

**Off-Market Buybacks in Australia:  
Evidence of Abnormal Trading around Key Dates**

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# **Off-Market Buybacks in Australia: Evidence of Abnormal Trading around Key Dates**

## **Abstract**

Off-market share buybacks in Australia are often structured with the buyback price comprising a large dividend component (which may carry imputation tax credits) and a small capital component. This unique structure has the consequence that institutions on low tax rates stand to benefit most from selling shares back to the company. In this paper, we explore evidence of abnormal trading activities around key dates in the conduct of off-market buybacks and investigate the drivers of these activities. We find evidence of abnormal trading activities around the initial announcement and the final announcement dates of the buyback. The significant differences in abnormal volumes between the buybacks with and without imputation tax credits highlight the importance of tax motivations in explaining abnormal trading activities in the shares of companies conducting off-market buybacks.

*Key words:* Tax arbitrageurs; Off-market share buybacks; Imputation credits; Trading volume

## 1. Introduction

Since the liberalization of buyback regulations in December 1995, share buybacks have become an important capital management tool used by companies in Australia to return cash to investors.<sup>2</sup> Companies may buy back shares either on-market or off-market. On market buybacks are carried out on the Australian Securities Exchange in the ordinary course of trading. The focus of this study is on equal access share buybacks, a type of off-market buyback where all shareholders are invited by the company to tender some or all of their shares into the buyback.<sup>3</sup>

Prior event studies of equal access share buybacks typically investigate the market reaction to the announcement of the buyback by studying returns in a narrow window around the announcement date. Other important dates in the buyback process are generally ignored in these studies (see, Brown 2007). Because there are considerable uncertainties surrounding the final details of the buyback which are not resolved until the buyback closes, such studies may provide an incomplete picture of the overall market reaction to the buyback. For example, the final buyback price (in a Dutch auction tender) and the extent of the under- or over-subscription are not known until the company announces the outcomes on the final announcement date. Therefore one might also expect abnormal returns around the final announcement date as the market learns new information about the future distribution of returns.

This study focuses on certain key dates from announcement to completion of off-market buybacks and investigates abnormal trading activities and abnormal returns around these key dates. The buyback price in an equal access repurchase comprises a dividend component and a capital component. Due to the dividend imputation tax system operating in Australia, Australian equal access repurchases have unique tax features which result in companies being able to complete off-market buybacks at a discount to the market price, because shareholders gain from the imputation tax credits attaching to the dividend component and may gain from any capital losses on the capital component. This situation stands in stark contrast to self-tender offers in the U.S., which are almost always completed at a premium to market price (Anderson and Dyl 2004). Therefore, an important contribution of this study is an investigation of whether the tax treatment has a role to play in explaining trading behavior

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<sup>2</sup> Australian companies were first allowed to undertake share repurchases in 1989. The *First Corporate Law Simplification Bill* was enacted in December 1995, leading to simplification in the processes and regulations that govern buybacks.

<sup>3</sup> Within off-market buybacks, there are four categories of buyback - minimum holding, selective, employee and equal access.

around the key buyback dates and whether particular tax clienteles might be driving such trading behavior.

Using arguments similar to the tax-arbitrage arguments in the dividend literature (see Miller and Modigliani 1961; Strickland 1997; Grinstein and Michaely 2005), we postulate that particular tax clienteles which stand to benefit most from selling shares into the buyback, become the marginal and price-setting investors. These investors cause price pressure as they attempt to capture the imputation tax credits by buying shares in the announcement period in order to sell those shares into the buyback. Superannuation funds (on a 15 percent marginal tax rate) and charities (on a zero tax rate) belong to this clientele (Brown and Efthim 2005, Brown 2007, Brown and Davis 2011). A large proportion of the observed positive announcement abnormal returns could be driven by such a price pressure effect, and is argued to be mainly driven by institutional investors.

Uncertainty surrounding the final outcome of the buyback is resolved around the final announcement date, when the company announces the final buyback price and the extent of any scaleback (too many shares tendered) or shortfall (not enough shares tendered). Institutions who bought on the announcement date in order to sell shares into the buyback (and generate the tax advantages) must typically rebalance portfolios once the results of the buyback are known. This causes abnormal trading activity around the final announcement date.

In this study, we examine the abnormal trading activities surrounding the key dates for a comprehensive sample of off-market share buybacks in Australia announced between year 1997 and 2011. This paper makes three main contributions to our understanding of off-market buybacks in Australia. First, it documents abnormal trading activity around key dates in the off-market buyback process. Second, this paper allows the separation of the information effect and tax effect on abnormal returns and volumes, and provides direct evidence that abnormal trading is higher for buybacks with larger tax benefits, thus supporting a tax-induced trading effect. Third, by studying two key dates, we capture the information effects for the whole buyback period, and provide direct evidence of investors' portfolio rebalancing around buybacks when information is released on the final announcement date.

The remainder of this paper is organized as follows: Section 2 provides a literature review of off-market buybacks. Section 3 provides a description of propositions, data and method. The results and discussions of the analyses are presented in Section 4. We summarize the paper in Section 5.

## 2. Background and Literature Review

### 2.1 Overview of the taxation treatment of off-market buybacks in Australia

Interaction between Australian taxation law<sup>4</sup> and company law has led to the unique taxation treatment of equal access buybacks. When a company buys back its own shares, the consideration paid to a participant (the buyback price) is divided into a dividend component and a capital component. The company determines the capital component after consultation with the Commissioner of Taxation. The remainder is the deemed dividend component. Alternatively, the entire buyback price can be set as capital component. Under a dividend imputation system, companies with sufficient undistributed imputation tax credits can distribute these tax credits to participating shareholders through the deemed dividend component of the buyback.<sup>5</sup> Imputation tax credits can be used to offset personal income tax for resident shareholders.<sup>6</sup> For superannuation funds whose marginal tax rate is 15 percent and therefore less than the company tax rate of 30 percent, imputation tax credits involve tax rebates. In addition, the capital component of the buyback price can be very low, even to the point of generating capital losses. Capital losses can then be used to offset realized capital gains on other assets. Low marginal tax rate investors such as superannuation funds benefit from participating in the buyback, especially when using capital losses to offset other short term capital gains (Brown and Davis 2011).<sup>7</sup>

However, participating shareholders do not receive these advantages without some tradeoffs. The buyback price is usually set at a discount to the prevailing market price. In contrast, self-tender offers in the U.S are generally conducted at a premium to compensate

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<sup>4</sup> Taxation treatment provisions are provided in the *Income Tax Assessment Act (1936)* (ITAA 1936).

