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Rights issues: Retail shareholders and their participation decisions

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Abstract

Using daily ownership data, this study documents median participation rates for retail and institutional shareholders in rights offers in Australia of 60% and 94% respectively. At the median, the rights issue results in 0.25% (1.34%) of the value of firm market capitalization (offer size) being transferred from retail shareholders to institutional shareholders. Retail shareholder participation is higher in renounceable offers, offers with larger discount and those made by firms with larger market capitalization and lower risk. Companies with above median retail participation rates perform better in the long run. The results suggest that, on average, retail shareholders make rational participation decisions in rights offerings.

Keywords: Rights issues; Rights offers; Wealth transfers; Retail shareholder participation; Institutional shareholder participation; Rational; Discount; Abnormal returns.

Abstract

Using daily ownership data, this study documents median participation rates for retail and institutional shareholders in rights offers in Australia of 60% and 94% respectively. At the median, the rights issue results in 0.25% (1.34%) of the value of firm market capitalization (offer size) being transferred from retail shareholders to institutional shareholders. Retail shareholder participation is higher in renounceable offers, offers with larger discount and those made by firms with larger market capitalization and lower risk. Companies with above median retail participation rates perform better in the long run. The results suggest that, on average, retail shareholders make rational participation decisions in rights offerings.

Keywords: Rights issues; Rights offers; Wealth transfers; Retail shareholder participation; Institutional shareholder participation; Rational; Discount; Abnormal returns.

The traditional rights offer (RO) provides a mechanism for companies to raise capital from existing shareholders efficiently, equitably, and at low cost. If all shareholders act rationally and take up their rights to purchase new shares, there are no resulting wealth transfers between shareholder groups, even when rights are offered at a discount to the current price. Yet, despite these positive attributes, the number of ROs issued by industrial firms in the U.S. has diminished since the 1960s (Eckbo and Masulis 1992). A similar trend for ROs is observed in later years in other countries such as the U.K., Canada, Japan, and Hong Kong (Armitage 2010; Eckbo et al. 2007; Wu and Wang 2009). In turn, this has led to the "rights paradox" denoted by the puzzling co-existence of relatively low costs associated with raising capital via ROs (compared to other forms of capital raising) and their infrequent use by companies. As rights are typically "in the money", shareholders are expected to participate in such offerings. Prior literature, most notably Holderness and Pontiff (2016), however presents results that are consistent with the view that small shareholders in the U.S. tend to leave "money on the table" by not participating in valuable rights offerings. [1] They also suggest that the non-participation may be related to underlying agency problems that are signalled when managers choose non-renounceable (non-transferrable) offers. [2] Generally, the literature characterizes institutional investors as "sophisticated' and retail (or small) shareholders as lacking financial literacy and sophistication, which may lead to the lack of participation.

Typically, there is no legal requirement for firms to disclose participation rates in rights issues. As a result, data to measure participation rates are generally unavailable to researchers. To date, apart from a study by Rantapuska and Knüpfer (2008), there has been no research using actual participation rates of retail shareholders. Our study differs from previous research in one important aspect: we have access to share registry data that measure ownership on a daily basis, for retail and institutional shareholders separately. This allows us to estimate accurately the ownership changes following the first allocation of shares in a large sample of rights offerings. Ownership changes reflect the attractiveness of the issue to different groups of shareholders, and are consequently an important determinant of wealth transfers between the groups.

[1] Lee and Poon (2018) study open offers in Hong Kong and present evidence consistent with Holderness and Pontiff (2016) that shareholder participation is low and private benefits are gained by large shareholders at the expense of non-participating shareholders. They also suggest that despite these characteristics open offers remain popular in Hong Kong. We discuss open offers in more detail in Section II.

[2] Approximately half (49%) of offerings in Holderness and Pontiff (2016) are non-transferrable.

Our study is conducted on Australian data. ROs have a long history in Australia and remain popular today. Over 1999-2007, Australian companies raised around $21.43 billion via ROs.[3] Non-renounceable offers are significantly more popular than renounceable offers as more than two-thirds (68%) of offers are non-transferrable over our sample period, which suggests that market participants in Australia are accepting of multiple offer structures, and that the agency problems identified by Holderness and Pontiff (2016) are less likely to drive participation behavior by retail shareholders. Further, ROs are also characterized as fair by the regulator, because they satisfy the 'equal opportunity principle'.[4] In view of these observations, our central hypothesis is that when offered the opportunity to buy shares in a RO, retail shareholders in Australia in fact make rational participation decisions.[5]

We document empirical evidence to answer our research question by investigating the drivers of participation decisions for retail shareholders. If the participation decisions of retail shareholders are driven systematically by a set of factors that reflect either firm or offer quality, we are led to conclude that retail shareholders (as a group) are rational in their exercising behavior. It is important to emphasize at the outset, that we do not have data that identify shareholders at the individual level; our daily ownership data are at the aggregate level for the two groups of shareholders, retail and institutional. Consequently, we are unable to measure the financial sophistication of individual retail shareholders, as Rantapuska and Knüpfer (2008) do, but we do have a much larger sample size.

The ownership data allow us to account for market participants who buy or sell shares up until the cum-entitlement date of the RO. The measure of retail and institutional shareholder ownership on the cum-entitlement date determines eligibility to participate in the RO. We quantify the number of shares purchased by retail and institutional shareholders based on the first allocation (before unsubscribed rights are sold in a shortfall or oversubscription offer). The retail (institutional) shareholder participation rate is defined as this number divided by the number of shares retail

[3] Over the sample period, the funds raised per issue for rights offers are just under four times that raised per issue by private placements.

[4] See Australian Securities and Investment Commission (ASIC) Regulatory Guide 189. In particular, RG189.8 and RG189.9 make the point that rights issues are one of the few forms of capital raising that give retail shareholders the same opportunity (as institutional investors) to buy securities at a discount to market price. At: https://asic.gov.au/regulatory-resources/find-a-document/regulatory-guides/rg-189-disclosure-relief-for-rights-issues/

[5] We assume, consistent with prior literature that institutional shareholders participate to the highest possible extent (if not fully).

(institutional) shareholders are eligible to subscribe for under the rights offer. This approach allows us to calculate accurately retail and institutional shareholder participation rates in the rights offer. Our sample of 387 rights offers during 1999-2007 has a mean (median) retail shareholder participation rate of 59 (60) percent; the mean (median) institutional participation rate is 102 (94) percent. The mean (median) participation rate for all shareholders is 101 (79) percent.[6] The consequence of differing participation rates between the two shareholder groups is an average (median) wealth transfer of 1.19 (0.25) percent of market capitalization and 6.32 (1.34) percent of the funds sought, from retail shareholders to institutional shareholders. By way of comparison, Holderness and Pontiff (2016) report an average (median) participation rate of 64 (71) percent for the entire shareholder group, and an average wealth transfer from non-participating to participating shareholders of 4.5 percent (7 percent) of market capitalization (funds sought). Of course, if institutional shareholders at large participate and retail shareholders largely do not, as has been postulated by Holderness and Pontiff (2016), then the wealth transfers from non-participating to participating shareholders may be much the same as those from retail to institutional shareholders.

In answering the central research question as to whether retail shareholders act rationally when deciding whether to participate in companies' rights offerings, the paper produces a number of contributions to the literature. First we empirically demonstrate that retail shareholders exhibit higher participation rates when the RO is renounceable, when it has a shortfall facility, when the issuing company has larger market capitalization, when the company has lower idiosyncratic risk and when the discount to market price is larger. These systematic relations lead us to answer our main research question in the affirmative, and conclude that retail shareholders, as a group, exhibit rationality. Second, we find that retail shareholder participation rates are lower than institutional shareholder participation rates. In addition, companies where retail shareholders have above median participation rates in the RO, perform better in the long run than those where participation rates are below the

[6] Over 30 percent of our sample companies have issued options giving holders the right to purchase shares, often out to 2 years from the issuance date. In addition, many rights offers have unlisted options attached to the offer. Taken together, the existence of listed and unlisted options gives option holders the right to participate in the rights offer provided options are exercised prior to the record date. Conceivably the ownership registration of these newly issued shares may be delayed, resulting in the share ownership on cum-entitlement date to be underestimated. This, and other important factors discussed in Section III, can lead to the participation rate calculated for institutions to be larger than 100%. We do not have access to data on option exercise. However, we conclude that almost all institutional shareholders participate in the rights issue, because the (average) median participation rate is 102% (94%) for this group.

median. An important contribution of the paper is to provide an accurate calculation of the wealth transferred from retail shareholders to institutional shareholders in the sample of ROs. These wealth transfers are a consequence of the differing participation rates that form the key hypothesis of our study. We also document negative and significant abnormal announcement returns, consistent with the evidence in Balachandran, Faff and Theobald (2008). In addition, we find that the higher is the retail shareholder participation, the larger are the announcement returns. Moreover, the announcement returns are negatively and significantly related to the expected wealth transfer from retail to institutional shareholders. In as much as the (negative) market reaction at announcement reflects the offering firm's quality, these results suggest that retail shareholders participate less (leading to higher wealth transfer) in offerings made by lower quality firms. Taking our results collectively, we provide strong evidence that retail shareholders, as a group, appear to make rational participation decisions in ROs.

While institutional shareholder average participation rates in ROs are above 100 percent, with high institutional ownership of public companies,[7] and relatively stable participation rates (around 59%) for retail shareholders, the wealth transfers from retail to institutional shareholders are in fact modest. Our final contribution therefore is to surmise that these characterizations (of the Australian RO market) may also be indicative of an equilibrium whereby companies anticipate rational participation decisions by retail shareholders, and structure the ROs accordingly.

Using Australian data, the results documented in this paper offer new insights into rights offers as a capital raising mechanism. First, while Australia is a small concentrated market, it provides an opportunity to study shareholder participation decisions, given the frequent use of rights offerings to raise capital and the availability of daily ownership data. Second, rights offerings are an important capital raising mechanism in Australia, and the setting provides an interesting contrast to their diminishing use in the U.S. Third, in contrast to the situation in Finland, both renounceable and non-renounceable offers are prevalent, allowing a comparison of the participation rates in each. Fourth, wealth transfer effects can be measured accurately, with daily ownership data providing cum-

[7] ASX (2010) documents the institutional ownership rate in public companies is greater than 80 percent. Authors who have noted the gradual domination of institutional share ownership in the U.S. include Brennan (1995), Allen (2001) and Kaniel et al. (2008).

entitlement holdings. Finally, cross-sectional analysis using the daily ownership data, provides insights into the drivers of the participation decisions of retail shareholders.

The remainder of the paper is organized as follows. The next section presents a brief literature review. Section III describes the data and presents descriptive statistics. Section IV describes the approach used to measure wealth transfers, and documents retail participation rates. Section V explores the determinants of participation rates and wealth transfers. In Section VI we document the market reaction to the announcement of the rights offering including any anticipation by the market of the resulting wealth transfer. There we also explore changes in retail share ownership between the announcement date and the ex-rights date, and document long-run performance of RO companies. In Section VII we provide a number of robustness checks to our results. Section VIII concludes the paper.

II. RELATED LITERATURE AND CENTRAL RESEARCH QUESTION

In a Rights Offer (RO), new shares are offered first to existing shareholders in proportion to their holdings (for example, a 1:2 rights offer is a right to buy one new security for every two securities owned). They are widely recognised as a cost-effective and fair method to raise equity capital. Unlike traditional seasoned equity offerings, the discount of the offer price in ROs is not a cost to current shareholders, when rights are fully subscribed. As such, ROs are perceived to be the most equitable equity-raising method. Despite their cost attractiveness, ROs have become a rarity in the U.S. since the 1960s, a phenomenon coined the 'rights offer paradox' in Smith (1977) and further analyzed in Hansen (1988), Eckbo (2008), and Holderness and Pontiff (2016). Existing research has been unable to explain fully the paradox, given that ROs are still popular in some countries including Australia, Sweden, Italy, the U.K. and Singapore (Holderness and Pontiff 2016). This section reviews related studies that contribute to explaining this puzzle.

