Taxes, tenders and the design of Australian off-market share repurchases

Christine Brown\textsuperscript{a}, Kevin Davis\textsuperscript{b}

\textsuperscript{a}Department of Accounting and Finance, Monash University, Caulfield East, Victoria 3145, Australia
\textsuperscript{b}The Australian Centre for Financial Studies, Department of Finance, the University of Melbourne, Parkville, Victoria 3010, Australia

Abstract

In designing off-market (self-tender offer) share repurchases, Australian companies must consider the resulting potential tax benefits for different investor groups with consequent effects upon the supply of stock tendered by holders and the ultimate tender outcome. We develop and estimate a model of the stock supply curve that demonstrates less than perfect elasticity and incomplete tax arbitrage arising from ‘participation risk’ for potential arbitrageurs. We are able to estimate the extent of disequilibrium in prices involved in fixed-price repurchases and show that it is substantial. We show that Australian Tax Office restrictions on the tender price range for Dutch auctions have meant that non-participating shareholders have foregone some potential benefits through the transfer of tax benefits to (primarily institutional, low tax rate) successful tender participants. The results provide support for legislative changes proposed in 2009 (but not implemented as of mid 2011), which removed constraints on the allowable range of repurchase prices.

Key words: Repurchases; Taxation; Tenders; Shareholder heterogeneity

JEL classification: G32, G35, H20

doi: 10.1111/j.1467-629X.2011.00445.x
1. Introduction

The literature on share repurchases is extensive and examines, *inter alia*, motivation (signalling, capital management etc.), market reactions and choice of method (on- versus off-market\(^1\) etc.). See Allen and Michaely (2003) for a recent survey. The focus of this paper is upon two specific issues identified in that literature. One is the argument that corporate managers make payout decisions that favour institutional investors. A second is the merits of fixed-price versus Dutch auction tender mechanisms in implementing off-market share repurchases. We utilize Australian data that, because of its particular tax characteristics, provide a favourable institutional environment in which to examine these issues.

Off-market share repurchases, structured to achieve certain tax advantages, have been popular in Australia in recent years, but have attracted criticism from commentators in the financial press.\(^2\) Underpinning the criticism has been the complaint that such repurchases favour one group of shareholders to the detriment of others. The possibility of inequitable treatment of shareholders arises because of the specific tax treatment applied to Australian repurchases which also leads to the unusual outcome of repurchases occurring at a substantial discount to the prevailing market price.

While the discount pricing of repurchases reflects idiosyncratic tax factors, the Australian tax and institutional environment provides a valuable opportunity to examine whether characteristics of the supply curve of stock tendered by holders found in other studies of repurchases are robust to marked changes in institutional conditions. In particular, tax heterogeneity of investors is well defined in the Australian case enabling us to identify key determinants of the stock supply curve, to test whether complete tax arbitrage occurs and to examine how pricing constraints affect the distribution of benefits from repurchases between participants and non-participants.

As Bagwell and Shoven (1989, p130) note, ‘[b]oth the sellers and the nonsellers can gain from a corporate program of share repurchase’ because of self-selection based on their tax characteristics, implying that the pricing mechanism for the repurchases is important in distributing such gains. Rau and Vermaelen (2002), Short et al. (2002) (using UK data from a partial imputation tax system) and Lie and Lie (1999) (using US data from a classical tax system) find that the tax position of important shareholders, such as pension funds and other institutional shareholders, is a key factor in corporate payout policy. Thus, the importance of

---

\(^1\) The terms ‘repurchase’ and ‘buyback’ are used interchangeably in Australia. Off-market repurchases are called self-tender offers in the U.S. and on-market repurchases, where the company repurchases shares on the stock market through a broker are called open-market repurchases in the United States.

institutional investors in firm capital management decisions appears to be independent of the specific tax environment. While we do not examine the choice between payout methods (see Brown and Norman, 2010), our analysis of the characteristics and pricing of repurchases provides evidence from a different tax environment consistent with corporate payout policy favouring institutional investors.

The full imputation tax system operating in Australia combines with somewhat unique tax rules governing the treatment of off-market repurchases to provide an ideal environment to investigate the importance of investor-level taxes in the structure of repurchases. Thus, the first general contribution of the paper is an examination of how taxes affect capital management in a non-classical tax system, and in providing a different lens to previous studies through which to examine the consequences of shareholder tax heterogeneity.

Our analysis shows that Australian off-market repurchases are generally structured to provide most benefits to low tax rate participating investors (such as institutional pension (superannuation) funds) who have short-term capital gains from trading activities elsewhere in their portfolios. Our empirical findings also suggest that alternative structures and pricing could provide a greater share of benefits to non-participants, although Australian Tax Office (ATO) restrictions have played an important role in the outcomes observed.

A second contribution of the paper lies in developing and estimating a model of the supply curve for stock tendered by shareholders, by modelling the net benefits of participation to shareholders with different tax situations. We are also able to exploit information extracted from repurchase offer and completion documents to measure outcomes of excess demand (ED) for shares wanted for repurchase by the company or excess supply of shares tendered by holders because of auction price bounds. We use this information to estimate an upward sloping supply curve for stock tendered in Dutch auctions using censored regression techniques. We are able to test whether tax arbitrage can fully explain the shape of the supply curve or whether other risk-related factors associated with tendering are also relevant.

These results enable us to assess the extent of mispricing in fixed-price tenders and also the costs to non-participating shareholders from the minimum price bounds imposed by companies (in response to ATO rulings) on Dutch auction outcomes. Our results provide support for changes to the tax legislation proposed in May 2009 (but not enacted as of mid 2011), affecting the treatment of off-market repurchases, which inter alia removed the lower bound on the price at which companies can repurchase shares.

The Australian experience is also of interest because it relates to significant capital management decisions. As we demonstrate later, many of the largest listed companies are involved (often more than once), and the average percentage of shares outstanding bought back is in the order of 5 per cent. While the number of off-market repurchases over our study period is relatively small (82), the total dollar amount involved in many years in the sample period is

© 2011 The Authors
Accounting and Finance © 2011 AFAANZ
comparable to the very much larger number of on-market repurchases. There has also been a change in the dominant method of conducting off-market repurchases, away from fixed-price tenders to (constrained) Dutch auction tenders. The data available provide an opportunity to examine the consequences of this change and compare the merits of the two methods.

The remainder of the paper is structured in the following way. Section 2 reviews the literature relevant to the development of later sections of the paper, while Section 3 outlines the tax treatment of off-market repurchases in Australia. Section 4 describes how off-market repurchases have evolved in Australia and presents salient details of the characteristics of our data. Modelling of the tender process and derivation of the supply curve of stock tendered are undertaken in Section 5. Section 6 contains estimation of the supply curve and application of the results to assess the effects of price limits on auction outcomes and distributional effects. Section 7 summarizes our results and concludes with some suggestions for further research and policy implications.

2. Literature review

Off-market (self-tender) repurchases are generally conducted at a fixed-price or via a Dutch auction, where a range of prices at which shareholders can tender is specified. Bagwell (1992) finds considerable heterogeneity across the shareholder bid information provided by 32 US companies conducting Dutch auction share repurchases. Bagwell (1992) and Hodrick (1999) provide direct evidence that US firms repurchasing shares via a Dutch auction face upward sloping supply curves, a finding corroborated by Brown and Ryngaert (1992) for fixed-price tender repurchases. Market imperfections such as capital gains tax and asymmetric information or differences of opinion about fundamental value have been used as explanations for the presence of an upward sloping supply curve. Comment and Jarrell (1991) argue that the less than complete tendering response in the United States to both fixed-price and Dutch auction repurchases at a premium to the market price indicates that firms face upward sloping supply curves during the offer period.

Studies such as Dann (1981), Vermaelen (1981, 1984), Lakonishok and Vermaelen (1990), Comment and Jarrell (1991) and D’Mello and Schroff (2000) that find positive abnormal returns on announcement of self-tender offers in the United States are taken as evidence in support of managers undertaking a repurchase to signal to the market that their shares are undervalued (the ‘undervaluation hypothesis’). Extensive empirical support for the undervaluation hypothesis does

---

3 For example, for the complete population of on-market and off-market repurchases for the period 2003–2006, there are 147 companies undertaking 247 on-market repurchases buying an (unweighted) average of 2.4% of outstanding shares and spending $7.4 billion. In contrast over the same period there were 18 companies undertaking 22 off-market repurchases returning $13.7 billion to shareholders and buying back an (unweighted) average of 7.2% of outstanding shares.
not of course preclude other explanations for the observed positive announcement returns. The market may react positively if the disbursement of cash via the repurchase lowers the agency costs of free cash flows (Jensen, 1986; Bagwell and Shoven, 1989; Dittmar, 2000; Jagannathan et al., 2000; Grullon and Michaely, 2004).