<sup>5</sup> The terms “imputation tax credits” and “tax credits” are used interchangeably. Tax credits represent Australian corporate tax paid by the company on the profits from which the dividend has been distributed. The tax credits received by a resident taxpayer with a marginal tax rate of  $t$  from the Australian Tax Office (ATO) is calculated as  $D(t - t_c)/(1 - t_c)$ , where  $D$  represents the size of the deemed dividend component and  $t_c$  is the company tax rate. When all the imputation tax credits are distributed, and all recipients are able to fully utilise them then the imputation system effectively eliminates the double taxation of dividends (Officer 1994). Undistributed franking credits lose value over time so distribution of the tax credits to the maximum extent possible is optimal from shareholders’ perspective. Off-market buybacks provide a mechanism (other than through ordinary dividends) for Australian companies to distribute franking credits to their shareholders.

<sup>6</sup> Australian resident individuals, complying superannuation funds, registered organisations and life assurance companies can use distributed imputation tax credits to offset their tax liabilities. For superannuation funds in Australia, this rebate is equal to approximately 21 percent.

<sup>7</sup> For assets held for more than twelve months individuals pay capital gains tax at their marginal rate on one half of the capital gain. For superannuation two thirds of the gain is taxable. Short term capital gains are generated when an investor sells an asset that has not been held for more than 12 months. Hence, this portion of capital gains is taxed at the full marginal tax rate of the investor and not subject to the discount method of capital gains tax.

shareholders who incur a capital gains tax liability immediately upon tendering their shares (Anderson and Dyl 2004). Due to the discount of the buyback price to the prevailing market price in Australia, only low marginal tax rate (such as superannuation funds on a 15 percent marginal tax rate) and tax-exempt investors will benefit from participating in off-market buybacks (Brown and Efthim 2005). High marginal tax rate shareholders are better off selling their shares on the stock exchange.

## **2.2 Literature Review**

Prior studies on buybacks typically find a positive reaction at the announcement of a buyback.<sup>8</sup> While several reasons have been established in the literature to explain the market reaction, two predominant hypotheses emerge to establish the main drivers.<sup>9</sup> They are the undervaluation-signaling hypothesis (Dann 1981; Vermaelen 1981; Ofer and Thakor 1987; Stephen and Weisbach 1998; Peyer and Vermaelen 2009) and the free-cash-flow agency cost hypothesis (Jensen 1986; Bagwell and Shoven 1989; Nohel and Tarhan 1998; Grullon and Michaely 2004). In addition, the tax induced trading and price pressure hypothesis which has been established in the dividend literature (Ainsworth et al. 2010) also provides a framework for studying price changes around share buybacks.

### **2.2.1 Signaling and Agency Cost**

A share repurchase plays a role in mitigating the asymmetric information that exists between managers and shareholders. When managers buy back shares at a premium to the market price, they are conveying to shareholders that their stock prices are currently undervalued. Management survey results are also consistent with the empirical evidence of the undervaluation-signaling hypothesis being the main driver of announcement abnormal returns (Brav et al. 2005 (U.S.); Mitchell et al. 2001 (Australia)).

The free-cash-flow agency cost hypothesis asserts that payout of excess cash flows to shareholders through share repurchases can lower agency costs (Jensen 1986). If excess cash is not distributed back to shareholders, managers are inclined to invest in perquisites, empire

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<sup>8</sup> A vast literature provides evidence of abnormal announcement returns. See for example, Dann (1981), Vermaelen (1981), Constantinides and Grundy (1989), Comment and Jarrell (1991), D'Mello and Schroff (2000), Lakonishok and Vermaelen (1990), Anderson and Dyl (2004). Zhang (2005) finds that the market responds positively to repurchases in Hong Kong. Wang et al. (2009) examine share repurchase announcements in the U.K. and find consistent evidence.

<sup>9</sup> Other relevant hypotheses explaining buyback announcement abnormal returns include the leverage effect (Bagwell and Shoven 1989; Opler and Titman 1996; Dittmar 2000; Hovakimian et al. 2001; Hovakimian 2004; Mitchell and Dharmawan 2007), takeover defence (Bagwell 1991; Billett and Xue 2007), and to counter dilution due to employee and management stock options (Fenn and Liang 1997; Chan et al. 2010).

building and other negative net present value investments. Consistent with this hypothesis, Grullon and Michaely (2004) document stronger positive market reactions when firms with higher level of cash reserves announce an intention to repurchase shares. The model in Oded (2011) conjectures that tender offers reduce free cash flows more efficiently than open-market repurchases, because excess cash can be distributed more quickly via tender offers.

A comprehensive study investigating Australian on-market repurchases<sup>10</sup> by Mitchell and Dharmawan (2007) finds that firms have a stronger incentive to signal undervaluation and reduction in agency costs using on-market repurchases. In comparison with the U.S., Australia implements a more transparent and timely disclosure of important information surrounding on-market repurchases programs, thus increasing the use of repurchases as a signaling tool. Consistent with Mitchell and Dharmawan (2007), Akyol and Foo (2012) find evidence of more positive announcement reactions for those Australian on-market repurchases in which managers report a motive for the undervaluation to the market.

However, it is important to note that unlike US open-market repurchases or self-tender offers, Australian off-market buybacks, particularly those with franking tax credits attached, are often offered at a discount to the market price.<sup>11</sup> Indeed, for recent Dutch auctions the company often states that it will undertake the repurchase only if it can be completed at a minimum discount to market price.<sup>12</sup> This distinctive feature eliminates the potential for the signaling hypothesis to explain the market reaction to announcement of Australian off-market buybacks, as an announcement that the company is buying back shares at a price below the market price is not a credible signal of undervaluation.

### **2.2.2 Tax-induced trading and price pressure**

The theoretical and empirical literature investigating share price behavior has established that tax clienteles explain the trading and price behavior around ex-dividend dates.<sup>13</sup> Investors who value dividends more than capital gains will hold and buy stocks cum-dividend and investors who value capital gains more will sell stocks cum-dividend. Both sides trade with each other during the cum-dividend period and subsequently reverse their trades on the

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<sup>10</sup> In Australia, open-market repurchases are referred to as on-market repurchases.

<sup>11</sup> Imputation credits are also called “franking” credits.

<sup>12</sup> For example in the 2004 BHP off-market repurchase the company stated that the repurchase would proceed only at a discount of at least 5% to the volume weighted average price in the last five days up to and including the closing date of the buyback.

