Naïve Hedge Funds in the Canadian Preferred Share Market

One of the greatest delusions foisted on the investing public is the idea that it is somehow difficult to outperform the market; another is that heavy turnover is always a bad thing for an investment portfolio. It is particularly sad that these views are so widely held when evidence to the contrary is so easy to obtain.

If we examine the source of profit in the Canadian securities industry[1], for example, we may construct the following table of principal trading revenue for the past few years:

Trading Profits in the Canadian Securities Industry (CAD millions)

Year	Equity Trading	Fixed Income Trading
2006	811	806
2007	460	698
2008	-11	1,045
1H09	67	1,196

Profits on equity trading have declined throughout the credit crunch, but much of the slack has been taken up by the bond trading desks; I have no doubt but that things will normalize in short order.

These gargantuan profits are not – typically – earned through fundamental analysis of value or through taking a view on the market and taking investment action based on predictions of market direction. These profits are almost entirely earned through providing liquidity to the marketplace and – particularly with fixed income instruments – maintaining an inventory for the convenience of buyers and sellers.

In essence, the service performed is identical to that provided by a used car dealer. Let us assume that Joe has a car and Jane wishes to buy one – but they don't know each other. It is entirely possible that Joe will take out an ad in the paper; that Jane will respond; and that they will agree to a price of $7,500, with the only frictional cost being the cost of the ad.

This requires a fair amount of effort from both of them, however; and Joe may find that he has to keep his car for longer than he wants it while he tries to find a buyer. Jane may need a car immediately, not at some time in the next month. A very attractive alternative procedure is for Joe to sell his car to a used-car dealer for $7,000; some time later, the dealer sells the car to Jane for $8,000. Both Joe and Jane have realized sub-optimal prices on their transaction; but they were able to execute painlessly. The dealer's gross profit of $1,000 pays for a lot of services, large and small: but his primary function is to provide liquidity to the marketplace.

As an aside, the dealer might well make a mental note following this transaction to change his bid and offer on comparable cars to 7,100–8,100. This won't be because he has performed detailed analysis of peak-oil, political conditions in the Mid-East and the impact of the various pending Clean-Air bills to determine that fuel-efficient cars will become more valuable in the future … it will be simply because he found the sale to be a little easier than expected and the purchase a little tougher. The same process applies in financial markets.

The metaphor can be extended almost indefinitely. There is an army[2] of proprietary traders on the Street, entrusted by their firms with varying amounts of capital and industriously turning over their positions as often as possible. Equity traders have had a pretty skinny time of it in the past two years[3]: capital has been reduced, new players have emerged (High Frequency Traders); algorithmic trading and new order types are making their jobs more difficult; trade execution becomes ever cheaper for potential competitors who are not securities dealers – but fear not! There is always a demand for liquidity, there will always be profits available for its suppliers and sharp traders will always get enormous bonuses.

Supplying liquidity to the market is generically referred to as "Noise Trading", and can be extremely lucrative: a Toronto Life article[4] on David Berry, the former preferred share trader at Scotia Capital, claims that Scotia's profits from the preferred share desk alone in 2002 totalled $75-million. Despite this, it is still very common to hear deprecating remarks about the potential for outperformance in the illiquid Canadian preferred share market – so this month's feature will use a "naïve hedge fund" technique to examine demand for liquidity in our little corner of the capital markets.

Those interested in Noise Trading should be aware that there is more to the task than simply entering nothing but limit orders! It has been shown[5] that institutions profit though executing trades that are formally 'liquidity taking' when there has been a change in market fundamentals between the time of limit order placement and execution. It has been suggested[6] that Pegged Orders (discussed in the November issue) are desirable because this risk, dubbed 'mispricing risk' is reduced.

Successful Noise Traders will seek to perform a large number of transactions with minimal exposure at any time to any given security or sector of the market – just as with any other kind of diversification, this allows the general rule (that most price changes are noise) to dominate the exceptions (that some price changes are fundamental).

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1 Investment Industry Association of Canada, *Securities Industry Performance, Report for the Second Quarter (2009),* available on-line at http://www.iiac.ca/Upload/Q2_09%20Securities%20Industry%20Performance.pdf (accessed 2009-12-8)

2 It has been estimated that trading profits – as distinct from investment profits – in Taiwan for the five year period ended in 1999 could support an industry of 11,000 individuals – even if these individuals were paid four times the average financial institution salary. Barber, Lee, Liu and Odean, *Who Gains from Trade? Evidence from Taiwan,* available on-line at http://faculty.haas.berkeley.edu/odean/papers/Taiwan%20Performance/Who%20Gains%20from%20Trade%20040407.pdf (access 2009-12-9)

3 It is these occasional dry spells – both industry-wide and for individual traders – that have led to a widespread perception that day-trading is a very risky activity. It is not the day-trading that is dangerous; it is the undercapitalized nature of the average day-trader that means he must make monthly profits or deplete his capital. Note, however, that there are good day-traders and poor ones; an individual is well advised to determine his classification while using other people's money.

4 Derek Finkle, Toronto Life, *The Trader's Revenge,* available on-line at http://www.torontolife.com/features/traders-revenge/ (accessed 2009-12-9)

5 Juhani Linnainmaa, *The Limit Order Effect,* on-line at http://www.gsb.stanford.edu/facseminars/pdfs/Linnainmaa_Limit_Order_Effect.pdf (accessed 2009-12-8)

6 David P. Brown, Craig W. Holden, *Pegged Limit Orders,* available on-line at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=744667 (accessed 2009-12-9)

The Preferred Share Market is Fundamentally Illiquid

There are various elements that combine to ensure that the Canadian preferred share market is illiquid and will, in all probability, remain illiquid.

- **Preferred Shares are Exchange-Traded:** Many investors, particularly retail players who are out of the institutional information loop, consider exchange trading to be an unmitigated benefit, but there are drawbacks to this status. Information on pricing has an enormous value, and if investors are obtaining this knowledge without charge, it is much less valuable to the dealers.
- **Preferred Shares positions tie up capital:** According to IIROC[7] a thirty year corporate bond may be margined at 10%, while the reduced margin rate[8] for a preferred share requires 30% margin – the same as a common share.
- **Dividends on Short Positions Cannot Offset Dividends on Long Positions:** Canadian income tax laws[9] have the effect of making the market less efficient by making it more expensive to take a short position: dividends paid by most investors may not be claimed as an expense; even securities dealers are only allowed to claim two-thirds of the expense. Thus a taxable investor cannot create a market-neutral portfolio in a natural manner[10].

