Risk and Return in the Canadian Hedge Fund Industry

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Abstract

This paper presents statistics on the risk and return of Canadian hedge funds based on a comprehensive database of approximately 200 different Canadian hedge funds covering the period from January 2005 to June 2009. We find the range of risk and return for individual hedge funds varies widely but that there are significant gains to diversification by taking a portfolio approach to hedge fund investing. We also find that the risk and return characteristics of the hedge funds in our database are on average different than what is reported by the two Canadian hedge fund indices published by Scotia Capital and CanadianHedgeWatch. We compare the Canadian industry with the global hedge fund industry and note there are differences in both the historical returns as well as distributional characteristics. Our analysis shows that the unique risk characteristics of Canada's capital markets have been clearly evident in its hedge fund industry. The implication is that Canadian hedge funds have continued to be attractive for Canadian as well as foreign investors.

1. Introduction

Capital markets in Canada have typically been slower to develop than in other industrialized countries. Our hedge fund industry appears to be no exception to this general rule. In contrast with the global hedge fund industry, which has been well developed since the 1990s, the Canadian industry was quite small and undeveloped before the start of the millennium. According to Gregoriou (2004) there were only nine hedge funds in Canada that had five year performance figures at the end of 2002. This contrasts sharply with the thousands of hedge funds which were operating successfully around the globe at that time.

There is a large body of academic literature which analyzes the risk and return characteristics of the global hedge fund industry. This literature is based on a fairly long time series of data that has been compiled by hedge fund index providers such as Credit Suisse / Tremont (CS/T) and Hedge Fund Research Inc. (HFRI). Although there have been a number of articles written that express concern over possible biases in these databases they continue to provide a fertile environment for study of the global industry. As a result, our understanding of the risk and return of global hedge funds, and how they may fit into an investor's portfolio, continues to grow.

In contrast, very little has yet been written on the Canadian hedge fund industry. This is at least partially because of the short history of the domestic market which means there is no reliable source of data on which to conduct a reasonable analysis. Two organizations – Scotia Capital (SC) and CanadianHedgeWatch (CHW) – report return information on indices of Canadian hedge funds they have compiled however, it appears these indices have not been analyzed in detailed studies. Given the growth in the industry since the start of the millennium we believe it

would be timely to study the risk and return of the entire Canadian hedge fund industry, as well as the representativeness of these indices.

This paper presents statistics on the risk and return of Canadian hedge funds based on a comprehensive database of approximately 200 different Canadian hedge funds which we have recently compiled. Using data from 2005 we compare and contrast the risk and return characteristics of the Canadian hedge fund sector with those of the existing Canadian hedge fund indices and the global hedge fund industry more generally. We also compare these characteristics with those for commonly-used equity indices in order to put the true risk of Canadian hedge funds into perspective.

We find the range of risk and return for individual hedge funds varies widely but that there are significant gains to diversification by taking a portfolio approach to hedge fund investing. We also find that the risk and return characteristics of the hedge funds in our database are on average different than what is reported by the two Canadian hedge fund indices. We compare strategy sectors in Canada with those for the global hedge fund industry and note there are differences in both the historical returns as well as distributional characteristics. Our analysis shows that the unique risk characteristics of Canada's capital markets have been clearly evident in its hedge fund industry. The implication is that Canadian hedge funds have continued to be attractive for Canadian as well as foreign investors.

This paper makes an important contribution to the academic literature by presenting the first comprehensive overview of the risk and return of the Canadian hedge fund industry. Our results should also be of great interest to the investment community because of the implications

for asset allocation for Canadian as well as international investors.

The outline of this paper is as follows. We start with a brief review of the literature on hedge funds in Section 2. In Section 3 we describe how we compiled the data for this study. In Sections 4 and 5 we present summary statistics for our data and compare them to the two existing Canadian hedge fund indices. In Sections 6 and 7 we extend this comparison to the global hedge fund indices as well as traditional asset class benchmarks. In Section 8 we outline a number of practical implications for investors, including examples of how adding a diversified portfolio of Canadian hedge funds can improve the risk and return characteristics of a wide variety of portfolios typically held by Canadian and international investors. In Section 9 we present a brief conclusion.

2. Literature review

The early academic literature on hedge funds generally finds evidence of outperformance as compared to traditional asset classes. For example, Lamm (1999) reported large excess returns on hedge funds for the period he considered. Based on this finding he concluded investors should make allocations to hedge funds of up to 100% of their portfolios. Such outperformance has continued to be reported in a number of more recent studies. Fung, Hsieh, Naik and Ramadorai (2008) find a subset of funds-of-funds consistently delivers alpha. Lett (2009) reports that hedge funds outperformed global stock indices with less volatility during 2008 and early 2009.

Other studies disagree, claiming the outperformance is because of biases in the data. Malkiel and Saha (2005) is one of the most influential of these studies, and reports that hedge fund

returns have been overstated by over 3% annually. Other authors, such as Amin and Kat (2003a) and Ackermann, McEnally and Ravenscraft (1999), estimate this bias to be much smaller at less than 2% and .2% respectively. Fung and Hsieh (2009) recently provided an update of their previous studies on this issue (Fung and Hsieh (1997, 2000)). They note that the literature "tends to focus on the negative aspect of a hedge fund's ability to choose when and where to report performance". They report that 40% of the top 100 single-manager hedge fund firms in the 2008 annual ranking by Institutional Investor are missing from the most popular hedge fund databases, which could represent "a sizable bias in the opposite direction – namely, that good performance may also be excluded."

A number of studies have also pointed out the higher order distributional characteristics of hedge fund returns offset their apparent outperformance when measured in traditional ways. For example, Brooks and Kat (2002) report that hedge funds have negative skew and high kurtosis and claim this is evidence of "hidden risk" in hedge funds. Brulhart and Klein (2005) rebut this criticism by arguing investors should care about higher statistical moments instead of skew and kurtosis which are misleading because they are scaled by volatility. They also report that the higher moments for hedge funds have been less than for equity indices.

There has also been considerable literature on explaining hedge fund performance through factor analysis. For example, Fung and Hsieh (2002) study the relationship between a hedge fund manager's returns and the returns on the assets which they are trading. Agarwal and Naik (2004) explain hedge fund risk exposure using a multifactor model of excess returns on fixed income and equity securities and options. Foerster (2006) looked at various factors to explain equity market neutral hedge fund returns.

The literature on factor analysis was the starting point for a number of authors to attempt to replicate hedge fund returns through direct exposure to the underlying factors (Hasanhodzic and Lo (2006), Amin and Kat (2003b), Kat and Polaro (2006) and Northwater (2007)). The goal of this exercise is to find a replication strategy that delivers the returns of hedge funds while avoiding the illiquidity and high fees that are usually associated with hedge fund investing. Unfortunately the success of actual trading strategies based on factor replication has not been encouraging.

