Converting Preference Shares:
An Australian Capital Structure Innovation

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ABSTRACT

Converting preference shares (prefs) are a relatively recent addition to the range of corporate securities issued in Australia.. Prefs are a hybrid security which resemble convertible debt, except for two significant characteristics. First, conversion is mandatory. Second, the conversion ratio (of ordinary shares received per pref held) is unknown in advance. The conversion ratio depends on the ordinary share price at the conversion date, and is calculated such that each pref converts into a fixed value of ordinary shares (although some issues have an option-like conversion value payoff).

Like any hybrid or derivative security, the cash flow characteristics of prefs can be replicated by constructing a portfolio of more basic financial instruments. Several alternative replicating portfolios are outlined, one of which depicts prefs as equivalent to an ordinary share issue plus creation of a swap contract between "old" and "new" shareholders in the firm, and provides useful insights into the possible motivation for prefs as a source of corporate funding.

Drawing on this analysis, the paper argues that because prefs are a relatively low risk security from the perspective of investors, they provide an attractive method for raising equity finance in situations where significant information asymmetries exist between management and outside investors. In addition, however, the decision by management to issue prefs (rather than some other security) will typically reflect a number of firm specific factors and market imperfections (including taxes). These are examined and their relevance for particular issuers and for the specific design of pref securities analysed.

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Introduction

Converting Preference Shares (prefs) have been issued by a number of Australian companies in recent years. Table 1 provides a list of issuers between July 1991 (the first issue) and January 1994, and relevant characteristics of those issues. While each issue has some idiosyncratic features, all can be viewed as variations on a common structure involving payment of a fixed preference dividend stream until the date of mandatory conversion into a fixed dollar value of equity.

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 Insert Table 1
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Since the issuer of prefs raises permanent capital (ultimately taking the form of ordinary shares), while investors initially obtain a security which looks very much like a fixed-rate, fixed-term debt or preference share instrument, prefs raise some interesting questions. First, can prefs be easily modelled as a derivative security in a

way which throws light on their special characteristics? Second, why have prefs proven to be an attractive source of funds for Australian companies? Third, are similar instruments likely to be useful vehicles for capital raisings in other countries?

This paper examines those questions. First, the characteristics of converting preference shares are described in section 1. Section 2 adopts a financial engineering approach to explain how prefs can be replicated in several different (but equivalent) ways as packages of more basic financial instruments. One of those replicating portfolios is chosen for use in the subsequent analysis of Section 3, where it helps to shed light on how conditions of asymmetric information may prompt management to use prefs as a preferred vehicle for obtaining equity finance or in preference to debt finance. Section 4 complements that discussion by outlining some market imperfections and tax considerations (including some specific Australian factors) which may influence the decision whether or not to issue prefs and the particular form those securities might take. The conclusion offers some comments on the likelihood of prefs becoming a popular form of security in other markets.

1.   Security Design

As indicated in Table 1, the prefs issues made to date vary in some important details, but all have a common structure[1]. Each pref is purchased by the investor paying a specified sum (P_f) on the subscription date. Returns to the investor have two

components. First, a fixed preference dividend, denoted here as r percent p.a., is to be paid until the conversion date[2]. (As table 1 indicates, there is typically around 3-5 years from the subscription date to the conversion date). Second, the pref is converted into a number (M) of ordinary shares at the conversion date (n)[3]. At the subscription date M is unknown, being determined according to a formula of the form:

$$M = P_f / P_n \qquad [1]$$

or

$$M = Max [P_f / P_n, P_f/Z] \qquad [2]$$

or

$$M = Max [Min (P_f / P_n, P_f /Y), P_f/Z] \qquad [2a]$$

where P_n is the share price immediately prior to the conversion date[4], Z is a pre - specified **ceiling price**, and Y is a pre-specified **floor price**. Thus, for example, if P_f = $100, Z = $8, and Y = $4, the number and value of shares issued under the three rules for various values of P_n are shown in Table 2. Under conversion rule [1], the number of shares received varies inversely with the conversion date share price such that for each pref held, the investor receives shares that have a market value equal to the amount originally subscribed (P_f). Under rule [2], provided P_n < Z, the prefs holder will receive a number of shares which varies inversely with the conversion date share price, such that the value of shares received is P_f.[5] For P_n > Z, the investor receives the predetermined minimum of shares (P_f/Z) so that the value of shares received increases with the conversion date share price.[6] Under rule [2a], the maximum number of shares

received is limited to a prespecified amount, so that the value of shares received declines as the conversion date share price falls below the pre-specified floor value.

