Media coverage and biotechnology IPOs: Some Australian evidence

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Abstract

This paper analyses Australian biotechnology initial public offerings and the role of media coverage during the issue period in explaining capital raising, sentiment and underpricing. This paper finds empirical support for the hypothesis that an issuing company that receives more press coverage during the listing process leaves significantly more money on the table than those who receive less coverage, a finding consistent with the presence of sentiment effects and hot issue periods.

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INTRODUCTION

The underpricing of initial public offerings (IPOs) is now a consistently established finding in the empirical finance literature across a range of countries.[1] The majority of explanations for the observed underpricing relate to uncertainty around the offering,[2,3] although there are well-known sentiment effects that produce hot issue periods in IPO markets.[4,5] Hot issue periods are characterised by greater levels of IPO underpricing, with an increased volume of IPO capital raisings, and larger capital raisings.[6]

The key challenge is to find variables that capture the movements in market sentiment.

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At the overall market level, there is a role for the number of new issues, the level of underpricing and general market conditions.[7,8] The purpose of the present analysis is to explore this issue in the context of individual IPOs in the Australian biotechnology sector. There is a significant role for variations in the market index as a sentiment variable for Australian IPOs in general,[9,10] and this result also holds true for Australian biotechnology IPOs.[11]

There are alternative variables that can be used to measure sentiment-type effects. One possible alternative sentiment variable is media coverage during the issue period. More underpriced offerings receive a greater number of media cites in the months post IPO and also show a relationship between media coverage in the month prior to listing and underpricing.[12] With investor sentiment providing a significant contribution to underpricing, media coverage during the issue period and for high first-day returns will encourage investment in subsequent listings. Conversely, other studies[13] have found that greater levels of media coverage in the period one year prior to IPO was negatively related to the level of underpricing in support of their media legitimisation theory which states that increased media coverage provides a form of validation of a new firm's legitimacy, hence reducing perceived investor risks associated with that firm.

This paper extends the previous analysis of market sentiment and media effects in the context of Australian biotechnology IPOs. The biotechnology sector makes for an interesting analysis, given the general uncertainty that applies to valuation in that sector. More specifically, market sentiment is explored through the addition to the modelling of variables capturing media coverage during the issue period. Those companies with greater levels of direct (company name mentioned specifically) and indirect (eg discussions about the disease area the company hopes to treat) media coverage could expect to face differing levels of investor sentiment *v* more inconspicuous listings.

The plan of this paper is as follows. The following section sets out the modelling framework and the hypotheses to be tested. The next section then presents the results of the empirical analysis. The penultimate section contains some concluding remarks.

MODELLING FRAMEWORK

Data were collected for 30 Australian biotechnology IPOs over the period from 1994 to 2004 from information contained in the issuing company's prospectus sourced from the Connect 4 Database. The base models to be estimated (without the media coverage variables) are:

$$\begin{aligned}\text{Money Left} = {} & \beta_0 + \beta_1 CIT + \beta_2 INDACC \\ & + \beta_3 PRICE + \beta_4 PROD \\ & + \beta_5 SENT\_AO + \beta_6 TOT\_APP + \varepsilon_I,\end{aligned}$$

where *MoneyLeft* is the amount of money left on the table which is equal to the number of shares issued*(price on close − issue price). *CIT* is the total number of citations of employees' and members of the scientific advisory boards' work as per the 'web of science' database. *INDACC* is a dummy variable for the use of a reputable independent accountant. *PRICE* is the issue price of the listing. *PROD* is the number of fully developed products described in the prospectus. *SENT_AO* is the movement on the Australian Stock Exchange (ASX) all ordinaries index (orthogonalised to be independent of movement in the health and biotechnology index) from the date on the independent accountants report to date of listing. *TOT_APP* is the total number of awarded patents and patents under application at the time of listing, with each country treated as a separate application.

$$\begin{aligned}Ln\_CapRais = {} & \beta_0 + \beta_1 INDACC + \beta_2 PRICE \\ & + \beta_3 PROD + \beta_4 SENT\_HB \\ & + \beta_5 TOT\_APP + \beta_6 TOT\_PAT + \varepsilon_i\end{aligned}$$

where *Ln_CapRais* is the natural logarithm of the amount of money raised by the IPO. *SENT_HB* is the movement of the ASX health and biotechnology index measured from the date on the independent accountants report to the date of listing. *TOT_PAT* is the number of awarded patents at the time of listing.