As the hedge fund market has matured, a growing number of articles have focused on regulation and governance of hedge fund managers. Agarwal, Daniel and Naik (2008) study managerial incentives in the hedge fund industry. Stulz (2007) argues the performance gap between hedge funds and mutual funds will narrow as regulatory developments increasingly limit the flexibility of hedge funds in the future. Cumming (2008) finds that performance of hedge funds tends to be lower when there are greater regulatory restrictions.

These studies have almost exclusively analyzed the global hedge fund industry. A small number of studies have examined regional hedge fund markets but the literature is not extensive, presumably because of the lack of reliable data. For example, Ineichen (2004) studies European hedge funds and reports that the performance characteristics are generally the same as for the global indices. Do, Faff and Wickramanayake (2005) study the Australian hedge fund industry and find similar results. In contrast, Hakamada, Takahashi and Yamamoto (2007) study Asia-Pacific hedge funds and find the distributional characteristics are somewhat different. Teo (2009) considers the geography of hedge funds by comparing returns on Asian-focused

hedge funds with the proximity of the manager to its investments. He finds pervasive evidence of a local information advantage, particularly for funds that invest in illiquid and emerging market securities.

Gregoriou (2004) analyzes Canadian hedge funds and proposes a modified Sharpe ratio that helps address the issue of non-normal returns. His study reported that fifty hedge funds were operating in Canada in 2002 but that only nine of those funds had monthly performance figures spanning the entire 1998 to 2002 time period he considered. To our knowledge Gregoriou (2004) is the only published article on the Canadian hedge fund market. Given the passage of time and the tremendous growth of the Canadian hedge fund industry, we believe the time has come for a more comprehensive study which is the purpose of this paper.

3. Data

Our database was compiled over a period of 14 months and contains information on approximately two hundred active and inactive Canadian hedge funds. A fund qualifies as Canadian if the actual investment management team is based in Canada. Funds offered by a Canadian-based institution, but for which the investment manager is based elsewhere, such as New York or London, do not qualify for classification as a Canadian hedge fund.[1] In general, the funds included in our database focus their efforts on Canadian securities although they may also invest in securities from other countries if this is consistent with their trading strategy.

In order to identify funds for possible inclusion in our database we started with funds listed on Hedgefund.net. This database is US-based and provides information on a large number of

[1] For example, some asset management companies offer funds under their banner for which the advisor or manager is based in the United States. None of these funds have been included in our database of Canadian hedge funds.

global and Canadian hedge funds. Unlike the global universe, where most funds report to a database such as Lipper or Hedge Fund Research, many Canadian funds do not report to Hedgefund.net which required us to extend our search in a number of ways. We found a number of hedge funds on Fundata, a Canadian-based database that provides information on mutual funds and a subset of hedge funds in Canada. Several Canadian prime brokers also provide capital introduction services to their prime brokerage clients. We have relationships with a number of these institutions who provided us with information on such funds. Another source used was the two providers of Canadian indices, Scotia Capital and CanadianHedgeWatch, which list the constituents of their indices. Word of mouth also provides a useful source of funds. Fortunately many Canadian managers provide performance information on their website without requiring a password to access it. Fund managers not actively looking to raise additional capital are in some cases reluctant to share performance information; only a small handful of managers refused to provide performance data and were excluded from our analysis. Although our search is not likely to be complete in all respects we do believe it is representative of the Canadian industry.

Our initial list contained over 300 different Canadian hedge funds that were in existence during the period January 2005 to June 2009. We did not apply any filters to the data, such as length of track record, assets under management or return-based criteria. Many funds offered multiple share classes of the same fund and may offer an offshore domiciled version in addition to the Canadian domiciled version. Where the only difference between classes is the fees charged and/or minimum investment amount, only the class with the longest time series of returns was retained. Offshore versions of Canadian domiciled funds have been removed, unless there is a demonstrated difference between the two funds. After removing these duplicate funds we were

left with a sample of 198 funds which were used to create the KCS Composite Index of Canadian hedge funds.

These funds were then grouped into the commonly-used set of trading strategies which are analogous to the industry sectors of major stock market indices. These consist of Equity Long/Short, Equity Market Neutral, Fixed Income Arbitrage, Convertible Arbitrage, Global Macro, Event Driven, Managed Futures and Multistrategy. We verified each fund's self classification and re-categorized some funds because the strategy description provided by the manager did not match the stated strategy. For example, some managers classified themselves as Multistrategy when they were merely running different versions of trading models within the same broad strategy sector.

Table 1 provides information on the number of funds at the end of each year from 1998 to 2008. The small number of funds before 2002 is consistent with the number reported in Gregoriou (2004). At the beginning of 2005, our index starts with 99 funds; by January 2006 the number of constituents increased to 125 and to 147 by the start of the following year. By mid-2008 the number of active funds peaked at 174 before declining to 144 by year end.

The indices we created from our data on individual funds are an equal weighting of the monthly performance of all the funds assigned to that index. The individual funds did not need to have a minimum number of months of history before being included; a fund was included from its inception or January 2005, whichever came first. We chose this date to start our indices because it is the same as the inception dates for both the CanadianHedgeWatch and Scotia Capital indices.

4. Summary statistics

Table 2 presents summary statistics on our Composite index and sub-indices of Canadian hedge funds. It provides the typical measures of average return, standard deviation, skew and kurtosis as well as the third and fourth central moments. It also provides statistics on draw downs and months to recovery which are also commonly reported in studies of hedge fund returns.

This table shows that the returns were strongly positive for the period we studied. The arithmetic mean monthly return was 0.823% for the entire universe which represents 10.3% annually. The monthly standard deviation was only 2.9% (10.1% annualized) which resulted in an annual Sharpe ratio of 0.67. The largest drawdown was 19.6% starting in July, 2008 and still has 7.6% left to recover.

The summary statistics show that returns for the various sub-indices were also strong during this period. All were positive, with the best being Futures, closely followed by Macro. Fixed Income provided the lowest return of only 0.25% per month, which corresponds to 3% annually. Sharpe ratios varied from 0 to 1.7. Managed Futures and Equity Market Neutral showed the lowest drawdowns at -3.7% and -5.5% respectively, while Event Driven and Convert strategies displayed the largest drawdowns of -32.4% and -40.2%.

