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## The pricing of underwriting services in the Australian capital market

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### Abstract

Recent media releases have placed enormous strains on the credibility of the underwriting industry. It has been alleged that underwriters in the US and UK collude and fix underwriting fees. In contrast to recent evidence on underwriter spreads in the US (Chen, H.-C., Ritter, J.R., 2000. The seven percent solution. *Journal of Finance*, in press.), we find that Australian underwriting fees are not clustered at one particular percentage. Using 282 underwritten industrial IPOs from 1980 to 1996, we find that underwriters systematically price their services according to firm-specific variables such as the offer size, the subscription period of the issue, the retained ownership after the IPO, the offer price, and whether options form part of the underwriter's compensation. © 2000 Elsevier Science B.V. All rights reserved.

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In the US, the fees investment banks charge to underwrite share offerings have not changed in more than a decade. In Britain, fixed underwriting fees are the subject of an antitrust investigation, which began hearing this month. Studies in both countries suggest issuing companies are overcharged.

Anonymous, *The Economist*, 27 June 1998

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## 1. Introduction

Despite intensive competition within the underwriting industry, recent media releases alleged that underwriters in the US and UK may collude and fix underwriting fees. The practice of fixing underwriting fees in the UK is not a new phenomenon. Levis (1990) notes that the underwriting fee structure in the UK is almost uniform across underwriters irrespective of the type, nature, and risk profile of the issuing company. Recently, Chen and Ritter (2000) show that underwriters in the US charged exactly 7% for over 90% of initial public offerings (IPOs) raising between \$20 and \$80 million from 1995 to 1998. The frequency of 7% spreads is triple the frequency of a decade earlier, and the level is about twice as high as in other countries. One of the explanations that they propose for the high underwriter spread is the implicit collusion amongst underwriters in the US. An antitrust investigation has begun in the US in 1999.

This paper aims to provide further international insights into the credibility of the underwriting industry. We begin by examining whether the cluster in underwriting spreads observed by Chen and Ritter (2000) is present in the Australian underwriting fee structure. Previous US studies commonly refer to the fee that the underwriter receives as the underwriter spread, measured as the difference between the offer price and the per share proceeds to the IPO firm divided by the offer price. This spread would typically include management fees and selling concessions. Because of the standby agreement, issuers in Australia do not receive the IPO proceeds upfront (from the underwriter) but rather at the close of public subscriptions. The Australian underwriter spread is composed of the underwriting fee, management fee, and handling fee.<sup>1</sup> These three fees are separately quoted on a per share basis. In this paper, we focus on the underwriting fee, which compensates the underwriter for bearing the risk and cost for underwriting the issue.<sup>2</sup> Since not all issues are fully underwritten, the underwriter fee is therefore

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<sup>1</sup> The management fee compensates the lead underwriter mainly for managing the float (e.g., providing an advisory role in the preparation of the prospectus and participating in the due diligence committee) and finding retailers (i.e., a syndicate of sub-underwriters) for the issue. The handling fee provides a means of compensating the Australian Stock Exchange (ASX) for bearing their stamps or other acceptable identifications.

<sup>2</sup> To test whether there is a cross-subsidisation between underwriting and management fees, we include the management fee in our underwriting spread measure. The results are generally less significant than those reported in this paper. This suggests that our measure of underwriting fee better reflects the underwriting risk of the IPO. The handling fee is payable by either the issuer or the underwriter. As the prospectus does not always state who is responsible for paying such fees, we exclude the handling fee from the underwriting fee in cases where we know that the underwriter is responsible for such a fee. We rerun all tests in this paper using the reduced sample. Given that the handling fee is typically set at 1% of the issue price, it is not surprising that similar results are obtained.

defined as the dollar underwriting fee per underwritten share as a percentage of the offer price.

Table 1 reports the underwriting fee by industry and year of listing for a sample of 282 underwritten industrial IPOs listed in Australia from 1980 to 1996. For this sample, the average underwriting fee is 3.68% with a median of 3.66%.<sup>3</sup> It ranges from 1% to 8%. Figs. 1 and 2 plot the underwriting fee against issue size and time, respectively. In sharp contrast to the US evidence, the plots show that underwriting fees in Australia vary across issue size and over time. Although there is a clustering of fees at 3%, 4% and 5%, the underwriting fee is definitely not fixed at one particular percentage.

We also investigate how underwriting fees in Australia are set. Specifically, we test whether underwriters in Australia price their services systematically according to several readily observable variables, some of which proxy for the risk and cost of underwriting an equity offer. Little attention has been paid to the pricing of underwriting services in the academic literature. As underwriting fees constitute a large component of the total costs typically incurred in a public issue in Australia,<sup>4</sup> an investigation on how underwriters price their services is thus highly warranted.

In an early attempt, Pugel and White (1988) find that various proxies for underwriting cost and issuer-specific risk explain some of the variance in underwriter spreads. James (1992) shows that the optimal pricing for underwriting services is to provide an initial discount in the spread in the hope of locking into a bi-monopolistic relationship with the issuer and earning quasi-rents in subsequent engagements. In Jain and Kini (1999), the underwriter spread is negatively related to managerial ownership, providing support for the monitoring role of the underwriter in IPO firms.

The development of an Australian fee model is motivated by several characteristics unique to the Australian market setting. For example, all IPOs in Australia are issues-cum-listings and underwritten on a standby agreement basis. Further, the offer price and issue size have to be set and disclosed in the prospectus prior to its circulation. This is typically done about 2 months prior to the IPO, in contrast to the US where the offer terms are set at the pricing meeting the day prior to the IPO. These institutional characteristics therefore provide an opportunity to test the robustness of the underwriter fee model previously developed in the US setting.

We find that the offer size, the subscription period of the issue, the retained ownership after the IPO, the offer price, and whether underwriters receive options as part of their compensation significantly explain the variance in underwriting

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<sup>3</sup> Woo (1999) reports an average gross spread (underwriting and brokerage fees) of 3.4% for a sample of 68 Australian IPOs with proceeds \$30–100 million from 1984 to 1996. Using a larger sample across the whole range of proceeds, we report an average gross spread of 4.1%.

<sup>4</sup> In Australia, underwriting and brokerage fees constitute about 75% of total costs (excluding underpricing) of public issues (Submission to the Committee of Inquiry into the Australian Financial System, 1979, 1980, 1981, Australian Merchant Bankers Associations).

