

Commitments Test Entities on the ASX – Quarterly Reporting and Seasoned Equity Offers[∞]

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This study examines the Commitments Test Entities (CTEs) listed on the Australian Securities Exchange (ASX) based on agreements with the ASX to spend the funds raised under an Initial Public Offering (IPO). ASX requires CTEs to submit quarterly cash flow reports for at least two years, of which at least four consecutive quarters must record positive cash flows from operations. We examine the duration of quarterly reporting by CTEs and the likelihood of a CTE continuing to submit quarterly reports beyond the second anniversary of listing. We also examine the likelihood of a CTE IPO having a seasoned equity offer. CTEs are significantly more likely to have an SEO within three years of listing than concurrent non-CTE IPOs. Majority of sample CTEs continue to submit quarterly reports beyond the second anniversary of listing. While CTEs have listing day returns comparable to concurrent non-CTE IPOs, CTEs provide significantly lower post-listing short-term returns and are less likely to forecast positive earnings or cash flows in the IPO document. The use of offer proceeds for internal purposes (such as for working capital and investments in plant and equipment) and cash flow forecasts have significant effect on duration of CTE quarterly reporting.

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1. Introduction

The aim of this paper is to provide insights into entities listed as Commitments Test Entities (henceforth CTEs or CTE) on the Australian Securities Exchange (hereafter ASX or the Exchange). In this research we primarily focus on CTEs as they are admitted to the official list of the ASX under the recently enacted alternative listing condition of the Exchange, while also comparing CTE IPOs to non-CTE IPOs listed during the sample period under the pre-existing ASX listing rules.

Companies seeking listing on the ASX under the general admission criteria must satisfy either the profits test or the assets test.¹ Following the introduction of the

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Commonwealth Law Economic Reforms Program Act 1999 (Cth) (CLERP), implemented in September 1999, entities that did not satisfy the listing requirements under the profits test, but had raised sufficient cash in the IPO, could list on the ASX under the assets test as a CTE, where the company makes commitments to spend the IPO proceeds as agreed in consultations with the ASX.² The ASX enforces the compliance with the agreement in respect to the use of the IPO proceeds by requiring CTEs to submit a quarterly cash flow report to the ASX (Appendix 4C, 'quarterly report for entities admitted on the basis of commitments'). These quarterly reports require disclosure of a consolidated statement of cash flows, financing and investments activities, acquisitions and divestments, payments to related entities, as well as any payments and loans provided by the entity to the company directors and their associates. ASX generally requires a CTE to submit quarterly reports for the first two years after listing during which a CTE is expected to have at least four consecutive quarters of positive cash flows from operating activities.³ An entity listed as a CTE is no longer required to provide quarterly reports to the ASX once it reports four consecutive quarters of positive cash flows from operations. The ASX makes an announcement to the market that the particular company has been released from the requirement to submit quarterly reports to the ASX. In this paper we examine the likelihood of a CTE being able to reach the target of four consecutive quarters of positive cash flows in the first two years of listing, as well as providing evidence on the actual duration of quarterly reporting by sample CTEs.

The ASX is one of the largest equity markets in the world. It ranked thirteenth largest in the world by market capitalisation at the end of 2009.⁴ While there are several small stock exchanges in Australia in addition to the ASX (for example, the National Stock Exchange) these exchanges usually specialise in one industry or product (for example, wine industry or taxi licences) and due to a relatively small number of listings are not in direct competition with the ASX. The ASX itself does not have a second board so all IPOs list on the main board of the Exchange. This is in contrast to the US, where IPOs are traded over the counter (OTC).⁵

¹ The general admission criteria of the ASX have two tests, the assets test and the profits test. The assets test requires a minimum \$2 million in net tangible assets or \$10 million in market capitalisation, while less than half of total tangible assets must be in cash or easily convertible to cash. Minimum working capital of \$1.5million is also required. The profit test has the following requirements: the entity must have profits of at least \$1million over the last three years, a minimum \$400,000 profit over the last year, and be currently profitable. The entity applying for admission under the profits test must be a going concern and the main business activity must not have changed in the last three years. A directors' statement about the entity's future profitability is also required. For both tests, the entity must provide audited accounts for the last three years to the ASX. An entity must also have a minimum 500 shareholders investing at least \$2,000 each, or 400 shareholders with a minimum 25% shares held by unrelated parties. For further details see ASX listing rules, Chapter 1 Admission, Section 1.2 and Section 1.3 <http://www.asx.com.au/ListingRules/chapters/Chapter01.pdf>

² If the assets test has been satisfied by an entity, and half or more of the entity's total tangible assets are cash or easily convertible to cash, the entity must enter into agreement with the ASX to spend at least half of its liquid assets. Furthermore, the business objectives and investment of offer proceeds plan must be clearly stated in the offer document or provided separately to the ASX (see ASX listing rule 1.3.2(b)).

³ Non-compliance with this requirement would result in suspension of the entity from official quotation on the ASX.

⁴ Australia ranked fourth in the Asia-Pacific region behind Japan and China (plus Hong Kong) and India. Source: World Federation of Exchanges.

⁵ A Second Board existed in Australia, but was abolished on 30 June 1992, with most stocks delisted or transferred to the main board of the ASX. The Second Board's decline started with the October 1987 market crash, after which better companies gradually transferred to the Main Board of the Exchange. The resulting reduction in number and liquidity of the remaining Second Board companies prompted its closing in 1992 (Bruce et al., 1997; Taylor and Whittred, 1998).

Thus, Australia does not have a well-developed alternative equity market to provide CTEs with an avenue to list and get relatively large-scale equity finance. In contrast to the ASX where CTEs are admitted immediately to the official list of the Exchange, young and unprofitable companies in other markets are usually accommodated through a specialised exchange or a sub-market of the main exchange (for example, the Alternative Investment Market of the London Stock Exchange). Thus, the ASX setting for CTEs is unique compared to most developed markets.

The CLERP Act 1999 (Cth) and the amendments of ASX listing rules introduced important changes to company financing in Australia (Chapple et al., 2005).⁶ The new rules improved access for relatively small and recently established entities to source public equity finance. The listing standards for CTEs are not overly restrictive. A company that is not a going concern, does not have accounts' history for the previous three years and is currently unprofitable, can list on the ASX as a CTE by raising (for example) \$10 million capital from investors conditional on making commitments to the ASX about the investment of proceeds.

In the absence of these legislative and regulatory changes it is likely that many CTEs would otherwise struggle to obtain access to new equity finance in the Australian market. These companies may therefore have relocated to markets where equity finance was more readily available. The costs of equity finance for early-stage businesses would also likely be higher if such businesses were unable to raise capital through the ASX.

Our paper is related to Chapple et al. (2005), who explore the accuracy of earnings forecasts in IPO documents subsequent to the introduction of the CLERP Act. Chapple et al. find that while the frequency of (voluntary) disclosure of earnings forecasts post-CLERP Act has declined, the accuracy of earnings forecasts were unchanged. However, Chapple et al. do not specifically look into CTEs and do not examine the post-listing share returns of IPOs in their sample. Our paper is also related Gallery et al. (2008), who examine the related party cash transactions by CTEs listed prior to end of December 2005. Gallery et al. argue that additional information disclosure provisions required of CTEs act to protect investors, but do not specifically examine the effect of disclosure requirements for the CTEs in relation to the stated use of offer proceeds, or issues such as the duration of CTE quarterly reporting. Our study extends the evidence of Chapple et al. (2005), Gallery et al. (2008) by examining a longer time span by looking into more recent CTE IPOs. Our research provides an empirical test of the duration of CTE quarterly reporting and the likelihood of a CTE meeting the minimum target of four consecutive quarters of positive cash flows from operations in the first two years of listing. We also examine the likelihood of SEOs by recent IPOs listed on the ASX (both CTEs and non-CTE IPOs) and provide insights about the characteristics of sample IPOs likely to have an SEO.