The implications of exchange trading are varied, and a lot of knock-on effects have been observed. The introduction in the US of TRACE, mandatory reporting of corporate bond trades with publication of their prices[11], has been suggested[12] to have reversed the capital allocation at dealerships between Corporate Bonds and Credit Default Swaps from 10:1 prior to introduction to 1:10 following introduction. Dealers will allocate capital to business lines based on profitability, and profitability is reduced by price reporting – to the tune of approximately $1-billion annually in the US after TRACE's introduction. Additional capital – and therefore liquidity – was redeployed into syndicated bank loans and private placements.

Similar effects were observed in the Canadian equities market following the Toronto Stock Exchanges decision to disseminate real-time detailed information on the limit-order book to the public.[13] It was found that this change resulted in an increase in transaction costs and an decrease in liquidity since "limit-order traders are reluctant to offer free options [to execute the limit order or to ignore it] to other traders".

Despite these negative effects on liquidity – and on the availability of investments to retail holders – there are often calls[14] for Canadian bond trading to become more transparent. It is not clear whether such advocates are taking into consideration the probable effects of such a change on the capital markets as a whole.

Academic research regarding exchange trading and its transparency implies there should be two important differences between trading in preferred shares relative to corporate bonds:

- Retail liquidity is enhanced, since bid-offer spreads are tighter (compared to retail corporate bond markets) and a wide range of similar instruments can be compared and traded at will.
- Institutional liquidity is reduced, since potential market-neutral market-makers are less willing to allocate capital to the market.

The fundamental institutional illiquidity of the Canadian preferred share market implies an an increased potential for institutional traders to experience relatively high market-impact costs and hence provide the opportunity for profitable noise trading by other investors. These investors desire exposure to the market (and fully fund this exposure) but are indifferent (within limits, of course!) to which particular securities they own. Trading is a zero-sum game: one man's market impact cost is another man's market-making profit.

In other words, while it may not be profitable for securities dealers and market-neutral middlemen to supply liquidity to the market, it could well be possible – and consistent with capital market theory – for investors who desire exposure to the asset class to achieve outperformance through supplying liquidity. Such investors will not be affected by the problems of shorting (they will simply restrict their sales to instruments already owned) or by the obstacle of a requirement to earn a return-on-equity of 12%+ on a market-neutral strategy; a relatively small performance increment will amply repay the additional effort through increases in assets under management.

So why isn't this happening?

Reasons for the Absence of Preferred Share Noise Trading in Public Funds

Given the discussion above, many investors will be wondering why funds (other than my own Malachite Aggressive Preferred Fund, of course!) aren't set up with the specific purpose of capturing the performance increment available. There are a number of reasons for this:

Firstly, it doesn't come with a good story. Investors expect to hear a good story about the management of their investment – peak oil, the collapse of US real-estate prices, the ascent of China, and so on – and the rationale that a particular investment was purchased mainly because somebody else wanted to sell it is is not considered compelling.

When I was managing government bonds in the 1990's, I was interviewed twice for Andrew Allentuck's "Pro's Picks" columns in the *Globe and Mail*[15] and, in accordance with the column's format, asked to justify some of the holdings. I suspect that these were the two most boring interviews ever published.

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7 Investment Industry Regulatory Organization of Canada, *Dealer Member Rules, 100.2*, available on-line at http://iiroc.knotia.ca/Knowledge/View/Document.cfm?kType=445&linkType=toc&dbID=200909341&tocID=493&folderDirection=+1&nc=1260479227640 (accessed 2009-12-10)

8 See http://docs.iiroc.ca/DisplayDocument.aspx?DocumentID=E6224D5C8F9E44AD9C5FDFAE259BB028&Language=en for a recent list

9 Income Tax Act, Section 260(6), available on-line at http://laws.justice.gc.ca/en/showdoc/cs/I-3.3/bo-ga:l_I-gb:l_C//en (accessed 2009-12-9)

10 This problem exists with equities as well, but dividends are less important for equities.

11 Reported by FINRA on-line at http://cxa.marketwatch.com/finra/BondCenter/Default.aspx (accessed 2009-12-10)

12 Hendrik Bessembinder and William Maxwell, *Transparency and the Corporate Bond Market*, available on-line at http://www.business.utah.edu/humis/docs/person_1268_1199982369.pdf (accessed 2009-12-10)

13 Ananth Madhavan, David Porter, and Daniel Weaver, *Should Securities Markets be Transparent?*, available on-line at http://bank-banque-canada.ca/en/res/wp/2001/madhaven-porter-weaver.pdf (accessed 2009-12-11)

14 E.g., FAIR Canada, *Canada Needs a Transparent Bond Market*, available on-line at http://faircanada.ca/top-news/canada-needs-a-transparent-bond-market-july-29-2009/

15 Published April 26, 1997 and July 11, 1998

Secondly, it is a labour intensive trading technique and the practitioner must have some knowledge of the market. Performance is not a major selling factor in the retail marketplace – despite all the lip-service – so any funds spent on portfolio management (as opposed to advertising and commissions paid to salesmen) are largely wasted.

Thirdly – and finally, this reason is rational! – the heavy turnover implies that capital gains and losses are realized very quickly; funds run in such a manner may outperform on a pre-tax basis, but are much less tax-efficient than a fund with a buy-and-hold philosophy. On the other hand, it should be noted that tax efficiency is much less important in the fixed-income world – where prices can never exceed a certain limit, regardless of time held - than it is with equities, in which prices can increase without limit.

Fourthly, the dividend tax credit and gross-up makes the investment far more attractive to taxable investors than to non-taxable investors. To a large degree, this means that pension funds have no interest in the asset class and therefore the managers of such funds will not participate in making the market more efficient[16].

Fifthly, frequent trading will boost the Trading Expense Ratio (TER) so beloved of regulators[17]. There are, apparently, some people who consider this a meaningful number, but commissions paid in order to execute trades are a fraction of the total cost of trading; the figure will normally be dwarfed by spread costs and market impact costs. The TER of Joe and Jane in the auto trading example, for instance, is zero; but somehow the intermediary was able to make a profit anyway.

Sixthly, institutions that might have an interest in noise trading and have or could acquire the expertise to do it properly are often handcuffed by accounting policies. For example, ING Canada reported[18] that at year-end 2008 they had an unrealized loss of $522.5-million (net) on their Available For Sale preferred shares with an unamortized cost of $1,750.8-million. Trading these shares would have transferred the loss from "Other Comprehensive Income" to "Net Income" – the latter being the figure used in most industry price/earnings databases and the subject of most discussion.

