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Abstract

The short-run market performance of initial public offerings (IPOs) indicates that the prices are often underpriced. This is widely accepted as a universal phenomenon. To find out whether Australian IPOs are underpriced, this paper analyzes the short-run market performance of 254 IPOs by industry, listing year and issue year. To measure the performance, the first-day returns are divided into the opening price primary market and the closing price secondary market, and the post-listing returns are also examined.

The study found that, overall, Australian IPOs were underpriced by 25.47% based on abnormal returns and 26.43% on raw returns on the first-day primary market, which was statistically significant at the 1% level. However, analysis of the secondary market indicates that the Australian IPOs were overpriced by 1.55% and 1.54% on abnormal and raw returns, respectively, which was statistically significant at the 5% level. The examination of post-listing returns shows that Australian IPOs were underpriced based on cumulative abnormal returns (CARs) on the 3rd, 6th, and 10thdays by 24.63%, 24.06%, and 23.34%, respectively. The primary and post-listing analysis shows that IPOs in the industrial sector are more attractive to investors, whereas those in the chemical and materials sector are less attractive compared to other sectors. As far as the investors' wealth is concerned, the study concludes that the short-run market performance analysis should consider both the first-day and post-listing returns.

Keywords: Australian IPOs, short-run market performance, underpricing, primary & secondary market.
JEL Classification: G12, G14, G32.

Introduction

Prior studies have paid much attention to the evaluation of the market performance of initial public offerings (IPOs) owing to the wealth of investors in different countries. They have examined IPO market performance in two different periods – short-run and long-run – in terms of three phenomena: the underpricing or short-run market phenomenon, the underperformance or long-run market phenomenon, and the "hot issue" market phenomenon.

Underpricing is a short-run market phenomenon first documented by Stoll and Curley (1970), Logue (1973), and Ibbotson (1975) who used the first-day return to explain the level of underpricing. Ritter (1991) initially examined the long-run underperformance phenomenon by using post-listing returns and calculating the following measures: cumulative abnormal return (CAR), cumulative raw return (CRR), wealth relative (WR), and buy-and-hold return (BHR). These measures were also used by other researchers (Moshirian et al., 2010; Ajlouni and Abu-Ein, 2009; Ahmad-Zaluki et al., 2007; Omran, 2005; Kooli and Suret, 2004). The "hot issue" market phenomenon was introduced to the finance literature by Ibbotson and Jaffe (1975). It examined the short-run cyclical behavior of underpricing using the average initial return (AIR). Subsequently, this hypothesis was tested by many researchers (Ritter, 1984; Ibbotson et al., 1988) in different countries.

However, a review of past Australian IPO studies indicates that short-run market performance has not been evaluated by combining the first-day opening price primary market return, the first-day closing price secondary market return, and the post-listing returns. This type of IPO market performance analysis could provide more valuable information to investors. An analysis of short-run performance based on the first-day return itself may not provide sufficient information to investors, as price levels vary between the first and post-listing days. Further, variations in the opening and closing price levels of the first day of listing indicate more uncertainty about the future performance of IPOs due to factors such as lack of information and demand condition. The post-listing prices are also needed to measure short-run market performance, because the market needs more time to settle. Therefore, this paper seeks to evaluate the short-run market performance of Australian IPOs using the first-day primary and secondary market returns, and the post-listing returns by industry and different sample periods.

The remainder of this article is organized as follows. Section 1 reviews the international evidence on underpricing. Section 2 covers the data and methodology. Section 3 discusses the results and analyses and Final Section concludes the major findings.

1. The international evidence on underpricing

Table 1 shows the first-day average return of IPOs in selected developed and emerging markets.