Table 1  
Underwriting fees by industry and year of listing fee for a sample of 282 underwritten IPOs, 1980–1996

		Underwritten IPOs				Underwriting fee (%)			
		Count	%	Mean	Median	Mode	Standard deviation	Minimum	Maximum
<i>Panel A: By industrial classifications</i>									
ASX code	Industrial class								
06	Developers and contractors	17	6.03	3.72	3.75	5.00	1.05	1.25	5.00
07	Building materials	6	2.13	3.68	3.78	4.00	0.38	3.00	4.00
08	Alcohol and tobacco	6	2.13	3.17	3.00	3.00	0.26	3.00	3.50
09	Food and household	15	5.32	3.89	4.00	3.00	1.25	1.80	6.00
10	Chemicals	3	1.06	3.72	3.50	2.65	1.19	2.65	5.00
11	Engineering	23	8.16	3.82	4.00	4.00	1.15	1.25	6.25
12	Paper and packaging	5	1.77	4.13	3.50	3.50	2.20	2.63	8.00
13	Retail	13	4.61	2.92	3.00	3.00	0.61	2.00	4.00
14	Transport	9	3.19	3.67	3.50	3.25	0.78	2.50	5.00
15	Media	10	3.55	2.98	3.00	3.00	0.97	1.50	4.50
16	Banks and Finance	1	0.35	3.00	3.00	3.00	–	3.00	3.00
17	Insurance	4	1.42	2.68	2.50	1.70	1.04	1.70	4.00
18	Entrepreneurial investors	3	1.06	2.67	3.00	1.00	1.53	1.00	4.00
19	Investment and financial services	39	13.83	3.68	4.00	3.00	1.22	1.45	7.50
21	Miscellaneous services	58	20.57	3.77	4.00	4.00	0.90	2.00	6.00
22	Miscellaneous industrials	64	22.70	3.99	4.00	4.00	0.94	2.00	6.00
23	Diversified industrials	3	1.06	2.58	2.50	2.25	0.38	2.25	3.00
24	Tourism and leisure	3	1.06	3.00	3.00	2.50	0.50	2.50	3.50

*Panel B: By year of listing*

Year								
1980	1	0.01	1.25	1.25	1.25	–	1.25	1.25
1983	2	0.71	2.97	2.97	2.00	1.37	2.00	3.94
1984	9	3.19	3.52	3.00	3.00	1.07	2.54	6.00
1985	28	9.93	3.77	3.60	3.00	0.98	2.00	6.00
1986	48	17.02	4.00	4.00	4.00	1.04	2.30	7.50
1987	70	24.82	3.91	4.00	4.00	1.05	1.45	6.00
1988	4	1.42	3.92	4.00	4.00	0.17	3.66	4.00
1989	7	2.48	3.43	4.00	4.00	1.43	1.00	5.00
1990	1	0.35	5.00	5.00	5.00		5.00	5.00
1991	4	1.42	3.16	3.00	3.00	1.38	1.65	5.00
1992	18	6.38	3.11	3.25	3.00	0.87	1.25	4.00
1993	39	13.83	3.63	3.50	4.00	1.18	1.80	8.00
1994	43	15.25	3.41	3.50	4.00	0.89	1.70	5.00
1995	6	2.13	3.50	3.50	3.00	0.55	3.00	4.00
1996	2	0.71	3.00	3.00	3.00	0.00	3.00	3.00
Total	282	100.00	3.68	3.66	4.00	1.05	1.00	8.00

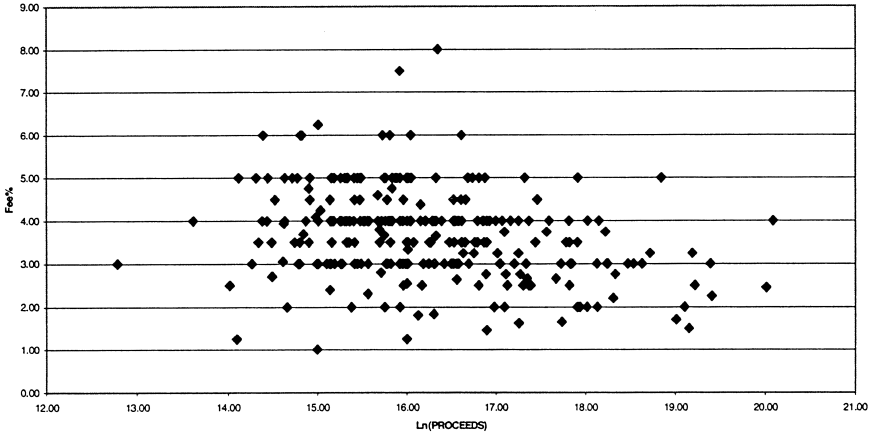


Fig. 1. Scatter diagram relating underwriting fees and offer size for 282 underwritten IPOs from 1980 to 1996.

fees in Australia. Our results do not provide evidence that underwriters in Australia collude or fix underwriting fees. Overall, we find that underwriting services in Australia are priced to compensate underwriters for the cost of underwriting and the risk of suffering capital loss in the event of undersubscription — a feature that is unique in standby underwriting agreements.

This paper is structured as follows. Section 2 discusses the institutional background of the Australian IPO market, with an emphasis on the underwriting

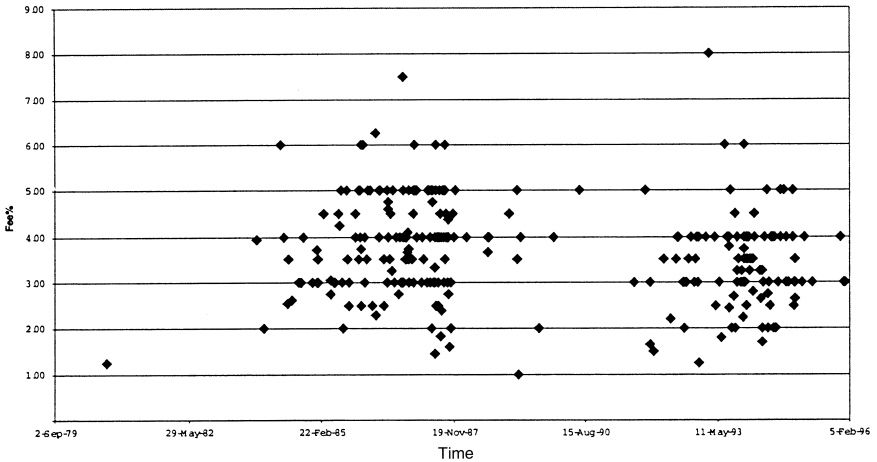


Fig. 2. Scatter diagram relating underwriting fees and listing dates for 282 underwritten IPOs from 1980 to 1996.

process. Section 3 provides a review of the previous literature. Section 4 discusses the methodology. Results are presented in Section 5. We conclude in Section 6.

## 2. Institutional background

In contrast to the US, companies conducting an IPO in Australia have to request admission to the Official List of the Australian Stock Exchange (ASX) at the time of the offer. This is referred to as issues-cum-listings (Finn and Higham, 1988). All offers of shares to the public must be made under the cover of a prospectus, which contains, amongst other information relating to the issuing firm, an underwriting agreement if the issue is underwritten. The underwriting agreement typically states the underwritten amount, the underwriting fee, and whether the issuer will indemnify the underwriter against all liabilities, costs, and expenses incurred by the underwriter in relation to the issue. It also prescribes escape clauses under which the underwriter will not soak up the shortfall in demand.<sup>5</sup> These clauses are fairly standard in most prospectuses.

In Australia, underwriting services are typically provided by brokerage firms and investment banks, and to a lesser extent, commercial banks, and life and general insurance companies. Unlike the US, where IPOs are underwritten on either a “firm commitment” or a “best effort” basis, IPOs in Australia are underwritten on a “standby agreement” contract. In the event that the offer is not fully subscribed, underwriters in Australia are liable to meet the shortfall in demand by purchasing the unsubscribed shares at the offer price. The standby contract is somewhat similar to the firm commitment basis of underwriting except that the latter requires the underwriter to purchase the issue upfront, repackage the issue and sell (and distribute) it to the public. In the best effort contract, the underwriter receives fees in proportion to the issue distributed (Ritter, 1987).

Setting the issue price is by far the most complex part of the IPO process and is typically done in negotiation between the issuer and the underwriter. One distinguishing feature of the Australian IPO process is that the offer price (and other terms of the issue) has to be determined and clearly stated in the prospectus before the offer document can be circulated to the public.<sup>6</sup> The underwriter (and the issuer) is locked into this offer price regardless of subsequent market movements.

