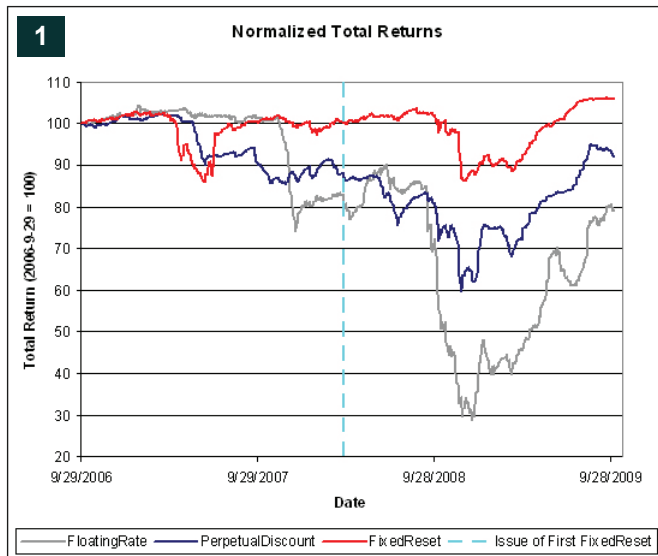# Market Timing and the Canadian Preferred Share Market[1]

The HIMIPref™ PerpetualDiscount index peaked on August 21 and since then has been in a steady decline that has accelerated in the past week – the loss from the peak is now 4.25% to October 9, 2009. Together with deeply conflicting views from economists regarding the relative dangers of inflation and deflation[2], this has fed fears that the gains of the past year are not just over, but are over-done; some investors are reducing their holdings on the grounds that 'what goes up must come down'.

This is a particularly insidious form of market timing because it pays no attention to value whatsoever; the fear is based strictly on short-term momentum. While the PerpetualDiscount index is indeed up an astonishing 53% from the low touched on 2008-11-26, a look at the longer term reveals that total return for the past three years has been negative.

The first FixedReset issue listed, BNS.PR.P, commenced trading on 2008-3-25. FixedReset Index performance prior to that date is set equal to that of the functionally equivalent FixedFloater index.

It is not my intent to discuss aspects of so-called "Technical Analysis" such as Moving Average Convergence/Divergence[3] or any of the other gibberish foisted by fools and charlatans upon the unwary; it is simply to point out that evaluating the past performance of a particular asset class – especially one that has been recently prone to the vagaries of fashion – depends greatly upon the period examined.

It may well be that a wise investor purchased at the low last November 26 and sold at the recent high of August 21: but he will have done so because the November 26 yield of 8.61% made the asset class a suitable element of his portfolio while the August 21 yield of 5.61% meant that there were other investments that better suited his needs. The capital gain in such a case would indeed be gratifying, but is not an essential element of the decision: the same sequence could well be implemented while absorbing a capital loss if another asset class improved its suitability relative to PerpetualDiscounts in the interim.

It is the yield going forward that is important, not the performance looking backward. The expected total return of a PerpetualDiscount issue with a yield of 5.61% is precisely that: 5.61%. While this expected future yield may not necessarily be realized over any given short period of time, as the length of the holding period increases, the realized total return from time of purchase will approach the yield at time of purchase regardless of what the price may be (in the absence of default or redemption, of course). This is because the issue will continue to pay out its coupons – the importance of the final price decreases as the holding period increases, due to the discounting effect of yields applied over long period.[4] At 6%, money doubles in 12 years – therefore, only one-quarter of the value of a 24-year bond yielding 6% is represented by the return of principal: three-quarters of the value is the income stream.

Market Timing

An investor who steps away from this precept and seeks to anticipate relatively short term changes in the overall market – and remember, I'm an old bond guy, so when I say "short term", I mean five years or less – is said to be engaging in Market Timing. A Market-Timer will make some kind of forecast of future economic conditions (for instance, that inflation will increase) and take investment action based at least in part on the assumption that the forecast will be proven right.