In the first study, Eckbo and Masulis (1992) argue that issuing new equity to current shareholders via ROs can potentially eliminate the adverse selection cost.[8] In the case of a high

[8] Under the information asymmetry framework of Myers and Majluf (1984), when management makes decisions in the interests of existing shareholders, undervalued issuers would choose not to issue as the costs of selling undervalued stocks

shareholder take-up rate, the adverse selection cost is negligible, because most new shares are bought by current shareholders and thus no wealth is transferred to outside investors. Eckbo and Masulis find that the current shareholder take-up averages 99 percent for industrial issuers of non-underwritten rights offerings.

The second study by Holderness and Pontiff (2016) conjectures that the wealth transfer between current shareholders can impose costs on issuers even though the take-up rate is high. They point out that the take-up rate reported in Eckbo and Masulis (1992) does not reflect the actual shareholder participation rate. Instead, it includes both rights subscribed by shareholders according to their entitled allocations and the purchase of unsubscribed rights by other shareholders via an oversubscription facility. Indeed Wu et al. (2016, p1045) argue that because of the 'confusion and ignorance' of non-participating shareholders, oversubscription of informed investors results in high take-up rates, which therefore do not necessarily equate to high participation rates. Holderness and Pontiff obtain participation rates via a survey conducted for 179 US ROs from 1988 to 2009 and find that the average participation rate is 64% with an average take-up rate of 95%. The consequential wealth loss of non-participating shareholders amounts to 7% of the capital raised or almost 5% of firm value. They also show that the market reacts negatively to the wealth transfers between current shareholders. They suggest that non-participation of retail shareholders, with consequent wealth effects, may be one explanation for the demise of rights offers in the U.S.

Another recent study by Lee and Poon (2018) investigates shareholder participation and wealth transfers associated with open offers in Hong Kong (HK). Open offers are similar to non-renounceable rights offers, because in an open offer the rights are not transferable. In addition, the open offer is often combined with a placing. It is not clear whether the open offers in the Lee and Poon's study are pro-rata.[9] Lee and Poon find participation rates in their sample of open offers are low, but take-up rates are high. Moreover, in a substantial percentage of their sample of HK companies, large shareholders act as the underwriter, resulting in lower wealth transfers and more favourable announcement returns. Armitage (2010) finds that minority shareholders tend to suffer wealth and ownership dilution in rights offers in the UK.

exceed the net present value (NPV) of the investment. On the other hand, overvalued companies will always issue and invest. Thus, equity issuance conveys to the market that the issuer is overvalued.

[9] See Listing Rules and Guidance – Open Offer HKEX: Available at en-rules.hkex.com.hk

To understand the popularity of rights offers in countries other than the U.S., several other papers examine the determinants of company choice to raise capital through a RO. For instance, Cronqvist and Nilsson (2005) find that family-controlled firms in Sweden adopt ROs to prevent their controlling block from being diluted. The model of Wu et al. (2016) predicts that issuers with a large private benefit (or low value issuers) choose ROs to prevent dilution, and those with a small private benefit (or high value issuers) choose public issues. Consistent with Cronqvist and Nilsson, in another HK study Wu and Wang (2005) find that the market reacts more adversely to the announcements of ROs by HK firms which have a higher level of controlling ownership. Dedman et al. (2008) argue that controlling shareholders in Italy indirectly force current shareholders to participate in ROs by setting a deep discount and subsequent to the fundraising, invest in negative NPV projects.

Diversity of share ownership is an important consideration when management weighs up the likely success of alternative methods of raising capital. For example, Eckbo and Masulis (1992) suggest that rights issues are likely to be popular in countries where shareholdings are relatively less diverse, because success of the offer is then more likely. Public companies in Australia have high proportions of institutional ownership (the average is around 80 percent) and have had a long and successful history of capital raising through rights offerings. Balachandran et al. (2008) investigate the quality-signalling hypothesis for Australian ROs and find that high-quality firms (with lower risk and high ownership concentration) tend to adopt fully-underwritten ROs, while intermediate-quality firms tend to choose non-underwritten offers. Low-quality firms prefer partially-underwritten ROs as issuers face a larger risk of offer failure but are reluctant to pay the high underwriting fees charged in a fully underwritten offer. High-quality firms tend to set lower discounts and consequently have higher abnormal returns at the announcement.

Research investigating the behavior of retail shareholders surrounding rights issues has generally lacked data detailed enough to provide in-depth insights. The only exception is the study of Rantapuska and Knüpfer (2008) which uses individual retail shareholder participation data for 18 ROs in Finland. The study finds that Finnish retail shareholders and foreign shareholders do not participate, nor do they sell their rights; such behavior is assumed to be mainly due to lack of financial capacity and financial sophistication. An alternative explanation for retail shareholder non-participation relates to the costs of gathering information, transaction costs, and opportunity costs of time, or a combination of all three (Grossman and Hart 1980). More recently, Holderness and Pontiff

(2016) obtain participation data from a survey approach but do not have a breakdown of retail and institutional participation rates.

We expect institutional shareholders to participate fully in valuable rights offerings. It is likely that a proportion of retail shareholders do not participate at all. For example, individual investors have a limited amount of attention to devote to investing. They are distracted, sometimes resulting in a delayed reaction to important information (Barber and Odean 2013; Hirschleifer et al 2009; Dellavigna and Pollet 2009). Thus, behavioral explanations, as opposed to financial constraints (Holderness and Pontiff 2016) or financial literacy (Rantapuska and Knüpfer 2008), may explain lower participation rates of retail shareholders. We do not have access to data that can tease out these alternative explanations for the extent of participation of retail shareholders. However, daily data at the aggregate level can provide insights into whether the participation behaviour of retail shareholders appears rational, and can facilitate accurate measurement of wealth transfers from retail to institutional shareholders that result from the first allocation of shares.

In order to clarify our expectations in terms of the determinants of retail shareholder participation rates consistent with the hypothesis, we split the drivers of retail participation rates into offer-related and firm quality-related variables. If retail shareholder behavior is rational, participation rates should be higher for higher quality issues and higher quality firms. Moreover, if retail shareholders are rational, *ceteris paribus* a higher offer discount should increase their incentive to participate in the RO. We use our research question to determine both the existence and type of relation between retail shareholder participation and the information publicly available to shareholders at the time of the offer. Our study complements recent studies of rights offers, including Balachandran et al. (2008) and Owen and Suchard (2008) in Australia, Armitage (2010) in the U.K., and the survey study of Holderness and Pontiff (2016) in the U.S.

III. DATA AND DESCRIPTIVE STATISTICS

A. Rights Offers

We obtain all ROs announced from 1999 to 2007, a period for which we have access to daily

ownership data from the Clearing House Electronic Subregister System (CHESS).[10] ROs issued by Australian public companies listed on the Australian Securities Exchange (ASX) are identified from Thomson Reuters SDC Platinum, which provides announcement dates, offer prices, renounceability, total offer proceeds, number of shares sought, and number of shares taken up. We manually collect announcement dates, underwriting status, whether the RO provides a shortfall facility, and manually cross-check its renounceability. We verify the data using RO announcements or prospectuses from the Securities Industry Research Centre of Asia-Pacific (SIRCA) Company Announcement database. Ex-entitlement dates are extracted from the Bloomberg database, while listing dates are from the Thomson Reuters Connect4 database. The sample covering 1999 to 2007 comprises 387 ROs issued by 300 unique firms.[11]

SIRCA provides daily share prices and daily total shares outstanding. We use these data to calculate returns for each company one year prior to its RO announcement, and market capitalization two days before the announcement date. The MorningStar DatAnalysis database is used to source issuers' accounting information at the balance sheet date immediately prior to the RO announcement date.

ROs can be distinguished by three main features – whether the rights are renounceable or non-renounceable, whether shortfall shares are taken up by underwriters, or whether existing shareholders are invited to apply for more than their entitlements. For a renounceable (RN) offer (referred to as "tradable" in the U.S.), shareholders who do not wish to participate may sell the rights to third-party investors on the secondary market during the subscription period. Even though non-participating shareholders can sell their rights on the secondary market they may still suffer wealth loss, since on

[10] Clearing House Electronic Subregister System (see next sub-section). The data are no longer available as ASX is currently changing the platform for managing the electronic recording of shareholdings. We originally obtained the CHESS data for the period 1999 to 2011. However, the period 2008 to 2011 encompasses the financial crisis. During this period companies struggled to raise capital, short selling constraints were imposed on the shares of financial companies and the period was one of heightened uncertainty, which together combined to make company behavior and outcomes for this period not comparable to the period 1999 to 2007. We therefore restrict our analysis to the period 1999 to 2007.

[11] In total, there are 413 rights offers during 1999-2007. Following the procedure adopted in Holderness and Pontiff (2016), Armitage (2010), and Armitage et al. (2014), we restrict our sample to discount offers with non-negative wealth transfers, resulting in the study sample of 387 ROs. During the period studied, most firms (241 firms or 80% of the sample) had one rights offering, tapering from 40, 13, 4, 1 and 1 firm (s) having respectively 2, 3, 4, 5 and 6 rights offerings. Note that our sample of ROs does not include any RO where institutional shareholders can exercise their rights before the offer is made to retail shareholders. Table 1 Panel B provides descriptive statistics of firm and offer characteristics for our sample of ROs.

average rights trade for slightly less than half of the trading period, and the value of the right is significantly below fair value (Massa et al. 2013). In addition, shareholders are not compensated if they do not exercise or sell their rights. Some brokers have a policy of selling the rights on the market if a shareholder fails to respond to the broker by the ex-entitlement date. However, this practice is uncommon in Australia.[12] In a non-renounceable offer (non-tradable or non-transferable), current shareholders do not have the option to sell the rights if they do not wish to exercise them.[13] In this case, shareholders must either take up their rights or let them lapse upon expiration without compensation.[14]

ROs may be non-underwritten (uninsured) (NUW) or underwritten (standby) (UW). An underwriter receives a fixed fee and a take-up fee (which depends on the value of new equity they subscribe) in return for purchasing the unexercised rights that remain at the completion of the RO. Underwriters may be governments, financial institutions, stockbrokers, and major shareholders of the company or any other party. Similar to the U.S., ROs in Australia can be structured with a shortfall facility (SF) that allows all current shareholders who take up their entitlements fully to apply for unexercised rights.[15] Firms have the option of providing a shortfall facility, but it is not a regulatory obligation. When there is no provision for a shortfall facility (NSF), directors have the discretion to allocate unexercised rights to institutional investors of their choosing or to offer them via a book-build.[16] Issuers do not reimburse non-participating shareholders for unexercised rights allocated to other shareholders.

[12] In the U.K., the broker appointed by the issuing firm would sell unsubscribed valuable rights in the market, with the proceeds returned to shareholders (Slovin et al. 2000).

[13] UK open offers have some characteristics that resemble non-renounceable ROs. The difference is that they are typically placed with institutional investors first, who then offer the shares pro-rata to the current shareholders. Any rights not taken up cannot be sold on the secondary market.

[14] The only way for financially constrained shareholders to take advantage of a NR offer is to sell part of their holdings to finance the take-up (Balachandran et al. 2008). However, this involves transaction costs.

[15] A shortfall facility is termed 'over-subscription' in the U.S.

[16] A book-build is an offer of securities to investors for which bids are sought from the investors and the allotments and offer price are determined based on those bids. According to ASX Listing Rule 3E(6)(c)(vi), companies must make the issue of unsubscribed shares within three months after the close of the offer, and the directors must have stated as part of the offer that directors alone or both directors and underwriters reserve the right to issue the unsubscribed shares at their discretion. The offer price of unsubscribed shares must not be less than the initial round offer price.

