CFR Working Paper NO. 13-09

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October 2013

Abstract

Over the past 30 years, mutual funds have become the dominant vehicle through which individual investors prepare for retirement via defined contribution plans. Further, money market mutual funds, which hold $2.7 trillion as of September 2013, are now a major part of the cash economy in the U.S. Accordingly, the flow of money to and from different mutual fund categories (e.g., equities vs. money funds) increasingly reflects the sentiment or risk aversion of the general population. In this study, we analyze flows between different categories of mutual funds, and find strong evidence of a seasonality in risk aversion of individual investors. Specifically, we find that aggregate investor flow data reveals an investor preference for U.S. money market and government bond mutual funds in the autumn, and equity funds in the spring, controlling for the influence of seasonality in past performance, advertising, liquidity needs, and capital gains overhang on fund flows. This movement of large amounts of money between fund categories is correlated with a proxy for variation in investor risk aversion across the seasons, consistent with investors' revealed preferences for safer investments in the fall, and riskier investments in the spring. We find similar evidence in Canadian mutual fund flows, and in flows among Australian funds, where the seasons are six months out of phase relative to Canada and the U.S. While prior evidence regarding the influence of seasonally changing risk aversion on financial markets relies on seasonal patterns in asset returns, we provide the first direct trade-related evidence.

JEL Classification: G11

Keywords: time-varying risk aversion; sentiment; mutual fund flow seasonality; net exchanges; net flows; risk tolerance; risk aversion

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Recent studies indicate that environmental influences affect investor financial risk aversion. For instance, Malmendier and Nagel (2011) find that individual investors' past experience with stock market returns is negatively correlated with their current level of financial risk aversion; those having lived during eras of poor stock returns are persistently more risk averse than those having lived during plentiful returns. And Bassi, Colacito, and Fulghieri (2013) find that weather may affect individual risk tolerance through its effect on mood.

Another body of evidence indicates that changes in the mood or sentiment of large groups of individuals may affect mutual fund flows between different asset classes. For example, Ben-Rephael, Kandel, and Wohl (2012) show that net exchanges of money from U.S. bond to U.S. equity funds exhibit a strong negative correlation with following-year returns in the market portfolio of equities, consistent with individuals pushing prices away from their fundamental values;[1] Indro (2004) also finds evidence consistent with equity fund flows being driven by investor sentiment. Further, Ben-Rephael, Kandel, and Wohl (2011) examine daily equity fund flows in Israel, finding strong autocorrelation in mutual fund flows and strong correlation of flows with lagged market returns, which create temporary price-pressure effects.[2]

In this paper, we seek to understand the roles investor sentiment, in general, and time-varying risk aversion, in particular, play in determining flows to mutual funds of different risk classes. Our findings have the potential to inform economists and policymakers about the role of behavioral factors in shaping flows to and from mutual funds, a major segment of both the retirement and cash markets. In turn, developing a deeper understanding of the role of changing investor preferences in driving flows among different mutual fund asset classes may improve our understanding of how investor sentiment may contribute to seasonality in asset class returns.

Specifically, we contribute to the fund flow literature by documenting a heretofore unknown

[1]Exchanges are movements of money between funds within a single fund family, and likely capture investor preferences rather than liquidity needs.

[2]Investors also react strongly to advertising by funds (Jain and Wu (2000), Gallaher, Kaniel, and Starks (2006), and Aydogdu and Wellman (2011)), and to other information that helps to reduce search costs (Huang, Wei, and Yan (2007)). In turn, the mutual fund industry spends more than half a billion dollars on advertising annually to attract investment inflows (see Pozen (2002)).

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and strong seasonality in mutual fund flows and net exchanges between fund asset categories. We show that flows to (and exchanges between) fund categories (e.g., equity versus money market), controlling for known influences such as return chasing, capital gains tax avoidance, liquidity needs, year-end effects, and advertising expenditures, are strongly dependent on the season and interact with the relative riskiness of the categories. Investors move money into relatively safe fund categories during the fall, and into riskier fund categories during the spring.[3,4] Further, we find strong evidence that this seasonality is correlated with the timing of seasonal variation in investor risk aversion. This seasonal variation in fund flows across risk categories is consistent with findings from the medical literature that individuals are influenced by strong seasonal factors that tend to synchronize their mood across the population (see Harmatz et al. (2000)), and with Kramer and Weber's (2012) finding that individuals are on average significantly more financially risk averse in the fall/winter than in the summer. Further, Kramer and Weber find the seasonal differences in financial risk taking are especially pronounced among individuals who satisfy clinical criteria for severe seasonal depression, but that seasonal differences are significant even among healthy individuals.

Prior studies have documented financial-market evidence consistent with seasonality in investor risk aversion by concentrating on returns.[5] In contrast, we provide new evidence on seasonal-risk-aversion-driven investing behavior that is based directly on quantities of funds chosen by investors at a fixed price (the daily closing mutual fund net asset value, NAV). We believe that an examination of the trades of mutual fund shares represents a unique setting to study investor sentiment

[3]A Toronto Star article (Marshman (2010)) reports on the most easily observable practitioner activity closely related to our findings, describing a new exchange-traded fund available to investors that engages in seasonal investing. Among its strategies are holding broad risky market indices (e.g., equities) for only the six "good" months of the year (which its managers identify as October 28 to May 5, applying the catch phrase "buy when it snows and sell when it goes"), and implementing seasonal trading strategies across different sectors.

[4]Discussions with a former academic who is now at a large global investment bank indicate that traders on the fixed income floor see low trading activity and high risk aversion during the last quarter of the year, which he describes as the "end-of-the-year effect." Then, risk taking and trading activity pick up markedly during the first quarter.

[5]For example, Kamstra, Kramer, and Levi (2003, 2013) and Garrett, Kamstra, and Kramer (2005) document seasonal patterns in returns to publicly traded stocks and bonds consistent with seasonally varying investor risk preferences, even when controlling for other known seasonal influences on returns, such as year-end tax effects. Further, Kamstra, Kramer, Levi, and Wang (2013) examine an asset pricing model with a representative agent who experiences seasonally varying risk preferences. They find plausible values of risk-preference parameters are capable of generating the empirically observed seasonal patterns in equity and Treasury returns.

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related to degree of risk aversion, since large quantities of shares may be purchased at that day's fixed NAV. Investor choice of quantities at a fixed price is more direct evidence than prior studies based on seasonality in asset class returns, since prices in most other markets adjust to temporary supply versus demand conditions, making the motivation for buying or selling difficult to determine. The patterns of mutual fund flows and net exchanges provide the first direct evidence that some individual investors may exhibit marked seasonal changes in sentiment related to risk aversion.

Further, we study mutual fund flows and exchanges because they are largely the outcome of individual investor decisions. According to the Investment Company Institute (2008), 44 percent of all U.S. households owned mutual funds during 2007. Individuals held 86 percent of total mutual fund assets, with the remainder held by banks, trusts, and other institutional investors. The implication is that mutual fund flows predominantly reflect the sentiment of individual investors, and that a broad cross-section of individuals are involved in mutual fund markets. Thus, if seasonally varying risk aversion has an influence on the investment decisions of some individuals, it is reasonable to expect the effects would be apparent in mutual fund flows and exchanges since there is no mechanism for arbitrageurs to directly counter the trades of such individuals (i.e., open-end mutual fund shares cannot be sold short). Overall, flows and exchanges to mutual fund categories uniquely represent the decisions of buyers, or sellers, without the confounding influence of the counterparty to the trade (unlike stock trades, for instance).

We use several data sets to study seasonality in flows, including U.S., Canadian, and Australian data. The U.S. data we employ are comprised of actual monthly flows to thirty mutual fund categories during 1985 to 2006, which we use to build 5 risk classes of funds: equity, hybrid, corporate fixed-income, government fixed-income, and money market. We also utilize data on net exchanges between these thirty fund categories, which are much less impacted by liquidity needs of investors (e.g., year-end bonuses or tax-season spikes in contributions) and, thus, add a cleaner view on the sentiment-driven trades of retail investors. We study monthly flows (and exchanges) to these fund asset classes with a model that controls for previously documented influences on flows, including return chasing, recent advertising, liquidity needs (we employ personal savings rates), and capital-gains overhang.[6] We also explore models that explicitly control for autocorrelation in flows (since flows and exchanges are slowly mean-reverting) and models with dummy variables that allow for arbitrary flow movement around the tax year-end.

With the U.S. flow and exchange data, we find empirical results that are strongly consistent with an influential seasonal effect on individual investor sentiment toward risk taking. Specifically, after controlling for other (including seasonal) influences on flows, we find that the magnitude of seasonal outflows from equity funds during the fall month of September (circa 2006) is approximately thirteen billion dollars and the increase in flows into money market funds is approximately three billion dollars. Those flows then reverse in the spring.[7] When we examine net exchanges, we find evidence of seasonality in investor sentiment consistent with the net flow data, though smaller in magnitude.

As an out-of-sample test of the seasonally varying investor sentiment hypothesis, we examine Canadian mutual fund data for 10 fund classes, which we use to build 4 different risk classes of funds: equity, hybrid, fixed income, and global fixed income. This provides us with a similar but more northerly financial market compared to the U.S. Medical evidence shows seasonal variation in mood is more extreme at higher latitudes.[8] Thus if the seasonally varying investor risk aversion hypothesis is correct, we should see more exaggerated seasonal exchanges in Canada than we see in the United States. Indeed, we find that seasonal net exchanges into and out of equity, hybrid, and safe fund classes show roughly double the proportional flows in Canada relative to the U.S., consistent with the seasonally varying investor sentiment hypothesis.

As a second out-of-sample test of the hypothesis, we examine flow data from Australia, where the seasons are six months out of phase relative to the U.S. and Canada, and the population lies

[6]For instance, Bergstresser and Poterba (2002) and Johnson and Poterba (2008) document that net flows to funds with large future capital-gains distributions are significantly lower than net flows to other funds.

[7]To make up the difference between the inflows and outflows, we believe that investors likely find other substitutes for safe money market funds, such as bank CDs or interest-bearing checking accounts. As we show below, we find support for this view when we consider seasonalities in bank account inflows and outflows.

[8]See Magnusson (2000) and Rosenthal et al. (1984), for example.

closer to the equator and should therefore be less affected by seasonal variation in mood. (For Australia, we have access to data for equity funds only.) If the seasonally varying investor risk aversion hypothesis is correct, these flows should show a seasonal cycle that is six months out of phase relative to seasonality in equity fund flows in northern hemisphere markets, and we should see attenuated seasonal flows relative to the U.S. This is exactly what we find: equity funds in Australia experience inflows during the Australian spring and outflows in the fall, and flows are roughly half the magnitude of those we see in the U.S.

The remainder of the paper is organized as follows. In Section I, we describe how seasonally changing risk aversion can translate into an economically significant influence on an investor's choice of assets. In Section II, we define the measures we use to capture the impact of seasonally changing risk aversion on investment decisions. In Section III, we discuss previously documented empirical regularities in flows, and we present evidence that the flow of capital into and out of mutual funds follows a seasonal pattern consistent with seasonal variation in investor risk preference, controlling for these regularities. We introduce the U.S. flows data in Section IV, and we present the main findings in Section V. In Sections VI and VII we present findings based on Canadian and Australian flows data, respectively. We describe additional robustness checks in Section VIII. Section IX concludes.

I The Link between Seasons and Sentiment Toward Risk Taking

The hypothesized link between seasons and investment choices is based on two elements. First, seasonally reduced daylight during the fall and winter tends to lead to a marked deterioration in people's moods as a direct consequence of the reduced hours of daylight. Individuals who experience *extreme* changes of this variety are labeled by the medical profession as suffering from seasonal depression, formally known as seasonal affective disorder (SAD). Even healthy people (i.e., those who are not suffering from SAD) experience milder but nonetheless problematic mood changes, commonly labeled winter blues. Second, winter blues and seasonal depression are associated with increased risk aversion, including financial risk aversion. Both of these connections are based on behavioral and biochemical evidence. Further, they have been extensively studied in clinical and experimental investigations.

Much research, including that of Molin et al. (1996) and Young et al. (1997), supports the first element of the link between seasons and risk aversion, namely the causal connection between hours of daylight and mild or severe seasonal depression. Medical evidence demonstrates that as the number of hours of daylight drops in the fall, up to 10 percent of the population suffers from very severe clinical depression, namely SAD.[9] Terman (1988) and Kasper et al. (1989) find that a quarter or more of the general population experiences seasonal changes in mood sufficient to pose a problem in their lives, but more recent evidence suggests that individuals lie along a continuum in terms of their susceptibility to seasonal depression, with even healthy individuals (i.e., those who do not suffer from severe seasonal depression) experiencing observable seasonal variation in their mood. See Harmatz et al. (2000) and Kramer and Weber (2012), for instance.[10] The evidence on and interest in seasonal depression make it clear that the condition is a very real and pervasive problem for a large segment of the population. Individuals can begin to experience depressive effects or winter blues as early as July or August, but the bulk of people experience initial onset during the fall. Individuals may begin recovering early in the new year, as the days lengthen, though most experience symptoms until spring. (See Lam (1998b) and Young et al. (1997).) Further, studies indicate that these seasonal changes in mood are more prevalent at higher latitudes – see

[9]As Mersch (2001) and Thompson et al. (2004) note, estimates of the prevalence of severe seasonal depression vary considerably, depending on the location, the diagnostic criteria, and the sample selection methods employed by the researchers. For example, Thompson et al. (2004) found the prevalence of SAD in Britain ranged from 5.6 percent to 10.7 percent depending on the diagnostic method. US studies, such as Rosen et al.'s (1990) study based on a sample in New Hampshire, find the incidence of SAD to be as high as 10 percent. Others find it is below 2 percent, such as Rosen et al.'s study of a sample in Florida.

[10]Over the last couple of decades, a large industry has emerged informing people how to deal with seasonal depression and offering products that create "natural" light to help sufferers cope with symptoms. Examples of popular books by leading researchers that are devoted to approaches for dealing with seasonal depression are Lam (1998a) and Rosenthal (2006).

Magnusson (2000) for example – and that symptoms are milder close to the equator, see Rosenthal et al. (1984) for example.

Regarding the second element of the link between seasons and risk aversion mentioned above, there is substantial clinical evidence on the negative influence a dampened mood has on individuals' risk-taking behavior. Pietromonaco and Rook (1987) find depressed individuals take fewer social risks and seem to perceive risks as greater than non-depressed individuals. Carton et al. (1992) and Carton et al. (1995) administer standardized risk aversion questionnaires to depressed individuals, and find those individuals score as significantly more risk averse than non-depressed controls. Additional studies focus specifically on financial contexts. For instance, Smoski et al. (2008) find depressed people exhibit greater risk aversion in an experiment that includes monetary payoffs. Harlow and Brown (1990) document the connection between sensation seeking (a measure of inclination toward taking risk on which depressed individuals tend to score much lower than non-depressed individuals) and financial risk tolerance in an experimental setting involving a first price sealed bid auction. They find that one's willingness to accept financial risk is significantly related to sensation seeking scores and to blood levels of neurochemicals associated with sensation seeking.[11]

In another experimental study, Sciortino, Huston, and Spencer (1987) examine the precautionary demand for money. They show that, after controlling for various relevant factors such as income and wealth, those individuals who score low on sensation seeking scales (i.e., those who are relatively more risk averse) hold larger cash balances, roughly a third more than the average person, to meet unforeseen future expenditures. Further evidence is provided by Wong and Carducci (1991) who show that people with low sensation seeking scores display greater risk aversion in making financial decisions, including decisions to purchase stocks, bonds, and automobile insurance, and by Horvath and Zuckerman (1993) who study approximately one thousand individuals in total and find that sensation seeking scores are significantly positively correlated with the tendency to take financial risks. Additionally, Kramer and Weber (2012) study a panel of hundreds of individuals starting

[11]See Zuckerman (1983, 1994) for details on the biochemistry of depression and sensation seeking.

in summer, again in winter, and finally in the next summer. They find healthy and depressed individuals become significantly more financially risk averse in winter on average, with the difference across the seasons being larger for the depressed group.