Equations [2] and [2a] have option theoretic interpretations. Consider, for example equation [2]. It is possible to depict the value of shares received by the prefs holder at conversion as

$$MP_n = Max\left[\,P_f, P_f.P_n/Z\,\right] \tag{3}$$

which can be rewritten as

$$MP_n = P_f + Max\left[\,0, P_f.(P_n/Z - 1)\right]$$

$$= P_f + (P_f/Z).Max\left[0, P_n - Z\,\right] \tag{4}$$

In effect, the prefs holder has an asset worth P_f plus an option, the value of which is equivalent to a call option giving an entitlement to P_f/Z ordinary shares at a strike price of Z. (In the example given in Table 2, the pref is equivalent to an asset worth $100 plus an option to buy 12.5 shares at a strike price of $8). For most prefs issues involving an option component, the ceiling price Z has been set at a sufficiently high value (and the floor price Y sufficiently low) vis a vis the current share price to make the option value of minimal significance[7]. Consequently, for ease of analysis the subsequent discussion assumes that conversion occurs as per equation [1], since this isolates one of the key aspects of prefs as a financial instrument.[8]

The innovative nature of the prefs lies in the characteristics of the conversion arrangements. Conversion is mandatory, and at an unknown future price. In effect, the prefs holder receives ordinary shares worth $1 at the conversion date for each $1 subscribed at the subscription date, plus the preference dividend stream up till conversion. From the perspective of the investor, the pref looks very much like a fixed term fixed rate investment- since the shares received on conversion can be sold in the market at the conversion date price to generate a cash flow equal to the amount invested[9]. But, for the company, there are no cash flows (other than the final dividend payment) at the conversion date. The amount subscribed at the subscription date constitutes permanent capital.

In practice, there are a number of specific characteristics of prefs which are also relevant.

First, conversion arrangements may involve various timing options such as:

[1] the investor may have the option to request immediate conversion if a takeover attempt occurs

[2] the company may have an option to offer holders an option of delayed conversion

[3] the company may have the option to bring forward the conversion date[10].

Second, the prefs rank behind debt in seniority. While, legally, they are an equity security (so that default risk is not a relevant concept), investors who recognise their debt-like characteristics will be concerned about default risk possibilities[11]. In the subsequent analysis of Sections 2 and 3, the problem of default risk is ignored, but some implications for security design are addressed in Section 4.

Third, the preference dividends are non cumulative. This is an important characteristic distinguishing preference shares from debt, as is the ability of the company to pass the preference dividend without incurring default, as emphasised by Emanuel [1983].

While these features of prefs are relevant (and in some cases could be particularly important considerations in the decision to issue, and the design of, prefs) the objective of the following sections is to develop a more general analysis to assist in understanding the growing importance of prefs.

2. Converting Preference Shares as Derivative Assets

Ignoring the various option components and other idiosyncratic features of particular prefs on issue (which can be modelled separately as extensions to the following analysis), the general common characteristic of prefs is that they offer a stream of

returns to their holders of the following form. On each dividend date until the conversion date (n), a fixed amount of r per cent of the prefs par value is paid[12]. At the conversion date, the stock of prefs on issue convert into a total number of shares (K') equal in aggregate value at that date to the subscription amount raised from issue of the prefs. Thus if P_n is the share price at date n, and there were K prefs originally issued at date 0 at par value P_f, K' would be determined as:

$$K' = KM = KP_f/P_n \qquad\qquad [5]$$

Subsequent to the mandatory conversion into equity, the prefs investors receive an aggregate dividend cash flow stream of dK', where d is the ordinary dividend per share.