B. Ownership data

A unique set of daily ownership data provided by the ASX and facilitated by SIRCA, enables calculation of shareholder participation in our sample of rights offerings. We calculate daily institutional ownership and retail ownership of the sample of companies undertaking ROs, using the Clearing House Electronic Subregister System (CHESS). Since 1998, when paper share certificates were eventually phased out in Australia, ownership of shares has been recorded electronically. The Australian Securities Exchange (ASX) operates CHESS to centrally register and settle trades. CHESS records contain the daily closing balance of domestic and foreign shareholders. In all, there are twelve categories, six for each of the shareholdings of domestic and foreign investors. For domestic holdings, five of the categories contain institutional shareholdings classified as banks and other deposit taking institutions, nominee companies, superannuation (pension) funds, trusts + government + insurance, and corporate. The final category is individual shareholdings. The same categories are repeated for foreign shareholders. However, domestic nominee companies hold the majority of foreign shareholdings (Bradrania et al. 2017). We therefore collect daily ownership data for domestic shareholders divided into institutional shareholdings (the sum of the five institutional categories) and retail shareholdings. We classify as "retail shareholders" all shareholders not belonging to the institutional group. Our domestic institutional ownership captures almost all institutional ownership on the ASX because foreign institutional shares are typically held by domestic nominee companies as previously noted. In addition, because there are virtually no individual foreign shareholders, our measure of retail shareholdings captures almost all individual holdings registered on CHESS.[17] In order to protect the identity of shareholders, the ASX releases ownership data only in an aggregated format.

Issuer-sponsored registers also operate, but shares must be transferred to the CHESS register before they can be traded on the ASX. Comerton-Forde and Rydge (2006) suggest that long-term strategic shareholders are not likely to be recorded on CHESS, if they have not traded since CHESS commenced in 1995. Long-term strategic shareholders include family shareholders, managerial

[17] In our sample, foreign retail shareholdings represent on average (median) only 1.6 % (1%) of CHESS Holdings. Our approach of restricting analysis to domestic retail and institutional shareholdings is justified because we are interested in the behavior of retail versus institutional shareholders in terms of their participation decisions. Foreign retail shareholdings are negligible and in any case because their rights are sold by the appointed nominee, their participation is 'automatic', and therefore not of interest in our setting. See footnotes 19 and 20.

shareholders, or private equity companies. Nevertheless, Bradrania et al. (2017) report that CHESS covers around 73% of market capitalization on the ASX, with coverage of CHESS increasing since 1995. Since there is no reason to suggest that retail (institutional) shareholder behavior (in terms of exercising rights) of CHESS registered shareholders is different from the behavior of retail (institutional) shareholders registered on the issuer sponsored register, we propose that our results are representative for the entire market. For the final sample of rights offers analyzed in Section IV of the paper, 59% of share ownership is registered on CHESS.

Rights offers are typically made to domestic shareholders only. The Australian Securities and Investment Commission (ASIC)[18] gives technical relief in relation to foreign shareholders. Companies determine which shareholders are 'eligible' to participate in the rights issue, and may restrict their rights issues to shareholders with registered addresses in Australia and New Zealand if they determine that it is unreasonable to offer securities to other holders.[19] However, the company must advise non-resident shareholders that they will be ineligible to participate in the offer. If the rights issue is renounceable the entity is required to appoint a nominee to sell the non-residents' rights and remit the proceeds to them.[20] ASIC also gives guidance on the process to be used (for example a bookbuild) and stipulates that the entity must advise foreign shareholders. Similar guidance is offered for non-renounceable rights issues, but is not as prescriptive. The nominee sale of foreign shareholder rights may result in a first-time registration of the ownership on CHESS, increasing the institutional ownership registered on CHESS, and possibly resulting in participation rates greater than 100% for institutional shareholders.[21]

C. Descriptive Statistics

Table 1 Panel A reports the distribution of ROs across the sample period by the number of

[18] ASIC is an independent Commonwealth government body and acts as Australia's corporate regulator.
[19] It is often not practicable for a company to comply with the securities law of overseas jurisdictions when making rights offerings. However, because around 40% by market capitalization of ASX shares are owned by foreign institutions, it is important for 'fairness' that foreign shareholders have the value of their holdings protected.
[20] The nominee is appointed pursuant to ASX Listing Rule 7.7 and Section 615 of the *Corporations Act (Cth)*. As a result of the sale of their rights, foreign shareholders have some protection to the value of their investment in the company. Nevertheless, the rights offer dilutes their ownership of the company.
[21] Recall that most foreign shareholdings are institutional.

ROs and total offer proceeds.[22] The sample period for our analysis is from 1999 to 2007.[23] From 1999 to 2007, the number of ROs doubled, suggesting that rights offers over this period had increased in popularity as a capital raising mechanism.

[Insert Table 1 about here]

The mean (median) size of the offering firm is $66.70 million ($14.20 million) by market capitalization.[24] On average, RO issuers have negative stock market performance in the year leading up to the issuance date, as shown by the average (median) prior-year abnormal stock returns (*Pre-issue AR*) of -19 (-12) percent. These preliminary statistics are consistent with findings for PIPE issuers in the U.S., where the majority of issuers are loss-making firms, typically in the early stages of product development or those in financial distress (Chaplinsky and Haushalter 2010; Chen et al. 2010). RO-issuers have an average institutional ownership of 61 percent, which is substantially lower than the average institutional ownership for all publicly listed companies in Australia, which for the period of our study was around 80 percent (ASX 2010).

In terms of offer characteristics, the number of new shares sought as a proportion of the existing number of shares is on average 31 percent. Around 32 percent of offers are renounceable and 65 percent are underwritten. The average discount is 22.45 percent. These statistics are similar to those reported by Balachandran et al (2008). In addition, around 35 percent of offers have a shortfall facility, and the final take-up rate is around 92 percent.

IV. PARTICIPATION RATES AND WEALTH TRANSFERS

[22] All amounts are reported in Australian dollars. All sample variables are winsorized at the 1st and 99th percentiles.
[23] Ownership data extend to 2011, but the period 2008 to 2011 encompasses the financial crisis. Capital raising during this period was difficult, participation rates of both institutional and individual shareholders were low. We choose to restrict our analysis to the period 1999 to 2007, because it better reflects normal market conditions.
[24] The average size of the companies in our sample of rights offers is consistent with that reported in Table 3 of Balachandran et al (2008). However, over the same period the average (median) capitalization of firms listed on the ASX is $670m ($25m). The companies undertaking rights offerings are small. We perform robustness checks in Section VII.

With daily ownership data, we are able to obtain reliable measures of the number of shares purchased by retail and institutional shareholders, in the first round allocation of the offer. As shown in Equation 1 (Equation 3), the number of shares purchased by retail (institutional) shareholders divided by the number of shares that retail (institutional) shareholders are entitled to purchase in the RO, measures the retail (institutional) participation rate. The retail (institutional) nonparticipation rate in Equation 2 (Equation 4) is simply 100% minus the retail (institutional) participation rate in Equation 1 (Equation 3). An important aspect of this study is that with daily ownership data we are able to measure retail and institutional ownership proportions just prior to the ex-entitlement date, and therefore can calculate accurately the number of shares that each group is entitled to purchase under the rights offer. Participation rates are calculated from the first allocation, before shortfall shares are allocated.

We adjust the wealth transfer formula of Holderness and Pontiff (2016) for our study of wealth transfer between retail and institutional shareholders. Importantly as can be seen from the definition of new shares purchased we are measuring both participation (Equations (1) and (2)) and wealth transfer (Equations (5) to (7)) at the first round allocation. First round participation decisions (before shortfall or oversubscription allocations) are an important measure of retail shareholder interest in the rights offer. Subsequent shortfall allocations are often to institutional shareholders and confound any attempt to measure the rationality of retail shareholder participation decisions.

Wealth transfer as a result of the first allocation is calculated by taking the product of the number of shares that retail shareholders are entitled to but do not take up and the discount of the offer price to the current share price. Following Holderness and Pontiff (2016), wealth transfer as a dollar value (*WT*) is scaled by market capitalization ($WT_{\%marketcap}$) and offer size ($WT_{\%offersize}$), as shown in Equations 6 and 7, respectively.

$$Retail\ Part\ = \frac{New\ shares\ purchased_{retail}}{RETAIL_{PRE}/N} \quad (1)$$

$$Retail\ Nonpart = 1 - Retail\ Part.Rate \quad (2)$$

$$Insti\ Part = \frac{New\ shares\ purchased_{insti}}{INSTI_{PRE}/N} \quad (3)$$

$$Insti\ Nonpart = 1 - Insti\ Part \quad (4)$$

$$WT = Retail\ nonpart\ \times\ NEW_{Retail}\ \times (Price_{PRE} - Price_{OFFER}) \quad (5)$$

$$WT_{\%\ marketcap} = \frac{WT}{Market\ cap} \quad (6)$$

$$WT_{\%\ offer\ size} = \frac{WT}{NEW_{RO} \times Price_{OFFER}} \quad (7)$$

where

$RETAIL_{PRE}$ = The number of shares owned by retail shareholders on the cum-entitlement date[25]

$INSTI_{PRE}$ = The number of shares owned by institutional shareholders on the cum-entitlement date

$New\ shares\ purchased_{retail}$ = The number of shares purchased by retail shareholders in the first allocation round of RO shares

$New\ shares\ purchased_{insti}$ = The number of shares purchased by institutional shareholders in the first allocation round of RO shares

N = The number of existing shares required to buy one new share

NEW_{Retail} = The number of new shares that the retail shareholder group is entitled to buy = $RETAIL_{PRE}$ / N

NEW_{RO} = The number of new shares issued in the RO

$Price_{PRE}$ = Price two days before the RO announcement date

$Price_{OFFER}$ = Offer price of the new shares issued in RO

Market cap = Market capitalization two days before the RO announcement date

The right to buy new shares at a discount is valuable to shareholders. If a shareholder takes up their full entitlement, their investment value would not be affected by the rights offer even though the ex-rights price is likely to fall (due to new shares issued at a discount) because they purchase the new shares at a discounted price. Clearly, shareholders suffer wealth loss if they fail to exercise the allocated rights and are unable to realize the rights for value on the secondary market (if they are non-renounceable).

When unexercised rights can be sold in the secondary market, shareholders do not suffer wealth loss provided the rights trade at their fair value. However, ownership is diluted if shareholders do not participate in the renounceable rights offer. Without the actual prices of the renounced rights sold in the secondary market, we estimate wealth transfers as a result of the first round allocation in both renounceable and non-renounceable ROs using the methods identified in Equations 1 to 7. We assume (consistent with the empirical evidence in Massa et al. (2013)) that the secondary market for renounced rights is generally illiquid, which suggests that non-participating shareholders are unable to realize the theoretical value of a renounced right. Thus, wealth loss to non-participating shareholders is unlikely to be zero even in a renounceable right offer. Overall, while the wealth

[25] We measure both the retail ownership and institutional ownership as at the cum-entitlement date to account for those who buy or sell shares up until the cum-entitlement date of the RO. That is, the CHESS registry records are examined two days after the ex-entitlement date (which is three days after the cum-entitlement date). This approach accounts for the T+3 registration on CHESS.

transfer consequence in non-renounceable rights offers is clear, it is less so in renounceable rights offers. It is therefore important to note that the wealth transfer estimates for the renounceable RO subsample are likely to be overestimated.

We collect manually the date of first allocation for each RO from Morningstar DatAnalysis. This allows us to cleanly identify the initial participation decision of retail and institutional shareholders in the rights offer from CHESS data. We measure participation rates and wealth transfers that result from this first allocation. That is, participation rates measured *before* the allocation of shortfall shares are used to calculate the wealth transfer measure. This is likely a lower bound on final wealth transfer.[26]

Table 2 Panel A presents the summary statistics for shareholder participation rates, proportional discount, and wealth transfers, all measured immediately after the first allocation in the RO. The average discount in the sample is 22.45% and on average slightly more than half (59.32%) of retail shareholder rights are exercised while all (101.55%) institutional shareholders rights are exercised. These statistics imply a wealth transfer *from* retail shareholders *to* institutional shareholders, consistent with Holderness and Pontiff's (2016) postulation that most of the non-participating shareholders are retail (small) shareholders. The averages (medians) of $WT_{\%marketcap}$ and $WT_{\%offersize}$ are 1.19% (0.25%) and 6.32% (1.34%) respectively. To put the wealth transfer estimates into perspective, for CHESS registered shareholders across the rights offers in our sample, retail shareholders transfer an average (median) of $209,583 ($65,431) to institutions. Although in the majority of our RO sample retail shareholders transfer wealth to institutions, the estimated wealth transfers do not appear economically significant when measured relative to market capitalization and offer size.

