

The Importance of Issue Reset Spreads

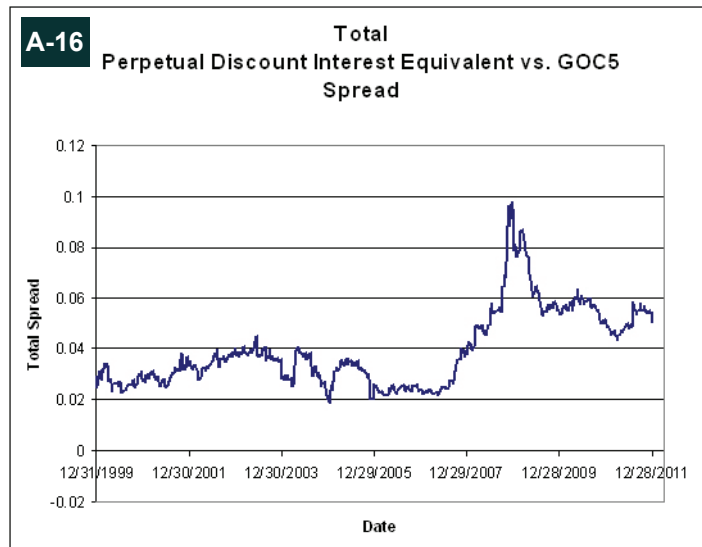
This newsletter has previously examined Current Yield (the current dividend divided by the current market price) of FixedResets in an attempt to develop a pricing model for these issues. The “Expected Loss” model was introduced in May, 2010, and the “Expected Loss Rate” model in August of that year. The ability of these models to explain the relative pricing of FixedReset issues is reviewed every month in the appendix devoted to the topic.

However, the current dividend is not the only attribute of importance when considering relative valuation – by their very nature, FixedResets change their dividend payment rate every five years.¹ While the importance of the Issue Reset Spread² has not been ignored, it has been thoroughly discussed³ only in the context of determining the probability of a call on the next Exchange Date without delving deeper into the influence of this spread on valuation.

This made sense at the time: the FixedReset structure was introduced during a period of tumult in the financial markets⁴ as a method whereby the banks could represent the same security to investors as a five-year investment and to regulators as perpetual loss-absorbing capital. The extremely fearful climate of the times – and throughout the period of heavy financial issuance lasting for the following year – led to very high initial coupons during a period when Government of Canada yields were relatively low, leading to very wide spreads on these issues. These wide spreads have in turn made the call probability for the first exchange date extremely high – when there are numerous junk issues trading with Issue Reset Spreads within shouting distance of 200bp, there is not much necessity for a top-rated bank to leave issues with spreads in excess of 400bp outstanding.

What will the stable value of the spread be? We have no way of knowing, since all our data for this structure comes from a period of stress. If, however, we look at the spread defined by PerpetualDiscount Interest-Equivalent yield and the GOC-5 rate⁵, as is displayed in Chart A-16, we see that pre-crisis levels fell in the range 200bp – 400bp, while it is not yet clear whether this spread will eventually return to that level, or whether a heightened appreciation of risk and awareness of regulatory changes will cause a permanent repricing of the additional risk.

However, even if we forecast FixedResets to trade 50bp narrower than PerpetualDiscounts as an (extremely large) allowance for the benefits of inflation protection, it should be apparent that there are a great many issues – particularly in the junk sector – that are at the lower end of this scale; that a prudent investor should assume that they will not be called; and that they will trade at a significant discount to their par values (due to their relatively low Issue Reset Spreads) should historical market spreads re-establish themselves. Hence, this essay is concerned with relative valuation analysis for FixedReset issues that are not expected to be called for the foreseeable future.



¹ The initial period is usually longer

² The percentage added to the Government of Canada 5-year yield that will determine the dividend rate of the preferred share from one Exchange Date to the next.

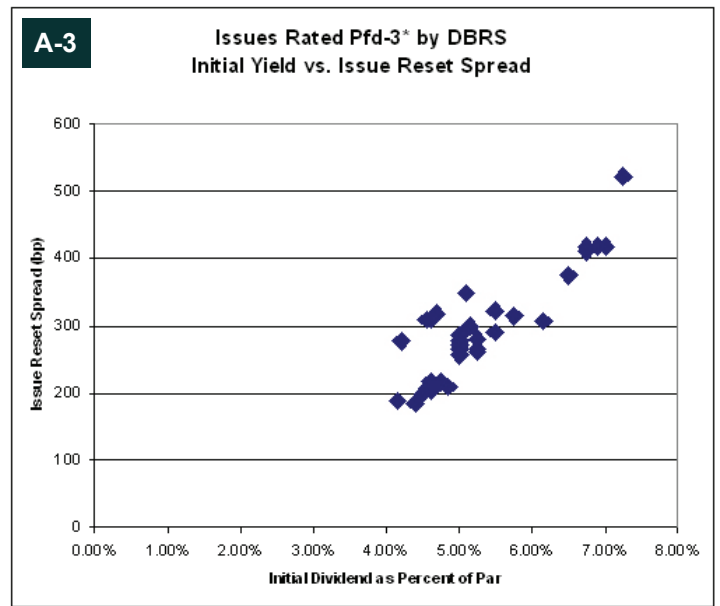
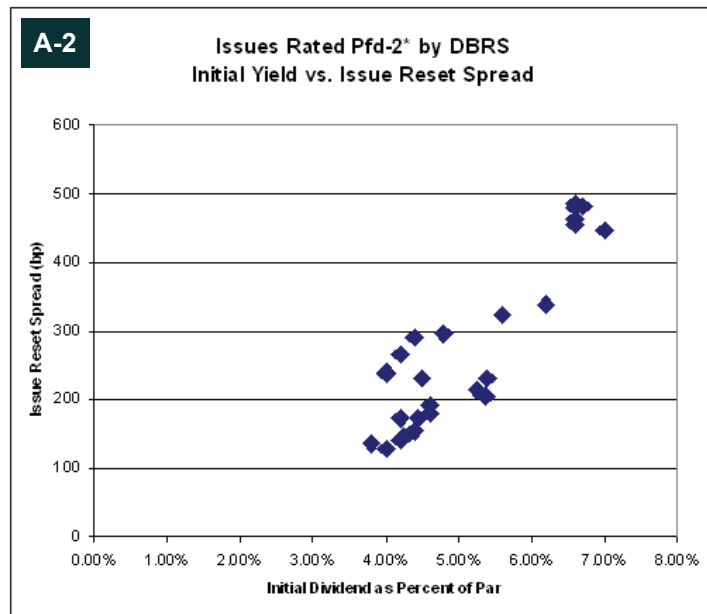
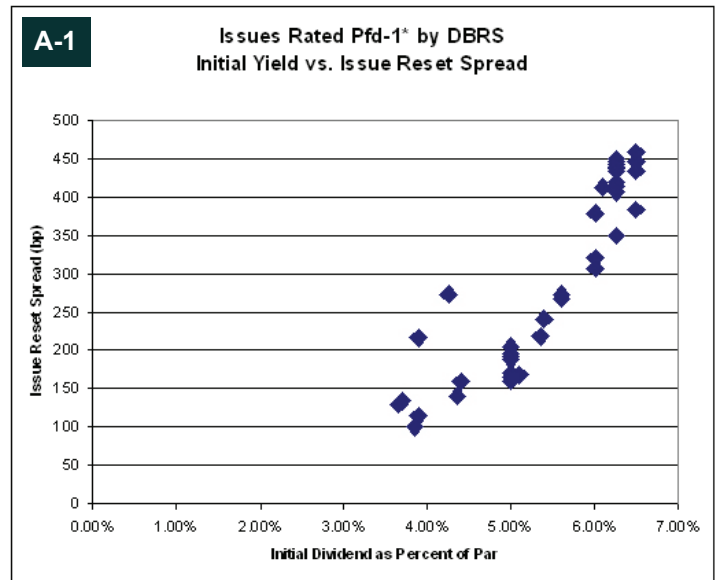
³ See the August, 2009, edition of this newsletter

⁴ April, 2008

⁵ This is the sum of what I generally refer to as the Term Spread, the Credit Spread and the Seniority Spread

Issue Reset Spreads in Practice

The relationship between the initial dividend rate and the Issue Reset Spread for FixedResets in the HIMIPref™ analytical universe is shown, disaggregated by approximate credit quality, in Charts A-1, A-2 and A-3.



Regressions for these data are summarized in Table A-1

Credit Class	Slope of Regression	Standard Error in Slope	Intercept	Adjusted R-Squared
Pfd-1*	12,158	942	-369	81.3%
Pfd-2*	10,133	1,056	-240	77.8%
Pfd-3*	8,002	720	-130	78.3%

The asterisk in the Credit Quality column is meant to imply that modifiers are disregarded; e.g., Pfd-2 includes Pfd-2(high), Pfd-2 and Pfd-2(low)*

The reasons for variance from a straight line should be understood:

- If the five-year Canada rate is constant, but spreads are different, all points should lie on the same line, with slope 10,000
- If the five-year Canada rate varies, but spreads are constant, all points should lie on the same line as above.
- However, if both elements vary, then points will be off the line defined by the above. For example, an issue with a spread of 200bp that comes to market when the five-year Canada rate is at 2% will have an initial dividend of 4% and an Issue Reset Spread of 200bp, while an issue with a spread of 100bp that comes to market when the five-year Canada rate is at 3% will have the same initial dividend, 4%, but an Issue Reset Spread of 100bp.

Present Value of a FixedReset

A little algebra is sufficient to analyze the present value of a FixedReset into portions defined by the initial rate, 5-year Canada rate and Issue Reset Spread.