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Table 1. Average first-day returns of IPOs in selected developed and emerging markets

Country	Average initial return	Sample size	Sample period	Author(s)
Panel A: developed markets				
Australia	19.8%	1103	1976-06	Lee et al.; Woo; Pham; Ritter
Canada	7.1%	635	1971-06	Jog & Riding; Jog &Srivastava; Kryzanowski, Lazrak & Rakita; Ritter
France	10.7%	686	1983-06	Husson & Jacquillat; Leleux & Muzyka; Paliard & Belletante; Derrien & Womack;Chahine; Ritter
Germany	25.3%	700	1978-08	Ljungqvist; Rocholl: Ritter; Vismara
Japan	40.1%	2628	1970-08	Fukuda; Dawson & Hiraki; Hebner &Hiraki; Pettway & Kaneko; Hamao, Packer & Ritter; Kaneko & Pettway; Ritter; Tokyo IPO.com
New Zealand	20.3%	214	1979-06	Vos & Cheung; Camp & Munro; Ritter
Portugal	11.6%	28	1992-06	Almeida & Duque; Ritter
South Africa	18%	285	1928-07	Page & Reyneke; Ali, Subrahmanyam & Gleason; Ritter
Spain	10.9%	128	1986-06	Ansotegui & Fabregat; Alvarez Otera
Sweden	27.3%	406	1980-06	Rydqvist; Schuster; Simonov; Ritter
U.K.	16.3%	4198	1959-08	Dimson; Levis
U.S.	16.9%	12028	1960-08	Ibbotson et al.; Ritter
Panel B: emerging markets				
Brazil	48.7%	180	1979-06	Aggarwal, Leal & Hernandez; Saito
China	164.5%	1394	1990-05	Chen, Choi & Jiang
Egypt	8.4%	53	1990-00	Omran
India	92.7%	2811	1990-07	Marisetty & Subrahmanyam
Jordan	149%	53	1999-08	Marmar
Korea	55.2%	1490	1980-06	Dhatt, Kim & Lim; Ihm; Choi & Heo; Moshirian, Ng & Wu; Cho; Ritter
Malaysia	69.6%	350	1980-06	Isa; Isa & Yong; Yong
Mexico	15.9%	88	1987-94	Aggarwal, Leal & Hernandez; Eijgenhuijsen & van der Valk
Sri Lanka	34%	105	1987-08	Samarakoon
Turkey	10.6%	315	1990-08	Kiymaz; Durukan; Ince; Kucukkocaoglu

Source: These figures were taken from Loughran et al. (2010) and the papers published by the authors.

The AIR range of developed markets varies from 7.1% to 40.1%, whereas that of emerging markets varies from 8.4% to 164.5%. The average sample sizes of the developed and emerging markets are 1919 and 684, respectively. The developed market results are more consistent than those of the emerging markets because of the lesser variation in the first-day average returns and the large sample size. Both markets show that investors achieve high returns on the very first day that a company's shares are listed on a stock exchange, which emphasizes that underpricing has been a persistent empirical phenomenon for many decades.

Moshirian et al. (2010) examined the price performance of emerging and developed Asian markets and found that China, Korea, Malaysia, Hong Kong, Japan, and Singapore were underpriced on the first-day returns by 202.93%, 70.3%, 61.81%, 21.43%, 34.04%, and 33.10%, respectively. Sohail et al. (2010) indicated that Pakistan IPOs were underpriced under the general state of economy by 42.17%, 40.99%, 37.35%, 38.17%, and 39.38% at the close of the 1st, 5th, 10th, 15th,and 20th days, respectively. Chan et al. (2004) also analyzed the Chinese IPO market and found that the average level of underpricing in A-shares and B-shares was 178% and 11.6%, respectively. Further, Banerjee et al. (2009) found that on average investors of Singaporean IPOs out-performed in the short-run market.

The US IPO market has been researched extensively by many researchers over the last two decades. Johnston and Madura (2002) studied internet and non-internet IPOs during the period from 1996 to 2000 and showed that the initial returns were more favorable for the former than the latter. Further, they showed that the level of underpricing of internet firms did not become statistically significant due to the demise of the internet sector – of a sample of 366 IPOs, the AIR was 78.5 per cent. The US IPO market was also analyzed by Loughran and Schultz (2006) and Ritter and Welch (2002), who reported that the AIRs were 18.1% and 18.8%, respectively. Further, Ibbotson (1975), Ritter (1987), and Ibbotson et al. (1994) reported that first-day returns were between 11.4% and 47.8%.