The KCS Composite index shows negative skew and high kurtosis as has been found in other studies of hedge fund indices. Many authors have interpreted this as evidence of extreme events in hedge fund returns. Brulhart and Klein (2005) argued this is not necessarily the case because skew and kurtosis can be misleading measures. This is because they are actually the

ratio of the third and fourth statistical moments to the corresponding power of the standard deviation. Figure 1 demonstrates their claim. It provides histograms of the monthly returns for the sub-indices with the highest and lowest kurtosis, which was 19.1 for Fixed Income and 3.1 for Futures. Since the scales have been kept the same the relative risk of extreme events for these two sub-indices is readily apparent. Despite its much higher kurtosis the histogram for Fixed Income indicates the historical risk of extreme events has been roughly similar to that of the Futures sub-index. This observation is consistent with the estimates of the third and fourth statistical moments also provided in Table 2.

It is important to recognize that the statistics in Table 2 have been calculated on the basis of taking a portfolio approach. If the risk and return is considered for individual funds instead, the risks would appear much larger. For example, the average standard deviation of all of the funds in our index, when considered individually, is 5.5% instead of 2.9% for the equally-weighted portfolio of these funds. We also note that a small number of individual funds contained in this portfolio provided returns in some months that appear extreme when considered on their own. For example, the highest and lowest single month return for the funds in our database were 103.8% and -44.9% respectively.

This information is consistent with frequent reports in the popular business press that highlight an individual fund that has experienced such extreme returns. Unfortunately this type of analysis ignores the benefits of diversification which are available to investors who take a portfolio approach. The benefits of this approach are common knowledge when investing in equities; unfortunately this point is often forgotten when discussing risk and return in the hedge fund industry.

Table 3 presents a matrix of correlations for the various sub-indices in our Canadian universe. The overall average correlation has been 0.45 which implies there are likely to be good gains from diversification across strategy sectors. Unsurprisingly, these range considerably in value. The highest correlation is between Equity Long/Short and Multi-strategy at 0.95. In contrast, the Futures index generally has low correlation with the other sectors, averaging only 0.14; of particular note is the correlation between Futures and Fixed Income and Convert which have both been negative.

5. Comparison with other Canadian hedge fund indices

This next section compares the historical risk and return of our Composite index and sub-indices with those of the two Canadian hedge fund index providers, Scotia Capital and CanadianHedgeWatch. Scotia Capital publishes an equal-weighted and an asset-weighted version of their hedge fund index. Scotia Capital does not publish sub-indices, but their index does include at least one fund from each major hedge fund strategy category. CanadianHedgeWatch offers an Equity Hedge index, a Notes index, a Fund of Funds index and a Composite index, all of which are asset weighted.

The Scotia Capital indices include funds from Canadian-domiciled managers only, and include at least one fund from all strategy categories. The CanadianHedgeWatch indices are not as narrowly defined. They include funds that are offered by Canadian institutions, but which may not be managed by Canadian-based managers. In addition, CanadianHedgeWatch is dominated by Equity Long/Short funds which appear to comprise approximately 90% of their Composite index, with the remainder consisting of Principal Protected Notes (PPNs) and Fund of Funds.

Table 4 reports summary statistics for these Canadian hedge fund indices as well as for our overall Composite index and the Equity Long/Short sub-index. We note distinct differences between the various Canadian hedge fund benchmarks; the CanadianHedgeWatch Composite Index in particular seems somewhat out of place. Although the measures of risk reported in Table 4 for the various indices are very similar the average returns are much lower for the CHW Composite Index.

One reason the difference in average returns between our Composite index and the CanadianHedgeWatch Composite index is that the latter also includes funds of funds and principal protected notes. We also note that many of the managers of the funds and portfolios referenced by the various notes, which represent over 30% of the funds in this index, are actually not based in Canada and in fact are off-shore managers. In addition, this index is heavily weighted towards Equity Long/Short managers which make up approximately 90% of the benchmark weight. If the assets of the Notes were removed from the CanadianHedgeWatch Composite index the Equity Long/Short weighting increases to approximately 95%. This is much higher than the generally held view that only 65-70% of the hedge funds in Canada are Equity Long/Short strategies. For these reasons we believe the CanadianHedgeWatch index is less representative of the Canadian hedge fund industry in general.

Scotia Capital produces an asset-weighted and an equal-weighted index although both are based on the same underlying funds. To be included in the benchmarks a fund must have at least $15 million (CAD) in AUM and have at least 12 months of track-record. These indices include (as at June, 2009) 34 funds managed by 24 different companies. Approximately 60% of the

managers run Equity Long/Short strategies. This composition is more consistent with the apparent make up of the Canadian hedge fund space as compared to the CanadianHedgeWatch index. While these indices appear to be more representative than the CanadianHedgeWatch Index, we note that our database contains a larger number of funds which may therefore be more indicative of the Canadian hedge fund industry. Although the measures of risk are similar, the average returns for our broader universe of Canadian hedge funds have generally been higher than for the Scotia Capital indices.

6. Comparison to global hedge fund indices

Table 5 presents a comparison of the historical risk and return of the KCS Composite index we have compiled and two popular global hedge funds indices published by CS/Tremont and Hedge Fund Research. The KCS Composite index and sub-indices have the highest return in all cases. Although the standard deviations of the KCS Canadian indices are often higher than for their global counterparts, the Sharpe ratios were always superior.

Figure 2 demonstrates this in histograms for the 3 composite indices. The KCS Composite index has a slightly broader distribution than the two global hedge fund indices, while also showing a flat peak at higher return levels. While most summary statistics were similar for the Canadian and global hedge fund indices the KCS Composite index displayed superior returns which translates into a noticeably improved Sharpe ratio versus the global benchmarks.

Over the course of this study, Canadian hedge funds distinguished themselves from their global peers on a number of dimensions. We believe this outperformance is attributable to three characteristics of the Canadian hedge fund industry which make it unique. First, Canadian

hedge funds tend to be smaller in asset size than their global counterparts; the largest funds in Canada would be mid-tier in the global marketplace. This mirrors the Canadian equity markets; the largest Canadian corporations are mid-caps when compared to corporations around the world. Canadian hedge funds tend to be smaller mainly because the Canadian capital markets are smaller. With a smaller pool of liquid stocks, bonds and other securities to trade, Canadian managers have to limit their capital base at lower levels in order to remain nimble or they may choose to trade in US or other markets around the world as well.

Second, as compared to the global security markets, Canadian markets are more inefficient due to the smaller size and relative lack of international investors. Very few US or global hedge funds have exposure to Canada, the market is just too small for multi-billion dollar funds to allocate an amount of capital that will have a meaningful impact on their P&L. The few that did have meaningful exposure to Canada are no longer around. This means there are better opportunities for Canadian managers as compared to what is available to managers trading in more efficient markets.

Third, Canadian hedge fund managers arguably have a local information advantage by being in Canada and trading primarily in their own markets. This observation is consistent with the findings of Teo (2009) for hedge funds trading in Asian markets, as discussed above.

