Aggregate Mutual Fund Flows: The Role of Economic Conditions and Flight-to-Quality

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Abstract

We study mutual fund investors' aggregate investment decisions and the role that economic conditions and destabilizing events have on their asset allocations. In particular, we document the roles played by predictors of economic conditions and flight-to-quality in aggregate fund flows. In the universe of US mutual funds between 1991 and 2008, we find that proxies for economic conditions are consistently related to net flow. An expected improvement in economic conditions causes investors to direct flow away from relatively safe money market funds and towards riskier equity funds. Around major crises, we find evidence of flight-to-quality, that is, significant flow into money market funds and out of equity funds. Further, we provide evidence that more sophisticated investors, who are likely to invest in low fee or low turnover funds, show a more pronounced reaction to economic conditions and crises. Our results exist in the population of Canadian funds as well. Whether altering flows in response to changing economic conditions benefits or hurts investors depends on their risk aversion. Investors with moderate to high levels of risk-aversion realize greater utility by switching between money market and equity funds in anticipation of changes in economic conditions, relative to a buy-and-hold strategy in equities.

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I. Introduction

The term "flight-to-quality" is ubiquitous when times are tough in financial markets. Despite the almost certain existence of this phenomenon, there is little evidence to demonstrate the mechanism through which flight-to-quality might exist and its implications. In this paper, we aim to provide evidence that sheds light on the role of economic factors and crises in the aggregate flows to mutual funds. The behavior of mutual fund investors is illustrated in Figure 1, which illustrates that from 1997 through 2008 excess flow to US domestic equity and money market funds appear to move in opposite directions from each other, especially during periods of financial crises. [1]

Studies at the mutual fund-level, such as Gruber (1996), Sirri and Tufano (1998) and Jain and Wu (2000), have shown that return chasing, advertising and media exposure are features that influence mutual fund flows. In contrast, we first investigate the relation between aggregate flows to the major asset class fund types and common proxies for economic conditions. We then examine whether mutual fund investors realize greater utility by following strategies that adjust asset allocations in response to economic conditions and crises. The natural closing question is: to the extent that investor flows are related to these factors, can we see an influence on asset prices?

Starting with monthly flow data for individual US mutual funds over the period of January 1991 through June 2008, we compute aggregate flow for four major asset categories: Money Market; Bond; Equity; and Foreign Equity. Each of these categories accounts for 10% or more of aggregate mutual fund assets. From the aggregate flow series,

[1] We compute excess flow as in Frazzini and Lamont (2008). The benchmark flow for a category (e.g. money market funds) assumes that flow is proportional to the asset weight of that category and excess flow is flow less benchmark flow. To ensure stationarity, we scale excess flow by aggregate market capitalization. We define the failure of Long Term Capital Management in August 1998; the Y2K problem in late 1999; tech stock related market crashes in 2000 and 2002, the terrorist attacks in September 2001; and the current credit crunch as crises.

we calculate the excess flow for each category in each month. Our main tests then relate the excess flow for the four categories to common proxies for economic conditions: the term spread, the default spread the change in the short rate (ΔT-BILL), the Treasury-Eurodollar spread (TED Spread), and volatility in the stock and bond markets (S&P Volatility and T-Bill Volatility). Our reliance on these variables is motivated by prior research (among many others, see Fama and Schwert, 1977; Fama and French, 1989; Schwert, 1989; Chen, 1991). This work suggests that an anticipated improvement in economic conditions is captured by an increase in the term spread and ΔT-BILL, or a decline in the default and TED spreads, with the opposite holding for worsening conditions.

We find that asset allocation decisions are influenced by economic conditions. When the economy is expected to perform favorably, i.e. the term spread is high, the default spread is low, ΔT-BILL is large, or the TED spread is low, investors direct flow away from money market funds and towards equity funds. Additionally, while equity volatility is not a significant determinant of flow, higher volatility in short-term T-bills boosts equity flow and diminishes money market flow. We interpret this as consistent with a flight to risky assets when inflationary uncertainty is higher. Interestingly, after controlling for economic conditions, there continue to be statistically and economically significant flows out of equity funds and into money market funds during crises.

In order to better understand the types of investors who respond to economic conditions and crises, we examine three sub-samples of the data. First, we sort the equity funds in our sample by fees and turnover, on the assumption that sophisticated investors are more likely to hold funds with low fees and turnover. We find that flow for low fee and low turnover funds is more sensitive to economic conditions and decreases more sharply

during the crises. This is consistent with sophisticated investors reacting quickly to economic conditions and more naïve investors being more complacent. Second, we find that large-cap fund flow is generally less sensitive to economic conditions and crises than small-cap fund flow. This is consistent with the pro-cyclical nature of small stocks relative to large stocks (e.g. Yogo, 2006) and suggests that investors understand the risks of the assets held by the funds.

Finally, we examine the relation between flow and economic conditions for Canadian mutual funds. The results for Canadian flow are generally similar to US flow. In particular, it is striking that the crises (which are non-Canadian in origin) are associated with higher flows to Canadian money market funds.

Given that investors respond to economic conditions and crises by moving assets between categories, we are left with two important questions. First, are investors better off when they fly-to-quality and update their asset allocation accordingly? We test this by forming portfolios based upon a strategy that adjusts asset allocations in response to predicted variations in economic conditions. The flight-to-quality portfolio realizes both lower average returns and lower volatility than a buy-and-hold strategy in the average equity fund. Thus, utility benefits to the flight-to-quality portfolio are risk aversion dependent. We estimate that investors with moderate to high levels of risk aversion will realize higher overall utility from the flight-to quality portfolio relative to the buy-and-hold strategy.

The remainder of the paper is organized as follows. Section II summarizes the relevant literature. Section III outlines the data and variables. Section IV describes the results. Section V concludes.

II. Related Literature

Empirical research investigating the determinants of mutual fund flow can be divided into two broad groups. The first investigates the determinants of flow at the individual fund level. Several papers have documented a positive relation between fund flow and past performance (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 advertising their success receive a disproportionate share of the inflow going to strong performers. The weight of the evidence indicates that the flow-performance relation is asymmetric. Sirri and Tufano (1998), Gruber (1996) and Lynch and Musto (2003) document that while investors send a larger proportion of flow to funds with strong performance, they do not proportionally pull flow away from poorly performing funds. However, Cashman et al. (2006b) provide evidence that fund investors reduce flow to poor performers with the same intensity that they increase flow to strong performers.

Gruber (1996) and Zheng (1999) examine future returns to fund investors resulting from such performance chasing and find that funds with large inflow outperform funds with outflow. 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 flow and future fund performance is confined to short horizons of about one quarter. Over a longer window, funds with recent inflow realize significantly lower returns than those with outflow.

Finally, Cederburg (2008) examines return-chasing and subsequent performance for fund investors over the business cycle. He finds that, during expansions, investors earn

higher risk-adjusted returns through return-chasing but investors do not chase returns during recessions, instead seeking funds with low market and book-to-market exposures.

Second, a more sparse literature examines the determinants of mutual fund flow at the aggregate level across fund types. Similar to the fund level research, Edwards and Zhang (1998) and Santini and Aber (1998) document that flow into equity funds is positively related to stock market performance. Santini and Aber (1998) also show that new money flow is negatively related to the lagged long term interest rate and positively related to contemporaneous personal disposable income. Campenhout (2004) finds that the change in the long rate, market return and fund performance are significant determinants of aggregate mutual fund flow in 11 European countries. Goetzmann et al. (1999) document that flow into equity funds is negatively correlated with flow into money market and precious metals funds. They argue this negative correlation suggests that fund allocations are not simply due to liquidity concerns but also reflect sentiment about the equity premium.