Let: r = initial rate

g = GOC-5 Rate (presumed to be constant)

s = Issue Reset Spread

p = periods to reset

d = discounting factor

V = Present Value

$$\begin{aligned}
 V &= rd + rd^2 + \dots + rd^p \\
 &\quad + (g+s)d^{p+1} + (g+s)d^{p+2} + \dots \\
 &= \sum_{t=1}^p rd^t + \sum_{t=p+1}^{\infty} (g+s)d^t \\
 &= r \sum_{t=1}^p d^t + (g+s) \sum_{t=p+1}^{\infty} d^t \\
 &= r \sum_{t=1}^p d^t + (g+s) \sum_{t=1}^{\infty} d^t - (g+s) \sum_{t=1}^p d^t \\
 &= (r-g-s) \sum_{t=1}^p d^t + (g+s) \sum_{t=1}^{\infty} d^t \quad [1]
 \end{aligned}$$

Lemma 1:

$$S = \sum_{t=1}^p d^t = d + d^2 + \dots + d^p$$

$$\frac{1}{d}S = 1 + d + d^2 + \dots + d^{p-1}$$

$$\left(1 - \frac{1}{d}\right)S = d^p - 1$$

$$S = \frac{d^p - 1}{1 - \frac{1}{d}} = \frac{d^{p+1} - d}{d - 1} = \frac{d - d^{p+1}}{1 - d}$$

Lemma 2:

$$S^1 = \sum_{t=1}^{\infty} d^t = d + d^2 + d^3 + \dots$$

$$\frac{1}{d}S^1 = 1 + d + d^2 + d^3 + \dots$$

$$\left(1 - \frac{1}{d}\right)S^1 = -1$$

$$S^1 = \frac{-1}{1 - \frac{1}{d}} = \frac{-d}{d - 1} = \frac{d}{1 - d}$$

from [1]

$$\begin{aligned}
 V &= (r-g-s) \frac{d-d^{P+1}}{1-d} + (g+s) \frac{d}{1-d} \\
 &= r \frac{d-d^{P+1}}{1-d} + (g+s) \left(\frac{d}{1-d} - \frac{d-d^{P+1}}{1-d} \right) \\
 &= r \frac{d-d^{P+1}}{1-d} + (g+s) \left(\frac{d^{P+1}}{1-d} \right) \quad \text{[Equ 2]}
 \end{aligned}$$

for a straight perpetual

$$r \equiv g+s \quad (\text{current rate is by definition equal to the future rate})$$

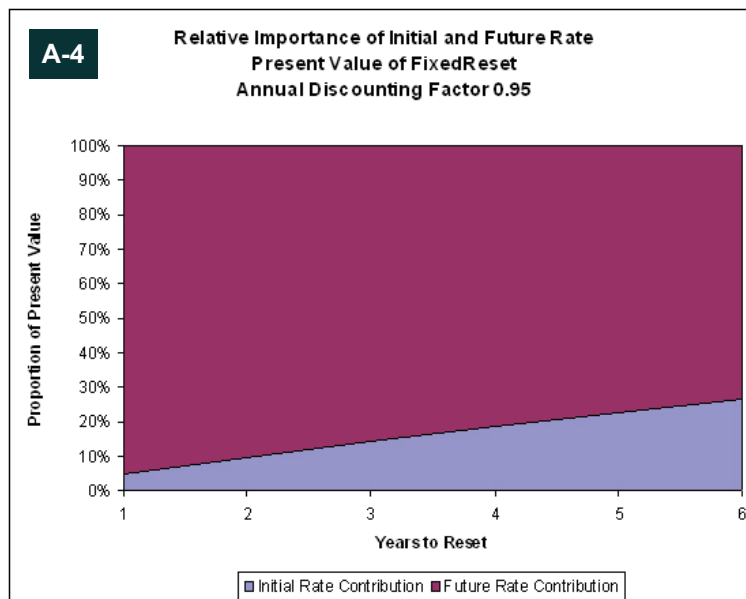
$$\text{and } v = r \frac{d}{1-d}$$

The first term in Equation 2 will be referred to as the “r-value”, equal to r multiplied by the “r-factor”. The second term defines the “gs-value” and the “gs-factor” similarly; the “gs-value” is the sum of the “g-value” and the “s-value”, after both are multiplied by the gs-factor.

It should be noted that in the above, the length of each period has not been defined: for exact answers one should use quarterly periods, but for simplicity and ease of understanding the following discussion will define “Periods” in units of 1 year.

If we set $d = 0.95$ in Equation 2 and solve for the factors that determine the contributions of r and g+s to present value, we derive Table A-2, which is presented graphically in Chart A-4.

Table A-2: Factors for Initial and Future Period Rates						
Item	P = 1	P = 2	P = 3	P = 4	P = 5	P = 6
r-factor	0.950	1.853	2.710	3.524	4.298	5.033
gs-factor	18.050	17.148	16.290	15.476	14.702	13.967
Proportion r	5.00%	9.75%	14.26%	18.55%	22.62%	26.49%
Proportion gs	95.00%	90.25%	85.74%	81.45%	77.38%	73.51%



It must be recalled that the derivation of Equation 2 did not include the effect of calls, so one may not blindly apply the valuation model. For example, there are 20 issues rated Pfd-1(low) that have an Issue Reset Spread in excess of 300bp. As these are likely to be called at the issuers' first opportunity on economic grounds (even ignoring "Deemed Maturities" effects arising the lack of an NVCC clause in Tier 1 issues), differences in the Issue Reset Spreads between these issues will not contribute significantly to fair market value.

However, Equation 2 is very helpful when evaluating issues less likely to be called; BCE.PR.K is an interesting case in point.

Present Value Analysis of BCE.PR.K

BCE.PR.K, a 4.15%+188 FixedReset, is of particular interest, as it is the only preferred share issue I know of (other than SplitShare preferreds) to have been reissued. The original \$300-million tranche was announced⁶ on June 20, 2011, when the five-year Canada rate was about 2.10%, with a second tranche of \$250-million announced⁷ December 12, when five-year Canadas were yielding about 1.30%.

Table A-3 shows the yields of Canada bonds reported⁸ by the Bank of Canada for the two announcement days. The first Exchange Date for the issue is 2016-12-30, so the initial term was about 5.5 years, which explains why the implied Canada yield (Initial Rate less the Issue Reset Spread = 4.15% – 188bp = 2.27%) is not closer to reported five year yield on that date of 2.19%. As has been discussed previously in this newsletter, issuers will often choose an initial term to reset in excess of five years to enable them to use a higher Canada yield than would be the case with a five-year term, while the underwriters can maintain the pretense of concern with the integrity of the structure.

Term	2011-6-20	2011-12-12
2-Year	1.51%	0.88%
3-Year	1.80%	0.94%
5-Year	2.19%	1.28%
7-Year	2.57%	1.54%
10-Year	2.97%	2.01%
Long-Term	3.42%	2.62%

Given the sharp decline in Canada yields in the six months between announcements, one might expect that an issue with an Initial Dividend Rate of 4.15% would carry an Issue Reset Spread of about 285bp, substantially in excess of the 188bp previously issued. We have seen such an effect previously; for example, BMO.PR.N and BMO.PR.O both have Initial Dividend Rates of 6.5%, but the Issue Reset Spreads for these issues are 383bp and 458bp, respectively, due to changes in Canada yields between the respective announcement dates of 2008-11-25⁹ and 2009-3-11¹⁰.

However, on December 12, 2011, BCE.PR.K closed at 25.00-05, with the market apparently unconcerned by the drop in Canada yields. This is not necessarily a ridiculous outcome; investors might have maintained their forecast for the December, 2016, five-year Canada yield without giving too much weight to changes in this yield five years prior to the reset date; but it does not change the fact that a new issue adhering to the normal FixedReset structure would have come with a much higher Issue Reset Spread.

We can now use Equation 2 to determine what effect such a difference in Issue Reset Spreads should have had on the price of BCE.PR.K and the notional, 4.15%+285bp FixedReset new issue that would have been the normal choice for an issue. As the Initial Dividend Rate is 4.15%, we will use $1/1.0415 = 0.96015$ as the discounting factor and set $p = 5$ years. We will set the 5-Year Canada rate to two different values so that we may see what assumption is required if either the actual or the notional issue is to have a present value equal to its par value. The calculations are summarized in Tables A-4 and A-5.

⁶ BCE Inc., *BCE announces \$300 million offering of cumulative redeemable first preferred shares, series AK*, Press Release, 2011-6-20, available on-line at <http://www.bce.ca/en/news/releases/corp/2011/06/20/76918.html> (accessed 2012-1-7)

⁷ BCE Inc., *BCE announces \$250-million additional offering of cumulative redeemable first preferred shares, series AK*, Press Release, 2011-12-12, available on-line at <http://www.bce.ca/en/news/releases/corp/2011/12/12/77014.html> (accessed 2012-1-7)

⁸ Bank of Canada, *Canadian bond yields: 10-year lookup*, available on-line at <http://www.bankofcanada.ca/rates/interest-rates/lookup-bond-yields/> (accessed 2012-1-7)

⁹ See <http://www.prefblog.com/?p=4156>

¹⁰ See <http://www.prefblog.com/?p=5836>

**Table A-4: Calculation of Present Value, BCE.PR.K and Notional New Issue
Discounting Yield = 4.15%, Future GOC-5 = 2.27%, P = 5**

Issue	Dividend Rate	r-value	s-value	g-value	Total Present Value
BCE.PR.K	4.15%+188	4.60	9.24	11.16	25.00
Notional	4.15%+285	4.60	14.01	11.16	29.77

**Table A-5: Calculation of Present Value, BCE.PR.K and Notional New Issue
Discounting Yield = 4.15%, Future GOC-5 = 1.30%, P = 5**

Issue	Dividend Rate	r-value	s-value	g-value	Total Present Value
BCE.PR.K	4.15%+188	4.60	9.24	6.39	20.23
Notional	4.15%+285	4.60	14.01	6.39	25.00

The values of “g” chosen for each of the two tables should not come as a surprise: given that the Discounting Yield has been set equal to the initial yield, then the issue that is trading at par will require a future GOC-5 yield that will maintain the Initial Dividend Rate in perpetuity.