Regarding the possibility that depressed individuals may exhibit passivity rather than risk aversion, Eisenberg et al. (1998) conducted experiments in which individuals differing in their degree of depression were faced with a series of choices between pairs of risky and safe alternatives, including some of a financial nature. By setting the choices such that in some cases the risky option was the default (not requiring action) and in other cases the safe option was the default, the researchers were able to distinguish risk aversion from passivity, finding depressive symptoms correlated with risk aversion, and not with passivity in making choices.

The evidence that risk aversion and negative sentiment peak in the winter (both for those who suffer from SAD and those who do not) gives us reason to consider whether there is systematic seasonality in investor choice between alternative investments of different risk, and, hence, systematic seasonality in the dollar flows between assets of differing risk classes.

II Measuring Seasonal Variation in Investor Risk Preference

Medical researchers have established that the driving force behind seasonal depression is reduced daylight, literally the amount of time between sunset and sunrise (which is at its minimum at summer solstice, increases most quickly at autumn equinox, peaks at winter solstice, and drops most quickly at spring equinox), not reduced *sunshine*, which depends on the presence of cloud cover.[12] Thus, we proxy for the influence of season on market participants' risk preferences using a variable based on the timing of the onset of and recovery from depression among individuals who

[12] Hirshleifer and Shumway (2003) document a different effect by showing that daily stock returns are related to unexpected cloud cover in cities with financial markets.

are known to suffer from SAD.[13] The variable is constructed as follows, based on data compiled in a study of hundreds of SAD patients in Vancouver by Lam (1998b).[14]

First we construct a seasonal depression "incidence" variable, which reflects the monthly proportion of seasonal-depression-sufferers who are actively experiencing symptoms in a given month. The incidence variable is constructed by cumulating, monthly, the proportion of seasonal-depression-sufferers who have begun experiencing symptoms (cumulated starting in late summer when only a small proportion have been diagnosed with onset) and then deducting the cumulative proportion who have fully recovered. This incidence variable varies between 0 percent in summer and 100 percent in December/January. Because the variable is an *estimate* of the true timing of onset and recovery among seasonal-depression-sufferers in the more general North American population, we use instrumental variables to correct for a possible error-in-variables bias (see Levi (1973)).[15] Our findings are qualitatively unchanged whether we use the instrumented variable or the original variable. Finally, we calculate the monthly change in the instrumented series to produce the monthly onset/recovery variable that we use in this study. We denote onset/recovery as $\hat{OR}_t$ (short for onset/recovery, with the hat indicating that the variable is the fitted value from a regression, as noted above). More specifically, the monthly variable $\hat{OR}_t$ is calculated as the value of the daily instrumented incidence value on the 15th day of a given month minus the value of the daily instrumented incidence value on the 15th day of the previous month.[16]

[13]While the proxy is based on individuals who suffer most extremely from seasonal changes in mood, we believe it is a good model for the timing of seasonal mood changes in the general population, in light of the experimental and clinical evidence discussed in the previous section. Our findings are qualitatively similar if instead we use a proxy based on the variation in hours of daylight across the seasons.

[14]Young et al. (1997) similarly document the timing of SAD symptoms, but for onset only. We base our measure on the Lam (1998b) data because it includes the timing of both onset and recovery. Results are similar if we average the timing of onset from both the Lam and the Young et al. studies.

[15]To produce the instrumented version of incidence, first we smoothly interpolate the monthly incidence of SAD to daily frequency using a spline function. Next we run a logistic regression of the daily incidence on our chosen instrument, the length of day. (The nonlinear model is $1/(1 + e^{\alpha+\beta day_t})$, where day_t is the length of day t in hours in New York and t ranges from 1 to 365. This particular functional form is used to ensure that the fitted values lie on the range zero to 100 percent. The $\hat{\beta}$ coefficient estimate is 1.18 with a standard error of 0.021, the intercept estimate is -13.98 with a standard error of 0.246, and the regression R^2 is 94.9 percent.) The fitted value from this regression is the instrumented measure of incidence. Employing additional instruments, such as change in the length of the day, makes no substantial difference to the fit of the regression or the subsequent results using this fitted value.

[16]The values of $\hat{OR}_t$ by month, rounded to the nearest integer and starting with July, are: 3, 15, 38, 30, 8, 1, -5, -21, -42, -21, -5, 0. These values represent the instrumented *net change* in incidence of symptoms.

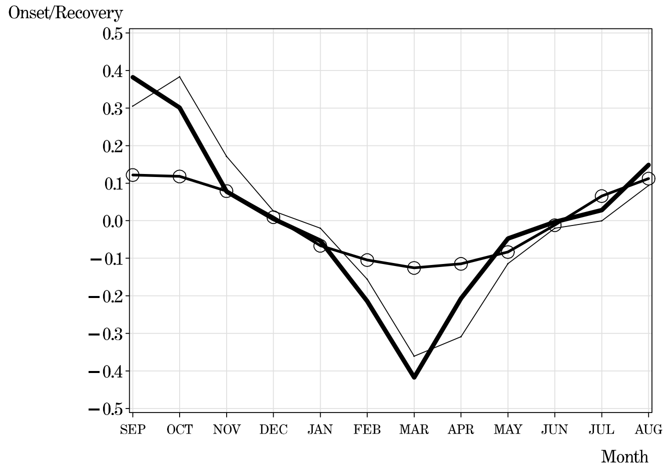

Figure 1: **Onset/Recovery and Change in Length of Night.** The onset/recovery variable reflects the change in the proportion of seasonal-depression-affected individuals actively suffering from depression. The monthly series, calibrated to the 15th day of each month, is based on the clinical incidence of symptoms among patients who suffer from the condition. The thick plain line plots the onset/recovery variable ($\hat{OR}_t$), the thin plain line plots observed onset/recovery, and the line with circles is the change in the length of night, normalized by division by 12.

$\hat{OR}_t$ reflects the *change* in the proportion of seasonal-depression-affected individuals actively suffering from depression. We consider the change rather than the level of depression-affected individuals because the change is a measure of the *flow* of depression-affected individuals and we are attempting to model a *flow* variable, the flow of funds into and out of mutual funds. (We perform robustness checks using the incidence of seasonal depression – i.e., the stock of depression-affected individuals – rather than onset/recovery – i.e., the flow of depression-affected individuals – and find qualitatively identical results, as reported in Appendix S1, a supplement available on request.) The monthly values of $\hat{OR}_t$ are plotted with a thick line in Figure 1, starting with the first month of autumn, September. Notice that the measure is positive in the summer and fall, and negative in the winter and spring. Its value peaks near the fall equinox and reaches a trough near the spring equinox. The movement in $\hat{OR}_t$ over the year should capture the hypothesized opposing patterns in flows across the seasons, should they exist, without employing the two (perhaps problematic) variables used by Kamstra et al. (2003): neither the simple fall dummy variable nor the length-of-day variable they employed is necessarily directly related to the onset and recovery from seasonal depression.[17] For comparison, Figure 1 also includes plots of observed onset/recovery (thin plain

[17] In untabulated regressions, we compare the performance of $\hat{OR}_t$ to the two variables Kamstra et al. (2003)

line) and the change in length of night (normalized by dividing by 12; thin line with circles).

Some advantages of the instrumented onset/recovery variable are important to emphasize. First, it is based directly on the clinical incidence of seasonal depression in individuals, unlike Kamstra et al.'s (2003) hours of night variable. Second, the onset/recovery variable spans the entire year, whereas Kamstra et al.'s (2003) length of night variable take on non-zero values during the fall and winter months only, and, therefore, does not account for the portion of individuals who experience seasonal depression earlier than fall or later than winter. (For a more complete discussion of the merits of the onset/recovery variable relative to Kamstra et al.'s original specification, see Kamstra, Kramer, and Levi (2012).) In light of these points, we conduct our analysis using the onset/recovery variable.

III Seasonality in Mutual Fund Flows

In our analysis of mutual fund flows, we investigate two questions. First, does the increased risk aversion that some investors experience with the diminished length of day in autumn lead to a shift from risky funds into low-risk funds? Second, do investors move capital from safe funds back into risky funds after winter solstice, coincident with increasing daylight and diminishing risk aversion? Prior to investigating these questions, we discuss several important considerations that we must take into account.

A Controlling for Capital-Gains Distributions

Capital gains and (to a much lesser extent) dividend distributions by mutual funds to shareholders exhibit seasonality in the U.S., even in data prior to the 1986 Tax Reform Act (TRA), which synchronized the tax year-end of all funds to October 31 (see, for example, Gibson, Safieddine, and Titman (2000)). This requirement of TRA went into full effect by 1990. Table 1 illustrates the

originally employed in their model, and we find qualitatively identical results. Importantly, conclusions relating to the existence of a seasonal cycle in mutual fund flows remain intact.

seasonality in capital gains and dividend distributions to shareholders by presenting the percentage of such distributions that are paid during each calendar month, computed over the 1984 to 2007 period using the CRSP Mutual Fund Database. The results show that capital gains are predominantly paid at the end of the calendar year, with 9.8 percent being paid during November and 72 percent during December. Presumably, fund administrators wait until the end of their tax year (October 31) to compute their capital gains distributions, rather than attempting to distribute them more evenly through the year which could result in an unnecessary distribution of gains that are lost later in the year. To a much lesser extent, dividend distributions are also paid in greater quantity at the end of the year, with 14.1 percent being paid during December. In untabulated results, we find similar seasonality in distributions when we focus on the post-TRA period (i.e., 1990-2007).

Since distributions of capital gains are highly seasonal and since over 90 percent of dividends and realized gains are reinvested at equity mutual funds (see Bergstresser and Poterba (2002) and Johnson (2010)), we must consider their effect on seasonal variations in mutual fund flows. There are a couple of potential influences that distributions may have on seasonal flow patterns. First, we would expect flows of funds to increase when distributions are large, simply by reinvestment of such distributions by investors. To address this, we assume that the choice of the reinvestment of capital gains and dividend distributions is usually made once by a new shareholder, who instructs the fund company to automatically reinvest (or not to reinvest) distributions, and that this decision is not subsequently changed.[18] Thus, we consider flows from reinvestment of distributions as "passive flows." Fortunately, our data set reports such flows separately from other shareholder flows, and, thus, we exclude reinvestments from the measure of flows.

Another influence of distributions is that potential shareholders may delay their purchase or advance their sale of shares of a fund with substantial realized capital gains to be distributed in the near future.[19] For instance, suppose that a fund realized a capital gain of one hundred

[18]Johnson (2010) reports that as a practical matter mutual fund shareholders "do not change their reinvestment option after account opening."

[19]In contrast, capital losses cannot be distributed by mutual funds; capital losses can only be banked to be applied against later capital gains.

dollars by October 31, based on trades during the year ending at this date. If the fund does not distribute these gains until December, shareholders may avoid purchasing such shares until the ex-distribution date to avoid the associated taxation. (See Bergstresser and Poterba (2002) and Johnson and Poterba (2008).) Also, investors who planned to sell the shares in January may sell before the distribution in December in order to avoid the capital gain realization, depending on the magnitude of the direct capital gain that will be realized by their sale of fund shares. For example, consider a shareholder who purchased his fund shares part way through the year, and only ten dollars of the year's one hundred dollars in total capital gains accrued since the time of his recent purchase. If that shareholder held his shares, he would be unable to recover taxes paid on the ninety dollars of excess capital gains until he ultimately sells the shares, thus he may sell prior to the distribution instead of holding the stock and incurring the taxation associated with the one hundred dollar capital gain distribution.

Hence expected capital gains distributions likely impact the tendency of shareholders to buy or sell a fund. Accordingly, we construct a measure of capital gains overhang for each fund class and observation, derived using the CRSP mutual funds database, eliminating capital gains distributions that are a return of capital (i.e., are non-taxable). This measure is realized capital gains. In robustness checks we consider an extensive set of alternative measures of capital gains overhang. In Section VIII, where we detail the full range of our robustness checks, we explain how we form these alternative measures of capital gains overhang, and we provide tables of regression results based on each alternative in Appendix S1.

We find that these capital gains overhang measures, minor variations on these measures, and various other combinations of measures we explored in untabulated analysis deliver results qualitatively identical to those produced by the primary model. While it is never possible to rule out every possible alternative explanation, it is evident that seasonality in capital gains, however modeled, does not appear to explain the seasonal variation in mutual fund flows we explore.

B Other Turn-of-the-Year Effects

Turn-of-the-year effects beyond those related to capital gains overhang, although not typically modeled in this literature, have the potential to induce seasonal variation in mutual fund flows. We consider several possibilities. For instance, some investors do not automatically reinvest dividend and capital gains distributions back into their mutual funds, but these investors are nonetheless still likely to reinvest these distributions at some point, either immediately upon receiving the distributions or soon thereafter. Since the bulk of distributions occur in December, we expect many investors may be reinvesting those funds in December, January, or February. These discretionary reinvestments would be counted as new inflows and would inflate flows in those months. Furthermore, variable employee compensation, in particular year-end bonuses, may inflate flows in January and February. Likewise, uncertainty experienced by investors awaiting the announcement of the specific amount of their variable compensation may inhibit flows in November and December. As a result of these possibilities, when we model flows we include dummy variables for each of the months November through February. The use of these four dummy variables is an ad hoc adjustment, with the potential to pick up and partially wash away the very effect we seek to identify. However, with most individuals who suffer from seasonal depression experiencing onset in September or October and recovering in March or April, we maintain some power to detect the effect even with the inclusion of these dummy variables and we do indeed find strong evidence of seasonal-depression-related flows. In Appendix S1 we exclude the November, December, January, and February dummy variables from the models and confirm that use of these dummy variables does not drive the results.

C Other Empirical Regularities in Mutual Fund Flows

There have been several studies of the causal links between fund flows and past or contemporaneous returns (either of mutual funds or the market as a whole). For instance, Ippolito (1992) and Sirri and Tufano (1998) find that investor capital is attracted to funds that have performed well in the past. Edwards and Zhang (1998) study the causal link between bond and equity fund flows and aggregate bond and stock returns, and the Granger (1969) causality tests they perform indicate that asset returns cause fund flows, but not the reverse. Warther (1995) finds no evidence of a relation between flows and past aggregate market performance. However, he does find that mutual fund flows are correlated with contemporaneous aggregate returns, with stock fund flows showing correlation with stock returns, bond fund flows showing correlation with bond returns, and so on. We include past returns in the models to control for return-chasing behavior and find this does not explain the seasonality in flows we identify.

Some researchers have looked for fund-specific characteristics that might explain fund flows. See, for instance, Sirri and Tufano (1998) and Del Guercio and Tkac (2008), who study the impact on fund flows of fund-specific characteristics, including fund age, investment style, and Morningstar rating. For our study, since we consider aggregated flows for a given asset class (e.g. money market funds), there is no need to control for fund age or rating. Gallaher, Kaniel, and Starks (2006) find mutual fund family advertising significantly influences investor inflows. In our models we control for aggregate print ad expenditures and find the seasonal movements between risky and safe categories do not appear to be driven by that factor. We also study the possibility that investor liquidity drives seasonal movements in flows, by controlling for aggregate personal savings; this factor also does not appear to drive our findings.