There are many reasons that noise trading is not more prevalent; the above are only the most obvious. All in all, there are many justifications for refusing to manage preferred shares in an active fashion, thereby contributing to the inefficiency of the market. An indication of the degree of inefficiency can be obtained through the simulation of a naïve hedge fund.

Naïve Hedge Fund Simulation

The concept of a naïve hedge fund has been developed over a long period and has been used[19] to construct a very plausible explanation of hedge fund losses experienced in the week of August 6, 2007, when the Credit Crunch began to dominate the investment environment and severe market dislocations were observed.

This construction used the relative performance of individual issues to determine a market neutral portfolio: the long positions were comprised of issues that had underperformed on the previous trading day, while outperformers were shorted. As the authors point out *another source of profitability of contrarian trading strategies is the fact that they provide liquidity to the marketplace. By definition, losers are stocks that have underperformed relative to some market average, implying a supply/demand imbalance, i.e., an excess supply that caused the prices of those securities to drop, and vice-versa for winners. By buying losers and selling winners, contrarians are increasing the demand for losers and increasing the supply of winners, thereby stabilizing supply/demand imbalances.*

This very simple model is able to illustrate the increasing efficiency displayed by US common stocks in the period 1995–2007, as shown in the following chart.

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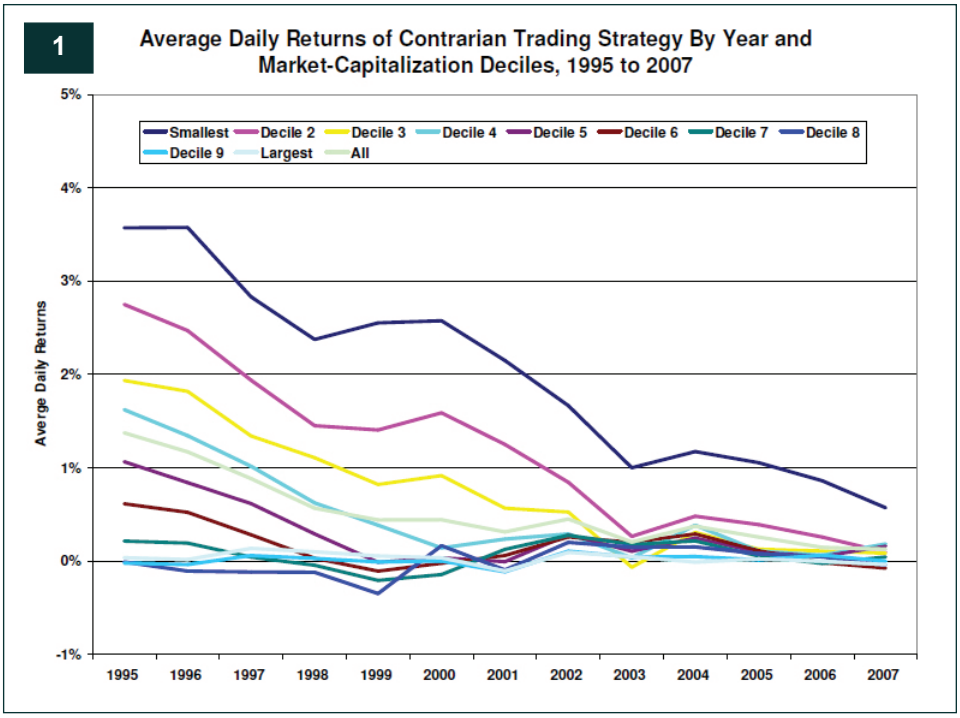


[16] Pension funds could run a market-neutral hedge fund, but I have been unable to persuade any to do so.

[17] National Instrument 81-106, available on-line at http://www.osc.gov.on.ca/documents/en/Securities-Category8/rule_20091016_81-106_invest-con-disc.pdf (accessed 2009-12-9)

[18] ING Canada, Press Release, 2009-1-26, *ING Canada Reports 2008 Fourth Quarter and Year-End Results*, available on-line at http://www.intactfc.com/files/pdf/Q4-08-Earnings/Q4_2008_Press_Release.pdf (accessed 2009-12-9)

[19] Amir E. Khandani and Andrew W. Lo, *What Happened To The Quants in August 2007?*, available on-line at http://web.mit.edu/alo/www/Papers/august07.pdf (accessed 2009-12-9)

Construction of Hedge Portfolios

I have applied the concept to all preferred shares contained in the HIMIPref™ database from 1993-12-31 to 2009-11-30. The daily total return for each issue was calculated[20], including an accrual for dividends on ex-dividend dates.

Then, for each type of preferred share in the HIMI taxonomy[21] a total of 27 possible hedge fund returns were calculated for every priced day. There were nine periods tested (the "horizons"), with three paradigms used to calculate return.

The periods were:

- 45 days
- 35 days
- 25 days
- 15 days
- 10 days
- 5 days
- 4 days
- 3 days
- 2 days
- 1 day

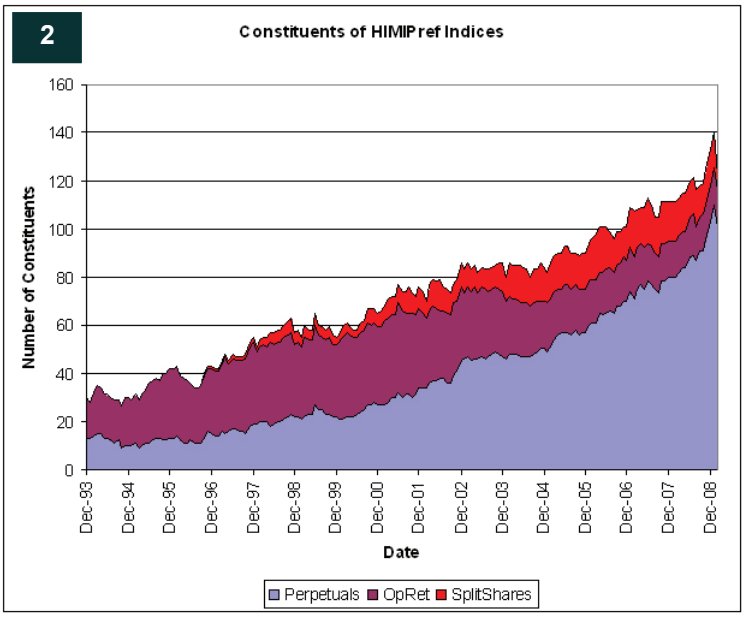
Note that these were trading days; days on which the Toronto Stock Exchange was closed were not included in the day count.