I don't like market timing and I don't do market timing. Financial Markets are chaotic; things that weren't important a year ago can become the driving force in the blink of an eye; the Law of Unintended Consequences punishes any policy-maker with the temerity to indulge in central planning (and any portfolio manager with the temerity to overlay his own projections on policy changes); and, perhaps most insidiously, there are a lot of players with a vested interest in confusing the issue.

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[1] This essay borrows heavily from my blog post of 2008-6-21, *Market Timing*, available on-line at http://www.prefblog.com/?p=2294 (accessed 2009-10-8)

[2] E.g., The Economist, 2009-5-7, *The greater of two evils*, available on-line at http://www.economist.com/opinion/displaystory.cfm?story_id=13610845 (accessed 2009-10-8) and Robert J. Samuelson, Newsweek 2009-6-6, Deflation and Inflation?, available on-line at http://www.newsweek.com/id/200916 (accessed 2009-10-8)

[3] E.g, Oanda FXTrade, *MACD,* available on-line at http://fxtrade.oanda.com/learn/graphs/indicators/macd.shtml (accessed 2009-10-9). Those who think my assessment of Technical Analysis and its practitioners harsh are invited to send me solid, scholarly proof that it has some validity. I've never seen any - nor have my own tests ever achieved success.

[4] For further discussion, see my essay *Perpetual Misperceptions,* available on-line via http://www.prefblog.com/?p=1308 (accessed 2009-10-9)

Journalists need something to write about; Dealers want to change your analysis of a situation so you'll trade. Financial advisors find it easier to convince clients that the account is being aggressively and pro-actively managed in their best interest if there are a few actual trades in the account with forecasts to justify them. And every trade costs money – commissions and spread and sometimes market impact.

My philosopy is to be fully invested at all times. Make yourself an asset allocation based on your personal needs and your long-term view of expected risks and returns. Review it once a year. Always ask yourself: 'What if I'm wrong?'

A disdain for market timing does not mean inactivity. My fund[5] does an awful lot of trading … but this is never because of a view that the market is going to go up or down.

It's simply me telling the cowboys: 'You want to trade? You want to pay the spread? You want to pay the cost of market impact? OK, you can pay that to me. Twist my arm!' I'm not always right when I agree to a trade. Fortunately, I don't have to be right every time to do a good job for my clients. Historically, my assessments of relative value have been accurate enough to outperform the market – although, I must point out, that is no guarantee for the future!

The more similar two instruments, the easier it is to identify the cheap one. Two discounted perps from the same issuer are easy to compare. A PerpetualDiscount and a PerpetualPremium from the same issuer is a little harder; comparisons with FixedResets are harder still. A PerpetualDiscount and cash is … difficult in the extreme. We may gain some understanding of how closely different asset classes are related through correlation analysis; in doing so, we will investigate the utility of the decomposition of spreads shown in Chart 2.

Correlation Analysis

When performing correlation analysis[6], we take a set of observations of data with two variables per observation. The data are assumed to be normally distributed and hence we can calculate the standard deviation of each variable over the set of observations. The data in each observation may then be compared in a disciplined manner.

If we find, for instance, that every time the first variable is one standard deviation above its mean, the second variable is also one standard deviation above its mean (and that this 1:1 relationship applies for each observation) then the correlation coefficient of the data is 1.0. The data are highly correlated and the system may be investigated further to determine whether there is an actual relationship.

The relationship may prove to be cause and effect (yelling "ouch" is highly correlated with being hit on the head), or coming from a common cause (two clocks may be highly correlated although not connected, because they are independently measuring the same thing) or the correlation may be spurious (given sufficient manuscripts written by monkeys, a tireless researcher[7] might find one that is highly correlated with the works of William Shakespeare).

In Chart 2, we plotted the yields of four different fixed income instruments: 5-Year Canadas, Long Canadas, Long Corporates and the PerpetualDiscount Interest-Equivalent yield, the last obtained by multiplying the actual yield on PerpetualDiscount preferred shares by 1.4 to approximate the tax benefits of dividend income as opposed to the interest income paid by the other three assets.