Our contributions to the literature are as follows. First, the unique institutional setting of the Australian market provides us with a motivation to examine the effect of recent

⁶ Changes in legislation (relevant to our research) are that the reform clearly established liability for inadequate disclosure of information in a prospectus, the entities liable in such cases, and have effectively reduced the regulatory requirements in equity funding. CLERP was initially an amendment to the Corporations Law, which was replaced by the Corporations Act 2001 (Cth) on 15 July 2001 and now presents a single legislative regime that applies to equity issuing companies in Australia (Chapple et al., 2005).

changes to ASX listing rules on the duration of quarterly cash flow reporting by CTE IPOs and the likelihood of CTEs meeting the minimum requirement of four consecutive quarters of positive cash flows from operations in the first two years of listing. Second, we expand the existing evidence on the listing day returns performance of initial public equity issuing companies in Australia, both CTE and non-CTE. Using a comprehensive sample of IPOs listed on the ASX between 1999 and 2007⁷ in Australia, we provide empirical evidence on the likelihood of seasoned equity offers by recent IPOs (both CTE and non-CTE). In this manner we explore whether theoretical explanations and previous findings on the probability of SEOs, are also applicable in the more recent period since the dot.com bubble burst in early 2000 as well as whether they apply to the CTE subgroup of ASX IPOs. We examine the theoretical predictions of the signalling by underpricing model (Welch, 1989), the market feedback model (Jegadeesh et al., 1993), and the liquidity needs model (DeAngelo et al., 2009). We also employ control variables that examine any effects of the use of offer proceeds (Autore et al., 2009) as the intended uses of offer proceeds are important in the context of CTEs (CTEs are required to make commitments to spend the offer proceeds in negotiation with the ASX).

We collect the information available to investors around the time of the IPO and evaluate the ability of this publicly available information to explain the likelihood of an SEO by recent CTE and non-CTE IPOs. Utilising ex-ante available information about sample CTEs also allows us to examine what characteristics (such as company age or the use of IPO proceeds) have an effect on the duration of CTE quarterly reporting and the likelihood of a CTE continuing to submit quarterly reports beyond the initial two-year period.

Our results indicate that CTE IPOs are significantly more likely to conduct SEOs within three years of listing compared to concurrently listed non-CTE IPOs. For the whole sample, younger firms are more likely to have an SEO within three years of listing. However, sample firms which forecast positive earnings or cash flows from operations in the IPO prospectus, and firms with higher M/B value of equity, are significantly less likely to have an SEO within three years after listing. Higher listing day returns (underpricing) and subsequent short-term returns (aftermarket returns) indicate increased likelihood of a subsequent seasoned equity offer. Thus, our evidence for the incidence of SEOs for CTEs and non-CTEs is consistent with the market feedback hypothesis (Jegadeesh et al., 1993) and the liquidity needs model (DeAngelo et al., 2009). We also find some support for the IPO quality signalling by underpricing (Welch, 1989).

Duration of quarterly reporting by CTEs is significantly longer for those IPOs indicating the use of offer proceeds for internal purposes (for general purposes such as working capital, and for investments, such as purchases of plant and equipment). However, CTEs forecasting positive cash flows from operations in the IPO prospectus have significantly shorter duration of quarterly reporting.

Furthermore, we find that CTEs forecasting positive cash flows and earnings are less likely to continue quarterly reporting after the minimum stipulated two-year period.

⁷ We require three years after the sample end in December 2007 to verify which IPOs had a subsequent SEO within three years after the IPO. Note also that while the CTE rule formally came into effect in March 2000, we identify additional IPOs listed between January 1999 and March 2000 that were subsequently required by the ASX to submit quarterly cash flow reports to the Exchange within the first eight quarters of listing.

Likewise, CTEs with superior short-term aftermarket returns, and those with higher M/B value of equity at listing, are significantly less likely to continue quarterly reporting beyond the first two years of listing.

As such the results of our study provide insights into the impact of regulatory changes due to introduction of the Commitments Test Entity listing avenue and should be of interest to investors, regulators, and to companies listed on the ASX.

The rest of this paper is structured as follows. Section 2 provides a review of the related literature and empirical predictions relevant to this research. Section 3 outlines the data used in this study. Section 4 presents the empirical results while section 5 concludes.

2. Related literature and empirical predictions

2.1. Seasoned equity offers

Theoretical predictions and empirical evidence about seasoned equity issuance by IPO firms (see for example, Welch 1989; Jegadeesh et al. 1993) point that IPO firms could engage in signalling their quality to the market by discounting the IPO shares (Welch, 1989), or wait for their quality to be revealed by the market itself (Jegadeesh et al. 1993) through superior IPO share returns in the weeks subsequent to listing.

The signalling hypothesis (in its various forms) asserts that high quality firms will signal their superior quality using mechanisms which are difficult and costly to replicate by inferior quality firms. Thus, firms going public may use the proportion of retained ownership in the IPO (itself a portfolio of projects) (Leland and Pyle, 1977) or the offer price discount (Welch, 1989) to signal high quality of the firm's future projects.⁸ As argued by Welch (1989), high quality firms will underprice their IPO to enable the firm to achieve a higher price in a subsequent secondary seasoned equity offering. A low quality firm can try to conceal their low quality by incurring significant imitation expenses. However, there is a probability of discovery that the low quality firm's value will be revealed anyway in the aftermarket, and faced with the need to incur imitation expenses and subsequent loss of this investment if the firms' quality is revealed, the low quality firm has little incentive to falsely signal high quality. The result is that for low quality firms, underpricing and larger retained ownership do not result in selling seasoned equity at higher prices. Thus, a positive relationship should be expected between IPO underpricing and long-term returns as evidenced by Lee et al. (1996) for Australian industrial IPOs.

Signalling models have received support from studies of industrial company listings in various markets although the results are mixed. In the Asia Pacific region, Su and Fleisher (1999) tested the signalling hypotheses of Allen and Faulhaber (1989), Welch (1989), and Grinblatt and Hwang (1989) in Chinese stock markets and have found the results are generally consistent with signalling models. Firth and Liao-Tan (1997) tested the signalling models for IPOs in Singapore, finding empirical support for Leland and Pyle's (1977) retained ownership signal, where a positive relationship exists between the percentage of shares retained and the market value of the IPO firm.

⁸ See also Grinblatt and Hwang (1989) who combine the retained ownership and underpricing signals.

The evidence above is, however, contradicted in more-recent research (Kennedy et al., 2006). Using a more recent dataset of US IPOs (between 1991 and 1998), Kennedy et al. cast some doubt on the ability of established theories to explain IPO underpricing (among other implications), with IPO signalling by underpricing receiving the least support.

Jegadeesh et al. (1993) examine the effect of IPO underpricing on the probability of an SEO but found stronger support for the market feedback hypothesis, where favourable information about the firm's market reception, reflected in the aftermarket price appreciation, resulted in the management's decision to expand the firm's projects that apparently have higher marginal returns than initially estimated.

Alternatively, DeAngelo et al. (2009) argue that companies have SEOs simply because they need additional funding, and not due to market timing (Myers and Majluf, 1984) by managers, or because they have signalled their IPOs high quality by underpricing of the IPO shares.

In the following section we develop our hypotheses that we empirically test for CTEs and non-CTEs in the Australian market. We use the above mentioned studies to develop predictions about the likelihood of an SEO in a sample of recent IPOs listed on the ASX between 1999 and 2007.

2.2. Hypothesis development

The mixed results in prior research provide us with the motivation to test for the presence of IPO quality signalling by underpricing (Welch, 1989) for recently listed CTE and non-CTE IPOs on the ASX.⁹ We use the following hypothesis to test the quality signalling model for CTE IPOs:

H.1. CTE IPO underpricing is positively correlated with the likelihood of a seasoned equity offer within three years after listing.

Yet quality signalling might only be a part of the story on IPO returns. Jegadeesh et al. (1993) advance the market feedback hypothesis where IPO aftermarket returns (in the first two trading months after listing) are superior indicators of the IPO quality compared to underpricing. Thus, we test the validity of the market feedback model using the following hypothesis:

H.2. CTE IPOs with higher post-listing returns (aftermarket returns) have significantly increased likelihood of having an SEO within three years of listing.

More recent research points to the fact that equity issuing firms have some unique characteristics (Ljungqvist and Wilhelm, 2003; Ofek and Richardson, 2003; Loughran and Ritter, 2004 and Eckbo and Norli, 2005). An example of these characteristics may include company profitability (reflected in parameters such as earnings and cash flows). DeAngelo et al. (2009) document that without additional equity funding more than half of the companies in their sample of equity issuers would be unable to implement investment and growth strategies due to low cash reserves, and that this is the primary factor for conducting equity offers, and not market timing. These

⁹ The focus of this research is on CTEs so all hypotheses will be worded to express this focus.

findings provide us with the motivation to test for the presence of any effect of the near term liquidity needs on the probability of an SEO. More specifically, we examine whether positive cash flows and earnings have an effect on the likelihood of an SEO by sample IPOs.

