

LONG-RUN SURVIVAL AND PERFORMANCE

of Australian dotcom IPOs

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This paper explores the long-run survival and share market performance of companies which made an Initial Public Offering (IPO) around the time of the share market correction in 2000, widely known as the dotcom or internet crash. We find that dotcom stocks failed no more frequently than non-dotcom stocks and our results were not sensitive to listing pre- or post-correction. Further, we find that non-dotcom stocks did not significantly outperform those of dotcom stocks. These findings challenge the conventional wisdom on the dotcom bubble.

So-called 'unicorns', privately held high-tech start-up companies often with valuations over \$1 billion, are currently attracting investors' attention. Whether these valuations are justified, or signal another market correction, is yet to be determined. In the meantime it seems an opportune time to revisit the aftermath of the 2000 dotcom crash in search of useful lessons for today's investors.

The late 1990s were marked by the founding of numerous internet-based companies commonly referred to as dotcoms. Given the poor performance of investments in dotcom companies noted in other countries such as the US, this paper considers the long-run survival and investment return of Australian dotcom IPOs. A study of Australian dotcom issuers is warranted due to the significant differences between the US and Australian markets in terms of listing rules, issue procedures and issue size. While several studies have looked at short-run IPO performance, we consider whether investors would have been better or worse off over time if investing in Australian dotcom IPOs as opposed to non-dotcom IPOs.

The commonly held perception is that most of the dotcoms were a poor investment with few companies providing significant long-term returns. That many dotcoms failed is beyond dispute. In 2002, *Fortune* noted that 135 US dotcoms went bankrupt or shut down in 2000 (see Mahajan et al. 2002). Several possible reasons have been advanced for these failures including investor overenthusiasm, a lack of viable business models, questionable profit forecasts, and a lack of both adequate assessment valuation models and management expertise.

The last technology boom

In the late 1990s and early 2000 vast sums of money were invested in dotcoms. Low interest rates, widely available venture capital and increasing stock prices stimulated investment frequently via an IPO. Despite often not having generated any revenue prior to IPO, issues began trading at prices significantly above their subscription prices. By the beginning of 2000, many investors and commentators believed that stock prices, particularly those of dotcom stocks, were inflated and that a market correction was imminent (Steen and Turpie 2000). In mid-April of that year the market correction (also popularly known as the 'tech wreck') occurred. While the price of virtually all dotcom IPOs subsequently crashed, several of the dotcom IPOs from that time have gone on to become corporate giants.

Hot IPO Markets

Ibbotson and Jaffe (1975) noted evidence of 'fads' in the US market for IPOs. They called these events 'hot issue markets' and noted that such markets are characterised by numerous offerings, the concentration of new issues in particular industries, a preponderance of smaller issues, frequent oversubscription and abnormally high initial returns. Ritter (1984) investigated the initial returns of IPOs in the US 'hot issue' market of January 1980 to March 1981 and reported significantly higher initial returns for IPO stocks that went public in 'hot' rather than 'cold' markets. The high initial returns were almost entirely confined to IPOs of resource stocks. Other researchers have linked investor sentiment or overconfidence in a particular industry's future profitability to IPO underpricing in 'hot' markets including Helwege and Liang (2004), Derrien (2005) and Ivanov and Lewis (2008).

International studies consistently report high positive initial returns for dotcom IPOs made in the period prior to the stock market correction and subsequent negative returns in the post-correction period. In a study of US online retailers that went public, Mahajan et al. (2002) found that by the end of 2000 only one IPO still had a stock price higher than the offer price. Likewise, Coakley et al. (2008) found significant underperformance after listing in high-technology IPOs which went public in the 'hot' UK market at the time.

Evidence of Australian dotcom IPO performance is rather limited. Steen and Turpie (2000) examined the initial post-listing stock price returns for dotcom IPOs relative to all IPOs in Australia during 1999. By the close of the first day of trading, subscribers to the IPOs of dotcom companies would have earned an average market-adjusted return of 60.84 per cent, compared with 35.52 per cent for an investment in non-dotcom IPOs.

Hot Markets and Long Run Returns

While initial subscribers may gain high short-term returns, research suggests that over the long-run IPOs on average earn lower returns than comparable existing or seasoned firms. Ritter (1991) found that from their issue date to the third anniversary of their listing, US IPOs on average substantially underperformed a matched sample of seasoned firms. This finding included significant variation in performance depending on the year of issue and the issuer's industry; companies that went public in high volume or 'hot' years performed the worst. However, using a larger sample and longer return period Helwege and Liang (2004) found no significant difference in post-issue operating performance between IPOs listed in 'hot', 'cold' or 'neutral' markets.