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<sup>5</sup> Most clauses prescribe specific contingencies under which the underwriter can withdraw from the underwriting agreement. These contingencies include changes in market conditions, changes in law, failure to comply with the Corporations Law and ASX Listing Rules, a breach of significant contracts, insolvency and indictable offence committed by directors.

<sup>6</sup> As noted earlier, this is in contrast to the US where the offer price is not set until the day before official date of listing.

This is similar to the offer for sales at fixed price method in the UK (Levis, 1990). The average time delay between the date of prospectus registration and the commencement of trading on the exchange is 68 days in Australia (How, 1994).<sup>7</sup> Therefore, the risk of having to meet the shortfall in demand for IPOs is expected to be higher in Australia than in the US. This is further compounded by the fact that formalised pre-selling activities to the public at large are prohibited in Australia.<sup>8</sup>

Another aspect where the Australian capital market is different from that in the US is in its legal environment. Anderson et al. (1993) note that Australia has a much less litigious environment than the US. This is primarily due to the two jurisdictions operating under different legal systems. Relative to the US, the availability of a class of action to challenge the underwriter in Australia is much more restrictive (Law and Cullum, 1999). The fact that litigants in Australia must launch and fund their own actions further deters shareholders from bringing a lawsuit against the underwriter. Our underwriting fee model is therefore expected to be less noisy than that in the US as it is less affected by potential lawsuits.

### **3. Literature review**

Pugel and White (1988) examine the determinants of underwriting spreads in the US using firm-commitment basis IPOs listed in the first 6 months of 1981. They find that various proxies for underwriting cost and issuer-specific risk explain a significant fraction of the variance in underwriter spreads. The two proxies for underwriting cost they look at are the offer size and the complexity of the issue. For a given dollar amount of the underwriting spread, the larger the number of securities offered, the smaller the proportion of underwriting spread per share. In contrast to a “pure vanilla” issue, the negotiation process between the issuer and the underwriter for a more complex issue is likely to be longer. Also, a more complex issue is likely to entail greater effort by the underwriter in promoting and marketing the issue to the public. Thus, the underwriter is likely to take into account the complexity of the issue when determining the underwriter spread.

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<sup>7</sup> How's (1994) sample consists of IPOs listed during the pre-Corporations Law period. The average time delay has not changed much since the introduction of the Corporations Law in 1991. We find an average time delay of 65 days for industrial IPOs listed after 1991.

<sup>8</sup> Section 1078 of the Corporations Law prohibits promoters of the prospectus from “going from place to place” to offer securities for subscription or purchase. Section 1077 indicates that the phrase “going from place to place” includes communication done via “eligible communication service”. However, these sections do not apply to invitations to subscribe for an amount of at least \$500,000 by each person; s66(3)(a)(ba).

In considering the risk inherent in underwriting an issue, Pugel and White find that the underwriter is particularly concerned with the issuer-specific risk. The issuer's size and age are the two proxies for such risk. As investors and the underwriter are more familiar with larger and older issuing firms, the underwriting risk associated with such issues is lower.

Interestingly, in Pugel and White's study, the presence of leading underwriters significantly reduces the underwriter spread. They define leading underwriters as the largest 25 underwriters in terms of the volume of IPOs underwritten in their sample period. In line with Logue and Lindvall (1974) and Stoll (1976), they advance the competitive hypothesis. They argue that an issuer capable of attracting the service of a lead underwriter has the advantage of obtaining a lower underwriting spread than an issuer whose issue is underwritten by a small, local underwriting firm. The presence of a lead underwriter is thus indicative of the competitive environment in which the issue is underwritten. This is also supported in Muhammad et al. (1996) who find that competition amongst underwriters significantly lowers the underwriter spread. However, once *ex post* market volatility is controlled for, the proxy for competition is no longer significant.<sup>9</sup>

The competitive hypothesis appears to be counter-intuitive to our understanding that prestigious underwriters are inherently more costly. Booth and Smith (1986), Smith (1986), and Benveniste and Spindt (1989) argue that as prestigious underwriters tend to bring more reputational assets to the issuance process, they should be compensated more. Similarly, Gilson and Kraakman (1984), Booth and Smith (1986), and Tinic (1988) advocate that prestigious underwriters tend to extract a higher fee from issuers in order to maintain their investment in reputational capital. Further, How (1994) suggests that prestigious underwriters tend to charge a premium to reflect the higher quality services they provide.

The underwriter spread may also be set in light of future dealings with the client. James (1992) examines the pricing of underwriting services in the context of a long-term relationship between the underwriter and the issuer. He proposes that the underwriter must first acquire relationship-specific information in setting the issue price. This process often involves costly set-up expenses. The capitalisation of these expenses results in relationship-specific assets, which are neither transferable nor marketable.

The optimal pricing of services that acquire relationship-specific assets has its origin in the auditing literature (Klein et al, 1978; Farrell and Shapiro, 1989; DeAngelo, 1981), and is known as low-balling. Formally stated, DeAngelo (1981) refers low-balling to a situation where the supplier of services, due to competition,

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<sup>9</sup> The degree of actual or potential competition faced by the underwriter is proxied by the number of competing underwriters for each \$100 million offerings in a given 3-digit SIC industry code. It is also possible that high reputation underwriters are associated with lower spreads due to their low risk clients. The evidence in Carter and Manaster (1990) shows that high reputation underwriters choose low risk clients in an attempt to protect their reputation.

provides a discount in the initial fee with the expectation of earning quasi-rents in subsequent dealings with the recipient of services. James (1992) first attempts to study low-balling effects on underwriting spreads. He uses variables which Pugel and White found to be significant in explaining the pattern of underwriter spreads in the IPO market. Using shares-only IPOs in the US market from 1980 to 1983, he finds evidence of low-balling in the underwriting industry.

In Jain and Kini (1999), the effect of the underwriter's monitoring role in the IPO market on the underwriting spread is examined. They find a negative association between the underwriter spread and retained ownership (and institutional ownership). Following Jensen and Meckling (1976), they conjecture that IPO firms with higher retained ownership have less agency problems. The negative relationship between the underwriter spread and ownership therefore suggests that underwriters charge higher fees for firms with more agency problems, supporting the need for underwriter monitoring in the IPO market.

Although Chen and Ritter (2000) do not specifically develop an underwriting fee model, their study is relevant in providing some factors potentially important in explaining how the fee is set. They find a strong clustering of underwriter spreads at 7%, particularly for "moderate size" IPOs (defined as those with proceeds of \$20 million up to \$80 million) issued over the period 1995 to 1998. They provide a number of explanations for three observations made of US underwriting spreads: (i) Why are the US spreads higher relative to other countries? (ii) Why are the spreads clustered at 7%? And (iii) why is there an increased clustering of spreads over time? The explanation that they favour for the observed patterns in the spread is the strategic pricing (or implicit collusion) explanation, where underwriters act strategically to avoid turning IPO underwriting into a "commodity business" (p. 13). That is, if underwriters were to compete aggressively on the basis of fees, this may result in underwriters charging lower spreads in the future, resulting in a lower present value of profits to the underwriting industry.

In summary, the US evidence suggests that prior to the 1990s, gross spreads were variable and cost-based. In the 1990s, for moderate size IPOs, spreads have been independent of costs.