H.3. CTE IPOs with positive cash-flows from operations (prospectus one-year forecast) are expected to be significantly less likely to have an SEO within three years of listing.

Ritter (2006) documented, however, that IPOs with negative earnings provided higher initial returns to subscribing investors in the US, especially during the 1998-2001 period. Ritter (2006) suggested that a certain proportion of investors may have irrationally valued IPOs during the 1998-2001 periods. Thus, Ritter's results motivate us to test whether investors in ASX listed IPOs have priced these offers rationally in the most recent decade. We examine any effect of earnings forecasts on the likelihood of an SEO, consequently:

H.3.a CTE IPOs forecasting positive earnings for the year following the IPO are expected to be significantly less likely to conduct an SEO within the first three years of listing.

Autore et al. (2009) document that the use of offer proceeds has a material impact on the long-term returns after seasoned equity offerings (SEO). They point out that companies indicating that the SEO proceeds would be used for investment purposes do not underperform in the long run. However, equity issuers having no credible investment strategies (those using the offer proceeds for 'general corporate purposes') and issuers that use the offer proceeds for debt repayment significantly underperform in the three years following the equity reissue. In this research, we incorporate the use of IPO offer proceeds as an explanatory variable as this information is important in the context of CTEs, which list on the ASX conditional on the agreement to spend the offer proceeds according to agreements made with the Exchange. Consistent with Autore et al. we expect CTE IPOs that use the offer proceeds for working capital purposes (general purpose) or balance sheet restructure (debt repayment or divestment by existing owners) to have significantly increased likelihood to issue seasoned equity. This is due to the expectation that companies that need to use the IPO proceeds to pay-off debt or replenish their working capital are unlikely to have sufficient internal capital resources in the near to medium term, hence will need access to additional equity funding.

It is possible that a company grows to a stage in its life cycle where it is optimal to go public (see Chemmanur and Fulghieri, 1999). However, the optimal development stage for a company to go public might differ across economies and industries. Thus, while we acknowledge that the use of IPO proceeds may proxy for the development stage of the IPO company, it is a rather crude proxy so we make no predictions for the effect of the use of offer proceeds for investments (internally) or acquisitions. These two uses of offer proceeds may proxy for a wide variety of firms (that is firms at a higher stage of company development, with lower need for external funding, but also for more recently established high growth firms with insufficient internal capital).

We also use the above variables and hypotheses in relation to duration of quarterly reporting by CTEs. We expect that CTEs likely to meet the minimum requirement of

four consecutive quarters of positive cash flows from operations are likely to forecast positive cash flows and earnings in the IPO prospectus. Thus:

H.4. CTE IPOs forecasting positive cash flows for the year following the IPO are expected to be significantly more likely to have four consecutive quarters of positive cash flows from operations in the two-year period of quarterly reporting, and

H.4.a CTE IPOs forecasting positive earnings for the year following the IPO are expected to be significantly more likely to have four consecutive quarters of positive cash flows from operations in the two-year period of quarterly reporting. In other words, CTE IPOs forecasting positive earnings or cash flows (from operations) are expected to be significantly less likely to continue quarterly reporting beyond the initial two-year period.

Likewise, we expect that the signalling model and the market feedback model may play a role in revealing CTEs future profitability, where higher quality (more underpriced CTE IPOs) and those CTE IPOs with superior short-term returns would be less likely to be required by the ASX to continue submitting quarterly reports after the initial two-year period, thus:

H.5. More underpriced CTE IPOs are expected to be significantly more likely to have four consecutive quarters of positive cash flows from operations in the two-year period of quarterly reporting, and

H.5.a CTE IPOs with superior short-term post-listing returns are expected to be significantly more likely to have four consecutive quarters of positive cash flows from operations in the two-year period of quarterly reporting.

The following section introduces the data and methods used in this study.

3. Data and Methods

3.1. Data

The sample consists of companies that were admitted to the official list of the ASX between January 1999 and December 2007 based on the commitments test entity rule. Sample ending date before 2008 is necessary because we require a three year buffer to identify whether sample IPOs had additional equity offerings in the first three years of listing. Identification of the sample of CTEs was done by examining the ASX company announcements for whether the company lodged an Appendix 4C report with the ASX in the first eight quarters since listing (Appendix 4C, 'quarterly report for entities admitted on the basis of commitments'). We also require a copy of the IPO prospectus to be available.

During the sample period we identified 342 companies listed on ASX that lodge an Appendix 4c subsequent to listing on the ASX (see Table 1). CTEs represent around one-third of all successful IPOs listed on the ASX between 1999 and 2007.

Table 1 Initial public equity offers listed on the Australian Securities Exchange

Offer year	Commitments test entity (CTE) IPOs				Non-CTE (Industrial) IPOs			
	N	Percent	CTE as percent of all IPOs	CTE initial returns (%)	N	Percent	Non-CTE as percent of all IPOs	Non-CTE initial returns (%)
1999	57	16.24	55.34	47.31	44	13.71	42.72	31.91
2000	84	23.93	55.63	42.95	51	15.89	33.77	25.11
2001	27	7.69	49.09	-2.99	12	3.74	21.82	12.13
2002	14	3.99	25.45	21.44	11	3.43	20.00	9.14
2003	18	5.13	20.45	26.51	26	8.10	29.55	17.10
2004	52	14.81	32.10	13.49	44	13.71	27.16	16.43
2005	31	8.83	21.99	3.16	41	12.77	29.08	11.09
2006	26	7.41	17.33	19.32	32	9.97	21.33	17.42
2007	33	9.40	13.81	6.73	48	14.95	20.08	18.74
Total	342	100.00	29.84	24.99	309	100.00	26.96	19.45

N is the number of IPOs admitted to the official list of the Australian Securities Exchange; Percent is the number of offers in a particular year as a proportion of total ordinary share IPOs listed on the ASX (including resource company IPOs); Initial returns are market index adjusted returns between the subscription price and the first trading day closing share price.

We also identify non-CTE industrial IPOs listed on the ASX during the sample period. There are 309 non-CTE IPOs of equity that did satisfy the assets test or the profits test for listing admission to the ASX.¹⁰ These non-CTE IPOs would be classified as industrial IPOs according to previous research on ASX listed IPOs (see, for example, Lee et al., 1996).

We obtain the following public information about CTE and non-CTE IPOs:

Variable	Source
Whether the company is a Commitments Test Entity	Fin Analysis database of company announcements (ASX signal G*)
Company industry (according to GICS classification)	Connect4 database
Share prices	SIRCA (Datastream for missing values)
Offer price	Prospectus (Connect4 or Fin Analysis)
Offer size	Prospectus (Connect4 or Fin Analysis)
Time as CTE (duration of quarterly reports submission, appendix 4C)	(ASX signal G* announcements)
Company age at listing	Prospectus (Connect4 or Fin Analysis)
Company listing date	ASX signal G announcements
Earnings forecast	Prospectus (Connect4 or Fin Analysis)
Forecast cash flows from operating activities	Prospectus (Connect4 or Fin Analysis)
Use of the IPO proceeds (working capital, investments, acquisitions, capital restructure)	Prospectus (Connect4 or Fin Analysis)
Market to book value of equity ratio	Datastream and prospectus

* Signal G is an electronic database of all announcements made by ASX listed companies to the Exchange

The variables listed above were obtained from ASX company announcements, individual company websites, and the Connect4 and FinAnalysis databases. Share price data was obtained from the Securities Industry Research Centre of Asia-Pacific (SIRCA). The explanatory variables and their expected effects are explained in section 3.2.

CTEs that undertook an IPO in the period 1999 to 2007 operated in a number of various industries, predominantly in the high-tech sector (see Table 2). The initial

¹⁰ We exclude mining resources IPOs as previous research shows these IPOs are likely to be a quite distinct from other IPOs listed on the ASX (both in terms of firm characteristics and returns). See, for example, How (2000) and Dimovski and Brooks (2008).

equity offers by CTEs were most frequently made by companies in the software and services industry group (17.8% of the sample). The second and third largest groups are the pharmaceuticals and biotechnology industry group (13.7%) and the healthcare equipment and services industry group (11.7%).