Table 6 shows the correlations of the sub-indices of HFRI and the CS/Tremont indices. The correlations between the global sub-indices were similar to that within the KCS Canadian hedge fund sub-indices although on average slightly higher. As with the KCS Canadian indices (see Table 3), the correlations indicate that diversifying across hedge fund strategy sectors likely adds

value to an investor's portfolio.

7. Comparison to traditional asset class benchmarks

As most investors are aware, the period of this study was extremely volatile and includes severe market disruptions across almost all asset classes and markets globally. It saw the collapse of Lehman Brothers and other major investment bank collapses, temporary bans on short-selling globally and the exposure of a massive fraud (Madoff). Credit spreads widened to levels indicative of never before seen default rates, while certain sectors of the credit markets went for days with no bids. This period was a great period in which to study the role of hedge funds in an investor's portfolio.

Table 7 presents summary statistics for major global equity benchmarks as well as two major global hedge fund composite indices (the Hedge Fund Research Index and CS/Tremont Hedge Fund Index) and also our KCS Composite index. The traditional equity benchmarks suffered badly during the period studied – large draw downs that are yet to be recovered, significant volatility and generally negative average returns with the exception of the Canadian equity benchmark, the S&P/TSX Composite Index. The statistics for the two global hedge fund indices dominate the traditional benchmarks in virtually all measures. Of particular note is the significantly reduced magnitude of the maximum drawdowns for the hedge fund indices as compared to global equities. Similarly, Sharpe ratios are higher and volatility and 4^{th} moments are substantially lower as well, suggesting that the global hedge fund benchmarks fared better during the period than their equity counterparts.

A common misperception about hedge funds is that they are risky, even riskier than equities.

There are some hedge funds that take a lot of risk, either through leverage, unhedged trading or very concentrated positions. However if the definition of risk being used is volatility, the majority of hedge funds are less volatile than equities. Over the period we have considered, our Composite index of Canadian hedge funds outperformed Canadian equities. The Sharpe ratio of the KCS Composite index of Canadian hedge funds was 0.67, by comparison the S&P/TSX Composite was 0.11. This disparity is due to the KCS Composite having 3 times the return of the TSX composite while having only slightly more than half the volatility of the TSX. Canadian bonds, as measured by the DEX Universe Bond Index did nearly as well as Canadian HFs, with a Sharpe ratio of 0.30. Two of the KCS Canadian hedge fund sub-indices greatly outperformed these comparables. The Global Macro and Managed Futures sub-indices showed Sharpe ratios of 1.35 and 1.69, respectively. The comparison of Canadian hedge funds to US and global equities is even more favourable. The Sharpe ratio of the S&P500 Total Return index was -0.25, and the MSCI EAFE was -0.18.

Since standard deviation is only one measure of risk, the skew and kurtosis are also reported in Table 7. As is typically reported in other studies, the kurtosis for the hedge fund indices has been higher than for the equity indices, which is often interpreted as evidence of extreme returns. As discussed above, however, kurtosis can be misleading. We provide evidence of this in a series of histograms in Figure 3. Note how broad and flat the distributions are for the equity indices and how tall and narrow the distribution is for Canadian bonds. The histograms for the hedge fund indices are much more similar to bonds than to equities.

Table 8 provides correlations among the major markets of traditional investments and hedge funds. The KCS Composite index showed high correlation with Canadian equities (0.91).

Of the KCS sub-indices the highest correlations with the TSX were the Equity Long/Short index at 0.92 and Multistrategy at 0.87. The Global Macro and Managed Futures sub-indices showed the lowest correlations with Canadian equities at 0.21 and 0.16, respectively. Canadian hedge funds showed little to no correlation with Canadian bonds (0.03). The most correlated sub-index was the fixed income arbitrage index at 0.17, the other sub-indices ranged from -0.09 to 0.04.

Canadian hedge funds were less correlated with US and global equities. The KCS Composite index showed a correlation of 0.65 with the S&P500, 0.74 with the MSCI EAFE and 0.72 with the Nikkei. Most of the KCS Canadian HF sub-indices were as correlated with these benchmarks as the composite index, except for Equity Market Neutral (0.20 to 0.35), Global Macro (0.10 to 0.18) and Managed Futures (-0.05 to 0.02).

8. Implications for investors

The above empirical findings suggest a number of implications for investors. First, it is important to take a portfolio approach when investing in hedge funds. Given the evidence presented in Table 3, the best way for an investor to add exposure to Canadian hedge funds is likely through a diversified portfolio of Canadian hedge funds investing across all sub-strategy groups, or a similarly diversified fund of Canadian funds. Rather than attempting to pick the best one or two funds, representing only one or two hedge fund strategies, far greater diversification benefits can be obtained by investing in more than one or two funds. As can be seen in Table 4, the correlations between the various hedge fund strategies are relatively low, indicating benefits to diversifying across strategies.

Second, investors, consultants and researchers should be cautious with the index they choose as a benchmark for Canadian hedge fund returns. The existing Canadian hedge fund industry indices published by Scotia Capital appear to be more representative of the Canadian hedge fund universe than those published by CanadianHedgeWatch. However, neither is as broadly based as the KCS CDN index presented in this paper which implies their historical risk and return may not be ideal proxies for the entire Canadian hedge fund industry, depending on the investor's needs. This is an important consideration for asset allocation decisions and for performance measurement.

Third, the risk and return of Canadian hedge funds is distinct from that of the global hedge fund market, as well as traditional asset classes. The returns have generally been higher with only slightly higher risk. This implies investors could consider making significant allocations to Canadian hedge funds in addition to any allocation they may already have to the global hedge fund sector.

Table 9 provides further evidence of the benefits of investing in Canadian hedge funds. We recognize that ideally, we would have determined optimal allocations based on some formal model of asset allocation but also point out the generally recognized difficulties of applying standard mean-variance optimization techniques to portfolios that include hedge funds. Accordingly we simply present summary statistics on the portfolios of two stereotypical investors with varying allocations to hedge funds.

In the base case for the first investor, the allocation is 70% to equities and 30% in the DEX bond index, with the equities consisting of 20% to the S&P, 30% to the TSX and 20% to EAFE.

Examples 1a to 1f in the table present summary statistics for this base case when varying additional allocations are made to Canadian and global hedge funds as indicated. This exercise is repeated in the second set of allocations for the second stereotypical investor whose starting allocations also include emerging market equities.