The Australian IPO market has also been widely examined over the past years. Finn and Higham (1988) reported that Australian industrial and commercial IPOs were underpriced by 29.2%. Lee et al. (1996),

How et al. (1995), and Dimovski et al. (2011) also reported that industrial IPOs were underpriced in the short-run market by 11.86%, 19.74%, and 29.6%, respectively. However, Dimovski and Brooks (2008) and How (2000) documented that mining IPOs were underpriced by 13.3% and 107.18%, respectively. Nguyen et al. (2010) found that resource IPOs were underpriced by 16.13%. Dimovski and Brooks (2005; 2004) also found that Australian mining and energy IPOs and industrial and resource IPOs were underpriced by 17.93% and 25.6%, respectively, on the first-day return. Da Silva Rosa et al. (2003) reported that venture capital-backed and non-venture capital-backed IPOs were underpriced by 25.47%, whereas Gong and Shekhar (2001) found privatized IPOs were underpriced by 11.96%. Bird and Yeung (2010) and Bayley et al. (2006) also found that Australian IPOs were underpriced by 37.35% and 26.72%, respectively.

The evidence from the international literature on underpricing shows that the level of underpricing could vary according to factors such as the sample period, state of the economy, and nature of the market or industry. Therefore, there is a need to measure the level of underpricing by industry in the current time period due to the different state of economic period.

2. Data and methodology

2.1. Data and sample selection. In order to analyze the short-run market performance of Australian IPOs, all IPO data were collected from the Connect 4 database (www.connect4.com.au), which is more specialized for IPOs. The study examines fixed-price equity IPOs listed in the Australian Securities Exchange (ASX) from January 2006 to January 2011. A sample was selected based on the stratified random sampling method by industry or sector as a main criterion. To analyze IPOs by industry, all the listed IPOs during this period were sub-divided into seven sectors using the industry criterion. IPOs of the finance, property, equity trust, and closed-end funds sector were excluded from the sample following other researchers (Dimovski and Brooks, 2004; Ahmad-Zaluki et al., 2007). These researchers mentioned that IPOs in the finance, trust, and closed-end funds sector are not comparable with non-financial companies. These companies' annual reports are normally prepared according to different statutory requirements. Mergers, takeovers, and restructuring schemes were also eliminated from the sample, because they undeservedly impact the IPO companies' performance. Due to the large number of listed IPOs in the resource sector, the selected sample from this industry represents only 33% of the total listed IPOs, while other sectors represent 100%. Based on the availability of data, 254 IPOs were finally selected as a samplefor this study.

Table 2 shows the number of sample companies, offer proceeds (market price per share * number of issued shares) and money left on the table (first-day returns in terms of AU$), which are classified by industry, listed year and issued year.

Table 2. Number of sample companies, offer proceeds and money left on the table by industry, listing year, and issue year

Sample classification	No.of IPOs	%	Offer proceeds[1] (AU$ 000')	%	Money left on the table[2] (AU$ 000')
By industry					
Resources (energy, metals & mining)	143	56%	1279743	12%	1137267
Chemicals/materials	4	2%	953400	9%	113042
Industrials	46	18%	6717995	65%	190481
Consumer discretionary/staples	31	12%	588975	6%	72296
Information technology	20	8%	645582	6%	96831
Telecommunications	4	2%	22573	0%	2749
Utilities	6	2%	79750	1%	-7020
Total	254		10288018		582106
By listing year					
2006	68	27%	2856066	28%	216233
2007	91	36%	1607983	16%	244248
2008	29	11%	361219	4%	166584
2009	17	7%	368500	4%	45445
2010	41	16%	5045650	49%	-85511
2011	8	3%	48600	0%	-4893
Total	254		10288018		582106
By issue year					
2005	9	4%	53296	1%	19299
2006	69	27%	2887770	28%	191578
2007	96	38%	1666183	16%	421421
2008	19	7%	272019	3%	-10911

Table 2 (cont.). Number of sample companies, offer proceeds and money left on the table by industry, listing year, and issue year

Sample classification	No.of IPOs	%	Offer proceeds[1] (AU$ 000')	%	Money left on the table[2] (AU$ 000')
By issue year					
2009	16	6%	332000	3%	52203
2010	45	18%	5076750	49%	-91484
Total	254		10288018		582106

Notes: [1] Market price per share X Number of issued shares. [2] Money left on the table indicates the first-day returns in AU$ earned by initial investors and also acts as transfer from the issuing IPO firm to initial investor. Itis calculated by: (Market price per share- Issued price per share) X Number of issued shares.

