Underwriting of Australian Dividend Reinvestment Plans

by

Mathew Abraham[a], James Lau[b] and Alastair Marsden[c]

November 2016

Key words: Dividend reinvestment plans, underwriting, discount new shares

JEL: classification: G35; H25.

[a] Department of applied Business, Whitireia Polytechnic, Auckland.
[b] Department of Accounting and Corporate Governance, Macquarie University, Sydney.
[c] Department of Accounting and Finance, The University of Auckland.

Underwriting of Australian Dividend Reinvestment Plans

Abstract

This study examines the decision to underwrite a Dividend Reinvestment Plan (DRP) by Australian firms over the sample period 1995-2013. Under Australia's dividend imputation regime DRPs provide an important and potentially cost effective source of new capital in the Australian equity market (Abraham, Dempsey and Marsden, 2015). For non-financial firms we find the decision to underwrite a DRP is negatively related to the level of franking credits attached to dividends, but positively related to the leverage of the firm and the discount for new shares issued in lieu of dividends. For both non-financial and financial firms larger firms are more likely to have their DRP underwritten.

Underwriting of Australian Dividend Reinvestment Plans

1. Introduction

Australian dividend reinvestment plans ("DRP") provide firms a source of new equity capital by enabling shareholders to reinvest the cash component of their dividend income in exchange for additional shares issued by the firm. Firms that implement a DRP can increase their dividends per share but still retain funds for new investment. Abraham, Dempsey and Marsden (2015) show that under Australia's dividend imputation regime, DRPs can also provide a cost effective source of new capital compared to funds sourced by way of an equity issue or through retained earnings. This is where dividends reinvested under a DRP are distributed with franking or imputation credits that can be utilized by Australian tax resident investors. [1]

This paper examines the decision by firms to underwrite their DRP. A number of firms have their DRP underwritten in the Australian market. In an underwritten DRP ("UDRP"), the underwriter guarantees a set participation rate. With an UDRP, a shareholder opting not to participate in the DRP will still receive their dividends in cash. However, in the event shareholders in aggregate choose not to reinvest cash dividends at a minimum target level, new shares, equivalent to the value of that dividend, can be issued by the firm to the underwriter. Thus, underwriters guarantee a set participation rate to ensure that the firm retains a minimum level of funds.

Overall, we provide empirical evidence that for non-financial firms the decision to underwrite a DRP is negatively related to the level of franking credits attached to dividends

[1] For details of Australia's imputation system see Nicol (1994), officer (1994) and Pattenden and Twite (2008).

and positively related to the discount for new shares issued under the DRP. Both higher levels of franking credits and the greater discount on new shares issued in exchange for reinvestment of dividends may encourage shareholder participation in the DRP. When shareholder participation is expected to be high, risk averse underwriters will be more willing to underwrite the DRP and /or charge a lower underwriting fee. For non-financial firms we also find the decision to underwrite the DRP is positively related to level of debt. This may reflect the greater desire of the firm to underwrite the DRP where the firm faces higher potential financial distress costs and to avoid any negative signal associated with a reduction in dividends per share. Lastly, for both non-financial and financial firms we find the decision to underwrite the DRP is positively related to firm size. Larger firms are likely to have greater liquidity and subject to higher levels of research coverage by analysts. This reduces information risk to the underwriter and the costs of selling any shares that may be acquired by the underwriter under an UDRP.

The motivation for our study is as follows. First, we contribute to the literature by analysing the factors and determinants of a firm's decision to underwrite a DRP under Australia's dividend imputation regime introduced in 1 July 1987. Australia's dividend imputation regime encourages firms to pay dividends to the maximum of allowed franking credits (Nicol, 1992, Pattenden and Twite, 2008). A study on the firm characteristics that explains the decision to underwrite a DRP will therefore be of interest to managers and shareholders of firms who adopt a DRP. Second, our results will be of interest to underwriters when pricing their underwriting services to compensate for the risk of incurring any capital loss in the event the underwriter must cover any shortfall in the level of dividends reinvested under the DRP. Third, our results may provide useful information to the firms' shareholders, when deciding whether or not to participate in a DRP.

The remainder of this paper is organized as follows. Section 2 provides a brief overview of DRPs in the Australian context. Section 3 develops hypotheses to predict the characteristics of firms that have underwritten DRPs. Section 4 outlines the data and sample period of our study and discusses the methodology that we employ in our empirical tests. Section 5 presents the empirical results. Section 6 concludes.

2. Institutional background

DRPs in Australia

The terms of the DRP are set out in a prospectus and a plan booklet. Most DRPs allow holders of ordinary securities to participate equally on a pro rata basis under the plan. Shareholder participation is typically voluntary, and shareholders can vary their participation rate at any time. Many DRPs in the Australian also offer participating shareholders a small discount to the weighted average market price of the shares traded on the Australian Securities Exchange ("ASX") in a period immediately following the ex-dividend date. Under most DRP's no brokerage fees or other costs are charged to participating shareholders in respect of the allotment of new shares issued under the DRP. There are, however, a number of costs with DRPs. All shareholders pay for the implementation and administrative costs of a DRP. A DRP can also dilute earnings per share, where there is an increase the number of shares on issue by the firm.