Another possible reason for the observed positive announcement response in the United States is that repurchases are generally tax-advantaged as a payout mechanism when compared to dividends. Bagwell (1992) and Anderson and Dyl (2004) find that the magnitude of the market response in the United States to the announcement of a repurchase is positively related to the premium over market price at which the offer is made, consistent with the idea that the signal sent must be credible to market participants. In fact, share repurchases in the United States almost always occur at a premium to the market price at the date of tender completion because participating shareholders must be compensated for the capital gains tax which becomes due once the shares are tendered (Anderson and Dyl, 2004).

The off-market share repurchase environment in Australia is different in three important aspects to that in which US self-tender offers are conducted. First, because of the dividend imputation tax system operating in Australia, the tax disadvantages of dividends are not as pronounced as in the United States. While high marginal tax rate individuals may prefer capital gains because the payment of a dividend with attached tax credits still leaves residual personal tax to be paid, ceteris paribus the imputation system reduces the preference for capital gains. Second, because the proceeds of many off-market repurchases are not taxed purely as capital gains but as a mixture of dividend income and capital repayment, tax-based arguments for the choice between dividends and repurchases as preferred distribution mechanisms are not as straightforward. These tax arrangements enable shareholders to self-select regarding participation in response to the value of tax benefits arising for them, in contrast to the absence of such choice in the case of a pro rata dividend payment or return of capital.

Third, the unique structure for off-market repurchases often means that the repurchase is completed at a discount to market price. The transfer of valuable tax benefits results in shareholders’ willingness to tender at prices below the current market price, implying that off-market repurchases in Australia are less likely to send or be used as a credible signal of firm undervaluation. Survey evidence suggests that off-market repurchases are primarily undertaken by companies as an alternative to dividends (Mitchell and Robinson, 1999).

Consistent with this last argument, much lower abnormal returns on announcement are observed in Australia as compared with the United States, with the magnitude of the response positively related to the subsequent size of the discount to market price at which the repurchase is completed (Brown, 2007).4 One interpretation for the observed positive market response that is

---

4 The abnormal returns of 2.2% for off-market repurchases in Australia are much lower than the 7.7% reported by Bagwell (1992) for self-tender offers in the United States.
consistent with its magnitude being positively related to the offer discount is that
the disbursement of cash via an off-market share repurchase is tax-advantaged
for some shareholders and induces announcement date purchases by such inves-
tors to participate. These transitory purchases push up the announcement date
share price, and their subsequent reversal (via supply offers in the tender) pushes
down (up) the tender outcome price (discount).

The offer discount in many Australian off-market repurchases represents a
gain to non-tendering shareholders in return for the tax benefits directed to ten-
dering shareholders. Shareholders on the lowest marginal tax rates who are
active traders generating non-concessionally taxed capital gains\(^5\) (generally chari-
table institutions and pension funds) will have the lowest reservation prices
because (as explained in Section 5) they have larger tax benefits. Hence, hetero-
geneity in shareholder marginal tax rates is likely to lead to upward sloping sup-
ply curves by shareholders for ‘discount’ off-market repurchases, similar to the
result for ‘premium’ off-market repurchases in the United States (Comment and
States Brown and Ryngaert (1992) and Anderson and Dyl (2004) find that the
premium over market price in fixed-price tenders is increasing in shareholders’
capital gains tax liabilities, we show (in Section 5) that in Australia, a larger divi-
dend component (with its consequent tax benefits) is likely to increase the dis-
count to market price in Dutch auction repurchases.\(^6\) Participating institutional
investors enjoy the greatest tax benefits, suggesting that the structure of off-mar-
ket repurchases in Australia will be sensitive to institutional shareholdings,\(^7\) con-
sistent with the empirical findings of Rau and Vermaelen (2002) and Short et al.

3. Repurchases in Australia: tax and legal considerations

Share repurchases were not allowed in Australia until enabling legislation
was introduced in 1989. They can be undertaken on- or off-market, and the
focus of our study is the situation where the company invites all shareholders
to tender shares into the repurchase (termed an ‘equal access off-market’
repurchase). In general, companies are able to repurchase up to 10 per cent of
their ordinary shares in any 12-month period (commonly referred to as the 10/12
limit). There are a myriad of corporation laws, stock exchange listing rules,
tax rulings and exemptions granted by the Australian Securities and Invest-
ment Commission, which taken together give companies undertaking such

\(^5\) Concessional tax rates for capital gains tax apply in some circumstances. See Appendix 1.

\(^6\) Brown and Efthim (2005) show that the discount is positively related to the franked divi-
dend component of the off-market buyback price.

\(^7\) Unfortunately, reliable data on institutional shareholdings are not available in Australia
because of the widespread use of nominee companies.
repurchases the opportunity to structure the offer price (payment for the shares tendered) in certain tax advantageous ways. Fundamental to this is that Australia operates a full dividend imputation system. A brief overview of the Australian tax system is given in Appendix 1.

The interaction of taxation law and company law has created a somewhat unique taxation treatment for off-market repurchases in Australia. The company may be able to designate a (sometimes very small) portion of the repurchase price as being debited from the company’s share capital account, which is treated as a return of capital or capital component \( C \). Thus, denoting the current share price by \( P \) and the repurchase price by \( wP \), the remainder of the repurchase price amount is then sourced from retained profits and is a deemed dividend \( D = wP - C \) for taxation purposes.

A tax ruling on the dividend and capital component breakdown is required before a repurchase involving a dividend component is announced. In the case of Dutch auction tenders, the announcement specifies a dividend amount with the capital component being subsequently determined from the auction outcome as the difference \( C = wP - D \). If the company has sufficient undistributed tax (franking) credits, the deemed dividend portion can be ‘fully franked’, with Australian resident shareholders entitled to an income tax credit representing the Australian corporate tax paid by the company in respect of the profits from which the deemed dividend is derived.

The tax on the cash amount of the dividend \( D \) directly payable, or received as a refund from the ATO, by a resident taxpayer with a marginal tax rate of \( t \) is \( D(t - t_c)/(1 - t_c) \), where \( t_c \) is the company tax rate. The capital component \( C \) can be quite low and may result in participating shareholders who sell shares into the repurchase benefitting from a capital loss for tax purposes (depending on their cost base). Investors who have short-term realized capital gains on other assets, which would be taxed at their full marginal tax rate, benefit most from the tax offset. Investors whose only realized capital gains on other assets are from holding periods in excess of 1 year, and who thus face a capital gains tax rate

8 The tax treatment is similar to that in the U.K. for a subperiod of the Rau and Vermaelen (2002) study.

9 The Australian Government Board of Taxation (2007) states that the rationale for allowing part of the repurchase price to consist of a dividend was to ensure consistency with the rules on returns of capital, cancellations and liquidation. The logic behind the approach appears to be based on considering the repurchase as a ‘partial winding up’ of the company in which total contributed capital and retained earnings (each with different tax consequences upon distribution to shareholders) are each to be shared pro rata between liquidating and remaining shareholders.

10 Companies unable to pay a franked dividend are unlikely to elect to have part of the repurchase price treated as an unfranked dividend on which tax is paid at the shareholder’s marginal tax rate, because of investor tax preferences for capital gains rather than unfranked dividends.
in the current year lower than their marginal tax rate, receive less benefit. Appendix 2 provides a numerical illustration of the differential after-tax gains from participating for different classes of shareholders, and an algebraic proof is contained in Section 5.

One important consequence of this tax treatment is that the price resulting from the tender has, in most cases where a franked dividend component is involved, led to a repurchase price less than the prevailing market price. That is, \( wP < P \), where \( P \) is the market share price at the close of the tender, so that \( 0 < w < 1 \). This is in sharp contrast to the case of self-tender offers in the United States, which as previously discussed are generally conducted at a premium. In the case of fixed-price offers, 14 of the 18 repurchases in our sample involving franked dividends specified a repurchase price less than or equal to the company’s share price on the announcement date. In the case of Dutch auctions, the indicative price range specified at the announcement of the repurchase has, since late 2004 when ATO rulings in individual cases induced a change in approach, seen companies specify an upper limit as some minimum discount (generally 8 or 5 per cent) to the volume-weighted average price (VWAP) at the tender closing date. Those ATO rulings prevented repurchases at a discount of more than 14 per cent of the VWAP, leading to specification of this maximum discount (i.e. a minimum price) being pervasive.

The assignment of some part of the repurchase price as a franked dividend has made off-market repurchases in Australia contentious. Dividends are in principle to be paid pro rata to all shareholders. However, the deemed dividend component of the offer price in an off-market repurchase is distributed only to participating shareholders. This has given rise to criticism from commentators in the financial press that such repurchases create personal tax advantages for one group of shareholders (low tax rate institutional investors who participate) to the detriment of other non-participants. Whether that is so depends on the extent of gains to non-participants from the company repurchasing shares at a price less than the current market price. Our subsequent examination of whether price

---

11 Earlier Dutch auctions that specified price limits as dollar amounts often involved upper price limits in excess of the announcement date price.