#### **4. Data and methodology**

To ensure that only "unseasoned" issues are included in our sample, we excluded from our sample foreign owned or affiliated companies; companies either previously listed on or registered in a foreign stock exchange before becoming listed on the ASX; companies formed through a Scheme of Arrangement; unit trusts; and privatised public sector entities. We identify a total of 282 underwritten industrial IPO listings in Australia from 1980 to 1996 for which we

Table 2  
Determinants in the fee model — notations and measurements

Explanatory variables	Denoted by	Measured as	Predicted sign
<i>(A) Issue costs</i>			
Offer size	PROCEEDS	The product of offer price and the number of underwritten ordinary shares offered in the issue, measured in 1998 dollars.	—
<i>(B) Ex ante offering risk</i>			
Firm size	ASSET	The pro forma value of total assets	—
Issuers age	AGE	The number of calendar days from incorporation to the date of prospectus	—
Growth potential	GROWTH	One minus the net tangible assets backing per share.	+
<i>(C) Subscription period</i>			
Subscription period	PERIOD	The number of calendar days from the date of opening subscription to the date of closing subscription	+
<i>(D) Reputation premium</i>			
Underwriters' reputation	UWRITER	The maximum weighted dollar value of all shares underwritten by a given underwriter divided by the total dollar value of all IPOs ( $\times 100$ )	+
<i>(E) Retained ownership</i>			
Retained ownership	ALPHA	One minus the number of shares offered in the prospectus as a percentage of total shares outstanding after the IPO.	—
<i>(F) Low balling effect</i>			
Repeated issuer	REISSUE	Firms that issue equity 3 years subsequent to their IPO take a value of 1, 0 otherwise.	—
<i>(G) Control variables</i>			
Package IPOs	PIPO	Firms that issue options with their offerings take a value of 1, 0 otherwise	?
Underwriters' option	UWOPTION	Firms that issue options as part of their compensation to underwriters take a value of 1, 0 otherwise	?
Market states	HOT	IPOs issued during the period from November 1984 to just before the October 1987 crash, and January 1992 to August 1993, take the value of 1 and 0 otherwise.	?
Offer price	INVPO	The inverse of offer price.	—
CorporationsLaw	CORPLAW	Firms that are listed in the post-Corporations Law period take the value of 1 and 0 otherwise.	?

have a copy of the prospectus.<sup>10</sup> Although not reported, the majority of our sample firms (73%) were underwritten by a single underwriter. The maximum number of underwriters associated with a single IPO in our sample is eight<sup>11</sup>.

Information on the financial characteristics of the firm at the time of the IPO, the name of the lead underwriter, the underwriting fee, the subscription and prospectus dates were all manually collected from prospectuses. Daily share prices are provided by the ASX STATEX database. To test the low-balling effect, we require data on subsequent seasoned offerings made within 3 years after the IPO. Because of this, we have chosen 1 January 1996 as the end of our sample period. Information on subsequent SEOs is obtained from the ASX datadisc in the “Announcements” (full text) section. We also obtain information on whether an underwriter or a lead manager was employed in the SEO from SDC platinum.

Following Pagel and White (1988) and James (1992), we use an ordinary least squares (OLS) regression with the underwriter fee (FEE) as the dependent variable. To recap, FEE is the underwriting fee per share stated as a percentage of the offer price. We identify the various determinants of the underwriter fee from previous studies and incorporate them together with the institutional features of the Australian IPO market in the fee model. We group these determinants into the following broad categories: (i) issue costs; (ii) ex ante offering risk; (iii) subscription period; (iv) reputation premium; (v) retained ownership; (vi) low-balling effects; and (vii) control variables. The fee model is summarised in the following regression:

$$\begin{aligned} \text{FEE}_t = & \alpha_0 + \alpha_1 \ln(\text{PROCEEDS})_t + \alpha_2 \text{AGE}_t + \alpha_3 \ln(\text{ASSET})_t \\ & + \alpha_4 \text{GROWTH}_t + \alpha_5 \text{PERIOD}_t + \alpha_6 \text{UWRITER}_t + \alpha_7 \text{ALPHA}_t \\ & + \alpha_8 \text{REISSUE}_t + \alpha_9 \text{PIPO}_t + \alpha_{10} \text{UWOPTION}_t + \alpha_{11} \text{HOT}_t \\ & + \alpha_{12} \text{INVP}_0 + \alpha_{13} \text{CORPLAW}_t + \varepsilon_t. \end{aligned} \quad (1)$$

Table 2 lists and defines these determinants of underwriting fees. It also provides the expected sign of the relationship between the independent variables and the underwriting fee.

## 5. Results

Table 4 reports the results from multiple OLS regressions. Only independent variables that are significant in Regression I are included in Regression II. As

<sup>10</sup> Prospectuses were obtained from a number of sources including the companies themselves, local business libraries, the ASX, the Australian Securities and Investments Commissions (ASIC), and Connect-4 prospectus database.

<sup>11</sup> A syndicate of underwriters helps to spread the risk of underwriting. We test whether the underwriting fee is lower for co-underwritten IPOs relative to those IPOs underwritten by a single underwriter. The results are not significant.

reported in the table, the presence of heteroscedasticity was corrected using White's (1980) method. The adjusted  $R^2$  shows that our underwriting fee model explains about 15% of the variation in underwriting fees in Australia.

### 5.1. Issue costs

Issue costs are a fundamental consideration in the pricing of underwriting services. Bhagat and Frost (1986), Booth and Smith (1986) and Bae and Levy (1990) document economies of scale associated with issue size. Chen and Ritter (2000) document the same only for small (below \$20 million) and large (\$80 million or more) deals. In line with Pugel and White (1988), we argue that the larger the dollar size of an issue, the more the fixed costs incurred in the underwriting process can be spread over each dollar of shares underwritten. The underwriter will, in turn, demand a lower underwriting fee per share for a larger issue. This is further supported by lower search costs involved in underwriting larger issues (Logue and Lindvall, 1974).

We measure the offer size, PROCEEDS, as the product of the offer price and the number of underwritten shares offered. Table 3 shows that the average

Table 3  
Descriptive statistics for determinants of underwriting fee for a sample of 282 underwritten IPOs, 1980–1996

	Count	Mean	Median	Standard deviation	Skewness	Kurtosis	Minimum	Maximum
Ln (PROCEEDS)	281	16.23	16.01	1.20	0.56	0.39	12.78	20.08
PROCEEDS (A\$)	282	26,582,602	8,995,416	56,909,154	5.59	39.21	356,027	527,977,168
Ln(ASSET)	260	17.13	16.98	1.19	0.70	1.38	13.53	22.03
ASSET (A\$)	260	75,351,857	23,607,680	262,053,715	10.94	141.63	755,143	3,676,242,888
AGE (days)	282	2755	346	6297	3.57	12.85	2	32,566
GROWTH	274	0.44	0.46	0.35	0.14	-1.39	0.00	1.00
PERIOD (days)	252	35	27	83	-9.17	131.79	0	396
UWRITER	282	3.94	3.21	4.41	1.22	0.38	0.02	14.54
ALPHA	279	0.49	0.52	0.24	-0.63	-0.40	0.00	0.93
INVPo	282	1.43	0.92	5.6154	16.413	273.39	0.17	94.68

Descriptive statistics for determinants of the fee model using a final sample size of 282 underwritten IPOs. PROCEEDS is the product of offer price and the number of ordinary shares offered in the issue. ASSET is the pro forma total assets. AGE is the number of calendar days from incorporation to the date of prospectus. GROWTH is one minus the net tangible assets backing per share. PERIOD is the number of calendar days from the date of opening subscriptions to the date of closing subscription. UWRITER is the maximum weighted dollar value of all shares underwritten by a given underwriter divided by the total dollar value of all IPOs in our sample. ALPHA is one minus the number of shares in the prospectus as a fraction of total shares outstanding after the IPO. INVPo is the inverse of offer price. All dollar values are stated at 1998 dollars.