<sup>13</sup> See, *inter alia* Elton and Gruber 1970; Kalay 1984; Miller and Scholes 1982; Lakonishok and Vermaelen 1986; Karpoff and Walkling 1988; Michaely and Vila 1995; Michaely and Vila 1996; Koski and Scruggs 1998; Allen and Michaely 2003; Callaghan and Barry 2003; Dhaliwal and Li 2006; Graham and Kumar 2006; Felixson and Liljebloom 2008.

first ex-day. Moreover, trading volume on the ex-day increases with the tax heterogeneity of shareholders and with the dividend yield (Michaely and Murgia 1995; Michaely and Vila 1995, 1996; Dhaliwal and Li 2006). This trading strategy is also consistent with dividend clientele models (Miller and Modigliani 1961; Strickland 1997; Grinstein and Michaely 2005).<sup>14</sup>

While most of the early ex-dividend literature is based on US studies, there is also empirical evidence of tax-induced trading around the ex-dividend day in a non-US setting. For instance, Liljeblom, Loflund and Hedvall (2001) find that tax heterogeneity between foreign and domestic investors in Finland drives abnormal trading volumes around the ex-dividend day. A more comprehensive study by Rantapuska (2008) employing the identity of Finnish traders as well as the volume and direction of their trades around the ex-dividend day, also documents trading evidence consistent with investors' tax-induced preferences for dividends or capital gains. Milonas et al. (2006) find evidence consistent with tax-induced trading around the ex-dividend day of Chinese stocks.

For Australian evidence, Ainsworth et al. (2010) employ 33 Australian institutional fund managers' daily transactions around the ex-dividend day and find that institutional investors sell their shares during the cum-dividend period and buy back after the ex-dividend day. They argue that such tax-induced trading is driven by institutions taking advantage of the long-term capital gains tax discount<sup>15</sup> by maximizing their selling price prior to the ex-dividend day.

Consistent with the ex-dividend trading behavior literature, we argue that tax-induced trading, with the intention of obtaining franking tax credits, generates price pressure surrounding the key dates of Australian off-market buyback announcements. Employing a sample from 1996 to 2003, Brown (2007) finds that for equal-access off-market repurchases, statistically significant abnormal returns of around 1.2% exist on the announcement day and the subsequent day of the repurchase. However, somewhat different from tax-induced trading around ex-dividend days, trading volumes around Australian off-market buybacks are most likely driven by the *same* group of investors, that is superannuation funds in the marginal tax bracket of 15%. The price pressure hypothesis (Scholes 1972) posits that shifts in uninformed excess demand move prices temporarily away from their information-efficient values. Thus,

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<sup>14</sup> Dividend clienteles exist if firms that pay lower (higher) dividends attract investors with higher (lower) marginal tax rates (Miller and Modigliani 1961).

<sup>15</sup> Ainsworth et al. (2010) argue that institutional investors value capital gains more than dividends because of the introduction of a capital gains tax (CGT) discount for shares held longer than 12 months from September 1999, combined with the option for funds to employ a first-in first-out inventory method to calculate CGT holding periods.



abnormal returns are not entirely information effects especially in cases where abnormal trading volumes are present.

A price pressure effect has been detected in many corporate events.<sup>16</sup> For example, Harris and Gurel (1986) document abnormal returns for firms added to the S&P 500 index on the inclusion day and a reversal after two weeks. The authors assert that the abnormal returns are the result of price pressure effects, rather than signaling a change in future return distributions. Gygax and Otchere (2010) find evidence of price pressure effects dominating information effects when S&P revises the composition of the S&P 500 index. In another example of the price pressure effect, Mitchell et al. (2004) find that cumulative average abnormal returns (CAARs) drift downwards during the merger pricing period for certain types of acquirers. This arises due to merger arbitrageurs short selling, and CAARs immediately reverse direction at the end of the pricing period. In fact, the drift is almost completely offset by a subsequent one-month reversal. To the best of our knowledge, there has not been any study on tax-induced price pressure in the context of buybacks.

### **3. Propositions, Data and Research Method**

#### **3.1 Propositions**

The periods from the buyback announcement date to the ex-entitlement date and the buyback final announcement date are important dates for tax arbitrage. The timeline in Figure 1 illustrates the key dates for Australian off-market buybacks, namely the announcement of the buyback, the ex-entitlement date (the day after the cum-entitlement date)<sup>17</sup> and the buyback final announcement date where the size of scaleback (or shortfall) and buyback price in the case of a Dutch auction are announced.

**[Insert Figure 1 about here]**

To focus attention on our main arguments we present two propositions as follows:

**Proposition 1: Abnormal trading activities exist around the buyback announcement date.**

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<sup>16</sup> See, Maloney and Mulherin (1992) and Frank and Jagannathan (1998).

<sup>17</sup> The ex-entitlement date may appear to be a key date in the buyback timeline. However, in order for the investor to claim the franking credits associated with the buyback, the investors must have held the shares for at least 45 days on a last-in-first-out basis (paragraphs 207-145(1)(a) and 207-150(1)(a) of the *Income Tax Assessment Act 1997* (ITAA 1997)). Thus, the ex-entitlement date is not a significant milestone in the buyback process because there is generally not 45 days between the ex-entitlement date and the closing date. We have performed similar analysis on the sample with ex-entitlement date as the event date and our results confirm this.

At the announcement of a buyback, we expect tax arbitrageurs to buy shares in order to participate in the buyback, leading to significant positive abnormal returns and abnormal volumes. If the trading activity is tax-induced, we expect the abnormal returns and abnormal volumes to be greater for buybacks distributing franking credits relative to those that do not distribute franking credits, as buying pressure is created by investors who gain tax benefits from the buybacks. The abnormal returns and volumes are also expected to be greater for buybacks that have a prospect of scaleback than those without as these buybacks are generally more popular and investors can readily rebalance their portfolio by selling off their unsuccessfully tendered shares.

**Proposition 2: Abnormal trading activities exist around the buyback final announcement date.**

At the final announcement date of the buyback, we expect abnormal trading activity as a result of portfolio rebalancing with selling pressure arising from any scaleback. Under the Corporations Act 2001, companies must immediately cancel repurchased shares from the share registry.<sup>18</sup> Since S&P<sup>19</sup> does not adjust the index until the next quarterly rebalancing date, unless the company has repurchased more than 5% of outstanding shares (where it is adjusted at the market close the following Wednesday), any abnormal returns and abnormal volumes detected on the final announcement date can be attributed to investors selling down their investments due to scaleback.

Buybacks that distribute franking credits are generally completed at a discount. The repurchase of shares at a price below the market price is a positive net present value project from the company perspective, and a positive abnormal return is expected due to the increase in shareholder wealth. Conversely, buybacks that do not distribute franking credits may be viewed as negative net present value decisions as they are typically completed at a premium.<sup>20</sup> At the final announcement date, we expect significant abnormal trading volumes for the buybacks distributing franking credits (the FC) sample due to selling pressure caused by tax-arbitrageurs rebalancing their portfolio. In contrast, we do not expect selling pressure for the non-FC sample, because these buybacks are unlikely to be as popular.

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<sup>18</sup> Within one month of the cancellation, the company must lodge with ASIC a notice stating the number and class of shares cancelled and the consideration paid for the buyback: Corporations Act 2001, section 254Y.

<sup>19</sup> 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.

<sup>20</sup> The positive abnormal announcement returns for such buybacks arise from other reasons such as signaling or free cash flow effects.