We compare our statistics with figures for the U.S. documented by Holderness and Pontiff (2016) for the period 1983 to 2009, of averages (medians) for $WT_{\%marketcap}$ and $WT_{\%offersize}$ of 4.5% (0.6%) and 7.3% (2.7%). We do not claim that the magnitudes of these measures are directly comparable, but make the observation that for all measures, the wealth transfers for Australian rights issues for our sample (387 observations) are lower than those reported for the U.S. by Holderness and

[26] In addition, we do not have access to data differentiating the participants in the second round allocation, which may include allocation of shortfall shares possibly to outsiders.

Pontiff for a smaller sample of rights issues (around 150 observations). The WT estimate for our sample of Australian ROs is economically small, which is at least partially, a mechanical result because of the low retail shareholder ownership in the first place.

[Insert Table 2 about here]

From Table 2 Panel A, the wealth transfer measured for the period 1999-2007 is on average (at the median) $209,583 ($65,431). The CHESS coverage is 59% for this period, and assuming that the behavior of these shareholders is representative of all shareholders, we estimate the average (median) wealth transfer for all rights offers over this period to be $355,225 ($110,900).[27] To the extent that the wealth transfer measures are greater than zero, retail shareholders transfer wealth *to* institutional investors. We also note that under some circumstances the estimated wealth transfer for a RO can be negative. One conceivable scenario is where institutions are reluctant to participate but retail shareholders are not. A second scenario is where institutions own a larger proportion of the shares and the rights are offered at a price higher than the current market price premium (premium offers).[28]

Table 2 Panel B presents a comparison of retail and institutional participation rates, discounts and wealth transfers for ROs, classified according to the three main RO characteristics. The data are divided into six subsamples derived from the intersections of renounceable (RN) versus non-renounceable (NR), underwritten (UW) versus non-underwritten (NUW), and shortfall facility (SF) versus no shortfall facility (NSF).[29] Around 67.4% of the full sample of ROs are non-renounceable, 65.4% of the ROs are underwritten, and 34.6% have a shortfall facility. Renounceable offers, although fewer than non-renounceable, raise significantly larger proceeds. The majority of ROs in the sample are underwritten without a shortfall facility. In these issues, unsubscribed rights (shares not allocated during the initial round) are allocated to selected institutions or underwriters and current shareholders cannot apply for these unsubscribed rights.

[27] These figures are derived by taking the estimated WT calculated from CHESS registered shares and dividing by the coverage of CHESS (59%). These are crude estimates and need to be treated as such.
[28] As noted previously, we restrict our study to discount offers by excluding 26 premium rights offerings from our sample.
[29] Please refer to Section II for a detailed description of these characteristics.

Prior literature shows that offer characteristics signal issuer quality. High quality issuers are more likely to structure an underwritten offer because of the certification effects from the underwriter (Heinkel and Schwartz 1986, Balachandran et al. 2008). In addition, high quality issuers tend to use renounceable ROs (Holderness and Pontiff, 2016). They find it worthwhile to take on additional administration burden since their shareholders benefit from selling unsubscribed rights on the secondary market. On the other hand, low quality issuers are reluctant to organize a secondary market for rights trading because their rights are not valuable. Additionally, we argue that issuers that extend to existing shareholders the offer to apply for additional shares (shortfall offers) are also less likely to place a large block of new shares to friendly investors, thereby mitigating the risk of managerial entrenchment. To answer our question of whether retail shareholders make rational participation decisions, we predict that the participation rates of such shareholders are higher in underwritten and renounceable ROs and in those with shortfall offers.

We find that the retail participation rate is statistically significantly greater (at the 1% level) in renounceable offers (relative to non-renounceable) and at the 5% level for those with a shortfall offer (relative to no shortfall offer). Similarly, institutional participation is also statistically significantly greater in renounceable offers. However, institutions unlike retail shareholders have higher participation rates in underwritten offers compared to non-underwritten offers, consistent with Heinkel and Schwartz (1986) and Balachandran et al. (2008) who argue that underwritten right offers signal quality. Unlike retail shareholders, there is no difference in institutional participation rates between offers with and without a shortfall facility. In addition, the offer discount tends to be larger when the rights offers are underwritten or have no shortfall facilities, which exacerbates any wealth transfers. These univariate results are consistent with our proposition that retail shareholders have higher participation rates in quality offers.

Median wealth transfer (measured as $WT_{\%marketcap}$ and $WT_{\%offersize}$) for the non-renounceable subsample (NR) is significantly larger than that for the renounceable subsample (RN) according to the Wilcoxon-Mann-Whitney test. We also find that both the mean and median of $WT_{\%offersize}$ of the NSF sample is significantly larger than that for the SF sample. Lower retail participation rates in the NR (relative to RN offers) and NSF (relative to SF offers) likely lead to greater wealth transfer in

these offers. [30] In the subsequent multivariate analyses, we test the significance of these RO structures and firm-related quality proxies in explaining retail participation rates and wealth transfer, controlling for other firm characteristics.

V. DETERMINANTS OF PARTICIPATION RATES AND WEALTH TRANSFERS

Holderness and Pontiff (2016) argue that agency conflicts influence a company's choice to make a non-renounceable RO, which exacerbates wealth transfers, leading to the declining use of ROs in the U.S. However, it is unlikely that the agency perspective can fully explain the popularity of ROs in Australia, because as noted previously a large proportion of ROs are non-renounceable. We are therefore interested in the drivers of participation rates and wealth transfers in an environment where ROs are popular and institutional ownership is substantial. Clearly, the higher the retail shareholder participation rate, the lower the wealth transfer. However, identifying the factors that influence retail shareholder participation decisions is largely an empirical issue. With the daily ownership dataset, we are able to re-examine the predominant view formed from previous literature (e.g. Barber et al. 2009; Boehmer and Kelley 2009; Griffin et al. 2003) that retail shareholders' investment decisions suffer from irrationality and lack of sophistication, and answer our central research question.

Our research hypothesis states that rational retail shareholders will have higher participation rates in quality issues, and firm-quality variables will influence the participation rates. As discussed in Section IV, quality issues are those structured as renounceable, underwritten and with a shortfall facility. Firm quality can be proxied by firm size, idiosyncratic risk, pre-issue abnormal stock return, and *INSTI* which is a proxy for ownership concentration. We explore the drivers of participation rates and the related wealth transfers using a multivariate model as follows. We also control for the proportional amount sought and include industry and year fixed effects. All variables are described in Appendix Table A1, with a correlation matrix documented in Table A2.

$$Retail\ part\ rate_i = \alpha_i + \beta_1 RN_i + \beta_2 UW_i + \beta_3 SF_i + \beta_4\ Prop.\ discount_i + \beta_5\ Prop\ amount\ sought_i + \beta_6\ INSTI_i + \beta_7\ Pre-issue\ AR_i + \beta_8\ Log\ (Marketcap)_i + \beta_9$$

[30] Our results for participation and wealth transfers, for renounceable and non-renounceable offers, are comparable to those reported in Holderness and Pontiff (2016).

$IDY\ Risk_i + \gamma\ (Industry\ FE,\ Year\ FE) + \varepsilon_i$ *(8)*

$WT_{\%marketcap_i} = \alpha_i + \beta_1 RN_i + \beta_2 UW_i + \beta_3 SF_i + \beta_4\ Prop.\ discount_i + \beta_5\ Prop\ amount\ sought_i + \beta_6 INSTI_i + \beta_7\ Pre-issue\ AR_i + \beta_8 Retail\ part\ rate_i + \beta_9\ Log\ (Marketcap)_i + \beta_{10}\ IDY\ Risk_i + \gamma\ (Industry\ FE,\ Year\ FE) + \varepsilon_i$ *(9)*

[Insert Table 3 about here]

Table 3 presents regression results that link retail shareholder participation rates and wealth transfers to the variables in Equations 8 and 9. We use different model specifications for each of the dependent variables, to take account of multicollinearity in the independent variables. The regressions for participation use Log (Marketcap) and IDYRisk (which have a correlation of -0.74) in separate regressions.

Columns (1) and (2) of Table 3 present the results for retail shareholder participation rates. The significant (at 1%) coefficients on renounceability (*RN*) and shortfall facility (*SF*) show that retail shareholders have greater participation in ROs that are renounceable (versus non-renounceable) and those that have a shortfall facility (versus no shortfall facility), consistent with the univariate results in Table 2 Panel B. The coefficient on *RN* in column (1) indicates that a renounceable offer has a 10.9% higher retail shareholder participation rate compared to non-renounceable offers. In addition, retail shareholders have higher participation rates for offers with greater discount, and lower participation rates in rights offers by firms with higher idiosyncratic risk (or higher participation rates in larger companies). The underwriting status of the offer does not influence retail shareholder participation rates.[31, 32]

Therefore, on balance, our main hypothesis is supported and we conclude that retail shareholders as a group make rational participation decisions, with higher participation in attractive offers (renounceable offers, those with a shortfall facility and those with larger discount) and offers issued by firms of higher quality and/or lower risk. Holderness and Pontiff (2016) also document a positive relation between shareholder participation and the renounceability feature but are not able to

[31] Note that our focus is on retail shareholders, as their participation rate is one of the primary drivers of wealth transfers, given the high participation rate of institutional shareholders.

[32] We also measure the discount using the share price on the ex-rights date and 20 days after announcement (the offer close date) and the results remain unchanged.

identify separately the participation rates of retail shareholders. Moreover, they find that characteristics of the issuing firm do not influence shareholder participation in US ROs. In contrast, our study presents new evidence that the participation rate of retail shareholders is positively associated with firm size (proxied by Log(Marketcap)) and negatively associated with firm risk (proxied by IDYRisk). Retail shareholders are thus less likely to leave money on the table when greater value can be gained from participating.

We now focus on wealth transfer as the dependent variable (Equation 9), with results documented in columns (3) to (6) of Table 3, to investigate the drivers of wealth transfers. Wealth transfers are in some sense a mechanical consequence of the participation rates of retail shareholders. Results show that the higher the institutional ownership (measured as *INSTI*) the lower the wealth transfer (at a significance level of 1%). However, the negative relation between institutional ownership and $WT_{\%marketcap}$ may be mechanical. For example, if 99% (1%) of the firm value belongs to institutional (retail) shareholders, the maximum value that could be transferred from retail shareholders to institutions is 1% of market capitalization. That is, higher institutional ownership results in less wealth (proportionally) that *can* be transferred from retail shareholders through the rights offer. Nevertheless, the proportion of institutional ownership is a strong determinant of wealth transfer. For example, a firm with a 20 percent higher level of institutional ownership is associated with a decrease in wealth transfer of around 0.8 percent (-0.04×0.20) of market capitalization. While this does not at first glance appear economically significant, recall that the mean wealth transfer (from Table 2) is 1.19 percent of market capitalization. Therefore, a 20 percent increase in institutional ownership reduces the wealth transferred by around 67 percent of its average level. The fact that institutional ownership is not a significant determinant of retail shareholder participation decisions, supports our proposition that the level of institutional ownership affects wealth transfers only in a purely mechanical sense.