12 In late 2007, the ATO released a Practice Statement (PSLA 2007/9) stating that the maximum discount allowed in an off-market repurchase is 14 per cent calculated by reference to the VWAP on the 5 days leading up to and including the closing date of the repurchase. The ATO had in practice been applying this maximum discount in private rulings for some years prior to its official announcement.

13 This issue has been implicitly acknowledged by some companies in structuring the Dutch auction process. For example in the February 2006 off-market repurchase BHP Billiton announced that it would ‘…not proceed with the off-market repurchase unless the discount at which the shares can be repurchased represents at least an 8 percent discount.’ and that ‘[a]ll shareholders …including those not participating, …benefit [because of the] [p]urchase of shares at a discount of at least 8%.’
limits in the Dutch auction system (or use of a fixed-price tender) prevent equilibrium outcomes helps cast light on this question.

4. Usage and characteristics of off-market repurchases in Australia

The regulatory environment as described in Section 3 gives access to a rich source of data from the announcements made by the companies to the stock exchange. We have collected data on all off-market equal access repurchases from the Signal G Announcements section of the Aspect Huntley Financial Database and verified using announcements reported on the Australian Securities Exchange (ASX) website. Share prices are supplied by SIRCA on behalf of the ASX. Information on scalebacks (when an excess of tenders at the repurchase price occurs), shortfalls (when the company is unable to purchase the desired number of shares), deemed capital amounts and franked dividends is taken from company announcements. The data have been manually checked for consistency. Our sample consists of 62 off-market equal access repurchases conducted between 1996 and December 2008 out of 82 such repurchase announcements identified by our search. Those cases omitted involved delisted companies (for which data were not available, or the repurchase was part of the delisting process), unavailability of data for some early cases, repurchases as part of a merger process, non-standard arrangements (such as associated issues or exchanges of securities) and those cancelled without completion. Appendix 3 provides a full list of the included companies in date order along with certain characteristics of the repurchases.

In the early years of the study period, most companies offered to buy back shares at a fixed price, but from around 2002, most large repurchases were conducted via a Dutch auction. Our sample contains 30 fixed-price and 32 Dutch auction tenders. For 61% of the repurchases, the final tender price is below the share price at the close of the offer, with 24 of 26 Dutch auctions involving a franked dividend component in this category (with the two exceptions early in the sample period involving a fall in the market price between announcement and closing date). A shortfall occurs in 18 cases, of which 13 are fixed-price tenders, and a scaleback of successful tenders in 28 cases (of which 11 are fixed-price tenders). The importance of distributing franking credits as one motive for undertaking off-market repurchases (Brown and Norman, 2010) is illustrated with 71% of repurchases occurring with a franked dividend component.16

15 See also Mitchell et al. (2001) and Mitchell and Robinson (1999) for information on stated motivations for share repurchases in Australia.
16 Over 2001–2004, franking credits distributed via off-market repurchases were equal to 8% of total franking credits claimed by taxpayers (the remainder being from dividends paid) (Australian Government Board of Taxation, 2007, p56).
Table 1 provides summary statistics additional to the information in Appendix 3. Panel A illustrates the increasing frequency of off-market repurchases from 1999 onwards. Reinforcing the fact that 61% of repurchases are conducted at a discount, there are few years where repurchases are on average conducted at a premium. The total number of shares bought back as a proportion of the total shares outstanding (at the time of the repurchase) for all companies over the period is 5.32%. The equally weighted average across firms of the proportion bought back is 11.58%. As shown in Panel B, companies undertaking the 32 Dutch auction tenders are larger, spend around three times as much buying back shares and distribute around four times the dollar value of franking credits (on average) as compared to those using a fixed-price tender. Within the fixed-price

<table>
<thead>
<tr>
<th>Year</th>
<th>(Dutch)</th>
<th>Mean market cap ($m)</th>
<th>Mean discount ($m)</th>
<th>Mean franking credits ($m)</th>
<th>Sum discount ($m)</th>
<th>Sum franking credits ($m)</th>
<th>Amount spent ($m)</th>
<th>Mean prop’n bought</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>1 (0)</td>
<td>52</td>
<td>-1</td>
<td>0</td>
<td>-1</td>
<td>0</td>
<td>5</td>
<td>7.62</td>
</tr>
<tr>
<td>1997</td>
<td>1 (0)</td>
<td>16 444</td>
<td>10</td>
<td>165</td>
<td>10</td>
<td>165</td>
<td>651</td>
<td>4.01</td>
</tr>
<tr>
<td>1999</td>
<td>8 (2)</td>
<td>6400</td>
<td>-44</td>
<td>23</td>
<td>-351</td>
<td>184</td>
<td>2028</td>
<td>9.06</td>
</tr>
<tr>
<td>2000</td>
<td>5 (1)</td>
<td>3686</td>
<td>21</td>
<td>119</td>
<td>105</td>
<td>593</td>
<td>2413</td>
<td>10.11</td>
</tr>
<tr>
<td>2001</td>
<td>8 (0)</td>
<td>7175</td>
<td>19</td>
<td>59</td>
<td>150</td>
<td>472</td>
<td>2199</td>
<td>12.17</td>
</tr>
<tr>
<td>2002</td>
<td>4 (1)</td>
<td>1760</td>
<td>2</td>
<td>24</td>
<td>10</td>
<td>98</td>
<td>566</td>
<td>9.63</td>
</tr>
<tr>
<td>2003</td>
<td>4 (4)</td>
<td>21 989</td>
<td>74</td>
<td>159</td>
<td>298</td>
<td>636</td>
<td>2395</td>
<td>2.96</td>
</tr>
<tr>
<td>2004</td>
<td>8 (7)</td>
<td>21 141</td>
<td>90</td>
<td>179</td>
<td>719</td>
<td>1431</td>
<td>5051</td>
<td>4.09</td>
</tr>
<tr>
<td>2005</td>
<td>6 (6)</td>
<td>16 372</td>
<td>83</td>
<td>174</td>
<td>496</td>
<td>1043</td>
<td>3122</td>
<td>3.83</td>
</tr>
<tr>
<td>2006</td>
<td>4 (2)</td>
<td>28 885</td>
<td>144</td>
<td>283</td>
<td>575</td>
<td>1134</td>
<td>3101</td>
<td>3.84</td>
</tr>
<tr>
<td>2007</td>
<td>8 (7)</td>
<td>18 005</td>
<td>112</td>
<td>222</td>
<td>896</td>
<td>1780</td>
<td>4777</td>
<td>3.88</td>
</tr>
<tr>
<td>2008</td>
<td>5 (2)</td>
<td>2964</td>
<td>-6</td>
<td>26</td>
<td>-29</td>
<td>129</td>
<td>639</td>
<td>15.04</td>
</tr>
<tr>
<td>Whole sample</td>
<td>62 (32)</td>
<td>12 585</td>
<td>46</td>
<td>124</td>
<td>2877</td>
<td>7664</td>
<td>26946</td>
<td>5.32</td>
</tr>
</tbody>
</table>

Panel B

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Mean market cap ($m)</th>
<th>Mean discount ($m)</th>
<th>Mean franking credits ($m)</th>
<th>Sum discount ($m)</th>
<th>Sum franking credits ($m)</th>
<th>Amount spent ($m)</th>
<th>Mean prop’n bought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch</td>
<td>32</td>
<td>20 559</td>
<td>93</td>
<td>193</td>
<td>2988</td>
<td>6186</td>
<td>20006</td>
<td>3.83</td>
</tr>
<tr>
<td>Fixed</td>
<td>30</td>
<td>4080</td>
<td>-4</td>
<td>49</td>
<td>-111</td>
<td>1479</td>
<td>6940</td>
<td>11.86</td>
</tr>
</tbody>
</table>

Column 2 gives the number of repurchases each year, with the number of Dutch auctions each year in brackets. Market capitalization is measured as the number of shares outstanding at announcement date times the share price at the close of the offer. The discount ($m) is measured as number of shares bought back times the share price at the close of the offer minus the actual amount spent by the company. Franking credits represent the total tax credits distributed with the repurchase.
sample, there are several small companies that bought back a large proportion of shares.

5. The tender process

In this section, we analyse the determinants of the equilibrium relationship between a stock’s market price and the repurchase price arising from a tender process in which tax differences involved in selling into the repurchase versus selling on-market create a form of clientele effect. The resulting supply (offer) curve of shareholders, in conjunction with the demand for shares specified by the company in the repurchase, enables identification of an equilibrium repurchase price and of the determinants of net gains from participation to different clientele. In Section 6, we use data available from Dutch auction tenders (including measures of excess demand of the company and excess supply of shareholders where the equilibrium price is constrained by company-imposed price limits) to estimate the supply curve. This also enables us to estimate how the price set in fixed-price tender offers differs from the equilibrium price, and the consequences thereof.