IV Mutual Fund Data

We obtained the U.S. data sets from the Investment Company Institute (ICI). These data consist of monthly flows to thirty mutual fund investment objective categories, covering the period of January 1, 1984 to January 31, 2010.[20] The need for lagged values restricts the range of data used

[20] ICI provides data for thirty-three fund categories in total, however we omit three from the analysis: Taxable Money Market - Non-Government, National Tax-Exempt Money Market, and State Tax-Exempt Money Market. While these are ostensibly similar to the money market category (which includes only funds classified as Taxable Money Market - Government), we sought a money market category that represents the safest category of funds. Wermers (2010) shows evidence that investors considered the Taxable Money Market - Government category as the safe haven during the money fund crisis of September 2008. Our results are qualitatively unchanged if, instead, we include these three omitted investment objective categories in the money market category.

in our regression analysis to start in February 1985, and concerns about the chaotic flows during the financial crisis, in particular flows in and out of money market funds, motivates us to end the sample in December 2006 for the purposes of model estimation.[21] (Nonetheless, in untabulated robustness tests we find the results are qualitatively unchanged if we extend the sample period to include the financial crisis.) For each investment objective category during each month, ICI provides the total sales, redemptions, exchanges, reinvested distributions, and (end-of-month) total net assets (TNA), aggregated across all mutual funds within that category. Exchanges consist of exchanges from other same-family funds into a given fund (exchanges in) and exchanges from a given fund to other same-family funds (exchanges out). Table 2 shows the categories of funds we employ. We group the fund categories into five asset classes: "equity," "hybrid," "corporate fixed income," "government fixed income," and "money market." (In Appendix S2, a supplement available on request, we show that the results are robust to a less coarse classification into nine asset classes.) Flows and assets are aggregated across all investment objective categories within an asset class to arrive at asset-class-level flows and combined assets.[22] We compute "active" net monthly flows to asset class i during month t, as a proportion of end-of-month $t-1$ total net assets, as follows:

$$NetFlow_{i,t} = \frac{Sales_{i,t} - Redemptions_{i,t} + ExchangesIn_{i,t} - ExchangesOut_{i,t}}{TNA_{t-1}}.$$

Consistent with the literature, we treat reinvested dividends as passive and do not include them in our net flows measure.

Another measure of flows we consider is monthly net exchanges to asset class i during month t, as a proportion of end-of-month $t-1$ total net assets:

$$NetExchange_{i,t} = \frac{ExchangesIn_{i,t} - ExchangesOut_{i,t}}{TNA_{t-1}}.$$

[21]For example, Wermers (2010) shows that flows to and from money funds during September 2008 were largely driven by fears of prime money funds "breaking the buck."

[22]We weight by TNA when computing variables such as asset class returns, and aggregate dollar flows to arrive at aggregate flows for an asset class.

Net exchanges are not subject to some confounding effects that may complicate the study of net flows, including income flows (i.e., liquidity considerations such as tax refund cash flows, year-end bonuses, and changes in savings/expenditure behavior).

In Table 3, we report summary statistics for the data, including monthly asset class fund net flows (in Panel A), monthly asset class net exchanges (in Panel B), explanatory variables used in the regression models (in Panel C), and value-weighted excess returns (in Panel D). As previously mentioned, fund flows are reported as a proportion of the fund's prior end-of-month total net assets.

In Panel A, we see that the mean monthly equity class net flow is 0.504 percent of equity class TNA. The hybrid class has a mean monthly net flow around 0.733 percent of hybrid TNA, and the corporate fixed income class has very similar mean flows of 0.756 percent of TNA. The government fixed income class has mean monthly flows of about 0.782 percent of TNA, and the money market asset class has mean monthly flows of about 0.581 percent of TNA. Asset class net flow standard deviations range from a low of 0.84 percent for the equity class to a high of well over 2 percent for the money market and government fixed income classes. All of the series are somewhat skewed and leptokurtotic.

Panel B displays net exchanges which should, and do, net across asset classes to within a few basis points of zero (after weighting by the respective asset class prior-month asset values). The volatility of net exchanges is smaller than net flows, consistent with their lower average level, and the skewness is a mix of negative and positive compared to the consistent positive skewness of net flows across fund classes. Also, net exchanges are strongly fat-tailed.

In Panel C we first present statistics for advertising and savings. Our advertising variable is monthly print advertisement expenditures by mutual fund families (detrended by dividing by the previous year's total advertisement expenditure to account for time-series trend-line growth).[23] We calculate savings using data from the Bureau of Economic Analysis (BEA).[24] Advertisements trend

[23]We obtain the monthly advertising expenditure data from Gallaher, Kaniel, and Starks (2006), Figure 3. Their series covers advertisements in over 288 print publications over 1992-2001; for sample dates outside that period we use the average monthly values calculated using the 1992-2001 period. Reuter and Zitzewitz (2006) report that most mutual fund advertisements are print ads.

[24]Specifically, the savings variable is calculated by subtracting Real Personal Consumption Expenditures (BEA se-

upward during the sample period even after detrending by the 12-month moving average, though only slightly, and savings average to over 1.5 percent per month. Even the more conservative BEA savings rate (which is reported in the press) shows an average monthly savings rate of 0.4 percent per month over this period.[25]

Panel C also reports summary statistics for the one-year moving average return (R^{Year}, the return-chasing measure) and the realized capital gains return ($R^{CapGains}$, our primary measure of capital gains overhang throughout the year) for each asset class.[26] R^{Year} is the return over the prior 12 months, and $R_{i,t}^{CapGains}$ equals the realized capital gains return to holding the fund from the previous November 1 (the start of the tax year for mutual funds) to date $t-1$. Capital gains returns decline monotonically from a high of approximately 3.4 percent for the equity fund category through the categories of hybrid, corporate bond, government bond, and money market funds. Government bond funds report an average capital gain return of only about 23 basis points, roughly one fifteenth of that reported by equity funds. Money market funds have virtually no capital gains to distribute, and so this fund category exhibits an average capital gains return of approximately 0.1 basis points.

The first six columns of Panel D contain summary statistics on the monthly excess asset class returns: mean, standard deviation, minimum, maximum, skewness, and kurtosis.[27] We calculate the return to holding a fund as is conventional in the literature and as provided by ICI; the return for month t and asset class i is calculated as $R_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} - NetFlow_t}{TNA_{t-1}}$.[28] The asset class return

ries ID PCEC96) from Real Disposable Personal Income (BEA series ID DSPIC96), divided by DSPIC96, multiplying by 100, and dividing by 12.

[25]We have conducted robustness checks using the BEA personal saving rate (series ID PSAVERT) in place of the savings variable based on series IDs PCEC96 and DSPIC96 and found all three series behave very similarly, with use of the BEA personal savings rate making only minor qualitative changes to the results.

[26]We provide results from extensive robustness checks on the return-chasing and capital gains overhang measures. See Section VIII for a complete description and Appendix S1 for tabled results.

[27]Our excess returns are calculated conventionally, using the 30-day T-bill rate as the risk-free proxy return, sourced from CRSP.

[28]Note that this expression assumes that all distributions are reinvested. Our discussions with staff at the Investment Company Institute indicate that over 80 percent of investors reinvest capital gains and dividend distributions. Since we conduct many robustness checks on the impact of returns on flows, we do not believe that this assumption is critical; indeed the various permutations we consider when evaluating the impact of returns on flows makes little or no difference to the core results on seasonality in flows. Further, one of our robustness checks makes use of fund returns from the CRSP Mutual Fund Database, which provides actual returns to holding funds. Our findings are virtually identical based on the realized returns provided by CRSP.

data reveal familiar patterns, with equity returns being the largest and the most volatile, loosely declining across categories. We report additional metrics in the last two columns of Panel D. In the second-to-last column, we see that the excess returns show a monotonically declining CAPM beta from top to bottom, suggesting a declining exposure to systematic risk across this ordering of fund asset classes. The last column contains coefficient estimates from regressing excess returns on onset/recovery.[29] These estimates indicate that riskier fund returns tend to be negatively correlated with onset/recovery whereas safer fund returns tend to be positively correlated with onset/recovery.[30] Later we report the results of conditional analysis based on fund *flows*, our primary focus of interest.

Finally, in Panels E and F we present net flow and net exchange correlations across fund categories. For net flows (Panel E), we note that correlations between riskier categories, such as equity and corporate fixed income, are generally much higher than correlations between high- and low-risk categories, such as equity and money market. For net exchanges, it is even clearer that investors chiefly move money between the risky categories and the money market category. Overall, the correlations appear consistent with the notion that investors move money between categories, treating fund classes with similar risk and return profiles as complements and treating risky and safe categories as substitutes.

In Figure 2, we consider unconditional patterns in asset class fund flows. Again, conditional analysis follows. The monthly average flows (averaged across all years from 1985 to 2006) for the equity and money market asset classes are plotted in Panels A and B of Figure 2, respectively, with thick solid lines. Each plot starts with the first month of autumn. The unconditional seasonal

[29]The CAPM beta and the coefficient estimate on the onset/recovery variable are estimated in separate regressions. These coefficients are produced in a system-equation estimation using the seemingly unrelated regression technique and MacKinnon and White (1985) bootstrap heteroskedasticity-robust standard errors.

[30]Recall that the onset/recovery variable is itself positive in the fall and negative in the winter, so the implication is higher-than-average (lower-than-average) returns in safe (risky) categories in the fall and lower-than-average (higher-than-average) returns in the safe (risky) categories in the spring. These findings are consistent with studies that examine risky and safe securities outside the context of mutual fund flows. Specifically, Kamstra, Kramer, and Levi (2003) find lower-than-average stock returns in the fall and higher-than-average stock returns in the spring, and Kamstra, Kramer, and Levi (2013) find higher-than-average returns to safe U.S. Treasury securities in the fall and lower-than-average Treasury returns in the spring.

Average Monthly U.S. Net Flows and Predicted Flows Due to Onset/Recovery: Equity and Money Market

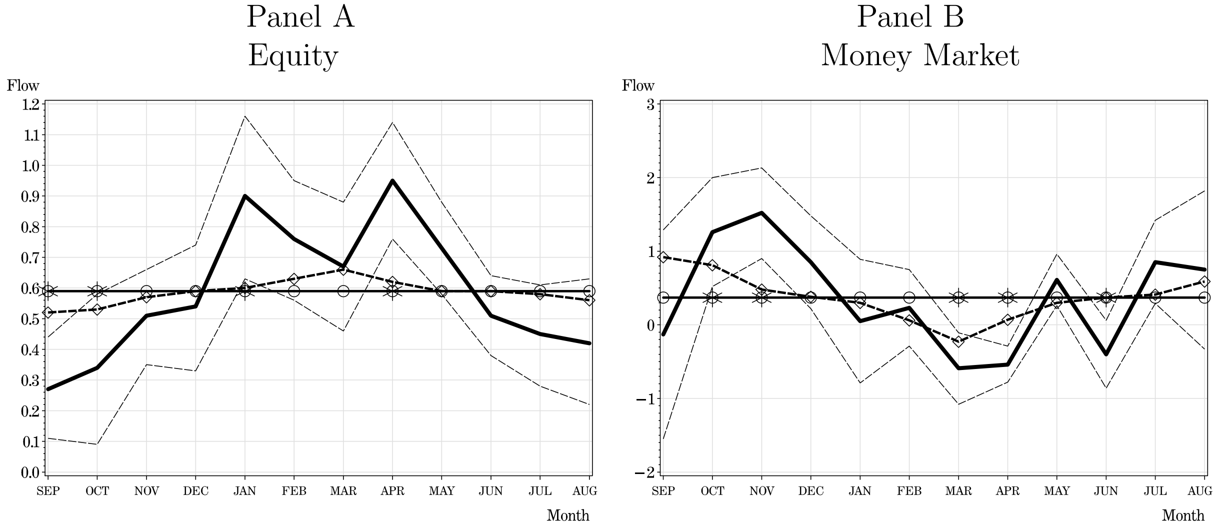

Figure 2: Panel A contains monthly average **equity** asset class fund net flows as a proportion of prior-month equity class TNA, indicated with a thick solid line, and average fitted values implied by the onset/recovery coefficient from estimating Equation (1), indicated with a dashed line with diamonds. Panel B contains monthly average **money market** asset class fund net flows as a proportion of prior-month money market TNA, indicated with a thick solid line, and average fitted values implied by the onset/recovery coefficient from estimating Equation (1), indicated with a dashed line with diamonds. The plots also include a 90 percent confidence interval around the monthly means (shown with thin dashed lines) and the average flow throughout the year (represented by solid lines with circles – and an x mark in cases where the average return falls outside of the confidence interval). The data, provided by the Investment Company Institute, span January 1985 to December 2006.

patterns in equity and money market flows are consistent with seasonality in investor risk aversion having an impact on flows. During the fall months, as daylight diminishes, individuals become depressed and more risk averse. If their risk aversion causes them to shift assets away from risky asset classes and toward safe asset classes, we should see lower- (higher-) than-average net equity (money market) flows in the fall months, and we do. Similarly, as daylight becomes more plentiful in the winter months through to the spring, fewer and fewer investors are affected by seasonal depression and become willing to hold risky funds. Accordingly, we see equity (money market) net flows are higher (lower) than average during that period. Overall, the flows in the summer/fall and winter/spring are consistent with depression-affected investors shifting their portfolios between risky and safe funds depending on their seasonally varying risk aversion. Of course, other factors may underlie these seasonal patterns, and we explore alternative explanations in the conditional analysis.

The thin dotted lines surrounding the thick lines in Figure 2 are the 90 percent confidence intervals around the average monthly flows.[31] Consistent with the intuition from the seasonal pattern of flows, we see several instances of statistically significant (unconditional) deviations of the equity (money market) fund flows from annual mean flows, lower (higher) in the summer/fall and higher (lower) in the winter/spring. The dashed line marked with diamonds represents the average monthly fitted values from a regression model that includes onset/recovery as an explanatory variable. We develop this model fully below, but for now we simply note that the fitted value from onset/recovery, controlling for other effects like capital gains, liquidity needs, year-end flows from reinvestment of distributions and bonus pay, and autocorrelation in flows, tracks the unconditional seasonal pattern in flows fairly well.

Unreported plots for the hybrid class, corporate fixed income class, and government fixed income class show seasonal flow patterns that lie between the extremes of equity and money market fund flows. This is perhaps not surprising, given that these other classes are intermediate in their exposure to risk relative to equity and money market asset classes, as measured by fund excess return beta and onset/recovery coefficient estimates shown in Table 3 and consistent with practitioner classifications of the risk involved in holding these various fund classes.

[31] There are several approaches one could adopt to calculate the confidence interval around the mean monthly net flows. The simplest is to use the standard deviation of the monthly mean flows directly. However, this would ignore information about the cross-sectional variability of flows across the fund asset classes. Instead, we form a system of equations with the flows data and estimate a fixed-effects model with twelve dummy variables (one for each month). In order to leverage the information in the cross-section more effectively, we work with slightly more disaggregated data than the five fund classes, using instead the nine classes we describe below. Consistent with the typical implementation of a fixed effects model, we allow each sub-class series within an asset class to have a different mean, while estimating a single set of parameter values for the variables each sub-class series in an asset class has in common, in this case the monthly dummy variables. The equity fund asset class is split into two sub-classes, "risky equity" and "safe equity." "Hybrid" remains as previously defined. "Corporate fixed income" is split into "global bond" and "U.S. corporate bond". "Government fixed income" is split into "munis," "medium and short-term government," and "general-term government." The "money market" asset class remains as previously defined. From this regression we obtain the standard errors on the fund flow monthly dummies to form the confidence intervals around the monthly mean flows. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. The instruments used for the regression are the 12 monthly dummy variables.