Columns (3) to (5) show that the other drivers of wealth transfer are the discount, the proportional amount sought and retail shareholder participation. The relation between wealth transfer and retail shareholder participation (and discount) is mechanical as shown by equation (5). Therefore, in columns (6) we run the regression omitting the discount and retail participation. In column (6) institutional ownership remains significant. In addition, the higher the run-up in returns the lower the wealth transfer (at a significance level of 5%), and companies with higher idiosyncratic risk have

higher wealth transfers. When the mechanical drivers are removed from the regression, results in column (6) show that the strongest (non-mechanical) determinant of wealth transfer is idiosyncratic risk. An increase in IDYRisk of 10 percent results in an increase in wealth transfer of 1.5 percent of market capitalization, which is more than the full wealth transfer in a representative rights offer.

One aspect of the Australian environment for firms issuing rights is the high institutional share ownership, and issuing firms' knowledge that institutional shareholders have generally very high participation rates. The multivariate results for the drivers of wealth transfers do not suggest that renounceability is a driver of wealth transfer, yet it is a significant driver of retail shareholder participation rates. Holderness and Pontiff (2016) argue that non-renounceable ROs result in significantly larger wealth transfer than renounceable ROs, an argument consistent with their unpopularity.[33] However, non-renounceable ROs remain popular in Australia, their frequency in our sample is more than double that of renounceable ROs. Once we control for other offer and firm characteristics, the regressions in Table 3 show no significant differences in wealth transfer between different types of ROs. This result, together with relatively high retail participation rates in non-renounceable offers, could be another reason for the continued popularity of non-renounceable ROs in Australia.

Summarising, the discount in the offer, proportionate amount sought, the level of institutional ownership and the retail participation rate are all drivers of wealth transfers, however all these variables are (at least partially) mechanically related to the wealth transfer measure. Idiosyncratic risk and pre-issue abnormal returns are the important non-mechanical drivers of wealth transfers. It is nevertheless conceivable that the relation between institutional ownership and wealth transfer is not purely mechanical. Since high quality firms are likely to have higher institutional ownership and more transparent disclosure (which reduces information asymmetries), retail shareholders may be more likely to participate in ROs by these firms, resulting in lower wealth transfer. (In any case, information asymmetry is not a major concern for our analysis because ROs are pro-rata). Thus, this signaling effect works in the same direction as the purely mechanical effect of higher institutional ownership (which reduces the wealth that *can* be transferred). It is therefore difficult to distinguish empirically

[33] Due to a lack of data for the value of rights traded on the secondary market, our wealth transfer measure for renounceable ROs is prone to overestimation. Nonetheless, the average wealth transfer in non-renounceable ROs is economically small.

between the mechanical versus the signaling effect. However, given the low correlation between retail participation and institutional ownership of 0.09 (see Appendix Table A2), and the fact that institutional ownership is not a driver of retail participation decisions in the multivariate analysis (Table 3), it is difficult to argue that the negative effect of institutional ownership on wealth transfer, is anything but mechanical.

VI. ANNOUNCEMENT EFFECTS AND LONG RUN PERFORMANCE

Ignoring wealth transfers among current shareholders, the theory developed in Eckbo and Masulis (1992) posits that adverse selection costs arise when wealth is transferred from current shareholders to outsiders. The analysis assumes (implicitly) that shareholder nonparticipation and any resulting wealth transfers among current shareholders are not important. However, Holderness and Pontiff (2016) document empirical evidence that wealth transfer among current shareholders erodes firm value, measured using announcement abnormal returns. They offer three non-mutually exclusive theoretical explanations for the negative information and price pressure effects arising from large wealth transfers. First, large predicted wealth transfers signal managers' desperation for additional cash flows, given they are willing to choose a rights offer which increases the ownership concentration of institutional shareholders and may lead to increased monitoring of managers. Second, as non-renounceable ROs are more prone to large wealth transfers, Holderness and Pontiff argue that the market infers more pervasive agency conflicts in firms that choose to issue non-renounceable ROs. Third, ROs with large predicted wealth transfers would see more shareholders disadvantaged by the RO (those who do not have the financial capacity to take up their rights and cannot sell their non-renounceable rights). Such disadvantaged shareholders are likely to sell their shares around the announcement date, leading to negative price pressure.

Although the information required to calculate wealth transfers, as shown in Equation 5, is not fully available until after the RO closes, Holderness and Pontiff argue that the market could use publicly available information to predict the extent of any wealth transfer. In this section, we therefore examine negative information effects due to predicted wealth transfer. We conduct an event study to examine the market reaction (abnormal returns) around the announcement dates of ROs. We also run a cross-sectional regression to determine whether the wealth transfers, retail participation rates (and

their predicted values), and price pressure influence the abnormal returns. Finally, we examine whether there are differences in long run abnormal performance between RO firms where retail and institutional shareholders have high or low participation rates.

For the event study, daily returns are measured as the continuous logarithmic returns adjusted for dividend and capitalization changes.[34] Abnormal returns are estimated using the market model, with an estimation period spanning 314 days prior to the announcement day to 60 days before the announcement day (day -314 to -60).[35] The S&P/ASX All Ordinaries Accumulation Index is used as the market proxy.[36] Following Campbell et al. (2010), we require each company to have a minimum of 24 non-missing stock returns in its 255-day normal estimation period. The average (median) issuer traded 76% (84%) of the days in the normal estimation period. While the median issuer traded 100% of the event period days, the average issuer traded 90%. These statistics indicate some RO-issuers' stocks are thinly traded. To deal with thin trading, the trade-to-trade method is used, following prior studies such as Suchard (2007) and Campbell et al. (2010).[37] We use the Boehmer et al. (1991) standardized parametric variance-adjusted test, and two non-parametric tests, the generalized sign test (Cowan, 1992) and the rank test (Corrado, 1989).

Employing a cross-sectional OLS regression model, we analyze whether wealth transfers between retail and institutional shareholders are able to explain the cumulative abnormal return (CAR) around the announcement date. The regression model is as follows:

$$CAR_i = \alpha_1 + \beta_1 WT_{\%marketcap_i} + \beta_2 Retail\ part\ rate_i + \beta_3 RN_i + \beta_4 UW_i + \beta_5 SF_i + \beta_6 Abnormal\ Trade_{i\ 7} + \beta_7 INSII_i + \beta_8\ Top20_i + \beta_9\ Log\ (Marketcap)_i + \beta_{10}\ Pre-issue\ AR_i + \beta_{11} IDY\ Risk + \gamma(Industry\ FE,\ Year\ FE) + \varepsilon_i \quad (10)$$

The dependent variable used in the cross-sectional analysis is the CAR for event window [-1, +1],

[34] Corrado and Truong (2008) find that tests based on logarithmic returns generally produce better test specification than tests based on arithmetic returns when applied to Asia-Pacific data.

[35] As a robustness check, we also use the Scholes and Williams (1977) beta-adjusted market model to deal with biased beta in the classic market model due to the thin-trading problem. Results remain unchanged.

[36] S&P in conjunction with the ASX have constructed a number of major indexes for the Australian market including the S&P/ASX All Ordinaries Index and the S&P/ASX 200 Index.

[37] The trade-to-trade method is superior over the lumped return method in dealing with missing prices (see, Maynes and Rumsey (1993), Campbell et al. (2010)). We use the Eventus software to run the event study, which incorporates the trade-to-trade method.

while the variable of interest is the wealth transfer measure ($WT_{\%\ marketcap}$) and the retail shareholder participation rate.[38] We also run separate regression specifications to incorporate the predicted values of $WT_{\%marketcap}$ and *Retail part rate*.

Table 4 presents the cumulative abnormal returns (CARs) across different windows around the announcement date for the whole sample. The average (median) CAR for [-1, +1] is -2.04% (-1.58%), which is significant under both parametric and non-parametric tests. The average (median) CARs for [-2, +2] and [-3, +3] are -1.45% (-1.82%), and -0.60% (-1.61%) respectively, which are both statistically significant only under the sign test.

[Insert Table 4 about here]

The presence of negative abnormal announcement returns in our sample is consistent with empirical evidence that seasoned equity offering (SEO) announcements generate negative abnormal returns. For instance, Eckbo and Masulis (1992) document that the average 2-day abnormal returns of underwritten (standby) rights offers and non-underwritten rights offers for industrial firms in the U.S. are −1.03 percent and −1.39 percent, respectively. Using a later sample of US rights offers, Holderness and Pontiff (2016) document average CAR [-1, +1] and CAR [-2, +2] of zero and -1.3 percent respectively. Our results are consistent with the three-day average CAR [-1, +1] of -1.74 percent for the sample of Australian ROs in Balachandran et al. (2008).[39] On the other hand, Lee et al. (2014) find the abnormal return around the announcements of Hong Kong rights offers to be -11.90 percent, which is much lower than documented for other countries. Lee et al. (2014) find that RO-issuers in Hong Kong have large free cash flows but lack growth opportunities, indicating a high level of agency costs.

The CARs documented in our sample are negative, continuing the trend of negative average pre-issue abnormal returns documented in Table 1. This result suggests that on average RO firms are not profitable. The negative CAR is also consistent with the "gun against the head of investors"

[38] We use a shorter CAR window than in US studies because in Australia, the offer price is revealed simultaneously with the announcement of a RO, whereas there is a lag between the initial public announcement and the offer price announcement in US ROs. The offer price in US ROs is set immediately before the start of rights trading or issue opening.
[39] The average CARs in Balachandran et al. (2008) range from -8.43 percent to 1.12 percent depending on the subsamples.

argument in Massa et al. (2016, p.4), where managers who are desperate to raise capital, force the hand of investors by issuing non-renounceable ROs. Additionally, in Australia because of the pro-rata structure of ROs, shareholder approval is not required regardless of the size of proceeds. The negative CAR is also consistent with the argument of Holderness (2018), that agency conflicts are inherent in issuers that do not seek shareholder approval.

Table 5 presents the results of the cross-sectional OLS regression of CAR [-1, +1] following Equation 10.[40] Independent variables include the retail participation rate, predicted retail participation rate (estimated using the specification in column (1) of Table 3), the wealth transfer measure ($WT_{\%marketcap}$), and the predicted value of $WT_{\%marketcap}$, (estimated using the specification in column (4) of Table 3). Other control variables are the types of offers, prop. amount sought, prop. discount, abnormal trade, institutional ownership , pre-issue abnormal return and idiosyncratic risk (*IDYRisk*).[41]

[Insert Table 5 about here]

We find that the coefficients on *Predicted* $WT_{\%marketcap}$ are negative and significant (at 1%) as shown in columns (3) and (4), suggesting that in the short-term, larger expected wealth transfers adversely impact firm value. Even though key information required to measure wealth transfer is not available until the closing date, our results indicate that investors anticipate the extent of wealth transfers. The negative information effects from larger wealth transfers may be signals of poor firm quality. Firm quality can be ascertained from observable financial measures and if retail shareholders are rational, they will participate less when firm quality is low, leading to a larger wealth transfer. Reflecting this argument, the retail shareholder participation rate has a positive effect on the announcement CAR (significant at 5%) in column (2). Interestingly, even though renounceability is a determinant of retail shareholder participation rates, it is not associated with abnormal market reactions, with the shortfall dummy also remaining insignificant.[42]

[40] We choose CAR [-1, +1] as the dependent variable in Equation 10 based on the results in Table 4, in which the statistical significance of CAR [-1, +1] is supported by the standardized parametric variance-adjusted test, Generalized Sign test, and Rank test. Running the OLS regression of CAR [-1, +1] similar to Equation 10 but substituting $WT_{\%marketcap}$ (*Predicted* $WT_{\%marketcap}$) with $WT_{\%offersize}$ (*Predicted* $WT_{\%offersize}$) also shows qualitatively similar results relative to those reported in Table 5.

[41] Note that $WT_{\%marketcap}$ is predicted using the same control variables, so they are not repeated in columns (3) and (4).

[42] We run separate regressions using RN, UW, and SF as explanatory variables keeping other variables in Table 5, and find the results remain similar quantitatively and qualitatively. This suggests that the non-trivial correlations between RN, UW, and SF as reported in Appendix Table A.2 do not pose multi-collinearity problems.