There are various ways of replicating prefs. One approach is to view prefs as equivalent to an issue of a fixed term fixed rate security to be redeemed at par, combined with a forward contract by the firm to issue a pre-specified value of equity at that date[13]. An alternative (equivalent) approach, adopted here for the insights which it provides, characterises prefs as being equivalent to the issue of ordinary equity to new shareholders (the prefs holders) plus a sequence of forward contracts (a swap) between old shareholders (group 2) and the prefs holders (group 1) over the period until the conversion date. The swap involves group 1 paying an amount related to returns on ordinary shares and receiving a fixed income stream.

9

This characterisation is most easily seen for a hypothetical prefs issue with the following features. First, it is assumed that the subscription price of the prefs is equal to the ordinary share price at the subscription date, i.e., $P_f = P_0$. Second, it is assumed that preference dividends accrue until the conversion date, when the accrued value of dividends and principal convert into an equivalent value of ordinary shares. In this case, the conversion formula for each pref becomes $M = P_0(1+r)^n/P_n$, and equation [5] for the aggregate conversion amount becomes

$$K' = KM = KP_0(1+r)^n/P_n \qquad\qquad [5a]$$

Third, it is assumed also that there are N ordinary shares held by old shareholders. Finally, assume also that there is no ordinary dividend paid by the company, and no

Insert Table 3

risk of non-payment of the dividends promised to prefs holders.

Table 3 illustrates the time 0 and time n positions of the K prefs holders and N old shareholders. At date n the accrued value of prefs dividends and principal of $KP_0(1+r)^n$

converts into K' shares at the share price P_n, such that $K'P_n = KP_0(1+r)^n$. If V is the total value of the firm at date n, the old shareholders' position can be denoted as $NP_n = V - KP_0(1+r)^n$.

The alternative representation of this situation involves the following set of replicating transactions:

(a) group 1 (prefs holders) instead buy K ordinary shares at price P_0 which have a value at n of $VK/(N+K)$, i.e., their proportionate share of firm value;

(b) the prefs holders (group 1) and old shareholders (group 2) enter a swap to be settled at date n. The swap involves group 1 paying an amount equal to the capital gain on their shareholding $[VK/(K+N) - KP_0]$ and receiving a fixed dividend amount $[KP_0(1+r)^n - KP_0]$;

(c) the swap is to be settled by the issue of additional shares to or cancellation of existing shares of group 1 shareholders.

Insert Table 4

These replicating transactions and their effects are outlined in Table 4.

As can be seen from a comparison of Tables 3 and 4, the position of both groups is the same in both cases - demonstrating the equivalence of the prefs issue to an ordinary share issue plus a swap between old and new shareholders. The swap involves group 1 (the prefs investors) paying away their entitlement to capital gains on their equity over a period, and receiving a fixed sum in return. (For more complex prefs structures, group 1's payment also includes an amount equal to ordinary dividend entitlements).

The settlement amount involved in the swap will depend upon the growth rate (r_a) of the firm's value relative to the "preference dividend rate" (r). This can be seen by noting that $V=(K+N)P_0(1+r_a)^n$, so that the swap payoff received by prefs holders can be written as $KP_0(1+r)^n - KP_0(1+r_a)^n$, the sign of which depends upon $r - r_a$.. Old shareholders will benefit vis a vis a straightforward issue of equity to new shareholders if the firm's growth rate exceeds the preference dividend rate (so that the payoff received by prefs holders is negative). Thus a critical issue in assessing the motivation behind the issue of prefs is the possibility of divergent views between new (prefs) investors and management (acting for old shareholders) about the expected future growth rate of the company, or about the discount rate appropriate for valuing the implicit swap[14].

3.   Wealth Creation and Transfers through Converting Preference Shares

While a number of specific factors, to be examined in section 4, will play a role in motivating individual issues of prefs (and the precise design of those securities), a more general motivation can be found based upon the existence of asymmetric information in financial markets.

The analysis of a prefs issue as equivalent to an ordinary share issue plus a swap between old and new shareholders provides a valuable perspective on the value adding capabilities of a prefs issue. In the hypothetical prefs issue examined above, the swap payoff (S) to group 1 shareholders (the prefs investors) is derived from Table 4 as:

$$S = -[V(K/(K+N)-KP_0] + KP_0(1+r)^n-KP_0$$

$$= - VK/(K+N) + KP_0(1+r)^n$$

The present value of the swap will thus be:

$$PV = KP_0(1+r)^n/(1+i)^n - [K/(K+N)E[V]/(1+\rho)^n \qquad [6]$$

where i is the discount rate applied to the fixed rate cash flows, E[V] is the expected value of the firm at date n, and ρ is the discount rate applied to the firm's risky cash flows. If it is assumed (for simplicity, and consistent with the assumption of no default

risk) that investors discount the fixed rate cash flows at the preference dividend rate r, (so that i = r), equation 6 can be simplified to:

$$PV = KP_0 - kE[V]/(1+\rho)^n \qquad\qquad [6a]$$

where $k = K/(K+N)$.