If we examine the past three years of data, we may tentatively identify the correlations – and hence, a presumed measure of how closely related these investments are – through a covariance matrix, shown as Table 1.

Table 1: Covariance Matrix for Yields of Four Different Fixed Income Instruments 123 Observations, Approximately Weekly, Period Ending 2009-10-7				
	Five-Year Canadas	Long Canadas	Long Corporates	Perpetual-Discount Interest Equivalent
Five-Year Canadas	1.00			
Long Canadas	0.93	1.00		
Long Corporates	-0.76	-0.65	1.00	
Perpetual-Discount Interest Equivalent	-0.82	-0.76	0.89	1.00

From the results shown in Table 1, we might incautiously conclude that:
- Five-Year Canadas and Long Term Canadas are highly correlated: there is not much point having both in any given portfolio
- Long Corporates and PerpetualDiscounts are highly correlated
- The correlation between obligations of Canada (both long and short term) and obligations of corporations (both long bonds and PerpetualDiscounts) are negatively correlated, which is very useful for diversification purposes

But we will not repeat Benjamin Graham's mistake and draw such a conclusion

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[5]   Malachite Aggressive Preferred Fund. See http://www.himivest.com/malachite/MAPFMain.php for more information

[6]   See Ian Stockwell, *Introduction to Correlation and Regression Analysis,* available on-line at http://www2.sas.com/proceedings/forum2008/364-2008.pdf, or almost any introductory statistics text
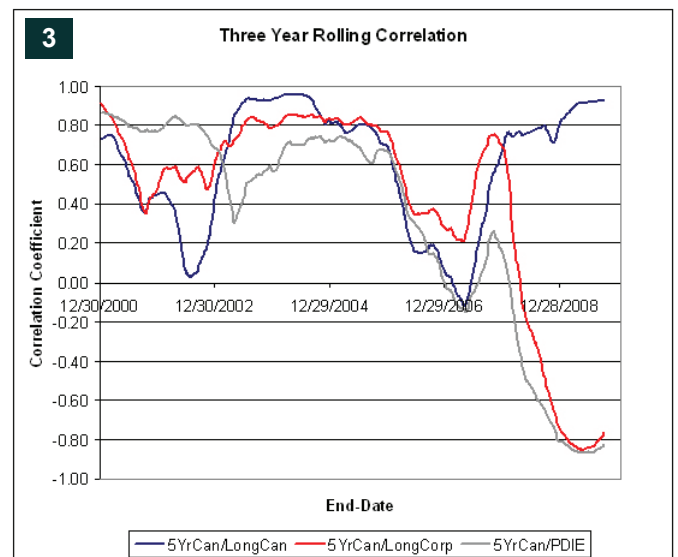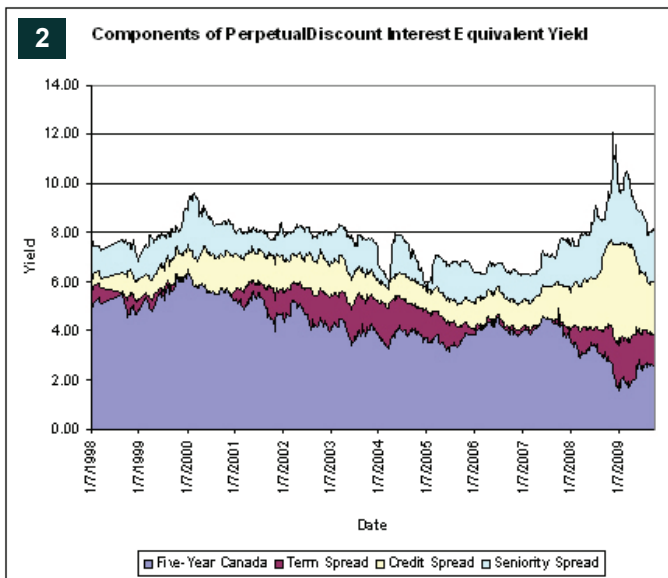
[7]   A Technical Analyst, for example.