The three paradigms tested for each combination of period and preferred share type were:

- **Naïve, Unpenalized:** Issues are ranked from 1…N in order of return for the prior period – the period being defined by the horizon of the hedge fund. Instrument 1 was paired with instrument N; instrument 2 was paired with instrument N-1, and so on until no further pairing was possible. The higher returning instrument in each pair was assigned to the short portfolio, the lower to the long portfolio. The future return (over the same day count as the prior period used for ranking) for the two portfolios was then calculated as the equally weighted mean average of the instruments held in the portfolio. The hedge return is the return of the long portfolio less the return of the short portfolio
- **Naïve, Penalized:** Portfolios were constructed as above, but when calculating the return of each portfolio:
  - The return of each element of the long portfolio was reduced by the bid-offer spread on the calculation date.
  - The return of each element of the short portfolio was reduced by the bid-offer spread on the last date in the future period
- **Informed, Penalized:** When constructing the portfolios, elements considered for inclusion in the long portfolio had their prior-period returns increased by the bid-offer spread on the calculation date. Elements considered for inclusion in the short portfolio had their prior period return decreased by the bid-offer spread on the calculation date. A pair was only formed if the long's net return was less than the short's net return. The return of hedge was calculated according to the "Naïve, Penalized" methodology.

The following data was stored for each hedge fund analysis[22]:

- Preferred market sector
- Calculation Date
- Horizon
- Paradigm
- Number of eligible instruments
- Number of instruments in hedge fund (long and short)
- Excess Return
- Mean long return
- Mean short Return
- Mean long spread
- Mean short spread



[20] A total of 510,023 data points

[21] Ratchets, Fixed-Floaters, Floaters, Operating Retractibles, Split Shares, Interest-Bearing, Perpetual Premium, Perpetual Discount and Fixed Reset. See http://www.prefletter.com/whatPrefLetter.php

[22] A total of 1,174,710 records, for which hedge funds could not be constructed for 418,252

As may be seen from the chart "Constituents of HIMIPref™ Indices"[23] the size of the preferred share universe has exploded over the past decade, as the increased regulatory emphasis on Tier 1 Capital has encouraged the issuance of Straight Perpetuals by financial corporations, outweighing the effect of accounting changes[24] that made Operating Retractibles less attractive to issuers. It will be noted that the class "Perpetuals" in this chart includes six of the subgroups in the HIMIPref™ taxanomy: Ratchets, FixedFloaters, Floaters, PerpetualPremium, PerpetualDiscount and FixedReset.

In order to simplify analysis and discussion, only hedge funds comprised exclusively of PerpetualDiscount issues (as defined on the calculation date for each fund) will be examined in this essay. As well as being the most numerous class, PerpetualDiscounts may be considered the purest class, requiring fewer approximations and assumptions in their analysis than any other class of preferred share.

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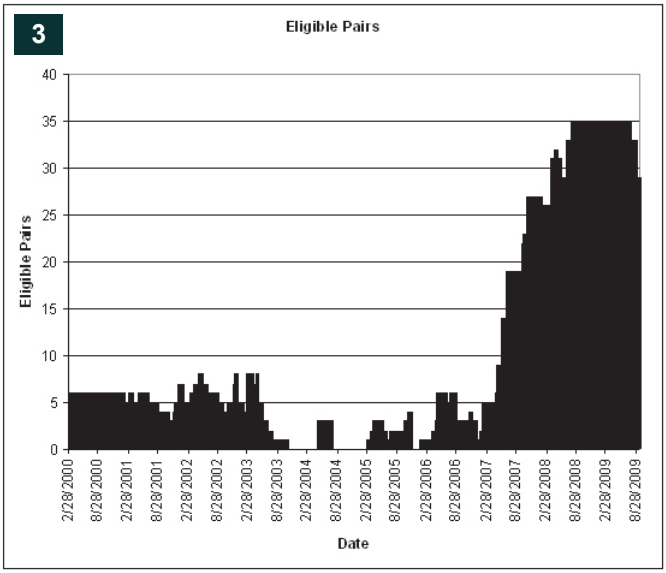

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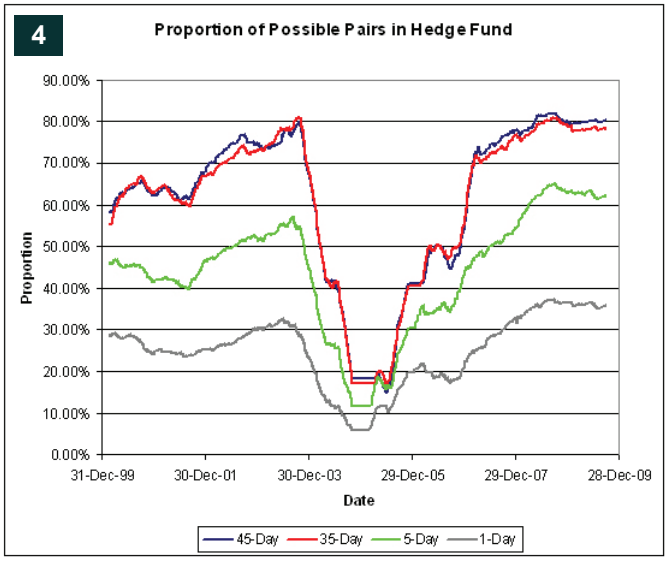


The chart headed "Eligible Pairs" shows the potential size of the simulated hedge funds throughout the analytical period and illustrates the difficulties inherent in the analysis of Canadian preferred shares – there is never enough data! It will be noted that there are two sources for the increase in the number of eligible pairs over the past three years:

- Migration of issues from the PerpetualPremium class to PerpetualDiscount as prices declined under the influence of the Credit Crunch
- New issuance, which peaked in the first quarter of 2007 (issuance since then has been dominated by FixedResets)

As may be surmised, only the past few years of data can be considered to be a rigorous test of market efficiency using this methodology, as previously there has been insufficient data to allow issue-specific risk to be diversified away. Note, however, that the concentration of the Canadian market implies that specific risk by issuer is still a problem.