There is substantial evidence that mutual fund flow affects prices of the assets held by the funds and thereby also affects the performance of the funds themselves.[2] Thus, shifts in flow disrupt manager investment strategies, e.g. investor redemptions necessitate "fire sales" of the most liquid assets in the fund. For example, Coval and Stafford (2007) find that mutual funds in the top and bottom flow deciles (high inflows or outflows to net assets) significantly underperform funds in the middle deciles. They also find that an investment strategy which shorts stocks likely to be involved in fire sales and buys ahead of anticipated forced purchases earns an average annual abnormal return in excess of 15%.

[2] For instance, Braverman et al. (2007) and Warther (1995) document a positive relation between mutual fund flow and asset returns.

Based on this evidence, the performance of mutual funds is likely dependent on the ability of managers to anticipate and prepare for economic cycle driven fund flow variations.

III. Sample and Variable Description

Mutual fund data come from the Center for Research in Security Prices (CRSP) Mutual Fund Database which provides monthly net asset value and returns by fund share class as well as quarterly or annual disclosures of management fees, portfolio turnover and fund objectives. We also obtain data on Canadian mutual funds from the Investments Funds Institute of Canada (IFIC) which collects monthly sales, asset value and redemptions by fund for all Canadian mutual funds, including broad objective classifications. Our dataset commences in January 1991 at which time the Canadian data become available from the IFIC; coincidentally, the CRSP database sees a large increase in funds around this time. We collect the CRSP data through June 2008, while the IFIC data conclude in October 2005. In order to classify funds as small-, mid- or large-cap, we calculate the average market capitalization for each equity fund's portfolio by merging the CRSP Mutual Fund Database with the Thomson Reuters Ownership Database. The merge is completed by linking CRSP fund identifiers with Thomson Reuters portfolio identifiers using the Mutual Fund Links Database.

For each fund we calculate monthly net flow as the change in net assets resulting from purchases and redemptions, controlling for fund return effects:

$$NF_{i,t} = A_{i,t} - A_{i,t-1} - A_{i,t-1}R_{i,t} \quad (1)$$

where *NF* is net flow, *A* is net assets and *R* is fund return for fund *i*. Our objective is to examine variations in aggregate flow across broad asset classes as economic conditions change. To this end, we aggregate net flow across four asset categories, Equity, Bond, Money Market and Foreign Equity.[3] We choose these asset classes as they provide the most intuitive partition of the risk spectrum of available mutual fund types.

We are interested, not in the level of flow for each fund category, but rather in the allocation of flow across fund categories with different risks. In essence, we want to capture the extent to which investors overweight one asset class, relative to another, while conditioning on macroeconomic predictors. Accordingly, we study the excess flow for each category, calculated as the flow directed to each asset class in excess of the flow that would have resulted on an asset value weighted basis:

$$ExF_{j,t} = \frac{\sum_{i=0}^{N}(NF_{i,t} - AWF_{i,t})}{MC_{t-1}} \quad (2)$$

Here, subscript *i* denotes a fund, subscript *j* denotes a fund asset class type, *t* denotes time and *N* is the total number of funds in category *j*. *ExF* is excess flow, *NF* is net flow as described in equation (1), *AWF* is net flow that would have resulted on an asset-weighted basis and MC is total market capitalization of the NYSE, AMEX and NASDAQ for US mutual funds and of the TSX for Canadian mutual funds. We follow Warther (1995) and standardize by lagged total market capitalization to control for time series variation in flow magnitude resulting from price appreciation and market growth.

[3] Due to the abundance of US equity funds in Canada, for the Canadian data we separately evaluate flows to US equity funds and flows to foreign country funds outside North America.

By studying the excess flow directed at a particular category, we are able to abstract from the effects of exogenous shocks and better isolate asset allocation effects. For instance, if business conditions worsen and income levels drop, investors are likely to reduce their investment in all categories. We are most interested in examining whether they reduce their investments proportionately across categories or if they target certain categories for more pronounced cutbacks, e.g. equity funds. This question is more cleanly addressed using the excess flow variable.

We relate the excess flow variable to proxies for economic conditions. The term spread is calculated as the difference between the yield on a long-term government bond (maturity of ten years or longer) and the three month Treasury Bill rate. The default spread is the difference between the yield on a portfolio of medium term corporate bonds and the yield on the medium maturity (three to five year) government bond. The TED spread is the difference between the three month LIBOR rate and the three month Treasury Bill Rate. Consumer confidence ranks general consumer sentiment relative to a baseline value of 100 based on survey responses. ΔT-BILL is the change in the yield on the three month Treasury Bill.

Finally, we include two proxies for market volatility. Equity volatility (S&P / TSX Volatility) is calculated as the sum of squared daily returns for each month to the S&P 500 or TSX index (for US and Canadian funds respectively). Fixed income volatility (T-Bill Volatility) is calculated as the sum of squared daily changes in the three month Treasury Bill yield for each month. We also include the return to each asset class to control for flow variation potentially resulting from return chasing behavior by investors. Each variable is defined separately for the US and Canadian samples using variables from each country.

Consumer confidence at a monthly frequency and Treasury Bill yields at a daily frequency are unavailable for Canada, thus these variables are excluded from the Canadian models.

The bond data are collected from various sources. Monthly data for Canadian government bonds and Treasury Bills are obtained from the Statistics Canada database. Data on the yields on medium term Canadian corporate bonds are obtained from a database created by the Economist intelligence unit. These are investment grade corporate bonds, predominantly A to AA grade bonds, with maturity below 10 years. Data on the TSX and S&P 500 index returns, consumer confidence, LIBOR and US bonds are collected from DataStream. US T-BILL data are collected from the St. Louis FED database.

Fama and French (1989) show that term spread and default spread track economic conditions. Specifically, term spread is wide near business cycle troughs, when conditions are expected to improve, and narrow near peaks, when conditions are expected to worsen. Default spread is wide when business conditions are poor and narrow when conditions are favorable. Chen (1991) shows that default spread predicts GDP growth over the following two quarters while term spread predicts GDP growth over the following five quarters: when the default spread is high, slow growth is predicted; when the term spread is high, rapid growth is predicted. Merton (1973) and Shanken (1990) suggest that the short-term T-Bill rate is a natural candidate for a state variable that captures variations in investment opportunities. The TED spread is a natural indicator of credit risk in the economy. As Treasury Bills are considered essentially risk free and LIBOR captures the credit risk of interbank loans, a widening of the TED spread signifies higher levels of counterparty risk.

It is possible that the spreads in the fixed income markets are understood and utilized more commonly by sophisticated investors. Thus we include consumer confidence to

capture additional perceptions of economic stability beyond variables traditionally considered in the academic literature. If mutual fund investors tend to avoid or flee riskier assets when economic conditions deteriorate, we expect to see the following coefficient signs in time-series regressions of flow on the proxies for economic conditions:

Decreasing Risk →

	EQ	BO	MM	FE
TERM	+	-	-	+
DEF	-	+	+	-
ΔTBILL	+	-	-	+
Confidence	+	-	-	+
TED	-	?	+	-

The predictions are clearest at the two ends of the risk spectrum, that is, for equity funds as well as fixed-income funds such as money market funds. When business conditions are expected to improve, investors should increase exposure to equity funds and reduce exposure to fixed income funds. Investors should do the opposite when conditions are expected to deteriorate.

Considered relative to the domestic fund categories it is clear that foreign equity funds are of greater risk than domestic money market or bond funds, but the risk ranking relative to domestic equity funds is less clear. To the extent that all equity fund categories are riskier than money market or bond funds, we would expect a positive relation with the term spread, consumer confidence and the change in T-BILL and a negative relation with the default spread and TED spread for foreign equity flow. On the other hand, to the extent that economic conditions vary across international regions, times of poor domestic economic performance may encourage investors to look abroad for investment opportunities, resulting in the opposite prediction.