Time-Varying Correlation

In the first edition of *The Intelligent Investor,* Benjamin Graham argued that a 50-50 split between stocks and bonds was mathematically desirable for a portfolio because the correlation between the two asset classes was negative; but this argument was dropped in the second edition since the correlation had changed.[8] Dropping the argument may have been premature, however: the Federal Reserve Bank of Kansas City's Financial Stress Index[9] uses as one of its indicators the correlation between two-year treasury bonds and the S&P 500 Index, on the grounds that during times of financial stress the correlation become negative, from its normal positive level. Since diversification will be most urgently required in times of stress, an investor could be quite justified in using the negative figure for asset allocation purposes, despite the fact that the correlation will be positive most of the time.
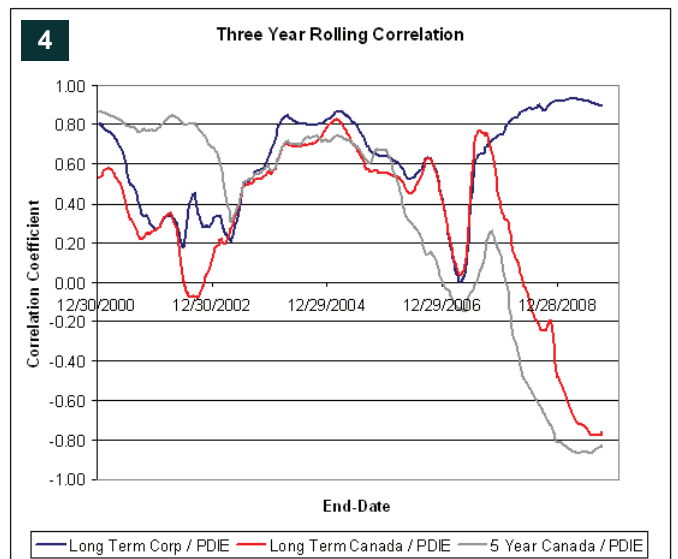
The fact that correlations between asset classes can change over time is a burgeoning field of academic research: Relationships have been sought and sometimes found: there appears to be a relationship between both the absolute and relative volatility of emerging market equity returns and the correlation of these markets with Australian equities[10]; and correlations between the Russian and US equity markets appear to be affected by (1) Country Risk as measured by the spread between the Russian Government Bonds and the U.S. Long-term Treasury Bonds, (2) the change in Russian ruble exchange rate with U.S. dollar, and (3) the change in world energy price.[11]

Getting back to the preferred share market, we can examine how the correlations between the five-year Government of Canada Yield and the other instruments chosen to decompose the spreads in Chart 2 change over time. These data are presented in Chart 3.

Chart 2 — Components of PerpetualDiscount Interest Equivalent Yield

Chart 3 — Three Year Rolling Correlation

It should be clear from Chart 3 and the many violent changes in correlation that there are many influences acting upon the four asset classes highlighted in the figure; most notably, we can hypothesize with high confidence that the negative correlation between five-year Canadas and the two corporate classes is due to the flight to quality highlighted by the Kansas City Fed in their Fiscal Stress Indicator. Note, however, that this must remain a hypothesis; before we were to dignify the claim with the sobriquet of "theory", we would need to look at more data.

We may also look at correlations focusing on the top-line of Chart 2 – the Perpetual-Discount Interest-Equivalent yield, against the other three asset classes. Correlation of the PDIE yield against the other three yields for three-year rolling periods commencing 2000-12-30 are shown in Chart 4.

