The Market Reaction to Investment Transparency

JG Chen*
J.G.Chen@massey.ac.nz

David Smith*
D.J.Smith@massey.ac.nz

Carolyn Wirth*
C.G.Wirth@massey.ac.nz

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*The authors are Senior Lecturers at the School of Economics & Finance, Massey University.

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Abstract

This paper investigates the influence of investment transparency on stock returns and information asymmetry, and finds contrasting outcomes when a new capital expenditure announcements sample is divided according to the sign (positive/negative) of the announcement period cumulative abnormal returns (*CAR*). For the positive *CAR* subsample, transparency magnifies the positive reaction, but only when earnings volatility is at or below median levels. For the negative *CAR* subsample, transparency magnifies the negative reaction when earnings are volatile. This suggests that investment transparency increases announcement period returns as long as predictive earnings persistence is not hampered. We show that firms experiencing positive market reactions to their announcements have better real growth options and suffer less from information asymmetry. In contrast, firms that experience negative reactions to low transparency announcements have greater information asymmetry prior to the announcement, and experience the greatest reduction in information asymmetry following the announcement. Our evidence suggests that firms have a predisposition for transparency which is negatively associated with information asymmetry in the days surrounding the announcement.

Keywords: Investment transparency, capital expenditures, information asymmetry, management forecasts, information disclosure

1. Introduction

What are the economic consequences of firms' decisions regarding their level of capital expenditure project disclosures? The extensiveness of an investment disclosure is described as investment transparency, and has been studied recently with respect to motivations for disclosure (Cannizzaro & Weiner, 2015; Mohamed & Schwienbacher, 2016) and its impact on investment efficiency (Chen, Smith, & Wirth, 2017). But little is known about how investment transparency affects stock returns and information asymmetry. In contrast to the US and other jurisdictions, continuous disclosure requirements in Australia require listed firms to immediately disclose their decisions to undertake a price-sensitive capital expenditure. Project announcements can contain project cost information and earnings-related projections that may be helpful to investors in forecasting firm-wide earnings and assessing firm valuation. Yet, in practice, the level of transparency regarding the financial implications of the investment varies considerably. Further, while past research generally finds positive average stock market reactions to capital expenditure announcements (e.g. Brailsford & Yeoh, 2004; Chen, 2006), other literature suggests that there can be considerable asymmetry in market reactions to new information due to factors such as ambiguity aversion (Epstein & Schneider, 2008), disclosure credibility (Gu & Li, 2007) and firm overinvestment (Titman, Wei, & Xie, 2004). Although their focus is post-event performance, Frank and Sanati (2018) point out that the tendency for past studies to analyse full samples produces averages that fail to consider potential asymmetry of responses. Accordingly, the aim of this paper is to gain a better understanding of the influence of investment transparency on stock returns and information asymmetry while allowing for asymmetric market responses to capital expenditure announcements.

To achieve this, new capital expenditure announcements to the Australian Stock Exchange (ASX) by listed companies from 2008 to 2014 are analysed for their content regarding the cost and profitability of the project. The stock cumulative abnormal returns (*CAR*) around a three day [0,+2] announcement window are analysed and then classified according to the return being positive or negative. We find that the sign of the return is important in distinguishing factors influencing the market reaction to investment transparency.

On average, the results reveal positive stock market returns to capital expenditure announcements, but there are considerable differences between the positive and negative *CAR* subsamples with respect to the importance of investment transparency in explaining the market response. The market reacts positively to greater investment transparency only for the positive *CAR* subsample. For the negative *CAR* subsample, greater disclosure does not result in greater abnormal returns.

Further, our empirical evidence indicates that the benefits of investment transparency depend upon the level of historical earnings volatility. At low levels of volatility, greater disclosure is associated with higher *CAR*, more so for the positive *CAR* subsample. This finding is consistent with Dichev and Tang (2009) who show that stocks with low historical earnings volatility have high future earnings persistence, while stocks with high historical earnings volatility have little predictive persistence. Our results show that investment transparency is negatively associated with *CAR* when earnings volatility is high, suggesting that detailed forecasts may magnify negative returns when predictive earnings persistence is low.

Our results also reveal other asymmetric influences on project announcement abnormal returns. The relationship between historical earnings volatility and abnormal returns is positive for low transparency announcements in the positive *CAR* subsample, but is consistently negative for negative *CAR* subsample announcements. Real options theory suggests that the presence of valuable growth options creates a positive relationship between a firm's stock returns and historical return volatility (Grullon, Lyandres, & Zhdanov, 2012). Our results are consistent with this, showing evidence that firms in the positive *CAR* subsample have better growth options than those in the negative *CAR* subsample.

We also produce evidence that low transparency investment announcements reduce information asymmetry in the negative *CAR* subsample. These firms have relatively greater information asymmetry (as proxied by bid-ask spread) prior to the announcement and experience the greatest reduction in information asymmetry following the announcement. Nevertheless, the bid-ask spread continues to remain higher for those firms displaying low transparency. In contrast, firms making high transparency announcements receive more investor attention prior to the announcement, and experience much lower information asymmetry both before and after their announcements. For these firms, there is little scope for more informative disclosures to reduce information asymmetry any further. Rather, our evidence suggests that it is firms' pre-disposition to high disclosure that lowers information asymmetry as opposed to the level of transparency of the announcement.

The initial analysis uses event study methodology to evaluate the mean daily market-adjusted returns for 239 new project announcements to the ASX from January 2008 to 2014 over different short-term event windows. A positive event-window *CAR* is expected, indicating that on average, the announcements of new capital expenditures are valued positively by the market. In the second test, cross-sectional regression is employed to assess the impact of investment transparency on the three

day [0,+2] project announcement *CAR*. If investors value investment transparency, then the relationship with project announcement *CAR* is expected to be positive. These tests are applied to the entire sample as well as separately to each of the positive and negative *CAR* subsamples to consider the potential for asymmetric market responses. Additional tests focus upon the relationship between investment transparency and information asymmetry. Managers may be predisposed to a particular level of transparency – for example, firms facing high information asymmetry prior to a project announcement may be more forthcoming in their disclosures and reveal greater information in an attempt to reduce problems of information asymmetry (Coller & Yohn, 1997). So a probit model is used to assess the determinants of firms' choice of high transparency in the 20 days prior to the investment announcement [-20,-1]. The last cross-sectional regressions of the full, positive and negative *CAR* subsamples test the relationship between investment transparency and information asymmetry as proxied by bid-ask spread. It is expected that greater investment transparency should reduce information asymmetry.

This paper mainly relates to the literature on the stock market response to public disclosures. A vast literature considers the market implications of public disclosures, much of it in the context of financial reporting and earnings announcements (e.g. Core, 2001; Healy & Palepu, 2001; Verrecchia, 2001). Comparatively little is known about how investors react to investment transparency.

According to the investment opportunities theory, shareholder wealth maximisation is achieved when managers accept projects with positive net present values (Miller & Modigliani, 1961). Consistent with this, past research generally reveals positive stock price reactions to new capital expenditure announcements. For example, positive cumulative abnormal returns (*CAR*) have been documented to be between 0.92% and 1.65% over a five day window [-2,2] in Australia (Brailsford & Yeoh, 2004; Powell, Moltchanski, & Nagm, 2012) and 0.86% over a three day window [0,2] in New Zealand (Wirth, Chi, & Young, 2013) around physical capital expenditure announcements and 1.65% over a five day window [-2,2] around US venture capital investments (Mohamed & Schwienbacher, 2016). These results suggest that on average, investment announcements are considered by the markets to be good news that adds value to the firm. Nevertheless, a positive mean *CAR* indicates nothing about the variation in market responses resulting from the level of informativeness of the announcements.

Using a two-period rational expectations model, Kim and Verrecchia (1991) show that stock price changes are positively related to the precision of an announcement. Consistent with this, some evidence suggests that more transparency in the form of capital guidance issued by firms creates a

feedback effect that enhances investment efficiency and improves long-term stock returns (Bae, Biddle, & Park, 2017). Further, large increases in capital expenditure are associated with higher stock returns when firm-level disclosure transparency is high, while projects that destroy value are predominantly found in firms with lower disclosure ratings (Huang & Zhang, 2012). Yet the literature is silent on whether or not investment transparency at the project-level is helpful to investors in their pricing decisions.

Recent research has highlighted the need to separately consider positive and negative reactions to news that are interpreted as market overreactions and underreactions resulting in price reversals and drifts (Frank & Sanati, 2018). Asymmetric market reactions can arise due to informational factors, such as when information quality is poor (Epstein & Schneider, 2008) or disclosures lack credibility (Gu & Li, 2007; Ng, Tuna, & Verdi, 2013). With respect to capital expenditures, the stock market may react less favourably to news when firms have fewer growth options (Brailsford & Yeoh, 2004; Chung, Wright, & Charoenwong, 1998; Jones, Danbolt, & Hirst, 2004), undertake inefficient diversification (Chen & Chen, 2011) or pursue non-optimal investments (Titman et al., 2004). Nevertheless, most capital expenditure event studies fail to analyse positive and negative market reactions separately.

Information asymmetry can increase investors' required rates of return and firms' costs of capital (He, Lepone, & Leung, 2013), while reductions in information asymmetry can reduce stock mispricing, improve stock liquidity and increase stock marketability (Diamond & Verrecchia, 1991; Healy, Hutton, & Palepu, 1999). So the role of investment transparency in reducing information asymmetry is of considerable relevance to managers and researchers. Firms may choose to reveal more information in their disclosures in order to reduce problems of information asymmetry between managers and external investors and between various types of investors (e.g. informed versus uninformed, majority versus minority shareholders). Empirical evidence suggests that firms facing greater information asymmetry are more likely to publicly announce their venture capital investments (Mohamed & Schwienbacher, 2016) and management earnings forecasts (Coller & Yohn, 1997) because they benefit more from greater disclosure. We seek to shed further light on this by considering whether the firms in our sample of project announcements adjust the level of their transparency according to the degree of information asymmetry that they are experiencing.

Empirical research evidence tends to support the view that information asymmetry can be reduced by greater public disclosure. Earnings announcements, management earnings forecasts and analyst earnings forecasts have all been found to reduce bid-ask spreads in the days following the

announcements (Amiram, Owens, & Rozenbaum, 2016; Coller & Yohn, 1997). Also, more precise management earnings forecasts are associated with lower dispersion of analysts' forecasts (Baginski, Conrad, & Hassell, 1993), while improvements in firm-level disclosure ratings are related to growth in institutional ownership and analyst coverage, and reduced bid-ask spreads (Healy et al., 1999). Reduced information asymmetry has also been reported in relation to greater disclosure by German firms through the adoption of International Accounting Standards or US Generally Accepted Accounting Standards (Leuz & Verrecchia, 2000). Greater product-related disclosure at the time of an IPO has been shown to reduce information asymmetry in Biotech firms (Guo, Lev, & Zhou, 2004). Closer to our topic, capital expenditure information disaggregated into maintenance and growth expenditures assists investors to forecast future sales (Beyer, Herrmann, & Rapley, 2015). Whether or not investment transparency in project-level announcements similarly reduces information asymmetry has yet to be investigated.