V Results

In this section we first consider U.S. net flows. These include flows between fund families. Next we consider net exchanges, i.e., *within-family* movements of money, such as a movement from a Fidelity equity fund to a Fidelity money market fund. Net exchanges are more immune to liquidity-related reasons to move money into or out of fund categories. For example, net exchanges would not be impacted by someone buying equity funds with year-end bonus money or selling funds for a large purchase. After discussing estimation results for both sets of flow measures, we discuss the economic magnitude of the findings.

A The Net Flows Regression Model

There is considerable autocorrelation in fund flows, so we estimate a model that incorporates lags of the dependent variable to control directly for autocorrelation. Specifically, we include a one-month lag and a three-month lag of the dependent variable as regressors. The complete model we estimate is as follows:

$$\begin{aligned} NetFlow_{i,t} &= \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t} + \mu_{i,Nov}Nov_t \\ &\quad + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t + \mu_{i,Feb}Feb_t + \mu_{i,Savings}Savings_{t-1} \\ &\quad + \rho_{i,1}NetFlow_{i,t-1} + \rho_{i,3}NetFlow_{i,t-3} + \epsilon_{i,t}, \end{aligned} \tag{1}$$

where i references the mutual fund asset class. The dependent variable, $NetFlow_{i,t}$, is the month t fund net flow expressed as a proportion of month $t-1$ total net assets. $\hat{OR}_t$ is the onset/recovery variable, Ads_t is monthly print advertisement expenditures by mutual fund families (normalized by the prior year's ad expenditures), and the remaining explanatory variables are as follows. $R^{Year}_{i,t}$ is the return to fund asset class i over the prior 12 months (*i.e.* from month $t-13$ through to month $t-1$), included to control for return-chasing flows. $R^{CapGains}_{i,t}$ is included to control for the influence of capital gains overhang on flows and equals the realized capital gains return to holding the fund from the previous year's November 1 (the start of the tax year for mutual funds) to month $t-1$. $Savings_t$ is personal savings. Personal savings is included as a control variable for investor liquidity needs, which might also affect fund flows in a seasonal way. (We lag savings by one month to avoid endogeneity, since investors make savings decisions simultaneously with decisions regarding mutual fund flows.) Nov_t, Dec_t, Jan_t, and Feb_t are dummy variables for monthly flows, taking on values of 1 in the indicated month, and zero elsewhere. These dummies are included to capture turn-of-the-year effects driven by factors beyond simple capital gains tax-avoidance, including the reinvestment of dividend and capital gains distributions in the months after the distributions are made, and the impact of year-end bonuses on flows, both of which may be influencing flows in November through February. We provide multiple robustness checks on this base specification, detailed in Appendix S1. For instance, we exclude the November through February dummy variables from the model, we use alternate capital gains measures and return chasing, etc. In each case the results are qualitatively identical to those we present here.

We estimate Equation (1) as a system of equations across asset classes using Hansen's (1982) GMM and Newey and West (1987, 1994) heteroskedasticity and autocorrelation consistent (HAC) standard errors.[32] Results from estimating this set of equations appear in Table 4. In Panel A we present coefficient estimates and two-sided t-tests. The bottom of Panel A contains the adjusted R^2 for each asset class model and χ^2 statistics for testing for the presence of up to 12 lags of autocorrelation or autoregressive conditional heteroskedasticity (ARCH; see Engle (1982)).

Consider, first, the coefficient estimates on the onset/recovery variable. The riskiest category, equities, has a statistically significant negative coefficient estimate (we discuss economic significance shortly). Recall that the onset/recovery variable itself is positive in the summer/fall and negative

[32]Our use of HAC standard errors is due to the fact that autocorrelation and heteroskedasticity are a prominent feature of flows for all asset classes. See Warther (1995), Remolona, Kleiman, and Gruenstein (1997), and Karceski (2002), among others. To calculate standard errors, we follow Newey and West (1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. The instruments used for the regression include the full set of explanatory variables. We also explored the use of seemingly unrelated panel regression estimation with MacKinnon and White (1985) bootstrap heteroskedasticity-robust standard errors and sufficient lags to control for autocorrelation. This approach yields similar results to GMM for both significance and magnitude of effects; individual t-tests on variables tend to be smaller, but joint tests of significance show strong statistical significance.

in the winter/spring (see Figure 1). Thus, the implication is that equity fund flows are expected to be below-average in the summer/fall and above-average in the winter/spring, consistent with the plot of unconditional equity fund flows shown in Figure 2. The onset/recovery coefficient estimate is positive and strongly statistically significant for the safest asset class, the money market category, implying money market fund flows are expected to be above average in the summer/fall and below average in the winter/spring, again as we see unconditionally. While we focus attention on the safest and riskiest categories of funds, we note that the intermediate-risk categories by measure of the CAPM beta estimate on fund category returns, hybrid and corporate fund categories (see Table 3), also have negative coefficients. Further, government fixed income, which has a CAPM beta of approximately 0 and is, arguably, very nearly as safe as the money market funds (which invest in shorter-term Treasuries) has a positive but statistically insignificant coefficient estimate on $\hat{OR}_t$. Although the signs and statistical significance of the three intermediate-risk fund categories are somewhat sensitive to the exact model specification, in particular the inclusion or exclusion of dummy variables for November through February, the core result of opposing seasonalities in flows when considering the extremes of the fund categories (i.e., equity versus money market) is very robust.

In Panel B of Table 4 we present statistics testing the joint significance of the onset/recovery coefficient estimates across the asset classes, using Wald χ^2 statistics based on the HAC covariance estimates. The first statistic tests whether the onset/recovery estimates are jointly equal to zero across the series. We strongly reject the null of no effect due to seasonally varying risk aversion. The second joint statistic tests whether the onset/recovery coefficient estimates are jointly equal to each other, not necessarily zero. This null is strongly rejected as well, supporting the position that the safe and risky funds do indeed exhibit different seasonal cycles in flows related to the onset/recovery variable. We also provide a χ^2 goodness-of-fit test of the model.[33] The goodness-of-fit test indicates that the over-identifying moment restrictions we use to estimate the model are not rejected.

[33]Hansen (1982) details conditions sufficient for consistency and asymptotic normality of GMM estimation and shows that the optimized value of the objective function produced by GMM is asymptotically distributed as χ^2, providing a goodness-of-fit test of the model.

We now consider other coefficient estimates shown in Table 4. The advertising expenditure coefficient estimate is positive for the equity and hybrid classes, and is strongly significantly negative for the remaining classes. This finding suggests that while fund family advertising may attract flows to equity funds, it likely does so at the expense of relatively safer funds. The return over the previous year, R^{Year}, has a positive coefficient estimate for all asset classes except for government fixed income, broadly consistent with flows chasing performance. Untabulated analysis confirms that the unconditional correlation of fund flows and lagged fund returns is strongly and statistically significantly significant, but that the inclusion of lagged fund flows attenuates this effect. The savings variable is strongly significantly positive for all classes of funds except the money market class, consistent with the notion that liquidity has an important impact on flows for most classes of funds. The capital gains overhang coefficient estimate is negative for all classes except money market funds which has an insignificant positive coefficient. (The magnitude of the coefficient estimate for the money market fund class is somewhat misleading since the average capital gains for this class of funds is virtually zero, coming in at approximately a hundredth of a basis point. This results in a minuscule economic impact for the money market class, consistent with the statistical insignificance of its coefficient estimate.) These results on the capital gains overhang coefficient estimate are broadly consistent with investors having a tendency to avoid purchasing funds that have substantial realized gains to distribute.

B Fit of the Net Flows Model

Recall that the dotted lines with diamonds that appear in Figure 2 represent fitted values implied by the onset/recovery coefficient from estimating Equation (1). It is also interesting to explore whether the *full model* can account for seasonalities only partially captured by the onset/recovery variable. In Figure 3 we plot the equity (Panel A) and money market (Panel B) monthly flows together with the average fitted values implied from the full model, indicated by a dashed line with diamonds.

Average Monthly U.S. Net Flows and Predicted Flows Due to Onset/Recovery from Full Model: Equity and Money Market

Panel A
Equity

Panel B
Money Market

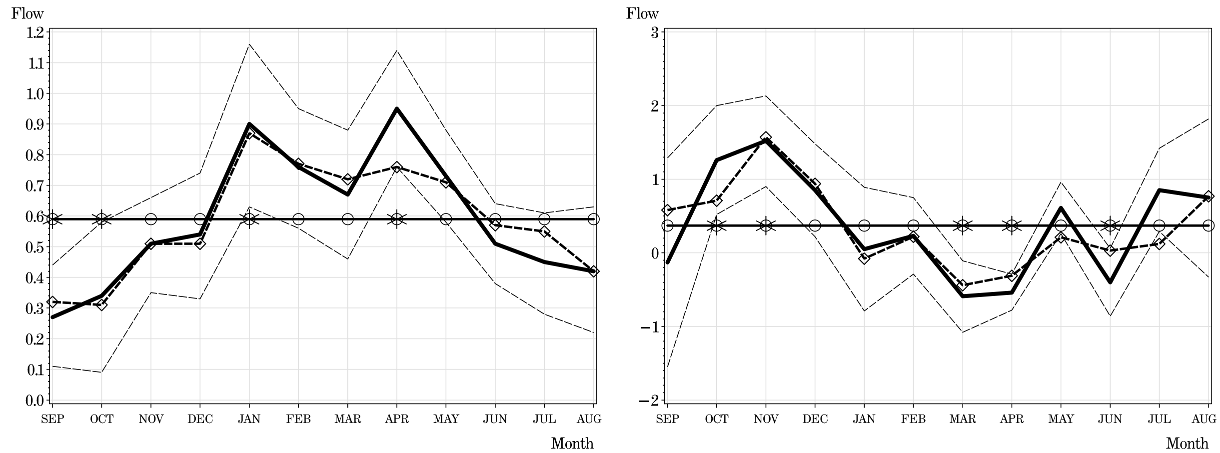

Figure 3: Panel A contains monthly average **equity** asset class fund net flows as a proportion of prior-month equity class TNA, indicated with a thick solid line, and average fitted values from estimating Equation (1), indicated with a dashed line with diamonds. Panel B contains monthly average **money market** asset class fund net flows as a proportion of prior-month money market TNA, indicated with a thick solid line, and average fitted values from estimating Equation (1), indicated with a dashed line with diamonds. The plots also include a 90 percent confidence interval around the monthly means (shown with thin dashed lines) and the average flow throughout the year (represented by solid lines with circles – and an x mark in cases where the average return falls outside of the confidence interval). The data, provided by the Investment Company Institute, span February 1985 through December 2006.

The full model, accounting for conditional effects and autocorrelation in flows, fits the unconditional seasonality in fund flows well.[34] Indeed, analysis of the residuals from this model shows no remaining seasonality in equity or money market flows. The *time-series* fit of the models is shown in Figure 4. Note that we plot all available data, including data we do not use to estimate the models, 2007 and beyond. Panel A of Figure 4 corresponds to the equity fund flows and Panel B corresponds to money market fund flows. The fit of the model is less precise over the first few years of the sample, consistent with the very volatile equity markets during the late 1980s. The spikes in flows during this period mostly coincide with extreme market events, such as the October 1987 equity market crisis. In addition, in January 1990 the ICI implemented changes in their data collection practices, an artifact of which is outliers in the flow and returns data in that year, and in general the ICI data are likely less precise prior to 1996.[35] The flows corresponding to hybrid,

[34]The lack of a *perfect* fit in the months for which we include dummy variables, November, December, January, and February, is due to our use of GMM instead of a least-squares method.

[35]The ICI informed us that they reorganized categories in 1996 and that the precision of their flows estimates improved afterwards.

Time Series of U.S. Net Flows

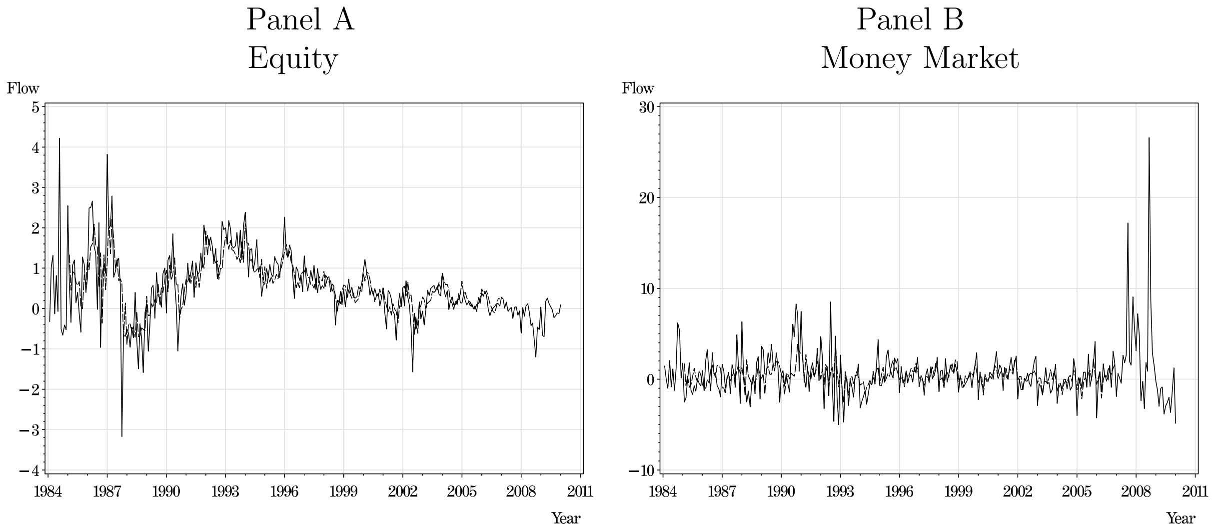

Figure 4: Panel A contains the time series of monthly **equity** fund net flows as a proportion of equity class TNA, indicated with a solid line, and the monthly fitted values from estimating Equation (1), indicated with a dashed line. Panel B contains the time series of monthly **money market** fund net flows as a proportion of money market class TNA, indicated with a solid line, the monthly fitted values from estimating Equation (1), indicated with a dashed line. The data, provided by the Investment Company Institute, span January 1984 through December 2009. The model is estimated over the period 1985-2006, hence the fitted series starts later and ends earlier than the realized series in the plot.

corporate bond, and government bond asset classes are very similar to the equity and money market asset classes and are not presented. Generally, these models are able to match the data well, in particular the seasonal periodicity (a feature most obvious in the money market asset class). In terms of R^2, there is substantial variation in fit across categories, with the government bond fund class showing an R^2 of approximately 90 percent and the money market fund class being the most difficult to fit with an R^2 of approximately 25 percent.

As a robustness check, balancing the need for a long period of time to estimate the model and concern for the quality of the early data period, we estimated Equation (1) after having truncated pre-1991 data from the sample. We find (in untabulated results) that the results for the impact of the onset/recovery variable are qualitatively unchanged, though the magnitude and significance are somewhat reduced. Exploring the 2000-2010 period shows very similar results to that found for the 1985-2006 period.

C Investor Sentiment and Mutual Fund Flows: Net Exchanges

Ben-Rephael, Kandel, and Wohl (2012) also explore flows between fund categories, finding that monthly shifts between bond funds and equity funds in the U.S. are related to aggregate equity market excess return movements. The flows they consider are net exchanges (exchanges in minus exchanges out), in contrast to the net flows (net exchanges plus sales net of redemptions) typically considered in the fund flows literature and used to this point in our own exploration of seasonality in flows. Ben-Rephael, Kandel, and Wohl (2012) suggest that net exchanges reflect the asset allocation decisions of fund investors, in contrast to sales net of redemptions which incorporate long-term savings, withdrawals, and short-term liquidity needs. If seasonally varying risk aversion indeed impacts investor asset-allocation decisions then a clear implication of Ben-Rephael, Kandel, and Wohl's (2012) claim is that this impact should be evident in net exchanges.