Table 2 Commitments test entity (CTE) and non-CTE (industrial) IPOs stratified by sector

GICS industry group	CTE IPOs		Initial returns	non-CTE IPOs		Initial returns
	N	Percent	Percent	N	Percent	Percent
Automobiles & components	3	0.88	113.01	0	0.00	N/A
Banks	1	0.29	0.33	2	0.65	-0.09
Capital goods	11	3.22	-0.28	40	12.94	24.70
Chemicals	2	0.58	-12.29	3	0.97	19.54
Commercial services & suppliers	18	5.26	10.59	34	11.00	19.01
Construction materials	0	0.00	N/A	3	0.97	13.06
Consumer durables & apparel	3	0.88	2.35	10	3.24	17.67
Consumer services	13	3.80	16.12	15	4.85	23.20
Containers & packaging	0	0.00	N/A	2	0.65	3.32
Diversified financials	15	4.39	23.51	61	19.74	12.49
Energy	7	2.05	9.18	7	2.27	2.21
Food & staples retailing	2	0.58	61.72	0	0.00	N/A
Food beverage & tobacco	16	4.39	7.31	14	4.53	7.05
GICS code not applicable	12	3.51	-3.32	12	3.88	42.55
Healthcare equipment & services	40	11.70	35.57	9	2.91	29.77
Household & personal products	3	0.88	5.60	0	0.00	N/A
Insurance	0	0.00	N/A	3	0.97	4.46
Media	19	5.56	33.19	9	2.91	8.49
Metals & mining	10	2.92	8.96	6	1.94	20.94
Paper & forest products	2	0.58	-26.18	5	1.62	21.35
Pharmaceuticals and biotechnology	47	13.74	11.83	7	2.27	17.98
Real estate	6	1.75	56.88	7	2.27	7.44
Real estate investment trusts	1	0.29	94.02	0	0.00	N/A
Retailing	12	3.51	22.19	17	5.50	14.77
Semiconductors & s. equipment	1	0.29	57.75	1	0.32	0.36
Software and services	61	17.84	52.38	18	5.83	56.80
Technology hardware & equipment	14	4.09	20.42	9	2.91	25.71
Telecommunication services	15	4.39	14.81	10	3.24	16.19
Utilities	9	2.63	7.30	0	0.00	N/A
Transportation	0	0.00	N/A	5	1.62	2.82
Total	342	100.00	24.99	309	100.00	19.45

The sample includes commitments test entity IPOs listed on the Australian Securities Exchange between 1999 and 2007. GICS is the Global Industry Classification Standard used by ASX; N is the number of offers; N/A not applicable; Percent is the number of offers in a particular industry group as a proportion of total CTE or non-CTE IPOs; Initial returns are the market adjusted listing day returns to subscribing investors.

In contrast, non-CTEs IPOs are more likely to be classified in more conventional industries, such as diversified financials (19.7%), capital goods (12.9%) and commercial services and supplies (11%).

3.2. Explanatory variables

In this section we outline the definition of variables used in this study. The variable AGE is natural logarithm of the number of days between the company incorporation date and the ASX listing date. Ho et al. (2001) found no effect of age on Australian technology IPO underpricing, while How (2000) found a negative relationship between mining firm's age and initial returns. We make no prediction on the effect of age on returns, but use the company age as a control variable for IPO riskiness.

The variable EARNINGS is one if positive earnings are forecast in the IPO prospectus for the post-offer year and zero otherwise. We expect that CTEs forecasting positive earnings in their IPO prospectus are likely to have larger initial and long-term returns than other CTEs.¹¹

CASH_FLOW is a dichotomous variable equal to one for companies with positive cash flows forecast in the offer document (one-year forward estimate). We expect that IPO companies with positive cash flows from operations would have greater long-run returns.

We use four categories for intended use of offer proceeds, namely *working capital* (operating activities), *investments* (for example in research and development of new technologies), *acquisitions* of other entities, *capital restructure* (such as debt repayment or divestment by existing shareholders).¹² WORK_CAP is one for companies specifying in the offer document that IPO proceeds will be used for working capital purposes and zero otherwise. INVEST is a dichotomous variable equal to one for companies using the offer proceeds for (internal) investment purposes; ACQ is a dichotomous variable equal to one for companies intending to use offer proceeds for acquisitions of other businesses or their parts, patents or technology; BS_RESTRUCTURE is a dichotomous variable equal to one for companies using the offer proceeds for balance sheet restructure (for example, debt repayment).

The INITIAL_RETURN variable is the return achieved by subscribing investors in the IPO (representing the return between the offer price and first trading day closing share price). The AFTERMARKET_RETURN variable is the return on an IPO in the first 20 trading days after listing, excluding the initial return to subscribing investors (Jegadeesh et al., 1993). Consistent with Jegadeesh et al. (1993) we expect IPOs with superior aftermarket returns (in the $t=1$ to $t=21$ trading window after listing) to also have better long-term returns than other CTE IPOs.

To enable comparisons, we also collect the above-described information for non-CTE IPOs and calculate initial and long-term returns using the methods described previously.

3.3 Regression models

We use a binary probit model to assess the ability of above identified variables (representing publicly available information about the sample IPOs at around the time of public listing on the ASX) to identify CTE and non-CTE companies which subsequently had seasoned equity offers. In the probit analysis, the independent

¹¹ However, these forecasts may not always be accurate. In their study of managers' dividend and earnings forecasts in 172 Australian IPO prospectuses between 1984 and 1997, Brown et al. (2000) found that both earnings and dividend forecasts are positively biased, while overestimations are more pronounced for earnings, which are about four times larger than dividend forecast errors. This is due to better ability of management to control dividends compared with earnings. This result is supported by Chapple et al. (2005) who document that earnings forecast errors were not reduced after the implementation of CLERP Act, with earnings forecast having an upward bias. Therefore, in this research, dichotomous variables for earnings and dividend forecasts will be used to reduce the bias in forecasts.

¹² Use of offer proceeds should be identifiable from the offer documentation, such as the IPO prospectus, because the ASX Listing rules, Appendix 3B "New issue announcement, application for quotation of additional securities and agreement" (question 6) asks for the purpose of the security issue. Note that the four categories are not mutually exclusive, that is, an IPO company may indicate in its prospectus that offer proceeds will be used for multiple purposes.

variables (continuous or coded as binary variables) were used to explain the dichotomous (0,1) outcome; that is, whether a sample company has a seasoned equity offer within the three years after listing.

Explanatory variables were included in the probit regression model as indicated below:

$$\begin{aligned} \text{Prob_SEO}(y=1) = & \Phi(\alpha_0 + \alpha_1 \text{CTE} + \alpha_2 \text{AGE} + \alpha_3 \text{LIQUIDITY_NEEDS} \\ & + \alpha_4 \text{INITIAL_RETURN} + \alpha_5 \text{AFTERMARKET_RETURN} + \alpha_6 \text{M_B} \\ & + \alpha_7 \text{WORK_CAP} + \alpha_8 \text{INVEST} + \alpha_9 \text{ACQ} + \alpha_{10} \text{BS_RESTRUCTURE}) \end{aligned}$$

Explanatory variables are as defined above. Note that the LIQUIDITY_NEEDS is either the EARNINGS or the CASH_FLOW variable.

Additionally, we use ordinary least squares regression model to estimate the explanatory power of variables used in this study to explain the duration of CTE quarterly report submissions, as presented below.

$$\begin{aligned} \text{DURATION(CTE)} = & \alpha_0 + \beta_1 \text{WORK_CAP} + \beta_2 \text{INVEST} + \beta_3 \text{ACQ} + \beta_4 \text{BS_RESTRUCTURE} \\ & + \beta_5 \text{INITIAL_RETURN} + \beta_6 \text{AFERMARKET_RETURN} + \beta_7 \text{CASH_FLOW} \\ & + \beta_8 \text{EARNINGS} + \beta_9 \text{M_B} + \varepsilon_i, \end{aligned}$$

where DURATION(CTE) is the number of years (rounded to four decimal places) between the CTE listing date (or start of quarterly reporting) and the final quarterly report (or the announcement by the company to the market that it is no longer required by the ASX to submit quarterly reports). Explanatory variables are as defined above, and ε_i is a regression error term.