Legal requirements of a DRP

DRPs enjoy a number of special exemptions under the Australian regulatory framework. First, DRPs enable companies to issue new capital without the requirement for a prospectus (section708 (13) of the Corporations Act 2001). Second, large shareholders can participate in DRPs notwithstanding that the additional shares they receive may breach the

takeovers provisions (section 611 Item 11 of the Corporations Act 2001).[2] Third, as a general rule, listed companies are not allowed to issue more than 15% of their ordinary shares in any 12 month period, and they are prohibited from issuing capital to related parties without shareholder approval (ASX Listing Rules 7.1 and 10.11). DRPs are exempt from these rules, subject to the proviso that the offer is made to all shareholders.[3]

Equity raising in Australia

New shares issued under a DRP provide a significant source of new equity capital for ASX-listed companies. Figure 1 plots equity raisings through DRPs, rights issues and private placements for the 1996 to 2013 years. The figure shows that DRPs are an important source of new equity capital in the Australian market. New capital raised through DRPs peaked during the 2008 to 2010 years around the period of the global financial crisis, when many firms actively sought to reduce their leverage and reliance on debt capital markets.

Insert Figure 1 about here

3. Hypothesis development

This section develops our hypotheses to explain reasons why firms underwrite DRPs.

Signalling and taxation

The use of an UDRP reduces the likelihood that the firm need to reduce cash dividends per share and negative adverse signalling costs if dividends are reduced. For example, Charitou,

[2] This exemption applies provided the plan is available to all shareholders resident in Australia (foreign shareholders do not have to be included in the plan for the exemption to apply). A recent initiative taken by ASIC (Australian Securities and Investment Commission) has been to exempt underwriters from a breach of the takeover provisions if they acquire 20% or more of a company's shares due to their underwriting commitment under an UDRP (ASIC Consultation Paper 105 issued 24 February 2005).

[3] An exception to the listing rule 7.1 is applicable to UDRPs if an issue under an underwriting agreement to an underwriter is a pro-rata issue to holders of ordinary securities and if the underwriter receives the securities within 15 business days after the close of the offer.

Lambertides and Theodoulou (2011) document that the market reaction to dividend reductions for firms with long patterns of relatively stable past earnings and dividend payouts is significantly negative. Also by ensuring the firm will receive a minimum level of cash from dividends reinvested back into the firm, the firm avoids any cash shortfall or funding restraints that may otherwise result from a high dividend payout policy. We hypothesize:

H1: Firms that have a high dividend payout are more likely to underwrite a DRP.

The dividend imputation regime in Australia encourages firms to maximize the distribution of franking credits for the benefit of Australian tax resident investors (see Officer, 1994). The Australian tax regime also encourages the payment of dividends with the franking credits attached to reduce any capital gains tax on sale of the shares (assuming the shares were purchased after 19 September 1985). This is because dividend payments lower the share price and hence any potential capital gains tax liability when the shares are sold. This is opposed to a higher capital profit on shares sold where dividends are not paid, but retained (non-distributed) earnings are capitalised into the price. Firms that adopt high dividend payout ratios to distribute the maximum level of franking credits to investors will therefore have greater incentives to underwrite the DRP to ensure the firm retains sufficient cash for new investment or other corporate purposes.

Murray and Skully (2003) note that shareholders participating in a DRP may also be concerned about share liquidity. This is where shareholders fully participate or reinvest 100% of all cash dividends back into the firm under the DRP, but are still liable for personal tax on dividend income. In this case shareholder receives no net cash inflow from the dividend but faces a negative cash flow due to personal tax payable. Under the tax imputation regime, however, franking credits offset or reduce the tax liability for Australian tax resident investors. This should ease shareholder liquidity pressures and the need for shareholders to sell any shares

in the firm or use alternative cash resources to pay any personal liability. Thus, shareholder participation in a DRP should be positively associated with the level of franking credits attached to dividends and there is less need for the firm to engage the services of an underwriter. This suggests the impact of the level of franking attached to dividends on the likelihood of firms seeking to underwrite a DRP is an empirical question. We hypothesize that:

H2: The decision to underwrite a DRP is unrelated to the dividend franking ratio attached to the firm's dividend.

Growth

Smith and Watts (1992), Glen et al. (1995) and Naceur et al. (2005) argue that investment opportunities have a negative relationship with dividend payout. High growth firms are likely to have more positive net present value projects. Thus, we expect firms with higher growth potential will be more likely to underwrite their DRPs to preserve cash and pursue their growth opportunities. We hypothesize:

H3: Growth firms are more likely to underwrite a DRP than non-growth firms.

Size

Underwriters of Australian DRPs are typically investment banks and major stockbroking firms. An underwriter, who must subscribe for any shortfall in the issue of new shares under the DRP, will then typically sell new shares acquired under the DRP pursuant to their underwriting obligation. Thus, the underwriter faces liquidity risks and may be forced to accept a discounted price on sale of any shares acquired under a DRP. Butler, Grullon and Weston (2005) show that underwriters charge higher investment banking fees when the firm's stock is less liquid. We posit larger firms are more likely to have greater stock liquidity and can more easily contract the services of an underwriter.