The regression model we estimate for net exchanges is:

$$\begin{aligned} NetExchange_{i,t} &= \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R_{i,t}^{Year} + \mu_{i,CapGains}R_{i,t}^{CapGains} \\ &+ \rho_{i,1}NetExchange_{i,t-1} + \rho_{i,3}NetExchange_{i,t-3} + \epsilon_{i,t}, \end{aligned} \tag{2}$$

where i references the asset class. The dependent variable, $NetExchange_{i,t}$, is the month t net exchange expressed as a proportion of month $t-1$ total net assets, and the remaining variables are as previously defined. In this model we exclude personal savings because exchanges between funds should be invariant to this quantity; indeed a point of looking at net exchanges is to expunge the impact of savings directly rather than simply to control for it in the regression model. We do not include dummy variables for the months of November through February in this model as the motivation for these dummies is lacking for net exchanges. That is, we already control for capital gains, and furthermore the other flow seasonalities which the dummy variables might be helpful for controlling (the reinvestment of dividend and capital gains distributions from mutual funds that concentrate around the year-end and flows from variable compensation such as year-end bonuses) should not impact net exchanges. Nonetheless, in Appendix S1, we provide a robustness check that confirms the inclusion or exclusion of these dummy variables does not qualitatively change the results.

We estimate Equation (2) as a system of equations using Hansen's (1982) GMM and Newey and West (1987, 1994) HAC standard errors. Table 5 contains estimation results. Similar to the results presented for net flows, the $\hat{OR}_t$ estimated coefficients for net exchanges are significantly negative for the riskiest asset class, equities, and significantly positive for the safest class, the money market. Just as we saw above, the money market class displays the largest magnitude onset/recovery effect. For the three categories between the safest and riskiest extremes, we see a mix of positive and negative coefficient estimates, with the estimate insignificant for the hybrid class. The magnitudes of the coefficient estimates on the intermediate-risk categories lie between the values for the equity and money market categories. In terms of R^2, there is again substantial variation in fit across categories with uniformly smaller R^2 values for net exchanges than for flows, most remarkably for the money market category. The hybrid fund category flows are the most easily fit with an R^2 of approximately 60 percent and the money market fund class is the most difficult to fit with an R^2 below 7 percent.

The statistics in Panel B reveal that the onset/recovery estimates are jointly statistically different from zero and different from each other across asset classes, again strongly rejecting the null of no seasonal-depression-related effect. The goodness-of-fit test indicates that the over-identifying moment restrictions we use to estimate the model are not rejected.

D Economic Magnitude

One way to assess the economic impact of the influence of seasonally varying risk aversion on net flows and net exchanges is directly from the $\hat{OR}$ coefficient estimates. For example in Table 4 (based on net flows), the $\hat{OR}$ coefficient estimate is approximately 1.4 for the money market class. To calculate economic impact, we multiply 1.4 by the value of the onset/recovery variable for a given month. In September, onset/recovery equals 38 percent (as reported in Section II). Thus, the average economic impact of seasonally varying risk aversion on money market fund flows in the month of September is roughly 0.52 percent of the previous month's total net assets of the taxable government money market class.

Another way to evaluate the economic magnitude is by examining the percentage of the seasonal variation, from fall trough to spring peak, captured by the onset/recovery variable. For U.S. equity mutual funds in Figure 2, realized flows reach a trough of about 0.25 (as a proportion of prior-month TNA) in the fall and reach a peak of about 0.95 in the spring. In comparison, the fitted value based on the onset/recovery variable troughs around 0.5 and peaks around 0.65. Thus for U.S. equity mutual fund flows, the variation in the fitted value accounts for roughly 20 percent of the seasonal variation in the realized series. For U.S. money market flows, the fitted value accounts for roughly 50 percent of the seasonal variation.

Yet another way to assess the economic magnitude is by calculating the actual dollar flows associated with the impact of seasonally varying risk aversion. For example, in September 2004 total net assets of the taxable government money market class was 353 billion dollars. Multiplying that value by the 0.52 percent of TNA we calculated above yields an onset/recovery-associated economic impact of approximately 1.5 billion dollars flowing into the money market asset class in September 2004. In the spring, the economic impact was such that about 1.8 billion dollars flowed out of money market funds in March 2005. These are immediate impacts (not accounting for the autocorrelation in the flows), which understates the impact. Accounting for autocorrelation leads to a total impact closer to 3 to 4 billion dollars.[36]

In Figure 5 we summarize the economic impact on net flows and exchanges (accounting for autocorrelation) for all five asset classes, for 2006. Each line represents the average monthly economic magnitude of the seasonally varying risk aversion effect for a given fund. The thickest dashed line corresponds to the money market. Our estimated models for the impact of onset and recovery

[36]To calculate the total monthly impact in the setting of a model with autoregressive terms, we divide the immediate impact by one minus the sum of the autoregressive coefficients. In the case of money market flows, we can see from Table 4 that this amounts to multiplying by roughly 2.5. We plot the total monthly impact in Figure 5.

U.S. Flows Attributed to Seasonally Varying Risk Aversion,
in Billions of Dollars

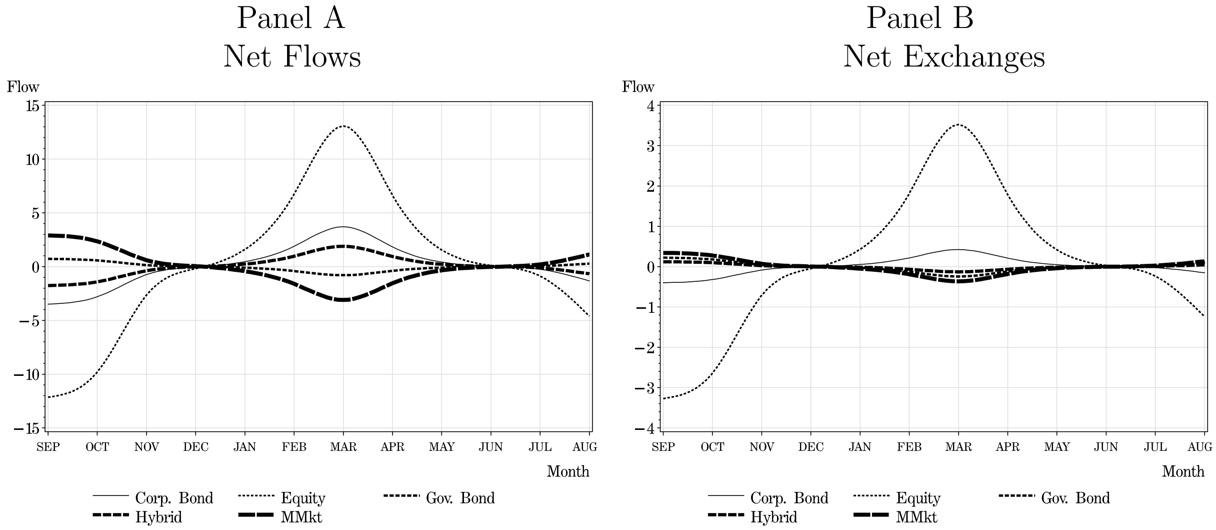

Figure 5: This figure contains the monthly net flows and net exchanges due to onset/recovery, in billions of dollars, by fund asset-class, for 2006. The legend indicates which lines represent which classes, provided by the Investment Company Institute. Panel A presents total net flows predicted from Equation (1) as arising from onset/recovery, Panel B presents total net exchanges predicted from Equation (2) as arising from onset/recovery.

suggest that seasonally varying risk aversion reduces net flows to equity funds by approximately 13 billion dollars (circa 2006), and increases flows to money market funds by approximately 3 to 4 billion dollars, on average, during the fall month of September, reversing in the spring month of March. Net exchanges are approximately 25 percent as large as net flows. Other asset classes exhibit less extreme flows due to seasonally varying risk aversion than the riskiest and safest fund categories.[37]

If we aggregate the economic magnitudes across all categories for a given month in Figure 5, it is apparent that the onset/recovery-associated mutual fund flows do not net out, even approximately, to zero across the categories. When aggregated across all fund categories, the net flows attributable to onset/recovery indicate that net outflows in the fall and net inflows in the winter (aggregated across asset classes) are at maximum about 10 billion dollars per month in September and March, roughly 5 billion in October and February, and roughly 2 billion in November and January, respectively. This works out to approximately 6 billion in average monthly outflows in the fall months

[37]Robustness checks with a model *excluding* autoregressive terms confirms the rough magnitudes of these economic effects; see Appendix S3, a supplement available on request.

and 6 billion in average monthly inflows in the spring months and raises the question, is there some other counterbalancing category of savings to/from which funds flow? The largest savings category is, perhaps, bank accounts, including checking, savings, and money market accounts (separate and distinct from money market mutual funds).

To answer this question, in untabulated analysis we considered deposit data (adjusted for inflation but unadjusted for seasonality) provided by the Board of Governors of the Federal Reserve System.[38] We found that bank accounts do indeed have inflows and outflows that match the direction of money market fund flows: inflows in the fall and outflows in the winter. The monthly winter outflows are just over 4 billion dollars per month on average, a reasonable match to the estimate for the unaccounted-for winter fund outflows, but the fall bank account inflows are large, at roughly 19 billion dollars per month on average, much larger than the unaccounted-for inflows of 6 billion dollars. Some of these flows are likely an artifact of individuals saving in advance of holiday spending, and saving does peak late in the quarter. If we leave out the December buildup in deposits, we have an average monthly flow of approximately 10 billion dollars, a closer match to the unaccounted-for fall fund outflows.

VI Canadian Flows

In this section, we explore the seasonality of mutual fund flows in Canada, a similar but more northerly financial market relative to the U.S. Since Canada's population resides at latitudes north of the U.S., if the seasonally varying risk aversion hypothesis is correct we should see more exaggerated seasonality in flows than we see in the U.S.[39] The Investment Funds Institute of Canada (IFIC) provided us with Canadian fund flow data that are similar to the previously described ICI data

[38]We obtained seasonally unadjusted total savings deposits and demand deposits plus other checkable deposits from the St. Louis Federal Reserve Bank, series IDs SAVINGNS and TCDNS respectively, deflated with CPIAUCNS (the consumer price index for all urban consumers, seasonally unadjusted, from the U.S. Department of Labor: Bureau of Labor Statistics).

[39]The U.S. population centroid (mean center) is approximately 37 degrees north (U.S. Census Bureau, based on the 2000 census), whereas the Canadian population centroid is approximately 48 degrees north. See Kumler and Goodchild (1992).

for the U.S. The IFIC data were provided based on 10 categories of funds which we translate into four broad categories: equity, hybrid, fixed income, and global fixed income. In Table 6 we provide details on the construction of the four categories of Canadian funds.

We focus on net exchanges rather than net flows for Canada because net flows are heavily impacted by peculiarities of Canadian tax law regarding tax-shielded and deductible retirement savings, known as registered retirement savings plans (RRSP). Although analogous to U.S. 401Ks, the Canadian RRSP deadline for eligible contributions is March 1 of the calendar year following the December 31 end of tax year, with Canadian financial institutions running intensive marketing campaigns encouraging RRSP contributions during January and especially February. This leads to very sharp increases in net flows into all fund categories in the first three months of the calendar year. The Canadian net flows pattern peaks in February, with substantial contributions to RRSPs extending even to the last eligible day for contributions, March 1, which impacts March flows as well. For every Canadian fund category we study, January, February, and March flows dominate the year, making it challenging to distinguish flow patterns over this period that are unrelated to a tax-year effect. Although we see autumn patterns in Canadian net flows data consistent with seasonally varying risk aversion (unconditional flows into safe funds and out of risky funds), we turn to Canadian net exchanges to formally evaluate seasonalities without the complications induced by Canadian retirement savings legislation.

Table 7 contains summary statistics on the Canadian net exchange data. The range of the data extends from January 1992 through November 2010. (The need for lagged values restricts the estimation period to start in January 1993.) As we remarked for the U.S. data, concerns about the chaotic flows during the financial crisis, in particular flows in and out of money market funds, motivates us to end the sample in December 2006 for the purposes of model estimation. Net exchanges are reported as a proportion of the fund's prior end-of-month total net assets. Panel A reports summary statistics on net exchanges across asset classes, the means of which net to close to zero (after weighting by the respective asset class prior-month asset values). The volatility of net exchanges is similar to that for U.S. fund exchanges, the skewness is negative except for equities, and the net exchanges are strongly fat-tailed, again similar to U.S. net exchanges. Panel B contains summary statistics for the mean monthly return over the past year (R_t^{Year}, the return-chasing measure) and the capital gains measure ($R_t^{CapGains}$, the cumulated return to holding the fund from the previous year's January 1 – the start of the tax year in Canada – until month $t-1$), by asset class.[40]

Panel C of Table 7 contains summary statistics for the monthly excess asset class returns (in excess of the 30-day U.S. Treasury rate, although results are not sensitive to the risk-free rate employed). The month t return for asset class i is calculated as $R_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} - NetFlow_t}{TNA_{t-1}}$, which assumes that all distributions are reinvested in the funds. The data reveal familiar patterns, with equity and hybrid excess returns being the largest and most volatile, although global fixed income has been quite volatile over the sample period. The excess returns show a virtually monotonically declining CAPM beta, suggesting declining exposure to systematic risk across this ordering of fund asset classes. We also present $\hat{OR}$ coefficient estimates from a regression of excess returns on onset/recovery. These estimates are consistent with the seasonally varying risk aversion hypothesis: large and negative for equity and hybrid classes, and large and positive for both fixed income classes.[41] Panel D contains correlations between monthly net exchanges across the asset classes. Note that the strongest correlation is -0.78, which is the correlation between the equity and fixed income categories. As with the U.S. data, investors tend to commonly substitute equity fund investments with safer fixed income investments, and vice-versa.

In Figure 6, we consider unconditional patterns in net exchanges for the riskiest and safest IFIC asset classes, equity funds (Panel A) and fixed income funds (Panel B), represented by thick solid

[40] Recall that for the U.S., the primary capital gains variable measures gains starting from November, consistent with the October 31 tax year-end for mutual funds in the U.S. Because the start of the Canadian tax year is January 1, there is no analogous two month overhang period in Canada. Thus, for Canada, the capital gains variable takes on non-zero values for all months of the year except January (the value is zero in January by construction). We do not have access to Canadian realized capital gains, and so we are restricted to analysis based on this returns-based proxy for capital gains. The findings for Canada are robust to excluding the capital gains variable from the model.

[41] The CAPM beta and the coefficient estimate on the onset/recovery variable are estimated in separate regressions, as was performed for the U.S. Coefficients are produced in a system-equation estimation using the seemingly unrelated regression technique and heteroskedasticity consistent standard errors, again as was done for the U.S.