However, the differences in Total Present Value between the actual re-issue of BCE.PR.K and that of the notional new issue should give investors pause: these are huge differences and the successful re-opening of BCE.PR.K can be explained only by assuming that investors assume that an Issue Reset Spread of 285bp will result in a call for redemption at the first opportunity – it must be remembered that this computation of Present Value ignores the value of the issuer’s embedded option.

However, the expectation of consistency seems a little far-fetched. It is much more likely that purchasers of the BCE.PR.K reopening, and their advisors, are simply incompetent.

Market Expectations of GOC-5 Yield

Given equation 2, we can calculate the market expectations of the Five-Year Canada yield that are required if each issue is considered separately. This calculation is performed in Table A-6 for all issues in the HIMIPref™ universe for which the Issue Reset Spread is below 200bp for investment-grade issues and below 300bp for junk.

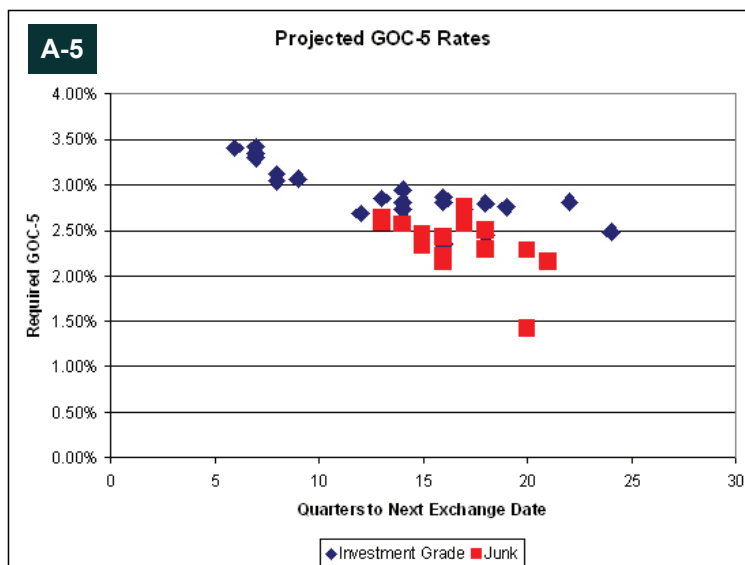
The Table A-6 calculation is approximate – it has been assumed that the required yield for each issue is the Current Yield at the bid price. In order to improve precision, all factors are computed on a quarterly basis (although the required GOC-5 yield is reported in annualized terms), but all periods are rounded to the nearest whole quarter. Thus, there is some imprecision related to the proximity of the next ex-Dividend date.

It should also be noted that no allowance has been made for the potential Deemed Retraction of bank- and insurer-issued FixedResets – all issues are analyzed throughout this essay as if they are true perpetuals.

Table A-6: Calculation of GOC-5 Rate Required for Each Issue to Realize its Current Yield to Perpetuity

Ticker	Initial Dividend	Spread on Reset	Reset Date	Bid	Current Yield (Annual)	P (quarters)	D (quarterly)	r-value	s-value	Required g-value	g (Annual)
BAM.PR.X	1.15	180	06/30/17	24.81	4.64%	22	0.988533	5.55	7.52	11.73	2.81%
BMO.PR.M	1.25	165	08/25/13	26.03	4.80%	7	0.988142	2.09	7.91	16.04	3.35%
BMO.PR.Q	0.975	115	08/25/16	25.42	3.84%	19	0.990491	4.22	6.24	14.96	2.76%
BNS.PR.Q	1.25	170	10/25/13	25.76	4.85%	7	0.988020	2.09	8.05	15.62	3.30%
BNS.PR.R	1.25	188	01/26/14	25.90	4.83%	8	0.988069	2.37	8.84	14.69	3.12%
BNS.PR.Y	0.9625	100	04/25/15	25.22	3.82%	13	0.990540	2.93	5.78	16.51	2.85%
BNS.PR.Z	0.925	134	02/01/16	25.01	3.70%	16	0.990835	3.42	7.81	13.77	2.36%
CIU.PR.C	0.95	136	06/01/16	25.12	3.78%	18	0.990638	3.91	7.59	13.61	2.44%
FTS.PR.H	1.0625	145	06/01/15	25.56	4.16%	14	0.989707	3.44	7.54	14.58	2.80%
GWO.PR.N	0.9125	130	12/31/15	23.39	3.90%	16	0.990344	3.36	7.14	12.89	2.35%
HSE.PR.A	1.1125	173	03/31/16	25.82	4.31%	17	0.989340	4.30	8.36	13.16	2.72%
IFC.PR.A	1.05	172	12/31/17	25.05	4.19%	24	0.989634	5.54	7.99	11.51	2.48%
MFC.PR.F	1.05	141	06/19/16	23.97	4.38%	18	0.989169	4.27	6.62	13.09	2.79%
PWF.PR.P	1.10	160	01/31/16	25.30	4.35%	16	0.989242	4.02	7.73	13.55	2.80%
RY.PR.I	1.25	193	02/24/14	26.20	4.77%	9	0.988216	2.65	9.09	14.46	3.07%
SLF.PR.G	1.0875	141	06/30/15	22.55	4.82%	14	0.988093	3.48	6.18	12.88	2.94%
TD.PR.A	1.25	196	01/31/14	26.10	4.79%	8	0.988167	2.37	9.30	14.43	3.04%
TD.PR.S	1.25	160	07/31/13	25.90	4.83%	6	0.988069	1.80	7.71	16.40	3.40%
TD.PR.Y	1.275	168	10/31/13	26.03	4.90%	7	0.987898	2.13	7.87	16.03	3.42%
TRP.PR.A	1.15	192	12/31/14	26.14	4.40%	12	0.989120	3.22	9.57	13.36	2.68%
TRP.PR.B	1.00	128	06/30/15	25.58	3.91%	14	0.990320	3.26	7.14	15.18	2.72%
TRP.PR.C	1.10	154	01/30/16	25.80	4.26%	16	0.989462	4.03	7.63	14.15	2.86%
ALA.PR.A	1.25	266	10/30/15	25.98	4.81%	15	0.988118	4.27	11.56	10.16	2.34%
BAF.PR.A	1.2125	209	03/31/16	25.50	4.75%	17	0.988264	4.64	9.00	11.86	2.75%
BCE.PR.K	1.0375	188	12/30/16	25.02	4.15%	20	0.989732	4.66	9.21	11.14	2.27%
BPO.PR.P	1.2875	300	03/31/17	25.25	5.10%	21	0.987411	5.90	11.27	8.08	2.15%
BRF.PR.A	1.3125	262	04/30/15	26.25	5.00%	13	0.987654	3.91	11.15	11.19	2.63%
CPX.PR.A	1.15	217	12/31/15	24.90	4.62%	16	0.988582	4.18	9.77	10.95	2.43%
CSE.PR.A	1.25	271	07/31/16	17.76	7.04%	18	0.982704	4.79	7.03	5.94	2.29%
EMA.PR.A	1.10	184	08/15/15	25.78	4.27%	14	0.989438	3.56	9.28	12.94	2.56%
FFH.PR.E	1.1875	216	03/31/15	22.40	5.30%	13	0.986923	3.52	8.59	10.29	2.59%
FFH.PR.G	1.25	256	10/30/15	23.88	5.23%	15	0.987094	4.23	10.07	9.58	2.43%
FFH.PR.I	1.25	285	12/31/15	23.90	5.23%	16	0.987094	4.49	11.07	8.35	2.15%
FN.PR.A	1.1625	207	03/31/16	19.06	6.10%	17	0.984979	4.32	6.56	8.18	2.58%
GMP.PR.B	1.375	289	03/31/16	22.31	6.16%	17	0.984834	5.11	9.05	8.16	2.61%
INE.PR.A	1.25	279	01/15/16	23.30	5.36%	16	0.986777	4.47	10.52	8.31	2.20%
NPI.PR.A	1.3125	280	09/30/15	25.29	5.19%	15	0.987191	4.45	11.12	9.73	2.45%
REI.PR.A	1.3125	262	03/31/16	25.73	5.10%	17	0.987411	4.99	10.35	10.39	2.63%
RON.PR.A	1.3125	265	03/31/16	24.11	5.44%	17	0.986582	4.95	9.68	9.48	2.60%
SJR.PR.A	1.125	200	06/30/16	25.57	4.40%	18	0.989120	4.57	9.33	11.67	2.50%
TA.PR.D	1.15	203	03/31/16	25.16	4.57%	17	0.988704	4.42	9.15	11.59	2.57%
TLM.PR.A	1.05	277	12/31/16	24.41	4.30%	20	0.989364	4.70	13.00	6.70	1.43%

See Equation 2 and discussion thereof for an explanation of the calculation.



An examination of Chart A-5, which presents the results from Table A-6 in graphic format, reveals two tendencies of interest:

- There is a clear tendency for the required GOC-5 rate to decline as the time until the next reset date increases; this is despite the fact that the near term (5–10 quarters) data points are substantially above the current GOC-5 level.
- There is a clear tendency for the required GOC-5 rate for junk issues to be less than the required GOC-5 rate for investment-grade issues.

I am at a loss to rationalize these two observations.

Rich/Cheap Analysis 1: Realizing Current Yield

Having derived a range of values for the future GOC-5 yield projected by the market, we may now reverse the process – plugging in an expected value of this future figure into Equation 2 for each of the instruments selected and determining the present value of the projected cash flows derived by using this figure.

For the moment, the Current Yield for each instrument will be used to derive the discounting factor for each calculation. As will be seen, this calculation yields results that are almost trivial, but which serve to illustrate an important point.