Two scenarios are apparent in which the perceived present value of the swap could be positive to both group 1 (prefs investors) and group 2 (ordinary shareholders) - or more precisely the management acting as agents for group 2. Both correspond to the company being temporarily undervalued in the eyes of management, with the undervaluation being removed before the conversion date of the prefs[15].

The first scenario is where management has a more optimistic view of the future value of the company than do outside investors, so that $E[V]_{management} > E[V]_{market}$, so that the company's shares are currently undervalued (from management's perspective). In such circumstances, the issue of ordinary shares alone would not be attractive, but could be warranted via a prefs issue if the terms of the implied swap were sufficiently favourable to existing shareholders.

A second scenario is where views on the risk of the company differ, with the market applying a higher discount rate than management in discounting the expected future

cash flows of the company. Again, an issue of ordinary shares would not be in the interests of existing shareholders, but the ability to obtain favourable terms on the implied swap may make a prefs issue attractive.

Both of these scenarios provide a perspective on the issue of prefs which suggests that such an instrument may rank high in a "pecking order" theory of capital structure[16]. Prefs are a low/moderate risk security (from the investor's perspective)[17], and thus, like debt, can provide a source of externally generated funding for positive NPV projects which overcomes the underinvestment problem analysed by Myers and Majluf [1984]. When external financing is required, and the firm's equity is undervalued, the portion of the gains from positive NPV projects which go to providers of external finance will be relatively low if that finance takes the form of prefs.

While the preceding arguments provide a rationale for the use of prefs, they do not explain why prefs are used rather than debt[18]. One simple answer (not compatible with the pecking order story told above) may be that an optimal capital structure exists for the firm, and that a prefs issue is the least cost method of raising equity needed to approach that structure. An alternative answer may lie in the different agency costs involved in a prefs issue as opposed to a debt issue. While a prefs issue creates a potential agency problem between existing shareholders and prefs investors, this is unlikely to be as severe as that involving debtholders. Because prefs holders can

be viewed as new shareholders who have entered a swap with old shareholders, agency problems between the two groups arise only in the context of actions which alter the value of the hypothetical swap contract. Since some part of any wealth transfers from swap value to share value will accrue to "new" shareholders (ie prefs holders) the incentives to exploitation are reduced[19]. Moreover, methods of altering the swap value to create a wealth transfer are limited. As can be seen from equation 6, the present value of the swap contract to the prefs holders can only be reduced by actions which (1) increase i (the discount rate applied to the fixed rate cash flows), (2) reduce ρ (the discount rate applied to the risky cash flows), (3) increase E(V) - (the expected value of the firm at the conversion date). Since it is likely that i and ρ are positively correlated, and that management actions which increase E(V) will also involve an increase in ρ, the scope for risk increasing activities to transfer wealth between old and new shareholders is limited.

4.   Specific Factors motivating the issue of Prefs

While the preceding section has provided an analysis of general factors which may prompt the issue of prefs, and help to explain their usage by Australian firms, it is only part of the story. Each issue of prefs will be prompted by both general and specific factors, and it is thus worth examining some of the firm specific or Australian-specific factors which may have motivated the issue of prefs or influenced their specific design characteristics[20].

(a)   Tax characteristics

In Australia, the dividend imputation system of taxation means that there is no double taxation of dividends received by Australian investors. Consequently, in designing a hybrid security such as the pref there has been no tax disincentive to use of a preference share security rather than a debt security as the base instrument subject to mandatory conversion. In addition, changes made in 1989 to the taxation treatment of convertible notes have reduced the attractiveness of that alternative hybrid security[21].