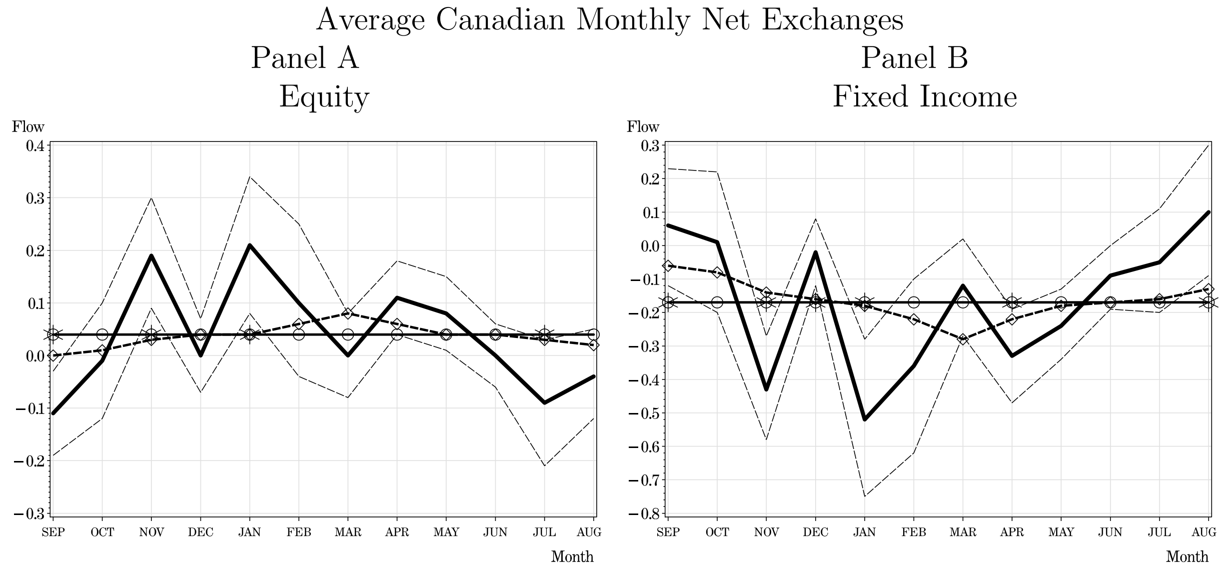

Figure 6: Panel A plots monthly average **equity** asset class fund total net exchanges, Panel B monthly average **fixed income** asset class fund total net exchanges (both as a proportion of prior-month fund TNA), indicated with a thick solid line, and average fitted values implied by the onset/recovery coefficient from estimating Equation (3), indicated with a dashed line with diamonds. The plots also include a 90 percent confidence interval around the monthly means (shown with thin dashed lines) and the average exchanges throughout the year (represented by solid lines with circles – and an x mark in cases where the average return falls outside of the confidence interval). The data, provided by the Investment Funds Institute of Canada, span January 1993 through December 2006.

lines. The unconditional seasonal patterns in the Canadian net exchanges are very similar to that seen in the U.S.: net exchanges are below (above) average for equity (fixed income) funds during the summer/early fall, and above (below) average during the winter/early spring. This unconditional evidence is consistent with investors' seasonally varying risk aversion impacting exchanges, with depression-affected investors shifting their portfolios between risky and safe funds depending on their seasonally varying risk aversion. In each panel, the thin dotted lines surrounding the thick solid line are the 90 percent confidence intervals around the average monthly exchanges.[42] We see several instances of statistically significant (unconditional) deviations of the equity fund exchanges from annual mean exchanges, lower in the summer/fall and higher in the winter/spring. The dashed line marked with diamonds represents the average monthly fitted values predicted from the impact of the onset/recovery variable in a regression model that controls for various other conditional

[42]These confidence intervals are produced similarly to the approach for U.S. flows and exchanges. We exploit the information in the cross-sectional variability across the fund asset classes by using a system of equations and estimating a fixed-effects model with twelve dummy variables (one for each month). Again, to calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. The instruments used for the regression are the 12 monthly dummy variables.

effects (Equation (3), which we introduce below). Unconditional plots and summary statistics are consistent with seasonally varying investor risk aversion influencing exchanges, but these are no substitute for formal conditional analysis, to which we now turn.

A Regression Model

The regression model we consider is:

$$\begin{aligned} NetExchange_{i,t} &= \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t} + \rho_{i,1}NetExchange_{i,t-1} \\ &\quad +\rho_{i,3}NetExchange_{i,t-3} + \rho_{i,6}NetExchange_{i,t-6} + \epsilon_{i,t}, \end{aligned} \tag{3}$$

where i references the mutual fund asset class. The monthly net exchanges are computed as exchanges in minus exchanges out. The dependent variable is monthly fund net exchanges as a proportion of the previous month's TNA. $\hat{OR}_t$ is the onset/recovery variable. Unfortunately, we were not able to obtain Canadian fund family advertising data; the remaining explanatory variables are as follows. $R^{Year}_{i,t}$ is the return to fund asset class i over the prior 12 months (*i.e.* from month $t-13$ through to month $t-1$), included to control for return-chasing exchanges. $R^{CapGains}_{i,t}$ is included to control for the influence of capital gains overhang on exchanges. Unlike the U.S., mutual funds in Canada did not face the U.S. Tax Reform Act of 1986, and tax reporting on capital gains follows the tax year, January through December. Hence $R^{CapGains}_{i,t}$ equals the cumulated return to holding the fund from the start of the tax year until month $t-1$; by construction this variable equals zero for January. In modeling Canadian net exchanges, we do not include dummy variables for the months of November through February, just as we did not for U.S. exchanges. (Recall that the motivation for including the monthly dummies is lacking for net exchanges; capital gains are controlled for directly and net exchanges are unaffected by reinvestment seasonalities and year-end bonuses, the latter of which are relatively less common in Canada in any case.) Nonetheless, in Appendix S1, we provide a robustness check that confirms the findings do not depend on the inclusion/exclusion of these dummy variables.

We estimate Equation (3) as a system of equations using Hansen's (1982) GMM and Newey and West (1987, 1994) HAC standard errors.[43] Table 8 contains estimation results. Consider, first, the coefficient estimates on the onset/recovery variable. The equity and hybrid asset classes both have negative and statistically significant $\hat{OR}_t$ coefficients. Recall that the onset/recovery variable itself is positive in the summer/fall and negative in the winter/spring (see Figure 1). Thus, the implication is that equity fund exchanges are expected to be below-average in the summer/fall and above-average in the winter/spring, as displayed in the unconditional plot in Figure 6. The onset/recovery coefficient estimate is positive and statistically significant for both of the fixed income asset classes, implying fixed income fund exchanges are expected to be above average in the summer/fall and below average in the winter/spring, again as we see unconditionally.

It is interesting to compare the magnitude of the coefficient estimates on the onset/recovery variable for Canadian and U.S. fund exchanges. One way to identify the seasonally varying risk aversion effect, distinct from other seasonal influences, is to consider an implication of the hypothesis, that net exchanges should be more pronounced the further the market is away from the equator, consistent with the clinical observation that the prevalence of seasonal depression generally increases with distance from the equator.[44] The average $\hat{OR}_t$ value across the U.S. equity and hybrid fund class net exchanges (based on values in Table 5) is approximately -0.08 while the average onset/recovery coefficient across the Canadian equity and hybrid fund classes net exchanges is approximately -0.14 (based on values in Table 8). The U.S. government bond and money market fund class net exchanges onset/recovery coefficient is approximately 0.16 (again based on values in Table 5) compared to the Canadian bond and global bond fund class net exchanges average coefficient of 0.30 (again based on values in Table 8). That is, for both risky asset class net exchanges and safe asset class net exchanges, we see approximately double the proportional movement in Canada that we see in the

[43] To calculate standard errors, we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. The instruments used for the regression include the full set of explanatory variables. Specifically, for each equation we include $\hat{OR}_t$, lags 1, 3, and 6 of the dependent variable, $R_{i,t}^{Year}$, and $R_{i,t}^{CapGains}$.

[44] See Magnusson (2000).

Time Series of Canadian Net Exchanges

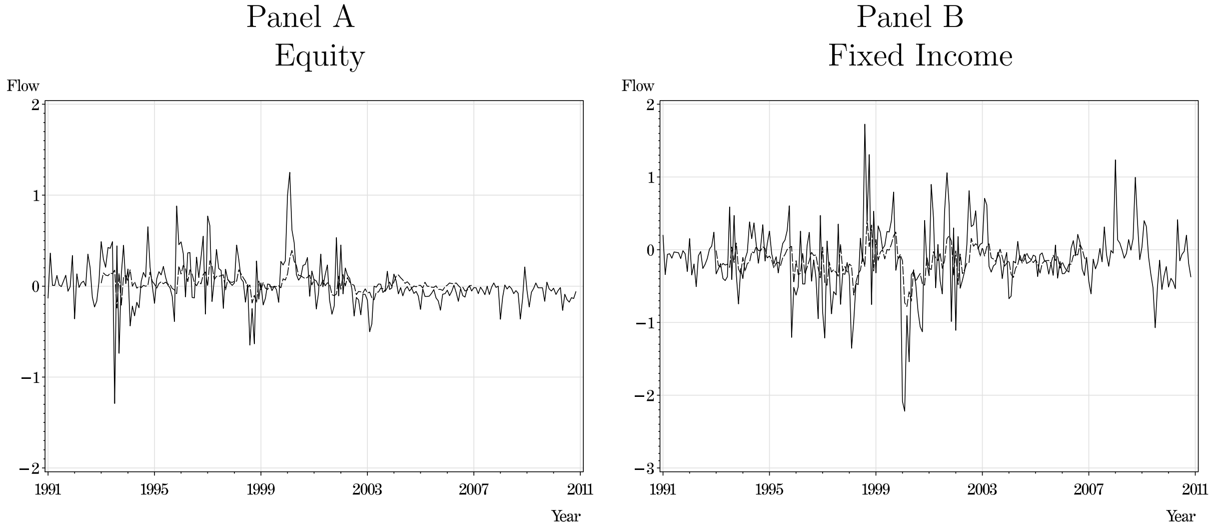

Figure 7: Panel A contains the time series of monthly **equity** fund net exchanges and Panel B the time series of monthly **fixed income** fund net exchanges (both as a proportion of fund TNA), indicated with a solid line, and the monthly fitted values from estimating Equation (3),indicated with a dashed line. The data, provided by the Investment Funds Institute of Canada, span January 1992 through December 2010. The model is estimated over the period January 1993 through December 2006, hence the fitted series starts later and ends earlier than the realized series in the plot.

U.S., on average. Of course the dollar magnitudes of both these exchanges are much larger for U.S. funds due to the size of the U.S. market. The remaining coefficient estimates are similar to what we have seen earlier; there is strong evidence of autocorrelation, return chasing, and some impact consistent with the avoidance of funds that have experienced recent capital gains.

In Panel B of Table 8, we present statistics testing the joint significance of the onset/recovery coefficient estimates and testing model fit. These tests provide strong evidence of a seasonal pattern in fund exchanges consistent with seasonally varying risk aversion influencing asset-allocation decisions, and the goodness-of-fit test indicates that the over-identifying moment restrictions we use to estimate the model are not rejected.

The time-series fit of the models is shown in Figure 7, Panels A and B, for the equity and fixed income asset fund cases respectively. The noisiness of the series is evident from these plots, as are the impacts of some notable macro events such as the currency crises of the late 1990s and the year-2000 tech boom.

In Figure 8, we summarize the average dollar impact on net exchanges associated with on-

Canadian Net Exchanges Attributed to Seasonally Varying Risk Aversion,
in Billions of Canadian Dollars

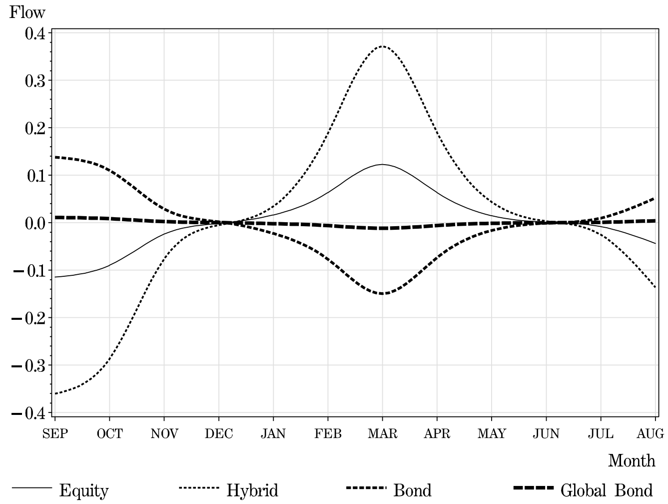

Figure 8: This figure reports the monthly net exchanges due to seasonally varying risk aversion, in billions of Canadian dollars, for equity, hybrid, fixed income and global fixed income funds, for 2006, predicted from Equation (3) as arising from onset/recovery. Data provided by the Investment Funds Institute of Canada.

set/recovery for Canadian funds, for 2006.[45] Each line represents, for a given asset class, the average monthly economic magnitude of the effect we attribute to seasonally varying risk aversion. The thin solid line corresponds to equities, the thin dashed line that varies most corresponds to the hybrid class, the dashed line that moves most in an opposing fashion relative to the equity and hybrid classes is the fixed income category (labeled bond), and the thick dashed line that varies least is the global fixed income category (labeled global bond). We see that both bond asset classes display opposing movements relative to the equity and hybrid asset classes. The annual variation in net exchanges due to onset/recovery for Canadian hybrid and equity classes peaks around plus-or-minus .5 billion Canadian dollars (CAD) in total.[46] The domestic fixed income asset class in Canada varies by roughly plus-or-minus .14 billion dollars, and the global fixed income asset class varies minimally.[47] The Canadian net exchanges are relatively large compared to the U.S. when considering the economy of the U.S. is roughly 11 times larger than Canada's. For comparison, the U.S. equity net exchanges oscillate approximately plus-or-minus 3.5 billion dollars over the seasons,

[45]To estimate the total monthly impact in the setting of a model with autoregressive terms, we divide the immediate impact by one minus the sum of the autoregressive coefficients. This is identical to the process used for the U.S.

[46]Exchange rates circa 2006 placed a ten to fifteen percent premium on the U.S. dollar.

[47]Untabulated robustness checks exploiting the moment condition that the net exchanges sum to zero do not result in qualitative changes to the results.

circa 2006, roughly 15% less proportionally than Canada after accounting for the exchange rate, and the U.S. money market and government bond fund classes vary seasonally by roughly plus-or-minus a half billion dollars, less than one tenth the variation we see in the safe asset classes in Canada. The relatively larger economic impact on Canadian versus U.S. net exchanges aligns with the relatively larger Canadian versus U.S. coefficient estimates discussed above.

VII Australian Flows

In this section, we test whether the relation of mutual fund flows to the seasonal onset/recovery pattern is similar in a developed market in the southern hemisphere, where the relation between the calendar and the seasons is offset by six months relative to North America. Also note that the Australian population centroid is roughly at the latitude of Sydney, 34 degrees south.[48] This provides a different way to rule out the possibility that the seasonal results arise due to the influence of particular calendar months, perhaps as a result of a turn-of-the-year effect or a tax-timing effect.

Specifically, we examine net flows to/from Australian-domiciled equity funds that invest in Australian equities, with the assumption that the majority of flows for these funds come from individuals domiciled in Australia. These individual investors are confronted with seasons that are six months out of sync relative to seasons in the northern hemisphere. In Australia, the summer solstice occurs in December, while the winter solstice occurs in June; this helps us to identify the seasonally varying risk aversion effect on flows independent of the actual calendar month.

We obtained end-of-month total net assets (TNA) from Morningstar for all Australian-domiciled mutual funds with an Australian equity focus for the period January 1991 to December 2007.[49,50] We estimate monthly net flows for each fund as the fractional change in total net assets, minus the investment return of the fund; flows are then aggregated across all equity funds. The need for

[48]See Hugo (1999).

[49]Although earlier data are available, the number of funds in the database is well below 100 prior to 1991.