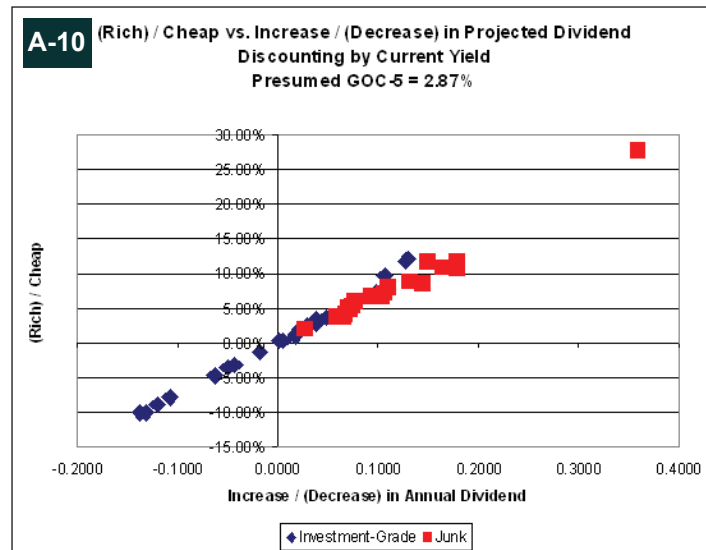
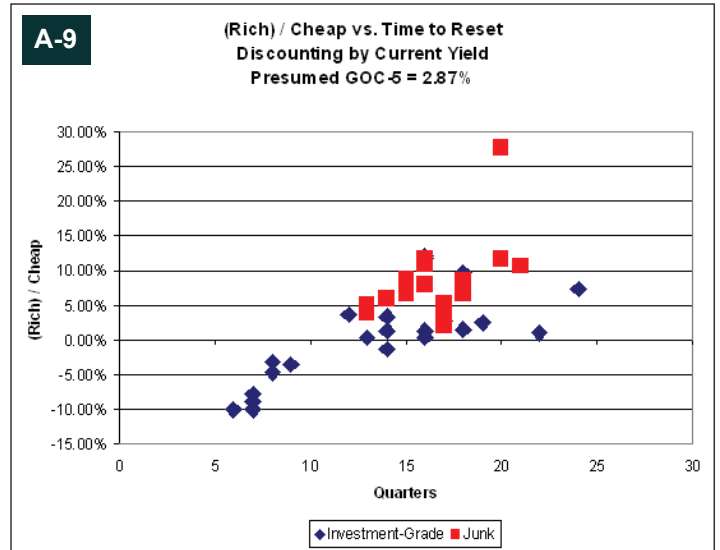
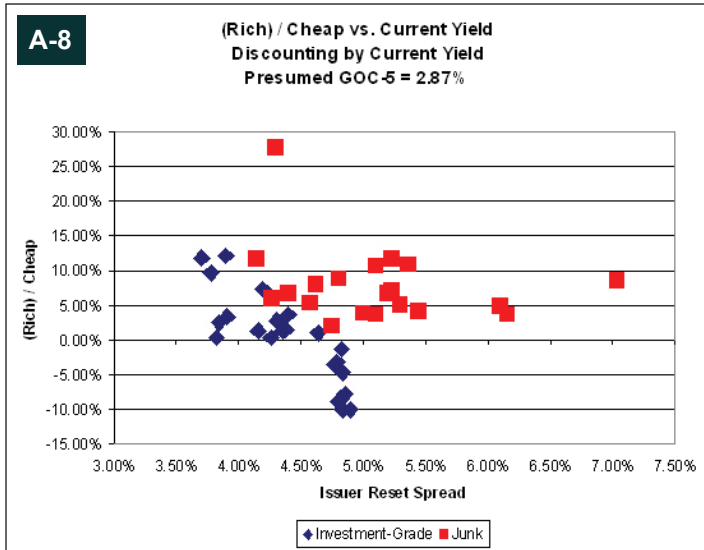
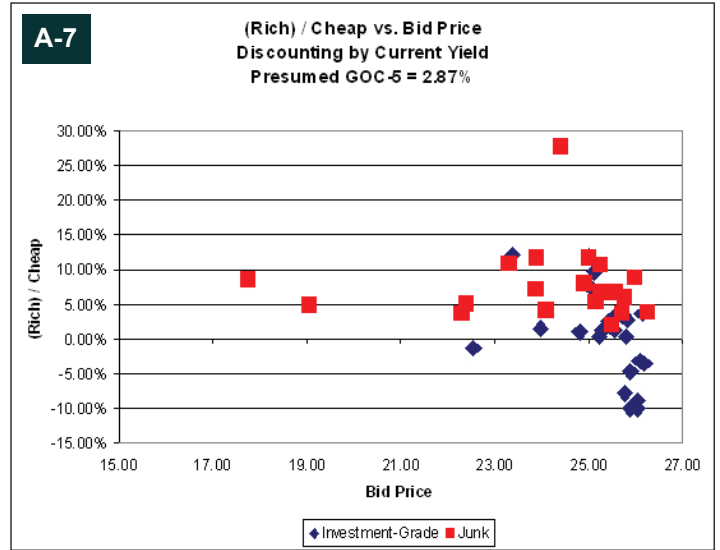
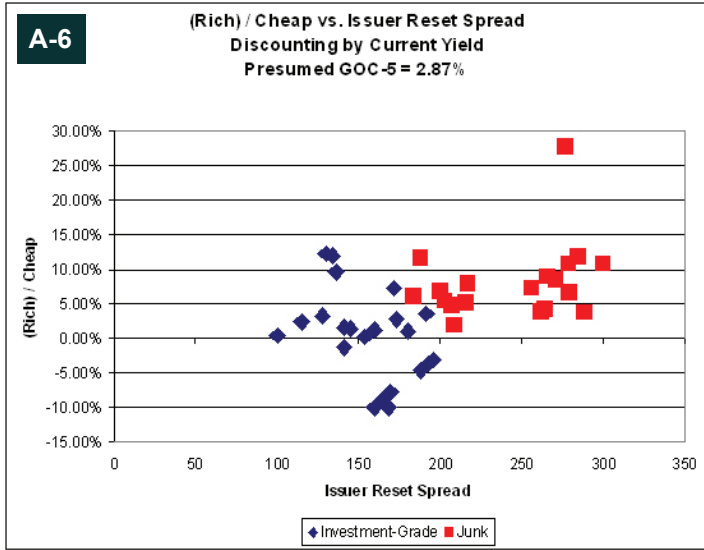
The arithmetic mean of the projected GOC-5 yield for the selected investment-grade issues is 2.87% and this will be used for all calculations. The restriction of this calculation to the investment-grade issues may be justified on two grounds:

- A larger pool of investors will be watching these issues and performing their own rich/cheap analysis; thus, these values may be considered a better reflection of the views of the market as a whole
- Investment-grade issues are more heavily influenced by overall interest-rate conditions than are junk issues, which are more susceptible to idiosyncratic risk.

The results of these calculations are shown in Table A-7 and scatter plots of the results are shown in Charts A-6 to A-10.