This paper extends the capital expenditure announcements literature that investigates the economic impact of project announcements by incorporating the level of investment transparency. We find that investment transparency magnifies positive market reactions to investment announcements when earnings volatility is at or below median levels, and magnifies negative reactions when earnings are volatile. We show that the findings are consistent with an explanation that the market reacts positively to investment announcements when firms have better real growth options and suffer less from information asymmetry, and investment transparency increases announcement period returns as long as predictive earnings persistence is not hampered. We also find that the investment transparency is associated with lower information asymmetry, but it is a firm's pre-disposition to high disclosure (as opposed to the announcement's transparency) that lowers information asymmetry. Firms experiencing high information asymmetry prior to the project announcement enjoy the greatest reduction in information asymmetry following the announcement. So although the announcement may help to reduce investor pricing disagreements, it may also confirm to the market the exercise of real growth options without sufficient creation of new follow-on options. These insights can inform managers and standard-setters on the conditions under which transparency of capital expenditure announcements may be beneficial.

Importantly, our work extends Frank and Sanati 2018 and other literature suggesting that there can be considerable asymmetry in market reactions to new information, and underscores the importance of considering the sign of market responses. The level of historical earnings volatility is found to have a moderating and asymmetric influence on the relationship between investment transparency and

stock returns. For stocks with low historical earnings volatility, investment transparency is positively related to announcement period stock returns. In contrast, for firms with high historical earnings volatility, investment transparency reduces event window stock returns. This is consistent with Dichev and Tang (2009) who find that earnings in firms with high earnings volatility have little predictive persistence due to mean-reversion tendencies and transitory elements of profitability. Our findings suggest that investors may discount the content of detailed project forecasts when earnings volatility is high, based upon a presumption of low predictive earnings persistence.

This paper also contributes to the investment transparency literature by constructing a project-level transparency measure that incorporates the level of project cost information and earnings-related projections that are relevant to investors in their forecasts of future firm earnings and valuation. Our measure has the advantage of being relatively objective, and is effective in explaining project announcement returns. Past literature tend to measure investment transparency using either firm-wide disclosure ratings or researcher-coded announcement ratings (e.g. Cannizzaro & Weiner, 2015; Huang & Zhang, 2012) that are not necessarily indicative of a given project or that require subjective judgements.

The balance of the paper is organised as follows. Section 2 describes the sample and data. We present the impact of investment transparency on market returns in Section 3 and on information asymmetry in Section 4. Section 5 concludes the paper.

2. Sample and data

2.1 Sample

The sample for this study is compiled from new capital expenditure project announcements to the ASX made by listed companies between 2008 and 2014, as reported in the SIRCA database.[1] Since 1994, the ASX continuous disclosure rules have required listed entities to immediately disclose any price-sensitive information ("ASX Listing Rules Guidance Note 8," 2013). This includes transactions that will significantly change a company's nature or scale, such as major capital expenditure projects. Such announcements are to be stand-alone and not combined with other non-market-sensitive announcements. The mandatory nature of the announcements reduces potential concerns about

[1] This is based upon the same announcement data as Chen et al., (2017) who study corporate motivations for disclosure of new capital expenditure projects.

sample selection bias. Nevertheless, the extent of information disclosed in the project announcements differs considerably, ranging from brief qualitative plans to fuller projections including project cost and profitability forecasts. This provides an excellent opportunity to study the impact of investment transparency on stock returns and information asymmetry.

Following Chen et al., (2017), to be included in the sample, projects must be for the purchase, construction or upgrade of physical capital assets. Due to the different nature of their disclosure content, corporate share acquisitions, intangible asset purchases and projects by firms in the extractive sector (mining, drilling and exploration) are excluded. Announcements by firms in the banking industry are also excluded due to their different financial structure. Projects that cost more than five times the book value of total firm assets are excluded to avoid possible bias caused by unusually large investments. Also excluded are announcements potentially affected by price-sensitive confounding events within +/-2 working days around the project announcement. Announcements after the close of trading are treated as arising on the next business day. For an announcement to be included in the sample, firm financial statement data must be available for at least three years prior to the announcement. After the application of the above filters, the final sample yields 239 new project announcements by 142 companies from January 2008 to December 2014. Panel A of Table 1 shows the annual distribution of the announcements, while Panel B reveals the industry affiliations grouped by level 2 of the Datastream Global Industry Classifications. Announcements from the financial sector[2] make up the largest proportion of the sample at 28.5%, followed by industrials at 25.9%.

2.2. Data

To measure the impact of investment transparency on security returns and information asymmetry, we exploit the richness of the information in our project announcements and identify those components most relevant to security pricing. According to Hanley and Hoberg (2010), disclosures that are relevant to security valuation increase IPO pricing accuracy more than other types of informative content. Applying this to project announcements, we consider that information regarding the profitability and cost of a project is highly relevant for investors to assess the project's valuation implications. Hence, we count the total number of discrete project-related profitability forecasts and cost disclosures in each new project announcement. In our sample, the total number of profitability

[2] The financial sector is comprised of real estate investment trusts, real estate services and asset management companies, but excludes banking.

and cost disclosures per announcement ranges from 0 to 6, and the average ranges from a high of 3.00 in the oil and gas industry to a low of 1.63 in the technology industry. We then construct a dummy variable, *DQ* for each announcement, where 1 denotes high transparency and 0 represents low transparency. Transparency is classified as high when the total number of discrete quantitative measures regarding the profitability and cost of project *j* disclosed in a single, new capital expenditure announcement for firm *i* is greater than 1. Transparency is considered to be low when the total number of profitability and cost measures disclosed in a given announcement is less than or equal to 1. Three examples of project announcements and their *DQ* scores are presented in Appendix 1. Unlike measures that rely on firm-wide disclosure ratings or researcher ratings (e.g. Cannizzaro & Weiner, 2015; Huang & Zhang, 2012), *DQ* requires little subjective judgement of disclosure quality.

The main firm characteristics in the *CAR* [0,+2] analysis include earnings uncertainty *(SDEarn)*, leverage *(Debt)*, high cash flow *(CFD_H)*, low market to book ratio *(MBD_L)*, firm size *(LnAssets)* and project cost *(Cost)*, and are measured as follows:

- *SDEarn* is the standard deviation of earnings before extraordinary items divided by average total assets from t-5 to t-1[3].
- *Debt* is total debt divided by total assets.
- *CFD_H* is a high cash flow dummy = 1 when firm *i* *$CF_{i,t-1}$* is above the median *CF_{t-1}* for all firms, and zero otherwise, where *CF* is cash flow divided by total assets.
- *MBD_L* is a low market to book value dummy = 1 when firm *i* *$MB_{i,t-1}$* is below the median *MB_{t-1}* for all firms, and zero otherwise, where *MB* is the market value of equity plus total assets minus the book value of equity divided by total assets.
- *LnAssets* is the log of total assets.
- *Cost* is the dollar cost of project *j* divided by total assets.

To analyse the effect of information transparency on information asymmetry, the following firm-level trading variables and characteristics are considered:

- *BAS* is the closing percent quoted bid-ask spread for firm *i* on day *d*, measured as: $\frac{Closing\ ask_d - Closing\ bid_d}{Closing\ ask_d + Closing\ bid_d/2}$;
- *Price* is the closing stock price for firm *i* on day *d*.
- *Size* is the log of firm *i*'s average market value of equity for the 100 days ending 21 days before the announcement.

[3] For firms with fewer observations, we require at least three years of data.

- *Turnover* is the average daily share trading volume for firm *i* for the 100 days ending 21 days before the announcement.
- *Volume* is 100 multiplied by share trading volume for firm *i* on day *d* divided by the number of ordinary shares outstanding.
- *Volatility* is the standard deviation of firm *i*'s daily stock returns for the 100 days ending 21 days before the announcement.

All variable definitions are detailed in Appendix 2. Firm financial variables were obtained from the Worldscope database, project information (*DQ* and project dollar cost) was compiled from the SIRCA announcements database and trading data was from the Thomson Reuters Datastream database. Firm financial variables are at the beginning of the fiscal year, unless otherwise indicated. We winsorise at the 1st and 99th percentiles all financial and cost variables, and the trading variables *BAS* and *Volume.* On a few days when *BAS* is missing, we replace the missing value with the last observed closing *BAS*. On the few days when *Volume* is missing, we average the next observed daily volume over the total of the non-missing day plus the immediately preceding missing day(s). For robustness, we repeat our tests by eliminating those observations on the days with missing values.

Table 2 presents the descriptive statistics for the project announcements sample partitioned by our high/low transparency measure, *DQ*. The statistics relating to variables used in the *CAR* [0,+2] analysis and bid-ask spread analysis for the window [-20,+20] surrounding the project announcements are shown in Panels A and B, respectively. Our sample firms have a median book value of assets of $149.9 million, and announce price-sensitive projects with a median cost of 4.3% of the book value of assets. While Table 2 reveals few differences to distinguish high and low transparency firms in terms of the financial variables, the trading variables show considerable differences. Relative to low transparency firms, high transparency firms have higher median debt ratios, lower information asymmetry (*BAS* and *Volatility*), are larger (*Ln Assets* and *Size*) and have greater liquidity (*Turnover* and *Volume*).

3. Investment transparency and market returns

3.1 Event study

Event study methodology is used to test the stock market reaction to the sample of project announcements. Abnormal returns are calculated as mean daily market-adjusted returns that are

cumulated over various event windows. Results are analysed using the Boehmer, Musumeci and Poulsen (1991) standardised cross-sectional test. For robustness, non-parametric results for the generalised sign test for the proportion of positive returns and the Corrado (1989) rank test are also reported.

3.2 Market response to investment announcement

Table 3 presents event study results of market-adjusted returns surrounding new project announcements. The Boehmer, Musumeci and Poulsen (1991) standardised cross-sectional test indicates that the announcement day 0 mean return of 0.97% is significant at the 5% level. The cumulative market-adjusted returns of 1.16%, 1.26% and 2.15% for the event windows [-2,+2], [0,+2] and [-10,+20], respectively are also significant at either the 1% or 5% levels. These results are interpreted as a positive stock market reaction to new capital investment announcements, and are broadly consistent with prior comparable Australasian studies (Brailsford & Yeoh, 2004; Powell et al., 2012; Wirth et al., 2013). Nevertheless, 45% of *CAR* in the [0,+2] window have a negative sign, so our subsequent analyses divide the sample between positive and negative *CAR* to allow for potential asymmetry in market reactions (Frank & Sanati, 2018).

Figure 1 depicts *CAR* around project announcements for the window [-20,+20] for the full, positive *CAR* and negative *CAR* samples. Before the announcement, *CAR* are unable to be distinguished between the positive and negative news reactions. By day 2, the positive news subsample *CAR* is above 3%, while the negative news subsample *CAR* is below -3%. After the announcement, the relative level of *CAR* temporarily reverses somewhat for both subsamples, but by day 20 there is little evidence of sustained post-announcement drift or reversals. This suggests that within 2 days of the announcement, price reactions are relatively complete.