These models are now augmented with additional variables to capture the media

coverage. Media coverage was measured as the number of media cites in major Australian publications in the period between the date specified on the independent accountant's report and the day of listing. The Factiva database was used as the source to capture data on media coverage. To ensure consistency across the sample period, only those publications with electronic access over the entire sample period were included; specifically, The Age, The Sydney Morning Herald, The Australian Financial Review and The Business Review Weekly. Media coverage data were collected at three levels: the industry level, the firm level and the therapeutic impact level. 'Biotechnology' was used as the search item at the industry level, '<company name>' at the firm level, and at the therapeutic impact level keywords describing the areas of treatment and disease were selected from the prospectus. To control for variation in the length of the window of the issue period, this information was standardised to produce a measure of media cites per day. Finally, larger offerings are intuitively expected to attract a greater level of media attention; to control for this potential large offering bias, the natural log of the total capital raised was also included in the money left model as an independent variable.

Thus, the models augmented with the media coverage variables are:

$$\begin{aligned} MoneyLeft = {} & \beta_0 + \beta_1 CIT + \beta_2 INDACC \\ & + \beta_3 PRICE + \beta_4 PROD + \beta_5 SENT\_AO \\ & + \beta_6 TOT\_APP + \beta_7 LN\_CAPRAIS \\ & + \beta_8 LN\_IND + \beta_9 LN\_DIS + \beta_{10} LN\_CO + \varepsilon_1 \end{aligned}$$

$$\begin{aligned} Ln\_CapRais = {} & \beta_0 + \beta_1 INDACC + \beta_2 PRICE \\ & + \beta_3 PROD + \beta_4 SENT\_HB + \beta_5 TOT\_APP \\ & + \beta_6 TOT\_PAT + \beta_8 LN\_IND \\ & + \beta_9 LN\_DIS + \beta_{10} LN\_CO + \varepsilon_i, \end{aligned}$$

where *LN_IND* is the standardised count of daily media articles about biotechnology, *LN_DIS* is the standardised count of daily media articles relating to the disease and treatment keywords and *LN_CO* is the standardised count of daily media articles mentioning the company name.

From the previous literature, there are two competing hypotheses about the impact of the media coverage variables. The Demers–Lewellen hypothesis expects that increased media coverage in the period prior to the IPO results in improved investor sentiment towards the issue, resulting in more money being left on the table on the first day of listing. Conversely, the Pollock–Rindova hypothesis expects that increased media coverage provides investors with additional information regarding the nature of the company, thus reducing investor uncertainty resulting in less money being left on the table on the first day of listing.

RESULTS

The results of estimating the models with and without the media coverage variables are reported in Table 1. The table presents ordinary least square parameter estimates and white-corrected *P*-values. The results in Table 1 reveal the following patterns. First, the introduction of the media citation variables has marginally increased the explanatory power of the *MoneyLeft* model with the adjusted *R* squared of the model moving from 0.44 to 0.47. Of the three media variables, only the variable measuring the number of times the company has been named directly is found to have a significant impact on the amount of money left on the table. This positive and significant coefficient supports the Demers–Lewellen hypothesis that increased media exposure prior to listing has a positive influence on investor sentiment, and thus increases the amount of money left on the table. In contrast, based on the Pollock–Rindova 'media legitimation' hypothesis, one could expect some negative coefficients, especially in relation to direct media coverage of the company name. The positive and significant coefficient for the company media variable, combined with the insignificant coefficients for the disease target and industry citations, leads to a conclusion against the media legitimation hypothesis for the underpricing of Australian biotechnology IPOs. Finally, the market sentiment variable retains its positive sign but loses its significance, suggesting that the media