Table A-7: Rich/Cheap Analysis #1: Realizing Current Yield with GOC-5 = 2.87%

Ticker	Initial Dividend	Spread on Reset	Reset Date	Bid	Current Yield	Change Dividend (Decrease)/ Increase	P (quarters)	D (quarterly)	r-value	s-value	g-value	Fair Value	(Rich)/ Cheap
BAM.PR.X	1.15	180	06/30/17	24.81	4.64%	0.0175	22	0.988533	5.55	7.52	12.00	25.08	1.08%
BMO.PR.M	1.25	165	08/25/13	26.03	4.80%	-0.1200	7	0.988142	2.09	7.91	13.75	23.74	-8.79%
BMO.PR.Q	0.975	115	08/25/16	25.42	3.84%	0.0300	19	0.990491	4.22	6.24	15.58	26.04	2.45%
BNS.PR.Q	1.25	170	10/25/13	25.76	4.85%	-0.1075	7	0.988020	2.09	8.05	13.60	23.74	-7.86%
BNS.PR.R	1.25	188	01/26/14	25.90	4.83%	-0.0625	8	0.988069	2.37	8.84	13.50	24.70	-4.62%
BNS.PR.Y	0.9625	100	04/25/15	25.22	3.82%	0.0050	13	0.990540	2.93	5.78	16.60	25.31	0.36%
BNS.PR.Z	0.925	134	02/01/16	25.01	3.70%	0.1275	16	0.990835	3.42	7.81	16.74	27.97	11.85%
CIU.PR.C	0.95	136	06/01/16	25.12	3.78%	0.1075	18	0.990638	3.91	7.59	16.03	27.53	9.61%
FTS.PR.H	1.0625	145	06/01/15	25.56	4.16%	0.0175	14	0.989707	3.44	7.54	14.92	25.90	1.35%
GWO.PR.N	0.9125	130	12/31/15	23.39	3.90%	0.1300	16	0.990344	3.36	7.14	15.75	26.25	12.23%
HSE.PR.A	1.1125	173	03/31/16	25.82	4.31%	0.0375	17	0.989340	4.30	8.36	13.87	26.54	2.78%
IFC.PR.A	1.05	172	12/31/17	25.05	4.19%	0.0975	24	0.989634	5.54	7.99	13.34	26.87	7.27%
MFC.PR.F	1.05	141	06/19/16	23.97	4.38%	0.0200	18	0.989169	4.27	6.62	13.47	24.35	1.58%
PWF.PR.P	1.10	160	01/31/16	25.30	4.35%	0.0175	16	0.989242	4.02	7.73	13.87	25.63	1.29%
RY.PR.I	1.25	193	02/24/14	26.20	4.77%	-0.0500	9	0.988216	2.65	9.09	13.52	25.26	-3.58%
SLE.PR.G	1.0875	141	06/30/15	22.55	4.82%	-0.0175	14	0.988093	3.48	6.18	12.59	22.26	-1.31%
TD.PR.A	1.25	196	01/31/14	26.10	4.79%	-0.0425	8	0.988167	2.37	9.30	13.62	25.29	-3.11%
TD.PR.S	1.25	160	07/31/13	25.90	4.83%	-0.1325	6	0.988069	1.80	7.71	13.82	23.33	-9.93%
TD.PR.Y	1.275	168	10/31/13	26.03	4.90%	-0.1375	7	0.987898	2.13	7.87	13.45	23.44	-9.94%
TRP.PR.A	1.15	192	12/31/14	26.14	4.40%	0.0475	12	0.989120	3.22	9.57	14.30	27.08	3.61%
TRP.PR.B	1.00	128	06/30/15	25.58	3.91%	0.0375	14	0.990320	3.26	7.14	16.01	26.41	3.25%
TRP.PR.C	1.10	154	01/30/16	25.80	4.26%	0.0025	16	0.989462	4.03	7.63	14.22	25.87	0.28%
ALA.PR.A	1.25	266	10/30/15	25.98	4.81%	0.1325	15	0.988118	4.27	11.56	12.47	28.29	8.89%
BAF.PR.A	1.2125	209	03/31/16	25.50	4.75%	0.0275	17	0.988264	4.64	9.00	12.36	26.00	1.96%
BCE.PR.K	1.0375	188	12/30/16	25.02	4.15%	0.1500	20	0.989732	4.66	9.21	14.06	27.94	11.67%
BPO.PR.P	1.2875	300	03/31/17	25.25	5.10%	0.1800	21	0.987411	5.90	11.27	10.78	27.95	10.69%
BRF.PR.A	1.3125	262	04/30/15	26.25	5.00%	0.0600	13	0.987654	3.91	11.15	12.21	27.27	3.89%
CPX.PR.A	1.15	217	12/31/15	24.90	4.62%	0.1100	16	0.988582	4.18	9.77	12.92	26.87	7.92%
CSE.PR.A	1.25	271	07/31/16	17.76	7.04%	0.1450	18	0.982704	4.79	7.03	7.44	19.26	8.45%
EMA.PR.A	1.10	184	08/15/15	25.78	4.27%	0.0775	14	0.989438	3.56	9.28	14.48	27.33	5.99%
FFH.PR.E	1.1875	216	03/31/15	22.40	5.30%	0.0700	13	0.986923	3.52	8.59	11.41	23.52	4.99%
FFH.PR.G	1.25	256	10/30/15	23.88	5.23%	0.1075	15	0.987094	4.23	10.07	11.29	25.59	7.17%
FFH.PR.I	1.25	285	12/31/15	23.90	5.23%	0.1800	16	0.987094	4.49	11.07	11.14	26.70	11.70%
FN.PR.A	1.1625	207	03/31/16	19.06	6.10%	0.0725	17	0.984979	4.32	6.56	9.09	19.98	4.81%
GMP.PR.B	1.375	289	03/31/16	22.31	6.16%	0.0650	17	0.984834	5.11	9.05	8.98	23.14	3.70%
INE.PR.A	1.25	279	01/15/16	23.30	5.36%	0.1650	16	0.986777	4.47	10.52	10.82	25.81	10.77%
NPL.PR.A	1.3125	280	09/30/15	25.29	5.19%	0.1050	15	0.987191	4.45	11.12	11.39	26.96	6.59%
REL.PR.A	1.3125	262	03/31/16	25.73	5.10%	0.0600	17	0.987411	4.99	10.35	11.34	26.68	3.71%
RON.PR.A	1.3125	265	03/31/16	24.11	5.44%	0.0675	17	0.986582	4.95	9.68	10.48	25.11	4.16%
SJR.PR.A	1.125	200	06/30/16	25.57	4.40%	0.0925	18	0.989120	4.57	9.33	13.39	27.29	6.74%
TA.PR.D	1.15	203	03/31/16	25.16	4.57%	0.0750	17	0.988704	4.42	9.15	12.94	26.52	5.39%
TLM.PR.A	1.05	277	12/31/16	24.41	4.30%	0.3600	20	0.989364	4.70	13.00	13.47	31.18	27.73%



Scatter plots are an extremely valuable tool in the development of quantitative analytical techniques, as they make it easier for the analyst to see relationships in the data which may be worthy of detailed study. In this case, there is a very clear relationship between the rich/cheap status of each issue and the presumed change in its dividend after reset when the GOC-5 rate is presumed to be constant. It should be noted that although 2.87% has been chosen as the constant value of this variable, the ranking of the relative values will remain unchanged when the value is changed – the precise value is of interest only when comparing the issues to issues which are affected differently by this rate – or which are not directly affected at all, as is the case with Straight Perpetuals.

However, the relationship between the change in expected dividend and rich/cheap is almost a tautology – only the variance of the periods until reset prevents it from being completely tautological and it is this variance that gives rise to the observed slight deviations from a perfectly linear relationship, as can be confirmed by inspection of equation 2. But the analysis contains an inconsistency; resolution of this inconsistency should improve the utility of the analytical methodology.

This inconsistency is the use of each issue’s Current Yield as the basis for the calculation of the Discounting Factor (variable “d” in equation 2). It does not make sense, for instance that we should determine relative worth by discounting the three TD issues included in the sample by three different yields, which vary by 11bp – and even less sense that the three TRP issues should be discounted with yields varying by 49bp (we won’t even discuss the four BNS issues, which have Current Yields varying by 115bp!).

While it might be desirable to use different discounting yields in certain cases, such variances should be supported by some theory, not introduced due to something as arbitrary as the level at which they are currently trading! After all, it is to determine the difference between the current trading price and a theoretically consistent fair value calculation that the rich/cheap analysis is performed in the first place! An improved pricing model is presented in the next section.

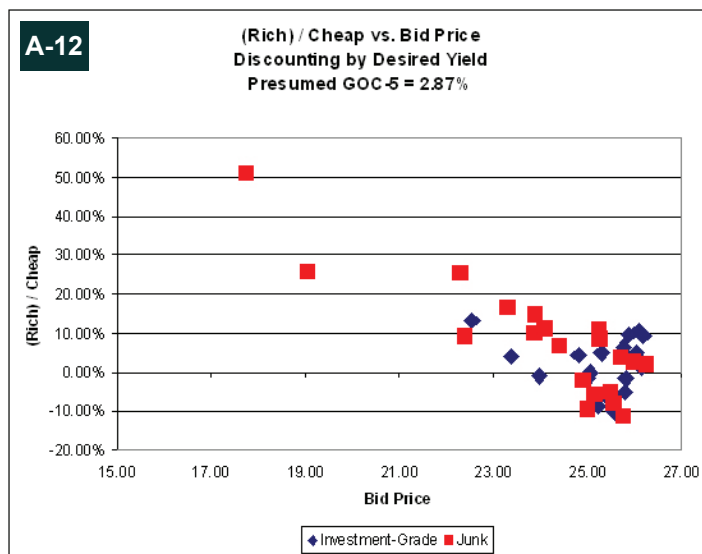
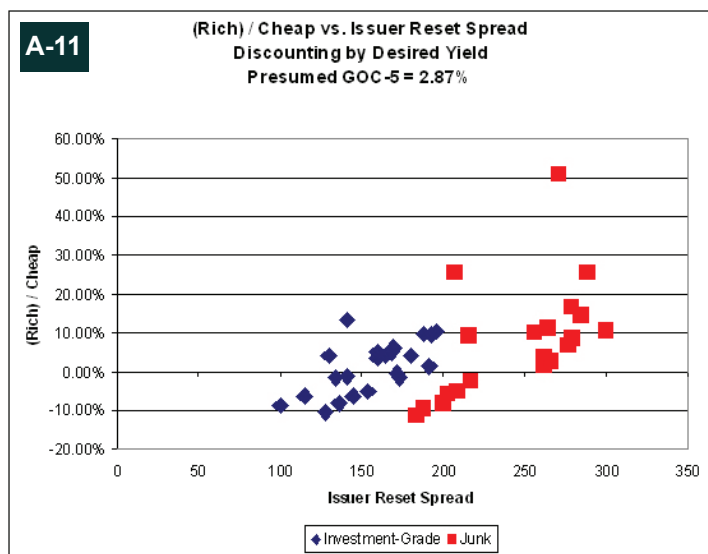
Rich/Cheap Analysis 2: Realizing a Desired Yield

It is most convenient – if rather arbitrary – to set the desired level of realized yield to perpetuity equal to the average Current Yield for each credit class, but unfortunately the average Current Yield for Pfd-1* issues is higher than that for Pfd-2* issues. Since this makes no sense, desired yields to perpetuity have been assigned arbitrarily. These yields are reported in Table A-8.

Calculations have been performed in the usual manner and are reported in Table A-9 and displayed graphically in Charts A-11 to A-15.

Credit Class	Average Current Yield	Desired Yield to Perpetuity
Pfd-1*	4.48%	4.20%
Pfd-2*	4.23%	4.50%
Pfd-3*	5.11%	5.10%

The postscript “” is intended to mean that the modifiers “(high)” and “(low)” are ignored; e.g., “Pfd-2*” includes Pfd-2(high), Pfd-2 and Pfd-2(low).*