Table 4

Multiple OLS regressions with FEE as the dependent variable fee for a sample of 282 underwritten IPOs, 1980–1996

	Predicted sign	Regression I ( <i>n</i> = 220)	Regression II ( <i>n</i> = 220)	Regression III ( <i>n</i> = 99)
Ln(PROCEEDS)	–	–0.28 (–4.75)***	–0.30 (–5.41)***	–0.32 (–4.02)***
AGE	–	–0.00 (–1.23)		–0.00 (–1.47)
GROWTH	+	0.18 (1.05)		–0.14 (–0.57)
PERIOD	+	0.00 (2.87)**	0.00 (2.81)**	–0.00 (–0.24)
UWRITER	+	0.01 (0.61)		0.02 (0.85)
ALPHA	–	–0.47 (–1.77)*	–0.54 (–2.09)*	0.18 (0.53)
REISSUE	–	–0.05 (–0.42)		
REISSUE*	–			–0.01 (–0.05)
PIPO	?	0.27 (1.41)		0.02 (0.10)
UWOPTION	?	0.48 (2.19)*	0.57 (2.77)**	0.15 (0.45)
HOT	?	0.03 (0.17)		0.41 (1.96)*
INVPO	–	–0.01 (–3.15)***	–0.01 (–3.27)***	–0.02 (–3.33)***
CORPLAW	?	–0.12 (–0.75)		–0.31 (–1.47)
Constant		8.28 (7.81)***	8.65 (8.99)***	9.10 (6.96)***
Adjusted <i>R</i> <sup>2</sup>		0.14	0.15	0.13
<i>F</i> -statistic		4.04***	8.77***	2.22*

The dependent variable (FEE) is the underwriting fee per share stated as a percentage of the offer price. PROCEEDS is the product of offer price and the number of shares on issue. AGE is the number of calendar days from incorporation to the date of prospectus. GROWTH is one minus the net tangible assets backing per share. The number of calendar days between opening and closing subscriptions is denoted by PERIOD. The underwriter's reputation, UWRITER, is measured as the maximum weighted dollar value of all shares underwritten divided by the total dollar value of all IPOs. ALPHA is one minus the number of shares offered in the prospectus as a percentage of total shares outstanding after the IPO. REISSUE takes a value of 1 if the firm issues equity 3 years subsequent to the IPO, 0 otherwise. REISSUE\* takes the value of 1 if the firm involves an underwriter as a lead manager or underwriter in its subsequent equity offering, 0 otherwise. PIPO takes a value of 1 if firms issue options with their offerings, 0 otherwise. UWOPTION takes a value of 1 if firms issue options as part of their compensation to underwriters, 0 otherwise. MINING takes a value of 1 if firms are in the mining industry, 0 otherwise. HOT takes the value of 1 for firms listed from November 1984 to just before the crash, and January 1982 to August 1993, and 0 otherwise. INVPO is the inverse of the offer price. CORPLAW takes the value of 1 for firms listed in the post-Corporations Law period, 0 otherwise. White's (1980) corrected *t*-values are stated in parentheses. For variables with predicted signs, one-tailed test is used to determine the significance level; otherwise, a two-tailed test is employed.

\* Denotes significance at the 0.05 level.

\*\* Denotes significance at the 0.01 level.

\*\*\* Denotes significance at the 0.001 level.

(median) offer size is \$26.58 millions (\$9 millions), stated at the 1998 dollar value.<sup>12</sup> The results in Table 4 indicate that offer size has a significant influence

<sup>12</sup> All dollar values are adjusted and restated in 1998 dollars using the Australian Economic Indicators published by the Australian Bureau of Statistics (1998).

on underwriting fees. The negative coefficient on PROCEEDS is consistent with previous findings that IPO firms with larger issue size pay significantly lower underwriting fees. Our results therefore support the economies of scale argument.

### 5.2. *Ex ante offering risk*

In Australia, an issuer is guaranteed a fixed proceeds (gross proceeds minus the underwriting fee and other flotation costs) when it enters into an underwriting agreement. In contrast, the underwriter's net compensation is contingent in part upon the demand for the IPO. Mispricing the IPO may lead to either an insufficient demand requiring the underwriter to "soak up" any unsubscribed shares (i.e., overpricing) or "leave too much money on the table" to the detriment of the issuer (i.e., underpricing). Therefore, in a multi-period underwriting market, the underwriter cannot afford to misprice the issues too often; frequent overpricing will adversely affect his regular clientele of investors while excessive underpricing will impair his ability to attract future issuers (Beatty and Ritter, 1986).

In this paper, we propose that the risk of mispricing is greater for IPOs with higher *ex ante* uncertainty, which we proxy using the firm's size, age and growth potential *vis-à-vis* assets-in-place (Ritter, 1984; How et al., 1995; Lee et al., 1996). We argue that the extent to which the underwriter can correctly "gauge" the issue price is dependent on the amount of information available about the IPO firm and is therefore higher for older and larger firms. IPO firms with higher growth potential have greater *ex ante* uncertainty and are also more difficult to price by the underwriter relative to IPO firms with lower growth potential. Therefore, other things being equal, older and larger companies with lower growth potential *vis-à-vis* assets-in-place pay a lower underwriting fee for their IPOs.<sup>13</sup>

We measure the firm's age (AGE) as the number of calendar days from incorporation to the date of the prospectus, and the firm's size (ASSET) as the pro forma value of total assets stated at 1998 dollar value.<sup>14</sup> Table 3 shows that the average (median) age and total assets of our sample firms are 2755 days (346 days) and \$75.35 millions (\$23.61 millions), respectively. IPO firm's growth potential (GROWTH) is measured by one minus the ratio of net tangible assets backing per share to the offer price. The average (median) of GROWTH is 0.44 (0.46), as shown in Table 3.

The results in Table 4 show that younger firms are associated with higher underwriting fees, although the relationship is not significant. As our measures of offer size and firm size are highly correlated (the correlation coefficient is 0.78), only one of these variables is included in our regressions at one time. Although not

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<sup>13</sup> It may also well be that larger issuers can obtain a lower per share underwriting fee due to their stronger bargaining power with the underwriter.

<sup>14</sup> We also proxy firm size by the pro forma market capitalisation, computed by the product of the number of shares outstanding after the issue and the offer price. Similar results are obtained.

reported, we find that firm size, when used in place of issue size in the regression, is a significant determinant of underwriting fees. Specifically, we find that smaller IPO firms pay significantly higher underwriting fees.<sup>15</sup> GROWTH has a positive coefficient, suggesting that IPO companies with higher growth potential vis-à-vis assets-in-place pay higher underwriting fees. However, it is not significant.