We first compare the after tax-cash flows of selling into the repurchase, where the repurchase price comprises a capital component and a franked dividend component, with selling on-market (such as is illustrated in Appendix 2). The notation used is given in Table 2. For convenience, the term $x t$ (where $0 < x < 1$) is referred to as the capital gains tax rate.

The after-tax cash flow from selling on the market is:

---

17 The clientele can arise after the announcement of the repurchase as ‘tax arbitrageurs’ purchase stock in order to participate. This corresponds to a dynamic form of the clientele model (see Allen and Michaely (2003)) where through the trading process stocks end up just prior to the ex-dividend date in the hands of those investors most tax advantaged by the payment of the dividend.

18 Our approach differs from Bagwell (1992) who uses actual shareholder tendering data supplied by 32 companies buying back shares through a Dutch auction. She finds upward sloping supply curves.

19 Because capital gains are preferred to unfranked dividends by all shareholders, there is no benefit in specifying part of the repurchase price as an unfranked dividend. Thus, all repurchases involve franked dividends and a capital component, or a capital component only.

20 In practice, $x\%$ of any gain is subject to tax at the marginal tax rate of $t$, where $x = 1$ if the asset has been held for < 1 year or is 0.5 for individuals and 0.67 for superannuation funds for assets held for more than 1 year (see Appendix 1).

21 The relevant market price is immediately prior to the close of tenders, because most shares will be tendered just prior to expiration of the offer (see Bagwell, 1992).
If the share is sold into the repurchase, the capital component is taxed at a rate \( \alpha t \) and the franked dividend component at rate \( \alpha t \cdot \frac{C}{C_0} \), such that the after-tax cash flow for an Australian investor able to use the tax credits is:

\[
S_B = P \frac{1 - \alpha t}{1 - t_c} + P_B \alpha t.
\]

Comparing these after-tax amounts, the repurchase sale proceeds exceed the on-market sale proceeds if

\[
\text{Gain} = S_B - S_M > 0
\]

Substituting and simplifying,

\[
\text{Gain} = P \left[ w \left( 1 - \frac{(t - t_c)}{(1 - t_c)} \right) - \frac{(t - t_c)}{(1 - t_c)} \right] - C \left[ \alpha t - \frac{(t - t_c)}{(1 - t_c)} \right].
\]

The shareholder’s original purchase price \( P_B \) is not relevant to the decision because it is the cost base used in calculating capital gains tax in both cases. As expected, the benefit from participating increases as the repurchase price increases (i.e. as \( w \) increases):

\[
\frac{\partial \text{Gain}}{\partial w} = P \left( \frac{1 - t}{1 - t_c} \right) > 0.
\]

The repurchase/market price ratio that makes the investor indifferent is:

\[
\hat{w} = \frac{(1 - t_c) - \alpha t(1 - t_c)(1 - \frac{C}{C_0}) - \frac{C}{C_0}(t - t_c)}{(1 - t)}.
\]

Thus, for repurchase/market price ratios above \( \hat{w} \), the investor will prefer to participate in the repurchase. Note that \( \hat{w} \) depends upon \( \alpha \) (\( \frac{\partial \hat{w}}{\partial \alpha} < 0 \)) so that the

<p>| Table 2 |</p>
<table>
<thead>
<tr>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investor’s original purchase price</td>
</tr>
<tr>
<td>Current market share price</td>
</tr>
<tr>
<td>Marginal tax rate</td>
</tr>
<tr>
<td>Capital gains tax rate</td>
</tr>
<tr>
<td>Capital component of repurchase price</td>
</tr>
<tr>
<td>Ratio of repurchase price to current market price</td>
</tr>
<tr>
<td>Franked dividend component of repurchase</td>
</tr>
</tbody>
</table>

© 2011 The Authors
Accounting and Finance © 2011 AFAANZ
participation indifference price is lower for investors with \( z = 1 \). (This is the case where they have capital gains to offset which would not receive concessional tax treatment because of the assets having been sold within 1 year of purchase).

For \( z = 1 \), Eqn 9 simplifies to

\[
\hat{w} = (1 - t_c) + t_c \frac{C}{P} = 1 - \frac{t_c}{(1 - t_c)} \frac{D}{P}
\]

where \( D \) is the dividend component of the repurchase price. In this case, \( \hat{w} \) is independent of the taxpayer’s marginal tax rate \( t \). All Australian investors with non-concessional capital gains will find it advantageous to participate if\(^{22} \)

\[
\hat{w} > (1 - t_c) + t_c \frac{C}{P},
\]

although the increase in the gain as \( w \) increases is inversely related to the investor’s marginal tax rate \( t \), which can be seen from Eqn 8 by noting that \( \frac{\partial^2 \text{Gain}}{\partial \hat{w} \partial t} < 0 \).

For investors with concessional capital gains, such that \( z < 1 \),

\[
\frac{\partial \hat{w}}{\partial t} = \frac{(1 - z)(1 - t_c)(1 - \frac{C}{P})}{(1 - t)^2} > 0.
\]

Thus, the repurchase/market price ratio that makes investors with concessional capital gains indifferent between participating or not is higher (i.e. the required discount is lower). The gains from participating for a higher tax rate investor (when \( w > \hat{w} \)) are less than those for a lower tax rate investor.

These results are summarized in Figure 1. It can be seen that investors with concessional capital gains (\( z < 1 \)) to offset will not participate at lower repurchase prices at which investors with non-concessional (\( z = 1 \)) taxed capital gains are still reaping benefits from participation.

The minimum possible repurchase price/market price ratio (\( \hat{w} = 1 - \frac{t_c}{(1 - t_c)} \frac{D}{P} \)) is where investors with non-concessional capital gains available to offset receive zero net benefit. If there are sufficient such investors, then a competitive no-arbitrage outcome should, in the absence of other costs or risks, lead to gains being competed away through the tender process and the

\(^{22} \) It is straightforward to show that foreign investors who are unable to use franking credits and with non-concessional capital gains will only participate if \( w > 1 \) (i.e if the repurchase price is above the current market price). While foreign investors with concessional capital gains to offset (\( z < 1 \)) may be willing to participate for some \( w < 1 \) (because of the low deemed sale price and thus tax capital losses) their gain is always less than that of Australian investors for any \( w \), making them uncompetitive in the tender and not relevant to the determination of the tender outcome.
repurchase/market price being set at, or marginally above, $\hat{w}$. Note that potential tender participants include investor ‘arbitrageurs’ who have or wish to realize non-concessionally taxed capital gains on other assets and who purchase the stock after the repurchase announcement (and before the ex-date) to participate in the tender. Our approach is consistent with dynamic dividend clientele models where dividend-paying stocks are bought temporarily just before the ex-date by investors who value them most (e.g. Miller and Scholes (1978), Kalay (1982) and Michaely and Vila (1995)). In keeping with dynamic tax-related trading on or before the ex-day, Brown (2007) finds significant abnormal trading volumes around the announcement date for a sample of Australian off-market repurchases.23 Thus, the assumption that tender participants with non-concessionally taxed capital gains will dominate the repurchase price determination is a priori reasonable.24

23 Lakonishok and Vermaelen (1986) and Michaely and Vila (1996) also find significant abnormal volumes on and around dividend ex-dates in the United States.

24 This requires that there is at least 45 days between purchase and the tender closing date in order that purchaser/participants meet the legal requirement to be able to use the franking (tax) credits. While some repurchases did not have 45 days between announcement and closing date, in many cases a forthcoming repurchase was foreshadowed in earlier corporate announcements. In our empirical work we have tested whether possibility of post-announcement purchase and participation is a significant determinant of the repurchase price, by inclusion of a variable measuring the number of days between announcement and close, but find that it is not.
In practice, however, other factors are relevant. First, all Dutch auction tenders have involved announcement of a tender price range within which the repurchase price will be set. Not only does this constrain the repurchase price, it also introduces the risk for ‘arbitrageurs’ that the amounts purchased at the final repurchase price might involve scaling back relative to amounts tendered. Because repurchases typically involve 40–60 days between announcement and completion, the market price of the stock can vary significantly introducing price risk for unsuccessful tenders. Second, even in the absence of scaling back, ‘arbitrageurs’ face price risk (and quantity risk from ‘underbidding’) arising from uncertainty about the final repurchase price determined by the auction process.\textsuperscript{25} The existence of such risks suggests that completion of the repurchase may require a higher price to elicit supply of stock from less tax-preferred investors or from those inframarginal investors who would otherwise prefer to continue to hold the stock.\textsuperscript{26}

These arguments suggest that the supply curve of stock tendered will not be infinitely elastic at the price ratio \( \hat{w} \) (which reflects the minimum price at which any supply will be forthcoming) but upward sloping to reflect the risks discussed above and the need to induce less tax-preferred and inframarginal investors to participate to meet the required quantity demanded by the company.