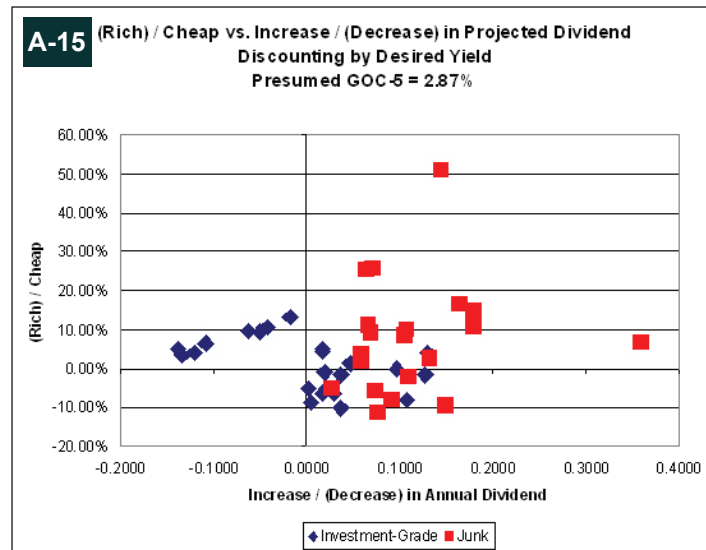
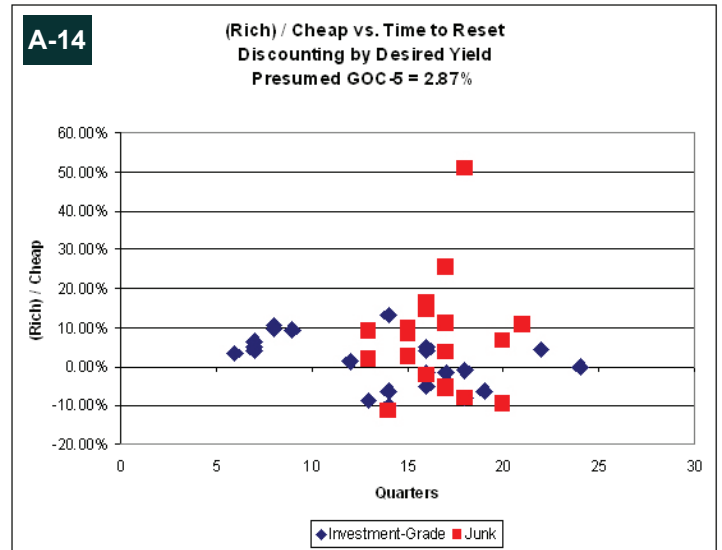
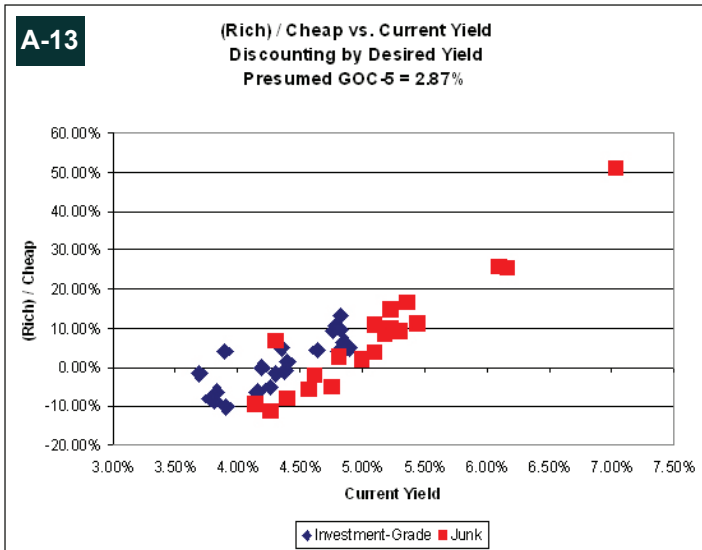


Table A-9: Rich/Cheap Analysis #2: Realizing a Desired Yield with GOC-5 = 2.87%

Ticker	Initial Dividend	Spread on Reset	Bid	Desired Yield	DBRS Rating	Change Dividend (Decrease)/ Increase	P (quarters)	D (quarterly)	r-value	s-value	g-value	Fair Value	(Rich)/ Cheap
BMO.PR.M	1.25	165	26.03	4.20%	Pfd-1(low)	-0.1200	7	0.989609	2.10	9.13	15.88	27.11	4.13%
BMO.PR.Q	0.975	115	25.42	4.20%	Pfd-1(low)	0.0300	19	0.989609	4.18	5.61	14.01	23.80	-6.37%
BNS.PR.Q	1.25	170	25.76	4.20%	Pfd-1(low)	-0.1075	7	0.989609	2.10	9.41	15.88	27.38	6.30%
BNS.PR.R	1.25	188	25.90	4.20%	Pfd-1(low)	-0.0625	8	0.989609	2.39	10.29	15.71	28.39	9.63%
BNS.PR.Y	0.9625	100	25.22	4.20%	Pfd-1(low)	0.0050	13	0.989609	2.91	5.20	14.91	23.02	-8.72%
BNS.PR.Z	0.925	134	25.01	4.20%	Pfd-1(low)	0.1275	16	0.989609	3.39	6.75	14.45	24.59	-1.67%
GWO.PR.N	0.9125	130	23.39	4.20%	Pfd-1(low)	0.1300	16	0.989609	3.34	6.55	14.45	24.35	4.08%
PWF.PR.P	1.10	160	25.30	4.20%	Pfd-1(low)	0.0175	16	0.989609	4.03	8.06	14.45	26.54	4.91%
RY.PR.I	1.25	193	26.20	4.20%	Pfd-1(low)	-0.0500	9	0.989609	2.67	10.46	15.55	28.68	9.46%
SLE.PR.G	1.0875	141	22.55	4.20%	Pfd-1(low)	-0.0175	14	0.989609	3.52	7.25	14.76	25.53	13.23%
TD.PR.A	1.25	196	26.10	4.20%	Pfd-1(low)	-0.0425	8	0.989609	2.39	10.73	15.71	28.83	10.46%
TD.PR.S	1.25	160	25.90	4.20%	Pfd-1(low)	-0.1325	6	0.989609	1.81	8.95	16.05	26.80	3.47%
TD.PR.Y	1.275	168	26.03	4.20%	Pfd-1(low)	-0.1375	7	0.989609	2.14	9.29	15.88	27.31	4.93%
CIU.PR.C	0.95	136	25.12	4.50%	Pfd-2(high)	0.1075	18	0.988875	3.85	6.18	13.04	23.06	-8.18%
MFC.PR.F	1.05	141	23.97	4.50%	Pfd-2(high)	0.0200	18	0.988875	4.26	6.40	13.04	23.70	-1.14%
BAM.PR.X	1.15	180	24.81	4.50%	Pfd-2(low)	0.0175	22	0.988875	5.58	7.82	12.47	25.86	4.23%
FTS.PR.H	1.0625	145	25.56	4.50%	Pfd-2(low)	0.0175	14	0.988875	3.42	6.89	13.63	23.94	-6.32%
HSE.PR.A	1.1125	173	25.82	4.50%	Pfd-2(low)	0.0375	17	0.988875	4.28	7.95	13.18	25.41	-1.58%
IFC.PR.A	1.05	172	25.05	4.50%	Pfd-2(low)	0.0975	24	0.988875	5.49	7.31	12.19	24.99	-0.24%
TRP.PR.A	1.15	192	26.14	4.50%	Pfd-2(low)	0.0475	12	0.988875	3.21	9.33	13.94	26.48	1.29%
TRP.PR.B	1.00	128	25.58	4.50%	Pfd-2(low)	0.0375	14	0.988875	3.22	6.08	13.63	22.93	-10.34%
TRP.PR.C	1.10	154	25.80	4.50%	Pfd-2(low)	0.0025	16	0.988875	4.01	7.15	13.33	24.49	-5.07%
ALA.PR.A	1.25	266	25.98	5.10%	Pfd-3	0.1325	15	0.987411	4.24	10.78	11.63	26.66	2.61%
BAF.PR.A	1.2125	209	25.50	5.10%	Pfd-3(high)	0.0275	17	0.987411	4.61	8.26	11.34	24.21	-5.06%
BCE.PR.K	1.0375	188	25.02	5.10%	Pfd-3(high)	0.1500	20	0.987411	4.55	7.15	10.92	22.63	-9.57%
BPO.PR.P	1.2875	300	25.25	5.10%	Pfd-3(high)	0.1800	21	0.987411	5.90	11.27	10.78	27.95	10.69%
BRF.PR.A	1.3125	262	26.25	5.10%	Pfd-3(high)	0.0600	13	0.987411	3.91	10.89	11.93	26.73	1.84%
CPX.PR.A	1.15	217	24.90	5.10%	Pfd-3(low)	0.1100	16	0.987411	4.14	8.69	11.49	24.31	-2.37%
CSE.PR.A	1.25	271	17.76	5.10%	P-3 (S&P)	0.1450	18	0.987411	5.00	10.58	11.20	26.77	50.75%
EMA.PR.A	1.10	184	25.78	5.10%	Pfd-3(high)	0.0775	14	0.987411	3.51	7.55	11.78	22.84	-11.40%
FFH.PR.E	1.1875	216	22.40	5.10%	Pfd-3	0.0700	13	0.987411	3.54	8.98	11.93	24.45	9.14%
FFH.PR.G	1.25	256	23.88	5.10%	Pfd-3	0.1075	15	0.987411	4.24	10.38	11.63	26.25	9.94%
FFH.PR.I	1.25	285	23.90	5.10%	Pfd-3	0.1800	16	0.987411	4.50	11.41	11.49	27.39	14.61%
FN.PR.A	1.1625	207	19.06	5.10%	Pfd-3	0.0725	17	0.987411	4.42	8.18	11.34	23.94	25.60%
GMP.PR.B	1.375	289	22.31	5.10%	Pfd-3(low)	0.0650	17	0.987411	5.22	11.42	11.34	27.99	25.45%
INE.PR.A	1.25	279	23.30	5.10%	Pfd-3(low)	0.1650	16	0.987411	4.50	11.17	11.49	27.15	16.53%
NPL.PR.A	1.3125	280	25.29	5.10%	P-3 (S&P)	0.1050	15	0.987411	4.45	11.35	11.63	27.44	8.49%
REL.PR.A	1.3125	262	25.73	5.10%	Pfd-3(high)	0.0600	17	0.987411	4.99	10.35	11.34	26.68	3.71%
RON.PR.A	1.3125	265	24.11	5.10%	Pfd-3(low)	0.0675	17	0.987411	4.99	10.47	11.34	26.80	11.17%
SJR.PR.A	1.125	200	25.57	5.10%	Pfd-3	0.0925	18	0.987411	4.50	7.80	11.20	23.50	-8.08%
TA.PR.D	1.15	203	25.16	5.10%	Pfd-3	0.0750	17	0.987411	4.37	8.02	11.34	23.73	-5.67%
TLM.PR.A	1.05	277	24.41	5.10%	Pfd-3(high)	0.3600	20	0.987411	4.61	10.54	10.92	26.07	6.79%

Very dramatic differences in relative valuation are uncovered when evaluating these issues in accordance with the simple model presented here; and I will go so far as to say I have a high degree of confidence in these relative valuations, even after allowing for attributes not incorporated in the model, such as credit quality and liquidity.