3.3 Does investment transparency explain the market response to investment announcements?

To provide evidence regarding the impact of investment transparency on the three day [0,+2] project announcement *CAR*s, the following cross-sectional regression is employed:

$$CAR_j = B_0 + B_1 DQ_{j,i,d} + B_2 SDEarn_{i,t-1} + B_3 Debt_{i,t-1} + B_4 CFD_{H,i,t-1} + B_5 MBD_{L,i,t-1} + B_6 (MBD_{L,i,t-1} \times CFD_{H,i,t-1}) + B_7 LnAssets_{i,t-1} + \sum_k \beta_k Industry\ dummies + \sum_t \beta_t Year\ dummies + \varepsilon_i \quad (1)$$

where $DQ_{j,i,d}$ (disclosure quantity) is a dummy variable to measure investment transparency with respect to a project *j* announcement by firm *i* on day *d*, where 1 denotes high transparency and 0 represents low transparency. We anticipate a positive relationship between event window *CAR*s and the transparency of the announcement. The remaining variables including industry and year dummies control for other influences on *CAR*. The rationale for explanatory variable inclusions is discussed below.

Information uncertainty surrounding an announcement can result from poor information quality and the volatility of a firm's fundamentals (Zhang, 2006). In our analysis, *DQ* proxies for information quality, representing the extensiveness of project cost and project earnings forecasts, while we use historical earnings volatility (*SDEarn*) to proxy for the volatility of a firm's fundamentals. Earnings volatility arises from economic shocks and accounting measurement issues, both of which can hamper the predictability of earnings (Dichev & Tang, 2009). Due to mean-reversion tendencies and transitory elements of extreme earnings, Dichev and Tang (2009) show that stocks with high historical earnings volatility have little predictive persistence, while stocks with low historical earnings volatility have high future earnings persistence. They also find that analysts fail to fully impound the implications of past earnings volatility on earnings predictability. Their findings could imply different outcomes for project announcements by firms with high historical earnings volatility. First, the earnings forecasts contained within announcements by such firms may be viewed sceptically by investors who discount the information based upon an assumption of low predictive earnings persistence. This suggests a negative relationship between high historical earnings volatility and project announcement returns. Second, investors may not fully incorporate the firm's past earnings volatility into their analyses, resulting in a weak relationship between historical earnings volatility and project announcement returns.

In contrast, real options theory implies alternative predictions for the relationship between historical earnings volatility and stock returns. Capital expenditures exercise growth options, but they can also give rise to new ones (Carlson, Fisher, & Giammarino, 2010). Applying real options theory, Grullon, Lyandres and Zhdanov (2012) find the presence of valuable growth options (proxied by firm age, research & development and growth) creates a positive relationship between a firm's stock returns and return volatility. This positive association is stronger before the exercise of real options, weaker after the exercise, and subsequently rises with the creation of new real options. Given the difficulties of measuring growth opportunities (Erickson & Whited, 2006), and given the relevance of earnings

and earnings forecasts to our announcements, we test the influence of earnings uncertainty and difficulty of earnings predictability using *SDEarn*.

A further possibility is the existence of an interaction between investment transparency and historical earnings volatility. For example, more extensive profit forecasts may be relatively less informative in the presence of high firm-level historical earnings volatility as there is more ambiguity regarding the implications and persistence of the new information. This suggests that the market sensitivity to greater investment transparency may be weaker (stronger) when firm-level volatility of fundamentals is high (low). The variation in profit-related disclosures associated with our project announcements sample provides an opportunity to shed more light on this. We consider this in subsequent analyses by adding an interaction between our investment transparency measure and historical earnings volatility, *DQ × SDEarn.* If event-window abnormal returns are less sensitive to the transparency of capital investments when firm-level historical earnings volatility is high, then a negative coefficient would be expected on the interaction term.

Following previous research, other variables that may influence announcement returns are leverage, cash flow, market to book ratio and firm size. Highly levered firms have higher default risk, while the commitment to pay debt may be a positive signal of the judicious use of cash, so *Debt* is measured as total debt divided by total assets (Chen, 2006). High free cash flow may result in agency costs if managers engage in wasteful spending (Jensen, 1986), so we control for this as follows. Cash flow is defined as operating income before depreciation and amortisation minus interest, taxes and dividends (Brailsford & Yeoh, 2004), then a dummy variable CFD_H equal to one is created when a firm's cash flow is above the median cash flow for all firms. Firms with greater future investment opportunities are able to invest in positive NPV investments, and on average stock prices react positively upon their announcement (Lang, Stulz, & Walkling, 1989). Conversely, investors may react negatively to project announcements when firms have poor investment opportunities (Brailsford & Yeoh, 2004), so to control for this, a dummy variable MBD_L equal to one is created when a firm's market to book ratio *(MB)* is below the median *MB* for all firms. *MB* is measured as the market value of equity plus total assets minus book value of equity divided by total assets. Firms with high cash flows and poor investment opportunities that announce new projects may be destroying shareholder wealth, resulting in a negative stock market reaction, so we follow Brailsford and Yeoh (2004) by interacting the variables $MBD_L \times CFD_H$. Large firms may enjoy higher returns from disclosing private investment information as they are more reliant on market liquidity (Diamond & Verrecchia, 1991). Alternatively, the greater attention that large firms receive from analysts and investors may lessen the surprise of

announcements (Atiase, 1985). Accordingly, we control for firm size using the log of total assets *(LnAssets)*.

To assess whether or not investment transparency influences the magnitude of stock returns, Table 4 presents ordinary least squares cross-sectional regressions of the *CAR* [0,+2] market adjusted returns. For model 1, the main variable of interest, *DQ,* and several control variables are included to explain *CAR* in the full sample. Surprisingly, there is no evidence that *DQ* influences announcement *CAR*. In fact, none of the explanatory variables in model 1 are statistically significant. In model 2, the interaction term *DQ × SDEarn* is added to model 1 to test whether or not the sensitivity of *CAR* to the transparency of capital investment announcements is weaker when earnings volatility is high, and stronger when earnings volatility is low. This may arise if earnings volatility affects investors' abilities to interpret the implications of the investment information, or if it influences investors' perceptions of the credibility of management's investment forecasts. Again, none of the explanatory variables explain project announcement *CAR*. Next, a very different picture emerges when model 2 is applied separately to the sample partitioned according to the sign of the announcement *CAR;* positive in model 3, and negative in model 4. For the positive *CAR* subsample, the coefficient *DQ* is significantly positive (1% level), indicating that greater (weaker) transparency is associated with higher (lower) announcement period returns. The significantly positive coefficient (1% level) on *SDEarn* may potentially be explained by real options theory, that suggests that the presence of valuable growth options creates a positive relationship between a firm's historical return volatility and stock returns (Grullon et al., 2012). Also of interest, the interaction *DQ* x *SDEarn* is significantly negative (1% level), supporting the notion that capital investment announcement transparency reduces event-window abnormal returns when firm-level historical earnings volatility is high. In contrast, when the announcement news is viewed negatively by the market as shown in model 4, there is no evidence of a direct relationship between *DQ* and *CAR*. Further, the sign on the *SDEarn* coefficient in model 4 changes to significantly negative (10% level), suggesting that historical earnings volatility negatively affects event window returns. As in model 3, the model 4 interaction *DQ* x *SDEarn* is significantly negative (5% level), suggesting that transparency magnifies negative stock market reactions when earnings volatility is high. If earnings persistence is low when historical earnings volatility is high (Dichev & Tang, 2009), then investors may react negatively if the ability to forecast the impact of the news announcements is impaired.

To assist the interpretation of the results in models 3 and 4, Table 5 calculates the impact of investment transparency on *CAR* at the 25th, 50th and 75th percentiles for *SDEarn*. As shown in Panel

A, for the positive *CAR* subsample, greater transparency increases *CAR* at low and median levels of *SDEarn,* but not at high levels. This appears consistent with the earnings persistence argument above. For the negative *CAR* subsample, Panel B shows that there is little change to stock returns as a direct result of transparency, and higher forecasting risk is associated with lower *CAR*, although the strength of this relationship is not strong. If the negative *CAR* subsample suffers from higher information asymmetry, then a lack of earnings persistence may add to the ambiguity problem. Behavioural explanations may also be plausible. Hribar and Yang (2016) find that overconfident managers are more likely to issue earnings forecasts, be over-optimistic in their forecasts, and issue more precise forecasts. Yet, if investors are able to detect management misrepresentation and filter out such bias in their stock pricing (Rogers & Stocken, 2005), then the absence of a market reaction to transparency may be logical, particularly when historical earnings volatility is high. Alternatively, a real options explanation may be that the negative *CAR* subsample firms may lack new growth options, in which case additional transparency may serve to confirm the exercise/depletion of such options.

Next, a series of robustness tests are performed in Table 6, making additions to models 3 and 4 from Table 4. We add project size (*Cost),* a proxy for information asymmetry (*Volatility)* and an alternative transparency proxy, *DCP*. The stock market reaction to project announcements may be stronger for relatively large projects, however, project *Cost* reduces our sample size. $Volatility_{i,n}$ is a proxy for uncertainty in a firm's information environment (Zhang, 2006) and is measured as the standard deviation of firm i's daily stock returns for the 100 days ending 21 days before the announcement. *DCP* is an alternative measure of transparency, being a dummy variable equal to one when both profitability forecasts and project cost are disclosed in project *j* announcement by firm *i*, and zero otherwise. Models 1, 2 and 3 update the positive *CAR* regressions to add the new variables each in turn. Neither *Cost* nor *Volatility* appear to add any additional explanatory power to the positive *CAR* regressions, and the coefficients for the main variables of interest, *DQ*, *SDEarn* and *DQ × SDEarn* retain the same signs and remain significant as in Table 4.[4] The change in the transparency measure from *DQ* to *DCP* also leaves the results materially unchanged. Models 4, 5 and 6 revise the regressions for the negative *CAR* subsample. Model 4 reveals that the coefficient for project *Cost* is significantly negative (1% level), the coefficient for *SDEarn* is no longer significant, and the coefficient on the *DQ × SDEarn* interaction remains significantly negative (5% level). Although the addition of *Cost* reduces our negative *CAR* sample size from 131 to 108, the coefficient on *DQ × SDEarn* remains relatively

[4]Some issues of multicollinearity arise with the introduction of *Cost* and *Volatility*. Both *Cost* and *Volatility* are positively correlated with *SDEarn* (0.64 and 0.52, respectively), and *Volatility* is negatively correlated with *LnAssets* (-0.72).

unchanged from Table 5. Adding *Volatility* in model 5 subsumes the direct impact of *SDEarn* on the negative *CAR* results, but again, the coefficient on *DQ × SDEarn* remains relatively unchanged from Table 5. Changing the transparency measure from *DQ* to *DCP* has no material impact on the results. Overall, the Table 6 results leave our previous observations materially unchanged.

Further concerns are possible endogeneity and selection issues arising from the binary *DQ* measure of transparency. Accordingly, we repeat the main Table 4 analyses using the Heckman (1979) two stage estimator (untabulated). The first stage estimates the probability of transparency levels using a probit regression with clustered robust standard errors. From this, an inverse Mill's ratio (hereafter, *Lambda*) is calculated and added as an explanatory variable to the model 2 to 4 analyses in Table 4. In all three models, the coefficient for *LAMBDA* is insignificant, suggesting that the endogeneity and selection issues are not biasing our Table 4 results. Given that this analysis reduces our sample size, we consider that our Table 4 results stand as originally reported.

