The Impact of Share Repurchases on Closed-End Funds

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Outline

1. Background and previous work on repurchases
2. How repurchases may affect closed-end funds (theory)
3. Evidence from the U.K. (tests)
   - short-term
   - long-term
4. Conclusions and implications

Section 1: Background and Literature

Repurchases: Stylised Facts

Repurchases in the US, as a proportion of earnings for the average firm

Source: Julio and Ikenberry (2004)

Share prices rise at the time of announcement
- about 3% in the U.S. (Ikenberry, Lakonishok and Vermaelen, JF, 1995)
- about 1% to 1.5% in the U.K. (Lasfer, wp, 2000; Rau and Vermaelen, JF, 2002)
- about 1% in Canada (Ikenberry, Lakonishok and Vermaelen, JF, 2000)

Share prices may continue to move in a systematic way thereafter (the supposed "under-reaction" inefficiency)
- +2.4% per year over the next three years in the U.S. (Ikenberry et al., 1995)
- +7% per year over the next three years in Canada (Ikenberry et al., 2000)

BUT
- not significantly up or down in the U.K. (Rau and Vermaelen, 2002)
- no effect for companies which issue more shares afterwards (Eberhart and Siddique, wp, 2004)
Possible Reasons for a Price Rise
(either short-term or long-term)

The repurchase

1) **signals** that directors think that firm is undervalued
2) increases **leverage** (tax gain, or managerial incentives rise)
3) reduces the **agency** risk of excess cash
4) increases **liquidity**

Two recent empirical papers reject all of these except (4) -- liquidity
- Eberhart and Siddique, wp, 2004
- Cook, Krigman and Leach, RFS, 2004

What affects the long-term rise? (1)

1) Other information released at the repurchase announcement date

   ![Graph showing prices drift upwards more rapidly if there are positive surprises]

   Source: Kadiyala and Rau, JBus, 2004

What affects the long-term rise? (2)

2) The **market-to-book** (premium or discount) of the repurchasing firm

   - Ikenberry et al (2000) Canadian results, over 3 years:
     - +0.28% per month for high m/b **growth** firms
     - +0.76% per month for low m/b **value** firms

   - similar results for US in Ikenberry et al (1995)

Example of the Value/Growth Difference (Canadian Companies)

![Graph showing monthly excess return % over 3 years]

Source: Ikenberry, Lakonishok and Vermaelen, JF, 2000
What affects the long-term rise? (3)

3) **New issues** of shares after repurchases

The median US firm over 1981-95 does **not** show a l.t. rise

- Eberhart and Siddique, working paper, 2004

→ the reason (they say) is that many firms making repurchases also issue new shares, so net position is more issues than repurchases

Aims of this paper

1) **To clarify theory** of why prices may change when repurchases occur
   - short-term
   - long-term

2) **To test that theory** on UK closed-end-fund companies
   - simple financial companies
   - transparent information on price and company value
   - able to examine data for:
     - announcement date
     - actual repurchase date
     - annual repeats

Why Study Closed-end-fund Companies?

- Announcement effect **not likely to be**:
  - signal that managers have superior information
  - tax
  - excess cash
  - optimal capital structure

- Announcement effect **might be**:
  - profit from buying at low market-price and selling portfolio at book-price (NAV)
  - liquidity (bid/ask spread)
  - signal that repurchases will be repeated

Practitioners Have Differing Views on Whether Repurchases Have a Permanent Impact and Reduce the Discount

"I am pleased to announce that the discount on your shares has narrowed from 17% a year ago to 10% at the time of writing. **This is at least partly because your Company has pursued its share buy-back policy** more vigorously ... this year".


"Witan (Investment Trust) had spent £115m on buying back its shares since last September in an attempt to cut the discount to net asset value to 8 percent. However, **the shares remained at a 10 percent discount**".

Previous Studies of Repurchases by Closed-End Funds

Only one U.S. paper:
Porter, Roenfeldt and Sicherman, 1999, J.Bus.

- + 1.56% abnormal increase in price around the announcement date
- +130 basis point change in discount (market-to-book)
- not a volume (liquidity) effect

Limitations of Porter et al study

- small sample of 27 companies – 9 equity funds, 18 bond funds
- 18 bond funds start with small discounts (market value = book value)
- no analysis of long-term returns
- assumes that the discount reverts to original level after repurchases, so no long-term impact of repurchases -- not measured or tested
- assumes only one repurchase, whereas first repurchase is likely to signal more repurchases

Funds Trade at Discounts, so Repurchases are Transparently Profitable

<table>
<thead>
<tr>
<th>nav per share</th>
<th>price per share</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
<td>$9</td>
</tr>
<tr>
<td>$2</td>
<td></td>
</tr>
<tr>
<td>$4</td>
<td></td>
</tr>
<tr>
<td>$6</td>
<td></td>
</tr>
<tr>
<td>$8</td>
<td></td>
</tr>
<tr>
<td>$10</td>
<td></td>
</tr>
</tbody>
</table>

Fund trades at -10% discount (m/b = 0.9)

Discount after repurchases = \[ \frac{\text{Market value of shares} - \text{Value of assets}}{\text{Value of assets}} \]

\[ D_a = \frac{S_b(1-R)P_a}{{(NAV_bS_b) - (S_bRP_a)}} \]

where D is discount, NAV is net asset value per share, S is number of shares, R is proportion of outstanding shares repurchased, subscript 'a' denotes "after" and subscript 'b' denotes "before"

Porter et al. (1999) derivation (redone slightly):
How Should the Profit Affect the Price?