A comparison of Charts 3 and 4 allows us to quantify a number of things that I have simply asserted in the past:
- Overall, the closest relationship (highest correlation) is between Long Corporate bond and PerpetualDiscount preferred yields.
- In addition, while the correlation certainly shows volatility, there is less variation in the correlation between Long Corporates and PerpetualDiscounts than there is for any of the other time-varying correlations considered.

Chart 4 — Three Year Rolling Correlation

8   Lingfeng Li, *Macroeconomic Factors and the Correlation of Stock and Bond Returns*, 2002, available via http://papers.ssrn.com/sol3/papers.cfm?abstract_id=363641 (accessed 2009-2-10)

9   Craig S. Hakkio & William R. Keeton, *Financial Stress: What Is It, How Can It Be Measured, and Why Does It Matter?*, available on-line
    at http://www.kansascityfed.org/PUBLICAT/ECONREV/pdf/09q2hakkio_keeton.pdf (accessed 2009-10-9)

10 R. Gupta & A.T.Mollik, *Volatility, Time Varying Correlation and International Portfolio Diversification: An Empirical Study of Australia and Emerging Markets*, available on-line
    at http://www.eurojournals.com/irjfe_18_02_Gupta.pdf (accessed 2009-10-8)

11   Thadavillil Jithendranathan, *Time-varying Correlations of U.S and Russian Equity Returns*, available on-line at http://129.3.20.41/eps/if/papers/0403/0403006.pdf (accessed 2009-10-8)

We may conclude that:

- Each of the four asset classes is affected in different ways by a variety of factors, which may change in nature and/or relative importance over time
- The factors influencing the yields of Long Corporates are very similar in nature and importance to the factors influencing PerpetualDiscounts
- The best yardstick to use as a measure of whether PerpetualDiscounts are "cheap" or "expensive" is the yield of Long Corporate bonds – with the caveat that at times the relationship can break down: in early 2007 the correlation as measured became zero, indicating no relationship between the two variables

With this in mind, we can look at the Seniority Spread (the difference between the PerpetualDiscount Interest-Equivalent yield and the yield on Long Corporate bonds) in more detail. I will take the opportunity to mention that in financial analysis, the difference between the price or yield of two assets is referred to as the "basis", while the risk that the basis will change – which will not necessarily involve a change in correlation – is referred to as the "basis risk".

Implications of Time-Varying Correlations

Correlations between variables that change over time can occur for a number of reasons:

- The amplitude of one of several important attributes might change
- The coefficient of one attribute with variable values might change
- A hitherto unknown factor might emerge

The first possibility has been highlighted earlier: the correlation of Russian and American equities is believed to be dependent, in part, upon world energy prices.

As an example of the second possibility, we may look at energy prices and the Canadian dollar. Bank of Canada research suggests[12] that the sign of the relationship between the Canadian dollar's real exchange rate against the US dollar and real energy prices changed from negative to positive over time, as the importance of Canada's energy exports grew; the authors pinpoint the time of the change in sign to the early 1990s.

Finally – and to complete our energy related trifecta – I note some commentary[13] on the accuracy of inflation forecasts: "…although there was concern about the effect of an overheated economy on short-term inflation rates during the 1960s, it would have been essentially impossible at that time to forecast the oil shocks of the 1970s, or the response of the fiscal and monetary authorities to those shocks."

A more current example of the emergence of unknown factors is the Credit Crunch of 2007–09. There is now widespread feeling[14] that the subprime debacle and subsequent counter-party crisis was simply the method by which central bank policy errors (keeping monetary policy too loose during the pre-2007 expansion) came to light: if it hadn't been sub-prime, it would have been something else. It is quite hard enough to forecast the effects of a perfectly functioning system; when the system breaks down, it is very difficult to forecast where the chips may fall.