As can be seen in Table 9, adding hedge funds to any of the basic portfolios would have improved the various statistics. Of primary interest however is the evidence that adding Canadian hedge funds to such a portfolio, either solely or in addition to global hedge funds, is most beneficial. With the lower volatility, lower drawdowns and higher returns, adding any amount of Canadian hedge funds to an investor's portfolio, would have lowered the volatility, lowered the draw downs and increased the return of that portfolio. This combined with the low correlation to traditional markets implies that Canadian hedge funds should be part of both Canadian and global investors' portfolios. In fact the best Sharpe ratio was for a portfolio consisting 65% in the DEX Universe Bond Portfolio and 35% in the KCS Canadian Hedge Fund Composite we compiled.

Before concluding it is important to note some caveats in our study and its implications for investors. First, the benefits of including hedge funds in a portfolio outlined above ignore other practical considerations, such as the relatively low liquidity of hedge funds, which may be important for investors. Second, we have based our conclusions on the historical evidence and need to make the usual disclaimer that "past performance is not indicative of future results". Third, although we believe our indices are representative of the Canadian hedge fund industry they may not be investible. Although the majority of funds included in our KCS Canadian indices are open for new investments some are closed or may be closed in the future.

9. Conclusion

This paper presents statistics on the risk and return of Canadian hedge funds based on a comprehensive database of approximately 200 different Canadian hedge funds covering the period from January 2005 to June 2009. We find the range of risk and return for individual hedge funds varies widely but that there are significant gains to diversification by taking a portfolio approach to hedge fund investing. We also find that the risk and return characteristics of the hedge funds in our database are on average different than what is reported by the two Canadian hedge fund indices published by Scotia Capital and CanadianHedgeWatch. We compare the Canadian industry with the global hedge fund industry and note there are differences in both the historical returns as well as distributional characteristics. Our analysis shows that the unique risk characteristics of Canada's capital markets have been clearly evident in its hedge fund industry. The implication is that Canadian hedge funds have continued to be attractive for Canadian as well as foreign investors.

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Table 1
Number of Canadian Hedge Funds between 1998 and 2008

This table provides the number of live Canadian hedge funds in our entire database for each strategy sector at the end of the calendar years as indicated.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
All Strategies	12	18	27	39	56	68	95	116	144	165	149
Multi	3	3	5	6	6	6	8	8	8	9	9
Convert	1	1	1	1	2	2	3	3	3	3	3
Fixed Income	1	1	1	1	3	3	4	6	6	8	5
Market Neutral	0	1	2	3	5	9	11	17	18	22	21
Event Driven	1	2	2	3	4	4	5	5	6	7	7
Equity Long/Short	5	7	13	18	25	32	49	58	75	86	75
Managed Futures	1	3	3	5	9	10	12	14	20	21	23
Global Macro	0	0	0	2	2	2	3	5	8	9	6

Table 2
Summary Statistics for Canadian Hedge Fund Indices

The statistics in this table are for monthly returns from January 2005 to June 2009 for the KCS Composite hedge fund index and sub-indices created by the authors of this paper. Statistics are for monthly data and are not annualized, except for the Sharpe ratio as indicated. The Sharpe ratio is based on a riskless rate of 3%.

	Average Monthly Return	Standard Deviation	Skew	Kurtosis	3rd Moment	4th Moment	Sharpe Ratio (annual)	Maximum Drawdown (%)	Period of Maximum Drawdown	Months to Recovery / Left to Recover
KCS Composite	0.823%	2.944%	-1.2400	5.4982	-3.163%	4.508%	0.6745	-19.57	5 months	7.564
KCS Multi	0.742%	3.946%	-0.9923	4.7179	-3.936%	5.816%	0.4319	-29.11	13 months	10.35
KCS EMN	0.450%	1.224%	-1.5210	7.2560	-1.407%	2.009%	0.5653	-5.38	6 months	2.222
KCS FI	0.251%	1.862%	-3.2631	19.1198	-2.762%	3.893%	0.0011	-15.66	18 months	7.896
KCS Convert	0.723%	5.534%	-2.5640	11.2010	-7.575%	10.125%	0.2960	-40.19	4 months	18.804
KCS Event Dr.	1.506%	5.419%	-1.0450	5.7161	-5.500%	8.380%	0.8025	-32.39	13 months	10.923
KCS Equity LS	0.837%	3.964%	-1.1120	4.8706	-4.107%	5.889%	0.5132	-27.73	13 months	12.816
KCS Futures	1.202%	1.948%	0.4065	3.1006	1.443%	2.585%	1.6935	-3.68	2 months	2 months
KCS Macro	1.460%	3.093%	2.2369	12.1188	4.045%	5.771%	1.3549	-5.54	2 months	2 months

Table 3
Correlations between Canadian Hedge Fund Sub-indices

This table provides correlations of monthly returns from January 2005 to June 2009 for the various KCS Canadian hedge fund sub-indices created by the authors of this paper.

	Multistrategy	Equity Market Neutral	Fixed Income	Convertible Arb	Event Driven	Equity Long/Short	Global Macro	Managed Futures
Multistrategy	1.000	0.599	0.790	0.715	0.880	0.950	0.243	0.131
Equity Market Neutral	0.599	1.000	0.379	0.366	0.455	0.622	0.164	0.357
Fixed Income	0.790	0.379	1.000	0.762	0.732	0.774	0.201	-0.127
Convertible Arb	0.715	0.366	0.762	1.000	0.728	0.693	0.132	-0.143
Event Driven	0.880	0.455	0.732	0.728	1.000	0.888	0.324	0.206
Equity Long/Short	0.950	0.622	0.774	0.693	0.888	1.000	0.235	0.201
Global Macro	0.243	0.164	0.201	0.132	0.324	0.235	1.000	0.359
Managed Futures	0.131	0.357	-0.127	-0.143	0.206	0.201	0.359	1.000

Table 4
Summary Statistics for Canadian Hedge Fund Indices

The statistics in this table are for monthly returns from January 2005 to June 2009 for the KCS Composite, Scotia and CanadianHedgeWatch hedge fund index and sub-indices as indicated. Statistics are for monthly data and are not annualized, except for the Sharpe ratio. The Sharpe ratio is based on a riskless rate of 3%.