IV. Results

a. Economic conditions and mutual fund flow

We start by reporting descriptive statistics on the excess flow variable, which is the key measure in our analysis in Panel A of Table I. For the primary asset classes (equity and money market) mean and median excess flow values are close to zero, suggesting that over our sample period, net inflows and outflows roughly match up for both asset classes. As seen in the negative mean flow for bond funds and positive mean for international equity funds, these fund classes face net outflows and inflows during the sample period. The standard deviations of excess flow are notably higher for the domestic asset classes and are highest for the asset classes at the extremes of the risk spectrum (equity and money market funds). This suggests either that these asset categories are more commonly utilized by domestic investors or that portfolio rebalancing between these asset classes is more common. The upper and lower quartile values, which are more extreme for the equity and money market asset classes than for the bond and international equity asset classes, reinforce this conclusion.

Panel B of Table I provides the time-series correlation matrix for excess flow for the four asset class categories. Consistent with the risk ordering of the series, US equity flow is positively correlated with international equity flow (0.47) and highly negatively correlated with money market flow (-0.84). Thus, investors appear to put money into, or pull money out of, equity fund types at the same time. Moreover, when investors increase their allocation to US equities, they reduce their allocation to money market funds. Bond fund flow has a positive correlation with equity fund flow (0.32) and a negative correlation with money market fund flow (-0.71). These correlations suggest that bond funds are viewed as

a riskier alternative to money market funds but are not avoided as strongly during episodes where net flow is directed to money market funds. This is consistent with the mixed composition of the bond category which consists of corporate bonds (with risk profiles more akin to equities) as well as less risky government bonds. Taken together, the correlations provide preliminary evidence that risk aversion is an important driver of investor allocations across fund categories with differing risk profiles. Shortly, we will carry out tests to formally examine the importance of risk aversion effects.

Table II provides summary statistics on the independent variables in these tests. Descriptive statistics are shown in Panel A. Term spread, the yield premium for investing in long-term over short-term bonds, averages approximately 2% per year. The mean value of default spread, the premium for investing in risky relative to safe bonds, is 1.7% per year. These value for term spread is similar to the value reported by Fama and French (1989) (1.99%) but the value for default spread is slightly higher than they report (0.96%) over a longer sample period. The average change in the annualized T-Bill rate is -0.025 (median zero), which reflects the relative stability of this variable. The average TED spread, the difference between the LIBOR and T-Bill rates, suggests counterparty risk premiums of approximately 0.5% during our sample period.

The mean monthly volatility translates into an annualized standard deviation of 16%. T-Bill volatility, computed as the within-month sum of squared daily yield changes, has a mean of 1% per-month. The return to the all equity fund class has a mean of 90 bps per month and a standard deviation of 14%, while that for other classes is somewhat lower (not reported). The similar levels of equity fund volatility and S&P 500 volatility are

reasonable since the universe of equity funds should mirror the market. By construction, consumer confidence has a mean close to 100 as this is the reference baseline for the index.

Panel B reports the time-series correlations among these variables. Default and term spread have a correlation of -0.15, and 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)). Term spread and consumer confidence are highly negatively correlated (-0.71), consistent with the forward-looking nature of term spread.

We now turn to the central issue in the paper, the importance of flight-to-quality effects in driving asset allocation decisions. To that end, Table III presents the results of regressions of EXCESS FLOW, the adjusted flow variable for the four fund categories, on the proxies for economic conditions, term, default and TED spread and ΔT-Bill, stock and bond market volatility, consumer confidence, as well as the previous month's asset class return (each measured at the end of the previous month) and the event dummy (SHOCK). The coefficient on SHOCK is set to one for the periods surrounding the LTCM failure, Y2K and 9/11.[4] We scale the dependent and independent variables by their standard deviations. This standardization allows us to directly assess economic significance. To account for conditional heteroskedasticity and autocorrelation, we assess significance using robust Newey-West t-statistics.

Panel A provides striking evidence of flow being sensitive to economic conditions. Equity flow is positively and significantly associated with term spread and negatively and significantly associated with both default and TED spread. Thus, when economic

[4] We only set the dummy to one for the non-stock market induced crises. These insulates us against the charge that our results are mechanically generated, in the following (reverse causality) sense: mutual fund selling pressure causes fire sales which cause the sharp price declines.

conditions are expected to improve (term spread is high), investors increase their allocations to equity funds. A deterioration in current economic conditions (default spread is high) or tightness in financial markets (TED spread is high) leads to a drop in equity flow. Consistent with sentiment models of investing, high values of consumer confidence cause equity flow to increase. Interestingly, excess equity flow is unrelated to equity market volatility but positively associated with bond market volatility. To the extent that bond volatility is high when inflation uncertainty is great, this is consistent with investors increasing their allocations to equity funds as a hedge against inflation risk. The coefficient on the event dummy (SHOCK) is negative and significant. This confirms that the conclusions drawn from Figure 1, namely that equity flows decline during the three major non-stock market crises in our sample period, are robust to the inclusion of other control variables.

For money market flow, which is at the other end of the risk spectrum, the contrast to equity flow is evident. Money market excess flow is negatively associated with term spread and bond volatility and positively associated with TED spread and SHOCK. Thus, money market flow increases during periods of financial tightness or external stress, and declines when economic conditions are expected to improve or when interest rate uncertainty rises. These results, together with those for equities, point to varying allocations across the business cycle. As mentioned earlier and described in Figure 2, we cannot think of a mechanical reason why equity and money market flows will be negatively related.[5]

[5] Figure 2 shows that equity and money market funds account for 43% and 26% of total assets under management in June 2000. Investors reallocating wealth from either money market or equity funds have 31% of the fund universe (on an asset weighted basis) available for consideration if they prefer to stay in mutual funds. Moreover, investment alternatives beyond mutual funds are also available. Thus, there is no mechanical constraint that excess flows to money market and equity funds must be offsetting.

For completeness, we also include the results for bond flow. We do not expect the results to be as marked as for equity or money market flow since this category, which includes corporate, municipal and government bond grouped together, is somewhat catch-all. Indeed, the results are much less distinct. The coefficients on default spread and T-bill and S&P 500 volatility are positive and significant, while that on SHOCK is negative and marginally significant. This set of coefficients is roughly consistent with stock and bond funds being regarded as substitutes, a possible consequence of the fact that bond funds include bonds of varying risks.

Turning to foreign equity flows, we note similarities in the coefficients for domestic and foreign equity funds. The coefficients on default and TED spread are negative and significant, the coefficient on SHOCK is negative and marginally significant, and the coefficient on T-Bill volatility is positive and highly significant. Thus, deteriorating home conditions leads investors to reduce their allocations to foreign equity funds. It does not appear that US investors opt for international diversification at a time when US conditions are weak or unsettled: foreign and US stocks are substitutes as far as the asset allocation decisions of US investors are concerned.

To check that these results are robust, we have estimated alternate specifications. Since our conclusions are unchanged, we summarize the results in the text rather than adding more tables. First, we exclude the event dummy, SHOCK. We exclude SHOCK to address concerns that the three major events during our sample period are defined ex-post, and perhaps somewhat arbitrarily. The coefficients on the remaining variables are similar in terms of magnitude, though significance generally increases. Thus, the inclusion of the event dummy does not inflate significance for any of the variables measuring

economic conditions. To deal with possible collinearity among the independent variables, we also employ subsets of the variables that capture economic conditions. For instance, we retain default spread, term spread and consumer confidence while dropping variables that are not significant at the 10% level. This boosts significance for the remaining variables. We also control for possible colinearity effects between term spread and consumer confidence given the high, inverse relationship between these variables by including the variables separately in the models.

Panel A of Table III provides evidence of flight to safety and quality in mutual fund allocations. Panels B to D take a finer look at this question, by separating funds by the riskiness of fund holdings and by investor sophistication. In Panel B, we separate US equity funds into large-cap, mid-cap and small cap funds based on the asset-weighted mean market capitalization of the portfolio holdings of each fund.

To calculate portfolio market capitalization, we merge the CRSP Mutual Fund Database with the Thomson Reuters Ownership Database utilizing the Mutual Fund Links Database. The Thomson Reuters Ownership Database contains a listing of number of shares held by stock for each domestic equity fund portfolio and also lists the market price and shares outstanding on the date of the holdings disclosure. Utilizing these data, we calculate the percentage-of-portfolio weighted mean market capitalization of the stocks held in each portfolio. We associate the most proximal quarterly or semi-annual value available to the monthly fund flow data in the CRSP Mutual Fund database (Depending on the time frame, portfolio holdings are disclosed on either a semi-annual or quarterly basis.). In each month we examine the distribution of mean portfolio market capitalization and classify each fund as belonging to: i) the small cap group (average stock capitalization <

Q1), ii) the mid cap group (Q1 < stock capitalization < Q3) or iii) large cap group (stock capitalization > Q3).

Aggregate excess flow to each of the three fund capitalization groups is then calculated in the same manner as aggregate excess flow for the asset class based fund types (i.e. equity or money market fund types). Small stocks are more sensitive to economic conditions than are large stocks. If investors recognize these risks, they might reduce their allocations to small stock funds relative to large cap funds when economic conditions are expected to worsen and do the opposite when conditions are expected to improve. Thus, small cap flows are expected to be more sensitive to variations in conditions than are large cap stocks.

Panel B of Table III provides evidence consistent with this story. Small cap flows are strongly related to term spread, consumer confidence and T-bill volatility (with a positive sign) and TED spread (with a negative sign). By contrast, large cap flows are not significantly related to the explanatory variables, with the exception of default spread, which enters with a negative sign. Thus, flows to small cap funds are more sensitive to variations in economic conditions than those for large-cap stocks. Mid-cap fund flows are related positively to term spread and T-bill volatility and negatively to TED spread, SHOCK and default spread (the latter is significant at the 10% level). The pattern in the coefficients is also revealing. The coefficients are generally largest for small cap funds and smallest for large-cap funds. Since the independent and dependent variables are all standardized, this means that economic significance is greater for small than large cap fund flows. Finally, note that the R^2 is highest for small-cap funds (0.30) and appreciably lower for mid-cap funds (0.19) and especially large-cap funds (0.11). The pattern in the R^2 also

suggests that small cap flows are more sensitive to variations in economic conditions than are large-cap flows.

Panels C and D of Table III take a different cut at the flight-to-quality question, this time sorting funds by degree of investor sophistication. We separate funds into quartiles based on (a) fees and (b) turnover within the fund in the same manner as described for the market capitalization sorts. Note here that annual or quarterly fee and portfolio turnover data are drawn directly from the CRSP Mutual Fund Database to form the fee and turnover groups. Turnover is a proxy for costs, since trading imposes costs on the fund holders. Thus, we expect sophisticated investors to be associated with funds with low fees and turnover (Houge and Wellman, 2006).

Panel C of Table III reports the results for fees. Flow for the low fee funds is highly responsive to variations in economic conditions. Flow for these funds increases with increases in term spread, consumer confidence and T-bill volatility and drops with increases in default spread, TED spread and during the major crises (SHOCK). By contrast, flow for the high fee funds responds only to default spread (with a negative sign) and with a positive sign, though marginal significance, to consumer confidence. Flow for intermediate fee funds display intermediate sensitivity to the economic variables, with the coefficients on default spread, SHOCK, TED spread and T-bill volatililty being significant or marginally so. As above, the economic significance of the variables tends to be largest for the low fee funds and smallest for the high fee funds. These results suggest that sophisticated investors reallocate funds more aggressively as conditions change than more naïve investors.

Panel D provides the results when we split the sample into quartiles based on turnover. The results are somewhat stronger than those for fees. For low-turnover funds, the coefficients on term spread, consumer confidence, and T-bill volatility are positive and significant, while those on default spread, TED spread and SHCOK are negative and significant. In the case of high turnover funds, the results are weaker, with only ΔT-BILL being significant at conventional levels. Thus, investors in high turnover funds tend to be sluggish in responding to variations in economic conditions. Flow for funds with intermediate turnover is significantly related to the variables that drive flow for the high turnover funds, though the coefficients are, in all but one case (the coefficient on default spread), smaller for intermediate turnover funds. To the extent that smart investors hold funds with low turnover, these results buttress the conclusion from Panel A that sophisticated investors are quick to respond to variations in economic conditions by moving between asset categories with differential risks. By contrast, naïve investors tend to be inertial. The R^2 in both panels drops dramatically as we move from low fee or turnover funds to higher fee and turnover funds.

To this point, our analysis has been based on US funds. It is of interest to see if similar patterns hold outside the US. Accordingly, Table IV presents results from flows to Canadian funds. Note that some variables do not have Canadian counterparts, so we estimate the full specification with the variables that we can create. Otherwise, flow is calculated the same way as in the US sample.

There are several similarities between the US and the Canadian results. As in the US, Canadian equity fund flow is positively associated with lagged term spread and negatively associated with lagged default spread and lagged TED spread (the coefficient on TED

spread is significant at the 10% level). Canadian money market flow is positively related to default spread and SHOCK and negatively related to term spread. These results point to flows into (out of) equity funds relative to money market funds when Canadian economic conditions are expected to improve (deteriorate), and to money market inflows during periods of stress. In the context of SHOCK, note that the triggers for two of these events do not originate in Canada, yet we see a strong increase in money market excess flow.

As in the US, the results for bond flow are weak. Looking at the determinants of foreign equity fund flow, we see that they are similar to the determinants of Canadian flow. The coefficients on default and TED spread are both negative and at least marginally significant while that on ΔT-BILL is positive and significant. This is consistent with favorable (poor) conditions in Canada causing increased (lowered) allocations to funds outside Canada, as was the case with international funds in the US. More intriguing are the determinants of US fund flow. Here, the coefficient on TED spread is positive and significant while that on term spread is negative and marginally significant. Thus, it seems that Canadian investors increase (reduce) flows to US funds rather than international funds when Canadian prospects are dim (bright).

Overall, our results suggest that mutual fund investors increase their allocations to safe funds when conditions are expected to worsen or in the face of global crises. This is consistent with flight to quality. The obvious question which follows is whether this flight-to-quality behavior yields net benefits to investors. The next section addresses this question.

b. Does flight-to-quality pay?

To evaluate the benefits of a flight-to-quality strategy, we complete two analyses. First, we examine raw and risk-adjusted performance to three portfolios (described below). Second, we undertake a utility analysis of the same three portfolios. The first two portfolios follow from a buy-and-hold strategy of holding exclusively equity or money market funds; and the portfolio is assumed to receive the average monthly return to all funds in the respective asset class type.[6] The third portfolio is the flight-to-quality (FTQ) portfolio and is structured to capture the return realized by alternating between equity and money market funds based on the economic predictors in the model.

We assume the flight-to-quality investor allocates 100% of his investible wealth to equity funds, but switches 100% of his wealth to money market funds when the term spread drops below its bottom quartile value based on the prior five years of monthly data[7]. This FTQ portfolio is assumed to receive the average return to the equity or money market asset class when wealth is allocated to that class.

Table V reports the holding period return, average monthly return and standard deviation of the monthly return to each portfolio. These statistics are computed from the series of monthly returns over our sample period, January 1991 through June 2008. We also report risk adjusted returns in the form of Sharpe ratios calculated as the average monthly return less the risk free rate, divided by monthly return standard deviation.

The FTQ portfolio realizes lower average monthly returns than the equity buy-and-hold portfolio over the sample period, accompanied by notably lower volatility. Adjusting

[6] For robustness we replicate the analysis utilizing asset-weighted mean asset class returns to represent the return realized by the buy-and-hold portfolios and reach the same conclusions.

[7] We select the term spread as the switch signal variable as it is most consistently significant in our time series regressions. For robustness, we replicate the analysis with other economic predictors (i.e. default spread) and find similar results.

for risk, we see that the Sharpe ratio is marginally higher for the equity portfolio than the FTQ portfolio (0.19 relative to 0.16). Thus, on both a raw and a risk adjusted basis the equity buy-and-hold strategy outperforms the FTQ strategy. Both the equity and FTQ portfolios significantly outperform the money market portfolio on a raw basis; however, due to the exceptionally low volatility of money market funds, the Sharpe ratio is higher for the money market portfolio relative to the other portfolios.

As a second metric, we compare investor utility realized across a range of risk aversion levels for each portfolio. We assume a simple mean-variance form for investor utility:

$$U_i = R_i - \frac{1}{2} A \sigma_i^2 \tag{3}$$

where U_i is investor utility, R_i is the mean monthly return for portfolio i and σ_i is the standard deviation of the monthly return for portfolio i, and A is the coefficient of absolute risk aversion.

We allow the risk-aversion parameter, A, to vary between 0 and 30. Figure 3 displays the variation in investor utility across the three portfolios for different levels of A. For risk aversion levels below 8, investors realize higher utility from the equity buy-and-hold strategy relative to either the money market or the FTQ portfolios. For risk aversion levels between 8 and 13, the FTQ portfolio yields higher utility than the equity buy-and-hold strategy (at a level of 13, the utility derived from the FTQ portfolio reaches zero). It should be noted that at a risk aversion level of 8 and beyond, utility from the money market

portfolio exceeds utility from both the equity buy-and-hold and FTQ portfolios. However, the low mean return to money market investments means that, if an investor seeks an annual return greater than 4% (consistent with a low to moderate risk aversion investor), he must choose between either the equity or the FTQ portfolio. In this situation, low risk aversion investors (A = 1 to 7) prefer the equity portfolio, moderate risk aversion investors (A = 8 to 13) prefer the FTQ portfolio, and high risk aversion investors (A > 13) select the money market portfolio.

This result is robust to using other economic predictors as the switching signal. For robustness we also vary the switching threshold and find that reducing (increasing) the switching threshold reduces (increases) the risk aversion level as which higher utility is realized from the FTQ portfolio. For example, if the investor switches from equity to money market funds when the term spread drops below its mean value over the past five years (as opposed to the bottom quartile value), FTQ utility become greater than equity portfolio utility when A = 11. Likewise, if the bottom quartile value divided by two is used as the switching threshold, the FTQ portfolio becomes preferable to the equity portfolio at a risk aversion level of A=5.

This analysis does not take into consideration transactions costs, which are difficult to estimate for several reasons. The fund returns provided in CRSP are adjusted for management expenses and 12-b fees (advertising fees). Different classes of funds realize different proportions of 12-b fees depending on front and back-end load fees which are paid when the fund is purchased or sold. Presumably an investor who intends to implement a FTQ strategy would select a fund class with no front or back-end load and correspondingly could undertake the strategy without incurring any transaction costs. But,

the FTQ investor would be exposed to higher 12-b fees than an investor who implemented a long term, equity buy-and-hold strategy utilizing a fund with a time diminishing back-load fee. It is difficult to model the differences in realized fees between the FTQ and buy-and-hold strategies and it is entirely possible that the overall fee structures are equal (i.e. cumulative additional 12-b fees paid by the FTQ portfolio equal front or back-end fees paid for the buy-and-hold strategy).

To calibrate the results, an increase of 0.5% in the fees paid by the FTQ portfolio on an annualized basis increases the risk aversion level (*A* coefficient) where the FTQ portfolio becomes preferable to the equity portfolio by one unit. We estimate that the FTQ investor switches between equity and money market funds five times during our sample period of approximately 17 years. Khorana et al. (2009) estimate that front and back-end loads add 0.42% per annum to the average equity fund in the United States, based on a five year holding period. Thus, if the FTQ and equity buy-and-hold portfolios incur the same transaction cost exposures, the FTQ portfolio would switch two more times than the baseline fund in Khorana et al. (2009) and incur 0.1% additional fees on an annualized basis over the sample period. An increase in fees of this magnitude would have a negligible effect on our conclusions.

V. 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 aggregate fund flow, i.e. whether investors direct money towards safer (riskier) investments when economic conditions are expected to become weaker (stronger) and whether they tends ot

move to safe investments during crises. With this goal in mind, we study monthly net flow for the universe of US mutual funds between 1991 and 2008. We separate funds into four categories—Equity, Bond, Money Market, and Foreign Equity—and aggregate flow for each of these categories. Our variable of interest is the excess flow for each category, computed as the flow less the flow that is proportional to the asset weight of that category. At extreme ends of the risk spectrum are Equity and Money Market funds, with Bonds and possibly Foreign Equity representing intermediate risks.

As proxies for economic conditions, we use the default spread, term spread, the change in the short term T-Bill rate (ΔT-BILL), and the Treasury-Eurodollar (TED) spread. We also consider the effects of stock and bond volatility and consumer confidence. Following prior research (e.g. Fama and French, 1989; Chen, 1991), we assume that economic conditions are good when default and TED spread is low, and term spread and ΔT-BILL are high. We then relate the excess flow for the four categories to these variables plus controls.

We find that an expected improvement in economic conditions causes investors to direct flow away from money market funds and towards equity funds; when conditions are expected to deteriorate, the reverse happens. Specifically, investors increase their allocation to equity funds, and lower their allocations to money market funds, when the term spread is high, default spread is low, TED spread is low and ΔT-BILL is high. Moreover, while flow is unrelated to equity volatility, higher T-bill volatility raises equity flow and reduces money market flow. This is consistent with a flight to risky assets when inflationary uncertainty is higher. There are statistically and economically significant flows

out of equity funds and into money market funds during the three major crises occurring over our sample period: the LTCM debacle, the Y2K episode and the 9/11 attacks.

We conduct further tests in order to understand the types of investors who respond to economic conditions and crises. First, we stratify the equity funds in our sample by fees and turnover, the presumption being that sophisticated investors are more likely to hold funds with low fees and turnover. We find that flow drops more sharply during the crises and is more responsive to economic conditions for low fee and low turnover funds. This is consistent with sophisticated investors reacting rapidly to conditions and more naïve investors being relatively inertial. Second, we find that large-cap fund flow is less sensitive to economic conditions and during crises than is small-cap fund flow. Since the performance of small stocks tends to be more pro-cyclical than that of large stocks, this analysis suggests that investors understand the risks of their funds' assets.

Finally, we examine the relation between flow and economic conditions for the universe of Canadian mutual funds. The results for Canadian flow are highly similar to those for US flow. It is notable that the crises (which are non-Canadian in origin) see higher flows to Canadian money market funds.

In sum, our analysis shows that mutual fund investors adjust their asset allocations in response to fluctuating economic conditions and crises. This prompts two important questions. First, is flight to quality based asset allocation beneficial or detrimental to investors? We address this issue by examining the performance of portfolios that are adjusted in response to predicted variations in economic conditions relative to a buy-and-hold equity benchmark. This analysis implies that these asset allocation shifts enhance welfare for investors with moderate to high levels of risk aversion. The second question is

whether there is a connection between these systematic asset allocation shifts and asset prices. This is left to future work.

References

Beber, A., Brandt, M.W. and Kavajecz, K.A., 2009, Flight-to-quality or flight-to-liquidity? Evidence from the Euro-area bond market. *Review of Financial Studies* 22, 925-957.

Braverman, O., Kandel, S. and Wohl, A., 2007, Aggregate mutual fund flow and subsequent market returns, Tel Aviv University working paper.

Campenhout, G.V., 2004, Aggregate equity fund flow and the stock market, University of Antwerp working paper.

Cashman, G.D., Deli, D.N., Nardari, F. and Villupuram, S., 2006a, On monthly mutual fund flow, Arizona State University working paper.

Cashman, G.D., Deli, D.N., Nardari, F. and Villupuram, S., 2006b, Investors do respond to poor mutual fund performance: evidence from inflows and outflows, Arizona State University working paper.

Cederburg, S., 2008, Mutual fund investor behavior across the business cycle, University of Iowa working paper.

Chen, N.F, 1991, Financial Investment Opportunities and the Macroeconomy, *Journal of Finance* 46, 1467-84.

Coval, J. and Stafford, E., 2007, Asset fire sales (and purchases) in equity markets, *Journal of Financial Economics* 62, 479-512.

Edwards, F.R. and Zhang, X., 1998, Mutual funds and stock and bond market stability, *Journal of Financial Services Research* 13, 257-282.

Fama, E.F. and French, K.R., 1989, Business conditions and expected returns on stocks and bonds, *Journal of Financial Economics* 25, 23-49.

Fama, E.F. and Schwert, G.W., 1977, Asset returns and inflation, *Journal of Financial Economics* 5, 115-146.

Frazzini, A. and Lamont, O.A., 2008, Dumb money: mutual fund flow and the cross-section of stock returns, *Journal of Financial Economics* 88, 299-322.

Khorana, A., Servaes, H. and Tufano, P., 2009, Mutual fund fees around the world, Review of Financial Studies, forthcoming.

Goetzmann, W.N., Massa, M. Rouwenhorst, K. W., 1999, Behavioral factors in mutual fund flow, Yale School of Management and INSEAD working paper.

Gruber, M., 1996, Another puzzle: the growth in the actively managed mutual funds, *Journal of Finance* 51, 783-810.

Houge, T. and Wellman, J., 2006, The use and abuse of mutual fund expenses, *Journal of Business Ethics* 70, 23-32.

International Monetary Fund, 2007, World economic outlook database, **http://www.imf.org/external/ns/cs.aspx?id=28**, accessed December 3, 2007.

Investment Company Institute, 2007, Trends in mutual fund investing, http://www.ici.org/stats/mf/trends_11_06.html#TopOfPage , accessed on December 3, 2007.

Jain, P.C. and Wu, J. S., 2000, Truth in mutual fund advertising: evidence on future performance and fund flow, *Journal of Finance* 55, 937–957.

Lynch , A. W. and Musto, D. K., 2003, How investors interpret past fund returns, *Journal of Finance* 58, 2033-2058.

Merton, R. C., 1973, An Intertemporal Capital Asset Pricing Model, *Econometrica 41*, 867-887.

Patro, K.D., 2006, International Mutual Fund flow, Rutgers University working paper.

Santini, D.L. and Aber, J.W., 1998, Determinants of net new money flow to the equity mutual fund industry, *Journal of Economics and Business* 50, 419-429.

Schwert, G.W. (1989), Why Does Stock Market Volatility Change Over Time?, *Journal of Finance* 44, 1115-1153.

Shanken, J., 1990, Intertemporal Asset Pricing: An Empirical Investigation, *Journal of Econometrics* 45, 99-120.

Sirri, E.R. and Tufano, R. 1998, Costly search and mutual fund flow, *Journal of Finance* 53, 1589-1622.

Warther, V.A., 1995, Aggregate mutual fund flow and security returns, *Journal of Financial Economics* 39, 209-235.

Yogo, M., 2006, A Consumption-Based Explanation of Expected Stock Returns," *Journal of Finance* 61, 539-580.

Zhang, L., 1999, Who moves the market? A study of stock prices and investment cash flow, University of Michigan working paper.

Table I

Panel A of Table I reports descriptive statistics for monthly excess flow, where excess flow is calculated as aggregate net flow for each fund type in excess of the net flow which would have been realized on an asset weighted basis, standardized by total market capitalization of the NYSE, AMEX and NASDAQ. Excess flow is reported separately for four mutual fund types Equity, Bond, Money Market and Foreign Equity. Panel B reports the correlation matrix of excess flow across fund types, values significant at conventional levels (α=0.05) appear in bold face.

Panel A: Descriptive Statistics of Excess Flow ($x10^3$) by Fund Type

Type	Mean	Median	Q1	Q3	STD
Equity	-0.250	0.051	-5.641	6.542	10.161
Bond	-1.184	-1.139	-4.470	1.710	7.095
Money Market	0.075	0.006	-14.191	13.140	19.432
Foreign Equity	1.498	1.250	-1.099	4.191	4.376

Panel B: Correlation Matrix of Excess Flow by Fund Type

	Equity	Bond	Money Market	Foreign Equity
Equity	1			
Bond	**0.320**	1		
Money Market	**-0.836**	**-0.711**	1	
Foreign Equity	**0.467**	0.130	**-0.603**	1

Table II

Panel A of Table II reports descriptive statistics for the independent variables used as proxies for the economic state in the US. 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 month end from January 1991 through June 2008. Term spread is the difference in yield between the ten year plus Government Bond and the three month Treasury Bill. Default spread is the difference in yield between medium term corporate bonds and three to five year Government Bonds. The change in T-Bill (ΔT-BILL) is the change in the yield for the three month Treasury Bill. Consumer confidence is the consumer confidence index value derived from consumer survey responses related to current and planned spending. The TED spread is the difference in yields between the three month LIBOR and T-BILL rates. Fund type return is the mean daily return to the fund type, we report values for the equity fund type in the table below, values for the other fund types are similar. We include two proxies for market volatility, S&P volatility is the mean squared daily return for the S&P 500 index and T-Bill volatility is the mean squared daily change in the three month T-Bill rate, both computed for each month.

Panel A: Descriptive Statistics of Independent Variables

Variable	Mean	Median	Q1	Q3	STD
Term Spread	2.047	1.846	0.918	3.469	1.434
Default Spread	1.653	1.524	1.279	1.91	0.557
ΔT-BILL	-0.025	0	-0.11	0.11	0.244
Consumer Confidence	100.3	101.4	83.6	116.1	23.835
TED Spread	0.468	0.386	0.27	0.566	0.31
Fund Type Return	0.009	0.014	-0.018	0.038	0.041
S&P Volatility	0.002	0.001	0.001	0.003	0.002
T-Bill Volatility	0.01	0.002	0.001	0.004	0.082

Panel B: Correlation Matrix of Independent Variables

	Term Spread	Default Spread	ΔT-BILL	Consumer Confidence	Ted Spread	Fund Type Return	S&P Volatility	T-Bill Volatility
Term Spread	1							
Default Spread	**-0.154**	1						
ΔT-BILL	-0.072	**-0.240**	1					
Consumer Confidence	**-0.712**	**0.211**	**0.139**	1				
TED Spread	**-0.400**	0.109	**-0.335**	**0.246**	1			
Fund Type Return	-0.035	-0.105	0.063	-0.026	-0.008	1		
S&P Volatility	-0.069	**0.578**	**-0.317**	**0.226**	**0.189**	**-0.266**	1	
T-Bill Volatility	0.064	0.140	**-0.182**	-0.112	**0.272**	-0.045	**0.157**	1

Table III

US Excess Flow Time-series Regression Results

Table III reports time-series regression results of monthly excess flow to four US fund categories (Equities, Bonds, Money market, and International equities) regressed on fund type return and proxies for US economic conditions. The dependent variable, excess flow, is calculated as aggregate net flow for each fund gcategory in excess of the net flow which would have been realized on an asset weighted basis, standardized by total market capitalization of the NYSE, AMEX and NASDAQ. The independent variables are described in Table II, except for Shock, which is a dummy variable equal to one for the following exogenous market shocks: the failure of the Long Term Capital Management Hedge Fund, the Y2K concerns at the end of 2000 and the 9/11 terrorist attacks in New York City. Panel A reports results for all four fund types, Panel B reports results for equity funds sorted by market capitalization, Panel C reports results for equity funds sorted by fund fees and Panel D reports results for fund portfolio turnover. Standardized, Newey West corrected coefficient values are report. Coefficients significant at conventional levels (α=0.10) appear in bold face.

Panel A: Full Sample

Variable	Equity		Money Market		Bond		Foreign Equity	
	Coef	Tstat	Coef	Tstat	Coef	Tstat	Coef	Tstat
Term Spread	**0.30**	2.49	**-0.22**	-2.09	0.10	0.87	0.00	-0.01
Default Spread	**-0.19**	-2.48	0.08	1.27	**0.15**	2.29	**-0.22**	-2.60
ΔT-BILL	0.08	0.87	-0.08	-0.78	0.09	0.93	0.11	1.19
Consumer Confidence	**0.22**	1.84	0.00	0.03	-0.14	-1.25	-0.15	-1.32
Ted Spread	**-0.23**	-2.17	**0.26**	3.15	-0.12	-1.51	**-0.26**	-3.16
Fund Type Return	0.03	0.32	0.04	0.44	**0.14**	1.80	0.09	1.49
S&P Volatility	0.03	0.22	-0.04	-0.38	**0.16**	1.90	-0.09	-0.94
T-Bill Volatility	**0.10**	3.08	**-0.14**	-5.31	**0.07**	3.23	**0.18**	9.50
Shock	**-0.20**	-2.10	**0.19**	2.15	**-0.08**	-1.66	-0.11	-1.51
R^2	0.20		0.24		0.12		0.30	

Panel B: Equity Funds Sorted by Average Portfolio Market Capitalization

Variable	Small Quartile		Mid Quartiles		Large Quartile		Large - Small
	Coef	Tstat	Coef	Tstat	Coef	Tstat	
Term Spread	0.39	3.22	0.26	2.09	0.18	1.38	-0.16
Default Spread	0.02	0.17	-0.13	-1.64	-0.34	-3.86	-0.11
ΔT-BILL	-0.02	-0.20	0.08	0.95	0.06	0.68	-0.02
Consumer Confidence	0.31	2.71	0.15	1.34	0.27	1.56	0.00
Ted Spread	-0.45	-4.30	-0.19	-2.48	-0.09	-0.64	0.13
Fund Type Return	0.12	1.77	-0.02	-0.23	0.07	1.04	0.02
S&P Volatility	-0.02	-0.17	-0.05	-0.40	0.16	1.50	0.01
T-Bill Volatility	0.10	3.10	0.13	5.46	0.05	1.07	-0.16
Shock	-0.07	-0.87	-0.23	-2.71	-0.13	-1.34	0.19
R^2	0.32		0.19		0.11		-0.21

Panel C: Equity Funds Sorted by Fund Fees

Variable	Low Quartile		Mod Quartile		High Quartile		High - Low
	Coef	Tstat	Coef	Tstat	Coef	Tstat	
Term Spread	0.33	3.05	0.18	1.49	0.17	0.90	-0.32
Default Spread	-0.18	-2.17	-0.18	-2.32	-0.29	-2.80	0.18
ΔT-BILL	0.05	0.57	0.12	1.12	0.03	0.27	0.30
Consumer Confidence	0.23	1.93	0.07	0.55	0.24	1.67	-0.36
Ted Spread	-0.26	2.22	-0.18	1.78	-0.14	1.27	-0.35
Fund Type Return	0.04	0.49	-0.01	-0.11	0.06	0.86	0.03
S&P Volatility	0.02	0.18	0.03	0.36	0.03	0.33	0.02
T-Bill Volatility	0.15	4.55	0.05	1.71	-0.01	-0.13	-0.14
Shock	-0.23	-2.14	-0.12	-1.83	-0.05	-0.58	0.19
R^2	0.25		0.12		0.10		-0.15

Panel D: Equity Funds Sorted by Fund Portfolio Turnover

Variable	Low Quartile		Mod Quartile		High Quartile		High - Low
	Coef	Tstat	Coef	Tstat	Coef	Tstat	
Term Spread	0.39	3.68	0.25	1.88	0.07	0.58	-0.32
Default Spread	-0.19	-2.52	-0.21	-2.41	-0.01	-0.12	0.18
ΔT-BILL	-0.05	-0.64	0.05	0.51	0.25	2.35	0.30
Consumer Confidence	0.34	2.72	0.24	1.95	-0.03	-0.19	-0.36
Ted Spread	-0.36	3.47	-0.23	1.97	0.00	0.00	-0.35
Fund Type Return	0.05	0.66	0.06	0.78	0.07	0.92	0.03
S&P Volatility	0.00	0.03	0.04	0.36	0.03	0.24	0.02
T-Bill Volatility	0.17	5.78	0.08	2.22	0.04	1.46	-0.14
Shock	-0.22	-2.48	-0.21	-2.13	-0.03	-0.33	0.19
R^2	0.31		0.18		0.03		-0.28

Table IV

Canadian Excess Flow Time-series Regression Results

Table IV reports time-series regression results of monthly excess flow to five Canadian fund categories (Equities, Bonds, Money market, US equities and International equities) regressed on fund type return and proxies for Canadian economic conditions. The dependent variable, excess flow, is calculated as aggregate net flow for each fund category in excess of the net flow which would have been realized on an asset weighted basis, standardized by total market capitalization of the TSX. Shock, which is a dummy variable equal to one for the following exogenous market shocks: the failure of the Long Term Capital Management Hedge Fund, the Y2K concerns at the end of 2000 and the 9/11 terrorist attacks in New York City. Term spread is the difference in yield between the ten year plus Canadian Government Bond and the three month Treasury Bill. Default spread is the difference in yield between medium term corporate bonds and three to five year Government Bonds. The change in T-Bill (ΔT-BILL) is the change in the yield for the three month Treasury Bill. The TED spread is the difference in yields between the three month LIBOR and Canadian T-BILL rates. Fund type return is the mean daily return to the fund type, TSX volatility is the mean squared daily return for the TSX index. Independent variables are lagged by one one month. Standardized, Newey West corrected coefficient values are report. Coefficients significant at conventional levels (α=0.10) appear in bold face.

Variable	**Equity**		**Money Market**		**Bond**	
	Coef	Tstat	Coef	Tstat	Coef	Tstat
Term Spread	**0.528**	2.83	**-0.342**	-2.68	0.018	0.12
Default Spread	**-0.466**	-2.43	**0.363**	1.75	0.133	0.64
ΔT-BILL	-0.024	-0.3	-0.105	-0.61	0.12	0.91
Ted Spread	**-0.378**	-1.72	-0.016	-0.14	0.093	0.61
Fund Type Return	0.031	0.3	**0.247**	2.54	**0.299**	2.62
TSX Volatility	**0.307**	3.08	-0.127	-1.26	0.104	0.89
Shock	-0.084	-1.34	**0.132**	2.23	-0.026	-0.25
R^2	0.12		0.28		0.07	

Variable	**US Equity**		**Foreign Equity**	
	Coef	Tstat	Coef	Tstat
Term Spread	-0.162	-1.53	0.078	0.78
Default Spread	-0.077	-0.78	**-0.425**	-3.05
ΔT-BILL	0.076	1.35	**0.178**	2.35
Ted Spread	**0.231**	2.20	-0.209	-1.50
Fund Type Return	0.228	2.93	**0.291**	1.98
TSX Volatility	**0.198**	1.81	0.088	0.68
Shock	0.100	0.77	0.115	0.72
R^2	0.27		0.18	

Table V

US Portfolio Risk – Return

Table V reports the risk and return for three portfolios. The equity and money market portfolios allocate 100% of wealth to equity and money market funds respectively, and realize the mean monthly return to each fund type. The Flight-to-Quality portfolio allocates 100% of wealth to equity funds but transfers 100% of wealth to money market funds when the term spread drops below its first quartile value based on the previous five years of monthly data. The Term spread is calculated as the difference in yield between the 30 year plus Government Bond and the three month Treasury Bill at month end. Holding period return is the return to each portfolio from January 1991 to June 2008, calculated as the sum of monthly returns over that period. Mean Return is the mean monthly return and Standard Deviation is the standard deviation of monthly returns for each portfolio over the same period. The Sharpe Ratio is mean return less the risk free rate divided by standard deviation, where the risk free rate is the monthly average risk free rate over the sample period (0.125%). The analysis is performed only for the US sample.

	Money Market	**Equity**	**Flight to Quality**
Holding Period Return (%)	57.44	187.93	134.71
Mean Return (%)	0.27	0.89	0.64
Standard Deviation (%)	0.12	4.13	3.19
Sharpe Ratio	1.20	0.19	0.16

Figure 1

Excess Flow for US Equity and US Money Market Funds during Crises

Figure 1 displays monthly excess flow to US Equity (CE) and US Money Market (MM) fund types from June 1997 to June 2008 over which time there were six significant events which influenced financial markets:

1. August 1998, the hedge fund Long Term Capital Management lost 44% of total assets becoming a prominent example of the risk potential in the hedge fund industry.
2. During the third and fourth quarters 1999, fears surrounding the potential effect of the turn of the century on the date tracking systems in computers.
3. From September to December 2000 the NASDAQ dropped 45.9%, commonly referred to the "Crash of 2000".
4. The September 11, 2001 terrorist attacks on the World Trade Center in New York City (9/11).
5. Starting in March 2002, with dramatic drops in July and September, the "Bursting of the Internet Bubble" leads to a significant stock market downturn in 2002.
6. The ongoing credit crisis, starting in early 2007.

Excess flow is calculated as aggregate net flow for each fund type in excess of the net flow which would have been received on an asset weighted basis, standardized by total market capitalization of the NYSE, AMEX and NASDAQ.

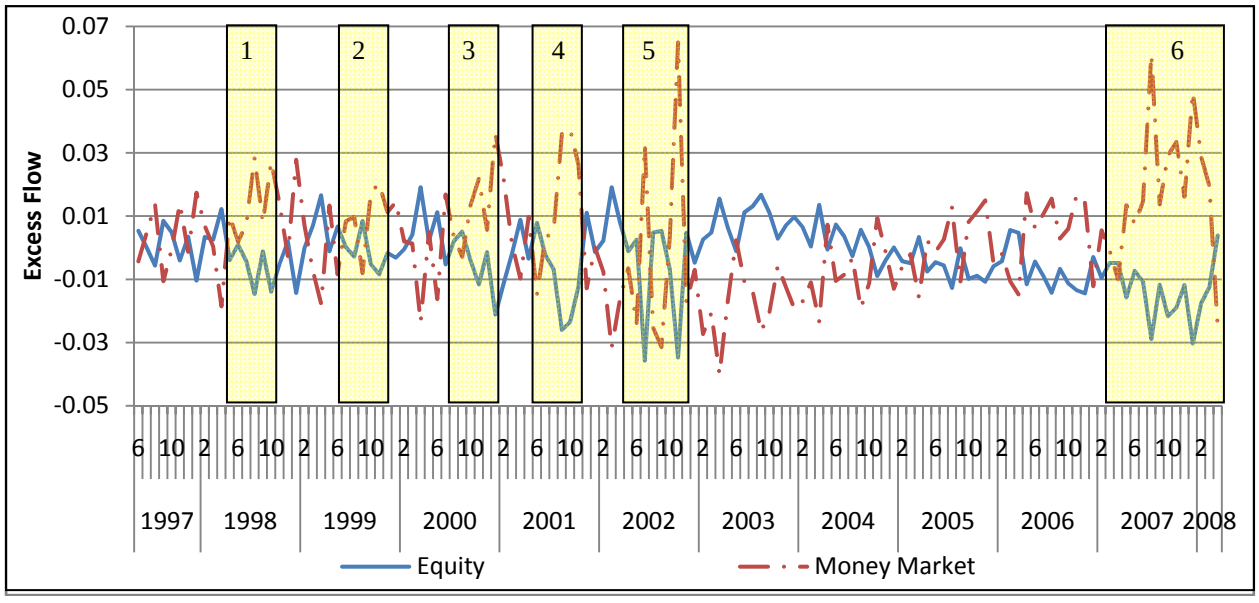

Figure 2

Figure 2 displays the proportion of total net assets under management for each mutual fund category at the approximate midpoint of the US sample, June 2000. The proportions are representative of the proportions observed throughout the sample period.

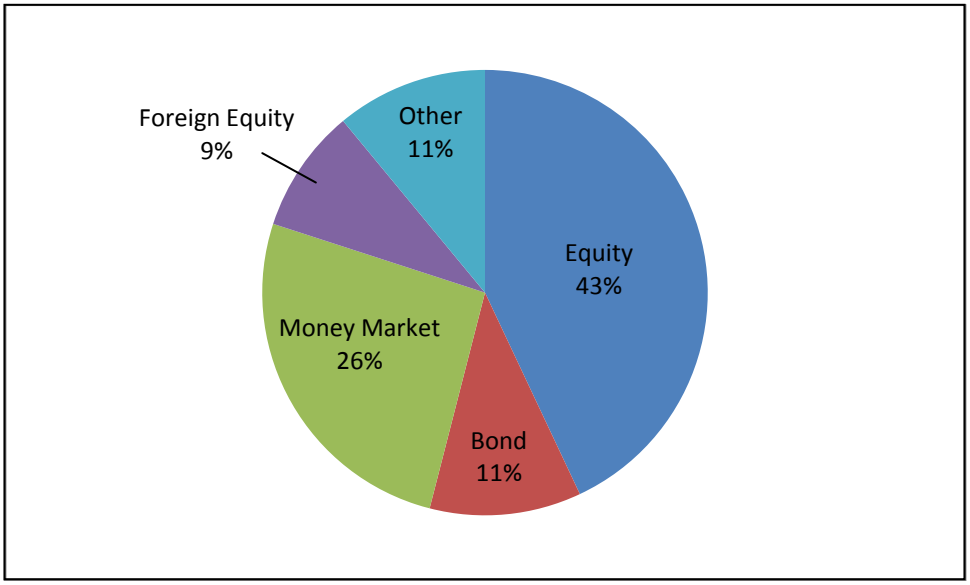

Figure 3

Variation in Investor Utility across Portfolios

Figure 3 displays the variation in investor utility with variation in the coefficient of risk aversion across the three portfolios described in Table V: the equity and money market portfolios allocate 100% of wealth to equity and money market funds respectively and realize the mean monthly return and monthly standard deviation of return for that fund type. The Flight-to-Quality portfolio allocates 100% of wealth to equity funds but transfers 100% of wealth to money market funds when the term spread drops below its first quartile value based on the previous five years of monthly data. The Term spread is calculated as the difference in yield between the 30 year plus Government Bond and the three month Treasury Bill at month end.