3.4 The asymmetric market response to investment announcements

We suggested above several potential explanations for the asymmetric market responses to capital expenditure news, including ambiguity, credibility, earnings persistence and the possession of real options. Further, the market may react negatively when firm capital expenditures diverge from the market's perceptions of optimal spending (Luo, 2016). We do not assert that our list of possibilities is exhaustive, and do not rule out alternative reasons for potential differences between positive and negative *CAR* reactions.[5] Many of the above explanations are challenging to test, and the reasons for an asymmetric market response to capital expenditure announcements are not the main focus of our study. Rather, our focus is to explain the market reaction to investment transparency. Nevertheless, to add credibility to our conjectures regarding real options and information asymmetry, in Table 7 we present probit regressions of the likelihood of a positive value for project-announcement *CAR*. First, model 1 includes a dummy variable for low transparency announcements, DQ_{LOW} to assess whether low investment transparency is more likely in either of the *CAR* subsamples. Next, to test whether pre-announcement information asymmetry is different between the positive and negative *CAR* subsamples, a proxy for information asymmetry is added, being the daily closing percent quoted bid-ask spread (*BAS*) for firm *i* over the pre-event window [-20,-1]. Then, to test whether the presence of valuable growth options potentially explains our Table 4 findings of an asymmetric relationship

[5] Untabulated results reveal that the negative *CAR* announcements are spread across the entire sample period, and are not concentrated in any particular years.

between the earnings uncertainty variable and *CAR, Intangibles* is added as a proxy for the presence of real options, measured at the end of time *t* as the lagged value of intangible assets excluding goodwill divided by total assets. The equation 1 control variables are also added. The model 1 results reveal a significantly negative (1% level) coefficient on DQ_{LOW}, indicating that low transparency announcements are less (more) likely to be associated with positive (negative) market reactions. This is consistent with our Table 4 finding that for the positive *CAR* subsample, greater transparency is associated with higher *CAR*. Further, the significantly negative coefficient on *BAS* (1% level) indicates that greater information asymmetry is less (more) likely to be observed in the positive (negative) *CAR* subsample, while the coefficient for *Intangibles* is significantly positive (1% level), implying that announcements by firms with greater growth options are more (less) likely to receive a positive (negative) *CAR* reaction. Next, model 2 adds an interaction term $DQ_{LOW} \times BAS$. If firms with high pre-announcement bid-ask spread and low investment transparency are less (more) likely to be in the positive (negative) *CAR* subsample, then a negative coefficient would be expected on the $DQ_{LOW} \times BAS$ interaction. The coefficient is significantly negative (1% level), suggesting that the combination of high pre-announcement information asymmetry and low investment transparency are less likely to be observed in the positive *CAR* subsample, and more likely in the negative *CAR* subsample. Then, in models 3 and 4, pre-announcement *BAS* is replaced by an alternative information asymmetry proxy, *BASDev*, representing the variability of pre-announcement *BAS,* estimated as the absolute value of the deviation of the day *t BAS* for firm *i* around the mean day *t BAS* for all sample firms. The results are materially unchanged from those in models 1 and 2, and overall are consistent with the view that firms in the negative *CAR* subsample suffer from greater information asymmetry, while firms in the positive *CAR* subsample possess greater real options.

4. Investment transparency and information asymmetry

4.1 Bid-ask spread around project announcements

Figure 2 depicts the average of daily closing percent quoted bid-ask spread around the project announcements for the window [-20,+20] for the full, positive *CAR* and negative *CAR* samples. Prior to the announcement, daily *BAS* remains consistently higher for the negative *CAR* subsample than for the positive *CAR* subsample. After the announcement, the *BAS* of the two subsamples remain similar up until event day +6, after which the *BAS* of the positive *CAR* subsample remains consistently higher than that of the negative *CAR* subsample. To shed further light on the impact of investment transparency on the results, daily *BAS* for the [-20,+20] window around project announcements is partitioned by the level of transparency. Figure 3 reveals that for the positive *CAR* subsample, *BAS* is

generally higher for firms with lower investment transparency. After the announcement, *BAS* appears to diverge between the high and low transparency groups, but no consistent reduction of *BAS* is evident. For the negative *CAR* subsample, Figure 4 shows that the gap between *BAS* for the two levels of transparency is even wider, with some narrowing of the gap occurring after the announcement between days +8 to +15. The reduction of *BAS* is more pronounced in the low transparency group, gradually declining from a high of almost 11% prior to the announcement to a low of less than 6% after. Nevertheless, the *BAS* surrounding the announcement remains consistently higher for firms with lower investment transparency, implying that firms with higher *BAS* have more opportunity to reduce *BAS.*

4.2 Univariate analysis

To inform the analysis on the relationship between investment transparency and information asymmetry, Table 8 presents the mean and median *BAS* and *Volume* for 20 days before and 20 days after the project announcements (excluding the announcement day), the mean and median change in the variables (after-before), and the tests of significance of the changes. Results are shown separately for the full sample, high and low transparency groups, and the positive and negative *CAR* subsamples. Mean (median) *BAS* decreases after the announcement, driven by the low transparency and negative *CAR* subsamples. This suggests that the announcement may play a role in reducing information asymmetry in these groups. Comparing between transparency levels, mean (median) *BAS* is significantly lower in the high transparency group, both before the announcement and after. Comparing between *CAR* subsamples, the positive *CAR* subsample displays significantly lower mean (median) *BAS* in the 20 days before the announcement, and significantly higher mean *BAS* in the 20 days after the announcement. Accordingly, the univariate results are consistent with a view that those firms that suffer from greater information asymmetry prior to the project announcement (i.e. negative *CAR* firms and those with low transparency) benefit more from a reduction in information asymmetry after the announcement.

Firms with greater trading volume may be attracting more investor attention, which can have the positive benefit of reducing investor underreaction to announcements (Jiang & Zhu, 2017). Table 8 reveals no significant changes to *Volume* surrounding the project announcement. However, comparing between transparency levels, mean (median) *Volume* is significantly higher for the high transparency group, both before and after the announcement, suggesting that relative to low transparency firms, high transparency firms enjoy greater investor attention. Comparing between *CAR*

subsamples, there are no significant differences except in the 20 days before the announcement when median *Volume* is lower for the positive *CAR* subsample.

4.3 Are firms pre-disposed to a particular level of transparency?

To mitigate endogeneity concerns with respect to our tests of the effect of investment transparency on information asymmetry, the next tests consider whether firms have a pre-disposition to a certain level of transparency in their project announcements. One line of reasoning is that firms facing greater information asymmetry prior to a project announcement are likely to be more forthcoming in their disclosures in an effort to improve pricing accuracy and reduce information asymmetry (Coller & Yohn, 1997). An opposing view is that potential costs of legal sanctions for inaccuracy may deter managers from making public forecasts when forecast difficulty is greater (Waymire, 1985). Accordingly, the following probit regression model tests the determinants of firms' decisions for high transparency for project announcements:

$$DQ_{j,i,d} = B_0 + B_1\, BAS_{i,d} + B_2 Volatility_{i,n} + B_3 Price_{i,d} + B_4 Size_{i,n} + B_5 Turnover_{i,n} + B_6 Volume_{i,d} + \sum_k \beta_k Industry\ dummies + \sum_t \beta_t Year\ dummies + \varepsilon_{i,d}, \quad (2)$$

where the variable subscripts represent project *j,* firm *i* and day *d*, while *n* represents the 100 day period ending 21 days before the announcement. $BAS_{i,d}$ is a measure of information asymmetry, defined as the closing percentage quoted bid-ask spread for firm *i* on trading day *d* for pre-event days [-20, -1]. Fong, Holden and Trzcinka (2017) show that the daily version of bid-ask spread performs well relative to high-frequency measures. We also include pre-announcement stock return volatility ($Volatility_{i,n}$) as a proxy for uncertainty in a firm's information environment. If firms experiencing high information asymmetry prior to the announcement are predisposed to greater investment transparency, then the coefficients on *BAS* and *Volatility* are expected to be positive. The univariate analysis in Table 3 revealed that firm trading data is very different between high and low transparency firms. Accordingly, the control variables *Price, Size, Turnover* and *Volume* are added to the equation. *Price* is the closing stock price for firm *i* on day *d* for pre-event days [-20, -1]; *Size* is the log of firm *i*'s average market value of equity for the 100 days ending 21 days before the announcement; *Turnover* is the average daily share trading volume for firm *i* for the 100 days ending 21 days before the announcement; and *Volume* is measured as (share trading volume for firm *i* on day *d* divided by number of ordinary shares outstanding for firm *i* on day *d*) * 100 for pre-event days [-20, -1].

Model 1 in Table 9 shows the full sample results of the equation 2 analysis. The coefficients on *BAS* and *Volatility* are significantly negative (1% level), indicating that firms with low (high) information asymmetry prior to a project announcement are more (less) likely to disclose project profitability and cost information. Models 2 and 3 apply the same model to the positive and negative *CAR* subsamples, respectively. The signs on the two information asymmetry proxies remain negative as in the full sample, with the coefficient on *BAS* significant only in the negative *CAR* subsample, and the coefficient on *Volatility* significant in both positive and negative *CAR* subsamples. These results imply that greater pre-event information asymmetry is associated with a lower likelihood for investment transparency and are consistent with Kent and Ung (2003) who find that smaller Australian firms with more volatile earnings are less likely to disclose forward-looking earnings information. Also of interest are the significantly positive coefficients on the *Turnover* (full sample and negative CAR subsample) and *Volume* (positive CAR subsamples) variables, which suggest that firms receiving higher (lower) levels of investor attention prior to the announcement are more (less) likely to display high transparency in their announcements.

4.4 Does investment transparency reduce information asymmetry?

Prior evidence finds that capital expenditure information disaggregated into maintenance and growth expenditures assists investors' to forecast future sales (Beyer et al., 2015), and that greater product-related disclosure at the time of an IPO reduces information asymmetry in Biotech firms (Guo et al., 2004). Accordingly, our next investigations consider whether greater investment transparency is associated with lower post-announcement information asymmetry in our sample firms. Building upon Coller and Yohn (1997) and Amiram et al., (2016), the following cross-sectional model tests the relationship between information asymmetry and investment transparency:

$$BAS_{i,d} = B_0 + B_1 DQ_j + B_2 Volatility_{i,n} + B_3 Price_{i,d} + B_4 Size_{i,n} + B_5 Turnover_{i,n} + B_6 Volume_{i,d} + B_7 Lambda_{j,d} + \varepsilon_{i,d} \quad (3)$$

where the variable subscripts represent firm *i*, day *d*, and project *j,* while *n* represents the 100 day period ending 21 days before the announcement. The dependent variable *BAS* is initially defined as the closing percentage quoted bid-ask spread for firm *i* on trading day *d* for event days [+1,+20] following the announcement. If greater transparency reduces information asymmetry, then the coefficient on *DQ* should be negative. Following Amiram et al., (2016), the control variables *Volatility, Price, Size, Turnover* and *Volume* reflect order processing and inventory carrying costs that may impact bid-ask spreads. *Volatility, Size and Turnover* are as defined earlier. High return volatility can be

indicative of greater information asymmetry between investors (Guo et al., 2004), so the coefficient for *Volatility* is expected to be positive. *Price* and *Volume* are as previously defined, but are measured daily over the post-event period. To correct for potential endogeneity issues, Heckman's (1979) two-stage estimation model is used. The equation 2 probit model of the probability of high transparency is re-estimated over the [-20,+20] window. From these results, an inverse Mill's ratio (*Lambda*) is calculated and added as an explanatory variable to equation 3.

Model 1 in Table 10 presents the results for the first test of equation 3. For the full sample in the period after the announcements, transparency *(DQ)* is negatively associated with information asymmetry. However, the results from Table 9 infer that firms experiencing low information asymmetry are pre-disposed to greater transparency in their investment announcements. So the next question to answer is whether the level of investment transparency associated with a project announcement reduces firm-level information asymmetry relative to the period before the announcement.

To test this, the variables *BAS, Price* and *Volume* in equation 3 are redefined in models 2 to 7 of Table 10 to include daily measures for the entire pre- and post-announcement period [-20,+20], and a dummy variable, *After* is added to equation 3 to test whether information asymmetry is reduced after project announcements. *After* equals one for the post-announcement period [+1,+20] and zero for the pre-announcement period [-20,-1]. The *DQ* explanatory variable remains in the equation to test the impact of transparency on *BAS*. In models 3, 5 and 7, the interaction *DQ* × *After* is added to test whether the effect of greater transparency on *BAS* is different after the announcements.

Results are presented for the full sample (models 2 and 3), positive *CAR* subsample (models 4 and 5), and negative *CAR* subsample (models 6 and 7). In all samples, the coefficients on *DQ* are significantly negative (1% level), indicating that *BAS* is negatively associated with investment transparency. However, in models 2, 4, 5 and 6 the coefficients for *After* are insignificant, implying no change in *BAS* following the announcement. Nevertheless, models 3 (full sample) and 7 (negative subsample) both reveal significantly negative coefficients for *After* (5% level) and significantly positive coefficients for the *DQ* × *After* interaction. This suggests that information asymmetry declines following the announcement, and that the influence of the predisposition for transparency is stronger than the influence of the announcement transparency in reducing information asymmetry. This is driven more strongly by the negative CAR subsample.

To assist in the interpretation of the negative news sample results, Table 11 estimates the impact of transparency on firm *BAS* surrounding a project announcement [-20, +20]. Greater transparency is associated with lower *BAS*, both before and after the announcement. Yet, the decline in BAS following the announcement is modest and confined to the low transparency group. These results are consistent with the Table 9 findings that firms are pre-disposed to (greater) transparency by virtue of their (lower) pre-announcement information asymmetry. They also confirm our earlier suggestion that firms with greater pre-announcement information asymmetry have more opportunity to reduce it. In the case of negative news, there is more opportunity for the announcement to reduce the high pre-announcement information asymmetry experienced by firms in the low transparency group. In contrast, firms in the high transparency group suffer less from information asymmetry prior to the announcement, so there is less scope for investment transparency to reduce information asymmetry further.

5. Conclusion

This paper investigates the market reactions to the level of transparency regarding the cost and forecast profitability disclosed in new capital expenditure announcements. Extant literature considers average market reactions to capital expenditure announcements, but fails to consider whether the content of the announcement may be important. Using insights from disclosure literature, we test whether greater transparency positively impacts stock returns and reduces information asymmetry. We document that the sign of the market returns surrounding the announcements is important in distinguishing factors that influence the stock market reactions to investment transparency. When short-window announcement period returns are positive, greater transparency is associated with higher returns, but only when earnings volatility is at or below median levels. Conversely, when announcement period returns are negative, greater transparency magnifies the negative reaction when earnings volatility is greater. We further document that information asymmetry reduces in the twenty days following an announcement, but only for the negative *CAR* subsample. These firms suffer from greater information asymmetry prior to the announcement, and therefore have more opportunity to reduce information asymmetry. Yet, it is not apparent that greater project announcement transparency is driving the reduction in information asymmetry for these firms. Rather, our evidence suggests that it is firms' pre-disposition to high disclosure that lowers information asymmetry as opposed to the level of transparency of the announcement.

We also test whether information asymmetry is lower and intangible assets are greater in the positive *CAR* subsample. Our findings suggest that the market is more likely to react positively to investment announcements when firms suffer less from information asymmetry and have better real growth options. Taken together, our evidence implies that investment transparency increases announcement period returns as long as predictive earnings persistence is not hampered. While our small sample size leads us to caution against generalising our results to larger jurisdictions, the main insights to managers and standard-setters are the conditions under which investment transparency may be beneficial.

Appendix 1

Examples of new project announcements to the ASX by listed Australian companies

Date	Company	*DQ*	Excerpt from company announcement
20/2/2012	Bega Cheese Limited	0	Victorian Minister for Innovation, Services and Small Business Louise Asher today joined with Bega Cheese in Dubai to announce a significant **$7.8 million expansion** of the company's Tatura facility in northern Victoria, generating added investment and jobs in the dairy industry.
10/11/2009	Ardent Leisure Group	1	Ardent Leisure Group (ASX:AAD) (the Group) today advises that it has reached agreement to acquire the real estate and business of Q Deck - Australia's highest beachside observation tower on levels 77 and 78 of the Q1 building, in Surfers Paradise, Gold Coast for **$13.3 million**. Established in 2005, Q deck is forecast to generate **EBITDA of $2 million** in the 2010 financial year before the benefit of marketing and management synergies delivered by the Group.
8/2/2011	A.P. Eagers Limited	1	A.P. Eagers Limited (ASX:APE) has today agreed, through its recently acquired Adtrans business, to purchase the Eblen Motors dealerships in Adelaide. Completion is expected to take place on 1 March 2011. The **acquisition cost will be approximately $7 million**, including goodwill, net assets and the land and buildings of the main dealership property at 106-114 Brighton Road, Glenelg. . . . Eblen Motors **sells approximately 1,300 new and used vehicles each year** and has an **annual turnover of approximately $50 million**.

Examples of the *DQ* transparency measure are presented. *DQ* is a dummy variable equal to 1 for high transparency and 0 for low transparency. Transparency is classified as high when the total number of discrete quantitative measures (listed in **bold** in the examples above) regarding the profitability and cost of project *j* disclosed in a new capital expenditure announcement for firm *i* in year *t* is greater than 1. Transparency is considered to be low when the total number of profitability and cost measures disclosed is less than or equal to 1.

Source: SIRCA Australian Company Announcements

Appendix 2: Variable Definitions

CAR_j	Cumulative abnormal return, being the sum of abnormal returns for each project announcement *j*, across event windows (-10,-2), (-2,+2), [0,+2], (-10,+10), [-10,+20] and [-20,+20]. Abnormal returns are measured as market-adjusted returns.
$DQ_{j,i,d}$	Dummy variable = 1 for high transparency announcements; i.e. when the total number of quantitative measures regarding the profitability and cost of project *j* disclosed in a new project announcement for firm *i* on day *d* is greater than 1, and 0 otherwise (low transparency).
$SDEarn_{i,t-1}$	Standard deviation of firm i's earnings before extraordinary items from years t-5 to t-1 divided by average total assets from years t-5 to t-1.
$Debt_{i,t-1}$	Lagged value of (total debt/total assets).
CFD_H	Dummy variable = 1 when firm *i* $CF_{i,t-1}$ is high (i.e. above the median CF_{t-1} for all firms), where $CF_{i,t-1}$ is the lagged value of (cash flow/total assets), and cash flow = operating income before depreciation and amortisation – interest – taxes – ordinary and preference dividends.
MBD_L	Dummy variable = 1 when firm *i* $MB_{i,t-1}$ is low (i.e. below the median MB_{t-1} for all firms); where $MB_{i,t-1}$ is the lagged value of (market value of equity plus total assets – book value of equity)/total assets.
$MBD_L \times CFD_H$	Interaction term calculated as $MBD_L \times CFD_H$.
$LnAssets_{i,t-1}$	Log of lagged total assets.
$DQ \times SDEarn$	Interaction term calculated as $DQ_{j,i,t} \times SDEarn_{i,t-1}$
$Cost_{j,i}$	Dollar value of project *j* divided by lagged total assets.
$Volatility_{i,n}$	Standard deviation of firm *i*'s daily stock returns for the 100 days ending 21 days before the announcement.
$DCP_{j,i,t}$	Dummy variable = 1 when both cost and profitability information are disclosed in project *j* announcement by firm *i* in year *t*.
DQ_{LOW}	Dummy variable = 1 when investment transparency is low = (1 - $DQ_{j,i,d}$).
$BAS_{i,d}$	The closing percent quoted spread for firm *i* on day *d*, measured as: $\frac{Closing\ ask_d - Closing\ bid_d}{Closing\ ask_d + Closing\ bid_d/2}$
$DQ_{LOW} \times BAS$	Interaction term: DQ_{LOW} is a dummy variable =1 when investment transparency is low = (1 - $DQ_{j,i,d}$); *BAS* is closing percent quoted spread for firm *i* on day *d* over the pre-announcement window [-20,-1].

$BASDev_{i,d}$	The absolute value of the deviation of the day *t BAS* for firm *i* around the mean day *t BAS* for all sample firms.
$DQ_{LOW} \times BASDev$	Interaction term calculated as $DQ_{LOW} \times BASDev_{i,d}$.
$Intangibles_{i,t}$	The value of firm *i*'s intangible assets excluding goodwill, divided by total assets at time *t.*
$Price_{i,d}$	The closing stock price for firm *i* on day *d*.
$Volume_{i,d}$	100 *(share trading volume for firm *i* on day *d* divided by number of ordinary shares outstanding for firm *i* on day *d*).
$Size_{i,n}$	Log of firm *i*'s average market value of equity for the 100 days ending 21 days before the announcement.
$Turnover_{i,n}$	Average daily share trading volume for firm *i* for the 100 days ending 21 days before the announcement.
After	Dummy variable = 1 for the period (+1,+20), and 0 otherwise.