Re-arranging the equation in terms of share price after repurchase we have:

\[ P_a = \frac{NAV_a (1 + D_a)}{1 + (D_a R)} \]

Assume that the discount is unaffected by the repurchase programme, once the repurchases have been made (so \( D_a = D_b = D \))

\[ E \left[ \frac{P_a - P_b}{P_b} \right] = \frac{1}{1 + (D)(R)} - 1 = DR \]

→ Expected change in price is a simple function of the initial discount (which is assumed constant), and the proportion of shares repurchased.

Closed-End Fund Effects: example

For example, if a fund with 10,000 shares repurchases 10% of them (\( R = 0.1 \)), the NAV per share is initially $10 and the discount remains at 10%:

\[ E(P_a) = \frac{10 \cdot (1 - 0.1)}{1 - (0.1)(0.1)} = \frac{9}{0.99} = 9.091 \]

<table>
<thead>
<tr>
<th>time</th>
<th>number of shares</th>
<th>value of assets</th>
<th>nav per share</th>
<th>premium (discount)</th>
<th>price per share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before any Announcement</td>
<td>10,000 (S_a)</td>
<td>$100,000</td>
<td>$10 (NAV_a)</td>
<td>-10%</td>
<td>$9.091 (P_a)</td>
</tr>
<tr>
<td>After the repurchase of 1,000 shares</td>
<td>9,000 (S_b)</td>
<td>$99,109</td>
<td>$10.101 (NAV_b)</td>
<td>-10%</td>
<td>$9.091 (P_b)</td>
</tr>
</tbody>
</table>

From Porter et al., J Bus, 1999

Closed-End Fund Effects: example

In an efficient market, the share price will rise at the time of the announcement, even though the fund assets have not yet been sold (at $10) to pay for the repurchases (at $9.091)

→ there will be a temporary effect on the discount, which will narrow and then widen-out again when repurchases have been made

Should Repurchases Have a Permanent Effect on the Discount (market-to-book)?

Porter et al assume one repurchase

- but funds which make one repurchase are obliged by shareholders to continue (as a persistent discount is visible)
- in the limit the fund repurchases all of the shares and the last shares must be repurchased at the NAV (otherwise shareholders will not sell)
- in reality a fund will not repurchase shares unless the discount is greater than some ‘target discount’

→the discount is driven towards a ‘target’ (e.g. -5%)
Market-to-Book and Repurchase Announcement

Will There One Jump or a Trend in Price and Discount -- ‘under-reaction’?

- Price should not jump immediately to its final level
  - buying shares and selling the portfolio is not a “risk-free” arbitrage
  1) portfolio cannot be replicated perfectly (replication risk)
  2) transactions costs (buy/sell shares, sell/buy portfolio)
  3) model risk – risk that discount widens at first, before narrowing
  4) unknown holding time (but cannot be more than one year for first position)

- Market-to-book (discount) drifts towards the target level at a risk-adjusted rate

Hypothesis 1: There is a Permanent Effect on the Discount

Empirical Implications

1) The price will jump greatly and discount narrow substantially on first announcement
2) After the first repurchase the discount will widen, but by less than it initially narrowed
3) Further announcements will not result in jumps of price or discount, as they are anticipated
4) The price will drift upwards a little over several years
5) The discount will narrow consistently over several years

Price, Nav and Discount under $H_1$
Hypothesis 2: There is No Permanent Effect on the Discount

Empirical Implications
1) The price will jump a little and discount narrow a little on first announcement
2) After the first repurchase the discount will widen by the earlier reduction
3) Further announcements will result in jumps of price and discount
4) The price will drift upwards very consistently over years
5) The discount will not change over years

Repurchases as Options
- The option to repurchase adds extra value to the announcement (as in Ikenberry and Vermaelen, Fin. Man., 1996)
- If an announcement signals future programmes, then the shareholders are given a sequence of ‘forward start’ options
  - The forward-start options will be at higher price-to-book exercise prices, so worth less than the initial option
- As options are wasting assets, the options will dampen the trend in the discount between actual repurchases
- Option effect will be largest for at-the-money discounts (i.e. those near to the level at which a repurchase decision is marginal)