Hence, assuming linearity, the supply curve of stock for tender \( i \) takes the form:

\[
\begin{align*}
    w_i &= \beta_0 + \beta_1 \frac{D_i}{P_i} + \beta_2 Q_i^S, \\
    (\beta_1) &< 0, \\
    (\beta_2) &> 0,
\end{align*}
\]

where \( Q_i^S \) is the amount supplied by investors into the tender. A test of whether ‘arbitrageurs’ determine the repurchase price (as in Eqn 10) is given by the null hypothesis that \( \beta_0 = 1 \) and \( \beta_1 = -t_c/(1 - t_c) = -3/7 \) (for \( t_c = 0.3 \)). In the following section, we test this hypothesis by estimating the supply curve for stock using data from the 32 Dutch auctions conducted over the period of our study. We also use this information to examine the pricing consequences of the 30 fixed-price tenders conducted.

6. Estimation of the supply curve of stock

In this section, we use censored regression techniques to estimate the supply curve of stock tendered in Dutch auctions used for repurchases. In these

\textsuperscript{25} Koski and Michaely (2000) find that abnormal trading volumes around announcements are negatively related to risk exposure, consistent with risk being a relevant determinant of such ‘arbitrage’ activities.

\textsuperscript{26} As noted earlier, the market price is a lower bound on the value these investors place on the stock, and the zero net gain repurchase price derived in the text is thus only a lower bound for these investors.
auctions, the company announces a quantity of stock which it wishes to repurchase (either as a number or dollar amount of shares) and, in all cases, announces a range of tender prices (either as dollar amounts or as percentage discounts to the closing market stock price). Consequently, the auction outcome may be constrained by the minimum price specified and involve an excess supply of shares tendered at that price, leading to scaling back of amounts tendered. Alternatively, if the maximum price specified constrains the outcome, there is ED and the company will fail to repurchase the number of shares desired.

Company documents reporting the outcome of repurchases to the ASX provide information that enables the calculation of the company’s ED for shares (shortfall) or excess supply by investors (scaleback). Thus, denoting the quantity of shares demanded by the company (as a proportion of shares on issue) by \( b_{\text{bsize}} \) and equating supply and demand gives the equilibrium repurchase price (as a ratio to market price) as the latent variable \( w_i^* \), which is only observed when the auction outcome is not constrained by price limits:

\[
\begin{align*}
    w_i^* &= \beta_0 + \beta_1 \frac{D_i}{P_i} + \beta_2 b_{\text{bsize}}, \\
    & \quad \text{for } w_i^* > \frac{w_i}{P_i}
\end{align*}
\]  

The coefficient on \( b_{\text{bsize}} \) is expected to be positive, because if the supply curve for shares is not perfectly elastic, then acquiring a greater proportion of shares requires paying a higher price to attract shareholders who would otherwise not tender. When a shortfall occurs, the observed price \( w_i = p_{\text{max}} < w_i^* \) and quantity supplied is less than \( b_{\text{bsize}} \), with the difference (the company’s excess demand) proxied by ED which is calculated as the percentage difference between shares sought and shares bought.\(^{27}\) When a scaleback occurs, the observed price \( w_i = p_{\text{min}} > w_i^* \) and quantity supplied is greater than \( b_{\text{bsize}} \), with the difference (excess supply by investors) proxied by \( ES \) which is calculated as the amount of scaleback as a percentage of shares sought. While our calculated ED measure could arguably be an exact measure of the excess quantity demanded, that is not so for the ES measure that would reflect inflation of tender amounts in expectation of possible scalebacks. Hence, we include both variables separately, rather than combining with \( b_{\text{bsize}} \).

The resulting censored regression model is:

\[
    p_{\text{max}}_i = \beta_0 + \beta_1 \frac{D_i}{P_i} + \beta_2 b_{\text{bsize}} + \beta_3 \text{ED}_i + u_i \text{ for } w_i^* > p_{\text{max}}_i
\]

\(^{27}\) Where a range of shares sought was indicated, the excess supply was calculated using the minimum of that range.

© 2011 The Authors
Accounting and Finance © 2011 AFAANZ
\[ w_i = \beta_0 + \beta_1 \frac{D_i}{P_i} + \beta_2 \text{bsize}_i + u_i \text{ for } p_{\text{min}_i} < w_i^* < p_{\text{max}_i} \]

\[ p_{\text{min}_i} = \beta_0 + \beta_1 \frac{D_i}{P_i} + \beta_2 \text{bsize}_i + \beta_4 \text{ES}_i + u_i \text{ for } w_i^* < p_{\text{min}_i}. \]

Estimation of the model involves inclusion of both ED and ES as regressors for all observations, with, in principle, ED = 0 for \( w_i^* < p_{\text{max}_i} \) and ES = 0 for \( w_i^* > p_{\text{min}_i} \). In practice, there are a small number of cases where repurchase prices within the price limits have been accompanied by either shortfall or scaleback because of unexplained decisions of the company in deciding upon a final price.

Five of the repurchases did not involve a franked dividend component, and this would be expected to lead to a higher repurchase price. Hence, a dummy variable equal to 1 when the repurchase did not include a franked dividend component is included, with the coefficient expected to be positive, giving

\[ w_i = \beta_0 + \beta_1 \frac{D_i}{P_i} + \beta_2 \text{bsize}_i + \beta_3 \text{ED}_i + \beta_4 \text{ES}_i + \beta_5 \text{FDIVDUM}_i + u_i \]

as the estimating equation.\(^{28}\)

We estimate Eqn 15 as a censored regression, assuming normally distributed residuals for the 32 Dutch auctions held over our period of study.\(^{29}\) Upper and lower censoring points were specified for each repurchase as the maximum and minimum prices specified in the offer document as a proportion of the stock’s market price at the closing date of the auction.\(^{30}\) The dividend/price ratio uses the closing price (consistent with the scaling of the repurchase price).\(^{31}\)

---

\(^{28}\) Because repurchases by smaller companies may be of less interest to large institutional investors, we also considered company size as a possible explanatory variable but found it to be insignificant.

\(^{29}\) We have also estimated the censored regression excluding the three Dutch Auctions (all involving no dividend payment) prior to July 2001 when the company tax rate was above 30 per cent in order to examine whether the change in company tax rate affects our results. There are no significant differences in either estimated coefficients or their significance levels.

\(^{30}\) In later dated auctions, the price bounds were generally expressed as a percentage discount to the VWAP over the 5 days prior to the closing date (and this was used in those cases). For earlier auctions, dollar prices were specified, and the share price on the closing date was used to scale the repurchase price.

\(^{31}\) Using announcement day prices leads to similar results. The dividend component is used because the dividend amount is exogenously given, whereas the capital component is determined endogenously as the difference between the repurchase price and the dividend amount.
Table 3 presents the results. The adjusted R\textsuperscript{2} for the regression is 97.3\% with all coefficients significant and having their expected sign. The hypothesis that competition between ‘arbitrageurs’ dictates the repurchase price determination (which, at t\textsubscript{c} = 0.30 as prevailed for most of the sample, implies that \(b_0 = 1\) and \(b_1 = -3/7\)) is clearly rejected.\textsuperscript{32} Consistent with that, the significant positive coefficient (\(b_2\)) for bbsize indicates that larger size offerings lead to a higher repurchase price, as would be expected if non-tax-preferred shareholders must be induced to participate and because of risks to ‘arbitrageurs’. Our finding of an upward sloping supply curve is consistent with the results of Bagwell (1992) and Kadapakkam and Seth (1997) for Dutch auction tenders and Brown and Ryngaert (1992) for fixed-price tenders. Repurchases without a franked dividend component have a higher repurchase price (\(b_5 > 0\)) as expected. Both the ED and excess supply proxies have significant coefficients with expected signs, with the smaller absolute value for the coefficient of the excess supply proxy consistent with inflation of tender bid sizes in anticipation of a scaleback.

\textsuperscript{32} It is also rejected for higher values of \(t_c\) which existed for the first three observations of the sample.

© 2011 The Authors
Accounting and Finance © 2011 AFAANZ
It is also apparent that the minimum price constraint plays a significant role in determining tender outcomes, with 18 of the 32 tenders involving left censoring (and only two right-censored cases). Of those, 16 involved a franked dividend component.\textsuperscript{33} The extent of overpricing OP induced by the minimum price constraint can be estimated as:

\[ \text{OP}_i = w_i - \hat{w}_i^* \]

where \( \hat{w}_i^* \) is the forecast latent variable.\textsuperscript{34} The mean (median) value of overpricing for these left-censored observations is 6.8 (4.9) percentage points, indicating that the ATO specified minimum of 14 per cent is a significant constraint in many cases, with the equilibrium average discount for these cases, thus being around 50 per cent higher than that allowed. The maximum overpricing is 21.7 percentage points, which occurred when the minimum price set by the company was only $0.10 (2 per cent) below the share price at announcement date.