### 5.3. Subscription period

In Australia, the subscription period for the offer has to be stipulated in the prospectus prior to circulation. We expect the underwriter, in conjunction with the issuer, to set the subscription period in light of his expectation of the demand for the IPO. The underwriter is likely to negotiate a longer subscription period for issues that are expected to have low demand. A longer subscription period may increase the probability of full subscription of an otherwise under-subscribed IPO, reducing the likelihood of the underwriter having to soak up any undistributed shares on the closing subscription date. On average, our sample firms have an average (median) subscription period (PERIOD)<sup>16</sup> of 35 days with a median of 27 days.

As expected, Table 4 shows that PERIOD is significantly positively related to the underwriting fee. Consistent with our conjecture, IPO firms with a longer subscription period pay a higher underwriting fee.

### 5.4. Retained ownership

Hansen and Torregrosa (1992) propose two opposing views on the relationship between retained ownership and the underwriting spread: the monitoring effect, which predicts a negative relationship, and the certification effect, which predicts a positive relationship. The evidence in Jain and Kini (1999) shows that the underwriter spread is related to the demand for underwriter monitoring, which they proxy using management share ownership and institutional ownership.

In this paper, we also test whether retained ownership has an impact on the Australian underwriting fee structure. In the US, underwriters “certify” the issue

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<sup>15</sup> The results are robust even after excluding firms (36 of them) with less than \$3 million in market capitalisation.

<sup>16</sup> Lee et al. (1996) note that the period between prospectus registration and the commencement of trading on the exchange reflects three distinct components: (i) a period between the prospectus registration and the opening subscription; (ii) a period between opening and closing subscription; and (iii) a period between closing subscription and the commencement of exchange trading. Since components (i) and (iii) are largely administrative and standardised, we use component (ii) to proxy for the level of expected demand (PERIOD). Not all firms in our sample set a definite subscription period. Some firms have their closing date set at directors' discretion. For robustness purposes, we also measure the subscription period using the listing date as the closing date of subscription. Although not reported, less significant results are obtained for this measure.

and this requires them to bear the liability imposed by the Securities Act of 1933 for ensuring the fairness of the offer price (Booth and Smith, 1986; Jain and Kini, 1999). We argue that underwriters do not perform such a certification function in Australia. By agreeing to underwrite the IPO at a set offer price, the underwriter in Australia only lends credibility to the IPO. In essence, he affirms the issue is priced “correctly” to reflect all information including potential adverse inside information (How, 1994). Therefore, we predict that the relationship between retained ownership and the underwriting fee is driven mainly by the monitoring role rather than the certification role of the underwriter.

Since information on the institutional ownership of IPO firms is not available, we test the underwriter’s monitoring role using the ownership retained by issuers after the IPO (ALPHA).<sup>17</sup> Table 3 shows that the average percentage of shares retained by issuers after the IPO is 49% with a median of 52%, much lower than in the US. Table 4 reports that retained ownership (ALPHA) is significantly and negatively related to underwriting fees, consistent with Jain and Kini (1999). Therefore, we provide support for the monitoring role of the underwriter in the Australian IPO market.

### *5.5. Reputation of the underwriter*

In line with Simunic (1980) and Klein and Leffler (1980), we propose that high quality underwriting services demand a price premium. The higher the quality of services provided, the higher is the underwriting fee. This has support in Booth and Smith (1986), Smith (1986), and Beveniste and Spindt (1989). They argue that prestigious underwriters tend to bring more reputational assets to the issuance process and should thus be compensated more. Similarly, Gilson and Krakman (1984), Booth and Smith (1986) and Tinic (1988) advocate that prestigious underwriters tend to extract higher fees from issuers in order to maintain their investment in reputational capital. In addition, How (1994) suggests that prestigious underwriters tend to charge a premium to reflect the higher quality services they provide. High quality, within this context, refers to the underwriter’s ability to price the IPO “correctly”, satisfying both sides of the underwriter’s clientele (Beatty and Ritter, 1986). Therefore, we hypothesise that, *ceteris paribus*, underwriters with higher reputational capital charge higher fees.

We proxy the underwriter’s reputation by the underwriter’s market share, defined as the dollar value of all shares underwritten by the underwriter divided by

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<sup>17</sup> As information on management share holdings is not always disclosed in the prospectus, we use the percentage of shares held by the issuer after the IPO in testing the demand for monitoring by the underwriter. How and Howe (1996) show a correlation between retained ownership and management ownership of approximately 0.7.

the total dollar value of all IPOs in the sample (UWRITER).<sup>18</sup> For IPOs jointly underwritten by a syndicate of underwriters, the underwriter's market share is weighted by the proportion of shares underwritten. That is, if underwriters A and B are responsible for 80% and 20%, respectively, of the shares in a given IPO, then underwriter A is assigned 0.80 and underwriter B 0.20 of the offering. Typically, the proportion is equal across joint underwriters. For joint underwriters, we choose the maximum underwriter's market share to proxy for the reputation of the underwriter to the issue.

Table 3 shows that our reputation metric ranges from 0.02% to 14.54%. It has an average of 3.94% and a median of 3.21%. Table 4 shows that UWRITER has a positive coefficient. This is consistent with the reputation premium argument, which predicts that more reputable underwriters charge higher fees. However, the relationship is not significant.

### 5.6. *Low-balling*

In order to assess the future prospects of the issue and therefore the issue price, the underwriter must first acquire relationship-specific assets (James, 1992). Likewise, in order to inform the issuer about the market, the underwriter must search and identify an informed client base for the new issue (Benveniste and Spindt, 1989; James, 1992). James argues that even though these start-up assets have enormous bearings on the marginal cost of the initial underwriting, they are likely to be durable for subsequent dealings such as post-IPO mergers and acquisitions. The underwriter is thus able to benefit from economies of scale and earn quasi-rents for subsequent dealings with the same issuer.<sup>19</sup>

Selecting an underwriter at the IPO thus creates a bilateral monopolistic relationship between the issuer and the underwriter. In competing to become the sole supplier of services, the underwriter will provide a discount in the IPO fee. This discount will only be provided if the underwriter expects subsequent dealing(s) with the issuer. Once the bilateral monopolistic relationship is established, the underwriter can increase the price of subsequent transactions. Hence, *ceteris paribus*, the IPO fee is hypothesised to be lower when the underwriter is more

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<sup>18</sup> Using market share as a proxy for reputation is based on the reputational capital paradigm, where high reputation firms have more customers because their present customers are satisfied with the quality of the services provided and will therefore not leave them for another. Furthermore, "word-of-mouth" advertising results in more arrivals (Rogerson, 1983). We also use the frequency of engagement by sample firms, weighted in the same manner as for the market share measure, to proxy the underwriter's reputation. Although not reported, the results using this alternative proxy are less significant.

<sup>19</sup> Although the relationship-specific asset, by definition, is specific to a particular issuer, it is highly plausible that the client base identified for the new issue will be beneficial both for future issues by the same issuer as well as for other new issues. The low-balling effect focuses, however, only on the relationship-specific asset acquired through dealings with the issuer.