Why does the market allow these differences? I suggest that:

- Market prices are heavily influenced by Current Yield, as has been discussed repeatedly in this newsletter, even though the dividend rate between Exchange Dates should contribute no more than about 25% of each issue's present value
- Bloomberg does not incorporate future projections of dividend rates into their system – and such is the intellectual bankruptcy of Canadian portfolio management that if an analytical method is not present on Bloomberg, it has no influence.¹¹

Break-Even Rate Shock

One influence on my decision to write about Issue Reset Spreads in this edition was a question from a reader who asked: *I've been thinking about adding something a bit different to my portfolio and the rate-reset may well becoming a viable option when looking at current interest rate levels, however the pricing would have to be such as to have the BERS be low enough so that the probability of a positive outcome is better than 50%. The catch would be to find an issue that has a <50% probability of being called and a BERS that would provide for a >50% probability of a favourable outcome upon interest rates increasing. Perhaps, this might be a suitable topic for comment upon in one of the upcoming issues of [this newsletter]. I guess the real question I'm asking is what would an appropriate BERS be in the current interest rate environment?*

Readers will remember that Break-Even Rate Shock was introduced in the June, 2009, edition of this newsletter as a method of quantifying the inflation protection offered by FixedResets (since the dividend will be reset every five years at a spread over the GOC-5 yield, which may be considered to be responsive to inflation) relative to the higher yields generally available on PerpetualDiscounts. This concept was later presented to wider readership in a shortened article¹² and calculators have also been made available on-line.¹³

After having given the matter some thought, I have been unable to come up with a reply to this reader's question that is not wholly evasive.

The problem is that in the current environment there is insufficient data for testing the consistency of various assumptions and that the assumptions required are both numerous and highly arbitrary:

- The theory relies on the existence of a PerpetualDiscount issue from the same issuer (or at the very least, one which is comparable). Most of these issues have since been migrated to the DeemedRetractable class
 - Should an analyst consider the reasoning behind my development of the DeemedRetractable class faulty, then he will have to explain the relative pricing of the issues: Implied Volatility is absurdly high and indicates a high degree of directionality in the forecasts of future market yields. I will cheerfully admit that I can find no explanation for this behaviour in the PerpetualDiscounts of non-regulated issues.
- All bank- and insurer-issued FixedResets should also be considered to be DeemedRetractibles, albeit with one Exchange Date prior to what is assumed to be a forced redemption. Such issues comprise the bulk of investment-grade FixedResets.
- Government yields are extremely low. It is unreasonable to suppose that ten-year government bonds should yield only 2% – the mid-point of the Bank of Canada's inflation target – and thus an increase should be expected, almost irregardless of the future behaviour of inflation
- Corporate yields, while certainly lower than historical norms, are not nearly as depressed as governments. A certain amount of spread-narrowing is to be expected over the short- to medium-term, almost irregardless of changes in credit quality and normal fluctuations in the business cycle

In short, there's very little data and a requirement for very sweeping assumptions in BERS. Still, there is one issue pair that has attracted my attention recently and it will be examined in the next section.

CZP.PR.A and CZP.PR.B

CZP.PR.A (CPI Preferred Equity Ltd. 4.85% Series '1' Pr) was issued¹⁴ on May 25, 2007, under the ticker symbol EPP.PR.A (Epcor Power Equity Ltd. 4.85% Series '1' Pr). An extremely poor reception led to the underwriters having to dump their inventory at 21.50.¹⁵

The issue of EPP.PR.B (EPCOR Power Equity Ltd. Series '2' Pr), a 7.00%+418 FixedReset, on November 2, 2009, was much more successful.¹⁶

Very shortly afterwards, there was a name (and ticker) change to CPI Preferred Equity Ltd.¹⁷

¹¹ Some analysts (particularly those who work for Bloomberg) might prefer to restate this as "all analytical methodologies with market influence are present on Bloomberg".

¹² James Hymas, *Breakeven Rate Shock*, Canadian Moneysaver, October 2009, available on-line at http://www.himinvest.com/media/moneysaver_0910.pdf

¹³ See *Break-Even Rate Shock Calculator* at <http://www.prefblog.com/?p=7511>

¹⁴ <http://www.prefblog.com/?p=872>

¹⁵ <http://www.prefblog.com/?p=1002>

¹⁶ <http://www.prefblog.com/?p=8518>

¹⁷ <http://www.prefblog.com/?p=8610>

In October 2010, DBRS placed the company under Review with Negative Implications following the company’s announcement of a strategic review which was considered to involve a probable sale of Capital Power Income L.P., the parent of the CZP.¹⁸

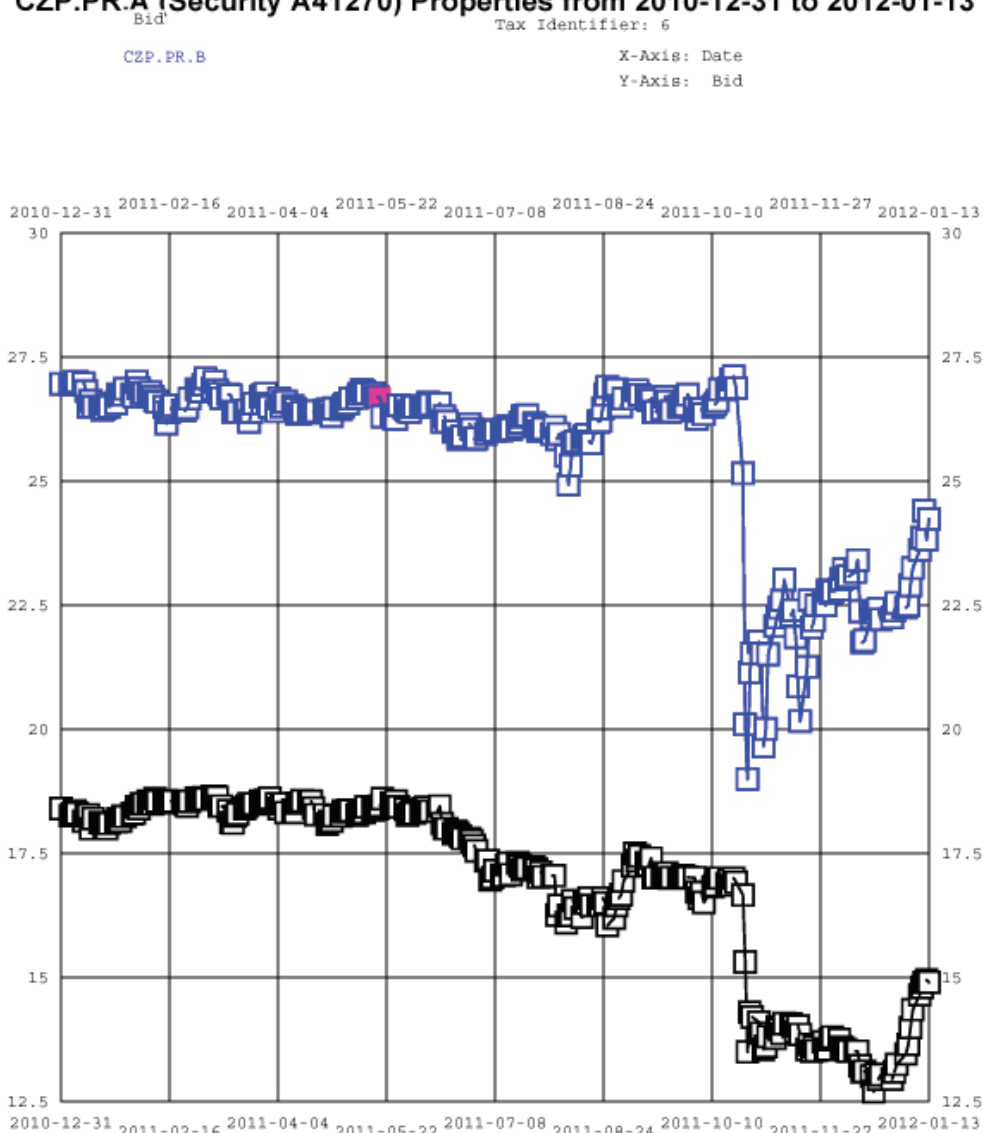
In June, 2011, a sale to Atlantic Power Corporation was announced and S&P put the company on Watch-Negative.¹⁹ The company’s status began to clarify in October, 2011, when DBRS gave warning of a possible three-notch downgrade²⁰ due to the fact that in the course of the takeover the entities would preserve their legal separate status, but that the acquired companies would be guaranteeing the parent’s debt. This maneuver, familiar to bond investors from the BCE/Teachers proposal, meant that for purposes of financial risk calculation the new conglomerate was a single entity. The takeover received its final approval on November 1²¹ and on November 10 DBRS applied its threatened three-notch downgrade²² (to Pfd-4) followed on December 21 by a downgrade to P-4(low) by S&P.²³

Naturally, all these changes had a severe effect on the market price. Chart A-17 shows the bid price for the two issues from December 31, 2010; Chart A-18 shows the yield-to-worst and Chart A-19 shows the difference in the yield-to-worst.