In the case of a scaleback where not all the shares tendered are bought back by the repurchasing company, the company will purchase a pro-rata fraction of the shares tendered by each participant. Tax arbitrageurs are then left with unsuccessfully tendered shares. To minimize tracking error, they must sell their unsuccessfully tendered shares, (perhaps on top of the portfolio rebalancing required to track the index at the same time), creating negative abnormal returns and positive abnormal volumes.

### **3.2 Data**

Data on off-market equal access share buybacks are collected from Company Announcements of the SIRCA database and verified using announcements reported on the ASX web site. Share prices and trading volumes are collected from SIRCA. The share prices are then adjusted for capitalization changes and dividends. Information on scalebacks, shortfalls, deemed capital amounts, franked dividends, events dates (initial announcement date and the announcement date of the size of scale-back and buyback price) are collected from company announcements. The data have been manually checked for consistency. The sample consists of 59 equal access off-market buybacks conducted between 1997 and 2011.<sup>21</sup> Market capitalizations are collected from Fin Analysis. Table 1 provides summary statistics of the sample. The average market capitalization of the sample is \$15,865 million. The average discount per share is \$0.86 (median \$0.27) and average proportion of scaleback is 26.42 percent. While there is a significant percentage of buybacks conducted at a discount (average 9.28 percent, median 9.30 percent), there exists some buybacks conducted at a premium (average 16.65 percent, median 8.05 percent). Companies bought back 3.2 billion shares, distributing \$32.9 billion in cash and \$24 billion in tax credits in total. The total number of shares bought back over the total shares outstanding (at the time of the buyback) for all companies is on average 8.85 percent (median 5.59 percent).

As shown in Panels B and C, our sample contains 34 Dutch auction and 25 fixed price tenders. The average market capitalization, offer price, discount, franked dividend, proportion of shares bought over shares sought, and proportion of scaleback are greater for Dutch auctions relative to fixed price buybacks. With 78 percent of buybacks conducted with a franked dividend component, our sample supports the argument of Brown and Norman (2010)

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<sup>21</sup> Although the sample size appears small, it consists of all usable off-market buybacks between 1997 and 2011. Some buybacks are excluded from the sample. For example, delisted companies (for which data was not available, or the repurchase was part of the delisting process), some early cases where data is unavailable, repurchases as part of a merger process, non-standard arrangements (such as associated exchanges or issues of securities) and those cancelled without completion.

that the distribution of imputation tax credits is one motivation for undertaking off-market buybacks. Companies spent three times as much buying back shares through the 34 Dutch auction tenders and distributed approximately 6 times the dollar value of imputation tax credits (on average) as compared to those using a fixed price tender. Panels D and E show that buybacks with franked dividend components result in significant a discount of 7 percent on average. On the other hand, buybacks without franked dividend components result in a premium of 23 percent on average. Panel F shows that large companies usually scale back their off market buybacks due to the high demand for their share buyback offer.

**[Insert Table 1 about here]**

### 3.3 Research Method

In this study, we investigate the abnormal returns and abnormal volumes of share trading surrounding the two key dates in the off-market buybacks, namely buyback announcement day and buyback final announcement day.

Abnormal returns ( $AR_{i,t}$ ) in this study are estimated using the market model,  $AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t}$  where  $R_{i,t}$  is the continuously compounded return, and  $R_{m,t}$  is the return on the S&P/ASX All Ordinaries value-weighted index, a broadly-based index composed of the top 500 stocks ranked by market capitalization (see Brown and Warner 1985). The coefficients of this model,  $\alpha_i$  and  $\beta_i$  are from a linear regression of the firm's stock return ( $R_{i,t}$ ) on the market proxy index ( $R_{m,t}$ ), in the estimation period of 260 days prior to the announcement day to 61 days before announcement day (day -260 to day -61).

Abnormal trading volume for each buyback is computed as  $AVol = \frac{(Vol - NVol)}{NVol}$  where  $Vol$  is daily trading volume and  $NVol$  is an estimate of normal trading volume for each buyback. We estimate normal trading volume as the average daily volume over days -120 through -20 relative to the announcement of the buyback date.<sup>22</sup> Consistent with Lakonishok

and Vermaelen (1986), we compute the standardized t-statistic as  $\hat{t} = \frac{\sum_{t=1}^T SAV_T / T}{\sigma(SAV)}$  where

$$\text{Standardized Abnormal Volume, } SAV_t = \frac{AVol_t}{\sigma(AVol_t)} \quad ^{23}$$

<sup>22</sup> Lakonishok and Vermaelen (1986) use a second *calendar time method* to reduce the problem of time clustering of the data. It is unlikely that time clustering is an issue with our sample of buybacks as there are only three instances where the buyback announcement dates fall on the same calendar days.

<sup>23</sup>  $\sigma(AVol_t)$  is the estimated standard deviation computed in the period -120 to -20 relative to the announcement of buyback, and  $\sigma(\overline{SAV})$  is the standard deviation of the mean standardized abnormal volume. As abnormal

To disentangle the information effects and tax induced trading surrounding off-market buybacks, the sample is divided into 2 subsamples: off-market buybacks that distribute imputation tax credits to participants (FC sample) and off-market buybacks that do not distribute imputation tax credit to participants (non-FC sample). We expect higher announcement abnormal returns for the FC sample, as they should reflect both tax-induced trading (price pressure) and information effects while announcement abnormal returns for the non-FC sample should only reflect the information effect. Hence, the difference in abnormal returns between the two samples reflects price pressure effects. For the non-FC sample, any abnormal trading volumes can be attributed only to informed trading, and not to tax-induced trading. Thus, smaller abnormal trading volumes are expected for the non-FC sample as compared to the FC sample, and the difference between the two sub-samples' abnormal volumes is attributed to tax-induced trading.

## **4. Results and Discussion**

### **4.1 Buyback Announcement Date**

#### *4.1.1 Abnormal Returns*

Table 2 presents results for the daily average abnormal returns for an event window [-5, +5] relative to the announcement of the buyback for the full sample and various sub-samples. Both the parametric t-statistics and non-parametric signed rank test are used to test the significance of the mean abnormal returns during the event window. We find a mean abnormal return of 2.13 percent on announcement day that is significant at the 1 percent level. The significance of the mean abnormal return persists until Day +1 after which negative mean abnormal returns are found (significant for Day +3 and Day +5).

Table 2 also reports the results by whether the buybacks distribute franking credits (FC) or not (non-FC). For the FC sub-sample, the results are consistent with the full sample where the mean abnormal returns of 2.13 percent and 0.80 percent are significant for Day 0 and Day +1, respectively. For the non-FC sample, only the Day 0 mean abnormal return of 2.11 percent is significant at the 1 percent level for both the parametric test and the non-parametric signed rank test.