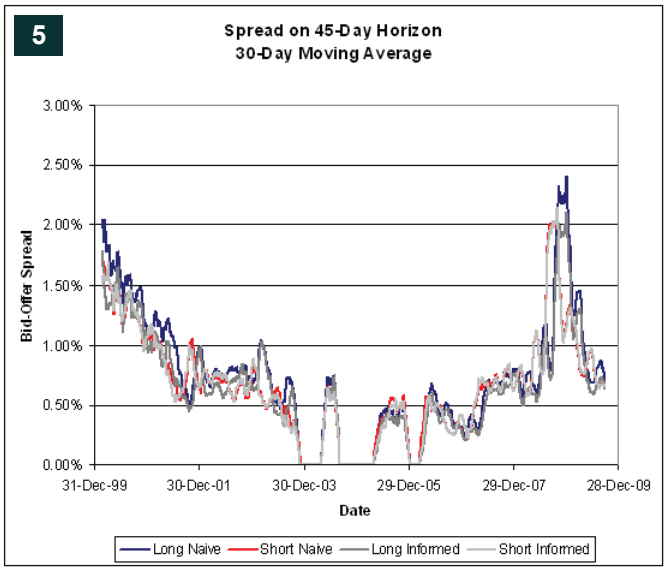
Spreads

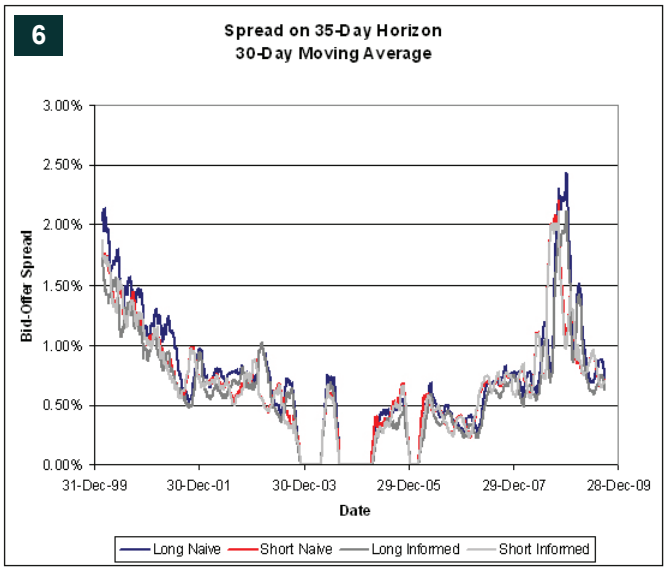
Another method of measuring market efficiency is the study of spreads – indeed, the bid offer spread is often used as a direct measure of liquidity.[25] It should come as no surprise that spreads peaked at the height of the crisis in the fourth quarter of last year; it is of more interest that spreads have now declined to below their levels in the early part of this century.

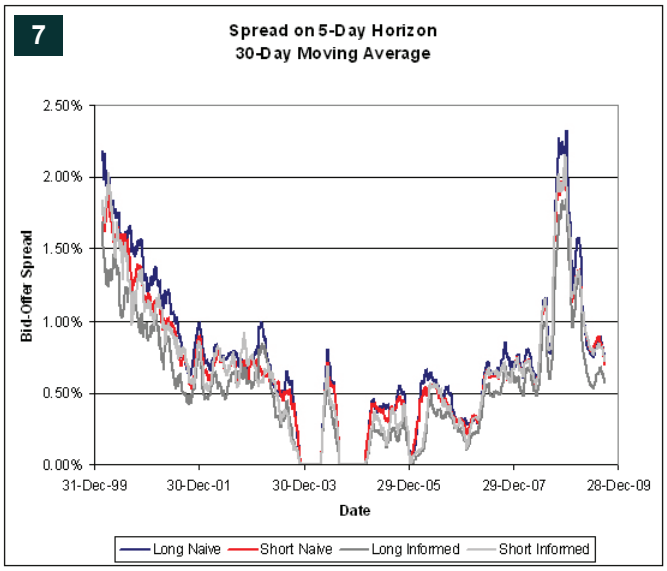
[23] Chart taken from seminar on Split Share Preferreds, 2009-3-26, available for purchase on-line via http://www.prefletter.com/eMailVerification.php?path=vid (accessed 2009-12-10)

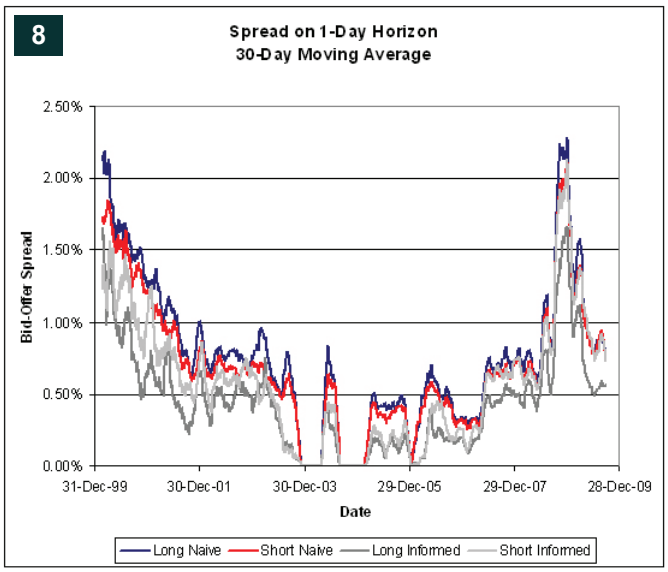
[24] See Alastair Murdoch, *Management Reaction to Mandatory Accounting Changes: The Canadian Preferred Shares Case*, available on-line at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=133128 (accessed 2009-12-10)

[25] See, for example, Gur Huberman and Dominika Halka, *Systematic Liquidity*, Journal of Financial Research 2001, available on-line at http://www0.gsb.columbia.edu/faculty/ghuberman/PDFpapers/SystematicLiquidityNov20.pdf (accessed 2009-12-10)









Presentation of Results

The returns of the long and short positions in each hedge portfolio was calculated separately by taking the mean average of the return of each position (which, for the two 'Penalized' paradigms, was affected by the penalty representing presumed transaction cost, as explained in the section "Construction").

The net return for each hedge portfolio was obtained by subtracting the return on the short portfolio from the return on the long portfolio. If portfolio construction for the calculation date was not possible due to insufficient data, the net return was assigned a value of zero.

This resulted in a portfolio return being calculated for every priced day throughout the period – for all horizons exceeding one day, therefore, there is considerable overlapping of the portfolios in time.

In order to prepare the charts, a 254-day rolling sum of the individual days' returns was calculated and these data plotted according to the last calculation date of the summation. The last day plotted for each chart in the analysis was September 25, 2009, this being the last calculation date possible in the dataset given the maximum 45-day horizon looking forward.