A-17

CZP.PR.A (Security A41270) Properties from 2010-12-31 to 2012-01-13

**Bid Prices:
CZP.PR.A (black)
and CZP.PR.B (blue)**



Historical Market Data Source: TSE (c) 1991-2011 The Toronto Stock Exchange. All Rights Reserved

¹⁸ <http://www.prefblog.com/?p=12473>

¹⁹ <http://www.prefblog.com/?p=15426>

²⁰ <http://www.prefblog.com/?p=16747>

²¹ <http://www.prefblog.com/?p=16858>

²² <http://www.prefblog.com/?p=17054>

²³ <http://www.prefblog.com/?p=1742>

A-18

CZP.PR.A (Security A41270) Properties from 2010-12-31 to 2012-01-13

Yield-to-Worst (at Bid)

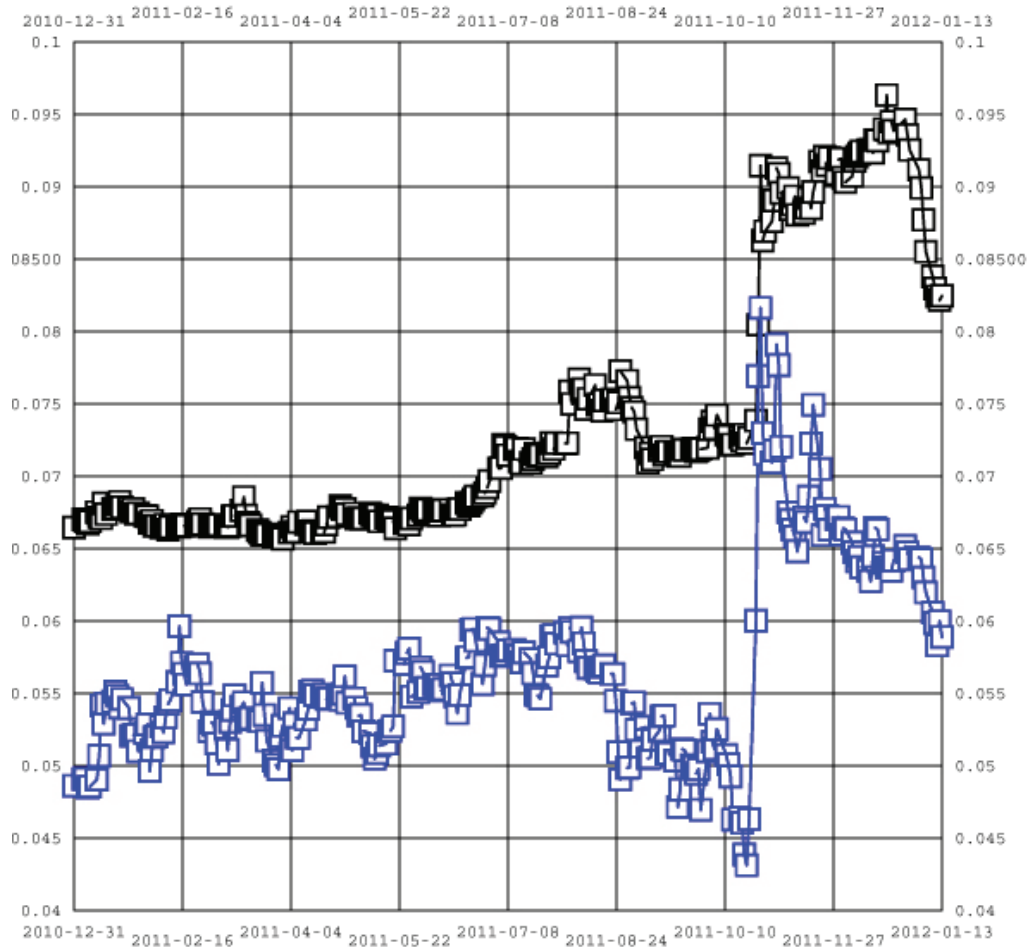
Tax Identifier: 6

CZP.PR.B

X-Axis: Date

Y-Axis: Yield-to-Worst (at Bid)

**Yield-to-Worst:
CZP.PR.A (black)
and CZP.PR.B (blue)**



Historical Market Data Source: TSE (c) 1993-2011 The Toronto Stock Exchange. All Rights Reserved

A-19

CZP.PR.A (Security A41270) Properties from 2010-12-31 to 2012-01-13

Yield-to-Worst (at Bid)

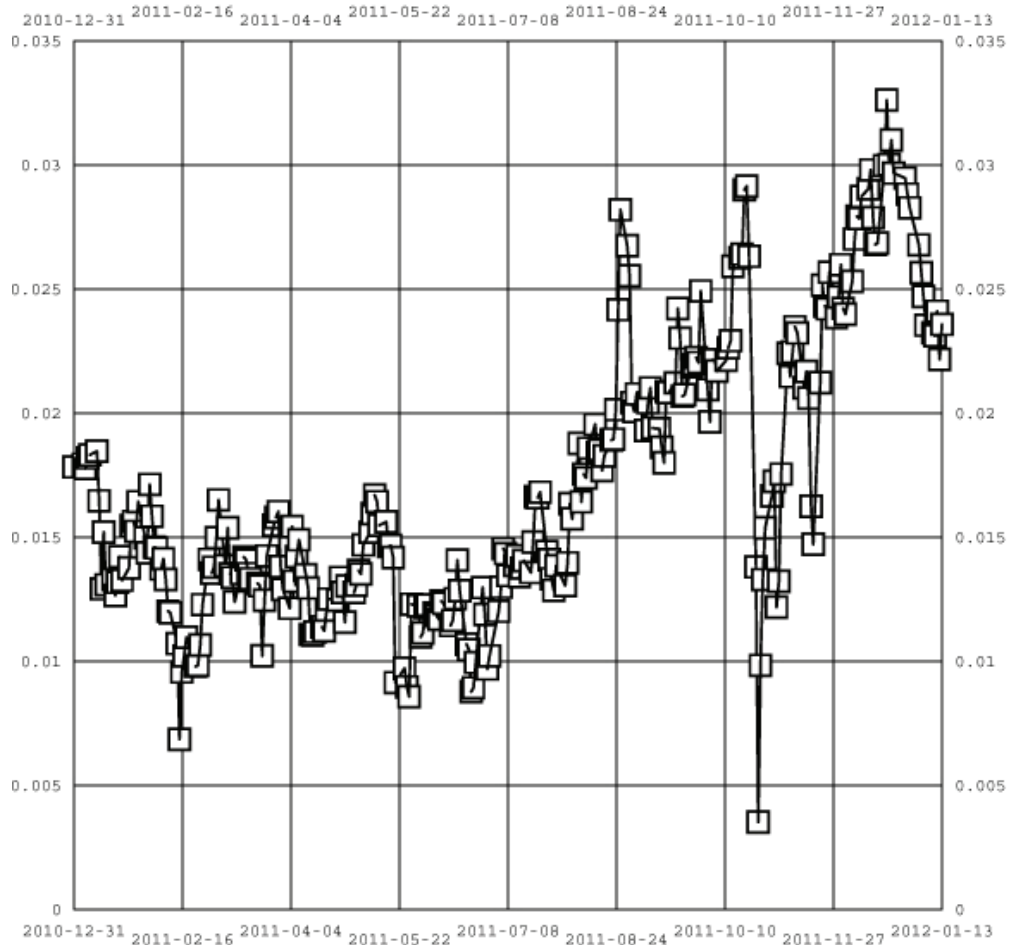
Tax Identifier: 6

**Yield-to-Worst Differences:
YTW CZP.PR.A
less YTW CZP.PR.B**

Difference

X-Axis: Date

Y-Axis: Yield-to-Worst (at Bid)



Historical Market Data Source: TSE (c) 1993-2011 The Toronto Stock Exchange. All Rights Reserved

It is the change in these differences that I find most fascinating. Summary information, together with that for BBD.PR.C (a PerpetualDiscount rated at Pfd-4 throughout) is provided in Table A-10.

Table A-10: Comparison of CZP.PR.A, CZP.PR.B and BBD.PR.C						
	December 31, 2010			January 13, 2012		
	CZP.PR.A	CZP.PR.B	BBD.PR.C	CZP.PR.A	CZP.PR.B	BBD.PR.C
Quote	18.40-64	26.96-15	23.56-69	14.90-00	24.24-40	23.36-37
Yield-to-Worst (bid)	6.65%	4.87%	6.76%	8.25%	5.89%	6.71%
Current Dividend	1.2125	1.75	1.5625	1.2125	1.75	1.5625
Current Yield	6.59%	6.49%	6.63%	8.14%	7.22%	6.69%
Modified Duration	13.03	3.56	12.74	11.14	13.54	12.96

One immediate effect that leaps out of the data is the large difference between current yield and YTW for CZPPR.B (the FixedReset Computation Spread). At the end of 2010 this is readily explainable by the relatively low Modified Duration – the issue was expected to be called at the first opportunity. Sadly for holders, this projection has been overtaken by events and the issue is not expected to be called – but there is still a huge difference between YTW and Current Yield!

The explanation has changed. The issue currently pays 7.00% of par, but the Issue Reset Spread is only (only!) 418bp, since the GOC-5 rate on the announcement date of 2009-10-13 was 2.82% as reported by the Bank of Canada²⁴ compared to the recent level of 1.25% that has been used to compute long-term expected yields.

It has been shown repeatedly in this newsletter that FixedReset pricing is dominated to a thoroughly unwarranted degree by Current Yield, even though the Issue Reset Spread is far more important for long term valuation purposes. Although this is a very useful insight for purposes of selecting issues for inclusion in a portfolio, it means that the underlying premise of the Break Even Rate Shock theory is invalidated when the dividend of the FixedReset is expected to change significantly on the next Reset Date.

At this point, I see no way of accounting for this in Break-Even Rate Shock other than by making many more assumptions than is presently the case. And, of course, the more assumptions you make, the more bias you introduce and the more that one faulty assumption can invalidate the results.

Investment Conclusions

Issue Reset Spreads are extremely important in the valuation of FixedReset issues that are not expected to be called – as a rough rule of thumb, I suggest that this includes investment grade issues with an Issue Reset Spread of 200bp or less, and junk issues with an Issue Reset Spread of 300bp or less. I consider the situation for issues with Issue Reset Spreads up to 100bp greater than these thresholds to be unclear, and will depend on relatively minor changes in market conditions.

Investors should pay particular attention to the Issue Reset Spread when selecting issues – even if one does not wish to perform a precise yield analysis for a presumed level of the GOC-5 rate, one should at the very least calculate what the Current Yield will be if the current price is maintained after reset at some reasonable and consistent value of GOC-5.

²⁴ <http://www.bankofcanada.ca/rates/interest-rates/lookup-bond-yields/>