[50]The Morningstar equity categories include Large Blend, Large Geared (leveraged), Large Growth, Large Value, Mid/Small Blend, Mid/Small Growth, Mid/Small Value, and Other (natural resources, ethical, quant, etc.).

lagged values restricts the range of data we use in the regression model to start in January 1992 and we again end the sample in December 2006. Unfortunately, Australian net exchange data are not available, and we are not able to obtain data on Australian government money market funds, so we proceed with an analysis that focuses solely on equity fund net flows. To minimize the influence of any potential data errors or outliers, we eliminate all fund-month observations having an inflow or outflow greater (in absolute value) than 10 percent of the prior month-end TNA.[51] Our sample consists of 91 funds with a total market value of 1.6 billion Australian dollars (AUD) on January 1, 1991 (equivalent to roughly 1.2 billion USD at that date), growing to 599 funds with a total market value of 70.2 billion AUD by December 31, 2006 (about 55.3 billion USD at that date). This market is roughly 1 percent the size (in value) of the U.S. equity mutual fund market as of December 31, 2006.

In Table 9 we report summary statistics on the Australian net flows, cumulated returns ($R_{i,t}^{CapGains}$), and returns over the past 12 months (R^{Year}). R^{Year} is expressed as a monthly mean return and $R_{i,t}^{CapGains}$ equals the cumulated return to holding the fund from the previous year's July 1 (the start of the tax year in Australia) until month $t-1$.[52] The mean equity net flow is around half a percent of TNA, and the standard deviation is almost 0.6. The return-chasing measure for Australian equity flows, R^{Year}, and the capital gains overhang measure, $R_{i,t}^{CapGains}$, behave similarly to the U.S. and Canada counterparts. Panel B of Table 9 contains summary statistics for the monthly excess asset class returns (in excess of the 30-day U.S. Treasury rate). The month t return for asset class i is calculated as $R_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} - NetFlow_t}{TNA_{t-1}}$, which assumes that all distributions are reinvested in the funds. The excess returns show fairly high mean returns and comparable volatility to U.S.

[51]There are occasional missing TNA observations for individual funds in the Australian data. Since TNA is used to form the inferred asset-class flows, a missing value for a large fund can artificially reduce estimates of asset-class TNA for a given month, which in turn can lead to a large estimated outflow for that month followed by a large estimated inflow. Filtering the data by eliminating flows greater than 10 percent (in absolute value) minimizes the impact of these errors. Such data points are rare, constituting only 0.15 percent of the sample of fund-months.

[52]This definition of $R_{i,t}^{CapGains}$ is most directly comparable to the Canadian definition of this variable, taking on non-zero values for all months of the year except the first month of the tax year, July in Australia. The variable equals zero in July by construction. We specify $R^{CapGains}$ in this manner for Australia since, unlike the U.S., the start of the Australian tax year for mutual funds aligns with the overall start of the tax year. Our primary results are robust to excluding this capital gains variable from the model.

and Canadian equity returns, with a CAPM beta of about 0.5. The $\hat{OR}$ coefficient estimate is not significant for Australia.[53]

In Figure 9 we informally consider seasonal patterns in investor net flows associated with these Australian equity funds. More formal regression analysis follows. Consider first Panel A. Notice that we plot monthly returns from March through February, that is, starting in the fall and ending in the summer. The Australian equity net flows, denoted by a thick solid line, appear noisier than their U.S. counterparts in Figure 2. The thin dotted lines surrounding the thick solid line are the 90 percent confidence interval around the monthly equity net flows. Compared to the U.S. and Canadian flow data, the Australian evidence shows little statistically significant unconditional seasonality.

The average fitted values implied by the onset/recovery coefficient from estimating the regression model we introduce below (Equation (4)) are represented by the dashed line with diamonds in Panel A. Those fitted values are consistent with seasonally varying investor risk preferences having an impact on flows, and the pattern is identical to U.S. and Canadian equity fund flows, but six months out-of-phase, just as are the seasons. We see equity fund net inflows are lower than average during the Australian fall and are higher than average during most of the Australian winter and spring. Overall, this pattern of onset/recovery fitted values is consistent with seasonal-depression-affected investors shifting their portfolios out of risky funds coinciding in time with their seasonally declining risk aversion, and offset by six months relative to the U.S.

Next we turn to conditional analysis of the Australian data, estimating this regression model:

$$\begin{aligned} NetFlow_{i,t} &= \mu_i + \mu_{\hat{OR}_{South}} \hat{OR}_{South_t} + \mu_{i,R^{Year}} R_{i,t}^{Year} + \mu_{i,CapGains} R_{i,t}^{CapGains} + \mu_{i,May} May_t \\ &\quad + \mu_{i,Jun} Jun_t + \mu_{i,Jul} Jul_t + \mu_{i,Aug} Aug_t + \rho_1 NetFlow_{t-1} + \rho_2 NetFlow_{t-2} \\ &\quad + \rho_3 NetFlow_{t-3} + \epsilon_{i,t}, \end{aligned} \tag{4}$$

[53]The CAPM beta and the coefficient estimate on the onset/recovery variable are estimated in separate regressions. Coefficients are produced using OLS and heteroskedasticity consistent standard errors.

Australian Net Flows

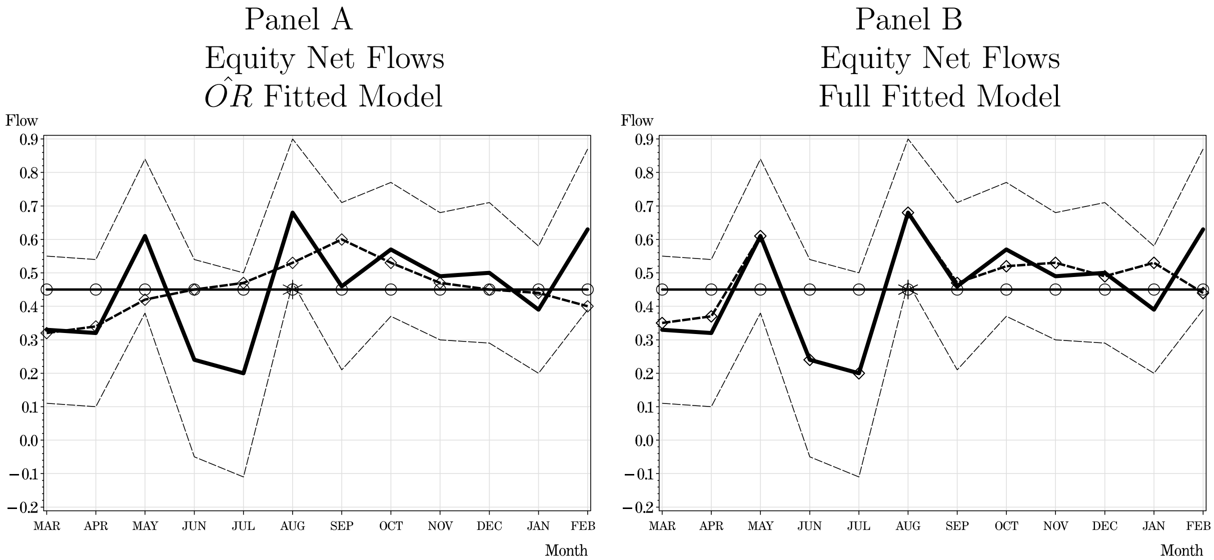

Figure 9: Panels A and B contain monthly average **Australian equity** aggregate fund flows as a proportion of prior-month Australian equity fund TNA, indicated with a thick solid line, and a 90 percent confidence interval around the monthly means (shown with thin dashed lines). Note that these plots start with the month of March, the first month of fall in Australia, to align the seasons relative to the plots for Canada and the U.S. The annual average flow is represented by a solid line horizontal with circles, and an x marks cases where the average return falls outside of the confidence interval. The dashed line with diamonds in Panel A represents the average fitted values implied by the onset/recovery coefficient from estimating Equation (4) and in Panel B represents the average monthly fitted values implied by the full set of coefficient estimates from estimating Equation (4).

where i references the equity mutual fund asset class. The dependent variable, $NetFlow_{i,t}$, is the month t aggregate fund flow expressed as a proportion of month $t-1$ total net assets. $\hat{OR}_{South_t}$ is the onset/recovery variable offset by six months from its U.S. counterpart to align with the southern hemisphere seasons,[54] and $R_{i,t}^{Year}$ is the return to the equity fund asset class over the prior 12 months (*i.e.*, from month $t-13$ through month $t-1$), included to control for return-chasing flows. $R_{i,t}^{CapGains}$, which is included to control for the influence of capital gains overhang on flows, equals the cumulated return to holding the fund from the previous July 1 (the start of the tax year in Australia) until month $t-1$ (hence $R_{i,t}^{CapGains}$ equals zero for July by construction). May_t, Jun_t, Jul_t, and Aug_t are dummy variables for monthly flows, taking on values of 1 in the indicated month, and zero otherwise. We include dummy variables for the months around the tax year, because net flows are likely perturbed by turn-of-year tax effects, much as they are in the U.S.

[54]We are not aware of any studies that provide estimates of weekly or monthly onset/recovery figures for seasonal depression in Australia's population. Since daylight in the southern hemispheres follows a sine wave shifted by six months relative to the northern hemisphere, we use the northern hemisphere's OR variable shifted by six months as a best-available approximation for the timing of onset and recovery in the southern hemisphere.

and Canada. In robustness checks provided in Appendix S1, we demonstrate that the findings are not driven by inclusion/exclusion of these dummy variables. We are not able to obtain Australian savings-rate or mutual fund family advertising data.

Table 10 contains estimation results for Equation (4). The model, while more parsimonious than that estimated for U.S. flows, still explains much of the variation in Australian flows, with an R^2 exceeding 60 percent. The residuals show no statistically significant evidence of autocorrelation or ARCH effects, and like the U.S. case, unadjusted Australian equity monthly net flows show strong positive autocorrelation. As with U.S. equities, the sign of the onset/recovery variable is significantly negative (recall that we are using a southern hemisphere version of the onset/recovery variable, so that we expect to find the same sign for equity funds in Australia as we saw for equity funds in the northern hemisphere countries). Further, the magnitude is economically meaningful and similar to the findings for U.S. funds: the coefficient value of -0.359 corresponds to a 35.9 basis point impact per unit of the onset/recovery variable, and onset/recovery varies between roughly plus and minus .4. This translates into roughly 14 basis points of seasonal variation in flows in either direction associated with seasonal depression. We find little evidence of return chasing or from capital gains.

The dashed line with diamonds in Panel B of Figure 9, represents the average fitted values from estimating Equation (4), controlling not only for onset/recovery but also the monthly dummies, capital gains, return chasing, and lags of the dependent variable. The model appears to closely fit the seasonality in the Australian flow data.[55] Unreported plots, derived from tables provided in Appendix S1, show that even when the model excludes the turn-of-tax-year dummy variables, the model captures the end-of-tax-year variation that the onset/recovery variable alone does not capture in Panel A.

The time-series fit of the model is shown in Panel A of Figure 10. The model fit is relatively consistent over the sample, with the largest oscillations occurring around the end of the Australian

[55] The appearance of an especially close fit in the months of May, June, July, and August is a combination of the inclusion of dummy variables for those months and the simplicity of the Australian model relative to the U.S. and Canadian models.

Australian Time Series of Net Flows &
Net Flows Attributed to Seasonally Varying Risk Aversion,
in Billions of Australian Dollars

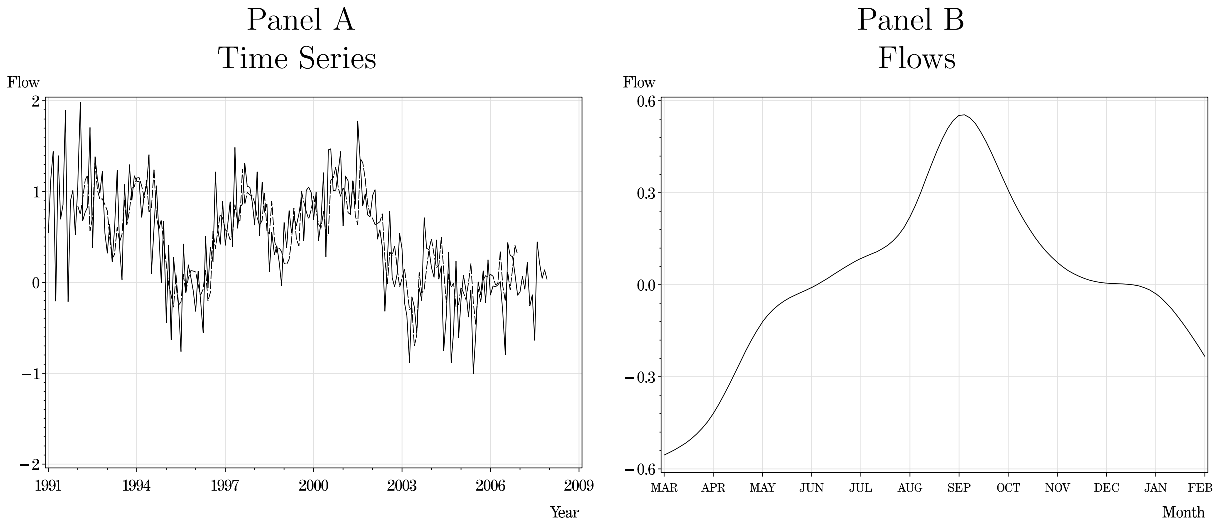

Figure 10: Panel A reports the monthly net flows due to onset/recovery, in billions of AUD, for equity funds, for 2006. Panel B contains the time series of monthly **Australian equity** aggregate fund flows as a proportion of equity TNA, indicated with a solid line, and the monthly fitted values from estimating Equation (4) indicated with a dashed line. The data on equity fund flows, provided by Morningstar, span January 1 1991 through December 31 2007. The model is estimated over the period January 1992 through December 2006, hence the fitted series starts later and ends earlier than the realized series in the plot.

tax year. In Panel B, we summarize the average economic impact associated with seasonally varying risk aversion for Australian equity funds, for 2006, with the thin line representing flows due to onset/recovery.[56] Naturally the flows are much smaller in magnitude than the corresponding flows for the U.S., varying between maximum outflows and inflows of approximately 0.4 billion AUD (roughly 0.3 billion USD in 2006). Since the U.S. economy is roughly 15 times larger than Australia's, the size-adjusted equity flows for Australia are less than half those of U.S.flows, which are close to 15 billion USD for the equity class alone.

VIII Robustness of Results

Here we report the results of a variety of robustness tests. First, in a previous version of this paper, we used returns and total net assets from the CRSP Mutual Fund Database to produce

[56]To estimate the total monthly impact in the setting of a model with autoregressive terms we divide the immediate impact by one minus the sum of the autoregressive coefficients. This is identical to the process used for the U.S. and Canada.

flows for risky and safe categories of mutual funds. Results are qualitatively identical to those we report here based on the ICI data. Second, we find virtually identical results for the U.S. when we exclude the first few years or the first half of the sample. Third, the ICI implemented changes in their data collection practices in January 1990, an artifact of which is outliers in the flow and returns data in that year. As a result, we explored omitting 1990 from the sample, which produces no qualitative changes in the results. Fourth, in the main analysis, we end the U.S., Canadian, and Australian samples uniformly in December 2006 to avoid possible contamination from the financial crisis. In robustness checks, we extended the sample end points to include the most recent set of data available. Our findings with respect to the influence of onset/recovery on flows are qualitatively unchanged. Fifth, we re-estimated the models while imposing a moment condition on flows due to onset/recovery (and exchanges due to onset/recovery) so that that the total impact from onset/recovery would net out to zero. This tightens standard errors, but otherwise does not produce notable changes to the estimation. Sixth, we included in the model a dummy variable to allow a reversal of flows from December to January for the U.S. and Canada (from June to July for Australia) related to tax-year rebalancing, and a dummy variable to allow a reversal of flows from October to November for the U.S. These produce no qualitative differences to the results on seasonally varying risk aversion. Seventh, we used seemingly unrelated regression techniques to estimate the system of equations, with MacKinnon and White (1985) bootstrap heteroskedasticity-robust standard errors and sufficient lags to control for autocorrelation. This approach yields similar results to GMM for both magnitude of the seasonally varying risk aversion effect and significance of the joint effect, although individual onset/recovery coefficients are less statistically significant.