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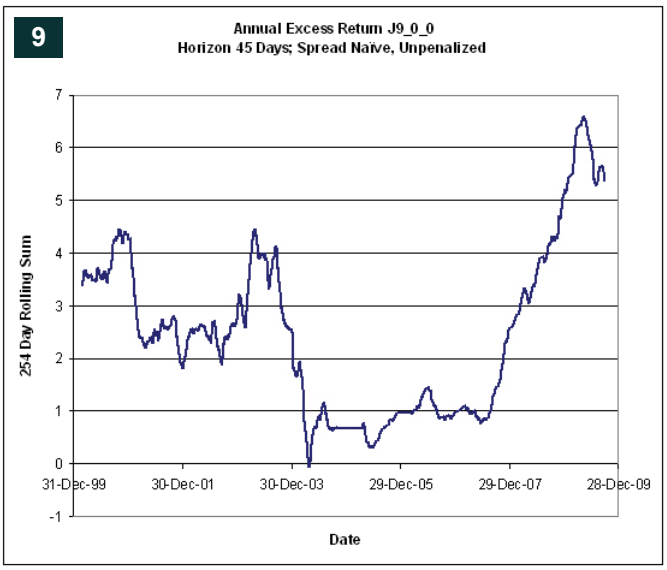

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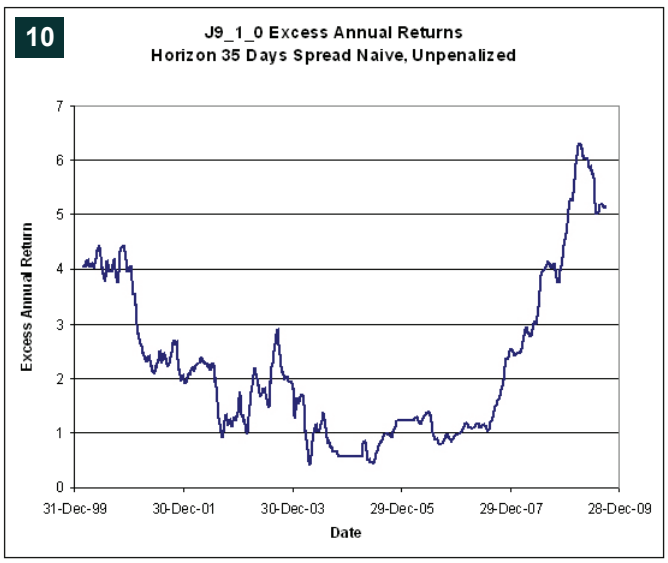

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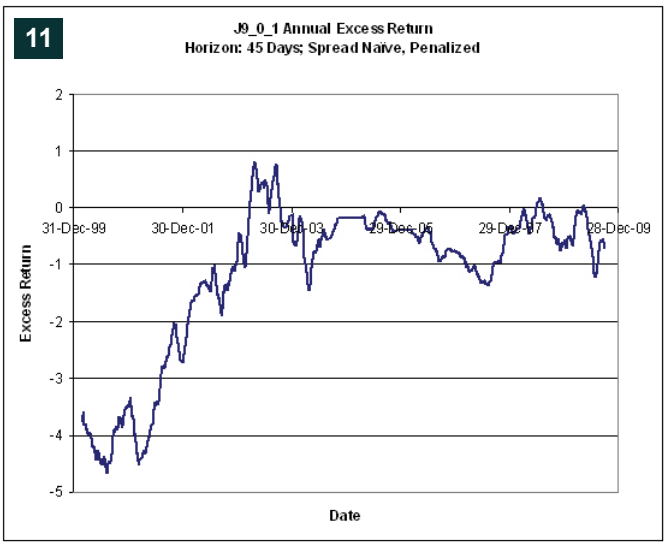

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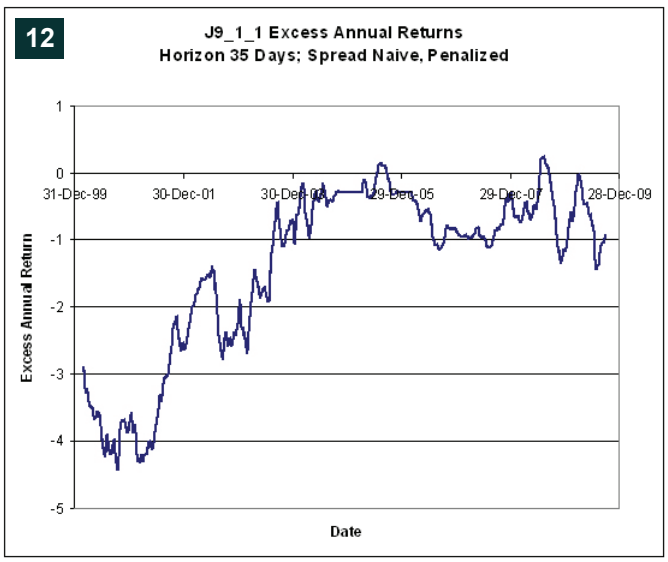

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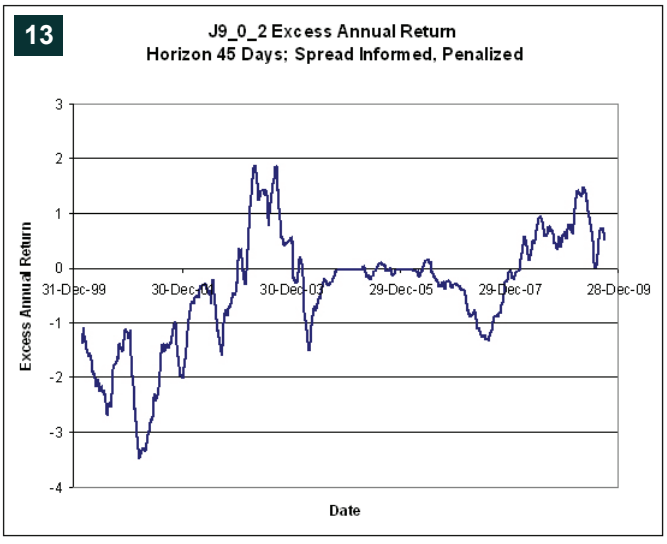