We now investigate the long-run performance of RO companies. To do this we measure cumulative abnormal returns (CARs) and buy-and-hold abnormal returns (BHARs) over two time horizons (T): 180 days and 360 days. CAR for each firm i is calculated as $CAR_i = \sum_{t=-1}^{T}(R_{it} - R_{benchmark,t})$. BHAR for each firm i is calculated as $BHAR_i = \prod_{t=-1}^{T}(1 + R_{it}) - \prod_{t=-1}^{T}(1 + R_{benchmark,t})$. The benchmark return is the daily return of the All Ordinaries Index. The literature finds that CARs are less susceptible to inference problems than BHARs due to the compounding effects in the latter measure (see Fama, 1998; Mitchell and Stafford, 2000). As the results in Table 1 illustrated, RO companies have average (median) abnormal market returns of negative 19.4% (12.3%) in the lead-up to the announcement of the rights offering.[43] Consistent with the findings of Kabir and Roosenboom (2003) for a sample of rights issues in the Netherlands, the results in Table 6 Panel A show that RO companies' average and median performance does not improve subsequent to the RO, with average (median) CAR over the subsequent 360 days of -20.14% (-22.29%). However, results in Panel B and Panel C of Table 6 also show that those ROs with either retail or institutional participation above the median perform significantly better than those with participation rates below the median. The results employing BHAR lead to similar conclusions. Of more interest is that in untabulated results we find that there is a 71% overlap in the companies in which retail and institutional shareholders have higher than their (respective) median participation rate, suggesting that there are substantial similarities in their decision-making strategies. Taken together, these results provide further corroborating evidence of rationality in retail shareholder participation decisions in that retail shareholder decisions approximately mirror those of institutional shareholders, which are typically assumed to be rational.[44]

[Insert Table 6 about here]

[43] See Appendix A1 for definitions.

[44] We also partition company performance by the net buying activities of retail and institutional investors, but do not find results of any statistical significance, and the results are not tabulated.

VII. ROBUSTNESS CONSIDERATIONS

Australia is a small concentrated market. As argued by Holderness and Pontiff (2016), such market structures increase the likelihood of successful capital raising using rights offerings. However, many of the companies outside the top 200 in Australia are characterized by small capitalization, high book-to-market ratios, high idiosyncratic volatility and poor liquidity. Moreover, as previously noted the average market capitalization of companies in our sample is small compared to the market average. Therefore, to ensure our results are not subject to undue influence from microstructure and other effects of low value 'penny stocks', we repeat our analysis, dividing the sample into stocks with market capitalization above and below $20 million.[45] In Table 7 Panel A we present statistics for the sample split into non-penny and penny stocks. There are 163 non-penny and 224 penny stocks. Penny stocks constitute 58% of the sample, reflecting the fact, previously observed that companies issuing rights are small by market standards.[46] Penny stocks are more volatile and have lower retail participation rates (than non-penny stocks). Penny stocks have larger discounts, measured 2 days prior to announcement. Wealth transfer for penny stocks as a percentage of market capitalization is larger. All of these cited differences are significant at the 1% level.

It is relevant to note that penny stocks have 17.86 (65.18) percent renounceable (UW) offers, while 52.76 (65.64) of non-penny stocks have renounceable (UW) offers. One consideration for all companies in deciding whether to make a renounceable rights offer is the associated listing fee, which may be more burdensome for small companies.[47] Shareholders may have an incentive to wait until near the closing date to make their decision, particularly for small volatile stocks.[48] Accordingly, as a further robustness consideration we measure the offer discount 20 days after the announcement date (offer close date).[49]

[45] Stocks with market cap below $20m are classified as 'penny stocks' (Drienko and Sault, 2013).
[46] This observation explains the lower institutional ownership in our sample compared to the overall market, reflecting the fact that institutions may be mandated to invest in non-penny stocks.
[47] See https://www.asx.com.au/documents/rules/gn15a_schedule_of_listing_fees.pdf
[48] For the period of our sample ASX listing rules allowed for 20 days from announcement to close of the offer.
[49] Prior to changes made in 2014 by the ASX, the average time to completion of the offer was around 20 days after announcement. See:
http://www.mondaq.com/australia/x/303564/Commodities+Derivatives+Stock+Exchanges/New+ASX+timetables+for+rights+issues

We repeat the cross-sectional analysis for retail participation rates separately on non-penny and penny stocks, with alternative measures of the discount as discussed above. Table 7 Panel B documents the results. Comparing results with those in Table 3, it is clear that the subsample results are different from the full sample analysis. First, non-penny stocks drive the significance on renounceability, likely due to the small proportion of penny stocks (18%) that have renounceable offers. Second, penny stocks drive the significance of the coefficient on IDYRisk. Results in Column (4) of Table 7 illustrate that for penny stocks, retail shareholders base their exercising decision on the discount at the close of the offer, with adjusted R^2 for the regression in Column (4) double that of Column (3), illustrating that retail shareholders leave the important exercising decision until later for penny stocks. This is consistent with rational behavior for volatile penny stocks and reflects the fact that 84 (90)% of rights for penny (non-penny) stocks are in-the-money at the close of the offer.

The regression results presented in Table 8 explore robustness issues for the wealth transfer measure across non-penny and penny stocks. As argued previously the variables discount and retail participation rate have a mechanical effect on wealth transfers. These variables have consistent levels of significance across non-penny and penny stocks, as illustrated in columns (1), (2), (4) and (5). We focus now on columns (3) and (6), where variables having a direct mechanical effect on wealth transfer have been eliminated from the regression. Institutional ownership has a consistent negative effect on wealth transfer for both non-penny and penny stocks. Interestingly for non-penny stocks renounceability becomes significant (at 5%), reducing the wealth transfer. It is likely that higher retail participation in renounceable offers drives this result.

The event study in Section VI is re-run using the Scholes and Williams (1977) beta-adjusted market model to deal with potentially biased beta in the classic market model due to thin-trading – results are similar. The Scholes and Williams' beta uses three OLS regressions and the correlation coefficient between the return at day t and the return at t-1 (i.e. the first-order serial correlation coefficient for the market return). This method is also adopted by Hertzel and Smith (1993), Tan et al. (2002), Anderson et al. (2006), and Autore et al. (2009). Our findings (not tabulated) are similar to original results.

We also test whether a trading strategy that sells shares obtained by exercising rights earn profits. We find that on average or at the median, exercising is profitable because selling shares in the short-

term (within 30 days post-listing) yields a positive return.[50] Following up on this result, we find that abnormal returns around the listing date of new shares are negative and significant (possibly due to selling pressure from profitable trading strategies). In addition, in further robustness tests we find that retail shareholder participation decisions are influenced by trading profits.

Our focus in the paper is on retail shareholders, because we are interested in the drivers of their participation decisions and consequent wealth transfers. Nevertheless, as a further robustness check we run regressions similar to those in Table 3, to explore the drivers of institutional participation decisions as a further robustness check (untabulated). The sole common driver between retail and institutional shareholders of participation rates is renounceability, which is one of the most important signals of the quality of the rights offer. Institutions have higher participation rates in offers (or companies) with lower risk, underwritten offers, those seeking to raise lower amounts, and those with lower discounts. The adjusted R^2s for the institutional shareholder participation regressions are less than half those that for the retail shareholder participation regressions.

We conclude this section by restating that our primary focus is on retail shareholders, the drivers of their participation decisions, and the wealth transfers that follow. There are differences between non-penny and penny stocks in the drivers of retail shareholder participation and wealth transfers. This is to be expected as non-penny and penny stocks have different characteristics. However, the myriad of robustness tests confirm our main conclusion that retail shareholders appear to exhibit rationality in their participation decisions.

VIII. CONCLUSIONS

Rights offerings continue to be a popular capital raising method in Australia. Using daily ownership data, we document the participation rates of retail shareholders at the first allocation date of the rights, and find that retail shareholders make rational participation decisions. High average institutional ownership implies that wealth transfers from retail to institutional shareholders are small in percentage terms.

[50] The strategy is profitable even after capital gains tax is applied. Short-term capital gains are taxed at the shareholder's full marginal tax rate. Australia operates on a last-in-first-out (LIFO) for determining shares sold.

Our findings speak to the puzzling disappearance of rights offerings in other countries. First, high institutional ownership and participation rates result in firms having confidence that the rights offering will raise the capital sought. Second, our results show that renounceability is not a critical condition to ensure retail shareholder participation. Third, participation rates in small companies, which prefer non-renounceable offers, are driven by the same factors as for larger companies. Therefore, supported by the securities regulator who views them as an 'equitable' capital raising method, rights offerings are used successfully by large and small Australian companies. Perhaps, herein lie lessons for firms that operate in other capital markets and their regulators. With support from their respective regulators, both large and small firms may not only be more amenable to utilizing any of the myriad rights offering designs to raise capital, but in the process also treat their shareholders equitably.

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Appendix Table A.1

This table provides a description for the computations of all variables used in the study. Sources of the variables are also provided.

Variable	Definitions	Sources
Ownership measures		
INSTI	Number of shares owned by institutional shareholders divided by total shares outstanding as recorded in CHESS two days before the announcement date.	CHESS
Top 20	Percentage of shares owned by Top 20 shareholders on the balance date immediately before issuance announcement date.	Morningstar DatAnalysis
Firm characteristics		
Marketcap	Market capitalization on the balance date immediately before issuance announcement date.	SIRCA
Log (Marketcap)	Natural logarithm of marketcap.	
TA	Total assets on the balance date immediately before issuance announcement date.	Aspect/Huntley FinAnalysis
IDYRisk	Idiosyncratic risk is measured as the standard error of the market model regression of daily stock returns over the period from day -260 to day -61 for each issuing company.	SIRCA
Pre-issue AR	Abnormal returns in the one year before to two days before the announcement date, where the normal returns are estimated using the market-adjusted model.	SIRCA
Offer characteristics		
$WT_{\%marketcap}$	Wealth transfer from retail shareholders to institutional shareholders as a consequence of ROs, which is scaled by market capitalization.	See computation in Equation 1
$WT_{\%offersize}$	Wealth transfer from retail shareholders to institutional shareholders as a consequence of ROs, which is scaled by offer size.	See computation in Equation 2
WT (in dollars)	Wealth transfer from retail shareholders to institutional shareholders as a consequence of ROs in dollars.	The numerator in Equations 1 and 2
RN	Dummy variables equal to one if the RO has a renounceable structure, zero if it has a non-renounceable structure.	SDC
UW	Dummy variables equal to one if the RO is underwritten, zero if it is not underwritten.	SDC
SF	Dummy variables equal to one if the RO has a shortfall facility, zero if it does not have a shortfall facility.	SDC
Prop. discount (1)	(Share price two days pre-announcement - offer price)/ share price two days pre-announcement.	SDC; SIRCA
Prop. discount (2)	(Share price 20 days after announcement - offer price)/ share price 20 days after announcement.	SDC; SIRCA
Prop. amount sought	The value of new shares sought divided by the total market capitalization two days before the issuance announcement date.	SDC; CHESS
Offer Proceeds	The value of new shares issued ($m).	SDC; CHESS
Retail part rate	Retail participation rate is computed from the number of RO shares purchased by the retail shareholder group (in the first allocation) divided	CHESS

	by the total number of RO shares that retail shareholders are entitled to buy. The latter is computed from the number of shares owned by the retail shareholder group immediately prior to the ex-entitlement date divided by the number of new shares allocated per one share owned.	
Insti part rate	Institutional participation rate is computed from the number of RO shares purchased by the institutional shareholder group (in the first allocation) divided by the total number of RO shares that institutional shareholders are entitled to buy. The latter is computed from the number of shares owned by the institutional shareholder group immediately prior to the ex-entitlement date divided by the number of new shares allocated per one share owned.	CHESS
Takeup	The total number of new shares issued in the RO divided by the number of new shares required to raise the capital amount sought. Total number of new shares issued includes the new shares taken up by all eligible current shareholders plus any new shares issued because of unsubscribed rights. These may be issued to underwriters, to current shareholders who apply for additional shares via the shortfall facility and to selected investors at directors' discretion. This measure is manually collected from company announcements.	SIRCA
Abnormal trade	Abnormal trade is measured by change in volume of the RO firm minus change in volume of a matched ASX-listed firm. Change in volume is computed as the natural log of one plus the sum of stock trades from five days before the initial announcement of rights offering to five days after, minus the natural log of one plus the sum of volume from sixteen days before the announcement to six days before the announcement. A matched firm has the closest return to the RO firm over the -16 to -6 window.	SIRCA
CAR [-1, +1]	Cumulative abnormal returns from Day -1 to Day +1 from the rights offer announcement date.	SIRCA
Predicted retail part rate	Predicted retail part is estimated based on the coefficients in Column 1 Table 3.	CHESS
Predicted $WT_{\%marketcap}$	Predicted $WT_{\%marketcap}$ is estimated based on the coefficients in Column 4 Table 3.	CHESS

Appendix Table A.2

This table shows the Spearman's rank correlation coefficients for all continuous variables used in our multivariate analysis. Point-biserial correlation coefficients are computed for correlations between a dummy variable (such as RN, UW, SF, $D_{\text{net buy retail}}$ and $D_{\text{net buy insti}}$) and a continuous variable. Tetrachoric correlation coefficients are computed for correlations between a dummy variable and another dummy variable. All sample variables are winsorized at the 1st and 99th percentiles. * indicates significance at the 5% level.