Buybacks that do not distribute franking credits (non-FC) are often conducted at a premium rather than a discount, which may signal firm undervaluation. The positive mean abnormal returns of these buybacks are similar to the share repurchases in the US, where the

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volume is positively skewed, using parametric t-test is questionable (Lakonishok and Vermaelen 1986). Thus, we also use a non-parametric signed rank test in calculating p-value.

positive mean abnormal returns reflect an information effect. Although buybacks that distribute franking credits (FC sample) are usually conducted at a discount, the positive mean abnormal returns on Day 0 and +1 reflect the strength of the company rather than undervaluation, where investors purchase shares to take advantage of the tax benefits associated with buybacks. The finding of a marginally higher mean abnormal return for the FC sample in comparison to the non-FC sample on Day 0 is consistent with tax-induced trading on top of any information effects resulting from the buyback announcement.

Results for the subsamples of buybacks with scaleback and without scaleback are also presented in Table 2. For both subsamples the mean abnormal returns are statistically significant on Day 0. In particular, the sample with scaleback presents a greater mean abnormal return (2.54 percent) relative to the sample without scaleback (1.54 percent), both significant at 1 percent. The difference in mean abnormal returns between the two groups is significant at the 1% level based on the Mann-Whitney test. This suggests that investors view announcement of buybacks with a prospect of scaleback more favorably. The prospect of scaleback is normally associated with the popularity of the buybacks thus these buybacks typically attract significant institutional participation, possibly leading to higher abnormal returns on announcement day. Our results are consistent with the results documented by Brown (2007), but slightly larger in magnitude due to a more extensive sample used in this study.<sup>24</sup> However, our result is lower than the 7.7 percent observed by Bagwell (1991) who examines US self-tender offers.

**[Insert Table 2 about here]**

#### *4.1.2. Trading Volumes*

SAVs are estimated over the window [-5, +5] relative to the announcement of the buyback day. We find evidence consistent with our expectation that extensive trading exists around buyback announcements. As presented in Table 3, there is a 294 percent increase in abnormal trading activity on Day 0, 290 percent on Day +1 and 175 percent on Day +2 and 62 percent on Day +3, all of which are significant at least at the 5 percent level. Our evidence is consistent with Brown (2007) but larger in magnitude due to a larger sample size.<sup>25</sup> Furthermore, there is also evidence of a run-up in SAV preceding the announcement of the buyback. Consistent with the argument in Brown (2007), this phenomenon suggests that

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<sup>24</sup> Brown (2007) observes abnormal returns of 1.235 percent and 0.925 percent on Day 0 and Day 1 respectively, for the sample of off-market buybacks in Australia over the period 1996 to 2003.

<sup>25</sup> Brown (2007) finds SAVs of 85 percent and 53 percent above normal levels on Day 0 and Day 1 respectively.

investors purchase shares prior to buyback announcements in order to participate in the buyback and to satisfy the qualified person (45-day) rule, as there may be less than 45 days between the announcement and the close of the buyback. The knowledge may come from management announcing buyback intent in an earlier context such as at the Annual General Meeting.

To investigate the effect of tax-induced trading activities, we divide the full sample into buybacks with franking credit (FC) and no franking credit (non-FC). For the FC sub-sample, we find evidence consistent with tax-induced trading. The SAV is 378 percent on Day 0, 370 percent on Day +1, 205 percent on Day +2 and 81 percent on Day +3, all of which are significant at the 1 percent level. This abnormal volume highlights the tax-induced buying pressure created by investors buying shares in order to participate in the buyback. On the other hand, the run-up, spike and subsequent downward drift are not observed for the non-FC sample. Instead, SAVs are mostly significantly negative preceding the buyback announcement for the non-FC sample. Since we do not expect tax-induced trading in this non-FC sample, the SAVs may represent informed trading due to new information release. Since there are no franking credits associated with these buybacks, there is no incentive for investors to get into the market early to qualify for the 45 day rule, hence the negative SAVs prior to the announcement date. Consistent with our expectation, SAVs of the non-FC sample are significantly lower than the FC sample at the 1 percent level on Day 0 to Day +4. We argue that the difference between the two samples' SAVs represents the existence of tax-induced trading by tax arbitrageurs.

Similar to the findings of the abnormal returns, the SAVs of the buybacks with scaleback are positive and significant at least at the 5 percent level from Days -1 to +3, and Day +5. On the other hand, there is only limited significance in SAVs for the non-scaleback sample. The SAVs are only significant for Days 0 to +2, and Day +5 but are lower relative to the scaleback sample. Again, this shows that the demand from firms' shares depends on the popularity of the buybacks. Investors are quick to get into the market when a popular buyback is announced even if there is a scaleback because their portfolio can be easily rebalanced.

**[Insert Table 3 about here]**

## **4.2 Buyback Final Announcement Day (Announcement of Scaleback and Offer Price)**

### *4.2.1 Abnormal Returns*

Table 4 reports the average abnormal returns around buyback final announcement day. Upon the announcement of scaleback and offer price (Day 0), there is a small mean abnormal return of 0.33 percent, marginally significant at 10 percent. However, the mean abnormal returns become negative and significant for Day +1 (-0.43 percent), Day +2 (-0.35 percent) and Day +4 (-0.75 percent), which reflect the selling pressure driven by institutional investor portfolio rebalancing. As compared to the abnormal returns at buyback announcement (2.13 percent), the magnitude of mean abnormal returns at the buyback final announcement date is much lower (or negative). The returns seem to resume to almost the normal level after the conclusion of the buybacks.

For the FC sample, the positive mean abnormal return on Day 0 of 0.59 percent (significant at the 1% and 5% level for parametric test and non-parametric test respectively) can be due to positive wealth effect where the completion of the buybacks at a discount represent a positive NPV project from the shareholders' point of view. However, after Day 1, the selling pressure seems to outweigh the positive wealth effect leading to negative abnormal returns for the following days. For the non-FC sample, the negative mean abnormal returns for Day +1 and +4 indicate a negative wealth effect (i.e. a negative net present value decision) where buybacks are completed at a premium.

For the scaleback sample, the mean abnormal returns are negative and statistically significant for the scaleback sample on Day 0, Day +1, and Day +4. The negative abnormal returns reflect price pressure effects from tax arbitrageurs selling off shares unsuccessfully tendered in the case of scaleback. Conversely, the mean abnormal return for the non-scaleback sample is 1.56 percent on Day 0 (significant at the 1% level), suggesting that the non-scaleback sample is not subject to the same selling pressure. The negative abnormal returns following Day 0 indicate price pressure effects due to portfolio rebalancing required when shares are cancelled.

**[Insert Table 4 about here]**

#### *4.2.2 Trading Volumes*

The SAVs upon the announcement of scaleback and offer price are also investigated over the window of [-5, +5] and reported in Table 5. While the SAVs are statistically significant across the event window, SAV is the highest on Day 0 at 182 percent and the 5% significance persisted until Day +3 possibly due to portfolio rebalancing activities where investors sell off shares that are unsuccessfully tendered.