	Average Monthly Return	Standard Deviation	Skew	Kurtosis	3rd Moment	4th Moment	Sharpe Ratio (annual)	Maximum Drawdown (%)	Period of Maximum Drawdown	Months to Recovery / Left to Recover
SC CDN HFI (EW)	0.457%	3.246%	-1.0340	4.5365	-3.283%	4.738%	0.2204	-26.51	6 months	17.132
CHW Composite	0.099%	3.215%	-1.0841	4.0915	-3.302%	4.572%	-0.1626	-31.56	14 months	25.845
CHW Equity Hedge	0.337%	3.997%	-0.8760	3.5120	-3.824%	5.471%	0.0756	-34.53	16 months	28.202
KCS Composite	0.823%	2.944%	-1.2400	5.4982	-3.163%	4.508%	0.6745	-19.57	5 months	7.564
KCS Equity L/S	0.837%	3.964%	-1.1120	4.8706	-4.107%	5.889%	0.5132	-27.73	13 months	12.816

Table 5
Summary Statistics for Canadian and Global Hedge Fund Indices

The statistics in this table are for monthly returns from January 2005 to June 2009 for the CS/Tremont, Hedge Fund Research and KCS Canadian hedge fund index and sub-indices as indicated. Statistics are for monthly data and are not annualized, except for the Sharpe ratio. The Sharpe ratio is based on a riskless rate of 3%.

Sub-Strategies	Average Monthly Return	Standard Deviation	Skew	Kurtosis	3rd Moment	4th Moment	Sharpe Ratio (annual)	Maximum Drawdown	Period of Maximum Drawdown	Months to Recovery / Left to Recover
CS/Tremont	0.353%	2.055%	-1.4197	6.0546	-2.309%	3.223%	0.1743	-19.68	16 months	13.913
HFRI Composite	0.408%	2.177%	-1.0594	5.2086	-2.219%	3.289%	0.2514	-21.42	16 months	12.792
KCS Composite	0.823%	2.944%	-1.2400	5.4982	-3.163%	4.508%	0.6745	-19.57	5 months	7.564
CS/T Multi	0.304%	2.169%	-1.5837	6.9308	-2.528%	3.519%	0.0859	-24.72	14 months	15.471
HFRI Multi	0.164%	1.886%	-2.4435	12.5217	-2.541%	3.548%	-0.1574	-21.48	19 months	11.704
KCS Multi	0.742%	3.946%	-0.9923	4.7179	-3.936%	5.816%	0.4319	-29.11	13 months	10.35
CS/T EMN	-0.246%	5.698%	-6.8886	52.2549	-10.842%	15.320%	-0.3017	-45.10	8 months	41.864
HFRI EMN	0.242%	0.900%	-1.4673	5.7929	-1.022%	1.396%	-0.0298	-9.04	10 months	7.775
KCS EMN	0.450%	1.224%	-1.5210	7.2560	-1.407%	2.009%	0.5653	-5.38	6 months	2.222
CS/T Fixed Income	-0.150%	2.680%	-3.2790	17.0809	-3.981%	5.448%	-0.5168	-29.02	14 months	20.626
HFRI Fixed Income	0.092%	2.352%	-1.9721	10.5534	-2.950%	4.240%	-0.2331	-28.11	19 months	18.005
KCS Fixed Income	0.251%	1.862%	-3.2631	19.1198	-2.762%	3.893%	0.0011	-15.66	18 months	7.896
CS/T Convert Arb	0.038%	3.144%	-2.2425	11.2079	-4.116%	5.753%	-0.2333	-32.88	14 months	16.803
HFRI Convert Arb	0.178%	3.507%	-2.2614	13.0192	-4.603%	6.661%	-0.0707	-35.32	13 months	15.507
KCS Convert Arb	0.723%	5.534%	-2.5640	11.2010	-7.575%	10.125%	0.2960	-40.19	4 months	18.804
CS/T Event Dr.	0.435%	1.896%	-1.1811	5.0984	-2.004%	2.849%	0.3377	-19.15	16 months	13.484
HFRI Event Dr.	0.303%	2.213%	-1.4367	6.6642	-2.497%	3.555%	0.0828	-24.79	16 months	16.576
KCS Event Dr.	1.506%	5.419%	-1.0450	5.7161	-5.500%	8.380%	0.8025	-32.39	13 months	10.923
CS/T Equity LS	0.429%	2.567%	-1.0577	4.7182	-2.616%	3.784%	0.2416	-22.00	16 months	14.298
HFRI Equity LS	0.313%	2.894%	-1.0310	5.2622	-2.924%	4.384%	0.0754	-30.60	16 months	19.734
KCS Equity LS	0.837%	3.964%	-1.1120	4.8706	-4.107%	5.889%	0.5132	-27.73	13 months	12.816
CS/T Futures	0.467%	3.141%	-0.0057	1.8753	-0.562%	3.676%	0.2396	-9.18	2 months	4 months
HFRI Futures	0.992%	2.560%	0.2626	2.8998	1.639%	3.341%	1.0046	-4.41	1 month	3 months
KCS Futures	1.202%	1.948%	0.4065	3.1006	1.443%	2.585%	1.6935	-3.68	2 months	2 months
CS/T Macro	0.691%	1.936%	-1.3199	7.1037	-2.124%	3.161%	0.7882	-14.94	4 months	9.704
HFRI Macro	0.584%	1.419%	0.2383	2.9510	0.880%	1.860%	0.8151	-4.94	3 months	7 months
KCS Macro	1.460%	3.093%	2.2369	12.1188	4.045%	5.771%	1.3549	-5.54	2 months	2 months

Table 6a
Correlations between CS/Tremont Sub-indices

This table provides correlations of monthly returns from January 2005 to June 2009 for the various sub-indices created by CS/Tremont as indicated.

	CS/T Multi	CS/T EMN	CS/T Fixedinc	CS/T Convert	CS/T Event	CS/T Equity LS	CS/T Futures	CS/T Macro
CS/T Multi	1.0000	0.4169	0.8221	0.8955	0.9423	0.8694	0.0849	0.6592
CS/T EMN	0.4169	1.0000	0.3662	0.1811	0.3743	0.2154	-0.0960	0.0438
CS/T Fixedinc	0.8221	0.3662	1.0000	0.8758	0.7398	0.6971	-0.1378	0.5855
CS/T Convert	0.8955	0.1811	0.8758	1.0000	0.7903	0.7573	-0.0466	0.6603
CS/T Event Dr.	0.9423	0.3743	0.7398	0.7903	1.0000	0.9035	0.1658	0.6351
CS/T Equity LS	0.8694	0.2154	0.6971	0.7573	0.9035	1.0000	0.2580	0.6658
CS/T Futures	0.0849	-0.0960	-0.1378	-0.0466	0.1658	0.2580	1.0000	0.3895
CS/T Macro	0.6592	0.0438	0.5855	0.6603	0.6351	0.6658	0.3895	1.0000

Table 6b
Correlations between HFRI Sub-indices

This table provides correlations of monthly returns from January 2005 to June 2009 for the various sub-indices created by Hedge Fund Research Inc. as indicated.