Brokerage houses also tend to give greater analyst and research coverage to large firms, which reduces information asymmetry costs in any decision to underwrite the DRP. Prior studies show that there are economies of scale in the issuance of new securities, and the empirical evidence shows that larger issues have lower relative fees than smaller issues (Smith, 1977; Booth and Smith 1986). In addition, larger firms can afford higher underwriting commissions, engage in more capital market transactions and more likely to offer new business opportunities with the underwriter.[4] We hypothesize that:

H4: Large firms are more likely to underwrite their DRP than small firms.

Financial distress and agency costs

Lasfer (1997a, 1997b) examines why firms issue scrip dividends[5] instead of cash dividends and proposes the cash shortage (financial distress) hypothesis. The cash shortage hypothesis implies that firms with high debt and/or liquidity constraints will adopt a scrip dividend plan as an alternative to their cash dividend to mitigate or reduce the likelihood of financial distress.

Firms also have an incentive to issue debt or new equity when internal funds are insufficient to fund the firm's cash requirements. Tamule, Bubnys and Sugrue (1993) suggest that firms with high debt and low cash flows will be forced to raise equity. Thus, we posit firms facing higher levels of financial constraints will be more likely to adopt an UDRP to ensure a minimum level of cash reinvested back into the firm and avoid sending any negative signal to the market. We hypothesize:

H5: Firms with low liquidity are more likely to underwrite their DRP than firms with high liquidity.

[4]James (1992) finds empirical support for the firm-specific relationships that the underwriter may establish with the issuers in the context of IPOs.

[5]A scrip dividend is similar to DRP but with the following differences; shares are not offered at a discount (Lasfer, 1997a) and shareholders have no choice on participation (Chan et al., 1995).

H6. Firms with high leverage are more likely to underwrite their DRP than firms with low leverage.

Discount

The discount on new shares issued under a DRP may impact on the underwriting decision for the following reasons. First, the underwriter will have greater incentives to underwrite those DRPs where discounts on the issue price are offered. A high discount offer allows the underwriter to acquire any shortfall in the issue of new shares under the DRP at a price lower than the current market price. The firm also benefits from the high discount in respect of an UDRP by reducing underwriter risk and the level of fees an underwriter may charge. On the other hand, a high discount on new shares issued under a DRP is likely to encourage greater shareholder participation and there will be less need for the firm to engage the services of an underwriter. Wills (1989) reports that greater shareholder participation in Australian DRPs can be expected the higher the discount on the issue price for new shares issued under the DRP. Abraham, Marsden and Poskitt (2015) also find that shareholder participation rates in non-underwritten DRPs are positively related to the discount offered in respect of the issue of new shares under the DRP. In summary, the impact of the discount on the decision to underwrite a DRP is uncertain. We hypothesize:

H7: The decision to underwrite a DRP is unrelated to the discount.

4. Data, Sample, and Methodology

Data and Sample

The DRP and non-DRP samples are identified from the population of all ASX-listed firms for the 1995 to 2013 years. Financial data (sourced from the firm's balance sheet, profit and loss account and cash flow statements), and equity and dividend data are obtained from the

DAT Analysis and Fin Analysis databases. Where necessary, the extracted information was cross-checked with the ASX's share market event files and company annual reports. We identified firms with DRPs and whether or not the DRP was underwritten from Company Announcement Sections from DAT Analysis and FIN Analysis and DRP prospectuses.[6]

The final sample comprises cross-sectional time-series data, with 1753 observations on firms with a non-underwritten DRP and 358 observations on firms with an UDRP. We split our sample into both non-financial and financial firms. The financial firms comprise those firms with ASX GICS codes 4010 (Banks), 4020 (Diversified Financials) and 4030 (Insurance).[7] The sample of observations was drawn from a range of industry groups (see Table 1). Diversified Financials are the largest group in the sample, accounting for 416 observations. For the non-financial firms, the largest group is drawn from Materials with 217 observations.

Insert table 1 about here

Methodology

We use a logistic model to test our hypotheses. The estimated logistic model takes the form:

$$UNDER_{i,t} = \beta_0 + \beta_1 PAYOUT_{i,t} + \beta_2 FRANK_{i,t} + \beta_3 TQ_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 CR_{i,t} + \beta_6 DEBT_{i,t} + \beta_7 DISCT_{i,t} + ASX\ GICS\ and\ Year\ categorical\ \text{var}iables + u_{i,t} \quad (1)$$

[6] Generally, firm announcements were the primary source of identifying underwritten DRPs. However, in some cases the DRP prospectuses of companies mention whether DRPs are underwritten or not underwritten.

[7] We excluded Real estate firms (ASX code 4040) from the sample as many real estate firms are real estate investment trusts ("REITS"), who derive a significant portion of their income from passive rents. These entities are typically required to pay out at least 90% of their income to unit holders or investors in the REIT and attach no franking credits to their distributions.

UNDER is a dummy variable, equal to one for firms with an underwritten DRP in period t and zero for firms without a DRP. *PAYOUT* is the annual dividends per share divided by the annual earnings per share.[8]

FRANK is the franking ratio, calculated as:

$$FRANK_{i,t} = \frac{Interim\ and\ final\ franking\ credits}{Interim\ and\ final\ cash\ dividends} \times \frac{1 - t_c}{t_c}$$

where t_c is the statutory corporate tax rate for the year in the t^{th} period.