A high proportion of poor quality IPOs made in 'hot' markets should translate over time into higher failure rates compared to IPOs made in 'cold' markets. Further the returns of IPOs made in the 'hot' industry should adjust other underperforming stocks downward over the long-term. Cook et al. (2003), examining US IPOs listing between 1980 and 2002, found IPOs during 'hot' markets were less likely to survive in comparison to firms making IPOs in 'cold' markets. However, more recent research by Nguyen et al. (2015) finds that US dotcoms did not fail more frequently than other firms.

Australian studies have also found poor long-run IPO returns. Both Mustow (1994) and Allen and Patrick (1996) document underperformance in post-listing returns of IPOs over a three-year period after listing of -25.38 per cent and -116.11 per cent, respectively. These two studies differed in the sample period analysed, 1984 to 1988 versus 1974 to 1984, respectively. Greater underperformance following the earlier post-listing period is consistent with the after-effects of a 'hot issue' market. While there have been a number of studies into the stock market performance of dotcom IPOs, few consider the long-term survival and stock market performance of Australian dotcom IPOs.

Data and methodology

The sample consisted of all new listings on the ASX between 1 January 1999 and 31 August 2001, as listed on the Connect4 database. Each IPO was examined to determine whether it was a true IPO in the sense that it was the first equity issue to the market at large. Investment and property trusts, relistings, spin-offs, compliance listings, companies currently listed on a foreign exchange and issues of convertible securities were excluded from our sample. The period was chosen to obtain a split of approximately 16 months either side of the 14 April 2000 stock market correction. Share prices were obtained from the SIRCA database. Company-specific data were obtained from company prospectuses and the Connect4 database.

Of the 299 IPOs listed during the period, 98 were classified as dotcom companies, determined from the description of the company's business activities in the prospectus and confirmed in the company details section of the Aspect DatAnalysis database. From the description we formed a judgement as to whether the company's main activities were focused on the development of internet-based technologies and applications and, hence, were classified as dotcoms. We also cross-checked our decisions against the GICS classification (451010 Internet Software and Services) index for each company.¹ Some notable companies that were thus identified as dotcoms included: domain name registration company *Melbourne IT*; online travel booking company *travel.com.au*; online accounting software company *Reckon*; digital advertising and online marketing company *Emitch*; and IT infrastructure company *eCORP*.

Performance Measures

Following accepted methodology, the abnormal return for each IPO, i , over the period $t-1$ to t is defined as AR_{it} where:

$$AR_{it} = \frac{P_{it} - P_{i,t-1}}{P_{i,t-1}} - \frac{I_t - I_{t-1}}{I_{t-1}}$$

and

P_{it} = the closing price of share i , t periods after the initial offering, where t = day 1 to day 21 and months 2 to 120, and t_0 is the offer date,

I_t = the value of the All Ordinaries Accumulation index t days or months after the offering.

The Average daily market Adjusted Return, AAR_t , (calculated to accumulate the abnormal returns for a portfolio of N companies at time t) is given as:

$$AAR_t = \frac{\sum_{i=1}^N AR_{it}}{N}$$

The sample mean AAR_t is a performance index reflecting the return (in excess of the market return) on an investment, divided equally among the N issues in the sample.

The Cumulative market Adjusted Return (CAR) for the sample for months 2 to 120 is:

$$CAR_t = \sum_{t=1}^T AAR_t$$

The most commonly used criteria for identifying 'hot' issues markets are high IPO volume or high level of initial returns. These two criteria are related as shown by Lowry and Schwert (2002). They investigated the relationship between volume and underpricing or high initial returns over 'hot' and 'cold' markets and found that periods of high underpricing were typically followed by high IPO volume. In addition to these two indicators of IPO market activity, Coakley et al. (2008) use a non-negative autocorrelation in the number of yearly IPOs to capture the momentum generated by investor sentiment in 'hot' markets. This additional criteria requires that the number of IPOs in a 'hot' market year be no lower than that in the previous calendar year. As this study considers a 16-month period either side of a clearly identified market correction, we define the hot market as the period of high levels of initial returns prior to the stock market correction.