For the FC sample, the SAVs are positive and significant from Day 0 to Day +5, with a peak mean SAV of 236 percent on Day 0. In contrast, the non-FC sample presents mean SAVs that are mostly negative and statistically significant from Day -1 to +2. The high SAVs associated with FC sample can be attributed to tax induced selling pressure caused by tax-arbitrageurs rebalancing their portfolio. In contrast, the low SAVs for the non-FC sample indicate a lack of investor interest in trading resulting in no evidence of price pressure.

As for the scaleback sample, the mean SAVs are again positive and significant from Day -2 to +3, peaking at 225 percent on Day 0. These results again suggest the existence of significant selling pressure created by tax-arbitrageurs rebalancing their portfolios through selling unsuccessfully tendered shares where a scaleback occurs. In comparison, the SAVs of the non-scaleback sample for Day 0 to +5 are much lower and not statistically significant.

**[Insert Table 5 about here]**

## **5. Summary and Conclusions**

This paper examines abnormal trading activities in the form of abnormal returns and abnormal volumes around key dates for Australian off-market buybacks and investigates the drivers of these activities. We find significant evidence of abnormal returns and abnormal volumes at buyback announcement and final announcement dates. We find evidence consistent with the significant abnormal volumes observed on these dates being caused by tax-induced trading on both key dates and by portfolio rebalancing activities possibly due to scaleback at the buyback final announcement date. Our findings suggest that traditional short-window event studies may not be providing the full picture of investor activities around companies' buyback arrangements.

The significant difference in abnormal volumes between the buybacks that distribute imputation credits versus those that do not highlights the prominence of tax-induced trading in off-market buybacks. This tax motivation for trading shares of companies engaging in off-market buybacks is unique to Australia due to the imputation tax framework and the atypical taxation treatment of Australian off-market buybacks. Low marginal tax rates institutional investors are likely to be the tax arbitrageurs in off-market buybacks as for this tax clientele the imputation tax benefits outweigh the value lost from selling shares back to the company at a discount to the market price.

The findings of this paper have important policy implications. The taxation treatment of off-market buybacks is structured in a way where one group of shareholders may benefit from participating in the buyback (shareholders with a lower marginal tax rate) to the

detriment of the other group of shareholders (shareholders with a higher marginal tax rate. Furthermore, because companies typically set 47 clear business days between the date the buyback is announced and the date that shares are deemed to be sold into the buyback this allows investors (both those who currently hold the shares and those who do not) to participate and take advantage of the franking credits attached to the buybacks. The substantial volumes of tax-induced trading found in our study provide evidence that supports the argument that these complicated tax treatments distort market prices. This result has relevance to recent legislative changes which limit the tax benefits associated with capital losses from buybacks and may lessen the price-pressure effect and tax-induced trading surrounding the buyback period. In addition, the current structure of off-market buybacks in Australia favors institutional shareholders with low marginal tax rates over retail shareholders with higher marginal tax rates. Whether retail shareholders in comparison to institutional shareholders ultimately gain from the new taxation treatment of off-market buybacks is a question left for future research.

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**Figure 1**  
**Timeline of Off-market Buyback Key Event Dates**

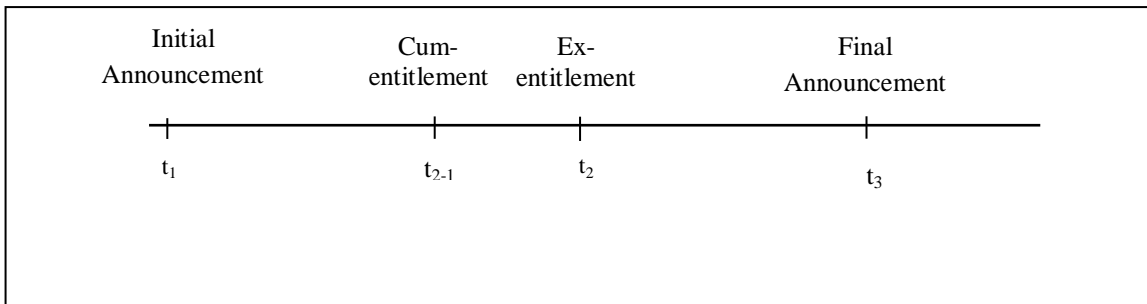


Figure 1 illustrates the three key event dates for off-market buybacks.  $t_1$  is the announcement date,  $t_2$  is the ex-entitlement date and  $t_3$  is the closing date of the buyback.

**Table 1**  
**Summary Statistics of Sample Off-Market Buybacks**

This table presents descriptive statistics for a sample of 59 off-market buybacks occurring over the period 1997 to 2011. Statistics are also provided for dutch, fixed, franked, non-franked, scaleback and non-scaleback partitions of the sample. Dutch refers to buybacks where offer price is determined via a Dutch auction tender process and fixed refers to buybacks where a fixed offer price is announced at the initial announcement. Franked (Non-franked) refers to the presence (absence) of franking credits attaching to the dividend component of buyback price. Scaleback (Non-scaleback) refers to unsuccessful (successful) buybacks where not all (all) tendered shares are repurchased by the company. *Market cap* is measured as the number of shares outstanding at the initial announcement multiplied with the current market price. *Offer price* is the buyback price for a share. *Discount* is measured as the difference between current market price per share and the offer price per share. *Total discount* is measured as discount per share multiplied with the number of shares bought back. *Capital component (Franked dividend component)* is the proportion of offer price considered as capital (dividend). *Amount spent* is the number of shares bought back multiplied with offer price per share. *Shares Bought/ Shares Outstanding* is the percentage of shares bought back of total outstanding shares. *Shares Bought/Shares Sought* is the percentage of shares bought back of shares sought. *Proportion of scaleback* is the percentage of shares tendered but not bought back by the repurchasing company. *Average daily normal volume* is the mean daily volume measured over the normal period window [-120, -21].