These results suggest that minimum price constraints imposed on the auction process substantially reduce the potential benefits to non-participating shareholders to the benefit of those participants whose tenders are accepted.

It is also possible to estimate the mispricing involved in fixed-price tenders, by out-of-sample forecasting of the latent variable for fixed-price tenders, using Eqn (15). In these cases, both over- and underpricing can be observed and calculated by estimating the mispricing using \( \text{MP}_i = w_i - \hat{w}_i^* \). For the 17 fixed-price tenders involving a franked dividend component, for which complete data are available, the mean (median) mispricing is 8.8 (8.1) percentage points. However, because both under- and overpricing occur, these figures understate the degree of mispricing. For the 12 cases of overpricing, the mean (median) is 18.4 (15.5) percentage points. For the five cases of underpricing, the mean (median) is 14.4 (3.0) percentage points.

If fixed-price tenders for which there is no dividend component are considered, the mispricing is even worse. For the eight cases of overpricing, the mean (median) is 33.4 (25.5) percentage points with a maximum of 78.9 percentage points. However, these eight cases were all either very small companies and/or small listed fund managers seeking to buy back a large proportion of stock on issue. For the three cases of underpricing, the mean (median) is 6.3 (1.6) percentage points with a maximum of 16.6 percentage points.

Comparing these results, it is apparent that the Dutch auction tender process, even when subject to price limits, performs better than the fixed-price tenders in reducing the degree of overpricing. And while there are too few cases (two only)\textsuperscript{33} The other two cases were completed at a premium to market price with the repurchase price having no dividend component.

\textsuperscript{34} The overpricing for the two left-censored observations involving no dividend component was small (2.5 and 1.2 percentage points).
of underpricing in the Dutch auctions to enable a meaningful comparison, the fact that 12 of 32 cases did not involve censoring suggests that this system is better at avoiding underpricing also (as would be expected).

Focusing on the repurchases involving a franked dividend component, where tax benefits are distributed to successful tenderers, in return for those shareholders accepting a lower price than the current market price, it is apparent that companies have generally ‘left money on the table’. This has occurred in the case of Dutch auctions because price limits imposed because of ATO rulings prevent an equilibrium outcome, or because the price specified in fixed-price tenders is above the equilibrium. Successful tendering shareholders would have paid more (by way of accepting a lower price) for the tax benefits distributed, which would have benefitted non-participants. The implications of this finding for policy are considered in the conclusion.

7. Conclusion

This paper makes a number of contributions to the literature on corporate capital management. First, it illustrates how tax distortions generate problems for corporate managers in making decisions involving equitable treatment of all shareholders. Second, it provides a valuable case study of how large and significant off-market repurchases are conducted in response to tax distortions in a well-developed capital market, in which shareholder tax heterogeneity is more clearly identifiable than in previous studies. Third, it uses a novel data set to estimate the supply curve for stock in Dutch auction tenders. The results show that auctions result in less mispricing than fixed-price tenders, even when they are constrained by maximum and minimum price limits. Supply curves for Dutch auction tenders are upward sloping, consistent with the results documented by Bagwell (1992) and others for different tax environments such as the United States. We show that the supply curve shape is not determined solely by tax arbitrage but that factors such as risks arising in the tender process are also relevant.

Fourth, the results are suggestive of corporate financial policy decisions, at least in some cases in our sample, being structured to favour low tax rate institutional investors who participate in the repurchase, to the detriment of other (high tax rate, long term) investors. High tax rate investors and those (such as foreign investors who cannot utilize the tax credits) for whom it is not optimal to participate in the repurchase do not reap as much of the benefit from the payout decision as they would if, for example, the repurchase price were set, or permitted by tax authorities to be, lower. Abstracting from the announcement effects of a higher share price, high tax rate investors can be worse off, even if the repurchase is done at a discount to the market price. This can occur because tenderers would have accepted less for their shares in the absence of price limits, and also if the previously undistributed tax credits were impounded in the share price, which would thus be depressed by their distribution.
Moreover, most recent repurchases have been announced with a sufficiently long lead time to the actual repurchase date to enable low tax rate investors such as institutional pension funds and fund managers, who may not be current shareholders, to purchase shares after the announcement and participate in the tax benefits. While that participation-induced demand for shares may cause a temporary spike in the share price, and the increased resulting competition in the tender process may lead to a larger final discount, our results suggest that price limits prevent non-participants achieving the full benefits associated with an equilibrium outcome.

This raises questions about the merits of tender price limits imposed as a result of ATO rulings. Following a report in May 2009 by the Australian Government Board of Taxation (2009), the Australian Government announced (but has not, as of mid-2011, implemented) changes to the tax arrangements for off-market repurchases, with two important consequences. First, the cap on the level of discount to the market price would be removed, which our analysis shows should result in a lower repurchase price and be of benefit to non-participating shareholders. However, the second major change, that capital losses would be denied to participating shareholders, reduces the tax benefits to participating shareholders and would ceteris paribus increase the equilibrium repurchase price. Introduction of those changes could be expected to have significant effects on the design of, and outcomes for, repurchases, involving a redistribution of (the overall reduced) tax benefits to non-participants.

References


Appendix 1: The Australian tax system

Australia introduced a dividend imputation tax system in 1987 under which resident companies generate imputation or ‘franking credits’ for company tax paid. The company’s franking account keeps track of these income tax credits (plus distributions carrying franking credits received from other companies) that can be passed on to shareholders. If the franking account balance is positive, dividends paid are ‘franked’ with a tax credit to recipients, but dividends paid when the balance is zero are ‘unfranked’.

Franked dividends carry tax credits equal to the company tax paid on the profits from which the dividend has been distributed. Resident shareholders declare the dividend (grossed up to equal the pre-company-tax profit from which the dividend was paid) as income, and then the tax credit is used to offset personal income tax obligations. Thus, if \(D\) is the cash dividend paid, the resulting taxable personal income is \(D/(1 - t_c)\) where \(t_c\) is the corporate tax rate. (The corporate tax rate has been 30 per cent since July 2001, was 34 per cent in the preceding fiscal year and was 36 per cent for the prior 5 years.) Personal tax is levied at the investor’s marginal tax rate of \(t\), which progresses to a maximum rate of 45 per cent, while superannuation (pension) funds face a flat tax rate of 15 per cent. The tax levied on the investor is thus \(tD/(1 - t_c)\), but the investor also receives a tax credit of \(t_cD/(1 - t_c)\) such that the tax payable (or rebateable) is \((t - t_c)D/(1 - t_c)\). Overseas investors cannot use the franking credits, nor can investors who have not held the stock for at least 45 days around the dividend entitlement date or who have hedged the price risk over the period.

Australia’s capital gains tax (CGT) provisions treat realized capital gains as assessable income in the year of disposal of the asset. Prior to September 1999, the inflation adjusted capital gain was included in ordinary income. For assets acquired after September 1999 (and at the taxpayer’s option for assets acquired prior to that date), proceeds are concessionally taxed for assets held longer than 1 year. For individuals, half, and for superannuation funds, two-thirds, of the nominal capital gain accrued on assets held for longer than 1 year is included as income. Capital losses are offset against capital gains in the year of calculation or carried forward.

35 Australian resident individuals, complying superannuation funds, registered organizations and life assurance companies may use distributed franking credits to offset their tax liabilities. Since July 2000, Australian investors have been able to receive a refund from the tax office if taxable income is insufficient to use all franking credits received. If all the franking credits are distributed, and all recipients are able to fully utilize them, then the imputation system effectively eliminates the double taxation of dividends (Officer, 1994).
Appendix 2: Investor tax treatment in Australian off-market repurchases

We illustrate the structuring of Australian off-market repurchases and the tax considerations for a superannuation (pension) fund with a tax rate of 15% and an individual paying tax at the top marginal rate of 45%. A hypothetical company, ABC announces an off-market Dutch auction repurchase for which the final price would comprise a franked dividend component of $18.00 with the remainder being a capital component. At the close of the tender, the final price is $26.00 at a discount of 13.3% to the current share price of $30.00. The $26.00 repurchase price thus comprises a fully franked dividend component of $18.00 with the remaining $8 defined as a capital repayment.

Consider first a superannuation fund which, several years earlier, had purchased an ABC share for $20. As shown in Table A1, sale of that share on the market at a market price of $30 would generate a net after tax cash flow of $29.00, once tax at 15 per cent had been paid on two-thirds of the $10.00 capital gain. (For investors holding the stock for <1 year, the entire capital gain would be taxable and the calculations in Table A1 would be amended accordingly.)