	WT $_{\%marketcap}$	Predicted WT $_{\%marketcap}$	Retail part rate	Pred-icted retail part rate	Insti part rate	INSTI	RN	UW	SF	Prop. Dis-count (pre-announc ement)	Prop. amount sought	IDYRisk	Log (Mar-ket-cap)	Pre-issue AR	CAR [-1, +1]
$WT_{\%marketcap}$	1.00														
Predicted $WT_{\%marketcap}$	0.79*	1.00													
Retail part rate	-0.63*	-0.49*	1.00												
Predicted retail part rate	-0.28*	-0.26*	0.46*	1.00											
Insti part rate	-0.39*	-0.34*	0.52*	0.22*	1.00										
INSTI	-0.36*	-0.44*	0.09	0.18*	0.06	1.00									
RN	-0.09*	-0.15*	0.23*	0.50*	0.14*	0.26*	1.00								
UW	0.03	0.04	0.02	0.06	0.18*	0.18*	0.30*	1.00							
SF	-0.03	-0.04	0.11*	0.25*	-0.05	-0.18*	-0.09	-0.54*	1.00						
Prop. discount (1)	0.46*	0.60*	0.11*	0.19*	-0.01	-0.13*	-0.003	0.14*	-0.13*	1.00					
Prop. amount sought	0.27*	0.30*	-0.18*	-0.27*	-0.13*	-0.17*	0.04	-0.05	0.12*	0.18*	1.00				
IDYRisk	0.37*	0.44*	-0.24*	-0.49*	-0.16*	-0.40*	-0.21*	-0.05	0.01	0.23*	0.15*	1.00			
Log (Marketcap)	-0.40*	-0.47*	0.23*	0.51*	0.18*	0.45*	0.41*	-0.003	-0.01	-0.24*	-0.29*	-0.74*	1.00		
Pre-issue AR	-0.22*	-0.29*	0.13*	0.24*	0.08	0.14*	0.10*	-0.02	-0.01	-0.01	-0.41*	-0.13*	0.23*	1.00	
CAR [-1, +1]	-0.19*	-0.19*	0.16*	0.01	0.03	0.15*	0.05	0.05	-0.05	0.03	-0.11*	0.04	-0.01	0.03	1.00

Table 1

Distribution and summary statistics of Australian rights offer sample from 1999 to 2007

Panel A provides the number (N) of ROs made by Australian public listed companies and their total offer proceeds (TOP) in millions ($M) on a year-by-year basis. The statistics are provided for an uncontaminated sample of 387 RO announcements for the period 1997 to 2007. Only discounted offers are included in the sample. Panel B shows the summary statistics of firm and offer characteristics for the ROs. Prop. discount (1) is the discount measured 2 days before announcement. Prop. discount (2) is the discount measured at close of the offer (20 days after announcement). Description of variables is provided in Appendix Table A.1. All sample variables are winsorized at the 1st and 99th percentiles.

Panel A: Whole sample distribution by year

Year	N	Total Offer Proceeds ($M)
1999	35	719.00
2000	29	175.00
2001	38	711.00
2002	27	309.00
2003	43	269.00
2004	47	540.00
2005	55	1400.00
2006	45	614.00
2007	68	1520.00
Total	387	6260.00

Panel B: Firm and offer characteristics

	Proportion	Mean	Median	Std Dev	Min	Max
Firm characteristics						
Market cap ($M)		66.70	14.20	160.00	1.04	994.00
TA ($M)		68.40	11.80	149.00	0.51	759.00
Pre-issue AR (%)		-19.44	-12.33	82.60	-220.88	161.08
IDYRisk (%)		5.54	5.24	15.33	30.92	92.12
INSTI (%)		60.65	59.71	18.16	13.78	89.83
Top 20 (%)		52.43	52.48	160.00	1.04	994.00
Offer characteristics						
Renounceable offers	32.56					
Underwritten offers	65.37					
With shortfall facility	34.63					
Prop. discount (1) (%)		22.45	18.03	16.38	0.00	76.19
Prop. discount (2) (%)		13.90	10.71	17.43	-29.63	66.67
Prop. amount sought (%)		31.49	21.31	33.65	0.34	315.93
Takeup (%)		91.98	100.00	22.19	5.20	135.98

Table 2 Summary statistics of participation rates, discount and wealth transfer measures

Panel A presents the mean and median of retail and institutional participation rates (estimated from Equations 1 and 3 respectively), discount, and wealth transfer estimates ($WT_{\%\ marketcap}$ and $WT_{\%\ offer\ size}$ estimated from Equations 6 and 7 respectively) for the sample of 387 ROs. The average, median and total wealth transfer in dollar value estimated from Equation 5 are also provided. Panel B provides the mean and median of discount, retail and institutional participation rates partitioned by RO structures. Differences between the RO structures are reported using parametric *t*-tests and Wilcoxon Mann-Whitney tests. All sample variables are winsorized at the 1st and 99th percentiles. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Panel A Participation rates, discount and wealth transfer measures

	Retail part. rate (%)	Institutional part. rate (%)	Prop. Discount (1) (%)	WT ($)	$WT_{\%marketcap}$ (%)	$WT_{\%offersize}$ (%)
Mean	59.32	101.55	22.45	209,583	1.19	6.32
Median	59.67	93.58	18.03	65,431	0.25	1.34
Total WT ($)				81,100,000		

Panel B: Participation rates, discount and wealth transfer measures partitioned by RO structures

	RO structures					
	Non-renounceable (NR) n = 261	Renounce-able (RN) n = 126	Non-underwritten (NUW) n = 134	Under-written (UW) n= 253	No shortfall facility (NSF) n = 253	With shortfall facility (SF) n = 134
Mean retail part. rate (%)	54.45	69.39	58.14	59.94	56.79	64.08
Median retail part. rate (%)	51.87	76.52	56.85	61.88	58.59	64.36
t-Test	-4.64***		-0.55		-2.24**	
MW test	-4.96***		-0.59		-2.17**	
Mean institutional part. rate (%)	95.21	114.81	84.78	110.48	103.94	94.82
Median institutional part. rate (%)	84.85	103.12	81.18	99.88	97.06	91.06
t-Test	-2.64***		-4.06***		1.06	
MW test	-3.06***		-3.95***		0.64	
Mean Prop. Discount (1) (%)	22.41	22.33	19.19	24.08	24.00	19.33
Median Prop. Discount (1) (%)	17.95	18.11	16.67	18.75	18.95	16.67
t-Test	0.05		-3.00***		2.81***	
MW test	-0.62		-2.45**		2.57**	
Mean WT ($)	201,165	309,140	201,165	214,042	228,984	172,955
Median WT ($)	60,154	58,683	60,154	65,730	69,272	44,545
t-Test	-2.10**		-0.27		1.20	
MW test	0.43		-0.42		2.00**	
Mean $WT_{\%\ marketcap}$ (%)	1.41	0.75	1.12	1.23	1.23	1.12
Median $WT_{\%\ marketcap}$ (%)	0.41	0.09	0.27	0.24	0.27	0.21
t-Test	2.67***		-0.49		0.44	
MW test	5.02***		-0.10		1.43	
Mean $WT_{\%\ offer\ size}$ (%)	7.00	4.92	4.87	7.08	8.06	3.04
Median $WT_{\%\ offer\ size}$ (%)	2.12	0.52	1.59	1.23	1.53	1.06
t-Test	0.91		-1.15		3.14***	
MW test	5.28***		-0.03		2.34**	
Mean proceeds ($m)	7.42	34.30	14.80	16.90	17.00	14.60

Median proceeds ($m)	2.97	13.00	3.96	4.57	4.38	4.19
t-Test	-5.85***		-0.45		0.49	
MW test	-9.01***		-1.51		0.51	

Table 3 Determinants of retail participation rates and wealth transfers between retail shareholders and institutional shareholders

This table reports OLS regressions of retail participation rates from Columns (1) to (3) and wealth transfers from retail shareholders to institutional shareholders from Columns (4) to (6) for the sample of 387 ROs. The dependent variable, *Retail part. rate* is the percentage of retail participating shares estimated using Equation 1. It is a ratio computed from the number of RO shares purchased by the retail shareholder group divided by the total number of RO shares that retail shareholders are entitled to buy. The dependent variable, $WT_{\%\ marketcap}$ is the wealth transfer as a percentage of market capitalization estimated using Equation 6. Independent variables are as described in Appendix Table A1. All sample variables are winsorized at the 1st and 99th percentiles. *t*-statistics from robust standard errors are in parentheses.*, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

	(1) retail_part	(2) retail_part	(3) $WT_{\%marketcap}$	(4) $WT_{\%marketcap}$	(5) $WT_{\%marketcap}$	(6) $WT_{\%marketcap}$
RN	0.109***	0.118***	0.002	0.002	-0.001	0.001
	(2.667)	(3.022)	(0.502)	(0.551)	(-0.420)	(0.375)
UW	0.012	0.003	0.001	0.001	0.001	0.004
	(0.395)	(0.079)	(0.545)	(0.515)	(0.430)	(1.609)
SF	0.111***	0.106***	0.000	0.000	-0.003	-0.005*
	(3.419)	(3.269)	(0.035)	(0.030)	(-1.150)	(-1.927)
Prop. discount (1)	0.223**	0.206**	0.081***	0.081***	0.075***	
	(2.383)	(2.252)	(7.490)	(7.479)	(6.699)	
Prop. amount sought	-0.076	-0.094	0.011**	0.011**	0.013**	0.008
	(-1.031)	(-1.289)	(2.060)	(2.050)	(2.180)	(1.392)
INSTI	-0.008	0.061	-0.037***	-0.036***	-0.038***	-0.048***
	(-0.066)	(0.539)	(-4.845)	(-5.043)	(-4.944)	(-5.207)
Pre-issue AR	0.010	0.025	-0.002	-0.002	-0.003*	-0.005**
	(0.464)	(1.128)	(-1.537)	(-1.529)	(-1.706)	(-2.339)
Log (marketcap)	0.044***		0.000			
	(3.062)		(0.349)			
IDYRisk		-2.217***		-0.004	0.057	0.146**
		(-3.785)		(-0.081)	(1.088)	(2.469)
Retail participation rate			-0.028***	-0.028***		
			(-7.922)	(-7.810)		
Constant	-0.111	0.717***	0.019	0.023***	0.003	0.017**
	(-0.469)	(6.387)	(1.520)	(3.197)	(0.391)	(2.091)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	387	387	387	387	387	387
adjusted R2	0.135	0.139	0.420	0.419	0.340	0.155