Yet another example is Manulife's lobbying to get the MCCSR rules changed last fall[15], and there we have a quintessentially Canadian solution to economic difficulties: when a systemically important institution runs into trouble, change the rules so it doesn't look like trouble any more!
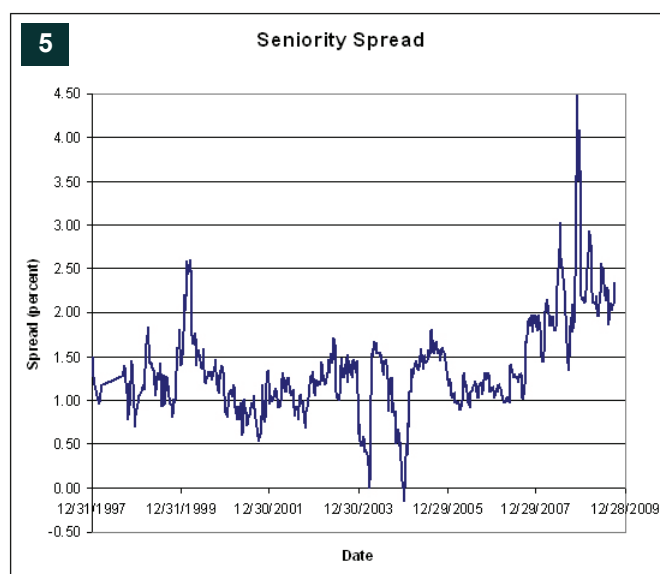
Each of the three influences on changing correlations is a reason why market timing cannot work in the long run. The world is simply too complicated to predict, policy responses may be misguided and thereby amplify errors instead of moderating them. Hitherto unknown factors may leap from lowly status as rounding errors into driving forces; financial markets are as difficult to predict as the weather.

All that one can do is diversify and, perhaps, seek to make small excess returns based on exploitation of small anomalies. Anything more is doomed to long-term failure, however lucky one might be on a few market calls.

The Seniority Spread

Historical levels of the Seniority Spread are shown in Chart 5. It may be seen that, apart from a spike in the early part of the century, this spread was fairly constant in the 100bp–150bp range until jumping during the early Credit Crunch and exploding in the wake of the Lehman default in 2008.

There is no immediately discernable relationship between the spreads shown in Chart 5 and either the Bank of Canada Financial Stress Index[16] and the Kansas City Fed's Financial Stress Index[17], both of which quantify the stress at the time of the Long Term Capital Management crisis and Russian debt default (August 1998) as being far more severe than that caused by the bursting of the NASDAQ technology bubble in March 2000 – although the Credit Crunch of 2007–09 is clearly dominant in all three data series. Clearly, the relationship of the Seniority Spread to potentially triggering events will be the source of much speculation amongst those who wish to indulge in market timing!

5 Seniority Spread

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[12] Ramzi Issa, Robert Lafrance and John Murry, Bank of Canada Working Paper 2006-29, *The Turning Black Tide: Energy Prices and the Canadian Dollar*, available on-line at http://www.bankofcanada.ca/en/res/wp/2006/wp06-29.pdf (accessed 2009-10-10)

[13] Michelle L. Barnes, Zvi Bodie, Robert K. Triest and J. Christina Wang, Federal Reserve Bank of Boston Public Policy Discussion Paper 09-8, *A TIPS Scorecard: Are TIPS Accomplishing What They Were Supposed to Accomplish? Can They Be Improved?*, available on-line at http://www.bos.frb.org/economic/ppdp/2009/ppdp0908.pdf (accessed 2009-10-10)

[14] E.g., John B. Taylor, *Systemic Risk and the Role of Government*, (speech) available on-line at http://www.frbatlanta.org/news/CONFEREN/09fmc/taylor.pdf (accessed 2009-10-10) and Roberto M. Billi, *Was Monetary Policy Optimal During Past Deflation Scares?*, available on-line at http://www.kansascityfed.org/PUBLICAT/ECONREV/pdf/09q3billi.pdf (accessed 2009-10-10)

[15] See my notes on PrefBlog at http://www.prefblog.com/?p=3898

[16] Mark Illing and Ying Liu, Bank of Canada Working Paper 2003-14, *An Index of Financial Stress for Canada*, available on-line at http://www.bankofcanada.ca/en/res/wp/2003/wp03-14.pdf (accessed 2009-10-9)

[17] Hakkio & Keeton, ibid.