Results

US stock markets experienced a major correction on Friday 14 April 2000. While the markets had been experiencing a degree of higher than usual volatility in the preceding weeks, this date marked the most significant correction for several years. The Australian market followed, falling 5.68 per cent when the market closed on the following Monday. This correction has become known as the 'tech wreck'. Table 1 shows descriptive statistics of dotcom and non-dotcom IPOs pre and post 14 April 2000. The table indicates that, on average, pre-crash and post-crash dotcom IPOs raised less funds than non-dotcom IPOs, however, the difference was not statistically significant. In terms of total assets, dotcoms were on average larger than non-dotcoms pre-crash, but the difference was statistically insignificant. Post-crash non-dotcom IPOs were significantly larger but this maybe somewhat distorted by a particularly large IPO. In the wake of the 'tech wreck' the number of IPOs listing did not fall although fewer dotcoms listed post-correction (43 as opposed to 55 pre-correction).

TABLE 1: Descriptive statistics IPOs, pre and post 14 April 2000

IPO type	Pre/Post 14-4-2000	Number of IPOs	Amount raised (mean \$m)	Total net assets (mean \$m)
Non-dotcom	Pre	81	33.64	7.32
Dotcom	Pre	55	24.08	8.67
Total	Pre	136	29.77	7.86
Non-dotcom	Post	120	26.52	41.10*
Dotcom	Post	43	23.68	23.04
Total	Post	163	25.76	35.92
Total sample		299	27.62	22.37

*Includes Australian Wheat Board with assets of around \$2.7 billion.

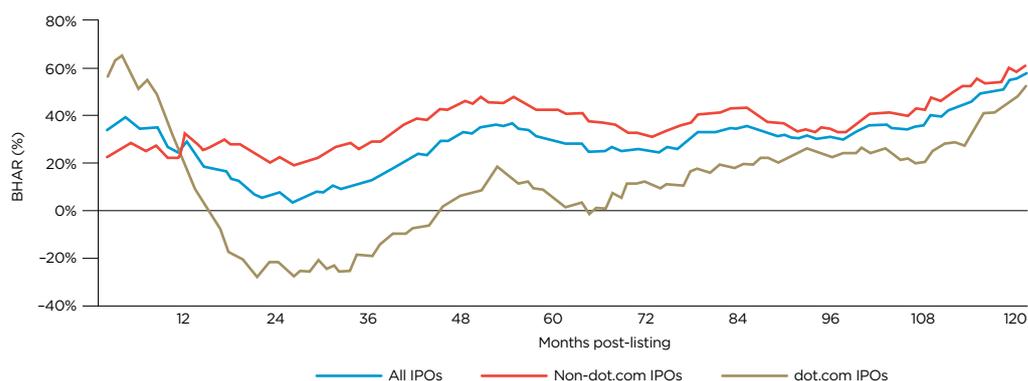
Table 2 shows initial returns for all IPOs were dramatically lower post-correction (10.46 per cent) than pre-correction (58.69 per cent) and that the difference was statistically significant at the one per cent level. This supports the notion of a 'hot' issue IPO market. Mean returns pre-correction for dotcom stocks (80.21 per cent) were far greater than non-dotcom stocks (44.08 per cent). These results were reversed post-correction with dotcom stocks returns (5.60 per cent) substantially lower than non-dotcom stocks (12.21 per cent).

TABLE 2: Initial market-adjusted returns, January 1999 to August 2001

	Pre market correction	Post market correction
	Whole sample	Whole sample
Mean (std. dev.)	58.69 (108.52)	10.46 (44.93)
Minimum	-49.00	-74.00
Maximum	730.00	289.00
	Non-dotcom IPOs	Non-dotcom IPOs
Mean (std. dev.)	44.08 (100.09)	12.21 (41.90)
Minimum	-49.00	-53.00
Maximum	730.00	289.00
	Dotcom IPOs	Dotcom IPOs
Mean (std. dev.)	80.21 (117.50)	5.60 (52.70)
Minimum	-29.00	-74.00
Maximum	610.00	199.00

We examine the performance of dotcom IPOs over a 10-year time horizon. While this is a long period for most capital market studies it is relevant in the Australian context given the long-term nature of equity market investment particularly in the form superannuation. Figure 1 illustrates the long-run CARs of dotcom, non-dotcom and all IPOs listed for a period of two to 120 months post-listing. CARs of dotcom IPOs fall dramatically after month four and by the end of the year had lower returns than non-dotcom IPOs. This indicates that dotcom stocks were initially overpriced compared with non-dotcom stocks, and when the market re-evaluated their future, prices fell accordingly. Statistically, the difference between the CARs of dotcom and non-dotcom IPOs was significant for the first five months of trading. Unlike those of the dotcom stocks, CARs of non-dotcom IPOs were in excess of 20 per cent for the full 12 months.