TQ, a proxy for growth is Tobin's Q, and calculated as follows:

$$TQ_{i,t} = \frac{MC_{i,t} + STD_{i,t} + LTD_{i,t}}{BVE_{i,t} + STD_{i,t} + LTD_{i,t}}$$

where MC_t is market capitalization at end of year t, BVE_t is book value of equity at end of year t, STD_t is short-term debt at end of year t and LTD_t is long-term debt at end of year t.

Firm size is measured by *SIZE*, defined as the natural logarithm of total assets. We proxy liquidity by the firm's current ratio, *CR*, defined as total current assets divided by total current liabilities at the end of year t to test the impact of liquidity constraints on the decision to utilize a DRP. *DEBT* is used to measure leverage and is defined as net interest bearing debt scaled by the total assets of the firm. The variable *DISCT* is the discount offered to shareholders under the DRP on new shares issued in lieu of dividends.

[8]If the firm paid dividends in excess of earnings per share, we set the dividend pay-out ratio to 100%.

Empirical results

Univariate results

Table 2 reports the univariate results for the non-dichotomous variables used in the empirical analysis for the full sample period between 1995 and 2013. We first discuss the results for the sample of non-financial firms.

The mean (median) *PAYOUT* for the UDRP firm observations is 0.6749 (0.6750). This is marginally lower (higher) than the mean (median) payout ratio for the non-UDRP firm observations of 0.6750 (0.6667). The difference in both means and medians is not significant under the t-test and Wilcoxon test. The results provide no support for H1. The mean (median) variable *FRANK* for non-UDRPs is 0.7666 (1.00), which is significantly higher than the mean (median) *FRANK* for UDPRs of 0.7087 (1.00). The results reject H2 in favour of the alternative hypothesis that firms with high franking credits attached to dividends are less likely to underwrite a DRP. In respect of the variables *TQ*, *SIZE*, *CR* and *DEBT* we find some evidence that UDRPs have lower growth prospects, are larger in size, a lower current ratio or level of liquidity and greater levels of debt. Thus, there is weak support for hypotheses H4, H5 and H6 but no support for H3. Lastly, the results show that for non-financial firms, UDRPs have a significantly higher mean and median *DISCT* or level of discount on new shares issued under the DRP compared to non-UDRPs. The evidence rejects the null hypothesis of H7.

For financial firms the results in Table 2 show that UDRPs are significantly larger than non-UDRPs (supporting H4), have a lower *CR* (supporting H5) and higher levels of *DEBT* (supporting H6). The median value of *TQ* is also significantly higher for UDRPs (1.3418), compared to the median value for non-UDRPs (1.0488). There is weak support for H3. Contrary to the results for the non-financial firms, the mean and median *DISCT* for non-UDRPs

is significantly higher at the 1% and 10% levels respectively compared to the mean and median DISCT for UDRPs.

Multivariate logistic results

Table 3 presents the results of the logistic model using clustered standard errors by ASXGICS code and year.[9] Both the logistic coefficient and marginal coefficients are reported. For the non-financial firms, the coefficient on *PAYOUT* is positive but not significant. The results provide no support for H1, that firms that have a high dividend payout are more likely to underwrite a DRP. The coefficient on *FRANK* is negative and significant at the 1% level. The results rejects H2, in favour of the alternative hypothesis that firms with a low franking credit ratio attached to their dividends are more likely to underwrite a DRP. The evidence is consistent with lower levels of expected shareholder participation in DRPs, where dividends have low franking credits attached. This is because Australian resident must still pay tax on the dividend income, with less tax offsets when little or no franking credits are attached to the dividend. To fund any tax shortfall, shareholders who fully participate in the DRP must therefore sell a portion of their shares or find cash from alternative sources.

The coefficient on *TQ* is negative but not significant. There is no support for H3. The coefficient on *SIZE* is positive and significant. The results support H4 that large firms are more likely to underwrite their DRP than small firms. This may reflect underwriter concerns about lack of share liquidity in the event the underwriter must purchase shares in the firm in the event of any shortfall in the minimum level of shareholder participation in the DRP. Underwriters may also be unwilling to underwrite a DRP for a small firm, where the underwriter has no existing business relationship and/or has no analysts researching the firm.

[9] Prior to the estimation of logistic models, correlations between key variables were tested. Correlations between the variables were generally low and all less than 0.35. For example the correlation between *PAYOUT* and *FRANK* was only 0.06 (non-financial firms) and 0.03 (financial firms).

The coefficient on *CR* is negative but not significant. The results do not support H5 that liquidity constraints play a role in the underwriting decision for non-financial firms. However, the coefficient on *DEBT* ratio is positive and significant. The results support for H6 that firms with a higher leverage are more likely to underwrite their DRP than firms with a lower leverage. Lastly, the coefficient on *DISCT* is positive and significant at the 0.01 level. The evidence rejects the null hypothesis H7 in favour of the alternative hypothesis that a high discount is necessary to attract an underwriter who is willing to underwrite the DRP.[10] This may also reflect incentives for the firm to lower underwriting costs where the underwriter receives a discount on the take-up of any shortfall of new issues issued under the DRP.