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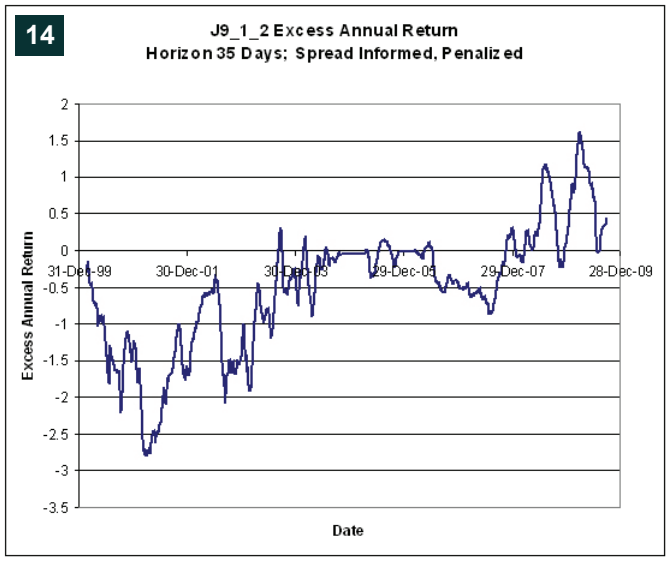

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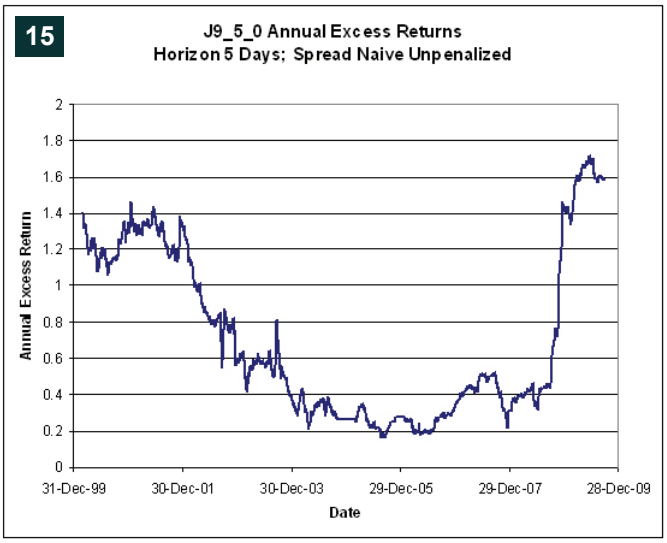

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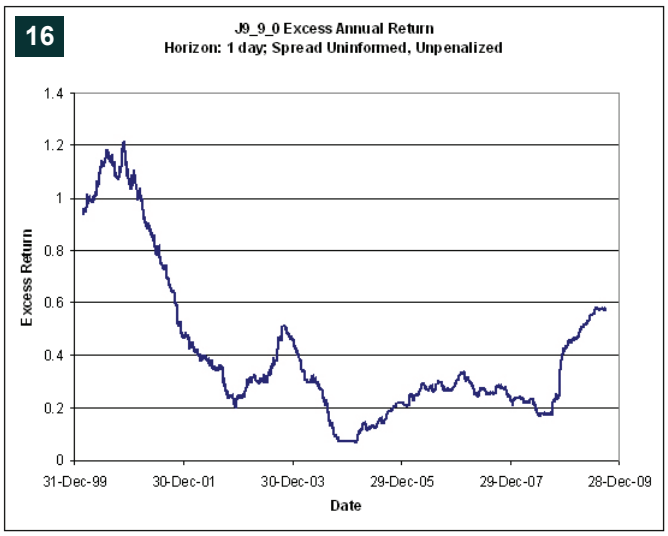

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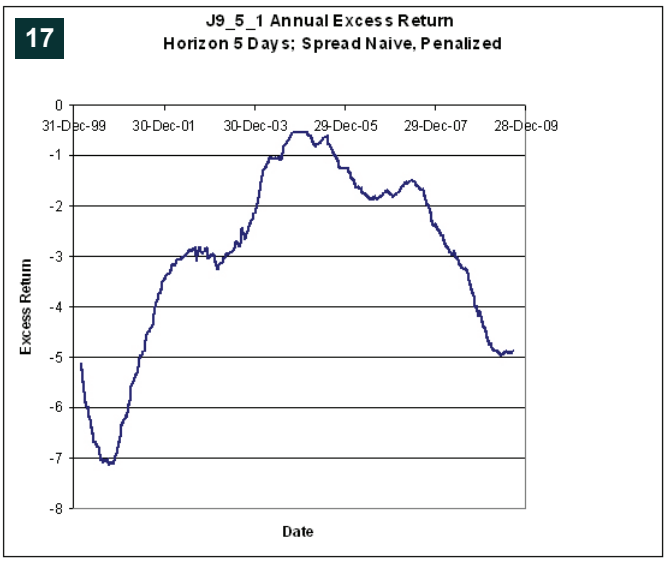

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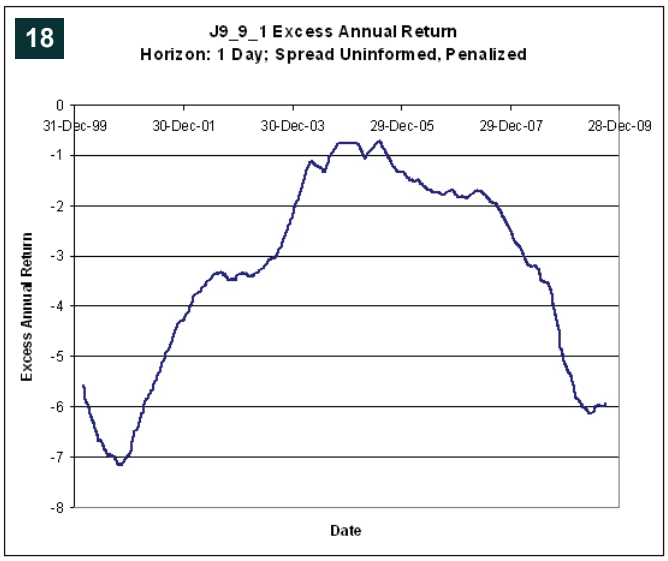