Investors in preferred shares, alarmed by recent declines, may take some comfort in the idea that the Seniority Spread is currently well above historical levels; but it would also be useful to make some assumptions about the default risk of preferred shares relative to that of senior corporate bonds and see how much spread there should be to compensate for default risk.

Note that it is clear that a liquidity premium[18] will be contained in the raw spread; for an institutional investor, bonds are much more liquid than preferred shares since – normally! – a million dollars worth of corporate bonds may be traded in a single telephone call without significantly moving the market; this is, to say the least, far less common in the preferred share market. Additionally, should short term cash be required, corporate bonds may generally be margined on far better terms than will be allowed for preferred shares, which are subject to the margining rules applicable to equities.

Paradoxically, I suggest that preferred shares are more liquid than long-term corporate bonds for a retail investor, since:
- Retail bond investors are at the mercy of their brokers when transacting; published bid-offer spreads at one discount brokerage are routinely in the 5% range for long corporate bonds
- When trading preferred shares on the exchange, investors have the option of placing limit orders in an attempt to supply, rather than consume liquidity. This option is not available for retail bond investors
- These differences in liquidity may not be circumvented via holding ETFs rather than individual bonds, since no specialized Canadian Long Term Corporate Bond ETF exists, to the best of my knowledge. Even if they did exist, the MER inherent would effectively serve to widen the Seniority Spread further

Still, through a series of reasonable assumptions, we may estimate the effects of potential defaults; our comfort with the answers will be equivalent to our comfort with the much easier to understand assumptions.

Spread Due to Default: Portfolio Approach

We will assume an infinitely diversified portfolio of corporate bonds and compare it with an equally well diversified portfolio of preferred shares; blithely ignoring the fact that the number of investment grade preferred shares issuers in Canada makes such diversification a somewhat tenuous assumption.

Estimation of default rates of publicly issued securities in Canada is plagued – as usual – by lack of sufficient data to allow for high confidence in any given number. In this section, I will use estimates based on data published[19] by DBRS while noting that:
- DBRS has recorded only 40 instances of default since its inception in 1976 out of 1,185 issuers, the fairly low 3% default rate being attributed to the high proportion of initial investment grade ratings
- DBRS considers its ten-year transition matrices (which would be favoured for estimating the default probability of a long-term bond) to be "less useful" than the ideal, due to rating discontinuations and the growth of DBRS' client book over time
- The focus of my interest in preferred shares is in issues I consider to be investment grade. Roughly three-quarters of the PerpetualDiscount index is rated Pfd-1(low) or better, with the remaining one-quarter rated Pfd-2(low) or better (issues are removed from the index if downgraded below this level)

For the portfolio approach, calculations will be performed on a portfolio of bonds with the following characteristics:
- Default rate of 0.1% annually
- Loss on default of 50%
- Yield of 6% prior to default

This will be compared with a portfolio of preferred shares with:
- Default rate of 0.5% annually
- Loss on default of 100%

Not surprisingly, this results in equality of returns when preferred shares yield an interest-equivalent of 6.45%; implying that a PerpetualDiscount Interest-Equivalent spread of 45bp is sufficient compensation for default risk, compared to the pre-Crunch range of 100–150bp and its current level of about 235bp.

Given this analysis, investors are currently being paid about 195bp – almost two percent per annum – as payment for bearing the illiquidity of preferred shares.[20]

Spread Due to Default: Single Issue Approach

In this model it is assumed we have a choice between the senior bond of a company, which carries a 6% coupon and is priced at par, and the preferred share of the same company paying dividends equivalent to 6%+PDIE (the PerpetualDiscount Interest Equivalent Spread).

The company pays all its interest and dividend for D-1 years; in year D it defaults, with recovery on the bond equal to 40% of par value and recovery on the preferred being zero. Neither investment pays any income in year D.