We next discuss the results for the financial firms (Table 3, last column). Only the coefficient on *SIZE* is positive and significant at the 0.01 level. The results support H4 that large firms are more likely to underwrite their DRP than small firms. Apart from support for H4, the results for financial firms do not support any of the other hypotheses that may explain the decision to underwrite a DRP.

Endogeneity between the level of discount on new shares and the decision to underwrite a DRP

The statistical significance of a positive relationship between the level of discount offered for new shares under a DRP and the decision to underwrite may be explained by potential endogeneity between these two variables. As already noted, firms seeking to underwrite their DRP have incentives to set a high discount for new shares issued under the DRP as underwriters' costs will be less. This is because a high discount encourages greater shareholder participation rates and reduces the risk to the underwriter of any shortfall or

[10] Our results in Table 3 are qualitatively similar when we replace DISCT with a dichotomous variable equal to one if a discount on new shares is offered to shareholders under the DRP and zero otherwise.

obligation to acquire any new shares in the firm if the DRP participation rate is below the guaranteed set participation rate. However, two-way causality may exist if risk-averse underwriters are only willing to underwrite DRP issues with a high discount to the offer price for new shares. This means underwriters are more likely acquire new shares in the firm at a price below the traded ex-dividend price if their underwriting obligations are triggered.

To control for potential endogeneity between the discount offered for new shares under a DRP and the firm's decision to underwrite the DRP, we use the propensity score matching method (see Lee and Masulis, 2011). We follow a two-step process. We first estimate a logit model with *DISCOUNT* as the dependent variable with the endogenous choice variables being *PAYOUT*, *FRANK*, *TQ*, *SIZE*, *CR* and *DEBT*. The variable *DISCOUNT* is a dichotomous variable equal to one if a discount on new shares is offered to shareholders under the DRP and zero otherwise. We posit a high *PAYOUT* will be positively associated with *DISCOUNT*, as firms with a high dividend payout ratio may wish to encourage greater shareholder participation to ensure the firm retains a minimum level of funds for reinvestment. *FRANK* is predicted to be negatively related to *DISCOUNT* as higher franking credits suggest greater shareholder participation rates in the DRP, where shareholders have a lower incremental tax liability on fully franked dividends compared to dividends with no or partial franking credits only. We predict a positive relationship between *TQ* and *DEBT* and *DISCOUNT* as firms with high growth prospects and high debt levels seek greater shareholder participation in the DRP. Lastly we predict a negative relationship between *SIZE* and *CR* and *DISCOUNT*. Larger firms and firms with greater current liquidity may have alternative sources of funds in the event shareholder participation is below expectations.

DRPs that offer a discount on new shares (treatment group) are then matched with DRPs that offer no discount (control groups), but with similar propensity scores. Four different

propensity methods are used. These are: using the propensity score as a covariate (Austin, 2011, Shadisk and Steiner, 2010), stratification for binary outcome (Rosenbaum and Rubin, 1984); the inverse probability of treatment weights (Harder et al, 2010) and nearest neighbour matching with replacement.

Table 4 presents the results of our logistic regressions and propensity score analysis. In panel A, we present the results of the logistic regression. For non-financial firms we find *DISCOUNT* is significantly negatively related to firm size and weakly positively related to liquidity proxied by current ratio. For financial firms, contrary to expectations, *FRANK* is significantly positively related to *DISCOUNT*. However, financial firms with larger debt levels are more likely to offer a high *DISCOUNT*. Table 4, Panel B presents the results for each of the four propensity score methods. For the non-financial sample the results for all four methods of propensity score analysis show that DRPs with a larger discount are significantly more likely to be underwritten, with the odds ratio all significant at the 1% level. However, for financial firms there is no evidence of any relationship between the decision to underwrite and the level of discount for news shares under a DRP.

Overall, the results in Table 4, Panel B, support our logistic regression analysis and results in Table 3. The evidence suggests that for non-financial firms, and after controlling for potential endogeneity, underwritten DRPs are associated with a higher discount on the issue of new shares compared to non-underwritten DRPs.

Conclusion

This paper investigates the determinants of a firm's decision to underwrite a DRP in the Australian market. A UDRP is a dividend reinvestment plan in which the underwriter purchases sufficient shares at the issue price to ensure a minimum guaranteed participation or

level of dividends that will be reinvested in the firm in accordance with the terms of the underwriting agreement. UDRPs enable firms to increase their dividend payout without depleting capital reserves.

Overall, we provide empirical results that for non-financial firms the decision to underwrite a DRP is negatively related to the level of franking credits attached to dividends. This may reflect lower expected shareholder participation in the issue where dividends are paid by the firm with little or no franking credits attached. Risk averse underwriters will therefore be less willing to underwrite the DRP and /or charge a higher underwriting fee. We also find evidence to show that the level of discount on new shares issued under the DRP is positively related to the decision to underwrite. A high discount encourages greater shareholder participation in the DRP, which also lowers risk to the underwriter. This result holds after controlling for potential endogeneity. Lastly for non-financial firms we find larger firms and firms with more debt are more likely to have an underwritten DRP.

For financial firms we find the decision to underwrite the DRP is positively related to firm size only. This may reflect an underwriter's willingness to only underwrite DRPs for larger firms that have greater share liquidity and where the underwriter faces less risk if required to purchase shares in the firm to cover any shortfall in the level of shareholder participation in the DRP. Large firms are also more likely to have an existing relationship with an underwriter and subject to greater levels of analyst research.