	HFRI Multi	HFRI EMN	HFRI FI	HFRI Convert	HFRI Event	HFRI ELS	HFRI Futures	HFRI Macro
HFRI Multi	1.0000	0.5411	0.9216	0.9600	0.8921	0.8597	0.0058	0.2478
HFRI EMN	0.5411	1.0000	0.5099	0.4121	0.6596	0.6371	0.4380	0.5909
HFRI FI	0.9216	0.5099	1.0000	0.8633	0.8966	0.8180	-0.0468	0.1309
HFRI Convert	0.9600	0.4121	0.8633	1.0000	0.8381	0.8173	-0.0886	0.1700
HFRI Event Dr.	0.8921	0.6596	0.8966	0.8381	1.0000	0.9520	0.2170	0.3855
HFRI Equity LS	0.8597	0.6371	0.8180	0.8173	0.9520	1.0000	0.2755	0.4862
HFRI Futures	0.0058	0.4380	-0.0468	-0.0886	0.2170	0.2755	1.0000	0.8701
HFRI Macro	0.2478	0.5909	0.1309	0.1700	0.3855	0.4862	0.8701	1.0000

Table 7
Summary Statistics for Traditional Market and Hedge Fund Indices

The statistics in this table are for monthly returns from January 2005 to June 2009 for the various traditional asset class and hedge fund indices as indicated. Statistics are for monthly data and are not annualized, except for the Sharpe ratio. The Sharpe ratio is based on a riskless rate of 3%.

	Monthly Return	Monthly SD	Skew	Kurtosis	3rd moment	4th moment	Sharpe ratio (annual)	Maximum drawdown	Length of Maximum Drawdown	Months to Recovery / Left to Recover
S&P 500	-0.087%	4.707%	-1.0341	5.3929	-4.760%	7.173%	-0.2478	-52.56%	16 months	36.27%
DEX Universe Bond	0.444%	2.210%	0.2612	7.0011	1.413%	3.595%	0.3042	-2.77%	2 months	2 months
MSCI EAFE	-0.010%	4.914%	-0.9869	4.6602	-4.892%	7.219%	-0.1831	-53.29%	21 months	40.09%
S&P/TSX Composite	0.406%	4.966%	-1.1544	5.7704	-5.210%	7.697%	0.1091	-44.80%	9 months	26.69%
CS/Tremont	0.353%	2.055%	-1.4197	6.0546	-2.309%	3.223%	0.1743	-19.68%	16 months	13.91%
HFRI Composite	0.408%	2.177%	-1.0594	5.2086	-2.219%	3.289%	0.2514	-21.42%	16 months	12.79%
KCS Composite	0.823%	2.944%	-1.2400	5.4982	-3.163%	4.508%	0.6745	-19.57%	5 months	7.56%

Table 8
Correlations between Traditional Market and Hedge Fund Indices

This table provides correlations of monthly returns from January 2005 to June 2009 for the traditional asset class and hedge fund indices as indicated.

	S&P 500	DEX Universe Bond	MSCI EAFE	S&P/TSX Composite	CS/Tremont	HFRI Composite	KCS Composite
S&P 500	1.0000	0.1057	0.9001	0.8257	0.6822	0.7826	0.6518
DEX Universe Bond	0.1057	1.0000	0.0782	0.0843	-0.0448	-0.0037	0.0279
MSCI EAFE	0.9001	0.0782	1.0000	0.8467	0.7517	0.8572	0.7403
S&P/TSX Composite	0.8257	0.0843	0.8467	1.0000	0.8787	0.9312	0.9057
CS/Tremont	0.6822	-0.0448	0.7517	0.8787	1.0000	0.9623	0.9297
HFRI Composite	0.7826	-0.0037	0.8572	0.9312	0.9623	1.0000	0.9398
KCS Composite	0.6518	0.0279	0.7403	0.9057	0.9297	0.9398	1.0000

Table 9
Effect of Adding Canadian and Global Hedge Funds to Traditional Portfolios

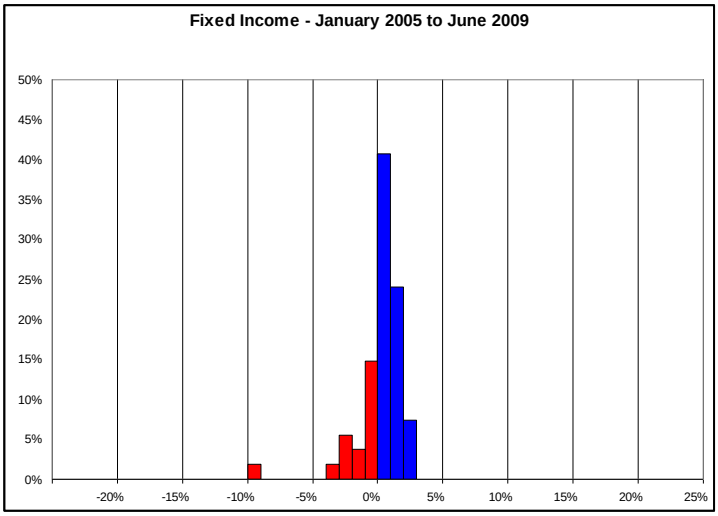
The statistics in this table are for monthly returns from January 2005 to June 2009 on various combinations of indices for traditional asset classes and hedge funds as indicated. Statistics are for monthly data and are not annualized, except for the Sharpe ratio as indicated. The Sharpe ratio is based on a riskless rate of 3%.

	Average Monthly Return	Standard Deviation	Sharpe Ratio (annual)	3rd Moment (%)	4th Moment (%)	Maximum Drawdown	Period of Maximum Drawdown
1 - (20% S&P, 30% TSX, 30% DEX, 20% EAFE)	0.12%	3.27%	-0.056	-0.0362	0.0514	-35.61%	Nov 2007 to Present
1a - (80% Portfolio 1, 20% CS/T)	0.17%	2.96%	-0.043	-0.0334	0.0470	-32.59%	Nov 2007 to Present
1b - (80% Portfolio 1, 20% KCS Composite)	0.28%	3.07%	-0.004	-0.0341	0.0485	-31.90%	Nov 2007 to Present
1c - (80% Portfolio 1, 10% CS/T, 10% KCS Composite)	0.23%	3.01%	-0.023	-0.0338	0.0477	-32.24%	Nov 2007 to Present
1d - (70% Portfolio 1, 30% CS/T)	0.19%	2.81%	-0.035	-0.0320	0.0449	-31.04%	Nov 2007 to Present
1e - (70% Portfolio 1, 30% KCS Composite)	0.37%	2.99%	0.024	-0.0332	0.0471	-29.98%	Nov 2007 to Present
1f - (70% Portfolio 1, 15% CS/T, 15% KCS Composite)	0.28%	2.90%	-0.005	-0.0326	0.0460	-30.51%	Nov 2007 to Present
2 - (20% S&P, 20% TSX, 30% DEX, 20% EAFE, 10% EM)	0.18%	3.40%	-0.038	-0.0374	0.0534	-36.63%	Nov 2007 to Present
2a - (80% Portfolio 2, 20% CS/T)	0.21%	3.06%	-0.027	-0.0343	0.0484	-33.43%	Nov 2007 to Present
2b - (80% Portfolio 2, 20% KCS Composite)	0.33%	3.18%	0.009	-0.0350	0.0500	-32.75%	Nov 2007 to Present
2c - (80% Portfolio 2, 10% CS/T, 10% KCS Composite)	0.27%	3.12%	-0.009	-0.0347	0.0492	-33.09%	Nov 2007 to Present
2d - (70% Portfolio 2, 30% CS/T)	0.23%	2.90%	-0.021	-0.0328	0.0461	-31.80%	Nov 2007 to Present
2e - (70% Portfolio 2, 30% KCS Composite)	0.41%	3.08%	0.036	-0.0339	0.0484	-30.75%	Nov 2007 to Present
2f - (70% Portfolio 2, 15% CS/T, 15% KCS Composite)	0.32%	2.99%	0.008	-0.0334	0.0472	-31.27%	Nov 2007 to Present