→ the implicit options will increase the announcement impact, but have no long-term effect

Price, Nav and Discount under $H_2$

The Data
140 UK closed-end funds
- repurchase announcements 5/11/96 to 29/10/04
- first announcements carefully identified (distinguish from repeats)
- great care taken to pinpoint exact date for information
- data on announcements from Perfect Information
- data on actual repurchases from Cazenove and Citywire
- event-study data on prices from Datastream
Event-Study Method

- Expected share price return estimated with:
  \[ \text{price return}_t = \alpha + \beta \text{ nav return}_t + \epsilon_t \]
  - using weekly data for 50 weeks prior to day -30

- Abnormal returns estimated for daily window -30 to +30

Section 3: Empirical Results

- Repurchase Announcement is Timed: the Discount is at a Local Minimum when Repurchases are Announced

- Average Discount and Announcement Date
  \[ (n = 140 \text{ funds}) \]

- Proportion of all Live Firms Repurchasing in Year

- `Announcing` Firms which Make Actual Repurchases Have More Extreme Discounts in the Relevant Year

4 out of 6 differences signif. at the 1% level
Funds Announce 15% Repurchase Programmes, but Those Proceeding only Buy about 5%.

Proportion of Shares Repurchased Each Year

The First Announcement Raises Price by about 2%

The Impact on the Discount is a little Less, as it is Calculated Relative to NAV rather than Price
The Information Affects Prices at the Time of the EGM Agenda and not at the Time of the EGM

The Effect is Larger for Funds which have a Higher Historical Probability of a Discount Below -20%

The Effect Depends on a Fund’s Market-to-Book at -1 Week

Conditional on the discount, the price impact of announcing a repurchase is four times larger than expected from a “one-shot” programme

\[ y = -0.0894 + 3.97x \]

\[ R^2 = 0.215 \]
The conditional price impact is five times larger than expected if the low-discount funds are excluded.

The Discount Rebounds when Actual Repurchases Occur in the Market.

Abnormal Change in Discount around Repurchase

Note: based on monthly windows and discount relative to an index of discounts on all closed-end funds.

The Announcement plus Repurchase Effect on the Discount is Positive for Value Funds and Negative for Growth Funds.

Conditional Abnormal Changes in Discounts from 1st Announcement to 2nd EGM: Buyers

Abnormal returns measured relative to changes in discounts on all investment trusts.
Conditional Abnormal Changes in Discounts from 1st Announcement to 2nd EGM: Non-Buyers

Abnormal returns measured relative to changes in discounts on all investment trusts.

There is a Large Second-Announcement Effect, but This May be Contaminated by Other Information

Abnormal Returns around the Second Announcement

The Rise/Fall in Discount is Not a Liquidity Effect

Average Bid/Ask Spreads around Repurchases

Results of Hypothesis Tests

<table>
<thead>
<tr>
<th>ITEM</th>
<th>HYPOTHESIS 1 (permanent impact)</th>
<th>HYPOTHESIS 2 (no permanent impact)</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Jump in price at first announcement</td>
<td>Larger than consistent with a constant discount</td>
<td>Consistent with a constant discount</td>
<td>YES, for the average stock</td>
</tr>
<tr>
<td>2) Sum of announcement and repurchase CARs</td>
<td>&lt;0</td>
<td>Only for value stocks</td>
<td>YES, for the average stock</td>
</tr>
<tr>
<td>3) Second announcement has a price impact?</td>
<td>No impact</td>
<td>Same impact as at first announcement</td>
<td>YES</td>
</tr>
<tr>
<td>4) Long-term drift of Price</td>
<td>YES</td>
<td>YES</td>
<td>In Fama/French model test</td>
</tr>
<tr>
<td>5) Long-term drift of Discount</td>
<td>Diminishes</td>
<td>Only for value stocks</td>
<td>YES, at the average</td>
</tr>
</tbody>
</table>
Summary of Main Results ...

1) There is a significant announcement effect on price of about 2%
2) Announcements are timed when the discount is at a low
3) The larger is the discount, the larger is the effect of the announcement
4) Conditional on the initial discount, the impact is four times larger than
   would theoretically be expected from a 'one-shot' programme
5) The discount widens when actual repurchases are made, on average by
   as much as it narrows on first announcement
6) There is no liquidity effect, as bid/ask spreads do not change
   significantly around the repurchase period
7) The results suggest that there is a long-term impact on the discount for
   value funds (with large initial discounts) but not for growth funds

Implications of the Study

1) Supports signalling arguments
   - funds repurchase when shares are cheap
   - funds signal a whole series of repurchases
2) Rejects the liquidity hypothesis
3) Provides a rational explanation for a drift in share price (the
   so-called 'under-reaction' to repurchase announcements),
   due to profits from repurchases
4) Supports the view of fund managers, that repurchases
   reduce the discount, but only for value funds

Selected References