In summary our study contributes to the literature by examining the factors that explain the underwriting decision for DRPs in the context of the Australian environment under a dividend imputation regime. Further research is warranted on DRPs given the importance of DRPs as a source of new equity capital for Australian firms and the role this new equity capital may play in encouraging greater firm investment in productive projects.

References

Abraham, M., Dempsey, M. & Marsden, A. (2015). Dividend reinvestment plans: A tax-based incentive under the Australian imputation tax system. Australian Tax Forum 30, 435-453.

Abraham, M., Marsden, A, & Poskitt, R. (2015). Determinants of a Firm's decision to utilize a Dividend Reinvestment Plan and Shareholder Participation Rates: Australian Evidence" Pacific Basin-Finance Journal, 31, 57-77

Austin, P. C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. Multivariate Behavioral Research, 46(1), 399-424.

Booth, J., & Smith, R. (1986). Capital raising underwriting and the certification hypothesis. Journal of Financial Economics, 15, 261-181.

Butler, A.W., Grullon, G., & Westson.L. (2005).Stock market liquidity and the cost of issuing liquidity. Journal of Financial and Quantitative Analysis, 40, 331-348.

Chan, K.W., McColough, D.W., & Skully, M. T. (1995). Dividend reinvestment plans in Australia. Global Finance Journal, 6, 79–99.

Charito, A., Lambertides, N., & Theodoulou, T. (2011). Losses, dividend reductions and market reactions associated with past earnings and dividend patterns. Journal of Accounting, Auditing and Finance, 26,351-382.

Glen, J., Y., Miller, R.K., & Shah.S.(1995). Dividend Policy and Behaviour in Emerging Markets. Retrieved from http://www.ifc.org/

Harder, V. S., Stuart, E. A., Anthony, J. C. (2010). Propensity score techniques and the assessment of measure covariate balance to test causal associations in psychological research. Psychological Methods, 15, 234-249.

How, J.C.Y., & Yeo, J.J. (2000).The pricing of underwriting services in the Australian capital market. Pacific-Basin Finance Journal, 8, 347–73.

James, C. (1992). Relationship-specific assets and the pricing of underwriter services. Journal of Finance, 47, 1210-1865.

Lasfer, M. (1997a). On the motivation for paying scrip dividends. Financial Management, 3, 237-249.

Lasfer, M. (1997b). Scrip dividends: The Management's view. European Financial Management, 3, 237-249.

Lee, G., & Masulis, R. W. (2011). Do more reputable financial institutions reduce earnings management by IPO issuers?. Journal of Corporate Finance, 17(4), 982-1000.

Murray, J., & Skully, M. (2003). Dividends, reinvestment and bonus shares: the shareholder's choice. Working paper, Monash University.

Naceur, S. B., Goaied, M., & Belanes, A. (2005). A re-examination of dividend policy: A dynamic panel data analysis. Retrieved from SSRN: http://ssrn.com/abstract=856384/

Nicol, R. E. (1992) .The dividend puzzle: an Australian solution? Australian Accounting Review, 4, 41-55.

Officer, R. (1994).The cost of capital of a company under an imputation tax system. Accounting and Finance, 34, 1-17.

Pattenden, K., & Twite, G. (2008). Taxes and dividend policy under alternative tax regimes. Journal of Corporate Finance, 14, 1–16.

Rosenbaum, P. R. & Rubin, D. B. (1984) Reducing bias in observational studies using subclassification on the propensity score. Journal of the American Statistical Association, 79, 516-524.

Shadish, W. R. & Steiner, P. M. (2010). A primer on propensity score analysis. Newborn and Infant Nursing Reviews, 10(1), 19-26.

Smith, C. (1977). Alternative methods for raising capital: rights versus underwritten offerings. Journal of Financial Economics, 5 173–207.

