Pricing zero dividend preference shares (zdp's)

1. Option replication of zdp's

(a) Zeros and ordinary share only

The zdp payoff is equivalent to *short* a European put on the underlying assets with strike=zero redemption price.
the zero GRY is an accumulation of (option premium – option payoff)
where the payoff is max(Strike price – Assets, 0)
ie the zdp holders lose if the put they've shorted is in-the-money at expiry.

(b) Zeros, ordinary shares, and prior charges

The zdp payoff in the presence of prior charges is equivalent to the option strategy known as a *bull put spread* (the payoff diagram is a flattened *s*-shape) –

- The zdp holders are *short* a put on the trust's assets at redemption price of the zdp
  (ie if the trust's assets fall below this, the zdp holders start to lose)
  (captured by the redemption hurdle rate)

- But the zdp holders are also *long* a put at the level of the prior charges
  (ie if the trust's assets fall below this level, the zdp holders don't lose any more).
  (captured by the wipe-out hurdle rate).

2. Functional form of zdp prices

The zdp price is a function of:

NPV of assets (+) (commonly measured as "cover" – but this doesn't have the NPV of future dividend outgo netted off).
Bank debt (-) (increases steepness of the sloped part in the s-shaped payoff diagram).
Bank covenant (-) (higher covenant → more likely portfolio rearrangement (eg sell assets) at inopportune time; the bank is then in control)
Charging structure
(expenses charged to capital → capital increase impaired – can be very material if highly geared
also 'management fees on management fees', if invested in other investment trusts)
also debt interest may be all charged to capital
the UK SORP on investment trusts says expenses & interest should be charged to income/capital in proportion to expected total returns. However on average 79% is charged to capital (Cazenove, July 01). This seems unrealistic for portfolios often yielding over 5%.)
Furthermore some trusts have registered offshore (typically Channel Isles), where they can apply International Accounting Standards and hence charge <u>all</u> expenses to capital. The other 'advantage' of the offshore registration is avoiding s842 ICTA88, which requires: no new investment > 15% of assets; and not retain more than 15% of securities income, which must be >= 70% of total income.)
Volatility of the portfolio (-) (the zdp holder is short a put option, so volatility is against him; note that volatility benefits the ordinary shareholder).

Dividend policy (-) (higher dividend payouts → capital increase impaired – in effect a transfer from capital to income, especially if facilitated by charging expenses to capital)
Dividend yield on underlying assets (-?) (Merrills say (empirically) portfolio optimised for higher yield has higher volatility – seems surprising).

3. Conflicts of interest

There is *generally a conflict* between the interests of the zdp holders (prefer less risky assets – limited upside and larger downside; short volatility); and the ordinary shareholders (prefer more risky assets).

However it is *not* unconditionally true that if the ordinary is dear, the zdp must be cheap (or vice versa). (The statement is true *conditional upon the premium/discount of the aggregate paper* over the trust's assets. If the aggregate paper is 2x the assets, relative cheapness of the zdp is little comfort.)

4. Premiums and discounts

The aggregate paper of a split cap trust tends to trade at a smaller discount (often in fact a premium) than non-split trusts.

As far as I can see, this is a fallacy. Creating several classes of liability (share capital) against a portfolio creates **no value**. Also, new trusts can be created at NAV (less initial costs) at essentially nil cost (which should tend to arbitrage any premiums).

The holders of the income shares may perceive value, but this is an irrationality: rather than holding an overpriced special class of capital, they could just as well (and more tax-efficiently) sell a small slice of capital each year. (But they don't want to 'spend capital'; instead need the trust to do it for them; cf. behavioural finance.)

Why then are split-cap trusts created? – the cynical answer is that higher fees can be charged.
(eg fees on g**ross** assets of a highly geared trust– see Adams & Angus).
(The first trust, Dualvest, issued in 1965, did have a genuine motivation: 88¾% tax on investment income made capital shares attractive to individuals.).

And why do the premiums persist? – investor confusion!. (Similarly also the issue of 'free' warrants with new trusts – see Gemmill & Thomas.)

5. Effect of cross-holdings

Extremely difficult to analyse:

- effectively means the trust has a small stake in itself (see algebra in Cazenove)
- Cross-ownership → trusts are more correlated → any one trust's portfolio of the cross-holdings has higher volatility (difficult to show, requires Monte Carlo simulation, see Merrill Lynch).

6. Effect on zdp's of dividend cuts on the income shares

This should probably have limited effect –

- the zdp holders were *never going to get the dividends anyway*, so there should be little effect on them.
- but the 'cover' will appear to fall (the income shares fall, because they are a claim on the dividend stream) – this is one of the weaknesses of 'cover' ie doesn't take account of the future income paid away.

7. Possible areas of research

Option replication – actually doing the replication, with prices from banks.

Monte Carlo simulation – of cross-holdings, expense payments, covenant breaches, etc.

Compare pricing of collateralised mortgage obligations in US (similar 'multiple classes of capital' problem).