FIGURE 1: Cumulative Market Adjusted Average Returns post-listing



At month 120, CARs of non-dotcom IPOs were approximately 60 per cent while those of dotcoms were just over 50 per cent. The difference between CARs of the two groups was statistically insignificant and hence dotcom stocks did not underperform non-dotcom stocks.

Table 3 indicates the listing status of the IPOs as at the end of December 2010. It shows that a substantial percentage of firms had delisted in the 10 years following the crash. To investigate the survival of dotcom versus non-dotcom IPOs we employ a Hazard model. Hazard models estimate the effect of variables on an event, in this case delisting, at a given time.² Time, from IPO to delisting was used as the variable of interest. Independent variables used are: logSIZE, the log of a company's nominal size at listing, in millions; PRECRASH, a dummy variable coded 1 if the company listed before the crash or zero if listed afterward; MISPRICE, the listing day return; and DOTCOM, a dummy variable coded one for tech companies and zero for all others. Data is right censored as at 31 December 2010.

TABLE 3: Status of IPOs listed January 1999 to August 2001, as at 31 December 2010

Period	IPO Type	Listed	Delisted	% Delisted
Pre-crash	Non-dotcom	52	29	55.8
	Dotcom	38	17	44.7
	Total	90	46	51.1
Post-crash	Non-dotcom	84	36	42.9
	Dotcom	29	14	48.3
	Total	113	50	44.2

Table 4 shows that size is statistically significant in all models. Curiously, larger firms were more likely to delist in any given month, when we might normally expect smaller companies to be more at risk of failure or takeover. The non-dotcom model also indicates that the more underpriced companies were at listing, the more likely they were to experience delisting. In addition a cox regression for the estimated survival function revealed that dotcom IPO company survival rates were no different to non-dotcom IPO companies' rates.

TABLE 4: Cox proportional hazard models of time to delisting

	Non-dotcom		Dotcom		Full sample	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
logSIZE	0.1559	0.038*	1.0763	0.004**	0.1985	0.006**
PRECRASH	0.1106	0.671	0.2119	0.566	0.1073	0.621
MISPRICE	0.2368	0.028*	-0.3011	0.215	0.0206	0.892
DOTCOM					-0.0105	0.964
R ²	0.024		0.085		0.015	
Wald test	10.79	0.013	8.77	0.032	8.38	0.079
Sample size	201		98		299	

*Significant at 1% level; **Significant at 5% level

Concluding comments

Over the long run, investors in non-dotcom stocks earned a return in excess of 20 per cent for the entire period. On average, returns on dotcom stocks initially declined but investors would have still seen a gain of around 20 per cent on their initial investment during most of the first 12 months. Those that stayed clear of investing in dotcom IPOs would have fared much better after the initial year of listing. This, of course, is predicated on the presumption that they were lucky enough to get an allocation of the float in the first place.

It may be that dotcoms took considerable time to establish their businesses — much longer than was ever envisaged, particularly at the time of the ‘bubble’. Those that survived became profitable and desired investments over the long run. Consistent with the most recent international evidence, we find no statistically significant difference between the survival of dotcom and non-dotcom companies which made an IPO either before or after the stock market correction of 2000.

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Notes

1. Our process was required as some companies that were not classified under the 451010 GICS code were clearly ‘dotcoms’, as in the case of purely online retailers.
2. In this paper delisting indicates company failure. While not all companies that delist ‘fail’ in the sense of financial collapse, the vast majority did. Approximately 40 per cent of delisted companies entered voluntary administration, went into receivership or were liquidated. Approximately 60 per cent that delisted were taken over. In an overwhelming number of cases shareholders in the IPO made either a negligible return or a loss on their initial investment. In a handful of cases shareholders of acquired companies earned large cumulative positive returns. There was no significant difference between the CARs of acquired dotcom and non-dotcom stocks that listed either before or after the correction.

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