	<b>Market Cap (\$mil)</b>	<b>Offer price (\$)</b>	<b>Discount (%)</b>	<b>Total discount (\$mil)</b>	<b>Capital component (%)</b>	<b>Franked dividend component (%)</b>	<b>Amount Spent (\$mil)</b>	<b>Shares Bought/ Shares Outstanding (%)</b>	<b>Shares Bought/ Shares Sought (%)</b>	<b>Proportion of scaleback (%)</b>	<b>Average daily volume</b>
<b>Panel A: All (n = 59)</b>											
Mean	15,865.17	10.09	0.00	56.07	50.28	51.83	558.29	8.85	103.27	26.42	38,803,440.25
Median	4,814.49	5.80	4.00	10.94	43.95	60.00	300.00	5.59	100.00	0.00	13,929,139.68
Sum	936,045.18			3,307.97			32,939.14				
<b>Panel B: Dutch (n = 34)</b>											
Mean	23,993.74	12.93	8.00	90.95	43.43	64.64	785.71	5.80	114.53	34.66	62,794,023.29
Median	11,376.99	8.75	9.00	41.50	38.35	71.54	406.98	4.23	111.79	38.88	28,673,565.62
Sum	815,787.19			3,092.46			26,714.16				
<b>Panel C: Fixed (n = 25)</b>											
Mean	4,810.32	5.49	-10.00	8.62	59.99	34.41	248.99	13.00	87.96	11.77	6,176,247.31
Median	317.97	2.19	0.00	-0.10	53.45	41.64	28.98	7.67	99.73	0.00	256,938.02
Sum	120,257.99			215.51			6,224.98				
<b>Panel D: Franked (FC) (n = 46)</b>											
Mean	19,703.36	11.78	7.00	75.68	39.49	66.48	678.98	7.54	107.80	29.81	48,702,259.97
Median	8,904.65	7.12	7.00	33.31	40.50	64.18	374.11	4.39	100.80	5.65	19,981,854.88
Sum	906,354.47			3,481.36			31,232.98				
<b>Panel E: Non-franked (non-FC) (n = 13)</b>											
Mean	2,283.90	4.13	-23.00	-13.34	91.67	0.00	131.24	13.49	87.26	15.68	3,776,847.39
Median	125.31	1.60	-12.00	-2.04	100.00	0.00	7.00	9.57	97.93	0.00	108,092.38
Sum	29,690.71			-173.39			1706.16				
<b>Panel F: Scaleback (n = 32)</b>											
Mean	21,823.69	12.16	4.00	69.98	40.61	61.37	750.08	6.40	113.04	57.43	55,486,360.65
Median	8,752.99	7.59	4.00	20.11	35.80	64.89	336.61	5.16	102.82	60.87	17,909,926.36
Sum	698,358.19			2,239.30			24,002.59				
<b>Panel G: Non-scaleback (n = 27)</b>											
Mean	8,803.22	7.64	-4.00	39.58	62.19	40.53	330.98	11.75	91.69	0.00	19,031,090.14
Median	1,443.23	4.00	1.00	0.00	59.15	42.86	193.87	5.59	92.26	0.00	3,276,498.63
Sum	237,686.99			1,068.67			8,936.56				

**Table 2**  
**Average Abnormal Returns around Initial Announcement Day**

This table documents daily mean abnormal returns around the initial announcement day for 59 off-market buybacks occurring over the period 1997 to 2011. This sample is partitioned based on whether franking tax credits are attached to the dividend component of buyback price (Franked vs. Unfranked) and whether scaleback occurs on the final announcement day (Scaleback vs. Non-scaleback). Daily average abnormal returns are estimated using an event study method based on the market model. The market index is All Ordinaries Index. The estimation period spans from day -260 to day -61. The results are presented over event window of [-5, +5] relative to the initial announcement day. We report parametric *t*-statistics based on Brown and Warner (1985) “crude dependence adjustment”. Non-parametric signed rank test statistics are also reported. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels.

Day	All (n = 59)			FC (n = 46)			Non-FC (n = 13)			Scaleback (n = 33)			Non-scaleback (n = 26)		
	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test
-5	-0.32	-1.36*	-154.00*	-0.13	-0.62	-30.00	-1.37	-1.45*	-17.00***	-0.34	-1.33*	-71.00*	-0.30	-0.67	-10.50
-4	-0.09	-0.40	-119.00	-0.32	-1.52*	-124.00*	0.98	1.04	4.50	-0.15	-0.58	-71.00*	-0.07	-0.15	-10.50
-3	-0.07	-0.31	28.50	0.02	0.09	38.00	-0.47	-0.50	-5.50	-0.08	-0.31	26.00	-0.02	-0.04	-1.50
-2	-0.08	-0.35	13.50	-0.10	-0.49	16.00	0.04	0.04	0.00	0.06	0.24	24.50	-0.26	-0.59	-6.00
-1	-0.07	-0.29	-17.00	0.11	0.51	8.00	-1.18	-1.25	-3.00	0.12	0.50	4.50	-0.38	-0.85	-17.50
0	2.13	9.04***	461.00***	2.13	10.11***	345.50***	2.11	2.23**	9.00*	2.54	10.09***	180.50***	1.54	3.44***	60.50**
1	0.46	1.95**	242.50**	0.80	3.82***	191.50**	-1.27	-1.35*	0.50	0.71	2.80***	85.50**	0.07	0.16	37.00*
2	-0.05	-0.23	-35.50	0.13	0.04	26.00	-0.84	-0.89	-12.50	-0.01	-0.06	-5.00	-0.08	-0.18	0.00
3	-0.82	3.48***	-231.50**	-0.75	-3.20***	-153.50**	-1.11	-1.18	-8.50	-0.82	-3.26***	-64.50*	-0.75	-1.67**	-44.00*
4	0.19	0.81	38.00	-0.04	-0.96	6.00	1.28	1.36*	4.50	0.31	1.25	15.00	0.04	0.09	9.50
5	-0.45	-1.89**	-234.00**	-0.33	-1.69**	-160.00**	-1.07	-1.13	-8.00	-0.38	-1.57*	-61.50	-0.43	-0.97	-37.50*



**Table 3**  
**Standardized Abnormal Volumes around Initial Announcement Day**

This table documents mean standardized abnormal volume (SAV) for 59 off-market buybacks around the initial announcement day. This sample is partitioned based on whether franking tax credits are attached to the dividend component of a buyback price (Franked vs. Unfranked) and whether scaleback occurs on the final announcement day (Scaleback vs. Non-scaleback). Following Lakonishok and Vermaelen (1986), we compute standardized abnormal volume as  $SAV_t = \frac{AVol_t}{\sigma(AVol_t)}$  where  $AVol = \frac{(Vol - NVol)}{NVol}$ , Vol is the daily trading volume and NVol is an estimate of normal trading volume for each firm over days -120 through -20 relative to the initial announcement day. Daily mean SAV and non-parametric *p*-value (see, Brown 2007) for days [-5, +5] are presented below. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels.