In comparing the number of IPOs with offer proceeds by industry, the resource sector has 56% of the sample IPO companies, but gives only 12% of the total sample offer proceeds. The industrial sector represents 18% of the sample IPO companies and contributes 65% of the total sample proceeds, which is the highest offer proceeds among the industries. The industrial sector has the highest value for money left on the table, which shows that its average market price is higher than that of the other sectors. The utility sector indicates a negative value for the money left on the table, which shows that the wealth of investors in this sector is diluted compared to the other sectors. Money left on the table had negative values in the listing years 2010 and 2011 and in the issue years 2008 and 2010 due to the higher issue prices compared to the first-day market prices.

2.2. Methodology. After selecting the sample of IPO companies by industry, listing year and issue year, the market prices of these companies were selected from the Morningstar database (www.morningstar.com.au). To measure the market performance of IPOs, this study selected the first-day adjusted opening and closing market prices, and the post-listing adjusted prices.

The first-day primary and secondary market raw returns were calculated using the following equations:

$$PR_i = \frac{P_{i,b} - P_{i,o}}{P_{i,o}}, \quad (1)$$

where PR_i is the first-day primary market raw return for security $i$measures between the issue price and the beginning price of the first day of trading, $PR_{i,b}$ is the beginning price of security i at the first trading day, and $PR_{i,o}$ is the issue (offer) price of security i at the day of issue.

$$SR_i = \frac{P_{i,c} - P_{i,b}}{P_{i,b}}, \quad (2)$$

where SR_i is the first-day secondary market raw return for security i measures between the beginning price and the closing of the first day of trading, $PR_{i,c}$ is the closing price of security i at the first day of trading, $PR_{i,b}$ is the beginning price of security i at the first trading day.

From the above raw returns (PR_i and SR_i), the market-adjusted abnormal/excess returns were also calculated to measure the short-run market performance of an IPO. The abnormal/excess return is considered a superior performance measure relative to the raw return, because it adjusts the market return of each IPO. The market return can be calculated by using ASX indices such as ASX 200, ASX 300, or ASX 500. However, this study used the All Ordinaries Index (ASX 500) as a market benchmark to measure the abnormal/excess market returns, as it covers 95% of the listed company prices in the ASX. The All Ordinaries Index was obtained from the Data Stream database. The following equations were used to calculate the market-adjusted abnormal return (AR) and the market-adjusted average abnormal return (AAR):

$$AR_{it} = R_{it} - R_{mt}, \quad (3)$$

where AR_{it} is the market-adjusted abnormal rate of return for company in period (t), R_{it} is the rate of return for company (i) in period (t) from PR_i and SR_i, R_{mt} is the rate of return on the benchmark (market) during the corresponding time period (t).

$$AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_{i.t}, \quad (4)$$

where AAR_t is the market-adjusted average abnormal return, n is the number of IPO companies in period (t).

To determine whether the average market-adjusted abnormal returns are statistically significant, this study used the following t-statistics (Ritter, 1991; Brown and Warner, 1985; Omran, 2005):

$$t(AAR) = AAR_t * \frac{\sqrt{n_t}}{\sigma_t}, \quad (5)$$

where AAR_t is the average market-adjusted abnormal return for day t, and σ_t is the cross-sectional standard deviation of the abnormal return for day t.

From the above market-adjusted average abnormal return, the market-adjusted average CAR was calculated following past studies (Ritter, 1991; Aktas et al., 2003). This measure is useful for analyzing the short-run performance of IPOs after listing. Therefore, the CAR was calculated for nine post-listing days by using the following equation:

$$CAR_{q,s} = \sum_{t=q}^{s} AAR_t, \quad (6)$$

where $CAR_{q,s}$ is the market-adjusted post-listing return (performance) from event day q to event days.