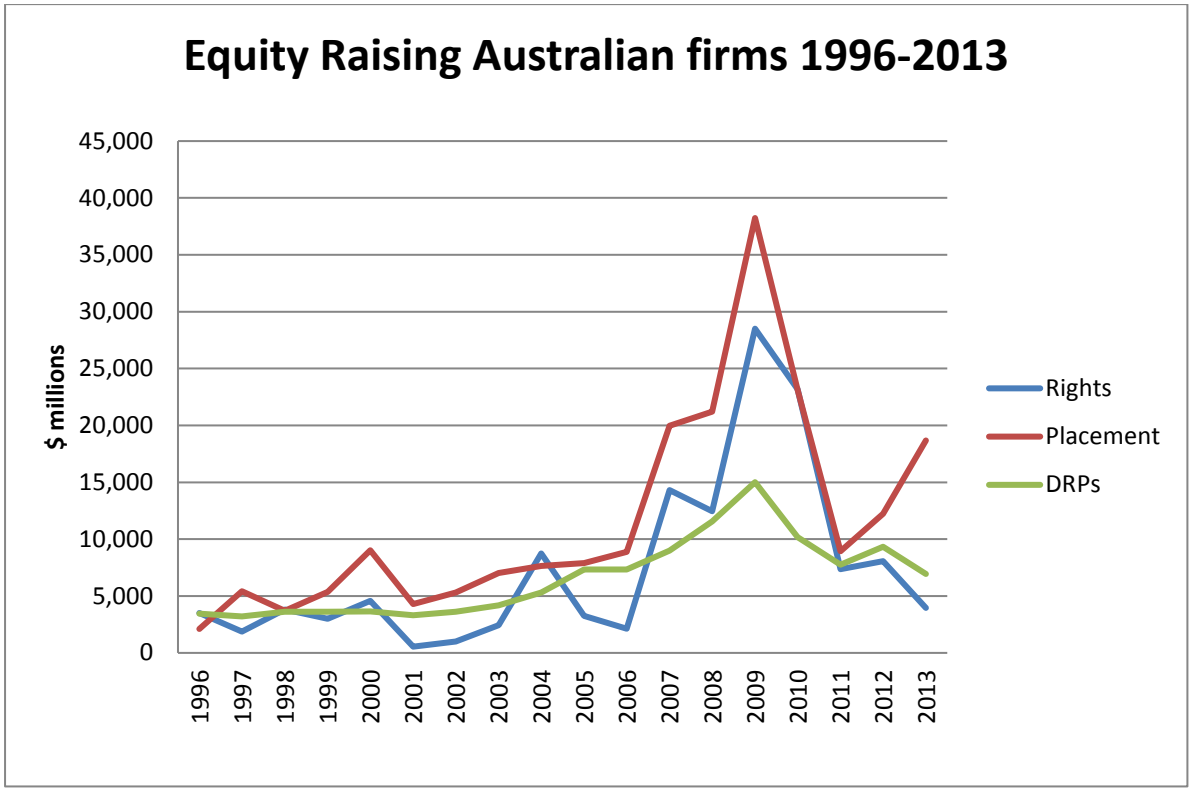
Smith, C.W., & Watts, R.L. (1992).The investment opportunity set and corporate financing, dividend and compensation policy, Journal of Financial Economics, 3, 263 -292.

Tamule, H. B., Bubnys, E. L., & Sugrue, T. F. (1993). Dividend reinvestment plans and pecking order capital structure behavior: an empirical investigation. Journal of Economics and Finance, 17, 91–102.

Wills, A. (1989).A decade of dividend reinvestment. Australian Accountant, (August), 65-73.

Figure 1

This figure plots equity raisings through DRPs, rights issues and private placements for the 1996 to 2013 years.



Sources: Australian Financial Markets Association (AFMA), Australian Financial Market Reports, 2001, 2003, 2007, 2008, 2010 & 2013; ASX Market Data Reports. Drawn from Abraham, Dempsey and Marsden (2015).

Table 1

Industry distribution of underwriting sample

GICS Code	Industry	Non-Financial Firms		Financial Firms	
		Non-UDRP Observations	UDRP Observations	Non-UDRP Observations	UDRP Observations
1010	Energy	42	23	n.a.	n.a.
1510	Materials	198	19	n.a.	n.a.
2010	Capital goods.	177	61	n.a.	n.a.
2020	Commercials and professional services.	90	27	n.a.	n.a.
2030	Transportation	92	30	n.a.	n.a.
2510	Automobiles and components	31	0	n.a.	n.a.
2520	Consumer durables and apparels	46	11	n.a.	n.a.
2530	Consumer services	49	4	n.a.	n.a.
2540	Media	80	0	n.a.	n.a.
2550	Retailing	64	2	n.a.	n.a.
3010	Food and staples retailing	26	19	n.a.	n.a.
3020	Food, beverage and tobacco	158	14	n.a.	n.a.
3510	Health care equipment and services	52	35	n.a.	n.a.
3520	Pharmaceuticals, biotechnology and life services	4	0	n.a.	n.a.
4010	Banks	n.a.	n.a.	56	64
4020	Diversified financials	n.a.	n.a.	401	15
4030	Insurance	n.a.	n.a.	39	27
4510	Software services	54	1	n.a.	n.a.
4520	Technology, hardware and equipment	16	0	n.a.	n.a.
4530	Equipment	4	0	n.a.	n.a.
5010	Telco communication services	12	0	n.a.	n.a.
5510	Utilities	62	6	n.a.	n.a.
	Total	1257	252	496.	106

* Financials are GICS Codes 4010 (Banks), 4020 (Diversified Financials) and 4030 (Insurance).

Table 2

Univariate Analysis (Full sample period, 1995-2013)

	Non-Financials			Financials		
	Non-Underwritten DRPs N = 1257	Underwritten DRPs N = 252		Non-Underwritten DRPs N = 496	Underwritten DRPs N = 106	
	Mean (Median	Mean (Median)	T- test (Wilcoxon)	Mean (Median	Mean (Median)	T- test (Wilcoxon)
PAYOUT	0.6750 (0.6667)	0.6749 (0.6807	0.01 (0.99)	0.7397 (0.7978)	0.7353 (0.7090)	0.21 (0.23)
FRANK	0.7666 (1.0000)	0.7087 (1.0000)	2.00** (0.075)*	0.9006 (1.0000)	0.9028 (1.0000)	-0.09 (0.18)
TQ	1.6351 (1.3136)	1.5109 (1.2570)	1.93* (0.12)	1.3696 (1.0488)	1.4069 (1.3418)	-0.52 (0.00)***
SIZE	19.994 (19.879)	20.204 (19.836)	-1.74* (0.14)	19.796 (19.204)	23.870 (24.502)	-14.33*** (0.00)***
CR	1.6428 (1.390)	1.5760 (1.305)	0.81 (0.06)*	14.427 (2.525)	1.8373 (1.2519(	4.50*** (0.00)***
DEBT	0.1922 (0.2126)	0.2256 (0.2261)	-2.43** (0.18)	-0.0400 (-0.0164)	0.0314 (-0.0084)	-3.52*** (0.00)***
DISCT	0.0167 (0.0000)	0.0213 (0.0250)	-3.01*** (0.00)***	0.0153 (0.0000)	0.0109 (0.0000)	2.42*** (0.10)*