A simple spreadsheet allows the computation of the value of D for any assigned PDIE that results in the preferred and the bond having the same internal rate of return; the answer may be surprising to those whose respect for the power of yield is not sufficiently healthy!

Even if the PDIE spread is only 100bp, the breakeven time to default is only 24 years. A PDIE of 200bp results in breakeven D of 17 years, while input of a 300bp spread outputs D of 13 years. At the current Seniority spread of about 235 bp, the breakeven time to default is 15 years; if the company can survive longer than that – roughly half the term of the bond – then the preferred share will have been the better investment.

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[18] For more about the liquidity premium, see my essay *Credit Spreads and Default Risk* via http://www.prefblog.com/?p=7586 (accessed 2009-10-11).

[19] Dominion Bond Rating Service, *2008 DBRS Corporate Rating Transition and Default Study,* available on-line at http://www.dbrs.com/research/227783/2008-dbrs-corporate-rating-transition-and-default-study.pdf (accessed 2009-10-9)

[20] That is, investors not requiring liquidity since they intend to hold the investment for a long time are, effectively, being paid a bonus. See Paul Fulcher & Colin Wilson, The Actuary, 2009-1-14, *Financial Crisis: The value of liquidity,* available on-line at http://www.the-actuary.org.uk/834588 (accessed 2009-10-11).

Cautionary Tales

The credit crunch has shown that even extremely solid, well respected global organizations like Citigroup can quickly become highly unpleasant experiences.

Citigroup announced a coercive exchange offer[21] of common shares for preferred shares on June 10 and at time of writing it appears that CIT Group Inc. might do the same[22] albeit with a different legal form. KBC Bank, a Belgian operation that ran into difficulties, has recently announced[23] a buy-back of hybrid securities (Innovative Tier 1 Capital, microscopically senior to preferred shares) at 70% of face value – which holders are expected to take advantage of, since the alternatives are probably worse.

Regulatory and monetary authorities, desperate to divert attention from their own indadequacy by scapegoating bankers and investors, are taking a dim view of a strict approach to seniority and are insisting that preferred shareholders incur some losses even before common shareholders have been completely wiped out.[24] It may be that this tendency, and future ramifications of new regulations designed to enshrine the principle, have caused and will cause a permanent shift in the relative risks of default between preferred shares and bonds and in the behaviour of issuers of these securities who find themselves financially embarrassed. This may ultimately cause an increase in the 45bp 'fair spread' estimated earlier, which I feel is currently rather harsh, if anything.

While the current 235bp Seniority Spread between long corporate bonds and the PerpetualDiscount Interest Equivalent rate makes preferreds quite attractive, a wise investor will remain diversified, both within his preferred share portfolio and his fixed income holdings in general – because, as has been emphasized in this essay, forecasting is a tricky thing!

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[21] Citigroup, Press Release 2009-6-10, *Citi Announces Public Share Exchange Launch, Finalizes Definitive Agreement with U.S. Government,* available on-line at http://www.citigroup.com/citi/press/2009/090610a.htm (accessed 2009-10-10)

[22] CIT Group Inc., Form 8-K, Filed 2009-10-2, available on-line at http://www.cit.com/wcmprod/groups/content/@wcm/@cit/@about/documents/information/offering-memorandum.pdf (accessed 2009-10-10)

[23] KBC Bank, Press Release, 2009-9-14, *KBC to repurchase certain outstanding hybrid Tier 1 securities via cash tender offer,* available on-line at https://multimediafiles.kbcgroup.eu/ng/published/KBCCOM/PDF/COM_RVG_pdf_KBC_to_purchase_certain_outstanding_hybrid_Tier1_securities_EN.pdf (accessed 2009-10-10)

[24] See, e.g., S&P Press release downgrading over 60 European financial institutions, released 2009-3-31, no longer readily available on-line, discussed at http://www.prefblog.com/?p=6104