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Figure 1 Cumulative abnormal returns around project announcements

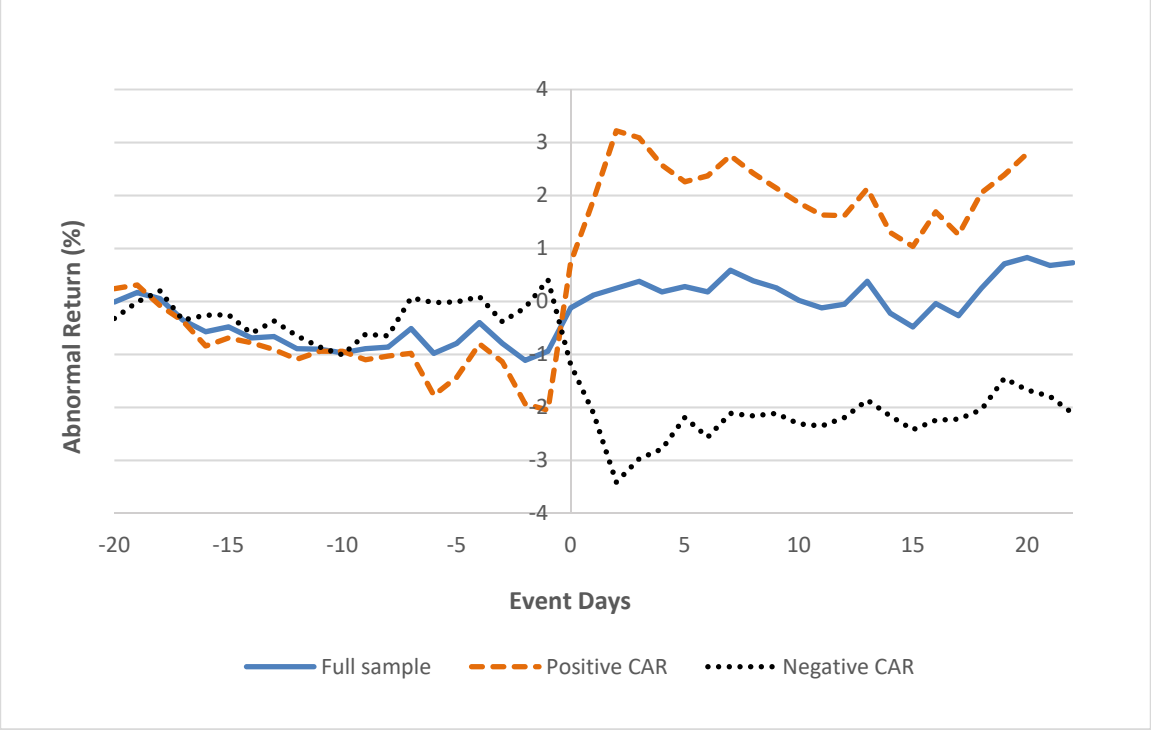
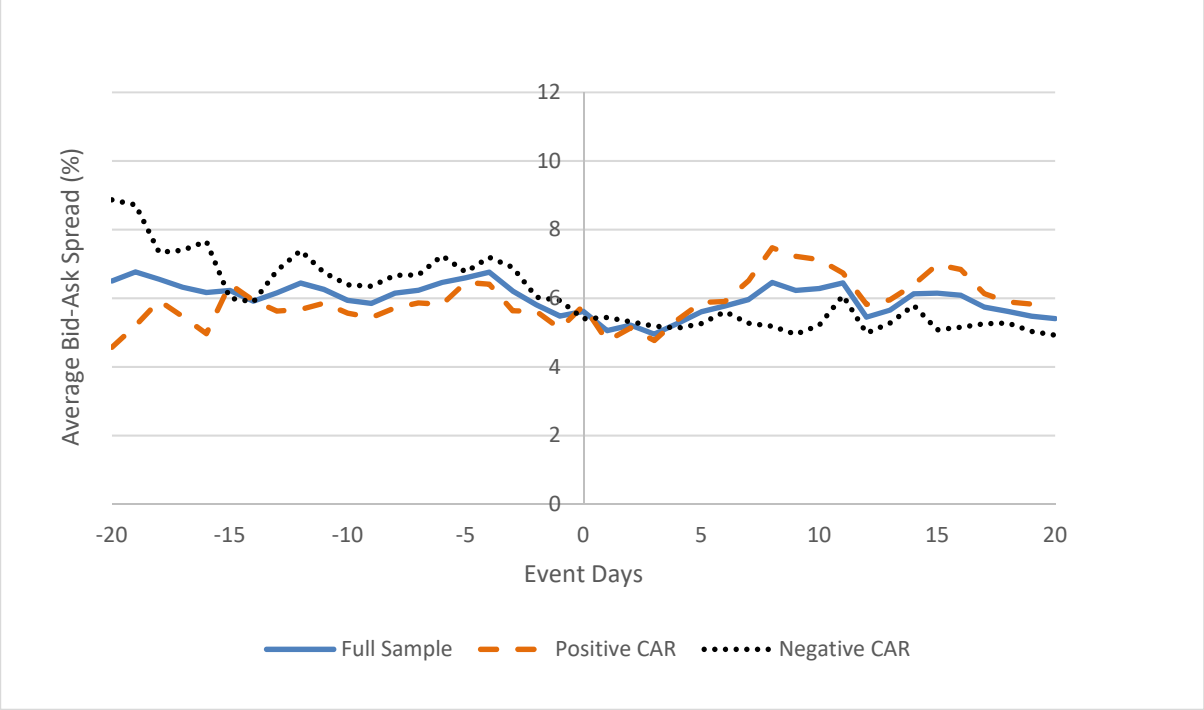
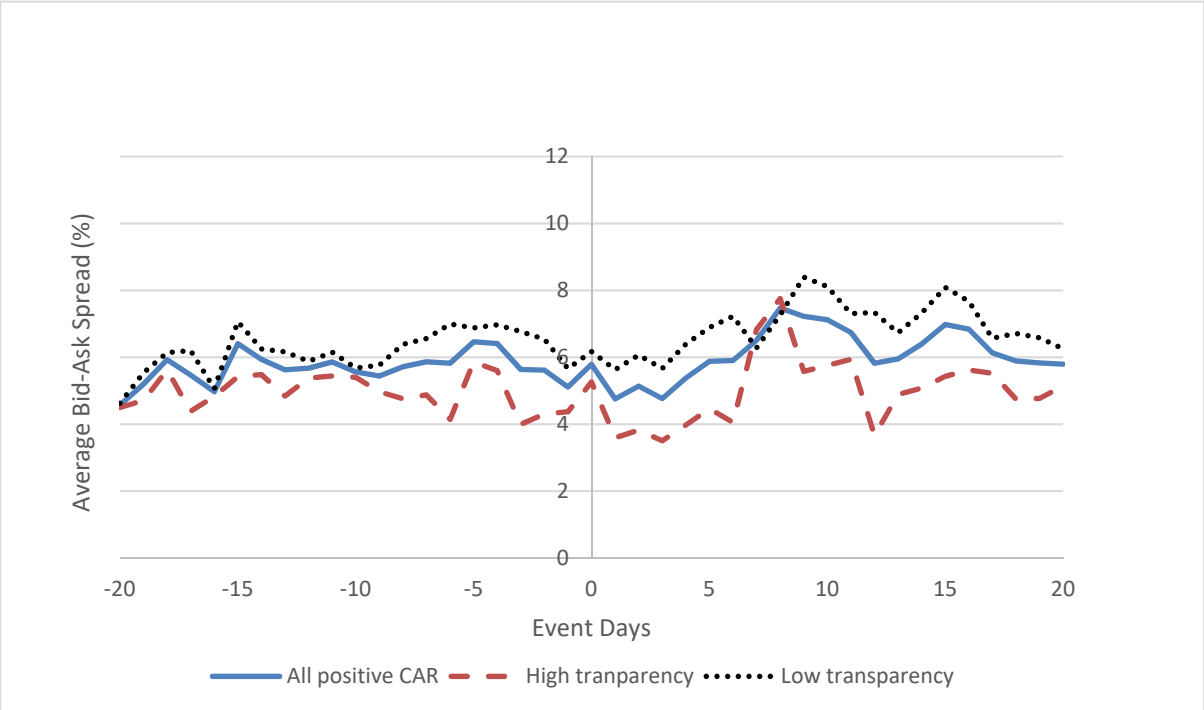


Figure 2 Bid-ask spread around project announcements by positive and negative *CAR*



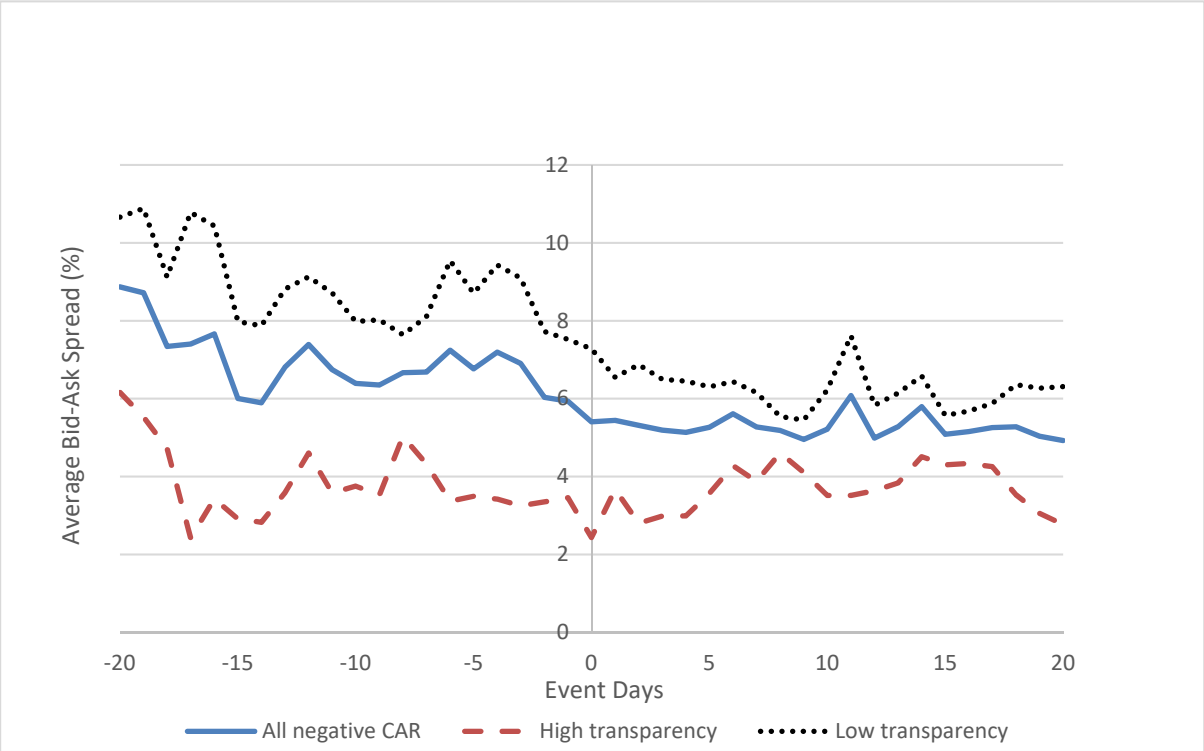
This figure displays information asymmetry (average bid-ask spread %) around project announcements for the full, positive *CAR* and negative *CAR* samples.

Figure 3 Bid-ask spread around project announcements by transparency level – positive *CAR* subsample



This figure displays information asymmetry (average bid-ask spread %) around positive *CAR* project announcements for all, high and low transparency levels.

Figure 4 Bid-ask spread around project announcements by transparency level – negative *CAR* subsample



This figure displays information asymmetry (average bid-ask spread %) around negative *CAR* project announcements for all, high and low transparency levels.

Table 1 Year and industry distribution of announcements

Panel A: Project announcements sample by year

	Total announcements	
Year	N	% of sample
2008	48	20.1
2009	25	10.5
2010	33	13.8
2011	45	18.8
2012	51	21.3
2013	14	5.9
2014	23	9.6
Total	239	100

Panel B: Project announcements sample by industry

		Total announcements	
Industry	Number of companies	N	% of sample
Basic materials	14	17	7.1
Consumer goods	21	31	13.0
Consumer services	13	28	11.7
Financial	32	68	28.5
Healthcare	10	15	6.3
Industrial	36	62	25.9
Oil and gas	3	4	1.7
Technology	4	4	1.7
Telecommunications	5	5	2.1
Utilities	4	5	2.1
Total	142	239	100.0

The sample distributions of project announcements by Australian listed companies from 2008 to 2014 are reported by year in Panel A and by industry in Panel B. Industry classification is from Industry Classification Level 2 of Datastream.

Table 2 Descriptive statistics partitioned by transparency level

Variable	Full Sample		High Transparency		Low Transparency			
	N	Mean (median)	N	Mean (median)	N	Mean (median)	Diff High-Low	T-Stat (Wilcox Z)
Panel A: *CAR* regression								
CAR02	239	0.013 (0.004)	97	0.013 (0.007)	142	0.013 (0.002)	0.000 (0.004)	0.01 (0.32)
SDEarn	239	0.119 (0.056)	97	0.128 (0.063)	142	0.113 (0.047)	0.015 (0.016)	0.55 (1.16)
Debt	239	0.281 (0.232)	97	0.279 (0.258)	142	0.282 (0.186)	-0.003 (0.072)	-0.05 (2.19)**
CFD_H	239	0.494 (0.000)	97	0.526 (0.000)	142	0.472 (0.000)	0.054 (0.000)	0.82 (0.82)
MBD_L	239	0.498 (0.000)	97	0.536 (0.000)	142	0.472 (0.000)	0.064 (0.000)	0.97 (0.97)
LnAssets	239	12.307 (11.918)	97	12.620 (13.461)	142	12.093 (11.550)	0.527 (1.912)	1.62 (1.77)*
Cost	184	0.468 (0.043)	93	0.409 (0.036)	91	0.528 (0.049)	-0.119 (-1.013)	-0.38 (1.08)
Panel B: Bid-ask spread regression								
BAS	9052	0.060 (0.023)	3620	0.044 (0.019)	5432	0.070 (0.026)	-0.026 (-0.007)	-11.12*** (-11.69)***
Price	9159	3.237 (1.650)	3631	2.515 (1.600)	5528	3.712 (1.673)	-1.197 (-0.073)	-10.49*** (-1.73)*
Size	8262	12.378 (12.538)	3244	12.798 (13.304)	5018	12.107 (11.761)	0.691 (1.543)	13.30*** (13.20)***
Turnover	8262	0.166 (0.087)	3244	0.181 (0.109)	5018	0.156 (0.081)	0.026 (0.029)	4.8*** (10.61)***
Volume	6676	0.166 (0.077)	2888	0.178 (0.089)	3788	0.157 (0.067)	0.021 (0.022)	3.76*** (6.04)***
Volatility	9159	0.028 (0.024)	3631	0.025 (0.021)	5528	0.030 (0.026)	-0.004 (-0.005)	-14.09*** -15.73***

This table reports the descriptive statistics for the sample of project announcements by level of transparency. Panel A presents the statistics relating to variables used in the *CAR* [0,+2] analysis for the sample of 239 project announcements, and Panel B presents the statistics relating to variables used in the bid-ask spread analysis for the window [-20,+20] surrounding the project announcements. High transparency denotes the group of new project announcements for which the total number of quantitative measures disclosed regarding the profitability and cost of project *j* is greater than 1, and low transparency denotes the group of new project announcements for which the total number of quantitative measures disclosed regarding the profitability and cost of project *j* is less than or equal to 1, *CAR02* is the cumulative abnormal (market-adjusted) return across event window [0,+2]; *SDEarn* is the standard deviation of earnings before extraordinary items divided by average total assets from t-5 to t-1; *Debt* is total debt divided by total assets; CFD_H is a high cash flow dummy = 1 when firm *i* $CF_{i,t-1}$ is above the median CF_{t-1} for all firms, and zero otherwise, where *CF* is cash flow divided by total assets; MBD_L is a low market to book value dummy = 1 when firm *i* $MB_{i,t-1}$ is below the median MB_{t-1} for all firms, and zero otherwise, where *MB* is the market value of equity plus total assets minus the book value of equity divided by total assets; *LnAssets* is the log of total assets; *Cost* is the dollar value of project *j* divided by total assets; *BAS* is the closing percent quoted bid-ask spread for firm *i* on day

d, measured as: $\frac{Closing\ ask_d - Closing\ bid_d}{Closing\ ask_d + Closing\ bid_d/2}$; *Price* is the closing stock price for firm *i* on day *d*; *Size* is the log of firm *i*'s average market value of equity for the 100 days ending 21 days before the announcement; *Turnover* is the average daily share trading volume for firm *i* for the 100 days ending 21 days before the announcement; *Volume* is 100 multiplied by share trading volume for firm *i* on day *d* divided by the number of ordinary shares outstanding; and *Volatility* is the standard deviation of firm *i*'s daily stock returns for the 100 days ending 21 days before the announcement. Unless otherwise indicated, all financial variables are at the beginning of the fiscal year. We winsorise at the 1st and 99th percentiles all financial and cost variables, and the trading variables *BAS and Volume*. Differences are evaluated using t-statistics (means) and Wilcoxon Z-statistics. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 3 Market-adjusted returns surrounding project announcements

Event days	Mean	Median	Propn. positive	Std.Csect. *Z*-statistic	Rank test statistic
-2	-0.35%	-0.14%	46%	-0.711	-1.498
-1	0.26%	0.03%	52%	1.082	0.727
0	0.97%	0.20%	55%*	2.418**	3.035***
1	0.14%	-0.01%	49%	0.363	0.186
2	0.14%	0.02%	53%	1.562	0.863
Event window					
[-10,-2]	-0.10%	-0.35%	48%	0.452	-0.356
[-2,+2]	1.16%	0.46%	54%	2.538**	1.482
[0,+2]	1.26%	0.40%	55%*	2.589***	2.358**
[-10,+10]	1.40%	0.94%	56%**	2.433**	1.302
[-10,+20]	2.15%	1.61%	57%**	3.225***	1.474
[-20,+20]	1.24%	1.89%	60%***	2.405**	0.643

This table reports the mean and median market-adjusted abnormal returns and market-adjusted cumulative abnormal returns (*CAR*) around 239 project announcements from 2008 to 2014. Statistical significance is evaluated using the Boehmer, Musumeci and Poulsen (1991) standardised cross-sectional test. The generalised sign test for the proportion of positive returns, and the Corrado (1989) rank test are also reported. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 4 Cross-sectional regression of project announcement returns [*CAR 0,+2*]

	(1) Full	(2) Full+Int	(3) *CAR*>0	(4) *CAR*<0
DQ	0. 005	0.019	0.041***	0.008
	(0.44)	(1.17)	(2.71)	(0.78)
SDEarn	0.100	0.167	0.425***	-0.051*
	(1.15)	(0.97)	(2.95)	(-1.72)
Debt	0.023	0.010	-0.061*	-0.027
	(1.07)	(0.29)	(1.86)	(-1.35)
CFD_H	-0.013	-0.008	0.022	-0.007
	(-0.67)	(-0.45)	(1.41)	(-0.40)
MBD_L	-0.002	0.002	0.016	-0.004
	(-0.23)	(0.14)	(1.35)	(-0.38)
$MBD_L \times CFD_H$	0.016	0.012	-0.023	0.019
	(0.84)	(0.62)	(-1.48)	(0.98)
LnAssets	0.002	0.002	0.000	0.004*
	(0.75)	(0.88)	(0.13)	(1.94)
DQ × SDEarn		-0.118	-0.406***	-0.137**
		(-0.67)	(-2.80)	(-2.28)
Intercept	-0.029	-0.043	-0.027	-0.069***
	(-0.90)	(-1.02)	(-0.55)	(-2.66)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.063	0.078	0.437	0.363
F	1.73	1.87	5.58	3.65
p>F	0.026	0.012	0.000	0.000
Obs	239	239	131	108

This table reports the results of OLS cross-sectional regressions of the cumulative abnormal returns for each project announcement. The dependent variable is the 3-day *CAR* [0,+2] estimated using market adjusted returns. See Appendix 2 for variable definitions. Coefficient estimates are reported with heteroscedasticity-robust *t*-statistics in parentheses below. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 5 The impact of transparency on *CAR* at different levels of earnings volatility

	Investment transparency score (*DQ*)		Change in *CAR*
SDEarn	*DQ* = 0	*DQ* = 1	(1) – (0)
Panel A: *CAR*>0			
Perc 25	0.010	0.042	0.032
Median	0.020	0.042	0.022
Perc 75	0.052	0.044	-0.008
Panel B: *CAR*<0			
Perc 25	-0.001	0.002	0.004
Median	-0.003	-0.004	-0.001
Perc 75	-0.006	-0.014	-0.008

This table estimates the influence of the level of transparency on project announcement *CAR* at the 25th, 50th and 75th percentiles for *SDEarn*.

Table 6 Cross-sectional regression of project announcement returns (*CAR 0,+2*) by positive and negative *CAR* – robustness checks

	CAR>0			*CAR*<0		
	(1)	(2)	(3)	(4)	(5)	(6)
	Cost	*Volatility*	*DCP*	*Cost*	*Volatility*	*DCP*
DQ	0.045***	0.041***		-0.006	0.004	
	(3.53)	(2.74)		(-0.56)	(0.42)	
SDEarn	0.580***	0.411***	0.276**	-0.071	-0.037	-0.050*
	(5.24)	(2.76)	(2.21)	(-1.06)	(-1.26)	(-1.70)
Debt	-0.100***	-0.058*	-0.022	-0.038**	-0.027	-0.026
	(-3.60)	(-1.70)	(-0.81)	(-2.27)	(-1.42)	(-1.24)
CFD_H	0.018	0.023	0.003	0.008	0.001	-0.008
	(1.07)	(1.53)	(0.20)	(0.30)	(0.05)	(-0.45)
MBD_L	0.007	0.014	0.014	0.005	-0.003	-0.003
	(0.66)	(1.22)	(1.22)	(0.53)	(-0.35)	(-0.32)
$MBD_L \times CFD_H$	-0.020	-0.025	-0.007	0.010	0.014	0.019
	(-1.10)	(-1.57)	(-0.44)	(0.36)	(0.75)	(1.03)
LnAssets	0.003	0.004	-0.000	0.002	0.000	0.004**
	(0.85)	(0.76)	(-0.12)	(1.20)	(0.12)	(2.09)
DQ × SDEarn	-0.539***	-0.401***		-0.125**	-0.150***	
	(-4.82)	(-2.73)		(-1.45)	(-2.53)	
Cost	-0.000			-0.007***		
	(-0.02)			(-2.55)		
Volatility		0.963			-0.958**	
		(1.03)			(-1.95)	
DCP			0.025**			0.002
			(2.00)			(0.18)
DCP × SDEarn			-0.289**			-0.125**
			(-2.28)			(-1.97)
Intercept	-0.061	-0.087	-0.001	-0.043*	-0.002	-0.072***
	(-1.18)	(-1.08)	(-0.01)	(-1.70)	(-0.07)	(-2.78)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.541	0.440	0.375	0.526	0.400	0.364
F	6.33	5.45	4.54	4.60	3.97	3.66
p>F	0.000	0.000	0.000	0.000	0.000	0.000
Obs	105	131	131	79	108	108

This table reports the robustness results from OLS cross-sectional regressions of the cumulative abnormal returns for each project announcement. The dependent variable is the 3-day *CAR* [0,+2] estimated using market adjusted returns. Model additions include project size (*Cost),* pre-event stock return volatility (*Volatility)* and an alternative transparency proxy, *DCP*. See Appendix 2 for variable definitions. Coefficient estimates are reported with heteroscedasticity-robust *t*-statistics in parentheses below. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 7 Probit model for the determinants of positive/negative project-level *CAR*

	(1) *BAS*	(2) $DQ_{LOW} \times BAS$	(3) *BASDev*	(4) $DQ_{LOW} \times BASDev$
DQ_{LOW}	-0.307***	-0.228***	-0.317***	-0.239***
	(0.04)	(0.05)	(0.04)	(0.06)
BAS	-0.876***	0.261		
	(0.23)	(0.45)		
$DQ_{LOW} \times BAS$		-1.512***		
		(0.51)		
BASDev			-0.373	0.707
			(0.26)	(0.57)
$DQ_{LOW} \times BASDev$				-1.414**
				(0.65)
Intangibles	2.591***	2.569***	2.566***	2.572***
	(0.24)	(0.24)	(0.24)	(0.24)
Debt	0.420***	0.460***	0.378***	0.408***
	(0.06)	(0.06)	(0.06)	(0.06)
CFD_H	0.160**	0.138**	0.180***	0.165**
	(0.06)	(0.07)	(0.06)	(0.07)
MBD_L	-0.111**	-0.111**	-0.122**	-0.124**
	(0.05)	(0.05)	(0.05)	(0.05)
$MBD_L \times CFD_H$	-0.077	-0.063	-0.099	-0.086
	(0.08)	(0.08)	(0.08)	(0.08)
LnAssets	-0.033***	-0.032***	-0.016	-0.018*
	(0.01)	(0.01)	(0.01)	(0.01)
Intercept	0.443***	0.389**	0.236	0.193
	(0.16)	(0.16)	(0.15)	(0.15)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Pseuo R^2	0.168	0.170	0.166	0.167
Likelihood ratio χ^2	813.67***	823.48***	801.17***	806.53***
Obs	4426	4426	4426	4426

This table reports the results of probit regressions of the determinants of the sign of the market reaction to capital expenditure announcements. The dependent variable is a dummy variable equal to one if the sign of the *CAR02* event window return is positive, and zero otherwise. The equations are estimated over the pre-announcement window [-20,-1]. DQ_{LOW} is a dummy variable denoting new project announcements with low transparency. $DQ_{LOW} \times BAS$ is an interaction between low transparency announcements and daily pre-announcement closing percent quoted bid-ask spread. *BASDev* is the absolute value of the deviation of the day *t BAS* for firm *i* around the mean day *t BAS* for all sample firms. $DQ_{LOW} \times BASDev$ is an interaction between low transparency announcements and *BASDev*. *Intangibles* is year *t* intangible assets excluding goodwill, divided by total assets. See Appendix 2 for variable definitions. Standard error estimates are reported in brackets. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 8 Comparison of trading variables before and after announcement

Variable	Sample	N	Mean (median) before	Mean (median) after	Mean (median) Change	t-stat (Wilcoxon Z) Paired obs.	t-stat (Wilcoxon Z) Between groups before	t-stat (Wilcoxon Z) Between groups after
BAS	Full	8920	0.062	0.058	-0.005	-2.12**		
			(0.023)	(0.022)	(-0.001)	(-1.68)*		
	High transp.	3534	0.045	0.045	-0.000	-0.02	-8.65***	-6.78***
			(0.019)	(0.018)	(-0.001)	(-0.05)	(-8.98)***	(-7.28)***
	Low transp.	5386	0.074	0.066	-0.008	-2.37**		
			(0.028)	(0.025)	(-0.002)	-2.08**		
	CAR>0	4920	0.057	0.061	0.005	1.37	-3.73***	2.69***
			(0.022)	(0.022)	(0.000)	(-0.40)	(-3.43)***	(0.06)
	CAR<0	4000	0.069	0.053	-0.017	-5.30***		
			(0.026)	(0.022)	(-0.004)	(-3.02)***		
Volume	Full	8920	0.163	0.169	0.006	1.11		
			(0.076)	(0.079)	(0.002)	(-0.95)		
	High transp.	3534	0.173	0.183	0.010	1.18	2.17**	3.08***
			(0.091)	(0.089)	(-0.002)	(-0.07)	(4.85)***	(3.68)***
	Low transp.	5386	0.156	0.159	0.003	0.39		
			(0.064)	(0.070)	(0.006)	(-1.19)		
	CAR>0	4920	0.163	0.168	0.005	0.67	0.11	-0.48
			(0.072)	(0.077)	(0.004)	(-1.10)	(-2.05)**	(-1.20)
	CAR<0	4000	0.164	0.172	0.008	0.92		
			(0.079)	(0.081)	(0.002)	(-0.24)		

This table reports, in the full, *CAR* and transparency samples, the number of observations, and the mean and median values of trading variables *BAS* and *Volume* for the 20 days before and the 20 days after the project announcement (excluding the announcement day). Paired observations reports the significance of mean (median) changes in trading values around the project announcements (after – before) for the full, positive *CAR*, negative *CAR*, high transparency and low transparency groups. Between groups reports the significance of differences in values between the two *CAR* subsamples (positive *CAR* - negative *CAR*) or the two transparency groups (high transparency – low transparency) for (i) the 20 days before and (ii) the 20 days after the project announcement. Significance is tested using two-sided t-tests (mean) and Wilcoxon two-sample Z tests. See Appendix 2 for variable definitions. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table 9 Probit model for the determinants of announcement transparency level

	(1) Full sample	(2) *CAR*>0	(3) *CAR*<0
BAS	-1.337***	-0.383	-7.868***
	(0.40)	(0.46)	(1.08)
Volatility	-15.264***	-11.201**	-47.027***
	(3.58)	(5.59)	(7.34)
Price	-0.057***	-0.049***	-0.079***
	(0.01)	(0.01)	(0.01)
Size	-0.004	-0.001	-0.151***
	(0.02)	(0.04)	(0.04)
Turnover	0.643***	0.071	2.308***
	(0.20)	(0.27)	(0.39)
Volume	0.139	0.384*	-0.443
	(0.16)	(0.20)	(0.29)
Intercept	0.113	0.545	1.706***
	(0.34)	(0.55)	(0.66)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Pseuo R^2	0.271	0.211	0.626
Likelihood ratio χ^2	727.47***	316.34***	861.45***
Obs	3220	1856	1364

This table reports the results of probit regressions of the determinants of firms' decisions for high transparency for project announcements. The dependent variable is a dummy variable equal to one if a firm's project forecast profitability and cost transparency is high, and zero if the profitability and cost transparency is low. Trading variables *BAS, Price* and *Volume* are daily observations over the pre-event window [-20,-1], while *Volatility, Size* and *Turnover* are averaged over 100 days ending 21 days before the announcement. See Appendix 2 for variable definitions. Standard error estimates are reported in brackets. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 10 Cross-sectional regression of project announcement bid-ask spread

	Full Sample			*CAR*>0		*CAR*<0	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	[+1,+20]	[-20,+20]	[-20,+20]	[-20,+20]	[-20,+20]	[-20,+20]	[-20,+20]
DQ	-0.009***	-0.011***	-0.013***	-0.008***	-0.009***	-0.022***	-0.024***
	(-7.50)	(-13.07)	(-10.84)	(-7.67)	(-6.04)	(-12.79)	(-12.03)
Volatility	-9.189***	-9.607***	-9.608***	-10.364***	-10.365***	-9.248***	-9.247***
	(-27.120)	(-38.54)	(-38.54)	(-38.17)	(-38.15)	(-20.45)	(-20.49)
Price	-0.035***	-0.036***	-0.036***	-0.037***	-0.037***	-0.036***	-0.036***
	(-30.320)	(-41.12)	(-41.13)	(-38.30)	(-38.28)	(-24.43)	(-24.47)
Size	-0.007***	-0.007***	-0.007***	-0.010***	-0.010***	-0.004***	-0.004***
	(-10.310)	(-15.42)	(-15.42)	(-13.91)	(-13.87)	(-6.97)	(-7.01)
Turnover	0.235***	0.248***	0.248***	0.252***	0.252***	0.239***	0.239***
	(26.450)	(36.60)	(36.61)	(35.14)	(35.12)	(19.41)	(19.45)
Volume	0.151***	0.159***	0.159***	0.191***	0.191***	0.135***	0.134***
	(22.310)	(30.59)	(30.58)	(28.59)	(28.59)	(18.45)	(18.47)
Lambda	0.861***	0.900***	0.900***	0.945***	0.945***	0.894***	0.894***
	(30.820)	(41.64)	(41.64)	(39.26)	(39.24)	(24.39)	(24.43)
After		-0.001	-0.002**	-0.001	-0.002	-0.001	-0.003**
		(-1.41)	(-2.22)	(-1.20)	(-1.52)	(-1.03)	(-2.03)
DQ × After			0.003**		0.002		0.005**
			(1.98)		(1.02)		(2.19)
Intercept	-0.540***	-0.565***	-0.564***	-0.565***	-0.565***	-0.609***	-0.608***
	(-23.830)	(-31.17)	(-31.16)	(-24.75)	(-24.74)	(-21.78)	(-21.78)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.786	0.807	0.807	0.850	0.850	0.808	0.808
F	545.31	1208.150	1158.45	989.130	946.170	518.560	497.760
p>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Obs	3265	6660	6660	3829	3829	2831	2831

For the full, positive *CAR* and negative *CAR* samples, this table reports the results of OLS cross-sectional regressions of the daily bid-ask spread around each project announcement. The dependent variable is the daily post-announcement bid-ask spread [+1,+20] in model 1, and the daily announcement window bid-ask spread [-20,+20] in models 2 to 7. See Appendix 2 for variable definitions. Coefficient estimates are reported with heteroscedasticity-robust *t*-statistics in parentheses below. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

Table 11 The impact of transparency on firm bid-ask spread when *CAR*<0

	Investment transparency score (*DQ*)		Change in *BAS*
	0 = low transparency	1= high transparency	(1) – (0)
After			
0 = before announcement	0.000	-0.024	-0.024
1 = after announcement	-0.003	-0.023	-0.020
Change in *BAS* (1) – (0)	-0.003	0.001	0.005

This table estimates the impact of the level of transparency on firm *BAS* surrounding a project announcement.