Taxation issues have been important considerations in the development of the prefs market in two ways. First, provided that the issuing company has franking credits available and provided that the Australian Tax Office (ATO) deems the structure of the prefs securities to be such as to involve appropriate ownership risks, companies are able to pay franked dividends on prefs. Whereas the first prefs issue by ANZ was deemed to be nonfrankable (and dividends paid also nondeductible in assessing ANZ's company tax liability), most subsequent issues have been designed to involve option elements meeting ATO requirements which enable the issuer to frank pref dividends.

In addition to their influence on the design of prefs, taxation considerations have been argued by some to be also important in prompting the growth of the prefs market

because of the attraction to some investors of a fixed-interest like security paying a franked income stream. The precise impact of this characteristic is, however, difficult to assess.

Consider, for example, an Australian tax-paying company contemplating the raising of funds from Australian tax-paying residents by means of a prefs issue or a debt issue, both of which involve equivalent risk from the perspective of the investor. If the interest rate on debt is i and the franked dividend rate on prefs is r, market equilibrium requires that $i = r/(1-t_c)$, where t_c is the company tax rate. Only in this case will the after personal tax rate of return to investors be equal for both securities. The after company tax cost of debt to the company is $i(1-t_c)$ which is equal to the cost of prefs capital (r). There is no tax incentive to either debt or prefs. The company tax bill will be higher if prefs are used rather than debt, but this will generate a higher level of franking credits available for distribution to prefs investors. Since, in this simple case, company tax is irrelevant (being "washed out" at the investor level), tax issues are irrelevant.

In practice, issues of prefs by Australian companies may be influenced by tax considerations because of the existence of overseas investors, for whom franking credits are of no value, or because the company's profit stream is not able to be fully distributed as franked dividends (as may occur if it is derived from offshore activities). To give one example, consider a company with primarily overseas holders of ordinary

shares, a large proportion of overseas income which cannot be franked, and a significant profitable investment opportunity within Australia which would generate frankable income. Raising equity capital by an issue of ordinary shares to finance that investment would mean that franking credits are generated as a result of company taxes paid on profits from the investment. Even if the new holders of equity are Australian taxpayers, it is not permissable to "stream" ordinary dividends so that those flowing to Australian shareholders are franked and those to overseas shareholders are unfranked. Since franking credits must be fully exhausted before unfranked dividends can be paid, that part of franking credits flowing to overseas shareholders are "wasted". If the investment were financed using debt, franking credits generated would be lower than if it were equity financed, but would still be wasted in dividend payments to foreign shareholders. However, if prefs offering a franked dividend are issued, any franking credits generated by the company must first be used in payment of the franked prefs dividend[22]. If franking credits are exhausted in this way, unfranked dividends can be paid on the ordinary shares. In this case, an appropriately designed prefs issue might be used to attract Australian investors who value franking credits, and allow unfranked ordinary dividends to be paid to overseas shareholders.

(b) Market completion

Prefs are a fixed-rate corporate security listed on the Australian stock exchange and available to both retail and institutional investors. In Australia, there has been no significant corporate bond market, and there has been relatively little use of "standard" preference share issues[23]. In this sense, prefs provide an outlet for fixed interest investors wishing to invest in marketable corporate securities, while at the same time providing permanent capital to the issuer.

(c)   Regulatory characteristics

Australian banks are subject to capital adequacy requirements laid down by the Reserve Bank of Australia. The Bank has ruled that since prefs provide a permanent source of capital they can count as equity in meeting those capital adequacy requirements. Consequently, a prefs issue is attractive vis a vis a debt issue in terms of meeting capital adequacy requirements. While an important consideration for the four banks shown in Table 1 which have issued prefs, this does not explain why an ordinary share issue was not used, nor can it explain use of prefs by the 11 non-banks shown in Table 1.

(d)   Managerial Control

Where converting preference shares are issued as a placement, rather than as a rights issue, it is possible for the issue to be directed into hands of investors 'friendly' to the

current management. It is thus possible to view the issue as something akin to a (mild) 'poison pill'. Premature (optional) conversion of prefs into ordinary shares at the pre-takeover price is prompted by attempted takeover. Moreover, if the share price declines (when management exposure to a hostile takeover may increase), the number of ordinary shares (and voting power) to which prefs holders are entitled increases. Consequently, the cost of mounting a hostile takeover may be increased.