To further substantiate the results on the duration of CTE quarterly reporting, we use a probit regression model to estimate the likelihood of a CTE reporting beyond the 'default' specified period of two years (eight quarters), and in that manner identify a 'profile' of a CTE IPO likely to not meet the minimum requirement of four continuous quarters of positive cash flows from operations. Explanatory variables for this purpose were included in the probit regression model as indicated below:

$$\begin{aligned} \text{Prob_CTE}>2\text{yr}(y=1) = & \Phi(\alpha_0 + \alpha_1 \text{AGE} + \alpha_2 \text{LIQUIDITY_NEEDS} + \alpha_3 \text{INITIAL_RETURN} \\ & + \alpha_4 \text{AFTERMARKET_RETURN} + \alpha_5 \text{M_B} + \alpha_6 \text{WORK_CAP} \\ & + \alpha_7 \text{INVEST} + \alpha_8 \text{ACQ} + \alpha_9 \text{BS_RESTRUCTURE}) \end{aligned}$$

Explanatory variables are as defined above. Note that the LIQUIDITY_NEEDS is either the EARNINGS or the CASH_FLOW variable.

4. Empirical Results

4.1. Sample descriptive statistics

Our sample of CTEs list on the ASX on average 4.9 years after their incorporation (see Table 3), which is significantly less than the 8.7 years on average for non-CTE IPOs. Table 3 shows that the average offer value is \$16.4 million for sample CTEs, compared to \$104 million for the non-CTE sample. The average CTE market capitalisation at the offer price is \$48.6 million. Thus, CTEs are on average substantially smaller (significant at the 1 percent level) than non-CTE IPOs listed on the ASX during the sample period (Table 3), and are smaller compared to IPOs listed on the ASX in previous periods (for industrial IPOs see How and Yeo, 2000 and for mining IPOs see How, 2000).

Table 3 Descriptive Statistics

Variables	Average	Median	25% quartile	75% quartile	Minimum value	Maximum value	Standard deviation	(<i>t</i> -stats)
Age								
<i>CTE</i>	4.89	2.99	0.92	6.40	0.07	41.30	5.86	(3.861)***
<i>non-CTE</i>	8.66	7.32	1.64	11.58	0.07	104.59	15.91	
Offer size (\$ million)								
<i>CTE</i>	16.42	7.00	4.00	15.00	0.81	422.99	4.13	(4.595)***
<i>non-CTE</i>	104.14	23.60	8.00	68.70	0.70	4,091.80	333.31	
Market capitalisation (\$ million)								
<i>CTE</i>	48.63	18.84	9.35	39.00	1.52	2,248.95	1.55	(3.005)***
<i>non-CTE</i>	221.72	65.00	20.97	184.00	3.17	2,614.00	422.63	
Listing day return (raw)								
<i>CTE</i>	24.99	8.00	-4.00	34.00	-80.00	730.00	70.97	(1.270)
<i>non-CTE</i>	19.45	9.52	0.00	29.50	-37.50	300.06	36.30	
Listing day return (adjusted)								
<i>CTE</i>	24.93	8.28	-4.15	36.65	-80.32	729.58	70.91	(1.257)
<i>non-CTE</i>	19.45	9.48	-0.20	28.90	-37.96	301.17	36.28	

The sample includes commitments test entity IPOs listed on the Australian Securities Exchange between 1999 and 2007. AGE is the number of years between incorporation of the company and listing date; OFFER SIZE is the amount sought in the offer; MARKET CAPITALISATION is the total number of shares after the IPO multiplied by the share offer price; LISTING DAY RETURN (RAW) is the return between the subscription price and first trading day closing price; LISTING DAY RETURN (ADJUSTED) is the return between the subscription price and first trading day closing price (adjusted by market index return on first trading day); *t*-stats test for the difference in distributions between CTE and non-CTE IPOs.

Table 4 indicates that only 26 percent of CTEs forecast positive earnings in their IPO prospectus, while only around 16 percent of CTEs forecast positive cash flows from operations in the post-offer year. CTEs are also significantly less likely to forecast positive earnings or positive cash flows than non-CTE IPOs (Table 4, column five). The majority of CTEs indicate that offer proceeds would be used for working capital (57.6 percent) and investments (72.5 percent), while only 17 (20.8) percent of CTEs indicate offer proceeds will also be used for acquisitions of other entities (debt repayment). Thus, CTE IPOs are significantly more likely to use the offer proceeds for internal purposes (working capital or investments in the company), while non-CTE IPOs are more likely to use the offer proceeds to repay debt or to make acquisitions (significant at the 10 percent level).

Table 4 Frequency of dichotomous variables

Dichotomous variables		Number of companies	Percent	(z-scores)
Positive earnings forecast	CTE	89	26.02	(4.796)***
	<i>non-CTE</i>	162	52.43	
Positive cash flow (operations) forecast	CTE	54	15.79	(8.607)***
	<i>non-CTE</i>	117	37.86	
Use of IPO proceeds				
Working capital	CTE	197	57.60	(3.999)***
	<i>non-CTE</i>	129	41.75	
New investments	CTE	248	72.51	(8.054)***
	<i>non-CTE</i>	127	41.10	
Acquisitions	CTE	58	16.96	(1.943)*
	<i>non-CTE</i>	71	22.98	
Capital restructure	CTE	71	20.76	(6.829)***
	<i>non-CTE</i>	141	45.63	
Delisted (bankrupt) within 3 years	CTE	6	1.75	(0.465)
	<i>non-CTE</i>	7	2.27	
Delisted (acquired) within 3 years	CTE	14	4.09	(1.361)
	<i>non-CTE</i>	20	6.47	
Delisted (bankrupt) within 5 years	CTE	10	2.92	(0.885)
	<i>non-CTE</i>	13	4.21	
Delisted (acquired) within 5 years	CTE	22	6.43	(2.332)**
	<i>non-CTE</i>	36	11.65	

The sample includes 342 CTE IPOs listed as commitments test entities on the Australian Securities Exchange between 1999 and 2007 and 309 non-CTE IPOs. IPO proceeds uses are not mutually exclusive, as many companies stated that offer proceeds would be used for multiple purposes; z-scores are from the Mann-Whitney (Wilcoxon) non parametric test for the difference between the frequency of dichotomous variables for CTE and non-CTE (industrial) IPOs; *, **, *** significant at alpha 0.10, 0.05 and 0.01 level respectively.

Krigman et al. (2001) find that of 2,049 IPOs in the USA from 1993 to 1995, around 28 percent of issuing firms make the first SEO within three years after the IPO. This compares to the proportion of reissuers in Jegadeesh et al.'s (1993) and Kennedy et al.'s (2006) samples which are around 21 and 22 percent respectively. Furthermore, in their survey of more than 280 studies, Eckbo et al. (2007) note that following the IPO only about a quarter of firms have a subsequent SEO. However, IPO firms in our sample are substantially more likely to have a seasoned offer of equity, with 79 percent of CTEs having at least one seasoned equity offer within three years after listing, while 53 percent of non-CTE IPOs have a seasoned equity offer within three years of listing on the ASX.¹³ In the full sample, 66.4 percent of IPOs have at least one seasoned equity offer within three years of listing.

These comparisons indicate that CTE IPOs are likely to be viewed as more speculative investments by investors than the concurrent non-CTE IPOs.

Nevertheless, CTE IPOs are not more likely to delist for negative reasons (administration or liquidation) in the first three or five years after listing (see Table 4). However, non-CTE IPOs are more likely to be acquired by another entity within five years of listing than CTEs.

The above evidence that the majority of CTE IPOs in this sample use at least part of the offer proceeds for working capital purposes and are conducting SEOs within three years after listing is consistent with DeAngelo et al.'s (2009) finding that equity issues are primarily driven by company liquidity needs.

¹³ CTEs are significantly more likely to have a seasoned equity offer within three years of listing on the ASX than non-CTE IPOs ($p < 0.001$).

Table 3 shows that the initial day raw returns, measured as the difference between the public offer price and the first trading day closing price are 24.99 percent on average for CTE IPOs and 19.45 percent for non-CTE IPO (the difference in initial returns between the two groups is not significant as indicated in Table 3). These levels of underpricing are similar to recent evidence for IPOs in Australia by Engelen and Essen (2010) who find that their sub-sample of IPOs in Australia between 2000 and 2005 provided initial returns of 18.04 percent on average.