Notes. The definitions of the variables are defined in section 4 of the text. The figures in parentheses are the statistical significance values. The asterisks in the table indicate statistical significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels.The Wilcoxon rank-sum test is a non-parametric alternative to the two sample t-test which is based solely on the order in which the observations from the two samples fall.

Table 3

Logistic model results. The model is:

$$UNDER_{i,t} = \beta_0 + \beta_1 PAYOUT_{i,t} + \beta_2 FRANK_{i,t} + \beta_3 TQ_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 CR_{i,t} + \beta_6 DEBT_{i,t} + \beta_7 DISCT_{i,t} + ASX\ GICS\ and\ Year\ categorical\ \text{var}iables + u_{i,t}$$

Variable	Expected sign	Logistic Coefficient Marginal Effect (Sig.) Non-Financial	Logistic Coefficient Marginal Effect (Sig.) Financial
Constant		-7.3649 (<0.01)***	-11.5629 (<0.01)***
PAYOUT	+ve	0.0426 0.0046 (0.88)	1.1211 0.0874 (0.18)
FRANK	?	-0.4943 -0.0574 (0.01)**	0.1841 0.0143 (0.79)
TQ	+ve	-0.0842 -0.0099 (0.28)	-0.2022 -0.0158 (0.56)
SIZE	+ve	0.1060 0.0121 (0.04)**	0.3607 0.0281 (<0.01)***
CR	-ve	-0.0245 -0.0029 (0.69)	-0.0621 -0.0048 (0.14)
DEBT	+ve	0.9757 0.1131 (0.03)**	0.6892 0.0538 (0.35)
DISCT	?	8.3146 0.9297 (0.01)**	-8.5939 -0.6704 (-0.32)
Log likelihood		243.6***	256.8***
R-Square		0.149	0.347
GICS and Year Categorical variables		Not reported	Not reported
Num. of obs.		1509	602

Note. For the independent variables the first number is the coefficient is the coefficient on the logistic regression. The second number is the marginal coefficient.

The figures in parentheses are the statistical significance values. The asterisks in the table indicate statistical significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels.

Table 4

Estimation of the Average Treatment Effect based on Propensity Score Matching

Panel A

The logistic model is:

$$DISCOUNT_{i,t} = \beta_0 + \beta_1 PAYOUT_{i,t} + \beta_2 FRANK_{i,t} + \beta_3 TQ_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 CR_{i,t} + \beta_6 DEBT_{i,t} + ASX\ GICS\ and\ Year\ categorical\ variables + u_{i,t}$$

Where *DISCOUNT* = 1 if a discount is offered for new shares under a DRP and zero otherwise. The other variables as already defined.

Variable	Logistic Coefficient (p-value.) Non-Financial	Logistic Coefficient (p-value) Financial
Constant	1.4411	-2.2607
	(0.08)*	(0.04)**
PAYOUT	0.1690	0.1255
	(0.46)	(0.74)
FRANK	-0.0286	0.7323
	(0.86)	(0.04)**
TQ	-0.0062	-0.0675
	(0.90)	(0.44)
SIZE	-0.0094	0.0581
	(0.01)**	(0.19)
CR	0.0785	-0.0021
	(0.08)*	(0.21)
DEBT	0.2283	0.8190
	(0.45)	(0.01)**
Log likelihood	192.9***	65.6
R-Square	0.1200	0.1032
GICS and Year Categorical variables	Yes	Yes
Num. of obs.	1509	602

Note. For the independent variables the coefficient on the logistic regression is provided.

The figures in parentheses are the statistical significance values. The asterisks in the table indicate statistical significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels.

Panel B. The average treatment effect based on propensity score matching

	Propensity score as the co-variate	Stratification with binary outcome	Inverse Probability of Treatment Weights	Nearest neighbour matching with replacement
Underwritten DRPs – Non-financial sample	1.700 1.271 – 2.273 (<0.01)***	1.666 1.247 – 2.227 (<0.01)***	1.757 1.329 – 3.324 (<0.01)***	2.0947 1.549 – 2.832 (<0.01)***
Underwritten DRPs – Financial sample	1.111 0.695 – 1.776 (0.66)	1.165 0.723 – 1.875 (0.52)	1.133 0.744 – 1.725 (0.56)	0.7101 0.424 – 1.190 (0.24)

The first figure is the odds ratio. The second figures are the 95% confidence intervals. Figures in parentheses are the statistical significance values. The asterisks in the table indicate statistical significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels.