Flight to Quality and Canadian Mutual Fund Flows

Aditya Kaul and Blake Phillips*

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Abstract

This paper examines the asset allocation decisions of mutual fund investors, focusing on flight to quality considerations. Specifically, we study monthly net flows to the universe of Canadian mutual funds between 1991 and 2005 to see how investors vary flows across fund categories as economic conditions change. Using the default spread, term spread and short term interest rate as proxies for economic conditions, we find that an improvement (deterioration) in Canadian economic conditions causes investors to direct flows away from (towards) fixed income-type funds and towards (out of) equity based funds. For example, a one standard deviation increase in the term spread (1.13%) results in an 84% increase and a 74% decrease in the percentage of flows directed at Canadian equity and money market funds respectively. To further assess the significance of shifting risk preferences, we examine the flows to equity and money market funds surrounding three major crises: the Long Term Capital Management debacle, the Y2K problem and the 9/11 terrorist attacks. Each episode is accompanied by significant flows into money market funds and out of equity funds. For example, the August 1998 Long Term Capital Management failure sees Canadian investors move $1,850 million into money market funds and $627 million out of equity funds. Our results provide evidence both of a strong flight-to-quality motivation underlying aggregate mutual fund flows and of rationality in mutual fund investor asset allocation decisions.

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* Both authors are from the University of Alberta School of Business. Corresponding Author: Aditya Kaul, University of Alberta School of Business, Edmonton, AB, Canada, T6G 2R6. E-Mail: akaul@ualberta.ca. The authors are grateful for financial support from a National Research Program in Financial Services & Public Policy grant and for data provided by the Investment Funds Institute of Canada.

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Abstract

This paper examines the asset allocation decisions of mutual fund investors, focusing on flight to quality considerations. Specifically, we study monthly net flows to the universe of Canadian mutual funds between 1991 and 2005 to see how investors vary flows across fund categories as economic conditions change. Using the default spread, term spread and short term interest rate as proxies for economic conditions, we find that an improvement (deterioration) in Canadian economic conditions causes investors to direct flows away from (towards) fixed income-type funds and towards (out of) equity based funds. For example, a one standard deviation increase in the term spread (1.13%) results in an 84% increase and a 74% decrease in the percentage of flows directed at Canadian equity and money market funds respectively. To further assess the significance of shifting risk preferences, we examine the flows to equity and money market funds surrounding three major crises: the Long Term Capital Management debacle, the Y2K problem and the 9/11 terrorist attacks. Each episode is accompanied by significant flows into money market funds and out of equity funds. For example, the August 1998 Long Term Capital Management failure sees Canadian investors move $1,850 million into money market funds and $627 million out of equity funds. Our results provide evidence both of a strong flight-to-quality motivation underlying aggregate mutual fund flows and of rationality in mutual fund investor asset allocation decisions.

The notion of flight-to-quality has received substantial attention in the financial press. For instance, on November 12, 2007, Reuters News reports that:

> *Investors put a net $20.5 billion into safe-haven money market accounts in the first week of November, reversing a brief flirtation with risk at the end of last month.*

The idea is that investors move to safer investments when economic conditions deteriorate and to riskier investments when economic conditions improve. Despite the intuitive appeal of flight-to-quality, there is little evidence of its prevalence or economic importance.[1] In this paper, we attempt to fill this void by examining the flows of Canadian mutual fund investors. Our tests focus on the variation in aggregate flow to funds that differ in terms of their riskiness as economic conditions change.

By examining asset allocation decisions conditional on economic conditions, we are also able to provide evidence on whether mutual fund investor trading is rational. The rational explanation suggests that flow to riskier categories will be higher when economic conditions are favorable, and that flows to safer categories will be higher in adverse circumstances. While this issue could be examined in any context, our study of Canadian mutual fund flow provides some advantages. The number of fund categories is relatively small, allowing us to draw sharp inferences. Additionally, since most extant research is based on U.S. mutual fund flow, our analysis provides evidence from a new arena.

The extant literature concludes, on balance, that fund-level investments are largely sentiment driven. For example, Warther (1995), Patro (2006) and others show that investors base their fund purchases on recent performance, chasing fund returns. This return chasing behavior is asymmetric in that investors fail to direct funds away from recent losers (see, for instance, Sirri and Tufano, 1998; Lynch and Musto, 2003). Additionally, funds that advertise recent success or receive greater media exposure attract a disproportionate volume of the total flow (Sirri and Tufano, 1998; Jain and Wu,

[1] A recent exception is Beber et al. (2007) who examine flows into the bond market in times of market stress.

2000), although Gruber (1996) finds that investors realize improved performance based on actual asset allocations relative to equal weighted allocations.

In contrast to these fund-level studies, we examine how broad asset allocations change in response to varying economic conditions. Specifically, as opposed to studying the relation between fund flows and fund performance, we investigate the relation between aggregate category flows and proxies for economic conditions. To capture economic conditions, we follow Fama and French (1989) and use TERM (the difference between the yields on long-term and short-term Canadian government bonds) and DEF (the difference between the yields on medium term corporate bonds and government bonds). To these, we add the short term interest rate (T-BILL, the 31-day Treasury Bill rate), as suggested by Shanken (1990). Good economic conditions are associated with high values of TERM and T-BILL and low values of DEF, and the opposite for poor conditions.

Starting with monthly flow data for individual Canadian mutual funds over the period of January 1991 through October 2005, we compute aggregate flow for seven major fund categories: Money market; Bond; Balanced; Dividend and Income; Canadian equity, US equity; and Foreign equity. Each of the seven categories accounts for at least 10% of overall flow, on average, although there is considerable time-series variation in the monthly flow accruing to each category. From these monthly aggregate flows we calculate the percentage of the overall flow accruing to each category by month. Our main tests then relate the percent of overall flow to the seven categories to the three proxies for economic conditions. By using percent flow, we are better able to account for changes in the size of the market and exogenous shocks, and to make direct comparisons across fund categories.

Our results suggest that asset allocation decisions are at least partially rational. When the Canadian economy is performing favorably (TERM is high, DEF is low, and T-BILL is high), investors direct assets away from fixed income-type funds and towards equity based funds. For example, a one standard deviation increase in the term spread (1.13%) results in an 84% increase in the percentage of flow directed to Canadian equity funds and a 74% decrease in the flow to money market funds. The

coefficients on DEF and T-BILL paint a broadly similar picture: investors allocate more (less) of their portfolio to risky than safe assets when economic prospects are good (poor). Moreover, the sensitivity to TERM, DEF and T-BILL is, for the most part, lower for balanced or dividend/income funds than for equity funds; thus, flow to the riskiest assets is most sensitive to economic conditions. This finding on the relation between flow and economic conditions is, to our knowledge, new.

This evidence of flight-to-quality is reinforced by an analysis of three major episodes that occur over our sample period: the failure of Long Term Capital Management in August 1998; the Y2K problem in late 1999; and the terrorist attacks in September 2001. Even though these events are US-centered, we find strong traces in Canadian asset allocation decisions. Each of these episodes is accompanied by perceptible shifts away from riskier equity fund investments and into safer, bond fund investments.

At the same time, a couple of our results provide some pause. Controlling for economic conditions, we find persistence at the broad asset level. Additionally, flows into equity funds tend to be higher following both negative and positive Canadian market returns, symptomatic of return chasing behavior. These results suggest that the drivers of aggregate level flow might not be entirely rational.

The remainder of this paper is organized as follows. Section 1 summarizes the relevant literature. Section 2 outlines the data and variables. Section 3 describes the results. Section 4 concludes.

1. Related Literature

Empirical research investigating the determinants of mutual fund flows can be characterized as following one of two approaches. First, a rich and growing literature investigates the determinants of flows at the individual fund level. Several researchers have documented a positive relationship between past fund performance and mutual fund flows (see, for example, Gruber (1996), Sirri and

Tufano (1998), Patro (2006) and Cashman et. al. (2006a)). Further, Sirri and Tufano (1998) and Jain and Wu (2000) document that funds which advertise their success receive a disproportionate volume of the future inflows directed at recent strong performers. This literature also tends to indicate that the performance – flow relationship is asymmetric. Sirri and Tufano (1998), Gruber (1996) and Lynch and Musto (2003) document that while investors divert a greater proportion of flows towards funds with strong recent performance they fail to direct flows away from poorly performing funds. On the other hand, Cashman et al. (2006b) provide evidence that investors punish poor performance by reducing inflows to those funds and do so at the same intensity as they increase inflows to strong performing funds.

Gruber (1996) and Zheng (1999) examine the returns to fund investors resulting from the return chasing behavior prevalent in mutual fund flows and find that the performance of funds with large inflows is significantly better than that of funds with outflows. They interpret these results as suggesting that mutual fund investors have selection ability. Frazzini and Lamont (2007) provide contradictory evidence, documenting that the positive relation between fund performance and inflows is confined to short horizons of about one quarter. Over a longer time frame, funds with recent strong performance realize significantly lower returns, on average, due to their allocations.

Second, a more sparse literature examines the determinants of mutual fund flows at the aggregate level across fund types. Similar to fund level research, Edwards and Zhang (1998) and Santini and Aber (1998) document that flows into equity based funds are positively related to stock market performance. Santini and Aber (1998) document that new money flows are negatively related to the lagged long term interest rate and positively related to contemporaneous personal disposable income. The findings of Santini and Aber (1998) are supported by Campenhout (2004) who finds that changes in the long term interest rate, the market return and fund performance are significant determinants of aggregate mutual fund flows from 11 European countries. Goetzmann et al. (1999) document that flows into equity funds are negatively correlated with flows into money market and precious metal

funds. They argue the negative correlation of equity and metal fund flows suggests that fund allocations are not simply due to liquidity concerns but rather to sentiment about the equity premium.

We contribute to this literature by examining the joint effects of economic conditions and risk preferences on aggregate mutual fund flows. To our knowledge, this is the first paper to explore the variation in relative flows to different fund categories with unique market exposures and risk profiles as economic conditions change.

2. Sample and Variable Description

Mutual fund flow data are provided by the Investments Funds Institute of Canada (IFIC) which collects monthly sales, asset value and redemptions by fund for all Canadian mutual funds. The database commences in January 1991 tracking 430 funds, and concludes in October 2005, tracking 1727 funds. Funds tracked by the IFIC database are classified based on the Canadian Investment Funds Standards Committee (CIFSC) 2007 Retail Investment Fund Category Definitions. In order to exclude minor asset categories, we focus on fund types that represent a minimum average value of 5% of total assets under management (aggregated across all funds) over the sample period. This filter yields seven asset categories: Canadian equity (CE); Balanced (BA); Dividend and income (DI); Bond (BO); Money market (MM); US equity (US); and International equity (IE). Appendix A provides the definitions of these seven fund types. Across the entire sample period, on average, the seven fund categories represent over 92% of total assets under management.

Our objective is to relate aggregate flows for these fund types to economic conditions. To this end, we are interested not in the level of the aggregate flow for the fund categories, but rather in the flow relative to other fund categories with differing market exposures and risks. To meet this objective, the flow variable studied here is the monthly percent of aggregate net sales, calculated as:

$$percent_sales_{j,t} = \frac{\sum_{i=1}^{N_j} net_sales_{i,j,t}}{abs(\sum_{j=1}^{N}\sum_{i=1}^{N_j} net_sales_{i,j,t})} \tag{1}$$

Here, net sales is defined as gross sales – gross redemptions + switches / transfers in – switches / transfers out. Distributions that are reinvested are not included in net sales. Subscript *i* denotes individual funds, subscript *j* denotes fund category and *t* denotes time. N_j is the total number of funds in category *j*, and *N* is the total number of fund categories (*N*=7). For example, percent sales in January 1991 for the Canadian equity fund category is the sum of net sales to all funds in this category divided by the sum of net sales for all funds in the sample, compiled for January 1991. By studying the percentage of aggregate sales directed to a particular category, we are able to abstract from the effects of exogenous shocks and better isolate asset allocation effects. For instance, if income levels drop, investors are likely to reduce their investments in all categories. The question of interest is whether they reduce their investments proportionately across categories. This question is more cleanly addressed using the percent sales variable.

We relate the percent sales variable to three proxies for economic conditions. The term spread (TERM), is the difference between the yield on the long-term Canadian government bond (maturity of 10 years or longer) and the 31-day Canadian Treasury Bill rate. The default spread (DEF) is the difference between the yield on a portfolio of medium term Canadian corporate bonds and the yield on the medium maturity (three to five year) Canadian government bond. The final proxy is the yield on the 31-day Treasury Bill rate (T-BILL). In addition, we include the previous month's market (Toronto Stock Exchange) return to capture the effects on flow of stock market conditions.

Fama and French (1989) show that TERM and DEF track economic conditions. Specifically, TERM is wide near business cycle troughs, when conditions are expected to improve, and narrow near

peaks, when conditions are expected to worsen. DEF is wide when business conditions are poor and narrow when conditions are favorable. Additionally, Chen (1991) shows that DEF predicts GDP growth over the next two quarters while TERM predicts GDP growth over the following five quarters. When DEF is high, slow growth is predicted; when TERM is high, rapid growth is predicted. Merton (1973) and Shanken (1990) suggest that the short-term rate, T-BILL, is a natural candidate for a state variable that captures variations in investment opportunities. If flight-to-quality is an important determinant of flow, we expect to see the following coefficient signs in time-series regressions of flow on the proxies for economic conditions:

Decreasing Risk →

	CE	DI	BA	BO	MM
TERM	+	-	NP	-	-
DEF	-	+	NP	+	+
T-BILL	+	-	NP	-	-

NP means no prediction.

The cleanest predictions are possible at either end of the risk spectrum, for equity funds as well for fixed-income type funds such as money market and bond funds. As TERM is high at business cycle troughs, investors would rationally be expected to overweight equity based funds relative to fixed-income funds, so as to increase exposure to the pending economic expansion. This leads to a positive coefficient on TERM for CE and a negative coefficient for BO or MM. Likewise, as DEF is high when business conditions are poor, rational investors would minimize exposure to equity based funds and seek safe havens in fixed-income type funds. Thus, a negative (positive) relation would be expected between CE (MM/BO) and DEF. Predictions related to DI and BA are less clear. As balanced funds represent a blend of fixed income and equity funds, the relation between balanced fund flow and economic conditions could be insignificant. To the extent that dividends are sticky, dividend

and income funds provide a lower exposure to business cycle fluctuations. This argument suggests that DI will resemble fixed-income type funds.

The bond data are collected from two sources. Monthly data for Canadian government bonds and treasury bills are obtained from the Statistics Canada database. Data for the average yields on medium term Canadian corporate bonds are obtained from the Economist database. These are investment grade corporate bonds (AAA to BBB), predominantly A to AA grade bonds, with a maturity of less than 10 years. Data on the TSX market return are collected from Datastream.

3. Results

We start by reporting descriptive statistics on the seven mutual fund categories tracked in this paper. Panel A of Table I reports statistics on the level of flow, assets and percent flow by fund category. Across the sample period, January 1991 to October 2005, the mean monthly dollar flow ranges between $190 million for the least active fund type (US funds) and $545 million for the most active fund type, international equity funds (all figures in Canadian dollars). Based on overall net assets, the largest category is Canadian equity funds (a mean of $60 billion), followed by international equities, balanced and money market funds. The medians yield generally similar orderings, although the medians are less extreme.

Net assets and flow grow rapidly over the sample period. For example, net assets under management in Canadian equity funds increase to 13 times their initial value, from $9 to $120 billion over the 15-year sample window. Money market and bond funds realize similarly rapid expansions, increasing five-fold and 11-fold respectively. These trends are illustrated in Figure 1, which shows the mean aggregate monthly flow to each fund type by year.

The number of funds available to Canadian investors also sees a rapid expansion between 1991 and 2005. Panel B of Table I reports the mean number of funds in each category by year. International

equity funds have the greatest representation (557 in 2005) followed by Canadian equity funds (355) and balanced funds (275). Despite having, on average, 13% of total assets under management, there are only 87 money market funds in 2005. This indicates that money market assets are concentrated in larger funds relative to international or Canadian equity funds.

At the end of 2005, total assets under management across all Canadian funds amount to approximately $550 billion. For purposes of comparison, total assets under management in U.S. mutual funds are approximately $9 trillion (US) (ICI, 2007). Thus, the size of the Canadian mutual fund industry is approximately 1/20th the size of the US fund industry. Based on 2006 GDP, the U.S. economy is 13 times the size of the Canadian economy (IMF, 2007). Thus, the relative sizes of the mutual fund industry in Canada and the US are not out of line with the relative sizes of the two economies.

Table I also reports statistics on the percent sales variable, which is the dependent variable in our examination of asset allocation. Over our sample period, the median percent sales values are, for the most part, tightly clustered, ranging from a low of 11% (for money market funds) to a high of 15% (for balanced funds), and with the share of bond funds being 12% and those of Canadian equity and international equity funds being 14%. The only two categories with significantly smaller shares are U.S. equity funds and dividend and income funds, both of which have median shares below 5%. The first quartile of percent sales is negative for two important categories (money market and Canadian equity funds), meaning that there are net outflows in approximately 44 months out of 177. The inter-quartile range, (Q3-Q1)/2, is large for each category, e.g. 0.145 for Canadian equity funds, and the standard deviation is even larger. Thus, there is considerable time-series variability in the relative flow series; it is this variation that we aim to explain using proxies for economic conditions.

Panel C of Table I provides the time-series correlation matrix for percent sales to the seven categories. Consistent with the risk ordering of the series, Canadian equity flow is positively correlated with international equity flow (0.51) and with balanced flow (0.49), and is negatively correlated with

bond flow (-0.42) and money market flow (-0.57). The small negative correlation of -0.10 (not significant at conventional levels) with DI suggests that the stable income provided by the latter is viewed as a risk substitute for the capital gains provided by equity funds. Flow to balanced funds is strongly negatively correlated with money market flow (-0.86) and positively correlated with dividend/income (0.65) and international equity (0.46) flow. To the extent that balanced funds are blends of stock and bond positions, the correlations are reasonable. Other notable correlations in flow exist for dividend and bond funds (0.67), dividend and money market funds (-0.47), bonds and international equities (-0.53) and money market and international equities (-0.72). These correlations provide preliminary evidence that mutual fund investors move between funds with differing risk profiles in a manner consistent with flight-to-quality.

Table II provides summary statistics for the independent variables in our regression analysis. Descriptive statistics are shown in Panel A. The yield premium for investing in long-term over short-term bonds, TERM, averages approximately 2% per year. The average premium for investing in risky relative to safe bonds, DEF, is 1.2% per year. These values are similar to the mean U.S. values reported by Fama and French (1989) for TERM (1.99%) and DEF (0.96%) over a longer sample period. The annualized T-Bill rate, T-BILL, is 4.6%, on average. Finally, the mean TSX return is 70 basis points per month. There is appreciable variability in each series, seen in the large standard deviation or inter-quartile range.

Panel B reports the time-series correlations of these variables. DEF and TERM have a correlation of 0.36. The positive correlation suggests that DEF and TERM contain common information about economic conditions, but the fact that the correlation is well below 1.0 implies that they capture different aspects of economic conditions (as argued by Fama and French (1989) and Chen (1991)). The correlation of -0.54 between TERM and T-BILL is due to the presence of the 31-day rate in both series. DEF and T-BILL are negatively correlated (-0.10), indicating that both capture variations in

economic conditions. Last, the TSX return is not significantly correlated with the contemporaneous TERM, DEF and T-BILL; the correlation values themselves are tiny.

Table III contains the key results in the paper. It presents the results of regressions of PERCENT_SALES, the percent sales for the seven fund categories, on the three measures of economic conditions, DEF, TERM, and T-BILL (each measured at the end of the previous month), as well as two control variables, the lagged values of PERCENT_SALES and the TSX return.[2] The previous month's percent sales for each category is included to capture persistence in aggregate flows. The lagged TSX return is included to examine the effects of the most recent market return on asset allocation, e.g. due to return chasing behavior at the aggregate level. We separate positive and negative market returns; this allows us to look for asymmetric return chasing effects.

We start with the flow to Canadian equity funds (CE). CE is positively related to TERM and T-BILL, and negatively related to DEF. The coefficients on TERM and T-BILL are significant at better than the 1% level of significance while that on DEF is significant at the 10% level. Since an increase in TERM or in T-BILL, or a decline in DEF, signifies improvements in economic conditions, this means that the share of aggregate flow directed towards equity funds increases when economic conditions improve. Similarly, equity fund flow declines when TERM or T-BILL declines or DEF increases, each indicative of deteriorating economic conditions.

At the other extreme, consider percent sales for Canadian money market fund, MM. MM is negatively related to TERM (at the 10% level of significance), and positively related to DEF (p-value < 0.01). The coefficient on T-BILL is insignificantly different from zero. These coefficients imply that the MM share of net sales increases when economic conditions are expected to deteriorate and declines when they are expected to improve.

[2] We standardize the dependent and independent variables using the time series standard deviations which allows us to directly make statements about economic significance.

The risk levels of dividend/income (DI), balanced (BA) and bond (BO) funds lie somewhere between the extremes represented by CE and MM. If flight-to-quality considerations are important, we expect investors to increase their bond investments and perhaps reduce their investments in dividend/income and balanced funds as conditions become gloomier, and to do the reverse as conditions improve. The findings for BO are consistent with these expectations: the coefficients on TERM and T-BILL are negative and the coefficient on DEF is positive. Thus, the relative flow into bond funds increases when TERM or T-BILL declines or DEF increases. For BA, the coefficient on TERM is significantly above zero at the 10% level. However, this coefficient is only half as large as that for equity funds. The sign and magnitude suggest that balanced funds are regarded as stock funds, but that their bond holdings lead to a more muted reaction to an improvement or deterioration in economic conditions. For DI, the only significant coefficient is that on T-BILL, and the fact that it is negative suggests that dividend/income funds are regarded more as bond than stock funds. Again, the coefficient is half as large as that for equity flow.

The predictions regarding international equities (IE) and US equities (US) are less clear. We expect the dominant effect to be associated with risk aversion on the part of Canadian investors. This effect suggests that flow to all risky investments, including non-Canadian funds, will decline as conditions get worse. On the other hand, if economic conditions in Canada and the US or international markets do not overlap completely, investors might increase their allocations to US or international funds in search of (relative) safety when Canadian economic conditions worsen. The coefficients imply that flow for both IE and US reacts similarly to that for Canadian equity funds. The coefficients on TERM and T-BILL are positive (for US flow, which on T-BILL is insignificantly different from zero), while that on DEF is negative. Thus, the share of mutual fund investments going to international and U.S. equities declines as Canadian economic conditions worsen. This is consistent with increased risk aversion on the part of Canadian investors resulting in larger flow to safe versus risky investments.

Turning to the control variables, the coefficient on lagged percent sales is significantly above zero. This is consistent with persistence in aggregate flow to each category, and with evidence from the individual fund level (see, for example, Warther (1995)). The effects of the market return variables are significant only for CE. The coefficients imply that investors direct a larger fraction of their flow to Canadian equity funds both after the market rises and after it falls, and are consistent with return chasing behavior at the aggregate level.

The regression evidence indicates that investors' asset allocation decisions reflect a flight-to-quality motivation. Specifically, they direct more of their dollars to risky investments (Canadian equity, US and international equity funds) and less to safer investments (bond and money market funds) in the face of improving economic conditions in Canada. Similarly, they park less money in risky investments and more in safe investments when conditions are expected to worsen. Consequently, it appears as if mutual fund investors take note of forward-looking signals of economic conditions in making their broad asset allocation decisions. In turn, these allocations are consistent with investor rationality: investors move to safer investments in the face of poor economic conditions and to riskier investments when conditions are improving.

In closing, we take a slightly different look at flight-to-quality by considering three exogenous shocks that occur over our sample period: the failure of Long-Term Capital Management in August 1998; the Y2K crisis in late 1999; and the terrorist attacks on New York City on Sept 11, 2001. Each of these events was accompanied by fears of a meltdown in global financial markets. If these events triggered flight-to-quality concerns, we might see their effects in Canadian mutual fund flow. We examine funds at the extremes of the risk spectrum, Canadian equity and money market funds.

Figure 3 shows the percent flow to CE and MM between June 1997 and March 2002, a timeframe which encompasses all three crises. The results are striking. In each case we see a strong increase in the percent flow to MM and a drop in the flow to CE. In the month of the LTCM debacle, the percent flow to MM is 2.43, while that to CE is -0.80, indicating net inflows of $1,850 million for money

market funds and outflows of $627 million for Canadian equity funds. Over the four months preceding Y2K, there is a mean monthly percent inflow for MM of 0.98 and this reverses in January 2000. The opposite pattern is apparent for CE, with a mean percent outflow over the same four-month period of 2.20. The equivalent dollar flow in the four months preceding Y2K is $1.6 billion into money market funds and $1.4 billion out of Canadian equity funds. Last, in September and October 2001, the months including and following the 9/11 attacks, there are percent inflows for MM of 1.16 and 0.94 and percent outflows for CE of 0.13 and 0.0001. These translate into cumulative two-month inflows of $500 million for MM and outflows of $300 million for CE.

Note that, with the possible exception of Y2K, the episodes are U.S. based. However, each episode was accompanied by fears that financial markets all over the world would face difficulties. Our evidence suggests that Canadian mutual fund investors were mindful of these risks and transferred money from risky to more secure investments. Our examination of these three episodes confirms that flight-to-quality considerations are an important driver of investor asset allocations.

4. Concluding Comments

In this paper, we examine the asset allocation decisions of mutual fund investors. We are interested in the importance of flight to quality considerations as a driver of fund flow, i.e. whether investors direct money towards safer (riskier) investments when economic conditions become weaker (stronger). With this goal in mind, we study monthly net flow for the universe of Canadian mutual funds between 1991 and 2005. We separate funds into seven categories—Canadian equity, Dividend and income, Balanced, Bond, Money market, US equity and International equity—and aggregate the flow for each of these categories. Our variable of interest is the percent flow for each of the seven categories. At extreme ends of the risk spectrum are Canadian equity and Money-market funds, with Balanced, Dividend/income, and Bonds representing intermediate risks.

As proxies for economic conditions, we use the default spread (DEF), term spread (TERM) and short term interest rate (T-BILL). Following prior research (e.g. Fama and French (1989), Chen (1991)), we assume that economic conditions are good when DEF is low, and TERM and T-BILL are high. We then relate the percent flow for the seven categories to DEF, TERM and T-BILL, plus controls. Our main finding is that an improvement in Canadian economic conditions causes investors to direct flows away from fixed income-type funds and towards equity based funds; when conditions deteriorate, the reverse happens. For example, a one standard deviation increase in the term spread (1.13%) results in an 84% increase in the percent of aggregate flow directed at Canadian equity funds, and a 74% decrease in the percent flow going to money market funds. Based on net sales in October 2005, these changes translate into an extra monthly inflow of $84 million for all Canadian equity funds and an outflow of $74 million for Canadian money market funds.

In order to provide further evidence on the significance of shifting risk preferences, we examine the flows to equity and money market funds surrounding three major crises: the Long Term Capital Management debacle, the Y2K problem and the 9/11 terrorist attacks. These three episodes prompted fears of a meltdown in global financial markets: if they triggered flight-to-quality concerns, we might see their effects in Canadian mutual fund flows. We find that each episode is accompanied by significant flow into money market funds and out of equity funds. For example, the August 1998 Long Term Capital Management failure sees Canadian investors move $1,850 million into money market funds and $627 million out of equity funds.

The message from our analysis is that mutual fund investors appear to take into consideration the information contained in signals of the economy's health (captured by such variables as DEF, TERM and T-BILL) while making their asset allocation decisions. Specifically, investors direct their dollars to asset categories on the basis of the risk characteristics of the category in conjunction with the prevailing economic environment. Overall, therefore, our results provide evidence of strong flight-to-

quality effects in aggregate mutual fund flows. They also point to some degree of rationality in mutual fund investor asset allocation decisions.

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Appendix A

The fund type classifications utilized in this article are established based on the Canadian Investment Funds Standards Committee (CIFSC) 2007 Retail Investment Fund Category Definitions (CIFSC, 2007). Following is the definition of each of the fund types examined in this article.

Balanced Funds (BA)
Funds in the Balanced Funds group must invest between 5% and 90% of their non-cash assets invested in Equity Securities and between 10% and 95% of their non-cash assets in fixed-income securities.

Canadian Fixed Income (BO)
Funds in the Canadian Fixed Income category must invest at least 90% of their fixed income holdings in Canadian dollars with an average duration greater than 3.5 years and less than 9.0 years. In addition, these funds must invest primarily in investment-grade fixed-income securities, such that the average credit quality of the portfolio as a whole is investment grade (BBB or equivalent rating or higher) and not more than 25% of the portfolio's holdings are invested in high yield fixed income securities. For purposes of the category definition, up to 30% of a Fund's assets may be held in Foreign Fixed Income products which will be treated as Canadian content provided that the currency exposure on those holdings is hedged into Canadian Dollars.

Canadian Equity (CE)
Funds in the Canadian Equity category must invest at least 90% of their equity holdings in securities domiciled in Canada, and their average market capitalization must be greater than the Canadian small/mid cap threshold.

Canadian Dividend & Income Equity (DI)
Funds in the Canadian Dividend & Income Equity category must have a stated mandate to invest primarily in income-generating securities and must invest at least 90% of their equity holdings in securities domiciled in Canada. In addition, these funds must invest at least 50% of their non-cash assets in income-generating securities such that the 3-year weighted average yield on the equity component of the fund's portfolio is at least 1.5 times the average yield of the Canadian Equity Fund benchmark, defined as the S&P/TSX Equity Index. The fund's average capitalization must exceed the Canadian small/mid cap threshold.

International Equity (IE)
Funds in the International Equity category must invest at least 95% of their equity assets in countries other than Canada and the United States and at least 70% of their equity assets in developed countries.

Money Market Funds (MM)
Funds in the Money Market group must invest at least 95% of their total net assets in cash or cash equivalent securities and otherwise comply with the legal definition of Money Market funds as outlined in National Instrument 81-102.

U.S. Equity (US)

Funds in the U.S. Equity category must invest at least 90% of their equity holdings in securities domiciled in the United States, and their average market capitalization must be greater than the U.S. small/mid cap threshold.

Table I

Panel A of Table I reports descriptive statistics for monthly net sales, net assets and percent sales. Each variable is monthly in frequency reported at months end from January 1991 through November 2005. Net sales is aggregate net sales for all funds in each category defined as gross sales – gross redemptions + switches / transfers in – switches / transfers out. Distributions that are re-invested are not included in net sales. Net assets is aggregate net assets for all funds in each category defined as the value of all holdings of the fund less all liabilities. Percent sales is calculated as net sales for each fund type divided by the absolute value of the sum of net sales to all funds. Panel B reports the mean number of funds in each fund type by year. Panel C reports the correlation matrix of percent sales across fund types, values significant at conventional levels (α=0.05) appear in bold face.

Panel A: Descriptive Statistics of Fund Variables by Fund Type

Variable	Type	Mean	Median	Q1	Q3	STD
Net Sales ($x10^6$)	BA	516	287	72	726	712
	BO	345	317	73	586	383
	IE	545	388	183	794	1028
	CE	437	267	-41	799	874
	DI	284	113	22	451	448
	MM	347	342	-323	873	869
	US	191	101	25	297	299
Net Assets ($x10^9$)	BA	45	53	18	65	30
	BO	24	25	12	31	14
	IE	60	67	27	89	37
	CE	66	81	29	96	36
	DI	18	18	4	23	16
	MM	33	32	16	48	16
	US	17	17	4	31	13
Percent Sales	BA	0.23	0.15	0.07	0.26	0.62
	BO	0.19	0.12	0.05	0.22	0.44
	IE	0.26	0.14	0.02	0.30	1.35
	CE	0.07	0.14	-0.03	0.26	0.56
	DI	0.22	0.04	0.01	0.17	0.52
	MM	-0.18	0.11	-0.14	0.42	2.18
	US	0.09	0.05	0.01	0.10	0.33

Panel B: Summary of number of funds per fund type, by year

BA	Canadian Balanced Funds	IE	International Equity Funds
BO	Canadian Fixed Income Funds	MM	Money Market Funds
CE	Canadian Equity Funds	US	United States Equity Funds
DI	Canadian Dividend and Fixed Income Funds		

**Refer to Appendix A for detailed fund type definitions

Year	BA	BO	IE	CE	DI	MM	US
1991	61	65	51	112	13	54	30
1992	67	74	67	132	15	66	43
1993	74	84	84	144	18	71	54
1994	82	95	134	165	21	72	63
1995	96	110	208	190	32	78	76
1996	93	114	239	198	33	77	81
1997	102	112	255	210	33	80	87
1998	119	119	277	245	37	84	98
1999	135	124	310	274	42	86	115
2000	160	131	464	306	44	87	154
2001	174	132	681	327	43	90	193
2002	197	138	717	347	49	91	234
2003	214	137	675	362	65	87	283
2004	252	143	616	355	74	87	277
2005	275	147	557	355	79	87	257

Panel C: Correlation Matrix of Percent Sales by Fund Type

	CE	BA	DI	BO	MM	IE	US
CE	1						
BA	**0.491**	1					
DI	-0.101	**0.650**	1				
BO	**-0.422**	**0.175**	**0.667**	1			
MM	**-0.570**	**-0.863**	**-0.470**	0.039	1		
IE	**0.507**	**0.457**	-0.140	**-0.531**	**-0.722**	1	
US	0.009	**-0.165**	-0.093	-0.139	-0.078	0.018	1

Table II

Panel A of Table II reports descriptive statistics for the independent variables used as proxies for the economic state in Canada. The correlation matrix of the same variables is included in Panel B, values significant at conventional levels (α=0.05) appear in bold face. The variables are monthly in frequency reported at months end from January 1991 through November 2005. DEF is the difference in yield between medium term corporate bonds and 3 to 5 year Canadian Government Bonds. TERM is the difference in yield between the 10 year plus Canadian Government Bond and the 31 day Canadian Treasury Bill. T-BILL is the yield on the 31 day Canadian Treasury Bill. TSX RETURN is the average daily return to the TSX Composite Index over the month of interest.

Panel A: Descriptive Statistics of Independent Variables

Variable	N	Mean	Median	Q1	Q3	STD
DEF	177	1.21	1.13	0.87	1.52	0.40
TERM	177	2.09	2.22	1.15	3.03	1.13
T-BILL	177	4.64	4.63	2.86	5.62	1.90
TSX RETURN	177	0.007	0.01	-0.01	0.04	0.04

Panel B: Correlation Matrix of Independent Variables

	TERM	DEF	T-BILL	TSX RETURN
TERM	1			
DEF	**0.360**	1		
T-BILL	**-0.541**	**-0.097**	1	
TSX RETURN	0.022	-0.010	-0.010	1

Table III

Percent Sales Time-series Regression Results

Table III reports time-series regression results of monthly percent sales to each fund type regressed on lagged percent sales, proxies for economic state and measures of stock market performance. The dependent variable is percent sales by fund type. Percent sales is calculated as net sales for each fund type divided by the absolute value of the sum of net sales to all funds, where net sales is aggregate net sales for all funds in each category defined as gross sales – gross redemptions + switches / transfers in – switches / transfers out. Distributions that are re-invested are not included in net sales. TERM is the difference in yield between the 30 year plus Canadian Government Bond and the 31 day Canadian Treasury Bill at month end. DEF is the difference in yield between medium term corporate bonds and 3 to 5 year Canadian Government Bonds at month end. T-BILL is the yield on the 31 day Canadian Treasury Bill at month end. NEG TSX RETURN is equal to TSX RETURN if TSX RETURN is <0 and is otherwise equal to zero, where TSX RETURN is the average daily return in each month to the TSX Composite Index. POS TSX RETURN is calculated in the corresponding fashion but in relation to a positive value for TSX RETURN. Standardized coefficient values are report with t-statistics corrected for first order autocorrelation reported in brackets below each coefficient. Coefficients significant at conventional levels (α=0.05) appear in bold face.

BA	Canadian Balanced Funds	IE	International Equity Funds
BO	Canadian Fixed Income Funds	MM	Money Market Funds
CE	Canadian Equity Funds	US	United States Equity Funds
DI	Canadian Dividend and Fixed Income Funds		

**Refer to Appendix A for detailed fund type definitions

Fund Level Percent Sales Regression Results

Independent Variables	Dependent Variable: Percent Sales by Fund Type						
	CE	BA	DI	BO	MM	IE	US
INTERCEPT	**-1.168**	0.362	0.459	0.536	0.104	-0.144	0.624
	(3.40)	(0.85)	(1.65)	(1.82)	(0.23)	(0.29)	(0.92)
LAG TERM	**0.324**	0.153	-0.009	-0.128	**-0.230**	0.224	0.235
	(4.06)	(1.55)	(0.16)	(1.95)	(2.13)	(1.93)	(1.48)
LAG DEF	-0.0943	-0.058	0.050	**0.136**	0.118	**-0.222**	**-0.297**
	(1.48)	(0.70)	(1.10)	(2.48)	(1.29)	(2.23)	(2.22)
LAG T-BILL	**0.289**	-0.076	**-0.154**	**-0.195**	-0.031	0.207	0.078
	(3.83)	(0.81)	(2.65)	(2.98)	(0.30)	(1.82)	(0.50)
LAG NEG TSX RETURN	**-0.222**	0.005	0.076	0.047	0.026	-0.032	-0.00
	(3.07)	(0.07)	(1.22)	(0.73)	(0.34)	(0.47)	(0.00)
LAG POS TSX RETURN	0.135	-0.022	-0.049	-0.059	0.013	0.045	0.036
	(1.78)	(0.29)	(0.72)	(0.86)	(0.18)	(0.70)	(0.49)
LAG % SALES	**0.415**	**0.299**	**0.669**	**0.615**	**0.231**	**0.227**	**-0.389**
	(6.13)	(4.12)	(11.82)	(10.09)	(3.12)	(3.02)	(5.56)
R^2	0.27	0.21	0.27	0.38	0.19	0.32	0.02

Figure 1

Mean Monthly Aggregate Net Assets by Fund Type and Year

Figure 1 reports the trend in mean monthly aggregate net assets for all funds in each category from 1991 – 2005. The averages calculated for 2005 exclude data for November and December due to data availability constraints. Net assets is defined as the value of all holdings of the fund less all liabilities.

BA	Canadian Balance Funds	IE	International Equity Funds
BO	Canadian Fixed Income Funds	MM	Money Market Funds
CE	Canadian Equity Funds	US	United States Equity Funds
DI	Canadian Dividend and Fixed Income Funds		

**Refer to Appendix A for detailed fund type definitions

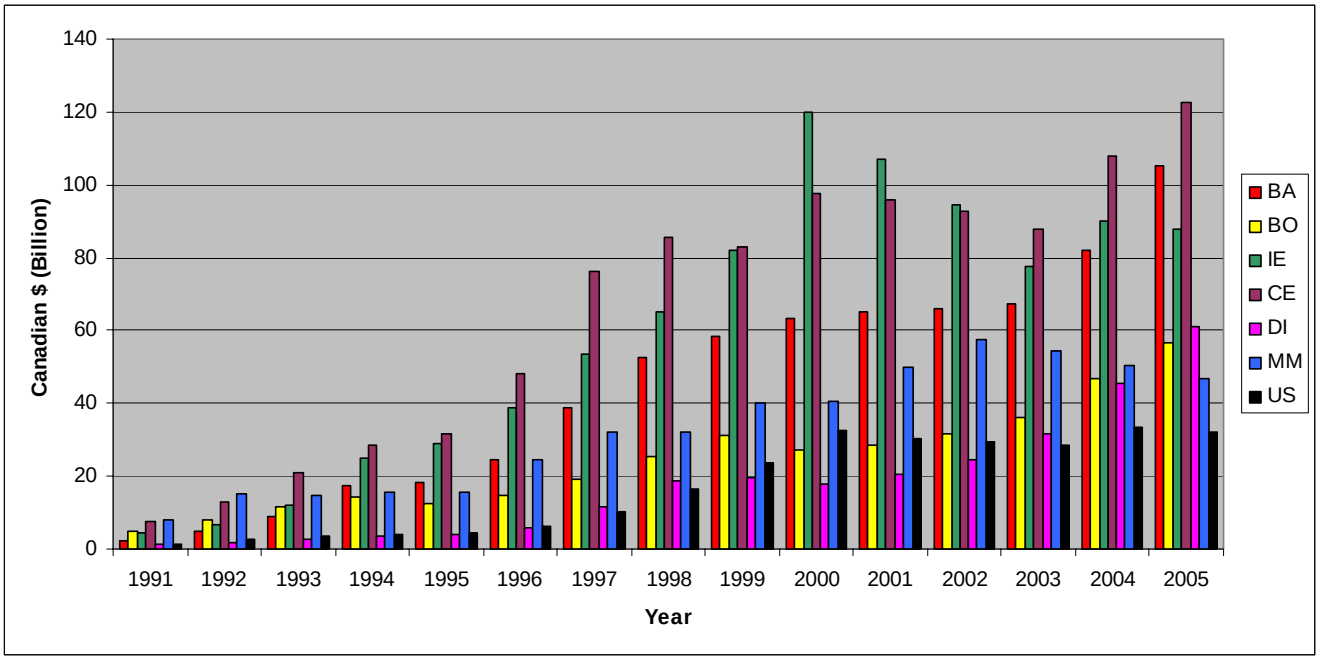

Figure 2

Mean Monthly Percentage of Total Net Sales by Fund Type and Year

Figure 2 reports the trend in the percentage of net sales attributable to each fund category from 1991 – 2005. The averages calculated for 2005 exclude data for November and December due to data availability constraints. Percent sales is calculated as net sales for each fund type divided by the absolute value of the sum of net sales to all funds, where net sales is aggregate net sales for all funds in each category defined as gross sales – gross redemptions + switches / transfers in – switches / transfers out. Distributions that are re-invested are not included in net sales.

BA	Canadian Balanced Funds	IE	International Equity Funds
BO	Canadian Fixed Income Funds	MM	Money Market Funds
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DI	Canadian Dividend and Fixed Income Funds		

**Refer to Appendix A for detailed fund type definitions

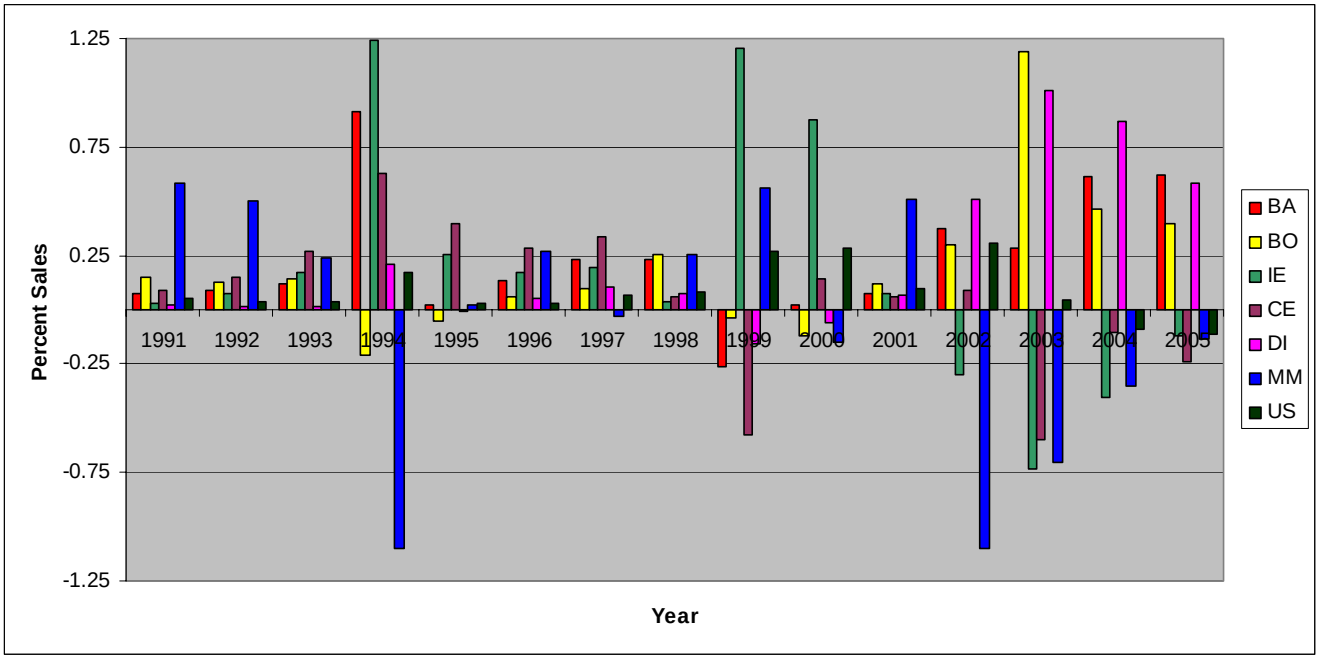

Figure 3

Percent Sales for Canadian Equity and Money Market Funds During Crises
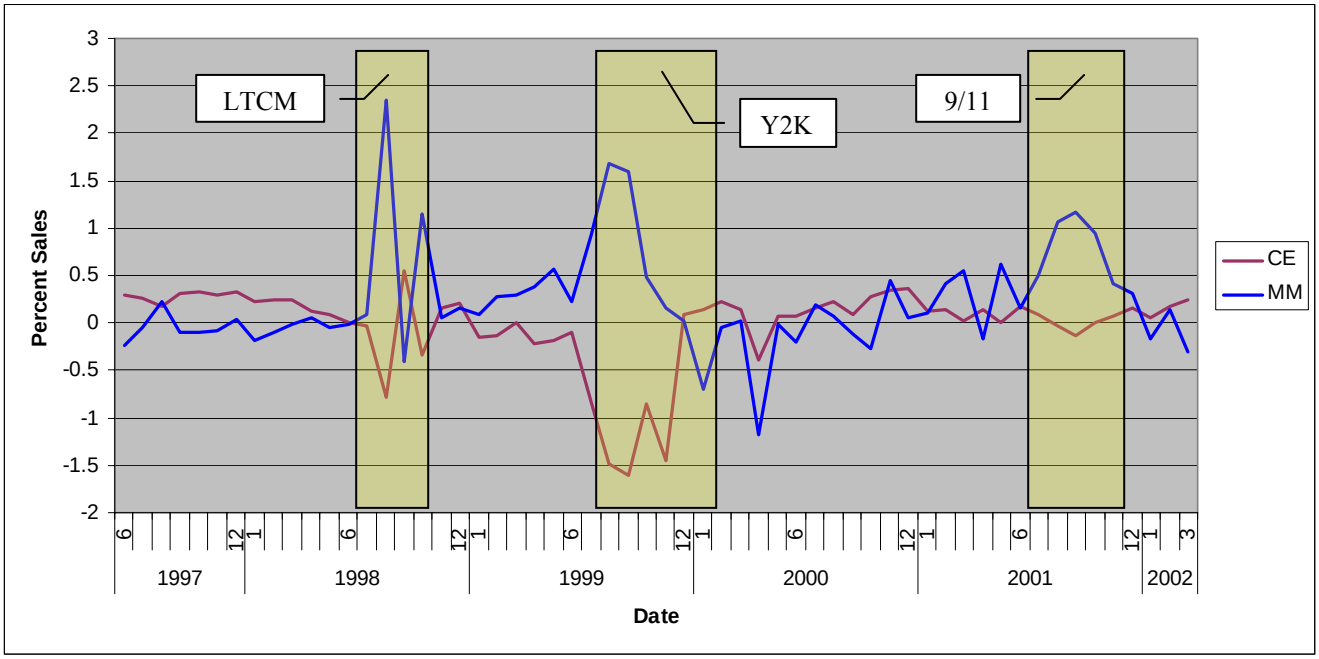
Figure 3 displays monthly percent sales to Canadian Equity (CE) and Money Market (MM) fund types from June 1997 to March 2002 over which time there were three significant global events which influenced financial markets: 1) August 1998, the hedge fund Long Term Capital Management (LTCM) lost 44% of total assets becoming a prominent example of the risk potential in the hedge fund industry. 2) Third and fourth quarters 1999, fears surrounding the potential effect of the turn of the century on the date tracking systems in computers (Y2K). 3) September 11, 2001, terrorist attacks on the World Trade Center in New York City (9/11). Percent sales is calculated as net sales for each fund type divided by the absolute value of the sum of net sales to all funds, where net sales is aggregate net sales for all funds in each category defined as gross sales – gross redemptions + switches / transfers in – switches / transfers out. Distributions that are re-invested are not included in net sales.