However, investing in CTE IPOs is not without risk. Within the sample, 114 offers (33.3 percent) have a first trading day closing price below the offer price, with the average return to subscribing investors in overpriced CTE IPOs a loss of 17.6 percent (based on first trading day close share price). The proportion of overpriced IPOs in our sample is comparable to findings in Lee et al. (1996), who reported that around one third of Australian industrial IPOs had negative market index adjusted initial returns, and How (2000), who found that about 19 percent of Australian mining IPOs had negative raw initial returns.

CTEs on average provide quarterly reports to the ASX for 5.8 years, while about 80 percent of CTEs continue submitting quarterly reports to the Exchange beyond two years of listing. Thus, a large majority of CTEs find it difficult to meet the minimum requirement of four consecutive quarters of positive cash flows from operations.

4.5. Regression results¹⁴

Regression results for the probability of SEOs are provided in Table 5, while the results for duration of CTE quarterly reporting are provided in Table 6. Table 7 presents the probit regression results for the likelihood of CTEs submitting quarterly reports beyond the ASX prescribed two-year period. We provide regression results for the likelihood of SEOs for the combined sample of CTE and non-CTE IPOs in Table 5, while Table 6 and Table 7 results are applicable to CTE sample only. While the results below discuss the explanatory power of variables in multiple regression analyses, the significance and direction of the relationship between explanatory variables and the dependent variables is confirmed in the univariate settings (unless reported otherwise).

4.4.1. SEO probability

The results in Table 5, Panel A, for the combined sample of CTE and non-CTE companies indicate that publicly available information available around the time of ASX listing for sample IPOs have moderate ability to explain the likelihood of seasoned equity offers within three years of listing. While the likelihood ratio index (McFadden R^2) range between 4.6 and 17.6 percent, the models correctly predict an SEO by sample companies approximately 70 percent of time. Given that the CASH_FLOW and EARNINGS variables are collinear, and that CASH_FLOW

¹⁴ We verify that the assumptions of regression analysis are not violated in our models. Multicollinearity between explanatory variables in regression models is controlled for by excluding collinear variables from regression models. While this approach may reduce the ability of a regression model to explain the dependent variable, it also results in a more parsimonious regression model where any effects of explanatory variables are easier to distinguish. Multicollinearity can be measured using the Tolerance statistic or its reciprocal the Variance Inflation Factor (VIF). White's (1980) heteroskedasticity test is used to evaluate the homogeneity of variance in regression models.

variable is collinear with AGE and M_B variables we present two alternative combinations of explanatory variables in order to reduce multicollinearity in our regressions.¹⁵

Table 5 Probit analysis of the incidence of SEOs within three years of the IPO (CTE and non-CTE companies)

Panel A	(1)		(2)		(3)		(4)	
	Probit coefficient	z- statistic	Probit coefficient	z- statistic	Probit coefficient	z- statistic	Probit coefficient	z- statistic
Independent variable								
Intercept	2.316***	3.295	2.216***	3.342	0.404**	2.206	0.358**	2.528
CTE	0.532**	2.111	0.491**	2.044	0.352**	2.220	0.375**	2.534
AGE	-0.164**	-2.265	-0.172**	-2.398				
EARNINGS	-0.506*	-1.680	-0.616**	-2.198				
CASH_FLOW					-0.225	-1.431	-0.305**	-2.056
INITIAL_RETURN	0.532*	1.844	0.553**	2.003	0.156	1.275	0.138	1.142
AFTERMARKET_RETURN	1.094*	1.867	1.161**	2.006	0.551*	1.895	0.567**	1.962
M/B	-0.088***	-2.817	-0.088***	-2.902				
WORK_CAP	-0.270	-1.198			-0.086	-0.609		
INVEST	0.003	0.011			0.094	0.628		
ACQ	-0.022	-0.081			-0.211	-1.262		
BS	-0.180	-0.775			-0.108	-0.683		
_RESTRUCTURE								
<i>Pseudo R²</i>		17.55***		17.42***		5.16***		4.63***
<i>Percent correct predictions</i>		70.39		69.78		68.37		67.09

Panel B	(1)		(2)		(3)		(4)	
	Probit coefficient	z- statistic	Probit coefficient	z- statistic	Probit coefficient	z- statistic	Probit coefficient	z- statistic
Independent variable								
Intercept	2.438***	2.827	2.309***	2.781	0.438**	2.082	0.372**	2.050
CTE	0.375	0.252	0.406	0.276	0.336	1.470	0.375	1.639
AGE	-0.174**	-2.103	-0.181**	-2.195				
EARNINGS	-0.471	-1.192	-0.578	-1.485				
CASH_FLOW					-0.331	-1.498	-0.407*	-1.929
INITIAL_RETURN	0.567	1.579	0.568*	1.706	0.417	1.374	0.402	1.365
AFTERMARKET_RETURN	0.802	0.972	0.862	1.051	0.583	1.010	0.536	0.936
M/B	-0.109**	-2.341	-0.105**	-2.322				
WORK_CAP	-0.286	-1.247			-0.100	-0.705		
INVEST	-0.003	-0.013			0.069	0.453		
ACQ	-0.011	-0.040			-0.227	-1.348		
BS	-0.157	-0.666			-0.099	-0.626		
_RESTRUCTURE								
CTE*AGE	0.018	0.099	0.010	0.058				
CTE*EARNINGS	-0.095	-0.165	-0.103	-0.182				
CTE*CASH_FLOW					0.192	0.633	0.194	0.648
CTE*INITIAL_RETURN	-0.085	-0.140	-0.038	-0.064	-0.312	-0.954	-0.319	-0.997
CTE*AFTERMARKET_RETURN	0.643	0.534	0.651	0.551	-0.048	-0.072	0.034	0.051
CTE*M_B	0.039	0.650	0.033	0.559				
<i>Pseudo R²</i>		17.88***		17.71***		5.41***		4.91***
<i>Percent correct predictions</i>		70.99		70.88		69.70		68.09

The sample includes CTE and non-CTE IPOs listed on the Australian Securities Exchange between 1999 and 2007. CTE is a dichotomous variable with unity representing companies listed as Commitments Test Entities; AGE is a natural logarithm of the number of days between the company incorporation date and the ASX listing date; EARNINGS (CASH_FLOW) assigns unity if positive earnings (cash flows from operations) were forecast in the IPO prospectus for the post-offer year in the offer document;

¹⁵ The minimum Tolerance statistic between explanatory variables was 0.71 (Variance Inflation Factor 1.41) confirming that the regression models in Table 5 do not suffer from multicollinearity.

INITIAL_RETURN is the return to subscribing investor in an IPO (difference between the offer price and the first trading day closing price); AFTERMARKET_RETURN is the return on an IPO in the first 20 trading days after listing (excluding initial returns to subscribing investors); WORK_CAP is unity for companies specifying in the offer document that IPO proceeds will be used for working capital purposes; INVEST is a dichotomous variable where unity designates companies using the offer proceeds for (internal) investment purposes; ACQ is a dichotomous variable where unity designates companies intending to use offer proceeds for acquisitions of other businesses or their parts, patents or technology; BS_RESTRUCTURE is a dichotomous variable where unity represents companies using the offer proceeds for balance sheet restructure (for example, debt repayment); M/B is the market to book value of equity on listing; *Pseudo R²* (McFadden *R²*) is calculated as $1 - (\log \text{likelihood of the estimated model} \div \log \text{likelihood of a model which includes intercept only})$; *Percent correct predictions* are calculated using a binary logistic model; *, **, *** significant at alpha 0.10, 0.05 and 0.01 level respectively. Dependent variable is a dichotomous outcome, whether CTE or non-CTE IPO company has a seasoned equity offer within three years after listing (1) or not (0).

In particular, the CTE variable indicates that Commitments Test Entities are significantly more likely to have an SEO within three years of listing than non-CTE IPO companies. AGE variable has a negative coefficient, indicating that more established entities are significantly less likely to have an SEO (regression models 1 and 2 in Table 5, Panel A). Moreover, the EARNINGS and CASH_FLOW variables have a significant negative effect on the likelihood of an SEO (except in the regression model 3). Thus, earnings or cash flow forecasts in the IPO prospectus are a valid signal of the likelihood of subsequent equity offers by upcoming IPOs. These results are supportive of liquidity needs model of DeAngelo et al. (2009) and our hypothesis H.3 and H.3.a. Consistent with predictions of the signalling models (for example, Welch, 1989) and with hypothesis H.1 we find that more underpriced IPOs are significantly more likely to conduct an SEO (regression models 1 and 2 only, variable significant at the 10 percent level in regression model 1). Likewise, we find that short-term aftermarket returns are a valid signal of SEO probability, where superior short-term returns increase the probability of an SEO before the three year anniversary of listing (significant at 10 percent level in regression models 1 and 3). Thus, our results are also consistent with the market feedback model of Jegadeesh et al. (1993) and with hypothesis H.2.