(e)   Debt Covenants

The legal status of the holders of prefs differs from that of holders of debt. An attempt to issue new debt may create problems as a result of pledges or covenants entered into in previous debt issues. One such covenant might relate to leverage. Since prefs effectively involve a temporary increase in leverage from the perspective of ordinary shareholders but not in terms of traditional accounting measures, a prefs issue may allow ordinary shareholders to gain otherwise unachievable benefits from increased leverage.

(f)   Financial Distress and Default Risk

As noted earlier, preference shares allow for the non payment of a dividend without prompting an occurrence of default. This provides a rationale for using preference

shares rather than debt as the basic instrument underlying prefs, but does not explain why the mandatory conversion feature is applied.

The possibility of financial distress is however important to the precise design of a prefs issue. As noted earlier, a decline in the value of the company's assets to a value less than the promised value of equity to be received on conversion creates a situation of "default" on the prefs issue. This can be overcome by the inclusion of a "floor" price in the terms of the prefs issue, such that a pre-specified maximum is set to the number of ordinary shares which will be issued on conversion. Prefs investors then bear a larger part (and ordinary shareholders a smaller part) of the risk arising from declines in the value of the company's assets below some specified value.

5.   Conclusion

Converting Preference Shares have emerged as a significant source of external funding in Australia in the 1990s. In this paper it was argued that this is consistent with their suitability in overcoming impediments to equity funding in a world of asymmetric information. Naturally, however, there has been more than one reason for the appeal of prefs - some of which are issuer specific and some of which reflect characteristics of the Australian market. Foremost among these has been the absence of any tax disadvantage to preference share financing under the Australian imputation tax system.

Given the valuable role which converting preference shares can play in enabling companies to achieve equity type (permanent) financing, despite the existence of informational asymmetries, it would be surprising not to see further use of this instrument in the Australian market. In a "pecking order" model of corporate capital structure it fulfils the criteria of a low risk security (for the investor). Moreover, because it avoids agency problems associated with the issue of debt, it may be preferable to a straight debt issue.

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Table 1
Converting Preference Share Issues

ISSUER	ISSUE DATE[a]	SIZE[b]	CONVERSION DATE	DIVIDEND RATE %[c]	CONVERSION AMOUNT[d]
ANZ Bank	11 Jul 1991	16	11 Jul 1995	13.25	1.11
Metway Bank	25 Nov 1991	25	25 Nov 1996	8.0*	1.11[e]
General Property Trust	1 May 1992	7	31 May 1996	8.25	1.22[f]
Coles Myer	5 Jun 1992	5	5 June 1997	6.8*	1.11[e]
Rothbury Wines	Oct 1992	28	1 July 1996	7.00*	(g)
GWA	May 1993	50	31 May 1996	7.25*	1.11[e]
Westpac	Aug 1993	10	30 June 1998	6.5*	1.05[e]
News Corp	Sep 1993	5	13 Sep 1998	6.25*	1.08[j]
SPC	Sep 1993	59	31 July 1998	7.25*	1.11[k]
Bank of Melbourne	Nov 1993	21	30 Nov 1998	6.00*	1.11[i]
National Mutual Property Trust	Nov 1993	24	30 Sep 1998	9.5	1.05
TNT	Nov 1993	39	31 May 1997	8.00	1.11[l]
Amalgamated Holdings	Dec 1993[a]	23	31 May 1997	5.00*	1.11[h]
Country Road	Dec 1993	39	5 Dec 1998	7.00*	1.11[l]
Forest Place	Jan 1994	77	24 Dec 1996	8.00*	1.11

Source: Prospectuses for the issues, ANZ McCaughan Converting Preference Share Analysis, November 30, 1994