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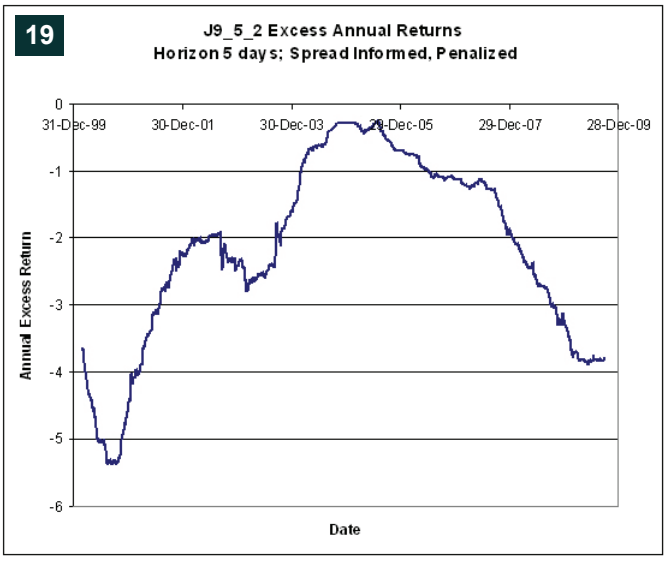

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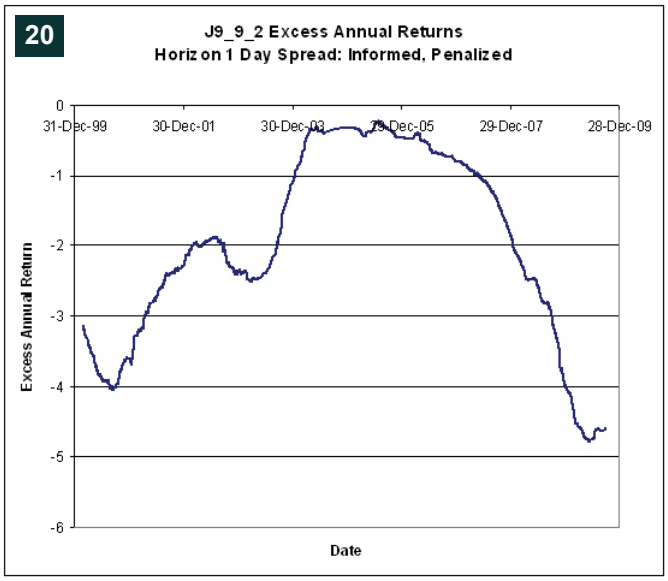

Conclusions

When examining the results on Charts 7 through 18, it should be borne in mind that calculations are performed – or attemped, anyway! – on every priced date, regardless of the horizon and that the excess returns are plotted as a sum over all calculation dates. Thus, while it is possible to conclude that a naïve hedge fund with a one day horizon and the ability to transact at the bid price has achieved simulated excess returns of almost 60bp over the past year (chart 14), it should be remembered that with a five-day horizon this excess does not increase to about 160bp as might be inferred from chart 13; the latter performance implies 5:1 leverage since the horizon periods overlap considerably.

The potential for 60bp p.a. excess return implied by chart 14 – even with such a naïve hedge fund as the one tested – would be of great interest to investors if it were possible to achieve such results; but, alas, chart 16 shows that blind implementation of the strategy will come to grief and is currently projected to lose 600bp annually.

This is not a trivial point. The study of market efficiency quoted earlier[26] explicitly ignored "a number of market frictions such as transactions costs, price impact, shortsales constraints, and other institutional limitations"; excusable in research of that nature but not in other cases. It is well known that transaction costs can be very high for active-trading strategies[27] but these costs have brought many hedge funds to grief; and in my role as a consultant on quantitative strategies, I have seen too many models in which transaction costs were simply ignored – even such easy to estimate costs as bid-ask spread.

Moreover, even when the hedge fund is aware of the spreads and – according to chart 2 – rejects almost two-thirds of the possible long/short positions on the basis of spreads, performance is only improved marginally and a large loss may still be expected.

From these observations we may conclude:

- The bid price is fairly volatile on a day-to-day basis
- The bid price is mean-reverting
- However, the daily volatility of the bid is dwarfed by the size of bid-offer spread

It appears on this basis that institutional trading does not have much impact on day-to-day prices. It is also apparent that, distinct from the pattern of steadily decreasing volatility found with American equities (chart 1), the profitability of a naïve hedge fund without transaction costs has, if anything, increased over time (charts 9, 10 and 15, although chart 16 shows a contrary pattern).

The situation is somewhat different when we extend the horizon to 45 trading days (about two calendar months) as illustrated with charts 7, 9 and 11.

We note that the naïve version of this hedge fund (chart 7), unpenalized by spread, had made a quite reasonable profit of about 550 bp over the trailing twelve months (although note that, due to overlapping horizons, this requires leverage of 45:1), however this excess return is more than eliminated once the bid-offer spread is factored into the equation.

When the hedge fund takes spread information into account however and – as shown in chart 2 – eliminates about 20% of the trades from consideration, the strategy becomes slightly, but significantly profitable. This is an important result. Using this very simple quantitative model, we have discovered how we can trade issues so that in a period of approximately two calendar months (45 trading days), we can cover the bid-offer spread – not just once, but twice, since the portfolio returns to neutral automatically at the end of the period. This shows that there is an element of determinism regarding future prices that many will say does not and cannot exist.

This is significant because this spread-informed fund is still very naïve. While a 45-day look-back period to determine which pairs should be traded is somewhat justifiable, it is much harder to justify the constant 45-day holding period. The next step in elaboration of trading rules while retaining this model would surely be an attempt to optimize the holdng period of each pair: perhaps by setting a target for gains and liquidating once those gains have been realized, whether that takes ten days or seventy; perhaps by taking a portfolio approach to the two positions and retaining the short position until it is purchased by a replacement pair.

I will note that the second approach is the one taken by my proprietary software, HIMIPref™: positions are not purchased for any specific holding period (although a "base" holding period necessarily enters into the valuation through the juxtaposition of yields with dynamic factors); a position is purchased when it is cheap and sold when it is expensive, the success of portfolio management being determined by the ability of the programme to assess such relative value questions accurately.

I suggest that the following explanation explains the data: institutions will enter and exit positions from time to time in a relatively price-insensitive manner. However, they will typically not insist on executing the entire trade in a short period of time. Instead, they will pressure the market for that particular security upwards or downwards, creating a noticeable and actionable mispricing that is gradually taken advantage of by other market players.

This is a natural elaboration of the institutional illiquidity in the marketplace discussed earlier – and supplying that need for liquidity can be profitable for those willing and able to execute those trades.

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[26] Khandani and Lo

[27] E.g., Ananth Madhavan, *Implementation of Hedge Fund Strategies*, available on-line at http://www.atrader.com/Implementation-of-Hedge-Fund-Strategies.pdf (accessed 2009-12-11)