The t-statistic for the market-adjusted average CAR was computed as follows (Aktas et al., 2003):

$$t(CAR) = \frac{CAR_t}{\sigma(CAR)_t} \quad (7)$$

abnormal return over *t* days.

3. Results and discussion

This Section provides the statistical analysis and the resultsderived from the methodology discussed in section 3.2. The empirical findings of the short-run market performance on the first-day returns and the post- listing returns are discussed in sections 4.1 and 4.2, respectively.

3.1. The first-day returns of IPOs. The findings of the first-day raw and market-adjusted abnormal returns are discussed in terms of the first-day opening price primary market and the closing price secondary market. The results of both the primary and secondary market returns are given in Table 3.

All sample companies were underpriced in the first-day primary market by 26.43% based on the raw return and 25.47% based on the market-adjusted abnormal return. These returns were statistically significant at the 1% level. In comparison to the first-day primary market returns, the Australian IPOs were overpriced in the closing price secondary market by 1.54% and 1.55% based on raw returns and abnormal returns, respectively. These levels of overpricing in the closing price secondary market were statistically significant at the 5% level.

If we examine IPOs by industry, in the primary market, the highest level of underpricing was seen in the industrial-sector IPOs, of which 67.01% was based on raw returns and 68.03% on abnormal returns. However, these underpricing levels were not statistically significant. The resources-sector IPOs were generally underpriced by 17.51% on raw returns and 16.64% on abnormal returns. These underpricing levels were statistically significant at the 1% level. The levels of underpricing (23.45% on raw returns and 23.88% on abnormal returns), in the telecommunication sector, were also statistically significant at the 1% and 5% levels. IPOs in the information technology sector were also underpriced on raw returns by 20.14%, which was statistically significant at the 10% level. In contrast with IPOs in other sectors, IPOs in the chemical and materials sector were overpriced by 5.68% based on raw returns and 10.91% based on abnormal returns. It is interesting to see that these IPOs earned negative returns in the primary market on the very first day in relation to both measures. However, these negative returns were not statistically significant. According to the closing price secondary market, the highest average overpricing level on raw returns was seen in the utility-industry IPOs (7.36%), which was statistically significant at 10%, while the lowest was in the resources-sector IPOs (0.62%). According to the abnormal return, the highest overpricing level was seen in the utility sector (7.54%), which was statistically significant at the 5% level. and the lowest was in the resources sector (0.70%). The average overpricing levels in the chemical and materials sector on the raw and abnormal returns were 9.49% and 6.35%, respectively. These overpricing levels were statistically significant at the 5% level. The overpricing levels (4.52% on raw returns and 4.66% on abnormal returns), in the information technology sector, were also statistically significant at the 10% level. In the secondary market, underpricing was not found in any sector.

The listing-year analysis shows that the highest level of underpricing took place in the primary market in year 2008 based on raw and abnormal returns by 98.09% and 106.37%, respectively. These levels of return were not statistically significant. In listing years 2006, 2007, and 2010, IPOs were underpriced on raw returns by 20.97%, 18.41%, and 13.52%, respectively. These underpricing levels were statistically significant at the 1% level. According to the abnormal return, IPOs listed in 2006, 2007, and 2010 were underpriced by 17.62%, 16.38%, and 14.02%, respectively, which were also statistically significant at the 1% level. The IPOs in listing year 2009 were underpriced by 12.94% on raw returns, which was statistically significant at the 5% level. Australian IPOs were overpriced in 2011 by 0.1% based on raw returns and 4.12% on abnormal returns. Statistical significance cannot be seen in these overpricing levels. The listing-year classification of the secondary market shows that IPOs were not underpriced based on raw returns even though underpricing could be seen on abnormal returns in listing year 2008, which was not statistically significant. Statistically significant overpricing levels was found on both return measures in 2007 and 2010

only. Listed IPOs in 2007 and 2010 were overpriced on raw returns by 2.01% and 2.86%, respectively. These rates of overpricing were statistically significant at the 5% level. The overpricing levels of listed IPOs on abnormal returns (1.89% and 2.99%) in 2007 were statistically significant at the 10% and 5% levels, respectively.

