leakage. This paper presents an empirical study of information content and trading behaviour around unscheduled earnings announcements – comprising of profit upgrades, profit warnings and neutral trading statements – made by ASX-listed companies during 2004. The contention is that informed trading impacts on the stock returns and trading volumes of listed entities, and hence abnormal returns or trading volumes observed prior to an announcement provide evidence of information leakage. The paper models a range of factors that potentially influence firm disclosure practices and contribute to the level information asymmetry in the market during the pre-announcement period. Previous research has investigated the influence of firm size and information content in contributing to information leakage. This study further considers the variables of firm growth, capital structure and industry group.

Keywords: Information Leakage, unscheduled announcements, Downgrades

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1. Introduction

Transparency and disclosure are central pillars of effective corporate governance practices and the functioning of capital markets. From an investment perspective, full, accurate and timely disclosure of information permits the market to determine intrinsic value. Without access to regular, timely, reliable and comparable information, investors will not be able to evaluate corporate prospects and make informed investment and voting decisions (OECD, 2003b). This will result in poorer allocation of scarce economic resources and a higher cost of capital. Additionally, disclosure and transparency are the building blocks of a market-based system for monitoring companies. Effective disclosure and transparency help set investor confidence that intrinsic value is not being siphoned off or wasted by managers or insiders. It allows shareholders and the public at large to assess management performance, thus influencing its behaviour (OECD, 2003b).

The genuine value of cash flows, combined with investors' confidence in their ability to enjoy these cash flows, determines a company's extrinsic, or market value. A similar relationship is found at the macroeconomic level. Reliable systemic disclosure generates confidence in market integrity. As a result, capital flowing to equity and debt markets will fully

and fairly reflect the underlying value of the national economy (OECD, 2003a). Consequently, disclosure and transparency not only affect individual companies' performance and market valuation, but also greatly influence a national economy's ability to attract domestic and foreign investment. Finally, transparency and disclosure gives the public the opportunity to understand the company's structure, activities and policies as well as assessing its performance with regard to environmental and ethical standards (OECD, 2003b).

Continuous disclosure can be defined as an obligation to promptly disclose new important information concerning a listed company as the information becomes available. This can be contrasted with periodic disclosure, which in the Australian context requires the preparation of annual and half-year disclosure documents. A central function of Australia's continuous disclosure regulations is to create a platform that equally distributes price sensitive information (PSI) and maintains an efficient market. Privileged access to material information by analysts, media and major shareholders creates favourable conditions for market manipulation and insider dealings, and consequently harms the integrity of financial markets and general public confidence in securities. The regulation of disclosure naturally

becomes a most important part of securities regulation and the focus of regulatory action

Since September 5, 1994, statutory provisions have expressly supported the Australian Stock Exchange's (ASX) continuous disclosure requirements contained in Chapter 3 of the ASX Listing Rules.⁵⁵ The general rule, in accordance with Listing Rule 3.1, is that once an entity becomes aware of any information concerning it that a reasonable person would expect to have a material effect on the price or value of the entity's securities, the entity must immediately inform the ASX of that information. Price sensitive information includes information about such things as earnings, mergers, acquisitions, joint ventures, changes in assets, new products or discoveries, developments regarding customers or suppliers (e.g. winning or losing a contract) and changes in control or management (ASIC, 2000). Listing Rule 3.1 is augmented by the operation of Rule 15.7, which provides that a firm may not make further disclosure to anyone until it has received an acknowledgement from the ASX that the information has been released to the market. Rule 15.7 is designed to ensure that the efficiency and integrity of the process of releasing market information is maintained, making the Company Announcements Platform the central collection point for all price sensitive information (ASX, 2003). Risk of informed trading activity and unequitable access to information is therefore significantly reduced, as the ASX acts as the initial conduit through which information is widely disseminated.

Under Australia's current continuous disclosure regime, it should be impossible to leak information: Either all investors hear news at once, or none do. Assuming the market is efficient, changes in security prices reflect the flow of new information to the market. Thus abnormal trading volume or price movements witnessed immediately prior to the release of price-sensitive unscheduled company announcements would provide evidence of information leakage and informed investor trading (Collett, 2004).

There has to date been limited empirical analysis of the presence of information asymmetry in Australian markets and the effectiveness of Australia's corporate disclosure rules in preventing selective disclosure and information leakage. This study examines information content and trading behaviour around unscheduled earnings announcements – consisting of profit upgrades, profit warnings and neutral trading statements – made by ASX-listed companies during 2004. The analysis of earnings forecasts are particularly relevant as these notices provide a clear signal to the market that management of the firm has revised their expectations, or believes that current analyst or market projections are inaccurate. Other types of

irregular announcement are not considered in this study as they may have variable information content, or provide an ambiguous signal to the market, which creates difficulties in assigning an a priori expectation of the market's response to the new information. The study will focus on the pre-announcement period to test for information asymmetry and informed trading prior to the official release of the earnings information through the ASX Company Announcements Platform.

Further, this study will attempt to identify the variables, or firm characteristics, that influence firm disclosure practices and contribute to the level of information asymmetry in the market during the pre-announcement period. Previous research has investigated the influence of firm size and information content in contributing to information leakage. This study further considers the variables of firm growth, capital structure and industry group. We consider capital structure to be of interest as profit forecasts provide early indications of a firm's continued ability to service its debt requirements and heavily influences the riskiness of its business. Examining a firm's growth in trading revenue, as a measure of recent performance, explores whether variations in disclosure practices exist between firms that are expanding or contracting appreciably. Finally, industry associations are considered to assist detecting variations in corporate culture across industries.

The remainder of this paper is organised as follows: Section II provides an overview of the empirical literature to date concerning information leakage and selective disclosure, and then develops the hypotheses to be addressed. Section III discusses the sample and develops the methodology adopted, while Section IV reports the findings of the empirical analysis accompanied by a brief discussion and Section V states the conclusions of the findings. Policy implications of the results are outlined, and areas of further research are suggested.

II. Literature Review

2.1 Informed Trading around Earnings Announcements

A review of the literature indicates that the imposition of statutorily enforced disclosure rules has been largely successful in reducing or eliminating information leakage and informed trading, in particular around earnings announcements. Helbok and Walker (2003) report that evidence of informed trading prior to the release of profit warnings by UK firms does not continue after the introduction of a continuous disclosure obligation. This finding is supported by Collett (2004) who finds no evidence of informed trading in any of his size categories prior to trading statements made by UK firms in the post-enactment period. Dedman (2004) acknowledges that this combined contribution to the UK disclosure literature suggests that recent changes to market regulation in the UK have reduced informed trading

⁵⁵ The provisions were inserted into the *Corporations Law* by the *Corporate Law Reform Act, 1994*

around earnings updates to insignificant levels. Similar findings were observed in the USA by Mac (2002), who reports an abatement in unfair trading around earnings announcements subsequent to the introduction of Regulation FD prohibiting selective disclosure by US firms. The study by Jackson and Madura (2003) examined the release of profit warnings by US firms and found evidence to suggest larger firm size and negative information content as contributing factors to increased information asymmetry observed prior to earnings announcements. However, this latter study employed data prior to the introduction of Regulation FD.

There is a gap in the literature however, with respect to studies performed on Australian markets. There has to date been limited empirical analysis of Australia's corporate disclosure rules and the presence of information asymmetry around earnings information announcements. However, there are some related studies that focus related disclosures and frequency of disclosures.

Aitken and Czernkowski (1992) measure unexpected returns and trading volume prior to the announcement of Australian takeover offers, during the period 1982 to 1987. The study finds that when the information contained in media reports leaking news before the official announcement is controlled for, a significant proportion (30%) of the price and volume run-up could be eliminated or explained. Their study also found significant abnormal returns 4 days prior to the media-adjusted announcement date.

In a series of working papers commissioned by the Australian Securities Commission (ASC⁵⁶), the Securities Industry Research Centre of Asia Pacific (SIRCA) reviewed Australia's enhanced disclosure (ED) rules by attempting to identify the impact on listed firms' disclosure practices, and the market reaction to those disclosures (Brown et al., 1999, Brown et al., 1996c, Brown et al., 1996b, Brown et al., 1996a).⁵⁷ Their results generally indicated that although total disclosures increased post-sanctions, disclosures classified as 'price sensitive' by the ASX only became more frequent for firms without a large analyst following and for firms which are more likely to have revealed relatively bad news. While their research incorporated all disclosures made in accordance with Listing Rule 3.1, and did not explicitly consider information leakage around announcement events, their results identified the marginal effects of ED on company disclosure policies which have been reflected in current international literature. Namely, there is some evidence that both company disclosure policies, and the level of informational asymmetry in the market

prior to price sensitive announcements, is conditional upon firm size and whether the informational content of the announcement is positive or negative for the disclosing firm.

2.2 The Frequency and Effect of Positive and Negative Announcements

A belief that ED legislation would modify corporate disclosure policies ultimately reduces to an expectation that the introduction of civil and criminal sanctions will have such an effect (Brown *et al.*, 1996c). Skinner (1994) develops an argument based on the expectations adjustment hypothesis of Ajinyka and Gift (1984), which states that the probability an earnings announcement will be pre-empted by voluntary disclosures depends on the absolute size of the earnings surprise. Skinner further argues that due to legal incentives to voluntarily disclose, US firms are much more likely to reveal 'bad' earnings news in advance than they are to foreshadow earnings improvements.

Collett (2004) demonstrated that both the number of negative trading statements and their absolute impact was much higher than the number and impact of positive trading statements. Similarly, Kasznik and Lev (1995) find that twice as many US firms issue pre-emptive warnings about negative earnings surprises than issue early indicators of positive earnings surprises. Interestingly, Mac (2002) reports that there was comparatively less information leakage for positive surprises than negative surprises, in both the pre- and post- Regulation FD period.

2.3 The Impact of Firm Size

The firm-size differential information hypothesis is provided by Atiase (1980), who proposes that the amount of private pre-disclosure information production and dissemination is an increasing function of firm size (market capitalization). This is supported by Ryan and Taffler (2004) who argue that periodic accounting reporting is an anticipated news release and thus generates extensive prior search activity (e.g. through the earnings forecasting activities of analysts). Other information events however, including those made under a continuous disclosure obligation, occur randomly and cannot be predicted in the same way without incurring substantial speculative search costs.