We also find that the M/B variable (proxy for growth opportunities) is highly significant and indicates that higher market valuation sample stocks (growth stocks) are less likely to have an SEO within the first three years of listing. Alternatively, the results could be interpreted in support of efficient markets, where higher stock valuation does not result in opportunistic sales of seasoned equity in the medium term (Myers and Majluf, 1984). However, the four variables indicating the intended use of IPO proceeds have no significant effect on SEO probability (regression models 1 and 3).

Table 5, Panel B, replicates the regression models of Table 5, Panel A while also including the interaction effects between the CTE variable and explanatory variables testing the hypotheses (except for the use of offer proceeds variables). We find that none of the interaction variables have a significant effect on the SEO probability. Thus we must infer that while CTEs are more likely to have an SEO than the concurrently listed non-CTE IPOs, the explanatory variables used in probit models in Table 5 have no incremental explanatory effect on the likelihood of SEOs between the two sub-samples.

4.4.2. Duration of CTE reporting

The results in Table 6 indicate that the regression models have low to moderate ability to explain the duration of CTE quarterly reporting. Again we face the problem of EARNINGS and CASH_FLOW variables being collinear, therefore these two

variables are presented in separate models. This enables us to test the effects of explanatory variables on returns while not violating the assumptions of the regression analysis.¹⁶

Table 6 Time as CTE – duration of CTE reporting

Independent variable	(1)	(2)	(3)	(4)
Intercept	3.421 (4.017)***	3.378 (3.997)***	4.476 (6.815)***	4.460 (6.829)***
WORK_CAP	1.243 (1.934)*	1.360 (2.151)**	1.035 (2.167)**	1.135 (2.405)**
INVEST	1.546 (2.236)**	1.603 (2.337)**	1.249 (2.238)**	1.223 (2.201)**
ACQ	-0.315 (-0.375)	-0.178 (-0.216)	-0.262 (-0.358)	-0.203 (-0.279)
BS_RESTRUCTURE	1.066 (1.417)	1.209 (1.637)	0.146 (0.242)	0.032 (0.054)
INITIAL_RETURN	-0.491 (-0.698)		-0.226 (-0.382)	
AFTERMARKET_RETURN	-1.120 (-0.940)		-1.107 (-1.335)	
CASH_FLOW			-1.668 (-2.936)***	-1.689 (-3.005)***
EARNINGS	0.539 (0.704)	0.233 (0.330)		
M/B	-0.077 (-1.551)	-0.092 (-2.189)**	0.019 (0.699)	0.016 (0.833)
Model F	1.970*	2.424**	3.046***	3.695***
Adjusted R ²	8.55	8.33	10.81	10.70

The sample includes CTE IPOs listed on the Australian Securities Exchange between 1999 and 2007. Cell values represent unstandardised regression coefficients for individual variables, with corresponding *t*-statistics in parenthesis; Dependent variable is the period that CTE provides quarterly reports to the ASX; WORK_CAP is unity for companies specifying in the offer document that IPO proceeds will be used for working capital purposes; INVEST is a dichotomous variable where unity designates companies using the offer proceeds for (internal) investment purposes; ACQ is a dichotomous variable where unity designates companies intending to use offer proceeds for acquisitions of other businesses or their parts, patents or technology; BS_RESTRUCTURE is a dichotomous variable where unity represents companies using the offer proceeds for balance sheet restructure (for example, debt repayment); INITIAL_RETURN is the return to subscribing investor in an IPO (difference between the offer price and the first trading day closing price); AFTERMARKET_RETURN is the return on an IPO in the first 20 trading days after listing (excluding initial returns to subscribing investors); CASH_FLOW is a dichotomous variable where unity represents companies with positive cash flows forecast (for the post-offer year) in the offer document; EARNINGS assigns unity if positive earnings were forecast in the IPO prospectus for the post-offer year; M/B is the market to book value of equity on listing; *, **, *** significant at alpha 0.10, 0.05, respectively 0.01 level. All regression models have homogenous variance of residuals.

Table 6 results indicate that the intended use of IPO proceeds has an effect on duration of quarterly reporting by CTEs. In particular, the use of offer proceeds for internal purposes (such as working capital and investments in plant and equipment) results in significantly longer quarterly reporting (WORK_CAP variable significant at 10 percent in regression model one). The use of offer proceeds for internal purposes (WORK_CAP and INVEST) could indicate that a CTE has a shortfall of funding of its operations and is perhaps less likely to be profitable in the near term. This is further

¹⁶ The minimum Tolerance statistic between explanatory variables in all regression models are above 0.5 (Variance Inflation Factor less than 2) confirming that the regression models in Table 6 does not suffer from multicollinearity. Removing collinear variables from regression models in Table 6 does not have a material effect on our results or conclusions.

supported by the results in regression models 3 and 4, which indicate that CTEs forecasting positive cash flows from operations for the post-offer year spend significantly less time as CTEs (i.e. they manage to have four consecutive quarters of positive cash flows and cease quarterly reporting to the ASX). However, the forecast earnings variable does not have a significant effect on duration of CTE quarterly reporting. Moreover, the use the offer proceeds for balance sheet restructuring (debt repayments or divestments by existing shareholders) or acquisitions do not have a significant effect in regression models in Table 6. However, the M_B variable has a significant negative effect (regression model 2 in Table 6) indicating that CTEs with greater market-to-book value of equity have significantly shorter duration of quarterly reporting.

4.4.3. Probability of CTE continued reporting

The results in Table 7 provide the analysis of the likelihood of a CTE continuing to be required by the ASX to provide quarterly cash flow reports beyond the initial two-year period. Around 81 percent of CTEs are required by the ASX to continue submitting quarterly cash flow reports (Appendix 4C) after the initially stipulated eight-quarter period. Results in Table 7 indicate that the probit regression models correctly predict between 86 and 88 percent whether a CTE is likely to continue submitting quarterly reports beyond two years after listing. Pseudo R^2 (McFadden R^2) range between 17.8 and 30 percent indicating that the regression models exhibit moderate power to explain the likelihood of continued CTE quarterly reporting.

Table 7 Probit analysis of the likelihood of CTE reporting beyond 2 years after listing (8 quarterly reports)

Independent variable	(1)		(2)		(3)		(4)	
	Probit coefficient	z-statistic	Probit coefficient	z-statistic	Probit coefficient	z-statistic	Probit coefficient	z-statistic
Intercept	1.481	1.207	0.198	0.202	1.483***	2.649	1.657***	5.062
AGE	0.214	1.384	0.228	1.571				
EARNINGS					-0.671	-1.379	-0.738*	-1.841
CASH_FLOW	-1.423***	-3.215	-1.372***	-3.533				
INITIAL_RETURN	0.131	0.233	0.195	0.393	0.056	0.119	0.083	0.186
AFTERMARKET_RETURN	-1.454**	-2.246	-1.388**	-2.304	-1.125	-1.587	-1.180*	-1.751
M/B	-0.032	-1.467	-0.029	-1.527	-0.081*	-1.697	-0.069*	-1.658
WORK_CAP	-0.571	-1.158			0.109	0.268		
INVEST	-0.735	-1.375			0.139	0.337		
ACQ	-0.342	-0.607			-0.461	-0.945		
BS	-0.206	-0.458			0.474	0.997		
_RESTRUCTURE								
<i>Pseudo R²</i>		29.88***		25.62***		21.28**		17.79***
<i>Percent correct predictions</i>		88.29		86.61		88.24		86.05