Table A1
The repurchase participation decision. The calculations assume that the share has been held for more than 1 year such that the shareholder is eligible for a concessionary rate on the capital gains when sold on market. Superannuation funds are taxed at the rate $t_p = 0.15$ on income and at the rate $(2/3)t_p = 0.10$ on long-term capital gains. For individual shareholders on the top marginal tax rate, the rates are, respectively, $t_p = 0.45$ and $(1/2)t_p = 0.225$. Capital losses from participating are assumed to be used to offset other short-term capital gains. A franked dividend of $D$ generates a net tax payment (rebate) of $D(t_p - t_c)/(1 - t_c)$, where $t_c = 0.30$ is the corporate tax rate 15% tax rate (superfund) 45% tax rate

<table>
<thead>
<tr>
<th>Repurchase price (1)</th>
<th>On-market sale at $30.00</th>
<th>15% tax rate (superfund)</th>
<th>Buyback participation at $26.00</th>
<th>45% tax rate</th>
<th>On-market sale at $30.00</th>
<th>Buyback participation at $26.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market price (2)</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Purchase price (3)</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Capital component (4)</td>
<td>NA</td>
<td>8.00</td>
<td>NA</td>
<td>8.00</td>
<td>NA</td>
<td>8.00</td>
</tr>
<tr>
<td>Capital gain (5) = (2)–(3) or (4)–(3)</td>
<td>10.00</td>
<td>-12.00</td>
<td>10.00</td>
<td>-12.00</td>
<td>10.00</td>
<td>-12.00</td>
</tr>
<tr>
<td>Tax on gain (6) = 0.10 (5) or 0.225 (5)</td>
<td>1.00</td>
<td>-1.20</td>
<td>2.25</td>
<td>-2.70</td>
<td>1.00</td>
<td>-1.20</td>
</tr>
<tr>
<td>Cash amount of dividend (7) = (1)–(4)</td>
<td>18.00</td>
<td></td>
<td>18.00</td>
<td></td>
<td>18.00</td>
<td></td>
</tr>
<tr>
<td>Tax payable/redeemable on dividend (8)</td>
<td>-3.86</td>
<td></td>
<td>3.86</td>
<td></td>
<td>-3.86</td>
<td></td>
</tr>
<tr>
<td>Net after tax cash flow (9) = (2)–(6)–(8) or (1)–(6)–(8)</td>
<td>29.00</td>
<td>31.06</td>
<td>27.75</td>
<td>24.84</td>
<td>29.00</td>
<td>31.06</td>
</tr>
</tbody>
</table>

© 2011 The Authors
Accounting and Finance © 2011 AFAANZ
If the superannuation fund participates in the repurchase at a price of $26.00, then $8.00 is the sale price for tax purposes and $18.00 is a dividend franked at a 30 per cent tax rate (the corporate tax rate). The superannuation fund makes a capital loss of $12.00 which when offset against other realized capital gains in its portfolio reduces tax payable by $1.20. The franked dividend receipt implies assessable income of $18.00/0.7 = $25.71, tax credits received of $7.71 and tax assessed of $3.86, giving a tax refund of $3.86. The net cash flow is thus $31.06 so that participating at a repurchase price of $26.00 is preferable to selling on market for $30.00. In contrast, the individual shareholder with a marginal tax rate of 45 per cent would be worse off from participating in the repurchase (because even though the tax benefit of capital loss is greater because of the higher marginal tax rate, that higher rate also means additional tax must be paid on the dividend).

In practice, the tax authorities assign a deemed sale price equal to a volume-weighted market price around the close of the tender offer, which also affects the deemed capital component. These complexities make the calculations somewhat more complex, but the outcome is essentially similar.


<table>
<thead>
<tr>
<th>ASX code</th>
<th>Date announced</th>
<th>Offer price/price at close</th>
<th>ED†</th>
<th>ES‡</th>
<th>Franked dividend component/price at close</th>
<th>Capital component/offer price</th>
<th>Dutch vs. Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>GYM</td>
<td>28/10/1996</td>
<td>1.310</td>
<td>0.162</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>CBA</td>
<td>12/11/1997</td>
<td>0.986</td>
<td>0.000</td>
<td>0.422</td>
<td>0.582</td>
<td>0.410</td>
<td>Fixed</td>
</tr>
<tr>
<td>CBA</td>
<td>10/02/1999</td>
<td>0.909</td>
<td>0.000</td>
<td>0.639</td>
<td>0.565</td>
<td>0.378</td>
<td>Fixed</td>
</tr>
<tr>
<td>SEV</td>
<td>11/03/1999</td>
<td>1.085</td>
<td>0.000</td>
<td>1.584</td>
<td>0.000</td>
<td>1.000</td>
<td>Dutch</td>
</tr>
<tr>
<td>AOR</td>
<td>17/03/1999</td>
<td>1.667</td>
<td>0.014</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>WYL</td>
<td>17/05/1999</td>
<td>1.048</td>
<td>0.000</td>
<td>0.672</td>
<td>0.609</td>
<td>0.419</td>
<td>Fixed</td>
</tr>
<tr>
<td>TIG</td>
<td>19/07/1999</td>
<td>1.222</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>CIN</td>
<td>30/09/1999</td>
<td>1.190</td>
<td>0.304</td>
<td>0.000</td>
<td>0.714</td>
<td>0.400</td>
<td>Fixed</td>
</tr>
<tr>
<td>CBA</td>
<td>30/09/1999</td>
<td>1.018</td>
<td>0.262</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Dutch</td>
</tr>
<tr>
<td>GOW</td>
<td>7/10/1999</td>
<td>1.026</td>
<td>0.000</td>
<td>0.000</td>
<td>0.632</td>
<td>0.385</td>
<td>Fixed</td>
</tr>
<tr>
<td>WOW</td>
<td>14/02/2000</td>
<td>0.927</td>
<td>0.000</td>
<td>0.842</td>
<td>0.465</td>
<td>0.498</td>
<td>Fixed</td>
</tr>
<tr>
<td>GUD</td>
<td>8/08/2000</td>
<td>1.142</td>
<td>0.768</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
</tbody>
</table>

In January 2004, the ATO issued a draft determination (TD2004/D1) which complicated the determination of the capital component. A ‘deemed’ sale price for tax purposes would be determined by adjusting the pre-announcement company share price by the percentage change in the market index (the S&P/ASX 200) between the announcement date and the tender closing date, and using this figure to calculate the capital component for tax purposes. In our empirical work, inclusion of a variable measuring the market index increase over the relevant period, to test whether this change had any significant effect on tender outcomes did not produce significant results.
### Appendix 3: (continued)

<table>
<thead>
<tr>
<th>ASX code</th>
<th>Date announced</th>
<th>Offer price/price at close</th>
<th>ED†</th>
<th>ES‡</th>
<th>Franked dividend component/price at close</th>
<th>Capital component/offer price</th>
<th>Dutch vs. Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLC</td>
<td>18/08/2000</td>
<td>0.962</td>
<td>0.00</td>
<td>1.353</td>
<td>0.623</td>
<td>0.352</td>
<td>Fixed</td>
</tr>
<tr>
<td>ANN</td>
<td>2/10/2000</td>
<td>1.013</td>
<td>0.00</td>
<td>0.965</td>
<td>0.000</td>
<td>1.000</td>
<td>Dutch</td>
</tr>
<tr>
<td>PDR</td>
<td>23/10/2000</td>
<td>1.800</td>
<td>0.077</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>CAA</td>
<td>13/02/2001</td>
<td>0.956</td>
<td>0.156</td>
<td>0.000</td>
<td>0.301</td>
<td>0.685</td>
<td>Fixed</td>
</tr>
<tr>
<td>CBA</td>
<td>13/02/2001</td>
<td>0.973</td>
<td>0.000</td>
<td>17.868</td>
<td>0.624</td>
<td>0.359</td>
<td>Fixed</td>
</tr>
<tr>
<td>IBC</td>
<td>14/02/2001</td>
<td>1.103</td>
<td>0.106</td>
<td>0.000</td>
<td>0.195</td>
<td>NA</td>
<td>Fixed</td>
</tr>
<tr>
<td>IAG</td>
<td>2/03/2001</td>
<td>0.875</td>
<td>0.000</td>
<td>6.246</td>
<td>0.302</td>
<td>0.654</td>
<td>Fixed</td>
</tr>
<tr>
<td>BOQ</td>
<td>6/04/2001</td>
<td>0.994</td>
<td>0.000</td>
<td>2.425</td>
<td>0.508</td>
<td>0.488</td>
<td>Fixed</td>
</tr>
<tr>
<td>WOW</td>
<td>30/04/2001</td>
<td>0.827</td>
<td>0.000</td>
<td>0.736</td>
<td>0.553</td>
<td>0.331</td>
<td>Fixed</td>
</tr>
<tr>
<td>EPI</td>
<td>11/09/2001</td>
<td>1.778</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>NA</td>
<td>Fixed</td>
</tr>
<tr>
<td>STO</td>
<td>17/10/2001</td>
<td>0.978</td>
<td>0.000</td>
<td>2.077</td>
<td>0.561</td>
<td>0.426</td>
<td>Fixed</td>
</tr>
<tr>
<td>TAB</td>
<td>21/03/2002</td>
<td>0.965</td>
<td>0.185</td>
<td>0.000</td>
<td>0.137</td>
<td>0.858</td>
<td>Fixed</td>
</tr>
<tr>
<td>IAG</td>
<td>6/05/2002</td>
<td>0.968</td>
<td>0.301</td>
<td>0.000</td>
<td>0.403</td>
<td>0.584</td>
<td>Fixed</td>
</tr>
<tr>
<td>SEV</td>
<td>27/08/2002</td>
<td>1.033</td>
<td>0.000</td>
<td>2.448</td>
<td>0.671</td>
<td>0.350</td>
<td>Dutch</td>
</tr>
<tr>
<td>SOF</td>
<td>15/10/2002</td>
<td>1.250</td>
<td>0.375</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>WOW</td>
<td>24/02/2003</td>
<td>0.921</td>
<td>0.324</td>
<td>0.000</td>
<td>0.688</td>
<td>0.253</td>
<td>Dutch</td>
</tr>
<tr>
<td>TLS</td>
<td>3/10/2003</td>
<td>0.850</td>
<td>0.000</td>
<td>1.907</td>
<td>0.547</td>
<td>0.357</td>
<td>Dutch</td>
</tr>
<tr>
<td>SEV</td>
<td>24/10/2003</td>
<td>1.032</td>
<td>0.295</td>
<td>0.000</td>
<td>0.413</td>
<td>0.600</td>
<td>Dutch</td>
</tr>
<tr>
<td>FGL</td>
<td>6/11/2003</td>
<td>0.891</td>
<td>0.045</td>
<td>0.000</td>
<td>0.488</td>
<td>0.453</td>
<td>Dutch</td>
</tr>
<tr>
<td>MAY</td>
<td>30/01/2004</td>
<td>1.044</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Dutch</td>
</tr>
<tr>
<td>CBA</td>
<td>11/02/2004</td>
<td>0.828</td>
<td>0.000</td>
<td>0.497</td>
<td>0.506</td>
<td>0.506</td>
<td>Fixed</td>
</tr>
<tr>
<td>LMC</td>
<td>24/02/2004</td>
<td>1.115</td>
<td>0.420</td>
<td>0.000</td>
<td>0.447</td>
<td>0.599</td>
<td>Fixed</td>
</tr>
<tr>
<td>IAG</td>
<td>30/04/2004</td>
<td>0.878</td>
<td>0.000</td>
<td>0.523</td>
<td>0.491</td>
<td>0.491</td>
<td>Dutch</td>
</tr>
<tr>
<td>WBC</td>
<td>6/05/2004</td>
<td>0.839</td>
<td>0.000</td>
<td>0.608</td>
<td>0.497</td>
<td>0.497</td>
<td>Dutch</td>
</tr>
<tr>
<td>TLS</td>
<td>27/09/2004</td>
<td>0.860</td>
<td>0.000</td>
<td>0.127</td>
<td>0.541</td>
<td>0.556</td>
<td>Dutch</td>
</tr>
<tr>
<td>BHP</td>
<td>5/10/2004</td>
<td>0.870</td>
<td>0.000</td>
<td>0.725</td>
<td>0.321</td>
<td>0.321</td>
<td>Dutch</td>
</tr>
<tr>
<td>ANN</td>
<td>12/10/2004</td>
<td>1.011</td>
<td>0.000</td>
<td>0.869</td>
<td>0.000</td>
<td>1.000</td>
<td>Dutch</td>
</tr>
<tr>
<td>BSL</td>
<td>23/02/2005</td>
<td>0.890</td>
<td>0.000</td>
<td>0.537</td>
<td>0.618</td>
<td>0.618</td>
<td>Dutch</td>
</tr>
<tr>
<td>CXP</td>
<td>1/03/2005</td>
<td>0.889</td>
<td>0.294</td>
<td>0.000</td>
<td>0.841</td>
<td>0.079</td>
<td>Dutch</td>
</tr>
<tr>
<td>RIO</td>
<td>11/03/2005</td>
<td>0.844</td>
<td>0.000</td>
<td>0.000</td>
<td>0.752</td>
<td>0.175</td>
<td>Dutch</td>
</tr>
<tr>
<td>CML</td>
<td>17/03/2005</td>
<td>0.908</td>
<td>0.000</td>
<td>0.580</td>
<td>0.463</td>
<td>0.463</td>
<td>Dutch</td>
</tr>
<tr>
<td>WBC</td>
<td>2/11/2005</td>
<td>0.854</td>
<td>0.000</td>
<td>0.675</td>
<td>0.271</td>
<td>0.271</td>
<td>Dutch</td>
</tr>
<tr>
<td>SGB</td>
<td>16/12/2005</td>
<td>0.855</td>
<td>0.000</td>
<td>2.425</td>
<td>0.637</td>
<td>0.412</td>
<td>Dutch</td>
</tr>
<tr>
<td>BHP</td>
<td>15/02/2006</td>
<td>0.838</td>
<td>0.000</td>
<td>1.740</td>
<td>0.763</td>
<td>0.254</td>
<td>Dutch</td>
</tr>
<tr>
<td>CML</td>
<td>23/05/2006</td>
<td>0.860</td>
<td>0.000</td>
<td>0.608</td>
<td>0.410</td>
<td>0.410</td>
<td>Dutch</td>
</tr>
<tr>
<td>NHH</td>
<td>29/09/2006</td>
<td>0.848</td>
<td>0.123</td>
<td>0.000</td>
<td>0.364</td>
<td>0.571</td>
<td>Fixed</td>
</tr>
<tr>
<td>GFL</td>
<td>30/11/2006</td>
<td>1.026</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>BHP</td>
<td>7/02/2007</td>
<td>0.827</td>
<td>0.000</td>
<td>1.662</td>
<td>0.743</td>
<td>0.298</td>
<td>Dutch</td>
</tr>
<tr>
<td>CXP</td>
<td>8/02/2007</td>
<td>0.866</td>
<td>0.000</td>
<td>1.561</td>
<td>0.817</td>
<td>0.132</td>
<td>Dutch</td>
</tr>
<tr>
<td>FGL</td>
<td>20/02/2007</td>
<td>0.865</td>
<td>0.000</td>
<td>0.724</td>
<td>0.600</td>
<td>0.495</td>
<td>Dutch</td>
</tr>
<tr>
<td>AWC</td>
<td>5/03/2007</td>
<td>0.888</td>
<td>0.000</td>
<td>3.938</td>
<td>0.838</td>
<td>0.210</td>
<td>Dutch</td>
</tr>
<tr>
<td>JST</td>
<td>7/03/2007</td>
<td>0.857</td>
<td>0.000</td>
<td>1.488</td>
<td>0.835</td>
<td>0.038</td>
<td>Dutch</td>
</tr>
<tr>
<td>STO</td>
<td>14/05/2007</td>
<td>0.950</td>
<td>0.000</td>
<td>1.556</td>
<td>0.732</td>
<td>0.317</td>
<td>Dutch</td>
</tr>
<tr>
<td>GFL</td>
<td>23/11/2007</td>
<td>1.256</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>CCL</td>
<td>5/12/2007</td>
<td>0.858</td>
<td>0.000</td>
<td>1.524</td>
<td>0.566</td>
<td>0.500</td>
<td>Dutch</td>
</tr>
</tbody>
</table>
Appendix 3: (continued)

<table>
<thead>
<tr>
<th>ASX code</th>
<th>Date announced</th>
<th>Offer price/price at close</th>
<th>ED†</th>
<th>ES‡</th>
<th>Franked dividend component/price at close</th>
<th>Capital component/offer price</th>
<th>Dutch vs. Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLD</td>
<td>13/02/2008</td>
<td>0.850</td>
<td>0.000</td>
<td>0.000</td>
<td>0.423</td>
<td>0.632</td>
<td>Dutch</td>
</tr>
<tr>
<td>STO</td>
<td>21/08/2008</td>
<td>0.920</td>
<td>0.000</td>
<td>1.449</td>
<td>0.751</td>
<td>0.195</td>
<td>Dutch</td>
</tr>
<tr>
<td>LST</td>
<td>25/09/2008</td>
<td>1.632</td>
<td>0.000</td>
<td>1.994</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>MMA</td>
<td>30/09/2008</td>
<td>1.289</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
<tr>
<td>GFL</td>
<td>28/11/2008</td>
<td>1.259</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>Fixed</td>
</tr>
</tbody>
</table>

†Shortfall as a percentage of shares sought. ‡Scaleback of tenders as a percentage of shares sought. NA, not available; ASX, Australian Securities Exchange.