Figure 1

Distribution of monthly returns of selected Canadian Hedge Fund Sub-indices

These histograms are based on monthly returns from January 2005 to June 2009 for the KCS Canadian hedge fund sub-indices created by the authors of this paper.



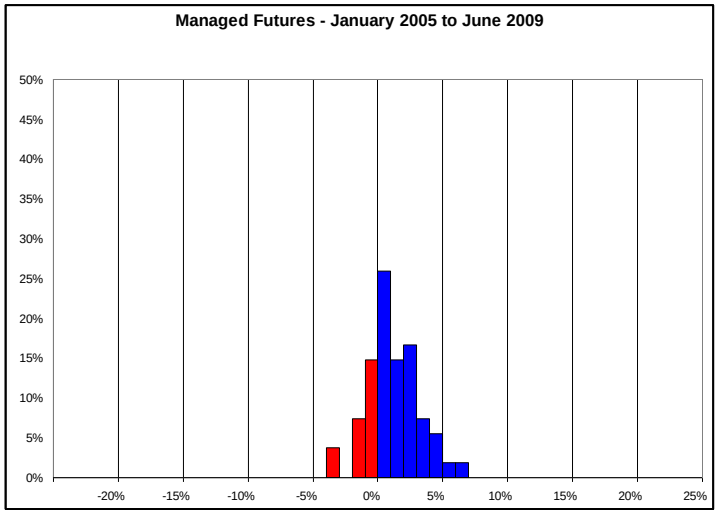
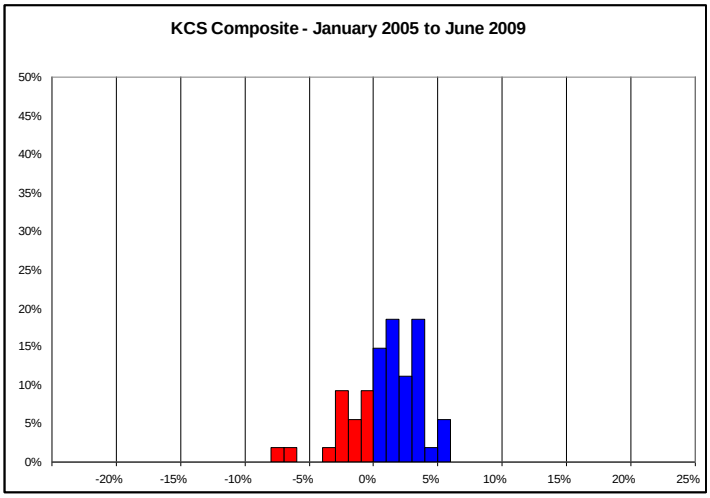
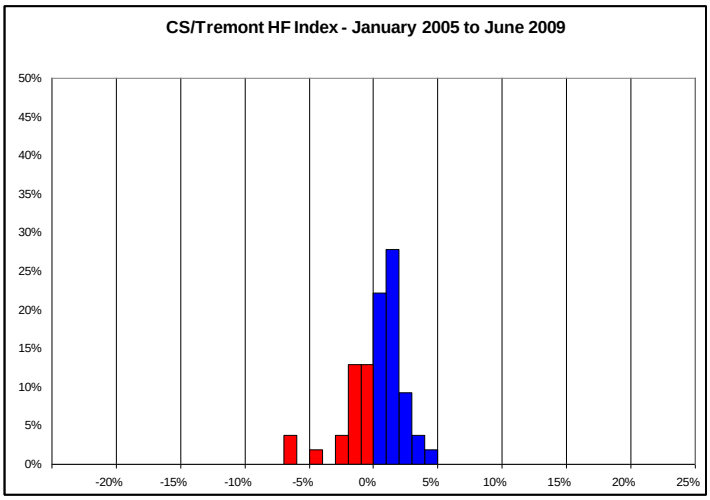


Figure 2

Distribution of monthly returns of selected Canadian Hedge Fund Sub-indices

These histograms are based on monthly returns from January 2005 to June 2009 for the KCS Composite, CS/Tremont and Hedge Fund Research hedge fund indices as indicated.





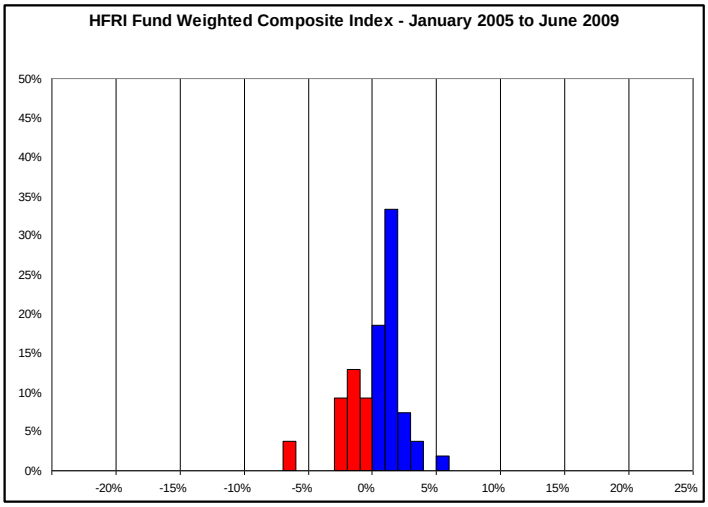


Figure 3

Distribution of monthly returns of selected global Traditional and Hedge Fund indices

These histograms are based on monthly returns from January 2005 to June 2009 for various global traditional and hedge fund indices as indicated.