The sample includes CTE and non-CTEs IPOs listed on the Australian Securities Exchange between 1999 and 2007. AGE is a natural logarithm of the number of days between the company incorporation date and the ASX listing date; EARNINGS (CASH_FLOW) is a dichotomous variable where unity represents companies with positive earnings (cash flows from operations) forecast (for the post-offer year) in the offer document; INITIAL_RETURN is the return to subscribing investor in an IPO (difference between the offer price and the first trading day closing price); AFTERMARKET_RETURN is the return on an IPO in the first 20 trading days after listing (excluding initial returns to subscribing investors); WORK_CAP is unity for companies specifying in the offer document that IPO proceeds will be used for working capital purposes; INVEST is a dichotomous variable where unity designates companies using the offer proceeds for (internal) investment purposes; ACQ is a dichotomous variable where unity designates companies intending to use offer proceeds for acquisitions of other businesses or their parts, patents or technology; BS_RESTRUCTURE is a dichotomous variable where unity represents companies using the offer proceeds for balance sheet restructuring (for example, debt repayment); M/B is the market to book value of equity on listing; *Pseudo R²* (McFadden R^2) was calculated as $1 - (\log \text{likelihood of the estimated model} \div \log \text{likelihood of a model which includes intercept only})$; *Percent correct predictions* are calculated using a binary logistic model; *, **, *** significant at alpha 0.10, 0.05 and 0.01 level respectively. Dependent variable is a dichotomous outcome, whether

CTE IPO company continues submitting Appendix 4C quarterly reports to the ASX beyond two years (eight quarters) since listing (1) or not (0).

In particular, we find support for hypothesis H4 and for hypothesis H.4.a where forecast cash flows and earnings have a significant negative effect on the likelihood of continued quarterly reporting. Thus, the two variables indicate that positive forecast earnings or cash flows from operations signal whether a CTE is likely to successfully meet the minimum requirement (four consecutive quarters of positive cash flows from operations) in the first two years of listing (where the EARNINGS variable is significant at the 10 percent level (regression model 4) while the CASH_FLOW variable is significant at the 1 percent level (regression models 1 and 2)).

We find no support for hypothesis H.5, because the initial listing returns do not significantly contribute to the explanation of the likelihood of continued quarterly reporting. In contrast, the AFTERMARKET_RETURN variable is significantly negatively correlated with the likelihood of continued quarterly reporting by CTEs (regression models 1, 2 and 4, significant at the 10 percent level in regression model 4), supporting hypothesis H.5. Thus, investors are likely to discover early in the aftermarket which CTEs are likely to become profitable (and therefore less likely to continue quarterly reporting). This result is consistent with the results for the CASH_FLOW and EARNINGS variables, but also with the direction of the M_B variable, which has a significant negative effect (regression models 3 and 4 in Table 7). Thus, greater market-to-book value of equity CTEs (at listing) are less likely to continue quarterly cash flow reporting beyond two years after listing. Finally, we find no effect of the use of IPO proceeds on the likelihood of continued quarterly reporting (regression models 1 and 3).

In summary, the results for in Tables 5, 6 and 7 are largely consistent. The results indicate that CTEs are significantly more likely to return to equity markets for additional funding in the first three years after listing (Table 5, Panel A). However, we find no effect of the interaction between the CTE variable and other explanatory variables (Table 5, Panel B). The results for AFTERMARKET_RETURN in Table 6 provide evidence for the market feedback model (Jegadeesh et al., 1993), indicating that CTEs with superior short-term aftermarket returns are significantly less likely to continue quarterly reporting beyond the initial two-year period. Furthermore, results for CASH_FLOW and EARNINGS variables (in Table 5, Panel A) lend support for the near-term liquidity needs model (DeAngelo et al., 2009) where sample IPOs with positive earnings (or cash flow) forecasts are less likely to have an SEO. Likewise, CTEs with positive cash flow forecasts have significantly shorter duration of quarterly reporting (Table 6) and are less likely to continue submitting quarterly reports beyond the two-year period (Table 7). Similarly, while sample IPOs with greater M/B value of equity at listing are significantly less likely to have an SEO within three years of listing (Table 5, Panel A regression models 1 and 2), CTEs with greater M/B value of equity have significantly shorter duration of quarterly reporting (Table 6, regression model 2) and are less likely to continue quarterly reporting beyond the two-year period (Table 7, regression models 3 and 4).

5. Conclusions

This study examines recent IPOs listed on the Australian Securities Exchange (ASX) between 1999 and 2007. Among those recent IPOs is a sub-group of companies listed as commitments test entities (CTEs). CTEs are a subset of ASX listed IPOs, the result of an alternative path to seek admission to the official list of the ASX based on the commitments to use the offer proceeds. This follows relaxation to the listing rules and the passing of the Commonwealth Law Economic Reforms Program Act 1999 (Cth) that allows relatively small and unprofitable companies to list on the ASX while agreeing with the Exchange on the use of the offer proceeds. The ASX monitors this process through quarterly reports these entities are required to submit to the Exchange usually for a minimum of two years.

We test the ability of the publicly available information around the time of the initial public offer to explain the likelihood of subsequent equity offer within three years after listing. Studying this subset of the population of ASX listed IPOs allows us to consider if the explanatory variables of the SEO probability (established in previous research) are applicable to small growth orientated companies such as CTEs.¹⁷ Our results provide some support that public information available around the time of the IPO can explain the likelihood of SEO by recent CTE and non-CTE IPOs.

Overall, we find that individual variables constructed from public information provide only partial explanation of the likelihood of an SEO. Moreover, CTEs are significantly more likely to source additional equity funding before the third-year anniversary of listing than the concurrently listed non-CTEs. However, variables constructed from public information for the purpose of this study cannot significantly differentiate between CTE and non-CTE in respect to SEO probability (none of the interaction variables in Table 5, Panel B are significant).

Furthermore, we explore the relationship between expected profitability and the need to source additional equity finance. We examine the relationship between forecast profitability (proxied by forecast earnings and cash flows in this research) and the likelihood of CTEs achieving positive cash flows from operations over a full year.¹⁸ We extend this analysis and also use public information available around the time of listing to explain the duration of CTE quarterly reporting.

Our results indicate that both initial listing returns (to subscribing investors) and subsequent short-term aftermarket returns provide a valid signal of the likelihood of a subsequent SEO within three years after listing. Thus, we find support for both the quality signalling model (Welch, 1989) and the market feedback model (Jegadeesh et al., 1993). However, we find stronger support for the market feedback model (aftermarket returns in Table 5, Panel A). Our results are therefore consistent with the recent IPO evidence from the USA (Kennedy et al., 2006), which indicates stronger support for the market feedback model compared to signalling by underpricing to explain the probability of an SEO.

¹⁷ This approach has been followed in the past (for example) for resource sector IPOs (Ritter, 1984; How, 2000) and high technology IPOs (Ho et al., 2001).

¹⁸ In addition to investing the IPO proceeds as agreed with ASX, CTEs are required to post four consecutive quarters of positive cash flows from operating activities to be deemed as having satisfied the conditions of listing under the CTE listing provision.

Our findings indicate that the majority of CTEs do not achieve four consecutive quarters of positive cash flows from operations in the first two years of listing. Thus, most CTEs are required to continue submitting quarterly cash flow reports (Appendix 4C) to the ASX beyond the first two years of listing. While our models have a limited ability to explain the duration of quarterly reporting by CTEs, the results indicate that the use of IPO proceeds for internal purposes (for general purposes such as working capital, and for investments such as expenditures on plant and equipment or R&D) lead to longer duration of CTE quarterly reporting. This is perhaps due to the nature of investments of IPO proceeds leading to a longer investment cycle to achieve profitable outcome for the newly listed entity. This is further supported by our results which indicate that CTEs are significantly younger entities at listing than non-CTE IPOs. Furthermore, positive cash flow forecasts in the IPO document signal significantly shorter duration of CTE quarterly reporting, as well as significantly reduced probability of continued quarterly reporting beyond the second-year anniversary of listing. CTEs that achieve superior short-term post-listing share returns, and those with greater M/B value-of-equity are significantly less likely to continue quarterly reporting beyond the initial two years. Likewise, CTEs with greater M/B value-of-equity have significantly shorter duration of quarterly reporting to the ASX.

However, given significant intercepts in most regression models in Tables 5, 6 and 7, it is possible that our regression models have omitted additional factors which have the ability to explain the likelihood of an SEO, as well as duration of quarterly reporting by CTEs and the likelihood of continued quarterly reporting beyond the first two years. Further research could examine the relationships between CTEs and external parties in the IPO such as underwriters or venture capitalists.

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