(a) Listing date (otherwise allotment date)
(b) Issue size as approximate percentage of pre issue market capitalisation.
(c) An * indicates that the proceeds are "fully franked", i.e. carry imputed tax credits
(d) Share value received upon conversion per dollar of original investment.
(e) Conversion rate varies if share price exceeds specified base price; conversion date can be accelerated by company; supplementary dividend payable to holders if ordinary dividends exceed prescribed base.
(f) Issued as a debenture plus detachable warrant; the warrant provides the right to subscribe for a specified value of stock at the stated discount to prevailing market price - subject to a limit on maximum and minimum number of shares to be received.
(g) Conversion is at a fixed rate of one ordinary share for each converting preference share
(h) Also convertible anytime into one share. At conversion date, conversion is to maximum of 2 shares or minimum of 1 share.
(i) Minimum conversion rate of 1 share
(j) Minimum conversion rate of 1.5 shares
(k) Minimum conversion rate of 5 shares
(l) Maximum conversion rate of 3.1 shares, minimum conversion rate of 1 share

Table 2

Illustrative Conversion Amounts

Rule	P_n	$2	$4	$6	$8	$10	$12
1	$M = 100/P_n$	50	25	16.67	12.5	10	8.5
	Value = $M.P_n$	$100	$100	$100	$100	$100	$100
2	$M = Max[100/P_n, 100/8]$	50	25	16.67	12.5	12.5	12.5
	Value = $M.P_n$	$100	$100	$100	$100	$125	$150
2a	$M = Max[\ Min(100/P_n, 100/4), 100/8]$	25	25	12.67	12.5	12.5	12.5
	Value = $M.P_n$	$50	$100	$100	$100	$125	$150

Table3

Ordinary shareholders and prefs holders wealth

	Date 0	Date n
Group 1 (Prefs holders)	KP_0	$KP_0(1+r)^n = K'P_n$
Group 2 (Ordinary shareholders)	NP_0	$NP_n = V - KP_0(1+r)^n$
Firm Value	$(N+K)P_0$	V

Table 4

Ordinary shareholders and prefs holders wealth

under the swap replication

		Date 0	Date n
Group 1 (Prefs holders)	ordinary shareholding	KP_0	$VK/(K+N)$
	swap payment		$-[V(K/(K+N)-KP_0]$
	swap receipt		$KP_0(1+r)^n-KP_0$
	net outcome	KP_0	$KP_0(1+r)^n = K'P_n$
Group 2 (Ordinary shareholders)		NP_0	$NP_n = V-KP_0(1+r)^n$
Firm Value		$(N+K)P_0$	V

END NOTES

[1] Levy [1993] provides an outline of the legal considerations involved in issuing converting preference shares in the Australian market.

[2] Except for a small number of the issues listed in Table 1, prefs dividends have been deemed to be "frankable" by the Australian Tax Office. The Australian taxation system has, since 1987, operated as an imputation system. Dividends paid out of income on which Australian company tax has been paid (referred to as franked dividends) are "grossed up" by the amount of company tax paid in determining the recipient's taxable income, and a tax credit given for the amount of company tax paid. This means that the company tax system operates essentially as a prepayment of personal tax for Australian resident taxpayers.

[3] Legally, the entitlement is for conversion into one ordinary share and an additional number of ordinary shares to be issued.

[4] In practice, P_n typically involves some discount (often 10%) to the conversion date share price. This could be allowed for by expressing equation (1) as $M = P_f.C_a/P_n$ where C_a is a conversion amount factor (typically 1.11 where the discount is 10%). The conversion amount factor has been ignored in the text in order to keep the analysis as simple as possible.

[5] In addition, where conversion rule [2] has applied, it has been customary to specify that a supplementary dividend will be paid to the prefs holders if the ordinary dividend exceeds some pre-specified base value.

[6] This latter structure has some similarity to that of the **equity notes** analysed by Courtadon and Merrick [1986]. However, they argue that the "basic" form of an equity note involves a forward contract by the investor to buy a fixed <u>number</u> of shares, collateralised by the debt security bought by the investor. The "basic" form of prefs involves a forward contract instead to buy a fixed value of equity. The structure is also different from that of "PERCS" which, as described in Finnerty (1993) and Chen, Kensinger, and Pu (1994) have a conversion option involving a capped share value.

[7] . For the Metway issue, the base price was $4.50 compared to a share price prior to the issue of around $2.30, for Westpac's issues the respective figures are $7.50 and $3.90. Only in the case of the GWA issue (where the respective values are $2.00 and $1.52) does the option element appear particularly important.