Table 5

Differences in underwriting fees by categorical variables fee for a sample of 282 underwritten IPOs, 1980–1996

	Count	Average	Standard deviation	<i>t</i> -statistic <sup>a</sup>	Mann–Whitney <sup>a</sup>
<i>Panel A: PIPOs</i>					
PIPO = 1	46	4.04	1.19	2.28 *	2.73 * *
PIPO = 0	236	3.61	1.01		
<i>Panel B: Underwriter options</i>					
UWOPTION = 1	21	4.18	0.92	2.56 *	2.38 * *
UWOPTION = 0	260	3.64	1.06		
<i>Panel C: Repeated issuers</i>					
REISSUE = 1	124	3.74	1.00	0.80	0.28
REISSUE = 0	138	3.64	1.09		
<i>Panel D: Hot issue period</i>					
HOT = 1	161	3.85	1.10	3.20 * *	2.80 * *
HOT = 0	121	3.46	0.95		
<i>Panel E: Corporations Law</i>					
CORPLAW = 1	112	3.43	1.00	3.38 * * *	3.61 * * *
CORPLAW = 0	170	3.85	1.06		

PIPO = 1 for package IPOs and 0 for shares-only IPOs; UWOPTION = 1 if underwriters receive options as part of their underwriting compensation and 0 otherwise; REISSUE = 1 if the IPO firm makes a seasoned equity offering within 3 years after the IPO and 0 otherwise; HOT = 1 for IPOs issued during the hot issue period and 0 otherwise; and CORPLAW = 1 if the IPO was issued during the pre-Corporations Law period and 0 otherwise.

<sup>a</sup>*t*-statistics and Mann–Whitney's *Z* scores are for the difference in underwriting fees between subgroups in each categorical variable.

\* Denotes significance at the 0.05 level.

\* \* Denotes significance at the 0.01 level.

\* \* \* Denotes significance at the 0.001 level.

likely to market a subsequent offering for the issuer.<sup>20</sup> As in James (1992), we use a dummy variable, REISSUE, which takes a value of 1 for firms that issue a subsequent public offering within 3 years after listing and 0 otherwise.

Table 5 reports univariate results of differences in underwriting fees using *t*-tests and non-parametric Mann–Whitney tests. About 47% of our sample returns to the market for subsequent equity offerings within 3 years after the IPO, consistent with Chelliah et al. (1996). Panel C indicates that companies with an

<sup>20</sup> Beatty (1989) finds that low-balling effect and the risk premium hypothesis can coexist. For issuers that are likely to engage in subsequent audits, auditors are likely to charge a premium above the low-balling fee to the extent that the continuing relationship is unlikely to discontinue as in the case of financial distress.

SEO within 3 years subsequent to listing (i.e., repeated issuers) pay slightly higher underwriting fees than companies that do not, although the difference in fees is not statistically significant. Similar results are obtained in the multiple regression results in Table 4. The prediction of the low-balling hypothesis is thus not supported.

We provide further test of the low-balling effect, noting that the SEOs examined by James (1992) are all public offerings. In contrast, subsequent public offerings are not a popular means for raising funds in Australia. Chelliah et al. (1996) document that repeated issues typically take the form of a rights issue or a private placement. As not all these issues require the services of an underwriter (e.g., in the issues of non-renounceable rights and placement directly placed by directors), our proxy for REISSUE may be biased against finding the importance of low-balling effect in explaining the variances in underwriting fees.

We therefore identify a sample of companies for which we know whether there was an underwriter or lead manager involved in the SEO. We managed to obtain such information for 99 firms. Of these, 53 (53.53%) firms returned to the equity market within 3 years after listing, but only 26 of them engaged an underwriter or a lead manager. We retest low-balling by assigning a value of 1 to the 26 firms and 0 to the rest (captured by the dummy variable REISSUE<sup>\*</sup>). The results are reported in Regression III in Table 5. The regression shows that REISSUE<sup>\*</sup> is of the right sign (i.e., negative) but not significant.<sup>21</sup>

We propose an explanation based on the Australian institutional environment for the lack of support for the low-balling effect in the Australian underwriting market. This institutional explanation revolves around the tax treatment for start-up expenses, which is different in Australia than in the US. In the US, these start-up expenses are not tax deductible. Thus, issuers may prefer to pay a lower underwriting fee in their initial engagement with the underwriter. For the underwriter, this initial fee reduction can later be recouped in the form of higher future quasi-rent, which is tax deductible to the issuer.<sup>22</sup> In Australia, firms are able to immediately expense or amortise these start-up costs and deduct them for tax purposes. As there are no incentives to defer the payment of these expenses to later periods, this may explain why the low-balling effect may not be as significant in Australia as it is in the US.

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<sup>21</sup> Following James, we conducted additional tests of the low-balling effect by: (i) analysing whether underwriter switching affects underwriting fees. Of the 26 firms that engaged an underwriter (or a lead manager) in their SEO, 12 firms switched their underwriters. Our results show that switching is not a significant variable in explaining the underwriting fee; and (ii) using the probability of firms reissuing (estimated as in James) in the test. The results provide some support for low-balling. Our results for these additional tests are, however, hampered by the small sample size.

<sup>22</sup> Given that fees on SEOs are not tax-deductible in the U.S (we thank the referee for pointing this out), future quasi-rents can come from other services that the underwriter provides to the issuer after the IPO.

## 5.7. Control variables

### 5.7.1. Package IPOs

Package IPOs (PIPOs), known as unit offerings in the US, consist of IPOs of common stocks and options (or warrants). Arguably, PIPOs are more complex to value than shares-only IPOs. Pugel and White (1988) find that the complexity of an issue affects the underwriting spread charged. Here we consider the possibility that underwriters may price their services differently for share-only IPOs and PIPOs.<sup>23</sup>

Schultz (1993) suggests that IPOs that include warrants are a type of staged financing analogous to sequential financing by venture capital firms. Due to the inherent uncertainty of PIPOs (How and Howe, 1996), we expect underwriters to demand a higher compensation for underwriting such issues. As most of these options are issued at the money and listed in the prospectus as being “free of charge”, they may act as a “sweetener” that attracts subscriptions of IPOs, making it easier for the underwriter to sell the issue. If this is the case, the underwriter may lower its fees. The impact of the choice of offer method on the fee model is thus ambiguous and we control for it using a dummy variable PIPO, which takes a value of 1 if the firm issues PIPOs and 0 otherwise.

Panel A of Table 5 shows that there are 46 companies (16%) that issue PIPOs in our sample. PIPO firms pay significantly higher underwriting fees than firms issuing shares-only IPOs. This may reflect the complexity and/or the inherent risk of PIPOs relative to a “pure vanilla” (i.e., shares-only) IPO. The OLS regressions in Table 4, however, show that underwriters do not appear to systematically price their services for PIPOs differently from shares-only IPOs once other factors are controlled for.

### 5.7.2. Underwriter options

Underwriters may also receive options as part of their compensation scheme. These options allow the underwriter to acquire a fixed number of shares of the issuer’s stock at a prescribed exercise price and time period. Interviews with Australian underwriters reveal that underwriter options are typically issued by high-risk IPOs offered by younger and smaller firms.

Our legislative setting with respect to underwriter options is inherently different from that in the US. In the US, the underwriter’s compensation is limited to a certain percentage of the gross issue proceeds from the offering by the “blue sky law” since 1996.<sup>24</sup> The issue of options in the US thus partly provides a means to circumvent regulations and compensate underwriters for underwriting a more risky

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<sup>23</sup> For robustness, we also test our model for a sample of firms that do not issue PIPOs and do not compensate their underwriters using options. The results do not differ from those reported in this paper.

<sup>24</sup> See Barry et al. (1991).

issue. Although such a regulation is absent in Australia, it does not necessarily imply that underwriters do not substitute underwriter options for other direct forms of compensation.<sup>25</sup> Furthermore, in the US, underwriter options are frequently associated with “house stocks” where the underwriter is the main market maker. The options create an incentive to continue recommending the stock to clients long after the IPO.