Table 1: Regression estimation results

	Base models		Augmented models	
	MoneyLeft (0,000)	**Ln_CapRais**	**MoneyLeft (0,000)**	**Ln_CapRais**
Variable	Parameter estimates (*P*-value)	Parameter estimates (*P*-value)	Parameter estimates (*P*-value)	Parameter estimates (*P*-value)
Constant	−2269.752 (0.0116)	15.1244 (0.0000)	14627.235 (0.5635)	15.11890 (0.0000)
CIT	0.066 (0.0032)		0.065 (0.0106)	
INDACC	−3839.288 (0.0233)	0.2795 (0.0879)	−3351.009 (0.1582)	0.164099 (0.4566)
PRICE	8092.745 (0.0001)	1.3036 (0.0000)	8858.387 (0.0018)	1.446753 (0.0000)
PROD	−356.160 (0.0266)	0.0308 (0.0004)	−373.745 (0.0294)	0.029396 (0.0166)
SENT_AO	23304.290 (0.0027)		8867.474 (0.5021)	
SENT_HB		−1.3797 (0.0788)		−2.289866 (0.0239)
TOT_APP	38.152 (0.0143)	0.0060 (0.0008)	32.267 (0.0447)	0.006231 (0.0013)
TOT_PAT		−0.0319 (0.0000)		−0.036517 (0.0000)
LN_CAPRAIS		—	−851.360 (0.6131)	—
LN_IND			−490.619 (0.6130)	0.171105 (0.0993)
LN_DIS			−246.312 (0.5947)	−0.065647 (0.2907)
LN_CO			1666.307 (0.0046)	0.016413 (0.7841)
Adjusted R^2	0.43	0.87	0.47	0.87
Observations	34	34	30	30

MoneyLeft is the amount of money left on the table, which is equal to the number of shares issued*(price on close − issue price). Ln_CapRais is the natural logarithm of the amount of capital raised by the IPO. CIT is the total number of citations of employees' and members of the scientific advisory boards' work as per the 'web of science' database. INDACC is a dummy variable for the use of a reputable independent accountant. PRICE is the issue price of the listing. PROD is the number of fully developed products described in the prospectus. SENT_AO is the movement on the ASX all ordinaries index (orthogonalised to be independent of movement in the health and biotechnology index) from the date on the independent accountants report to the date of listing. SENT_HB is the moment of the ASX health and biotechnology index) from the date on the independent accountants report to the date of listing. TOT_APP is the total number of awarded patents and patents under application at the time of listing, with each country treated as a separate application. TOT_PAT is the number of awarded patents at the time of listing.

coverage variables might be a better measure of sentiment for Australian biotechnology IPOs.

Augmentation of the *Ln_CapRais* with the media variables did not significantly increase the explanatory power of the model, with the adjusted *R* squared remaining at 0.87. The *INDACC* variable became insignificant, likely a result of a positive relationship between firm size, independent accountant quality and media coverage. The positive coefficient for the *LN_IND* variable indicates that periods with increased discussion of the Biotechnology sector in the popular press were associated with larger IPOs. Interestingly, neither specific company references nor discussion of relevant therapeutic field was found to be significant, indicating that an awareness by readers of the popular press of the Biotechnology sector as a whole is more influential on the magnitude of individual biotech company capital raisings.

CONCLUSIONS

A large body of literature surrounds the question of IPO underpricing and the reasons for its persistent occurrence around the world, with a significant portion of that literature dedicated to examining the relationship between underpricing, hot issue periods and investor sentiment. This analysis of Australian biotechnology companies that went public between 1994 and 2004 provides an exploration of the role of hot issue conditions and market sentiment in underpricing. Hot issue periods are typically characterised by increased media coverage and greater levels of money left on the table by new issues. This research supports the proposition that increased media coverage in the lead up to IPO is positively related to the amount of money left on the table for Australian biotechnology IPOs.

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