[8] Prefs with a conversion formula such as in [2] could be valued using an approach similar to that used by Courtadon and Merrick [1986] for equity notes. Their analysis, however, focuses upon the option characteristics of equity notes and does not explain why such securities are issued by firms. As argued later, the exclusion or inclusion of an option characteristic is of secondary importance in explaining the motivation for the issue of prefs, and thus not considered in the analysis which follows.

[9] In practice there may be a minor risk to the investor arising from share price fluctuations between the conversion date and availability of stock for sale.

[10] These timing options refer to characteristics of the prefs at the time of issue. In the case of the ANZ prefs issue, the company obtained shareholder approval during the life of the prefs to alter the conversion arrangements so as to allow prefs holders the option to receive cash rather than ordinary shares on the conversion date. This can be interpreted as a selective offer to buyback ordinary shares at the market price (on the prefs conversion date from shareholders acquiring shares by virtue of being prefs holders).

[11] The modelling of "default risk" faced by prefs holders is complex, since it involves analysis of situations in which the value of assets of the company (after meeting any obligations to creditors) are less than the value of ordinary shares promised to be issued to prefs holders. That could occur if there is no constraint on the maximum number of shares to be issued to prefs holders, in which case the ordinary share price would be expected to be zero and the number of new shares to be issued would be indeterminate. Imposing a "floor price" when designing the prefs, and thus limiting the number of shares to be issued, would prevent this problem and convert "default" risk of prefs holders into an explicit share price risk. Explicit modelling of default risk is not pursued in this paper, but its relevance for security design is briefly considered in Section 4.

[12] In practice, the prefs dividend is noncumulative, so that prefs holders are subject to a risk that the dividend might not be paid in some periods. This complication is ignored in this analysis by assuming that prefs issuers have a zero probability of entering a state of financial distress.

[13] Another replication, based on a suggestion by a referee of an early version of this paper, would be as equivalent to an issue of debt (or straight preference share) combined with a warrant giving the investor an option to purchase a specified value of equity at a strike price of zero. Yet another possibility, also suggested by a referee is to view the prefs as equivalent to a deferred equity issue.

[14] In practice, most prefs issues have involved both a rights issue and placement component, so that the distinction between old and new shareholders is not as clear cut as indicated in the text.

[15] This explanation for the attractiveness of prefs has also been expressed in the financial press by, for example, Bartholomeusz (1993) who notes that "for companies that believe they are at the bottom of the trough - like the banks - or who are convinced that they will experience the sort of share price growth that News has experienced since its near-collapse in 1990-91, they are most appealing".

[16] See Myers [1984]

[17] One source of risk for prefs holders is that management could elect not to pay the prefs dividend, and the securities issued to date (with the exception of the TNT issue) are non-cumulative. On the other hand, the arrangement for conversion into a fixed value of equity (or provision for supplementary prefs dividends if ordinary dividends exceed a specified base level, in those cases where the conversion arrangements depend on the share price) mean that the level of ordinary dividends has little effect on the prefs value (absent concerns of a financial distress situation).

[18] It should be noted that under the dividend imputation tax system which prevails in Australia, interest tax shield effects are minimal, thereby providing no bias towards debt financing rather than preference share issues.

[19] Much like in Jensen and Meckling's (1976) analysis of agency costs involving "inside" and "outside" equity holders and debt holders, the benefits of actions causing wealth transfers from other parties get diluted - in this case because prefs holders are also equity holders.

[20] Finnerty [1993] provides a more general discussion of how securities innovation may add value by overcoming market imperfections.

[21] In 1989, after a period of uncertainty about the future tax treatment of convertible notes, the tax treatment was changed so that any gain on conversion of notes into shares is treated as income and assessable at that time. Capital gains on subsequent sale of shares are calculated from that conversion date and on a cost base of the conversion date share price. Compared to an initial purchase of shares, this involves an adverse capital gains tax treatment of convertible notes. In contrast, even though the usual discount of the conversion price to the prevailing share price creates the impression of a capital gain on conversion of prefs, there is no capital gains tax liable at this date.

[22] To fully exhaust the franking credits arising from the project in payment of prefs dividends, it is likely that funds raised by issue of prefs would need to exceed those required for undertaking the investment opportunity and be used also in projects generating unfrankable income.

[23] See Davis (1993) for an outline of developments in the corporate debt market in Australia.