Table 4 Cumulative abnormal returns (CAR)

This table reports the mean and median CAR (%) for the sample of 387 ROs on different event windows. Abnormal returns are estimated using the market model, with an estimation period spanning 314 days prior to the announcement day to 60 days before the announcement day (day -314 to -60). The standardized cross-sectional parametric test (Std Csect) and non-parametric Generalized Sign Test and Rank Test are reported. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

CAR window	Obs.	Mean CAR (%)	Median CAR (%)	Std Csect	Generalized Sign Test	Rank test
(-1,+1)	387	-2.04	-1.58	-3.396***	-3.407***	-2.461***
(-2, +2)	387	-1.45	-1.82	-1.756**	-3.102***	-0.324
(-3, +3)	387	-0.60	-1.61	-0.897	-1.882**	0.124

Table 5 Determinants of cumulative abnormal returns (CAR)

This table reports OLS regressions of CAR [-1, +1] for the final sample of 387 ROs as described in Equation (10). The dependent variable, CAR [-1, +1] is the cumulative abnormal returns from Day -1 to Day +1 around the rights offer announcement date. *Predicted retail part* is estimated from Column 1 in Table 3 while *Predicted* $WT_{\%marketcap}$ is estimated from Column 4 in Table 3. Independent variables are as described in Appendix Table A1. All sample variables are winsorized at the 1st and 99th percentiles. In Columns 3 and 4 where predicted regressors are used, standard errors are bootstrapped and control variables used in Table 3 are excluded. *t*-statistics are in parentheses.*, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1) CAR [-1, +1]	(2) CAR [-1, +1]	(3) CAR [-1, +1]	(4) CAR [-1, +1]
$WT_{\%marketcap}$	-0.429	-0.168		
	(-0.621)	(-0.233)		
Retail part rate		0.059**		
		(2.188)		
Predicted $WT_{\%marketcap}$			-1.503***	-1.493***
			(-3.307)	(-3.276)
Predicted retail part rate				0.006
				(0.146)
Abnormal trade	0.003	0.003	0.003	0.003
	(0.586)	(0.636)	(0.632)	(0.621)
RN	-0.005	-0.012		
	(-0.272)	(-0.643)		
UW	0.017	0.017		
	(1.361)	(1.344)		
SF	-0.010	-0.016		
	(-0.808)	(-1.208)		
Prop. amount sought	-0.054	-0.086		
	(-0.901)	(-1.357)		
Prop. discount (1)	0.010	0.012		
	(0.406)	(0.531)		
INSTI	0.064	0.069		
	(1.471)	(1.573)		
Pre-issue AR	-0.003	-0.004		
	(-0.330)	(-0.395)		
IDYRisk	-0.191	-0.077		
	(-0.581)	(-0.223)		
Constant	-0.041	-0.083	-0.002	-0.006
	(-0.900)	(-1.556)	(-0.439)	(-0.229)
Industry FE	Yes	Yes	No	No
Year FE	Yes	Yes	No	No
Observations	387	387	387	387
Adjusted R-squared	0.0106	0.0244	0.0496	0.0472

Table 6 Long-run abnormal performance

This table shows the mean and median long-run abnormal returns for the 387 rights offering firms. Panel A presents the cumulative abnormal returns (CAR) and buy-hold abnormal returns (BHAR) statistics calculated over T=180 days and T=360 days for the whole sample. CAR for each firm *i* is calculated as $CAR_i = \sum_{t=-1}^{T}(R_{it} - R_{benchmark,t})$. BHAR for each firm *i* is calculated as $BHAR_i = \prod_{t=-1}^{T}(1 + R_{it}) - \prod_{t=-1}^{T}(1 + R_{benchmark,t})$. The benchmark return is the daily return of the All Ordinaries Index. Panel B (Panel C) presents the same statistics for the subsamples partitioned based on the median retail (institutional) participation rate. The first (second) column in each panel shows the CAR calculated from one day prior to 180 (360) days post rights offer announcement date. The third (fourth) column shows the BHAR calculated from one day prior to 180 (360) days post rights offer announcement date. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

	CAR [-1, 180 days]	CAR [-1, 360 days]	BHAR [-1, 180 days]	BHAR [-1, 360 days]
Panel A: Whole sample				
Obs	387	387	387	387
Mean	-15.04	-20.14	-22.99	-34.91
Median	-15.52	-22.29	-31.31	-45.00
Panel B: Partitioned by retail participation rate				
(1) Lower than median retail participation rate				
Obs	195	195	195	195
Mean	-25.59	-26.90	-34.85	-47.08
Median	-28.91	-34.13	-41.99	-58.31
(2) Higher than median retail participation rate				
Obs	192	192	192	192
Mean	-4.31	-13.27	-10.94	-22.56
Median	-8.09	-12.52	-18.30	-34.13
Difference between (1) and (2)				
t-Test	-3.29***	-1.43	-4.76***	-3.95***
MW test	-4.69***	-2.89***	-5.68***	-4.51***
Panel C: Partitioned by institutional participation rate				
(3) Lower than median institutional participation rate				
Obs	194	194	194	194
Mean	-23.23	-30.20	-34.55	-45.49
Median	-22.54	-31.75	-41.60	-60.50
(4) Higher than median institutional participation rate				
Obs	193	193	193	193
Mean	-6.80	-10.02	-11.36	-24.28
Median	-10.47	-13.88	-19.39	-35.08
Difference between (3) and (4)				
t-Test	-2.53**	-2.13**	-4.61***	-3.40***
MW test	-3.16***	-2.88***	-5.27***	-4.57***

Table 7 Sample statistics and regressions for retail participation rate – Penny stock and non-penny stock subsamples

Panel A documents sample statistics for non-penny stocks (market capitalisation above $20 million), penny stocks (market capitalisation below $20 million) as per the penny stock definition in the Australian market by Drienko and Sault (2013). Prop. discount (1) is the discount measured 2 days before announcement. Prop. discount (2) is the discount measured at close of the offer (20 days after announcement). There are 163 non-penny stocks and 224 penny stocks. Panel B documents retail participation drivers for non-penny and penny stocks. *t*-statistics are in parentheses.*, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Summary statistics

	WT ($)	$WT_{marketcap}$ (%)	Prop. discount (1) (%)	Prop. discount (2) (%)	retail part rate (%)	insti part rate (%)	IDYRisk
Non-penny							
Observations	163	163	163	163	163	163	163
Mean	308,124.80	0.41	18.19	12.74	67.27	108.65	0.04
Median	76,906.24	0.11	16.67	9.91	70.42	101.04	0.04
Penny							
Observations	224	224	224	224	224	223	224
Mean	137,877.20	1.84	25.50	14.41	53.52	96.37	0.07
Median	56,882.85	0.59	21.70	11.11	50.98	81.84	0.06
Difference	170,247.60	-1.43	-7.32	-1.66	13.75	12.28	-0.03
t-Test	3.39***	-5.32***	-4.41***	-0.88	4.55***	1.84*	-11.63***
MW Test	1.36	-6.78***	-3.97***	-0.67	4.40***	3.29***	-11.81***

Panel B: Retail participation rate regression

	(1)	(2)	(3)	(4)
	Non-penny		Penny	
	Retail part.	Retail part.	Retail part.	Retail part.
RN	0.202***	0.195***	0.011	0.036
	(3.845)	(3.936)	(0.163)	(0.599)
UW	-0.073	-0.064	0.062	0.034
	(-1.415)	(-1.350)	(1.455)	(0.833)
SF	0.089*	0.117**	0.112***	0.130***
	(1.710)	(2.383)	(2.631)	(3.201)
Prop. discount (1)	0.613***		0.152	
	(3.840)		(1.330)	
Prop. discount (2)		0.957***		0.472***
		(6.264)		(4.283)
Prop. amount sought	-0.008	-0.058	-0.072	-0.058
	(-0.087)	(-0.651)	(-0.810)	(-0.718)
INSTI	0.033	0.055	0.074	0.006
	(0.171)	(0.299)	(0.458)	(0.042)
Pre-issue AR	0.030	0.035	0.012	0.009
	(0.850)	(1.118)	(0.428)	(0.339)
IDYRisk	-1.434	-1.585	-1.202	-1.416**
	(-1.170)	(-1.437)	(-1.582)	(-2.081)
Constant	0.598***	0.608***	0.633***	0.629***
	(3.238)	(3.570)	(4.293)	(4.675)
Industry FE	Yes	Yes	Yes	Yes

Year FE	Yes	Yes	Yes	Yes
Observations	163	163	224	224
Adjusted R-squared	0.172	0.309	0.0819	0.172

Table 8 Regression for $WT_{marketcap}$ – Penny and non-penny stock subsamples

This table documents the drivers of wealth transfers for non-penny (market capitalisation above $20 million) and penny stocks (market capitalisation below $20 million), as per the penny stock definition in the Australian market by Drienko and Sault (2013). Wealth transfer is measured as a percentage of market capitalization. *t*-statistics are in parentheses.*, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Non-penny			Penny		
	$WT_{\%marketcap}$	$WT_{\%marketcap}$	$WT_{\%marketcap}$	$WT_{\%marketcap}$	$WT_{\%marketcap}$	$WT_{\%marketcap}$
RN	-0.002	-0.002	-0.003**	-0.001	-0.001	0.005
	(-0.940)	(-0.956)	(-2.060)	(-0.139)	(-0.153)	(0.757)
UW	-0.000	-0.000	0.001	0.002	0.002	0.003
	(-0.051)	(-0.019)	(0.400)	(0.553)	(0.553)	(0.870)
SF	0.002	0.002	-0.001	0.000	-0.000	-0.007
	(0.996)	(1.018)	(-0.626)	(0.001)	(-0.028)	(-1.587)
Prop. discount (1)	0.053***	0.053***		0.089***	0.090***	
	(2.637)	(2.638)		(6.848)	(7.054)	
Prop. amount sought	0.003	0.004	0.003	0.013**	0.014**	0.009
	(0.890)	(0.909)	(0.756)	(2.079)	(2.171)	(1.201)
INSTI	-0.018***	-0.019***	-0.022***	-0.054***	-0.054***	-0.071***
	(-3.168)	(-3.220)	(-2.775)	(-4.221)	(-4.362)	(-4.295)
Pre-issue AR	-0.003**	-0.003**	-0.004**	-0.002	-0.002	-0.003
	(-2.411)	(-2.387)	(-2.308)	(-0.851)	(-0.902)	(-1.187)
Retail part rate	-0.011***	-0.011***		-0.038***	-0.038***	
	(-3.954)	(-3.961)		(-7.068)	(-7.042)	
Log (marketcap)	-0.000			-0.001		
	(-0.324)			(-0.392)		
IDYRisk		0.004	0.013		0.010	0.139
		(0.117)	(0.461)		(0.133)	(1.512)
Constant	0.015	0.011**	0.016***	0.048	0.034***	0.026*
	(1.336)	(2.027)	(2.911)	(1.404)	(3.097)	(1.863)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	163	163	163	224	224	224
Adjusted R-squared	0.278	0.278	0.211	0.271	0.264	0.140

Rights issues: Retail shareholders and their participation decisions

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Abstract

Using daily ownership data, this study documents median participation rates for retail and institutional shareholders in rights offers in Australia of 60% and 94% respectively. At the median, the rights issue results in 0.25% (1.34%) of the value of firm market capitalization (offer size) being transferred from retail shareholders to institutional shareholders. Retail shareholder participation is higher in renounceable offers, offers with larger discount and those made by firms with larger market capitalization and lower risk. Companies with above median retail participation rates perform better in the long run. The results suggest that, on average, retail shareholders make rational participation decisions in rights offerings.

Keywords: Rights issues; Rights offers; Wealth transfers; Retail shareholder participation; Institutional shareholder participation; Rational; Discount; Abnormal returns.