When we examine IPOs in the primary market by the issue year, issued IPOs in 2006, 2009, and 2010 were underpriced by 10.66%, 15.72%, and 11.48%, respectively, based on raw returns. These levels of underpricing were statistically significant at the 1% level. The highest underpricing level was seen in 2005 based on both returns, which was statistically significant at the 10% level, while the lowest wasin 2006. Based on abnormal returns, the issued IPOs in 2010 were underpriced by 11.15%, which was statistically significant at the 1% level. In issue years 2006 and 2009, the IPOs were underpriced by 7.82% and 12.57% respectively, which were significant at the 5% level. In the Australian IPO market, overpricing was not found in any issue year, because the negative returns were not reported in these periods. Statistically significant overpricing can be found in the secondary market on both return measures in issue years 2007 and 2010. In 2007, issued IPOs were overpriced on raw and abnormal returns by 2.21% and 2.01%, respectively, and these were significant at the 5% level. The issued IPOs were overpriced on raw and abnormal returns in issue year 2010 by 2.45% and 2.58%, respectively. These overpricing levels were statistically significant at the 10% and 5% levels. The IPOs issued in all years were overpriced, except in 2008.

Table 3. First-day returns: primary and secondary market

Sample classification	N	Primary market				Secondary market			
		ARR	t-stat	AAR	t-stat	ARR	t-stat	AAR	t-stat
All sample companies	254	0.2643	2.68323***	0.2547	2.58008***	-0.01542	-2.32125**	-0.01552	-2.28958**
By industries									
Resources	143	0.1751	4.33212***	0.1664	4.25926***	-0.00624	-0.68684	-0.00705	-0.75994
Chemical/materials	4	-0.0568	-0.30442	-0.1091	-0.64118	-0.06493	-2.23596**	-0.06353	-2.08122**
Industrial	46	0.6701	1.28910	0.6803	1.30565	-0.01367	-1.02093	-0.01146	-0.84017
Consumer discretionary/staples	31	0.1874	1.49078	0.1829	1.40330	-0.01918	-0.98185	-0.01894	-0.97142
Information technology	20	0.2014	1.66072*	0.1414	1.11830	-0.04518	-1.71621*	-0.04657	-1.69014*
Telecommunications	4	0.2345	2.70353***	0.2388	2.37988**	-0.04934	-0.74846	-0.04563	-0.64157
Utilities	6	0.119	0.82420	0.1009	0.70822	-0.07361	-1.89193*	-0.07538	-2.00326**
By listingyear									
2006	68	0.2097	2.99575***	0.1762	2.57990***	-0.00501	-0.38026	-0.00596	-0.44948
2007	91	0.1841	4.28153***	0.1638	3.79262***	-0.02008	-1.98253**	-0.01899	-1.83264*
2008	29	0.9809	1.17469	1.0637	1.27483	-0.00086	-0.03953	0.00093	0.04073
2009	17	0.1294	2.48327**	0.0910	1.35423	-0.01770	-0.45353	-0.02046	-0.50255
2010	41	0.1352	4.85376***	0.1402	5.25645***	-0.02860	-1.96063**	-0.02990	-2.06199**
2011	8	-0.0094	-0.10762	-0.0412	-0.48275	-0.03145	-1.29574	-0.03278	-1.40411
By issue year									
2005	9	0.7254	1.63799*	0.6245	1.43259	-0.03660	-0.58809	-0.03654	-0.58596
2006	69	0.1066	2.95490***	0.0782	2.13436**	-0.00478	-0.41303	-0.00577	-0.49171
2007	96	0.4609	1.81547*	0.4673	1.83624*	-0.02212	-2.23252**	-0.02086	-2.04693**
2008	19	0.0692	0.65319	0.0942	0.89698	0.00697	0.19132	0.00878	0.22897
2009	16	0.1572	3.50894***	0.1257	2.22699**	-0.01030	-0.34467	-0.01361	-0.45343
2010	45	0.1148	3.81010***	0.1115	3.74274***	-0.02450	-1.88084*	-0.02583	-1.99162**

Notes: N = sample size, ARR = average raw return, AAR = average abnormal return * statistically significant at 10% level, ** statistically significant at 5% level, *** statistically significant at 1% level.