Day	All (n = 59)		FC (n = 46)		Non-FC (n = 13)		Mann-Whitney p-values	Scaleback (n = 33)		Non-scaleback (n = 26)		Mann-Whitney p-values
	Mean SAV (%)	Non-para p-value	Mean SAV (%)	Non-para p-value	Mean SAV (%)	Non-para p-value		Mean SAV (%)	Non-para p-value	Mean SAV (%)	Non-para p-value	
-5	13.20	0.10*	19.95	0.11	-10.68	0.09*	0.08*	4.10	0.14	24.74	0.12	0.83
-4	19.77	0.08*	32.50	0.11	-25.29	0.04**	0.02**	35.81	0.14	-0.60	0.12	0.11
-3	8.26	0.01***	16.49	0.06*	-20.87	0.01***	0.37	21.22	0.07*	-8.20	0.02**	0.45
-2	14.15	0.05**	26.93	0.11	-31.07	0.04**	0.08*	8.82	0.12	20.92	0.08*	0.89
-1	36.31	0.05**	41.37	0.11	18.40	0.01***	0.36	12.43	0.02**	66.62	0.14	0.19
0	294.14	0.00***	378.03	0.00***	-2.70	0.21	0.00***	395.57	0.00***	165.41	0.00***	0.11
1	289.73	0.00***	369.53	0.00***	7.37	0.21	0.00***	358.14	0.00***	202.90	0.01***	0.05**
2	174.53	0.01***	204.86	0.00***	67.19	0.09*	0.02**	185.92	0.01***	160.06	0.05*	0.74
3	62.27	0.02**	80.51	0.01***	-2.25	0.16	0.01***	69.68	0.01***	52.86	0.14	0.51
4	11.79	0.07*	23.06	0.11	-28.11	0.01***	0.01***	14.92	0.10*	7.81	0.14	0.92
5	-12.33	0.00***	-12.14	0.01***	-12.99	0.04**	0.83	-16.85	0.01***	-6.58	0.02**	0.15

**Table 4****Average Abnormal Returns around Final Announcement Day**

This table documents daily mean abnormal returns around the final announcement day for 59 off-market buybacks occurring over the period 1997 to 2011. This sample is partitioned based on whether franking tax credits are attached to the dividend component of buyback price (Franked vs. Unfranked) and whether scaleback occurs on the final announcement day (Scaleback vs. Non-scaleback). Daily average abnormal returns are estimated using an event study method based on the market model. The market index is All Ordinaries Index. The estimation period spans from day -260 to day -61. The results are presented over event window of [-5, 5] relative to the final announcement day. We report parametric *t*-statistics based on Brown and Warner (1985) “crude dependence adjustment”. Non-parametric signed rank test statistics are also reported. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels.

Day	All (n = 59)			FC (n = 46)			Non-FC (n = 13)			Scaleback (n = 33)			Non-scaleback (n = 26)		
	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test	Mean AR (%)	t-stat	Signed rank test
-5	0.40	1.56*	272.00***	0.25	1.28	135.00*	0.52	0.53	10.00*	0.82	3.23***	177.00***	-0.23	-0.49	-16.50
-4	0.00	0.02	56.50	-0.06	-0.30	2.50	0.36	0.37	6.00	0.03	0.11	38.50	-0.03	-0.06	0.00
-3	0.15	0.61	131.00	0.46	2.33**	184.00**	-1.12	-1.15	-9.00	0.09	0.36	52.00	0.26	0.55	20.00
-2	0.32	1.24	223.50**	0.26	1.32*	138.50**	0.43	0.44	7.00	0.22	0.87	80.50**	0.45	0.95	35.00
-1	-0.02	-0.06	56.00	0.06	0.31	67.50	-0.95	-0.97	-8.00	0.05	0.18	1.50	-0.11	-0.23	21.00
0	0.33	1.30*	175.00*	0.59	2.97***	158.00**	-0.65	-0.67	1.00	-0.53	-2.09**	-54.50	1.56	3.31***	85.50***
1	-0.43	-1.70**	-196.00**	-0.33	-1.65**	-105.00	-1.59	-1.63*	-17.00***	-0.36	-1.43*	-71.50*	-0.53	-1.13	-32.50
2	-0.35	-1.38*	-192.00**	-0.44	-2.20**	-188.00**	0.07	0.07	1.00	-0.20	-0.80	-31.50	-0.56	-1.18	-56.50**
3	-0.14	-0.53	-80.00	-0.18	-0.92	-67.50	0.38	0.39	2.00	-0.14	-0.55	-43.50	-0.13	-0.28	-8.50
4	-0.75	-2.95***	-364.00***	-0.59	-2.95***	-236.00***	-1.73	-1.77**	-21.50***	-0.60	-2.35***	-91.50**	-0.95	-2.02**	-90.00***
5	-0.28	-1.09	-40.00	-0.42	-2.10**	-85.00	-0.15	-0.16	1.00	-0.34	-1.33*	-4.50	-0.20	-0.43	-15.50

**Table 5**  
**Standardized Abnormal Volumes around Final Announcement Day**

This table documents mean standardized abnormal volume (SAV) for 59 off-market buybacks around the final announcement day. This sample is partitioned based on whether franking tax credits are attached to the dividend component of a buyback price (Franked vs. Unfranked) and whether scaleback occurs on the final announcement day (Scaleback vs. Non-scaleback). Following Lakonishok and Vermaelen (1986), we compute standardized abnormal volume as  $SAV_t = \frac{AVol_t}{\sigma(AVol_t)}$  where  $AVol = \frac{Vol - NVol}{NVol}$ , Vol is the daily trading volume and NVol is an estimate of normal trading volume for each firm over days -120 through -20 relative to the initial announcement day. Daily mean SAV and non-parametric *p*-value (see, Brown 2007) for days [-5, +5] are presented below. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels.

Day	All (n = 59)		FC (n = 46)		Non-FC (n = 13)		Mann-Whitney p-values	Scaleback (n = 33)		Non-scaleback (n = 26)		Mann-Whitney p-values
	Mean SAV	Non-para p-value	Mean SAV	Non-para p-value	Mean SAV	Non-para p-value		Mean SAV	Non-para p-value	Mean SAV	Non-para p-value	
-5	-19.93	0.03**	-18.49	0.04**	-25.02	0.16	0.81	3.94	0.14	-49.35	0.00***	0.03**
-4	-3.20	0.00***	5.04	0.03**	-32.35	0.04**	0.19	24.63	0.14	-36.08	0.00***	0.01***
-3	16.27	0.05**	14.44	0.08*	-22.78	0.16	0.85	40.31	0.12	-5.45	0.02**	0.75
-2	27.88	0.10*	34.10	0.11	5.86	0.16	0.41	56.17	0.04**	0.82	0.05**	0.13
-1	30.13	0.10*	43.39	0.11	-16.79	0.09*	0.05**	60.23	0.02**	-1.83	0.00***	0.02**
0	182.18	0.03**	235.55	0.00***	-6.69	0.01***	0.00***	224.96	0.00***	133.41	0.15	0.06*
1	92.26	0.02**	121.57	0.00***	-11.43	0.09*	0.00***	104.77	0.00***	76.41	0.15	0.17
2	86.04	0.02**	113.09	0.00***	-9.68	0.09*	0.00***	92.05	0.02**	77.37	0.12	0.59
3	52.01	0.03**	61.79	0.01***	17.40	0.21	0.19	62.08	0.02**	42.48	0.14	0.57
4	17.30	0.10*	21.32	0.08*	3.08	0.04**	0.08*	13.48	0.14	21.08	0.14	0.96
5	15.49	0.10*	28.29	0.08*	-29.81	0.04**	0.05**	16.38	0.14	2.51	0.14	0.49