We therefore control for the possible impact of underwriter options on the fee charged using a dummy variable, UWOPTION, which takes a value of 1 for firms that issue options to compensate the underwriter and 0 otherwise. Panel B in Table 5 shows that IPO companies that compensate underwriters with options pay significantly higher fees than those that do not. This result is further supported in Table 4, which shows that UWOPTION is positive and significant. Our results therefore suggest that companies that compensate their underwriter with options are associated with greater underwriting risk and thus pay higher underwriting fees. This particular form of underwriting compensation scheme is, however, not a popular one in our sample. Only about 7.5% of our sample firms provide options to their underwriters, as indicated in Table 5.

### 5.7.3. *Market states*

The substantially high initial returns documented in the hot issue market appear to be cyclical (Ritter, 1984; How et al., 1995). Davis and Yeomans (1976) and Logue and Lindvall (1974) suggest that unstable markets are associated with larger pricing errors. These, in turn, increase the underwriter’s risk of holding undistributed issues (Pugel and White, 1988; Muhammad et al., 1996). Conversely, favourable market conditions (i.e., a rising, less volatile stock market and relatively low stable interest rates) decrease both the risk and cost of underwriting IPOs. Accordingly, market volatility is likely to affect the pricing of underwriting services.<sup>26</sup>

We adopt a method similar to that of Ritter (1984) in identifying “hot issue” periods in Australia. Ritter characterises a hot issue period as a period of very high

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<sup>25</sup> If underwriter options are substitutes for monetary fees charged, their intrinsic value should be incorporated into the underwriting fee measure. However, these options often have characteristics (e.g., duration and exercise price) different from those of options issued concurrently with shares (in the case of PIPOs) and have restrictions to trade. Due to the difficulty in accurately estimating the intrinsic value of these options, we chose to control for them using a dummy variable in our tests.

<sup>26</sup> Large volumes of IPOs are also observed in hot market period. Since there is a peak in the number of firms that went public around the boom period (How et al., 1995), we expect these market variables to also capture the effect of competition amongst underwriters. From the sell-side perspective, the underwriter may require to expend more effort in marketing and distributing the new issue at times of intensive competition. The underwriters would thus demand higher underwriting fee for issues underwritten during the bullish market (Logue and Lindvall, 1974). However, it is also likely that the market during the bullish market would be more liquid, it would therefore be easier for underwriters to place their IPO shares.

volume of IPOs following a period of very high average initial returns. We identify Australian hot issue markets as the periods beginning from November 1984 till prior to the October 1987 crash, and January 1992 to August 1993. A dummy variable (HOT), which takes the value of 1 for IPOs listed during this hot issue period and 0 otherwise, is used to control for the market effect on underwriting fees.

More than half of our sample were listed during the hot issue period (57%) and Panel D of Table 5 shows that these firms pay significantly higher underwriting fees than firms going public during the “cold” period. However, when other determinants of underwriting fees are controlled for, Table 4 shows that the state of the IPO market is not a significant consideration in the pricing of underwriting services in Australia.

#### 5.7.4. *Offer price*

The underwriter performs two primary functions in an IPO: underwriting and setting the offer price (Newman, 1983). In the US, Logue and Lindvall (1974) suggest that there is a tradeoff between the offer price and the underwriting commission. They argue that, *ceteris paribus*, a higher issue price is more likely to have a prolonged issue period and a greater chance of the underwriter suffering from capital loss in the event of under-subscription. If the issue price is determined simultaneously with the underwriting fee, the underwriter will negotiate a higher fee as the underwriter requires greater risk-bearing compensation for a higher issue price. Likewise, the underwriter will be willing to settle for a lower fee if the offer price is low. A low offer price is likely to speed up the distribution period and lower the likelihood of under-subscription.<sup>27</sup>

As in James (1992), we use the inverse of the offer price (INVPO) as a control variable in our model. This variable has a mean of 1.43 and a median of 0.92. Table 5 shows that INVPO is significant. Therefore, consistent with Logue and Lindvall (1974), there is a trade-off between the offer price and the underwriting fee.

#### 5.7.5. *Corporations law*

The Corporations Law, which began operation on 1 January 1991, brought about a number of important changes to the prospectus regulation that are likely to affect the underwriting fees charged in Australia. One of these major changes is to include the underwriter(s) named in the prospectus as a person liable for false and

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<sup>27</sup> Implicit in our argument is an association between the degree of underpricing and the underwriting fee. Chen and Ritter (2000) find weak evidence of a tradeoff between underpricing and spread. We also test this, replacing offer price with underpricing in the equation. Our results show that, as with the offer price, underpricing is significant in explaining the underwriting fee.

misleading statements in the prospectus (Sections 1006–1007).<sup>28</sup> The perceived increased litigation risk is expected to increase the fee that underwriters charge in the post-Corporations Law period. We use a dummy variable to control for the changing statutory regime. This variable (CORPLAW) has a value of 1 if the IPO was listed after the introduction of the Corporations Law in 1991 and 0 otherwise.

Table 5 shows that about 60% of firms in our sample were listed during the pre-Corporations Law period. Contrary to our expectation, Panel E shows that issuers pay significantly *higher* underwriting fees in the pre-Corporations Law period than in the post-Corporations Law period. One possible explanation for this is the statutory defence provided by section 1011 of the Law to preparers of prospectus if reasonable precautions have been taken and due diligence has been exercised to ensure that all statements included in the prospectus are true and not misleading and no material omission. In addition, it is common to find indemnity clauses in the underwriting agreement where the issuer agrees to indemnify the underwriter against any liabilities arising out of the prospectus. However, the results in Table 5 show that CORPLAW is insignificant. Therefore, the introduction of the Corporations Law in 1991 does not appear to have any significant impact on the underwriting fee structure, once other determinants of underwriting fees are controlled for.

## 6. Conclusion

Recent media releases have put enormous strains on the credibility of the underwriting industry. The results of this study are much to our comfort for two reasons. First, we find that, in contrast to recent US evidence in Chen and Ritter (2000), Australian underwriting fees vary across issue size and over time. Although there is a clustering of fees at 3%, 4% and 5%, the underwriting fee is definitely not fixed at one particular percentage.

Second, our results show that underwriters in Australia rationally and systematically price their services mainly according to the cost and risk of underwriting. Our model is able to explain about 15% of the variation in underwriting fees. Our results support the economies of scale argument for the setting of the underwriting fee. IPO firms that issue a larger offer pay a significantly lower underwriting fee than IPO firms that issue a smaller offer. We find that firms with a longer subscription period for their offer pay significantly higher fees, reflecting the possible risk of underwriting an IPO with low expected demand. We also find support for the underwriter's role in monitoring IPO firms. Contrary to the US

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<sup>28</sup> The recent Federal Government's Corporate Law Economic Reform Program (CLERP), however, proposed that professional advisers to the preparation of the prospectus be responsible only for statements directly attributable to them, rather than the entire document (Black et al., 1998).

studies, we find weak evidence of a low-balling effect in the Australian underwriting market. Other significant explanatory variables for cross-sectional differences in Australian underwriting fees include the issue of underwriter options (companies that issue such options pay significantly higher fees) and the offer price.

In summary, we do not find evidence that underwriters in Australia fix or collude underwriting fees. Our results in fact suggest that underwriting services in Australia are priced to compensate underwriters for bearing the cost and the risk of suffering capital loss in the event of under-subscription — a feature that is unique in standby underwriting agreements.

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