3.2. The post-listing returns of IPOs. This section analyzes the post-listing returns by calculating the CAR for nine post-listing days. The calculated average CARs of all sample IPOs for the nine post-listing days are shown in Figure 1.

Table 4 provides only the post-listing returns for the 3rd, 6th, and 10th days by all sample companies, industries, listing years and issue years. All sample IPO companies were underpriced based on CARs by 24.63%, 24.06%, and 23.34% on the 3rd, 6th, and 10th days, respectively. However, only day 6 was statistically significant at 10% level. The post-listing returns of all IPOs were decreasing from the 3rd day to the 10th day.

All IPOs in the industrial sector were underpriced except in the chemicals and material sector. Only IPOs in the industrial sector were statistically significant in all three post-listing days and underpriced by 68.3%, 67.84%, and 66.29% in the 3rd, 6th, and 10th days, respectively. The tele-

communications sector was significant only in the 6th day. The chemical and material industry is overpriced in the 3rd, 6th, and 10th days by 16.02%, 18.41% and 23.33%, respectively. Only the return in day 6 was statistically significant at the 1% level.

The highest level of underpricing was in the listing year 2008, which was statistically significant at 1% level. In 2008, the average levels of underpricing on the 3rd, 6th and 10th days were 98.72%, 98.20%, and 95.90%, respectively. The listed IPOs in 2011 were overpriced only on the 3rd day and 6th day and underpriced on the 10th day. However, these overpricing levels were not statistically significant.

The IPOs issued from 2005 to 2010 were underpriced on the 3rd, 6th, and 10th days, but only IPOs issued in 2005 were statistically significant in all three days. In 2007, the underpricing levels were statistically significant only on the 3rd and 6th days. Overpricing was not found in these issue years.

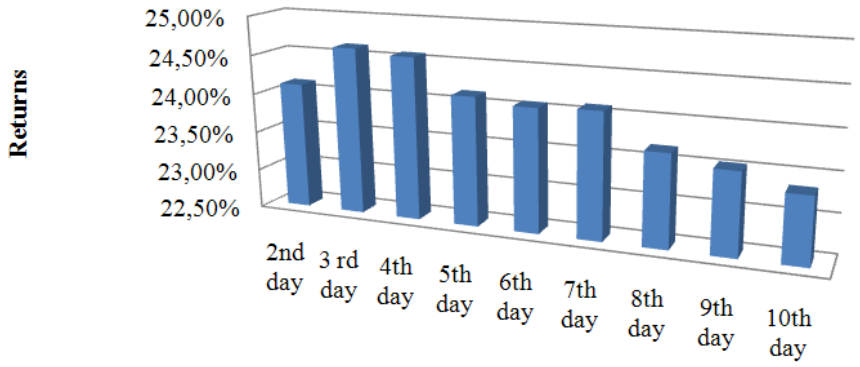

Fig. 1. The calculated average CARs for the nine post-listing days between 2006 and 2011

Table 4. Post-listing returns

Sample classification	N	Day 3		Day 6		Day 10	
		CAR	t-stat	CAR	t-stat	CAR	t-stat
All sample companies	254	0.24633	1.50236	0.24070	1.753312*	0.23345516	0.73694681
By industries							
Resources	143	0.17519	0.99419	0.17228	1.14107	0.16997	0.41786
Chemical/materials	4	-0.16029	-1.19323	-0.18414	-9.31558***	-0.23338	-1.18030
Industrial	46	0.68936	5.46692***	0.67843	6.54090***	0.66299	5.94402***
Consumer discretionary/staples	31	0.11135	0.57519	0.09562	0.69228	0.07341	0.48699
Information technology	20	0.09983	1.38996	0.09830	0.79474	0.10131	0.89582
Telecommunications	4	0.15416	1.53992	0.17258	1.95352**	0.13121	1.60006
Utilities	6	0.06337	0.25723	0.06818	0.86966	0.10006	0.61615
By listing year							
2006	68	0.22037	0.91661	0.18555	1.70326*	0.19214	1.02686
2007	91	0.14922	1.33777	0.15268	1.14235	0.12454	0.35407
2008	29	0.98972	4.68027***	0.98209	4.38880***	0.95905	3.77814***
2009	17	0.07568	0.73687	0.09411	0.72019	0.10400	0.89310
2010	41	0.11251	1.38781	0.12195	1.01284	0.11605	0.82415
2011	8	-0.07481	-0.95027	-0.05679	-0.72241	0.06993	0.06617
By issue year							
2005	9	0.63824	2.33499**	0.58679	4.77512***	0.55002	3.07244***
2006	69	0.11442	0.51734	0.08432	0.80154	0.08676	0.46525
2007	96	0.42956	2.83458***	0.43267	2.65843***	0.40998	1.15344
2008	19	0.10511	1.01209	0.10894	0.66031	0.07555	0.35237
2009	16	0.11845	1.26930	0.13064	0.99786	0.12530	1.26236
2010	45	0.08440	1.02675	0.09647	0.89051	0.12358	0.27002