Given company size is shown to be a proxy for the number of analysts following companies, Collet (2004) found strong evidence that the market is less surprised by trading statements from companies which are followed by numerous analysts. Further to this, his results indicated that while profit warnings for large companies produce significant negative abnormal returns on announcement day, the abnormal returns are negligible and insignificant for upgrades. Jackson and Madura (2003) found that the response to profit warnings during the announcement period and

⁵⁶ Now the Australian Investments and Securities Commission (ASIC)

⁵⁷ Since September 5, 1994, statutory provisions have expressly supported the ASX Continuous Disclosure Requirements. Ss.793C and 1101B of the *Corporations Act* allow a court to order compliance with any ASX Listing Rule or to make consequential orders on a contravention of any ASX Listing Rule.

post-announcement period is more negative for small firms. It may be concluded that as analysts monitor large firms more closely than they monitor small firms, earnings information disclosed by small firms is less likely to be anticipated.

2.4 Other Factors

Whereas price adjustments identify changes in the market's consensus expectations, irregular trading volume can reflect heterogeneous expectations of individual investors (Bamber, 1986, Collett, 2004). To the extent that information is leaked to individuals, a firm may experience abnormal levels of trading volume prior to an unscheduled announcement. However, if Australia's continuous disclosure regime is effective, information leakage and hence information asymmetry should not be present in the Australian market. We will also consider abnormal volume effects surrounding unexpected earnings announcements.

The level of information asymmetry and information leakage prior to information releases can be attributed to a firm's willingness to engage in selective disclosure practices. Given the potential legal and reputation costs of breaching disclosure rules, it is proposed that unobservable motivations induce management to engage in selective disclosure. Therefore, the pre-announcement period can be used to test whether company disclosure policies are conditioned by discrete firm characteristics. Previous research has investigated the influence of firm size and information content in contributing to information leakage. This study further considers the variables of firm growth, capital structure and industry group.

The effect of firm growth has not been considered by the prior literature. While we can form predictions regarding the influence the variable might have on the magnitude of abnormal returns (i.e. tendency to magnify or offset the information contained in the announcement), it is more difficult to form an *a priori* expectation concerning whether it would influence a firm's willingness to leak information. Firms experiencing financial difficulties would appreciably be cautious of the manner in which negative information is released to the market.

The firm's *debt to equity* ratio is considered to assess whether the level of debt financing (risk) employed by a firm influence its tendency to selectively disclose to favoured shareholders. As with firm growth, capital structure has not been considered as an independent variable by previous studies. Accordingly, we again have no pre-determined *a priori* expectation concerning its relationship with the magnitude of pre-announcement CARs. As a firm's trading revenue growth indicates recent financial performance, it may be used to identify firms that are being expanding or contracting, which may lead to less pre-announcement leakage.

A firm's industry group is also considered by this study according to its four-digit Global Industry

Classification System (GICS) code. This classification has also been overlooked by the supporting literature. Once again, no *a priori* expectation is advanced. The variable is considered to test whether corporate culture, and the willingness to leak price-sensitive earnings forecasts, varies between industry groups.

III. Research Design

The objective of this study is to test for information leakage and informed trading in the Australian stock market, prior to the release of unscheduled earnings announcements. The contention is that informed trading impacts on the stock returns and trading volumes of ASX-listed firms, and hence abnormal returns and trading volumes prior to an announcement would provide evidence of information leakage.

The initial data set comprises the complete set of announcements made by ASX-listed firms under their continuous disclosure obligations. The full electronic text of announcements made by ASX-listed firms is distributed through Signal-G electronic records, and subsequently archived on the DatAnalysis Image Signal database. The ASX attaches two-digit event codes to all Signal-G transmissions; this study focuses on item 14 ('Other') announcements that have also been flagged as price sensitive by ASX staff.

The study considers all announcements made during the sample period extending from January 1, 2004 to December 31, 2004. In total, 3,564 price-sensitive, unscheduled announcements were made during the period. Of these, 489 announcements were identified as containing forecast earnings information. To narrow the study focus on unscheduled earnings announcements, a number of announcements containing potentially confounding information were excluded from the sample. First, announcements that provide actual earnings or sales figures along with some indication of future earnings are eliminated, as the current trading results could bias the market response. Second, announcements including information such as dividend declarations, equity issues, substantial asset sales or administrative matters are eliminated, as the market reaction could otherwise not be fully ascribed to the earnings forecast. Firms are also excluded for insufficient data, where unscheduled announcements were made concurrently with annual or interim reports, or for the presence of confounding events or price sensitive announcements within a five-day window prior to the earnings announcement.

Table 1. Sample Characteristics of Unscheduled Earnings Announcements

Classification of all unscheduled earnings announcements by ASX-listed firms distributed through Signal-G electronic records by industry and announcement type for the period January 1, 2004 to December 31, 2004. Descriptive statistics for the size of firms included in the sample is denoted by market capitalisation one-day prior to the announcement and is in millions of A\$.

Industry Group	GICS Code	Upgrade	Neutral	Warning	Total
Energy	1010	2	1	0	3
Materials	1510	14	0	12	26
Capital Goods	2010	13	0	6	19
Commercial Services & Supplies	2020	5	0	5	10
Transportation	2030	0	0	4	4
Automobiles & Components	2510	1	0	2	3
Consumer Durables & Apparel	2520	3	1	3	7
Consumer Services	2530	7	1	4	12
Media	2540	5	2	2	9
Retailing	2550	6	3	3	12
Food & Staples Retailing	3010	3	2	0	5
Food, Beverage & Tobacco	3020	7	2	9	18
Health Care Equipment & Services	3510	3	1	3	7
Pharmaceuticals & Biotechnology	3520	5	0	0	5
Banks	4010	0	3	2	5
Diversified Financials	4020	16	3	2	21
Insurance	4030	3	0	0	3
Real Estate	4040	5	2	1	8
Software & Services	4510	8	2	5	15
Technology Hardware & Equipment	4520	1	0	3	4
Telecommunication Services	5010	2	1	1	4
Utilities	5510	2	0	1	3
Total		111	24	68	203

Market Capitalisation (,000,000)					
	Mean:	814.26	5315.20	1626.32	1626.28
	Median:	124.53	310.76	31.70	87.33

The final sample constitutes 203 unscheduled earnings announcements, as described in Table 1. The sample is divided into announcements that may be classified as a profit upgrade, a profit downgrade (warning), or a neutral trading statement to permit analysis of the information content of each announcement. Defining conclusively an upgrade, neutral trading statement, or profit warning requires a pre-existing market expectation or management forecast. As identified in previous studies, numerical forecasts are often not provided; instead, phrases such as 'above market expectations' were common. Accordingly, we adopted an approach similar to that espoused by Collett (2004) to classify the statements:

'Whilst we could have confined ourselves to unambiguous statements containing a clear signal relative to prior expectation, it was decided that there were sufficient statements exuding optimism or pessimism, but without existing market expectations, to adopt a more judgemental approach.' (Collett, 2004 p.8)

The content of each announcement and the trading data for disclosing entities is obtained from the Bloomberg and DatAnalysis databases. Trading data to be examined includes both stock returns and trading volumes around the announcements. The study will also examine the effect of specific firm characteristics and the information content of the earnings announcement.

3.1 Measuring Valuation Effects of Information Leakage

Event-study procedures are used to calculate the abnormal pre-announcement returns over several windows ranging in length from one to thirty days. Measuring abnormal returns before the announcement is a means commonly adopted to identify changes in the market's consensus expectations generated by new information, by distinguishing significant firm-specific price movements from market wide fluctuations (Beaver, 1968, Collett, 2004).

The abnormal return in any given period is the adjusted market model residual, which is the difference between the stock's actual return and the predicted return based on the adjusted market model return for that period. Continuously compounded actual daily stock and market index return for each day are employed in the market model estimates and measures of the actual stock return.

The potentials for bias of the OLS β_i (beta) from the market model due to nonsynchronous data have been widely recognised, and are particularly relevant in Australian markets. This study adopts the Scholes & Williams (1977) adjusted beta to avoid the bias associated with the estimation of parameters using daily returns for securities with infrequent trading. The Scholes-Williams procedure involves the estimation of three simple OLS regressions using the T daily returns within the estimation period:

The Scholes Williams estimates for each individual company announcement are calculated using returns during a 200-day estimation period, ending 30 days before the event date [-230, -31].

$$R_{it} = \alpha_{i1} + \beta_{i1}(R_{m,t}) + \mu_{1t} \text{ for } t = 1, 2, \dots, T \quad (1)$$

$$R_{it} = \alpha_{i2} + \beta_{i2}(R_{m,t+1}) + \mu_{2t} \text{ for } t = 1, 2, \dots, T-1 \quad (2)$$

$$R_{it} = \alpha_{i3} + \beta_{i3}(R_{m,t-1}) + \mu_{3t} \text{ for } t = 2, 3, \dots, T \quad (3)$$

The Scholes-Williams adjusted beta is then formed as follows:

$$\beta_{iSW} = \frac{(\beta_{i1} + \beta_{i2} + \beta_{i3})}{(1 + 2\rho)} \quad (4)$$

Where:

$R_{m,t+1}$ is the return on market in period t+1;
 $R_{m,t-1}$ is the return on market in period t-1;
 β_{ik} is the estimated OLS coefficients for k = 1, 2, and 3;
 β_{iSW} is the adjusted Scholes-Williams beta;
 and

ρ is the estimated OLS coefficient of $R_{m,t}$ on $R_{m,t-1}$ (the correlation coefficient)⁵⁸;

The corresponding Scholes-Williams adjusted α (alpha) is formed as follows:

$$\alpha_{iSW} = \left(\frac{1}{T-2} \right) \left[\sum_{t=2}^{T-1} R_{it} - \left(\beta_{iSW} \sum_{t=2}^{T-1} R_{mt} \right) \right] \quad (5)$$

Where:

α_{iSW} is the Scholes-Williams adjusted alpha.

The adjusted alpha and beta of the market model are then used to calculate the predicted returns of each

observation during a 36-day event window [-30, 5]. The market model residual abnormal returns (AR) for each observation during the event window are calculated as follows:

$$AR_{it} = R_{it} - E(R_{it}) \quad (6)$$

Where:

AR_{it} is the abnormal return for firm i on day t; and

$E(R_{it})$ is the expected return of the stock based on 200-day Scholes-Williams adjusted betas for each firm i.

The observations are segregated into three sub-samples, consisting of profit upgrades, profit warnings, and neutral trading statements. Abnormal returns are averaged across N firms for each sub-sample, giving the average abnormal return (AAR) for each event day:

$$AAR_t = \frac{\sum AR_{it}}{N} \quad (7)$$

Where:

AAR_t is the average abnormal return on day t.

Additionally, for the analysis of valuation effects over multiple event days, the cumulative average abnormal return (CAAR) was calculated:

$$CAAR_w = \sum_{t=t_1}^{t=t_2} AAR_t \quad (8)$$

Where:

$CAAR_w$ is the cumulative average abnormal return over an event window W days in length; and

t_1 & t_2 are the first and last event dates, respectively, of event window W.

An estimate of the standard deviation was calculated using the 200-day estimation period returns [-230, -31], which excludes the influence of any increased in variance around the event date:

$$S_{AAR} = \sqrt{\left(\frac{1}{199} \right) \sum_{t=1}^{200} (AAR_t - \overline{AAR})^2} \quad (9)$$

Where:

S_{AAR} is the standard deviation of the average abnormal return; and

\overline{AAR} is the mean average abnormal return over the 200-day estimation period.

Using the standard deviation estimate, upper-tail, lower-tail and two-tailed tests were performed to gauge the significance of both AARs and CAARs. All hypotheses were accepted or rejected according to the t-statistic, formulated as follows:

$$t = \frac{AAR_t}{S_{AAR}} \text{ or } t = \frac{CAAR_w}{\sqrt{W} \cdot S_{AAR}} \quad (10)$$

One-tailed tests were applied to the AARs and CAARs of upgrades (downgrades), given the a priori

⁵⁸ $\rho = \frac{Cov(R_{mt}, R_{m,t-1})}{\sqrt{Var(R_{mt})} \sqrt{Var(R_{m,t-1})}}$

expectation that the leakage of positive (negative) information would lead to an increase (decrease) in price. Specifically, upgrades were tested against a null hypothesis of AARs and CAARs being less than or equal to zero, while the null hypothesis for downgrades stated AARs and CAARs greater than or equal to zero. Two-tailed tests were performed for the AARs and CARs of neutral trading statements, given the a priori expectation of nil information content. A null hypothesis of AARs and CAARs equal to zero was applied.

3.2 Measuring Volume Effects of Information Leakage

In contrast to price movements, which reflect a change in the market's consensus expectations, measuring trading volume activity before the announcement is a means used to identify heterogeneous expectations of individual investors (Bamber, 1986, Collett, 2004). Measuring unexpected trading volume requires a benchmark for expected trading volume. Collett (2004) identifies the percentage of a firm's outstanding shares trading on a given day, as opposed to normal daily volume, as an appropriate measure due to its ability to adjust for equity issues during the sample period. Daily volume for each day in the sample period is calculated as follows:

$$VOL_{it} = \frac{SHRTRD_{it}}{SHROUT_{it}} \times 100 \quad (11)$$

Where:

VOL_{it} is the volume for firm i on day t ;

$SHRTRD_{it}$ is the number of firm i 's shares traded on ASX on day t , and

$SHROUT_{it}$ is the number of firm i 's shares outstanding on day t .

Abnormal volume (AVOL) is then calculated as the residual of daily volume less mean daily volume during the estimation period, and is estimated for each observation during a 36-day event window [-30, 5]:

$$AVOL_{it} = VOL_{it} - \overline{VOL}_i \quad (12)$$

Where:

$AVOL_{it}$ is the abnormal volume for firm i on day t ; and

\overline{VOL}_i is the mean daily volume of firm i during the 200-day estimation period [-230, -31]

The observations are again segregated into three sub-samples, consisting of profit upgrades, profit warnings, and neutral trading statements. Abnormal volumes were averaged across N firms for each sub-sample, giving the average abnormal volume (AAVOL) for each event day:

$$AAVOL_t = \frac{\sum AVOL_{it}}{N} \quad (13)$$

Where:

$AAVOL_t$ is the average abnormal volume on day t .

For the analysis of volume effects over multiple event days, the cumulative average abnormal volume (CAAVOL) was calculated:

$$CAAVOL_w = \sum_{t=t_1}^{t=t_2} AAVOL_t \quad (14)$$

Where:

$CAAVOL_w$ is the cumulative average abnormal volume over an event window W days in length; and

t_1 & t_2 are the first and last event dates, respectively, of event window W .

An estimate of the standard deviation was calculated using the 200-day estimation period volumes [-230, -31], which excludes the influence of any increased in variance around the event date:

$$S_{AAVOL} = \sqrt{\left(\frac{1}{199}\right) \sum_{t=1}^{200} (AAVOL_t - \overline{AAVOL})^2} \quad (15)$$

Where:

S_{AAVOL} is the standard deviation of the average abnormal volume; and

\overline{AAVOL} is the mean average abnormal volume over the 200-day estimation period.

Using the standard deviation estimate, upper-tail tests were performed to gauge the significance of both AARs and CAARs. All hypotheses were accepted or rejected according to the t-statistic, formulated as follows:

$$t = \frac{AAVOL_t}{S_{AAVOL}} \quad \text{or} \quad t = \frac{CAAVOL_w}{\sqrt{W} \cdot S_{AAVOL}} \quad (16)$$

One-tailed tests were applied to the AARs and CAARs for all sub-samples, given the a priori expectation of information leakage leading to an increase in trading volume. Specifically, observations were tested against a null hypothesis of AARs and CAARs being less than or equal to zero.

3.3 Cross-Sectional Model of Firm Characteristics

A cross-sectional model, similar to that adopted by Jackson and Madura (2003), is used to investigate the association between the absolute magnitude of the CARs for profit upgrades and warnings and the discrete firm characteristics specific to the event observation. The primary cross-sectional model is constructed as follows:

$$CAR_t = \delta_0 + \delta_1 SIZE + \delta_2 GRWTH + \delta_3 DBTEQU + \delta_4 NEG + \mu_t \quad (17)$$

$$E(\mu_t) = 0 \quad (18)$$

Where:

CAR_t is the tth cumulative abnormal return observation;

SIZE is the natural logarithm of the firm's market capitalisation prior to the event date;

GRWTH is the natural log return of the firm's trading revenue between the current and prior periods;

DBTEQU is the firm's debt to equity ratio for the current period;

NEG is a dummy variable assigned a value of one for profit warnings, and zero otherwise;

δ_q , $q = 0, \dots, Q$, are the regression coefficients; and

μ_t is the zero mean error term.

The model is applied to valuation effects over one-, five-, ten-, twenty- and thirty-day periods prior to the announcement to determine whether the valuation effects are conditioned by firm size, growth, capital structure, or by the announcement's information content. A second enlarged cross-sectional model is developed, which stratifies firms making profit warnings into their relevant GICS industry group:

$$CAR_t = \delta_0 + \delta_1 SIZE + \delta_2 GRWTH + \delta_3 DBTEQU + \delta_j IND_j + \mu_t \quad (19)$$

$$E(\mu_t) = 0 \quad (20)$$

Where:

IND_j, $j = 1, \dots, 22$, is a dummy variable assigned a value of one for profit warnings issued by a firm in a given GICS industry group, and zero otherwise.

The enlarged model is again applied to valuation effects over one-, five-, ten-, twenty- and thirty-day periods prior to the announcement.

IV. Results And Discussion

4.1 Information Content of Unscheduled Earnings Announcements

The valuation and volume effects during the post-announcement period are examined to determine whether unscheduled earnings announcements contain private information that the market was previously unaware of. The study proposes that management of disclosing firms hold private, price sensitive information, and that unscheduled earnings announcements are made to fulfil obligations imposed by the ASX Listing Rules. Table 2 presents announcement day abnormal returns and abnormal trading volumes, as well as post-announcement CAAR and CAAVOL for profit upgrades, downgrades and neutral trading statements made by ASX-listed firms during the sample period.

Table 2, Panel A provides results for profit upgrades. On the actual announcement day, average abnormal returns are 5.63%, significant at the 1% level. For the five-day period following the

announcement, a CAAR of -1.86% significant at the 1% level is observed. Similarly, announcement day average abnormal volume of 0.83% and a five-day CAAVOL of 1.00%, both significant at the 1% level, are observed. The magnitude of the post-announcement abnormal return is very high and we can therefore safely conclude that the market has responded to new information on that day. Hence, we may also conclude, that on average, profit upgrade announcements contain significant information content. However, as also implied by Figure 1, significant negative returns following the announcement day indicate that the market on average overreacted to the news, resulting in a price correction three to four days after the information release.

Table 2, Panel B provides results for profit warnings. For the announcement day, average abnormal returns are -4.79%, significant at the 1% level. A CAAR of -4.06%, significant at the 1% level, is observed for the five-day period following the announcement. Further, announcement day average abnormal volume of 0.22% and a five-day CAAVOL of 0.88%, both significant at the 1% level, are observed. Again, a highly significant post-announcement abnormal return permits us to conclude that the market has responded to new information on the announcement day. Thus, we may conclude, that on average, profit warning announcements contain significant information content.

The net valuation effects of profit warnings appear to be greater in magnitude than for profit upgrades. While the announcement day abnormal return for profit warnings (-4.79%) is less than that of profit upgrades (5.63%), the market takes longer to compound information contained in profit warnings. As indicated by Figure 1, the average two-day valuation effect of profit warnings is -8.55%, also significant at the 1% level. Further, unlike profit upgrades there are no immediate price corrections that suggest the market initially overreacted to the information.

Table 2, Panel C provides valuation and volume effects for neutral trading statements. On the actual announcement day, average abnormal returns are 0.61%, and a CAAR of 0.01% is observed for the five-day period following the announcement. Neither result is significantly different from zero. Reported trading volume in the post-announcement period is also insignificant for neutral trading statements. When combined with Figure 1, we may deduce that while the market response to neutral trading statements is positive, as the findings lack significance, the conclusion that on average neutral trading statements contain no information content is warranted. This finding is consistent with the definition of a neutral trading statement adopted, being those announcements that merely reaffirm previously stated projections or forecasts. Hence, the market should have already priced the information at the time of its original release.

Table 2. Information Content of Unscheduled Earnings Announcements

This table presents the stock price and trading volume effects of unscheduled earnings announcements made by ASX-listed firms, over the sample period of January 1, 2004 to December 1, 2004. The event date (Day 0) is defined as the actual announcement release date through the ASX Company Announcements Platform. AAR (AAVOL) is the average abnormal return (volume) of the cross-sectionally combined observations for the relevant event day. CAAR (CAAVOL) is the cumulative average abnormal return (volume) over the selected multi-day interval. T-statistics are in parenthesis.

Panel A: Profit Upgrades				
Event Window	AAR(%) or CAAR(%)		AAVOL(%) or CAAVOL(%)	
[0]	5.629%		0.828%	
	(14.685)	***	(11.206)	***
[1, 5]	-1.861%		1.004%	
	(-2.171)	***	(6.076)	***
Panel B: Profit Warnings				
Event Window	AAR(%) or CAAR(%)		AAVOL(%) or CAAVOL(%)	
[0]	-4.793%		0.223%	
	(-10.711)	***	(4.779)	***
[1, 5]	-4.063%		0.881%	
	(-4.061)	***	(8.432)	***
Panel C: Neutral Trading Statements				
Event Window	AAR(%) or CAAR(%)		AAVOL(%) or CAAVOL(%)	
[0]	0.608%		-0.017%	
	(1.094)		(-0.179)	
[1, 5]	0.007%		-0.213%	
	(0.005)		(-1.024)	

Note: * denotes statistical significance at the 10% level
 ** denotes statistical significance at the 5% level
 *** denotes statistical significance at the 1% level

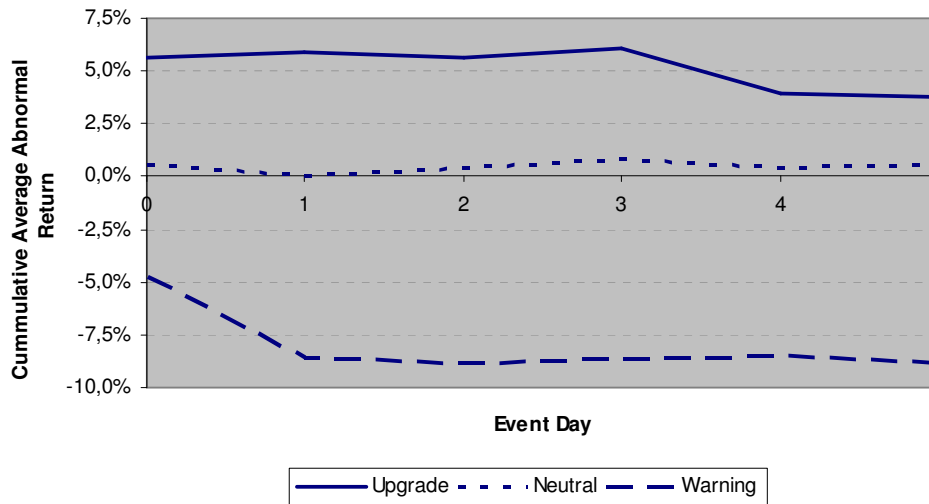


Figure 1. Post-Announcement CAAR for Unscheduled Earnings Announcements

This study is consistent with Collett (2004) who finds for UK firms making unscheduled trading statements, that the announcement day valuation effect of negative announcements (-15.56%) is greater in magnitude than for positive announcements (4.19%), both being significant at the 1% level. However, Collet reports that the UK market tends to overreact to negative announcements and, on average, firms experienced a positive price correction in the subsequent days trading. Collett also reports similar findings of insignificant valuation effects following the release of neutral trading statements (0.51%).

Helbok and Walker (2003) report that UK firms issuing profit warnings on average experience a -17.05% abnormal return on the announcement day. Further, Jackson and Madura (2003) found that US firms issuing profit warnings experience a -10.75% abnormal return on the announcement day. Taken together, this suggests that the Australian market is slower to complete its revaluation and less critical of firm's issuing profit warnings.

Overall, the findings are also consistent with Kim and Verrecchia (1991) who demonstrate that trading volume is proportional to the magnitude of the price change at the time of the announcement and to the degree of pre-disclosure informational asymmetry. This implies that, as observed, trading volume should increase at the time of unanticipated announcements, especially if shareholders have a diverse set of expectations.

4.2 Valuation Effects of Information Leakage

This study contends that markets are efficient in the semi-strong form. This implies that prices fully reflect all publicly available information, and hence that prices may be regarded as the consensus expectations of market participants. To the extent that information contained in unscheduled earnings announcements is leaked to analysts, media or major shareholders, the revaluation of a firm may begin before the official release of the price sensitive information through the Company Announcements Platform. Therefore, if firms were engaging in selective disclosure prior to the official announcement release, we would expect to see security prices, and hence returns, creep up (down) as informed traders revise their positions.

Profit Upgrades

Figure 2 demonstrates the path of the CAAR for profit upgrades during an event window extending thirty days before and five days after the official announcement date (Day 0). A brief examination identifies that the abnormal returns track a slight positive trend before returning to a relatively constant mean reversion leading up to the announcement date. The substantial spike at day 0 indicates the market's reaction immediately following the announcement, and the subsequent partial correction three to four days after the announcement.

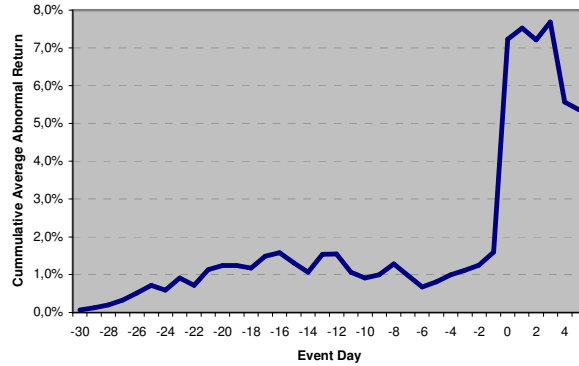


Figure 2. Profit Upgrade CAAR during Event Window

Table 3 presents the valuation effects around profit upgrade announcements made by ASX-listed firms during the sample period. None of the single day average abnormal returns prior to the announcement are significant and are not reported. A highly significant abnormal return is observed on the announcement day reflecting the release of new information to the market. This table 3 reports CAAR for profit upgrades over select multi-day intervals. All CAAR leading up to the announcement date are positive, but small, and none are significant. These findings indicate that on average, there are no significant changes in market consensus expectations prior to the release of unscheduled profit upgrades by ASX-listed firms during the sample period. This finding is consistent with Collett (2004) who reports that UK firms experience insignificant abnormal returns during a five-day window prior to the release of positive trading statements. Further, this study adds to the literature by examining an extended pre-announcement window, including the analysis of numerous multi-day intervals, to improve the likelihood of identifying the effects of information leakage.

Profit Warnings

Figure 3 demonstrates the path of the CAAR for profit warnings during an event window extending thirty days before and five days after the official announcement date (Day 0). An initial assessment suggests that the abnormal returns for profit warnings track a more substantial negative drift leading up to the announcement, before a brief correction prior to the announcement date. The downward spike from day 0 indicates a two-day revaluation period as the market adjusts to the new information. There does not appear to be evidence of an immediate positive correction to counter an initial overreaction by the market.

Table 3. Valuation Effects Around Profit Upgrades

This table presents the stock price effects surrounding profit upgrade announcements made by ASX-listed firms, over the sample period of January 1, 2004 to December 1, 2004. The event date (Day 0) is defined as the actual announcement release date through the ASX Company Announcements Platform. CAAR is the cumulative average abnormal return between day -30 and the relevant event day and over selected multi-day intervals. The t-statistics and p-values are based upon the null hypothesis that CAAR is less than or equal to 0. The alternative hypothesis states that CAAR is greater than zero.

Cumulative Average Abnormal Returns over Multiple Event Days			
Event Window	AAR(%) or CAAR(%)	t-statistic	Upper Tail p-Value
[-30, -1]	1.600%	0.7622	0.2235
[-20, -1]	0.471%	0.2750	0.3918
[-10, -1]	0.531%	0.4383	0.3308
[-5, -1]	0.926%	1.0807	0.1406
[0]	5.629%	14.6852	0.0000 ***
[1, 5]	-1.861%	-2.1714	0.9844

Note: * denotes statistical significance at the 10% level
 ** denotes statistical significance at the 5% level
 *** denotes statistical significance at the 1% level

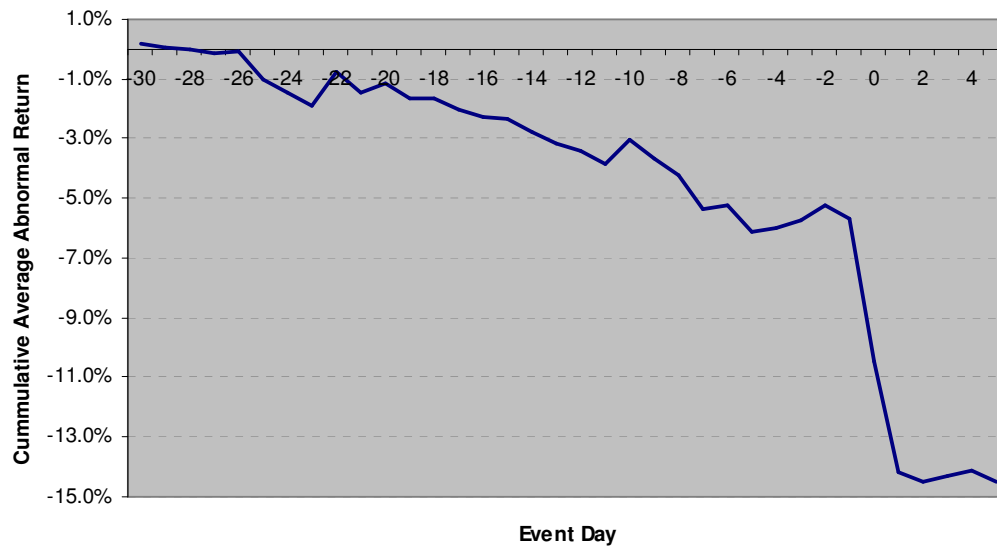
**Figure 3.** Profit Warning CAAR during Event Window

Table 4 presents the valuation effects around profit warnings made by ASX-listed firms during the sample period. Panel A reports the average abnormal return for the cross-sectionally combined observations for each day during the event window whereas Panel B reports CAAR for profit warnings over select multi-day intervals.

Unlike profit upgrades, the study finds some evidence of abnormal returns during the thirty-day pre-announcement period. Firstly, we observe CAARs of -5.66% for the window [-30, -1] and -4.22% for the window [-20, -1], both significant at the 5% level. Observed CAARs for the windows [-10, -1] and [-5, -

1] are also negative, but are insignificant. Furthermore, an inspection of individual daily average abnormal returns identifies, among other significant results, a cluster of days with significant negative valuation changes between one and two-weeks prior to the announcement date. Specifically, we observe average abnormal return of -1.10%, significant at the 1% level, for event day [-7], and average abnormal return of -0.90%, significant at the 5% level, for event day [-5]. We also observe returns of -0.63% and -0.61% for event days [-9] and [-8] respectively, both significant at the 10% level.

Table 4. Valuation Effects around Profit Warnings

This table presents the stock price effects surrounding profit warnings made by ASX-listed firms, over the sample period of January 1, 2004 to December 1, 2004. The event date (Day 0) is defined as the actual announcement release date through the ASX Company Announcements Platform. AAR is the average abnormal return of the cross-sectionally combined observations for the relevant event day. CAAR is the cumulative average abnormal return between day -30 and the relevant event day (Panel A), and over selected multi-day intervals (Panel B). AAR and S_{AAR} are the mean and standard deviation of average abnormal returns. The t -statistics and p -values are based upon the null hypothesis that AAR (CAAR) is greater than or equal to 0. The alternative hypothesis states that AAR (CAAR) is less than zero.

Panel A: Daily Average Abnormal Returns					
Event				Lower Tail	
Day	AAR(%)	t -statistic	p -Value		CAAR(%)
-30	0.1763%	0.3939	0.6530		0.1763%
-29	-0.1005%	-0.2246	0.4113		0.0758%
-28	-0.1066%	-0.2383	0.4060		-0.0308%
-27	-0.1134%	-0.2535	0.4001		-0.1443%
-26	0.0770%	0.1722	0.5683		-0.0672%
-25	-0.9632%	-2.1526	0.0163	**	-1.0304%
-24	-0.4041%	-0.9031	0.1838		-1.4345%
-23	-0.4667%	-1.0429	0.1491		-1.9012%
-22	1.1190%	2.5008	0.9934		-0.7822%
-21	-0.6604%	-1.4759	0.0708	*	-1.4426%
-20	0.2828%	0.6320	0.7359		-1.1598%
-19	-0.4973%	-1.1115	0.1338		-1.6571%
-18	-0.0115%	-0.0258	0.4897		-1.6687%
-17	-0.3251%	-0.7264	0.2342		-1.9937%
-16	-0.2540%	-0.5677	0.2854		-2.2477%
-15	-0.0922%	-0.2061	0.4185		-2.3400%
-14	-0.4393%	-0.9819	0.1637		-2.7793%
-13	-0.4055%	-0.9062	0.1830		-3.1848%
-12	-0.2070%	-0.4626	0.3221		-3.3918%
-11	-0.4537%	-1.0140	0.1559		-3.8455%
-10	0.8282%	1.8508	0.9672		-3.0173%
-9	-0.6284%	-1.4044	0.0809	*	-3.6458%
-8	-0.6041%	-1.3501	0.0893	*	-4.2499%
-7	-1.1029%	-2.4649	0.0073	***	-5.3528%
-6	0.1300%	0.2905	0.6141		-5.2228%
-5	-0.8984%	-2.0078	0.0230	**	-6.1212%
-4	0.1010%	0.2258	0.5892		-6.0202%
-3	0.2973%	0.6645	0.7464		-5.7228%
-2	0.4727%	1.0565	0.8540		-5.2501%
-1	-0.4113%	-0.9192	0.1796		-5.6614%
0	-4.7929%	-10.7114	0.0000	***	-10.4543%
1	-3.7548%	-8.3915	0.0000	***	-14.2092%
2	-0.2892%	-0.6463	0.2594		-14.4983%
3	0.1728%	0.3862	0.6501		-14.3256%
4	0.1955%	0.4368	0.6687		-14.1301%
5	-0.3872%	-0.8653	0.1939		-14.5173%
AAR	-0.0077%		S_{AAR} 0.0045		

Panel B: Cumulative Average Abnormal Returns over Multiple Event Days					
Event				Lower Tail	
Window	AAR(%) or CAAR(%)	t -statistic	p -Value		
[-30, -1]	-5.661%	-2.3100	0.0110	**	
[-20, -1]	-4.219%	-2.1083	0.0182	**	
[-10, -1]	-1.816%	-1.2833	0.1005		
[-5, -1]	-0.439%	-0.4384	0.3308		
[0]	-4.793%	-10.7114	0.0000	***	
[1, 5]	-4.063%	-4.0608	0.0000	***	

Note: * denotes statistical significance at the 10% level
 ** denotes statistical significance at the 5% level
 *** denotes statistical significance at the 1% level

Taken together, these results suggest there is significant informed trading activity, causing substantial valuation effects, prior to the release of profit warnings by ASX-listed firms during the sample period. These findings are unanticipated in light of the continuous disclosure obligations imposed on ASX-listed firms, and with reference to recent studies surrounding similar provisions in the United Kingdom and the United States of America.

Jackson and Madura (2003) report a highly significant CAAR of -3.53% for the window [-10, -2] preceding the release of profit warnings by US firms, their study was conducted prior to the introduction of legislative provisions prohibiting selective disclosure in the USA. While Mac (2002) reports an abatement of unfair trading in the USA subsequent to the introduction of Regulation FD, his study included both periodic and unscheduled earnings announcements thus jettisoning direct comparison to the findings of this study.

Conversely, Helbok and Walker (2003) examined the effects of changes to the London Stock Exchange Guidance Notes in 1994 and the imposition of a continuous disclosure obligation similar to that enacted in Australia. They report significant average abnormal returns during the two days immediately prior to the release of profit warnings for the pre-enactment period, but find informed trading and average abnormal returns are reduced to insignificant levels in the post-enactment period. The findings of Helbok and Walker are corroborated by Collet (2004) who reports no evidence of information leakage or significant average abnormal returns during the window [-5, -1] for UK firms making negative trading statements in the period 1995-2001.

Neutral Trading Statements

Following from the results reported in Table 2 and subsequent discussion figures and tables of results are not reported for neutral trading statements. The results can be summarised as follows: Most observations are highly insignificant, with the exception of event day [-1], which exhibits an average abnormal return of 0.93%, marginally significant at the 10% level. Notably, average abnormal returns observed on the announcement date and thereafter are conclusively insignificant. This study also finds that CAAR leading up to the announcement date vary in directional signal and are all decidedly insignificant. When considered with previous stated findings regarding the information content of neutral trading statements, it is difficult to conceive that valuation effects witnessed are the result of information leakage and informed trading. If neutral trading statements do not contain any information content that the market was previously unaware, then realistically management does not hold private information with which an informed trader could benefit in the pre-announcement period.

4.3 Volume Effects of Information Leakage

This study contends that markets are efficient in the semi-strong form, which entails that prices fully reflect all publicly available information. While valuation effects are examined to identify changes in the market's consensus expectations, irregular trading volume may reflect heterogeneous expectations of individual investors (Bamber, 1986, Collett, 2004). To the extent that information is leaked to individuals, a firm may experience abnormal levels of trading volume before the official release of the price sensitive information via the Company Announcements Platform. Therefore, if firms were engaging in selective disclosure prior to the official announcement release, we would expect to see a positive increase in trading volumes as informed traders revise their positions.

Profit Upgrades

Figure 4 presents daily average abnormal volume during an event window extending thirty days before and five days after the official announcement date (Day 0). The substantial increase in volume subsequent to the announcement is consistent with the market reaction to new information contained in profit upgrades. Prior to the announcement, daily trading volumes are generally below average volume levels observed during the estimation period.

Table 5 presents the volume effects around profit upgrades made by ASX-listed firms during the sample period. This table reports CAAVOL for profit warnings over select multi-day intervals. None of the single day abnormal volumes before the announcement are significant, and most observations are in fact below the adopted benchmark. Highly significant abnormal volume observed following the announcement is consistent with Kim and Verrecchia (1991), demonstrating that abnormal trading volumes are proportional to the degree of price change at the time of an unanticipated announcement. We observe that all CAAVOL prior to the announcement of profit upgrades are, on average, negative and highly insignificant. These findings indicate that there is no systematic evidence of individuals engaging in informed trading prior to the release of unscheduled profit upgrades by ASX-listed firms during the sample period. This finding is consistent with Collett (2004) who reports that UK firms experience insignificant abnormal volumes for each of the five days prior to the release of positive trading statements. Further, this study adds to the literature by examining an extended pre-announcement window, including the analysis of numerous multi-day intervals, to assist in identifying information leakage occurring before five days prior to announcements.

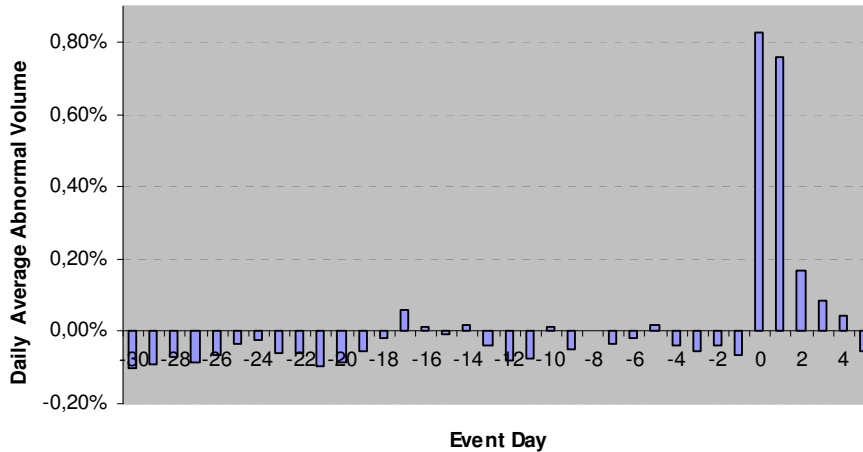


Figure 4. Profit Upgrade AAVOL during Event Window

Table 5. Volume Effects around Profit Upgrades

This table presents the trading volume effects surrounding profit upgrade announcements made by ASX-listed firms, over the sample period of January 1, 2004 to December 1, 2004. The event date (Day 0) is defined as the actual announcement release date through the ASX Company Announcements Platform. CAAVOL is the cumulative average abnormal volume between day -30 and the relevant event day and over selected multi-day intervals. The t-statistics and p-values are based upon the null hypothesis that CAAVOL is less than or equal to 0. The alternative hypothesis states that CAAVOL is greater than zero.

Cumulative Average Abnormal Volume over Multiple Event Days			
Event Window	AAVOL(%) or CAAVOL(%)	t-statistic	Upper Tail p-Value
[-30, -1]	-1.233%	-3.0456	0.9987
[-20, -1]	-0.548%	-1.6568	0.9503
[-10, -1]	-0.266%	-1.1393	0.8720
[-5, -1]	-0.178%	-1.0780	0.8588
[0, 0]	0.828%	11.2059	0.0000 ***
[1, 5]	1.004%	6.0756	0.0000 ***

Note: * denotes statistical significance at the 10% level
 ** denotes statistical significance at the 5% level
 *** denotes statistical significance at the 1% level

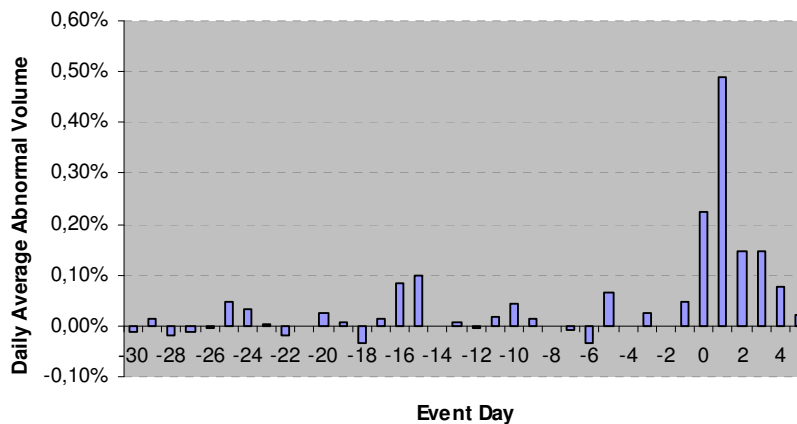


Figure 5. Profit Warning AAVOL during Event Window

Profit Warnings

Figure 5 portrays daily average abnormal volume during an event window extending thirty days before and five days after the official announcement date (Day 0). The substantial increase in volume subsequent to the announcement is consistent with the market reaction to new information contained in profit warnings. Abnormal trading volumes for the two days following the release of a profit warning (0.22% and 0.49% respectively) are considerably smaller than those observed for profit upgrades for the same period (0.83% and 0.76% respectively), again suggesting the market reacts to negative announcements with increased caution in comparison to positive announcements. Prior to the announcement, daily trading volumes are sporadic, though largely mean reverting, with strong evidence of increased trading levels for several days during the period.

Table 6 presents the volume effects around profit warnings made by ASX-listed firms during the sample period. Panel A reports the average abnormal volume for the cross-sectionally combined observations for each day during the event window. Consistent with Figure 6, we observe evidence of significant abnormal trading volume during the thirty-day pre-announcement period.

Average abnormal volume of 0.06%, significant at the 10% level, observed for day [-5] supports the previously reported average abnormal returns observed for the same day. Together these findings provide conclusive evidence of irregular trading activity around the period one to two weeks prior to official announcement release. Further, abnormal volumes of -0.10% and -0.08% are observed for event days [-15] and [-16] respectively, both significant at the 5% level. These event days, however, do not experience proportional abnormal revenues for the given sample. It is thereby proposed that witnessing isolated abnormal volumes, which do not occur concurrently with significant valuation effects, indicates heterogeneous expectations and informed trading by individual market participants.

Table 6, Panel B reports CAAVOL for profit warnings over select multi-day intervals. The findings generally support those expressed for single day observations prior to the announcement day. All CAAVOL are positive, and most are significant. Specifically, CAAVOL of 0.37% for the event window [-20, -1] supports the proposition of substantial irregular trading activity during the three-week period leading up the release of profit warnings by ASX-listed firms during the sample period. These findings are generally inconsistent with Collett (2004) who also examines trading volume prior to the release of negative trading statements by UK firms. Collett reports no evidence of significant abnormal trading volume for the five-day period prior to announcement.

Neutral Trading Statements

Previously stated findings of this study indicated that neutral trading statements on average contained no new information that the market was previously unaware of. This finding was consistent with the sub-sample constraint that neutral trading statements merely reaffirmed prior forecasts or projections to resolve heterogeneous expectations or incorrect market projections, rather than reveal new private information. Accordingly, the study anticipated insignificant trading volume and returns during the event window surrounding neutral trading statements.

A brief examination suggests increased trading activity early in the event window, which reverts to a period of consistent sub-normal trading levels leading up to the announcements date. Insignificant (negative) abnormal volume following day 0 indicates there was no increase in trading activity subsequent the announcement release. CAAVOL for all windows during the study period are negative and highly insignificant when testing for abnormally high trading activity. These findings are difficult, but considered broadly may allude to the marginal motivations of management to issue a neutral trading statement to the market which, as previously defined, does no more than to merely reaffirm previously stated forecasts or projections. It is hereby posited that management of firms issuing neutral trading statements, while not holding private information, are generally responding to uncertainty or doubt surrounding their current or future performance. Such uncertainty may indeed be the result of media or market rumours, and hence management provides additional voluntary disclosure to improve transparency and marketability, and further to prevent a potential false market in its securities.⁵⁹

4.4 Firm Characteristics

The initial findings of this study, as reported above, indicate there is sufficient evidence of information leakage and informed trading prior to unscheduled earnings announcements by ASX-listed firms to merit further analysis. The ensuing discussion presents the findings of this study's attempt to identify the variables, or firm characteristics, which influence firm disclosure practices and contribute to levels of information asymmetry during the pre-announcement period. Given the potential legal and reputation costs of breaching disclosure rules, it is proposed that unobservable motivations induce management to

⁵⁹ For example, the following extract is taken from a neutral trading statement issued by Flight Centre Ltd (FLT) on June 30, 2004:

'In light of recent press speculation at an important point in the current financial year, Flight Centre Ltd wishes to confirm its position on changes in industry commission arrangements and the likely year-end profit outcomes. ... The company also reaffirms its profit expectations for 2003-04, in response to unattributed press speculation.'

engage in selective disclosure. Prior studies have investigated the influence of firm size and information content in contributing to information leakage. As previously stated, this study extends the current literature by considering the additional variables of firm growth, capital structure and industry group.

The methodology used is similar to that adopted by Jackson and Madura (2003) in their study of profit warnings issued by US firms. The cross-sectional OLS model tests whether the absolute magnitude of CARs for profit upgrades and warnings, observed over five event windows, can be attributed to a set of exogenous variables. The final sample consists of 179 observations for each event window.⁶⁰ Table 7 summarises the independent variable descriptive statistics (Panel A) and independent variable correlation (Panel B). Panel B indicates that the independent variables exhibit weak correlation, and may be modelled in their original formulation without a need to correct for collinearity.

Table 8 presents the results for the primary OLS model, which includes the three independent variables representing firm size, growth and capital structure, and a dummy variable assigned a value of one for profit warnings, and zero otherwise. The dummy variable is used to stratify positive and negative unscheduled earnings announcement to determine whether a firm's propensity to pre-disclose price sensitive information is conditional upon the information content of the announcement.

The R squareds indicate that the primary model explains between 1.7% and 4.2% of the variation in absolute magnitude of CARs observed over the five event windows prior to the announcement day. A brief examination of the results from the primary model indicates the relationship between a firm's market capitalisation (SIZE) and the magnitude of CARs is inconsistent across the five event windows, and insignificant. Both the rate of growth in trading volume (GRWTH), and the level of debt financing employed by a firm (DBTEQU) appear to have a consistent inverse relationship with the magnitude of CAR, with initial evidence suggesting that the relationship may be significant during several event windows. Finally, the dummy variable assigned to profit warnings (NEG) suggests an inconsistent relationship, which may indicate that a propensity to pre-disclose negative price sensitive information decreases closer to the announcement date.

Overall, the primary model has minimal explanatory power for the magnitude of CARs observed during the pre-announcement period for profit upgrades and warnings. A second model is constructed which substitutes the dummy variable for profit warnings (NEG) with a series of dummy

variables that each represent profit warnings made by ASX-listed firms during the sample period according to the firm's industry group (IND_{*i*}).

Table 9 presents the results of the enlarged OLS model that again includes the three dependent variables representing firm size, growth and capital structure, and a series of dummy variables assigned a value of one for profit warnings issued by firms in a given GICS industry group, and zero otherwise. The dummy variable is used to determine whether a firm's propensity to pre-disclose negative price sensitive information is conditional upon their industry group.

The R squareds indicate that the enlarged model explains between 13.4% and 31.3% of the variation in absolute magnitude of CARs observed over the five event windows prior to the announcement day. This represents a considerable improvement of between 10.1% and 29.6% when compared with the parallel results obtained using the primary model.

The coefficients for SIZE vary in sign between windows and are close to zero. All coefficients for SIZE are insignificant. These findings are relatively consistent with Jackson and Madura (2003) who, although finding a significant positive relationship between firm-size and the magnitude of CARs one-day prior to announcement, found the relationship was inconsistent and not significant for extended windows prior to the release of profit warnings by US firms. The results of this study may be partially explained by limitations incidental to the data set. The sample mainly consists of smaller companies and therefore may lose some of the variation in information leakage associated with firm size.

The independent variable firm growth (GRWTH), defined by this study as a firm's increase in trading revenue, is previously untested in the supporting literature. Table 9 indicates that GRWTH has an inverse relationship with the dependent variable CAR across all event windows studied. Further, the coefficients for event windows [-10, -1], [-20, -1] and [-30, -1] are all marginally significant at the 10% confidence level. This relationship suggests that firm's experiencing growth in trading activities are less likely to incur significant valuation effects prior to the announcement date. Arguably, this relationship may be attributed to the fact that firms experiencing trading revenue growth are less likely to make profit warnings, and above this study reports no significant evidence of abnormal trading activity for profit upgrades made by ASX-listed firms during 2004. An inverse relationship between a firm's capital structure (DBTEQU), as indicated by its debt to equity ratio, and the magnitude of pre-announcement CAR are observed for all event windows studied. Further, the coefficient for DBTEQU is significant at the 10% confidence level for the event window [-10, -1], which corresponds with a period of significant abnormal trading activity prior to profit warnings issued by ASX-listed firms.

⁶⁰ Neutral trading statements are removed from the final sample as prior results indicated that on average they did not contain significant information content. Hence, valuation effects observed prior to the announcement day could not be attributed to information leakage, but rather other extraneous factors surrounding the event.

Table 6. Volume Effects around Profit Warnings

This table presents the trading volume effects surrounding profit warnings made by ASX-listed firms, over the sample period of January 1, 2004 to December 1, 2004. The event date (Day 0) is defined as the actual announcement release date through the ASX Company Announcements Platform. AAVOL is the average abnormal volume of the cross-sectionally combined observations for the relevant event day. CAAVOL is the cumulative average abnormal volume between day -30 and the relevant event day (Panel A), and over selected multi-day intervals (Panel B). AAVOL and S_{AAVOL} are the mean and standard deviation of average abnormal volumes. The t-statistics and p-values are based upon the null hypothesis that AAVOL (CAAVOL) is less than or equal to 0. The alternative hypothesis states that AAVOL (CAAVOL) is greater than zero.

Panel A: Daily Average Abnormal Volume				
Event			Upper Tail	
Day	AAVOL(%)	t-statistic	p-Value	CAAVOL(%)
-30	-0.0103%	-0.2210	0.5873	-0.0103%
-29	0.0158%	0.3380	0.3678	0.0055%
-28	-0.0180%	-0.3844	0.6495	-0.0125%
-27	-0.0106%	-0.2259	0.5893	-0.0231%
-26	-0.0049%	-0.1050	0.5418	-0.0280%
-25	0.0482%	1.0317	0.1517	0.0203%
-24	0.0333%	0.7118	0.2387	0.0535%
-23	0.0029%	0.0625	0.4751	0.0564%
-22	-0.0175%	-0.3747	0.6459	0.0389%
-21	-0.0021%	-0.0447	0.5178	0.0368%
-20	0.0262%	0.5612	0.2876	0.0631%
-19	0.0054%	0.1148	0.4544	0.0684%
-18	-0.0339%	-0.7259	0.7656	0.0345%
-17	0.0140%	0.2987	0.3827	0.0485%
-16	0.0838%	1.7924	0.0373	0.1322%
-15	0.1005%	2.1512	0.0163	0.2328%
-14	0.0007%	0.0147	0.4941	0.2334%
-13	0.0064%	0.1375	0.4454	0.2399%
-12	-0.0049%	-0.1058	0.5421	0.2349%
-11	0.0165%	0.3531	0.3622	0.2514%
-10	0.0425%	0.9092	0.1822	0.2939%
-9	0.0139%	0.2968	0.3835	0.3078%
-8	-0.0016%	-0.0337	0.5134	0.3062%
-7	-0.0067%	-0.1442	0.5573	0.2995%
-6	-0.0321%	-0.6863	0.7533	0.2674%
-5	0.0655%	1.4020	0.0812	0.3329%
-4	0.0004%	0.0081	0.4968	0.3333%
-3	0.0246%	0.5268	0.2995	0.3579%
-2	0.0005%	0.0103	0.4959	0.3584%
-1	0.0466%	0.9972	0.1599	0.4050%
0	0.2233%	4.7791	0.0000	0.6283%
1	0.4891%	10.4671	0.0000	1.1175%
2	0.1466%	3.1376	0.0010	1.2641%
3	0.1486%	3.1789	0.0009	1.4127%
4	0.0762%	1.6299	0.0524	1.4888%
5	0.0206%	0.4402	0.3301	1.5094%
AAVOL	0.1312%	S_{AAVOL}	0.0005	

Panel B: Cumulative Average Abnormal Volume over Multiple Event Days				
Event Window	AAVOL(%) or CAAVOL(%)	t-statistic	Upper Tail	
			p-Value	
[-30, -1]	0.405%	1.5823	0.0577	*
[-20, -1]	0.368%	1.7616	0.0399	**
[-10, -1]	0.154%	1.0392	0.1500	
[-5, -1]	0.138%	1.3168	0.0947	*
[0]	0.223%	4.7791	0.0000	***
[1, 5]	0.881%	8.4316	0.0000	***

Note: * denotes statistical significance at the 10% level
 ** denotes statistical significance at the 5% level
 *** denotes statistical significance at the 1% level

Table 7. Independent Variables Statistics

This table presents the independent variables descriptive statistics (Panel A) and correlation (Panel B). The independent variables are: *SIZE* - natural log of firm market capitalisation, *GRWTH* - natural log return of firm trading revenue, and *DBTEQU* - debt to equity ratio of firm.

Panel A: Descriptive Statistics			
	SIZE	GRWTH	DBTEQU
Minimum	0.47	-3.0330	-9.53
Maximum	10.75	6.9925	11.69
Range	10.28	10.0255	21.22
Mean	4.70	0.3174	0.53
Median	4.45	0.1563	0.30
Standard Deviation	1.920	1.053	1.521
Panel B: Correlation			
	SIZE	GRTH	DBTEQU
SIZE	1	0.080	0.132
GRTH	0.080	1	-0.013
DBTEQU	0.132	-0.013	1

Table 8. Results of Cross Sectional Analysis for Upgrades and Warnings

This table presents the regression tests of information content prior to profit adjustments (upgrades/downgrades) made by ASX-listed firms, over the sample period of January 1, 2004 to December 1, 2004. The dependant variable is the absolute CAR for each event window. The independent variables are: *SIZE* - natural log of firm market capitalisation, *GRWTH* - natural log return of firm trading revenue, *DBTEQU* - debt to equity ratio of firm, and *NEG* - dummy variable assigned a value of one for profit warnings and zero otherwise. T-statistics are in parentheses.

$$CAR_i = \delta_0 + \delta_1 SIZE + \delta_2 GRWTH + \delta_3 DBTEQU + \delta_4 NEG + \mu_i$$

	Event Window				
	[-1]	[-5, -1]	[-10, -1]	[-20, -1]	[-30, -1]
<i>C</i>	0.0095 (1.214)	0.0124 (0.942)	0.0138 (0.678)	0.0283 (0.896)	0.0548 (1.318)
<i>SIZE</i>	-0.0007 (-0.575)	0.0001 (0.062)	0.0001 (0.036)	-0.0023 (-0.404)	-0.0054 (-0.732)
<i>GRWTH</i>	-0.0018 (-0.945)	-0.0036 (-0.868)	-0.0125 (-1.979)	-0.0171 (-1.736)	-0.0212 (-1.637)
<i>DBTEQU</i>	-0.0026 (-1.889) *	-0.0042 (-1.472)	-0.0075 (-1.696) *	-0.0093 (-1.358)	-0.0054 (-0.596)
<i>NEG</i>	-0.0011 (-0.173)	-0.0062 (-0.667)	0.0098 (0.688)	0.0308 (1.393)	0.0311 (1.068)
<i>R</i> ²	0.017	0.018	0.042	0.031	0.033

Note: * denotes statistical significance at the 10% level
 ** denotes statistical significance at the 5% level
 *** denotes statistical significance at the 1% level

Table 9. Results of Cross Sectional Analysis by Industry

This table presents the regression tests of information content prior to profit adjustments (upgrades/downgrades) made by ASX-listed firms, over the sample period of January 1, 2004 to December 1, 2004. The dependant variable is the absolute CAR for each event window. The independent variables are: *SIZE* - natural log of firm market capitalisation, *GRWTH* - natural log return of firm trading revenue, *DBTEQU* - debt to equity ratio of firm, and *IND* – dummy variable assigned a value of one for profit warnings issued by firms in a given GICS industry group and zero otherwise. T-statistics are in parentheses.

$$CAR_i = \delta_0 + \delta_1 SIZE + \delta_2 GRWTH + \delta_3 DBTEQU + \delta_j IND_j + \mu_i$$

	Event Window				
	[-1]	[-5, -1]	[-10, -1]	[-20, -1]	[-30, -1]
<i>C</i>	0.0082 (0.990)	0.0068 (0.473)	0.0065 (0.297)	0.0202 (0.567)	0.0486 (1.039)
<i>SIZE</i>	-0.0007 (-0.440)	0.0011 (0.403)	0.0016 (0.398)	-0.0005 (-0.079)	-0.0044 (-0.515)
<i>GRWTH</i>	0.0000 (-0.011)	-0.0035 (-0.865)	-0.0121 (-1.960)	-0.0178 (-1.783)	-0.0240 (-1.826)
<i>DBTEQU</i>	-0.0020 (-1.178)	-0.0028 (-0.933)	-0.0081 (-1.779)	-0.0104 (-1.410)	-0.0026 (-0.264)
<i>IND:</i>					
1510	0.0043 (0.447)	-0.0097 (-0.574)	-0.0035 (-0.136)	-0.0235 (-0.562)	-0.0094 (-0.171)
2010	-0.0134 (-0.965)	-0.0176 (-0.727)	-0.0037 (-0.100)	0.0204 (0.340)	-0.0818 (-1.038)
2020	-0.0150 (-1.018)	-0.0153 (-0.598)	-0.0071 (-0.183)	0.0761 (1.205)	0.1538 (1.852)
2030	-0.0132 (-0.795)	-0.0089 (-0.306)	0.0403 (0.913)	0.0598 (0.836)	0.0160 (0.170)
2510	-0.0060 (-0.263)	0.0038 (0.096)	0.0171 (0.283)	-0.0382 (-0.390)	-0.0845 (-0.656)
2520	0.0293 (1.543)	0.0140 (0.424)	-0.0200 (-0.397)	0.0120 (0.148)	0.0493 (0.460)
2530	-0.0256 (-1.542)	-0.0786 (-2.720)	-0.0451 (-1.026)	-0.0311 (-0.436)	-0.0787 (-0.840)
2540	-0.0288 (-1.260)	0.0178 (0.446)	0.0193 (0.319)	0.0784 (0.799)	0.1309 (1.013)
2550	0.0486 (2.576)	-0.0262 (-0.798)	0.0023 (0.046)	0.0285 (0.351)	0.0766 (0.719)
3020	-0.0210 (-1.885)	-0.0210 (-1.082)	-0.0033 (-0.113)	0.0411 (0.860)	0.0309 (0.491)
3510	0.0467 (2.488)	0.0307 (0.938)	0.1249 (2.512)	0.2221 (2.754)	0.1756 (1.655)
4010	-0.0023 (-0.094)	-0.0262 (-0.619)	-0.0230 (-0.357)	0.0034 (0.033)	-0.0130 (-0.094)
4020	0.0049 (0.199)	0.0445 (1.038)	-0.0237 (-0.364)	-0.0299 (-0.282)	0.0853 (0.613)
4040	-0.0413 (-1.283)	-0.0376 (-0.669)	-0.2859 (-3.348)	-0.2759 (-1.992)	-0.2330 (-1.278)
4510	-0.0368 (-2.439)	0.0174 (0.664)	0.0484 (1.212)	0.0820 (1.266)	0.1894 (2.222)
4520	0.1054 (5.556)	0.1209 (3.656)	0.1188 (2.363)	0.0732 (0.898)	-0.0544 (-0.507)
5010	-0.0079 (-0.244)	-0.0152 (-0.269)	0.2008 (2.341)	0.1796 (1.291)	0.1471 (0.804)
5510	0.0095 (0.296)	-0.0197 (-0.351)	0.1026 (1.206)	0.1509 (1.093)	0.1909 (1.051)
<i>R</i> ²	0.313	0.170	0.212	0.146	0.134

Note: * denotes statistical significance at the 10% level
 ** denotes statistical significance at the 5% level
 *** denotes statistical significance at the 1% level

While this variable has not been considered in the supporting literature, this relationship would indicate that firms with increasing levels of debt finance in relation to equity, have decreasing propensity to pre-disclose price sensitive information prior to the official announcement release. This finding is especially noteworthy when considering firms issuing profit warnings, as a profit warning would generally indicate decreased revenue and a parallel reduced ability to service debt requirements.

Finally, a firm's propensity to pre-disclose information contained in profit warnings, as segmented by industry group, is considered. The results of the primary model were inconsistent with this study's previously reported findings, which suggested significant information leakage and informed trading activity prior to the release of profit warnings by ASX-listed firms. As the primary model indicated this relationship was not significant across all event windows, the extended model stratifies firms by their GICS industry group to enhance our ability to observe associations that are more marginal.

As indicated in Table 9, seven of the eighteen industries represented in the sample exhibit significant coefficients for at least one event window observed. The most substantial findings were for Health Care Equipment & Services (IND 3510), which reported highly significant coefficients for all windows except [-5, -1], and Technology Hardware & Equipment (IND 4520), which reported highly significant coefficients for window [-10, -1] and shorter time-periods. Other industries exhibiting significant coefficients were Commercial Services & Supplies (IND 2020), Consumer Durables and Apparel (IND 2520), Retailing (IND 2550), Software & Services (IND 4510) and Telecommunication Services (IND 5010). In contrast, the model constant term (C), which illustrates the intercept term for positive announcements, is highly insignificant across all event windows. This finding indicates that firms within particular industry groups have an apparent increased propensity to pre-disclose information contained in profit warnings prior to the official information release via the Company Announcements Platform.

V. Conclusion

This paper presents an empirical study of information content and trading behaviour around unscheduled earnings announcements – consisting of profit upgrades, profit warnings and neutral trading statements – made by ASX-listed companies during 2004. The contention is that informed trading impacts on the stock returns and trading volumes of listed entities, and hence abnormal returns or trading volumes observed prior to an announcement provide evidence of information leakage.

The signal conveyed in profit adjustments may be uncertain where the market has anticipated the information from other news disseminated about a

firm, an industry, or the general economy (Jackson and Madura, 2003). The valuation and volume effects during the post-announcement period are examined to determine whether management of disclosing firms hold private, price sensitive information, which the market was previously unaware. In an efficient market, a positive (negative) abnormal return on the announcement day implies that the market reacted to unanticipated good (bad) news that day (Mac, 2002). We observe highly significant levels of average abnormal revenue and proportional abnormal trading volume for both profit upgrades and profit warnings on the announcement day. Accordingly, we can confidently reject the null hypothesis of nil information content for profit upgrades and profit warnings. Further, we may conclude that these announcements contain private information, and are made to fulfil obligations imposed by the ASX Listing Rules.

These findings do not hold for neutral trading statements. We report that average abnormal revenue and trading volume on the announcement day of neutral trading statements were not significantly different from zero, and are unable to reject the null hypotheses of nil information content. It is posited that managers of firms making neutral trading statements do so to improve transparency and marketability, and further to prevent a false market in their securities. The study then examines the pre-announcement period to test for information asymmetry and informed trading prior to the official release of the earnings information through the ASX Company Announcements Platform. To the extent that information is leaked to the media, analysts or favoured shareholders, the market's revaluation of a firm may begin before the unscheduled earnings announcement is made. If there were such activity prior to the announcement, we would expect to see abnormal trading volumes and security prices, and hence returns, creep up (down) as informed traders revise their positions.

The examination of pre-announcement trading activity for profit upgrades indicates abnormal returns and abnormal volume at insignificant levels. These findings are consistent with Collett (2004) in a comparative study of UK firms, and we are unable to reject the null hypothesis that firms do not experience significant positive valuation effects prior to the release of profit upgrades.

The study does find evidence of information leakage and informed trading prior to the release of profit warnings by ASX-listed firms during the sample period. While these findings largely contradict the UK literature, which indicates continuous disclosure regulations effectively reduced information leakage and informed trading to insignificant levels (Collett, 2004, Helbok and Walker, 2003), they are consistent with the findings of Mac (2002) who reports comparatively less information leakage for positive surprises than negative surprises around US earnings announcements.

Specifically, we find evidence of significant abnormal volumes caused by heterogeneous investor expectations during the period 2-3 weeks prior to announcement, and significant abnormal revenues reflecting a shift in market consensus expectations during the period 1-2 weeks prior to announcement. The finding that individual trading activity precedes broader market revaluation is in line with Meulbroek (1992) who, in an empirical analysis of illegal insider trading, reports that both the amount traded by an informed trader and trade specific characteristics, such as trade size, direction, and frequency, signal the presence of an informed trader to the market.

To conclude, the study considers a range of firm characteristics that may potentially influence firm disclosure practices and contribute to the level of information asymmetry in the market during the pre-announcement period. Previous research has investigated the influence of firm size and information content in contributing to information leakage. This study further considers the variables of firm growth, capital structure and industry group.

The cross-sectional analysis indicates a decreasing propensity to selectively disclose information contained in unscheduled earnings announcements for those firms experiencing an increase in growth, and for those with high levels of debt financing. The relationship between firm size and the magnitude of pre-announcements CARs is inconclusive and negligible. While the firm-size differential information hypothesis contends that pre-announcement information production and dissemination is an increasing function of firm size (Atiase, 1980), our findings support an ancillary line of reasoning that unscheduled announcements occur randomly and hence cannot be predicted in the same way as anticipated periodic accounting reports (Ryan and Taffler, 2004).

Analyses of the announcement information content support the event study conclusions indicating insignificant levels of information leakage and informed trading prior to the release of profit upgrades. While the primary model produced inconclusive correlation between negative announcements and the magnitude of pre-announcement CARs, the enlarged model demonstrates that information leakage and informed trading prior to the release of profit warnings is highly clustered by industry group for the given sample.

References

1. Aitken, M. and Czernkowski, R. (1992) 'Information Leakage Prior to Takeover Announcements: The Effect of Media Reports' *Accounting and Business Research* 23, 3-20.
2. Ajinkya, B. and Gift, M. (1984) 'Corporate Managers Earnings Forecasts and Symmetrical Adjustments of Market Expectations' *Journal of Accounting Research* 22, 425-44.
3. ASIC Media Release 00/365, (2000) 'How do Australian Regulatory Standards on Disclosure by Listed Companies Compare to those in the United States?'
4. Australian Stock Exchange, (2003) 'Guidance Note 8: Continuous Disclosure'.
5. Atiase, R. (1980) 'Predisclosure Informational Asymmetries, Firm Capitalization, Earnings Reports, and Security Price Behavior around Earnings Announcements'.
6. Bamber, L. (1986) 'The Information Content of Annual Earnings Releases: A Trading Volume Approach' *Journal of Accounting Research* 24, 40-56.
7. Beaver, W. (1968) 'The Information Content of Annual Earnings Announcements' *Journal of Accounting Research* 6, 67-92.
8. Brailsford, T., Faff, R. and Oliver, B. (1997) *Research Design Issues in the Estimation of Beta*, McGraw-Hill, Sydney.
9. Brown, P., Taylor, S. and Walter, T. (1996a) 'The Effect of the Enhanced Disclosure Regime on the Efficiency of the Australian Share Market' SIRCA Working Paper.
10. Brown, P., Taylor, S. and Walter, T. (1996b) 'The Impact of the Enhanced Disclosure Regime on Corporate Disclosure Policies' SIRCA Working Paper.
11. Brown, P., Taylor, S. and Walter, T. (1996c) 'Enhanced Statutory Disclosure: Problems and Prospects' SIRCA Working Paper.
12. Brown, P., Taylor, S. and Walter, T. (1999) 'The Impact of Statutory Sanctions on the Level and Information Content of Voluntary Corporate Disclosures' *Abacus* 35, 138-62.
13. Collett, N. (2004) 'Reactions of the London Stock Exchange to Company Trading Statement Announcements' *Journal of Business Finance & Accounting* 31, 3-35.
14. Dedman, E. (2004) 'Discussion of Reactions of the London Stock Exchange to Company Trading Statement Announcements.' *Journal of Business Finance & Accounting* 31, 37-47.
15. Helbok, G. and Walker, M. (2003) 'On the Willingness of UK Companies to Issue Profit Warnings: Regulatory, Earnings Surprise Permanence, and Agency Cost Effects' Working Paper (SSRN).
16. Jackson, D. and Madura, J. (2003) 'Profit Warnings and Timing.' *Financial Review* 38, 497-513.
17. Kasznik, R. and Lev, B. (1995) 'To Warn or Not To Warn: Management Disclosures in the Face of an Earnings Surprise.' *Accounting Review* 70, 113-34.
18. Kim, O. and Verrecchia, R. (1991) 'Trading Volume and Price Reactions to Public Announcements' *Journal of Accounting Research* 29, 302-21.
19. Mac, C. (2002) 'The Effects of Regulation Fair Disclosure on Information Leakage' Working Paper (SSRN).
20. Meulbroek, L. (1992) 'An Empirical Analysis of Illegal Insider Trading' *The Journal of Finance* 47, 1661-99.
21. Organisation for Economic Cooperation and Development. (2003a) 'White Paper on Corporate Governance in Asia' 113.
22. Organisation for Economic Cooperation and Development (2003b) 'White Paper on Corporate Governance in South East Europe' 104.
23. Ryan, P. and Taffler, R. (2004) 'Do Firm-specific News Releases Drive Economically Significant Stock Returns and Trading Volumes' *Journal of Business Finance & Accounting* 31.
24. Scholes, M. and Williams, J. (1977) 'Estimating Betas from Non-synchronous Data', *Journal of Financial Economics*, Vol 5, 309-27.
25. Skinner, D. (1994) 'Why Firms Voluntarily Disclose Bad News' *Journal of Accounting Research* 32, 38-60.
26. Verrecchia, R. (2001) 'Essays on disclosure.' *Journal of Accounting & Economics* 32, 97-180.