Notes: N = sample size, CAR = cumulative average abnormal return* statistically significant at 10% level, ** statistically significant at 5% level, *** statistically significant at 1% level.

Conclusion

This research paper has analyzed the short-run market performance of the Australian IPOs listed from 2006 to 2011 by using the first-day opening-price primary market returns, the closing-price secondary market returns and the post-listing returns.

The analysis based on the first-day primary market returns and the post-listing returns shows that

Australian IPOs were underpriced in the short-run. This finding is in line with the underpricing of IPOs, which is widely accepted as a universal phenomenon. Although the Australian IPOs were underpriced, the post-listing returns indicate that the level of underpricing slowly decreased after the listing. The decreasing trend of post-listing returns is in line with the findings of Aktas et al. (2003), Kenourgios et al. (2007) and Kazantzis and Thomas (1996). However, Sohail et al. (2010) argue that this trend can be expected only up to the 10thday, under normal economic conditions. The decrease in post-listing returns indicates that future investors may under-perform (over-pricing) in the long-run.

The analysis of closing-price secondary market returns indicates that Australian IPOs were overpriced on abnormal and raw returns. Conversely, Chang et al. (2008) documented that Chinese IPOs were underpriced by 1.55% in the first-day closing-price secondary market. Analysis of the closing-price secondary market may be useful to investors, because the high returns of the first-day primary market are due to lack of information and the speculative behavior of investors.

A substantial variation can be seen in the level of short-run performance in the analysis of the first-day and post-listing returns by industry, listing year and issue year. IPOs issued by the chemical and materials industries were overpriced in the primary and secondary markets. Industrial-sector IPOs were underpriced by 68.03% on abnormal returns in the primary market, which was the highest level of underpricing relative to other sectors. The resource-sector IPOs were underpriced in the primary market on both return measures, which was statistically significant at the 1% level. The study found that IPOs in the primary market were underpriced, except in 2011, and overpriced in the secondary market. In the primary market, the levels of underpricing were statistically significant at 1%. In 2011, the levels of overpricing in both markets were not statistically significant. The level of overpricing in the secondary market was statistically significant in 2007 and 2010. The issue year analysis shows that IPOs in the primary market were underpriced and overpriced in the secondary market, except in 2008. Issued IPOs in both markets were underpriced in 2008, but not statistically significant. In the secondary market, statistically significant overpricing levels were found only in 2007 and 2010.

According to the post-listing analysis, industrial sector IPOs are the most attractive, being underpriced on CARs by 98.93%, 67.84%, and 66.29% in the 3rd, 6th, and 10th days, respectively. These underpricing levels were statistically significant at the 1% level. However, IPOs in the chemical and material industries are not attractive to investors, because they were overpriced based on the CAR measure for all days. However, overall, the post-listing analysis shows that investors' wealth has been decreasing as time goes by.

Wealth creation analysis in the IPO market should not simply focus on the first-day total returns, but also consider the post-listing returns. Though investors' wealth has increased in the primary market, the study concludes that it decreases in the first-day secondary market and the post-listing period.

Further studies are needed to identify why Australian IPOs are overpriced in the first-day closing-price secondary market and why the level of underpricing declines after the first-day opening-price primary market.

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