Eighth, we explored alternate proxies for capturing return-chasing behavior, using the prior one month, one quarter, two quarters, or three quarters of returns instead of the past year. As shown in Appendix S1, these model permutations produce no qualitative differences to the core result. Ninth, when we use the *incidence* of seasonal depression (the stock of seasonal-depression-affected individuals) rather than onset/recovery (the *flow* of seasonal-depression-affected individuals) we find qualitatively identical results. These results also appear in Appendix S1. Tenth, we find that excluding turn-of-tax-year dummies (May, June, July, and August for Australia, and November, December, January, and February for the U.S. and Canada) leads to no marked changes to results; see Appendix S1. Eleventh, in Appendix S2 we show that the U.S. results are robust to a less coarse classification of the ICI categories into nine asset classes rather than five (and in untabulated results we find the results are robust to use of the full set of thirty-three categories provided by ICI). Twelfth, for the Canadian data, we estimated the flows models on the 10 asset classes. We found strong evidence consistent with seasonally varying risk aversion impacting returns in this more granular view of the Canadian data. Thirteenth, in Appendix S3 we show that the U.S. results are robust to inclusion/exclusion of lags of the dependent variable (and in untabulated results we find the Canadian and Australian results are also qualitatively invariant to how we control for autocorrelation).

Finally, we explored extensive variations on the way we capture capital gains overhang, detailed in Appendix S1, for net flows and net exchanges each using ten alternative measures of overhang. These robustness checks demonstrate that the findings do not hinge on the way we measure capital gains. The ten alternative measures are as follows: (1) the primary asset-class capital gains measure utilized in Equations (1) and (2) modified to incorporate the predicted capital gains for month t;[57] (2) predicted asset-class cumulative returns from the start of the fiscal year November 1;[58] (3) predicted asset-class cumulative returns from the start of the fiscal year November 1, less

[57] To form this measure of capital gains, we use past (known) realized capital gains, plus a forecast for the current month t. Specifically, in cases where month t is January through October, we first construct predicted capital gains by regressing the capital gains measure on 12 monthly dummy variables (excluding the intercept to avoid perfect multicollinearity) and 12 lags of capital gains. Then the predicted value for month t is the cumulative actual capital gains (price appreciation plus all distributions) from November of the previous year through to month $t-1$ plus the predicted capital gains for month t. In cases where t is November or December, we use the actual October value of the cumulative capital gains, with no special accommodation for predicted capital gains.

[58] To form predicted cumulative returns from the start of the fiscal year, we use past (known) cumulative returns, plus a forecast for the current month t. In cases where t is January through October we first construct predicted cumulative returns by regressing returns on 12 monthly dummy variables (excluding the intercept to avoid perfect multicollinearity). Then the month t value is the cumulative actual capital gains (price appreciation plus all distributions) from November of the previous year through to month $t-1$ plus the predicted returns for month t. In cases where t is November or December, we use the actual October value of the cumulative returns, with no special accommodation for predicted returns.

distributions (which is identically proxy (2) less distributions); (4) cumulative asset-class returns over the past two years;[59] (5) cumulative asset-class returns over the past three years; (6) predicted asset-class capital gains set to zero except for November and December (this is identically proxy (1) set to zero except for November and December);[60] (7) for the equity and hybrid categories: predicted asset-class capital gains set to zero except for November and December, and for the corporate bond, government bond, and money market categories: cumulative asset-class returns for the past fiscal year for November and December only, and zero for all other months;[61] (8) for the equity and hybrid categories: predicted asset-class cumulative returns from the start of the fiscal year November 1, less distributions, and for the corporate bond, government bond, and money market categories: cumulative asset-class returns for the past fiscal year for November and December only, and zero for all other months; (9) cumulative equity returns over the past fiscal year (used as a capital gains measure for all five categories, unlike all other proxies we explore where the measure is asset-class specific) and set to zero except for November and December (the value in November and December is the actual October value of the cumulative equity returns); and (10) a combination of several measures all included in the model simultaneously: (a) cumulative asset-class returns for the previous fiscal year set to zero for all months except for November and December (the value in November and December is the actual October value of the cumulative returns), (b) the capital gains measure used in the primary analysis, and (c) cumulative asset-class returns from the start of the fiscal year November 1 to month $t-1$ (in cases where month t is November or December, we use the actual October value of the cumulative return) plus the predicted value for month t. Our

[59]We employ proxies (4) and (5) in recognition of the fact that capital gains realization can vary with returns over a longer period than the current fiscal year since funds can hold positions for multiple years and can carry accumulated losses forward.

[60]We form this measure in order to isolate the impact of capital gains in the months when capital gains are most likely to affect a shareholder's decision to buy or sell a fund, November and December.

[61]For proxies (7) and (8) we employ different measures for the bond and money market asset classes relative to the equity and hybrid asset classes. Recall that equity funds realize a large fraction of their return as capital gains, and this may influence investors' decisions about the timing of inflows and outflows (motivating our efforts to control carefully for capital gains overhang effects in our primary analysis and in all of these robustness checks). In contrast, for the bond and money market categories there are minimal capital gains. Thus in proxies (7) and (8), we control for capital gains overhang effects in the equity and hybrid categories while instead including an additional variable to capture *return chasing* behavior in the bond categories.

findings are invariant to use of any of these measures, suggesting capital gains overhang does not cause the seasonal variation in flows we study.

IX Conclusion

In this paper, we document a seasonal pattern in mutual fund flows that is consistent with individual investors becoming more risk averse in the fall, as the days shorten, and less risk averse in the winter/spring, as the days lengthen; that is, consistent with individuals experiencing changes in sentiment due to seasonal depression. SAD is a seasonal form of depression that affects somewhere between one and ten percent of the population severely (depending on location and the diagnostic criteria used to test for seasonal depression) and much of the rest of the population sub-clinically, with those affected experiencing depression and risk aversion that increases with the length of night. While prior studies have found economically and statistically significant evidence of a systematic influence of seasonal depression on stock and Treasury bond returns, this study is the first to directly link seasonal cycles in investor sentiment toward risk taking with seasonal patterns in directly measured investment quantities.

Specifically, we find that net flows and net exchanges (a measure of investor sentiment studied by Ben-Rephael, Kandel, and Wohl (2011, 2012)) for the riskiest group of mutual funds, equities, are lower in the fall and higher in the spring, while flows for the safest category, money market funds, exhibit the opposite pattern. We find that these seasonal patterns are significantly related to onset/recovery, after controlling for other prior-documented influences on flows/exchanges including past returns, advertising, and capital-gains distributions. Further, the significant explanatory power of the onset/recovery variable is robust to inclusion/exclusion of sufficient lags of the dependent variable to control for autocorrelation, indicating that the onset/recovery variable is not picking up simple lead-lag effects in unexpected flows. The evidence for mood-related seasonality survives subsample analysis, finer granularity of analysis of fund class, alternative measures of capital gains overhang and return-chasing, various other model refinements, and the study of international fund data, including Canada (a more northerly country where flows exhibit stronger seasonal variation, consistent with the greater prevalence of seasonal depression documented in Canada) and Australia (a southern hemisphere country where the seasonal flow pattern is six months out-of-phase, as are the seasons).

The seasonal flows associated with seasonally varying investor risk aversion are economically large, representing tens of billions of dollars. These large flows are consistent with the seasonal effects in stock and bond returns documented by Kamstra, Kramer, and Levi (2003, 2013) and Garrett, Kamstra, and Kramer (2005). They are also consistent with the general equilibrium asset pricing model explored by Kamstra, Kramer, Levi, and Wang (2013), in which the representative agent experiences seasonally varying risk aversion and seasonally varing intertermporal elasticity of substitution. Further research is needed to investigate whether trades by fund managers due to these investor flows impact stock and bond returns. In addition, future research might investigate the trading behavior of individuals, using brokerage data sets, to study seasonality in investor behavior on a micro level.

Finally, it is noteworthy that the mutual fund industry spends more than half a billion dollars per year on advertising. Our findings suggest that the industry might be well-advised to time their promotion efforts to the seasons. The most fruitful ad campaign may be one that aggressively pushes safe classes of funds in the fall when many investors are more risk averse than usual and then promotes riskier funds through the winter and into spring when risk aversion is reverting to "normal" levels. Of course, as the seasons continue their cycle independently of financial markets, no level of risk aversion should occupy a favored "normal" status. This is an important implication for any research where outcomes are sensitive to the specific assumptions made about risk aversion.

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Table 1: Seasonality in U.S. Capital Gain & Dividend Distributions to Mutual Fund Shareholders

We report seasonal patterns in capital gains and dividend distributions among all mutual funds over 1984 to 2007. To compute the percent of capital gains distributed during a given month, we first eliminate capital gains distributions that are a return of capital (i.e., are non-taxable). Then, we divide the value of capital gains distributions occurring during that month (across all years) by the total value of capital gains distributions across all months. The column on the left presents these percentages, while the column on the right presents results computed for dividend distributions. For dividend distributions, we exclude all non-taxable distributions, such as the tax-exempt portion of dividends distributed by municipal bond funds.

Average Percentage Taxable Distributions (Percent of Total Value of Distributions, by Month)

Month	Capital Gains	Taxable Dividend
January	1.1	6.9
February	0.9	7.0
March	2.4	8.9
April	1.1	7.3
May	1.5	7.2
June	3.8	9.3
July	1.9	7.5
August	1.8	7.3
September	2.2	9.3
October	1.6	7.7
November	9.8	7.6
December	72.0	14.1

Table 2: Classification of U.S. Mutual Funds

We map funds from thirty investment objective categories into a set of 5 asset classes, based on characteristics of the individual funds provided in the Investment Company Institute (2003) Mutual Fund Factbook.

Fund Number	ICI Fund	Asset Class
1	Aggressive Growth	Equity
2	Growth	Equity
3	Sector	Equity
4	Emerging Markets	Equity
5	Global Equity	Equity
6	International Equity	Equity
7	Regional Equity	Equity
8	Growth and Income	Equity
9	Income Equity	Equity
10	Asset Allocation	Hybrid
11	Balanced	Hybrid
12	Flexible Portfolio	Hybrid
13	Income Mixed	Hybrid
14	Corporate - General	Corporate Fixed Income
15	Corporate - Intermediate	Corporate Fixed Income
16	Corporate - Short Term	Corporate Fixed Income
17	High Yield	Corporate Fixed Income
18	Global Bond - General	Corporate Fixed Income
19	Global Bond - Short Term	Corporate Fixed Income
20	Other World Bond	Corporate Fixed Income
21	Government Bond - General	Government Fixed Income
22	Government Bond - Intermediate	Government Fixed Income
23	Government Bond - Short Term	Government Fixed Income
24	Mortgage Backed	Government Fixed Income
25	Strategic Income	Corporate Fixed Income
26	State Municipal Bond - General	Government Fixed Income
27	State Municipal Bond - Short Term	Government Fixed Income
28	National Municipal Bond - General	Government Fixed Income
29	National Municipal Bond - Short Term	Government Fixed Income
30	Taxable Money Market - Government	Money Market

Table 3: Summary Statistics on U.S. Monthly Percentage Asset Class Net Exchanges, Explanatory Variables, and Associated Returns to Holding These Funds

This table contains summary statistics on U.S. monthly fund percentage net flows, percentage net exchanges, explanatory variables, and returns over February 1984 through January 2010, for a total of 312 months (with the exception of R^{Year}, the return-chasing measure, for which the data starts in February of 1985, and $R^{CapGains}$, the capital gains measure, for which we have data from November 1984 to January 2007). Flows data are from the Investment Company Institute, and returns were calculated using fund flow and total net asset changes available from the Investment Company Institute. The returns in Panel D are in excess of the 30-day T-bill rate, with the 30-day T-bill rate available from CRSP. $R^{CapGains}$, the capital gains measure, equals the realized capital gains return to holding the fund from the previous year's November 1 (the start of the tax year for U.S. mutual funds) to the current year's October 31. R^{Year} is the one-year moving average of fund percentage returns, to capture return chasing. The advertising variable is monthly print advertisement expenditures by mutual fund families, detrended by dividing by the previous year's total advertisement expenditure, resulting in a proportion. The advertising data originate from Gallaher, Kaniel, and Starks (2006), Figure 3. Savings are based on real disposable income and expenditures as a percent of real disposable income, annualized, obtained from the Bureau of Economic Analysis. For each set of fund flows and returns we present the mean monthly values (Mean), standard deviation (Std), minimum (Min), maximum (Max), skewness (Skew) and kurtosis (Kurt). For excess returns we also present the CAPM beta and the coefficient estimate on the onset/recovery variable, each estimated in a separate regression. These coefficients are produced in a system-equation estimation using the seemingly unrelated regression technique and MacKinnon and White (1985) bootstrap heteroskedasticity consistent standard errors. We use the CRSP value-weighted total market return, including dividends for the market return. The instruments used for the onset/recovery regression are the onset/recovery variable ($\hat{OR}$) and a constant. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Panel A: Asset Class Percentage Net Flows

Index	Mean	Std	Min	Max	Skew	Kurt
Equity	0.504	0.84	-3.17	4.22	0.446	2.47
Hybrid	0.733	1.32	-2.28	6.67	1.187	1.73
Corporate Fixed Income	0.756	1.19	-2.29	5.83	1.171	2.69
Government Fixed Income	0.782	2.21	-3.62	10.99	2.362	6.16
Money Market	0.581	2.83	-5.02	26.60	3.502	26.12

Panel B: Asset Class Percentage Net Exchanges

Index	Mean	Std	Min	Max	Skew	Kurt
Equity	-0.045	0.36	-2.65	2.52	-0.567	18.30
Hybrid	-0.043	0.21	-0.82	1.10	0.381	4.66
Corporate Fixed Income	-0.020	0.41	-2.67	1.23	-1.763	9.46
Government Fixed Income	-0.062	0.34	-2.22	1.35	-1.810	11.03
Money Market	0.067	0.36	-1.07	3.59	4.039	32.01

Table 3 continues on next page

Table 3, Continued

Panel C: Explanatory Variables

Index	Mean	Std	Min	Max	Skew	Kurt
Advertising	1.010	0.19	0.53	1.72	0.596	0.31
Savings	1.513	0.19	0.56	1.92	-2.053	9.65
Equity Fund Specific:						
$R^{CapGains}$	3.416	2.99	0.00	13.12	1.117	1.52
R^{Year}	0.982	1.47	-4.64	3.82	-1.336	2.08
Hybrid Fund Specific:						
$R^{CapGains}$	1.817	1.62	0.00	6.29	0.860	-0.27
R^{Year}	0.707	0.90	-3.04	2.22	-1.322	3.05
Corporate Fixed Income Fund Specific:						
$R^{CapGains}$	0.413	0.39	0.00	1.78	1.211	1.05
R^{Year}	0.766	0.57	-1.00	2.52	-0.297	0.36
Government Fixed Income Fund Specific:						
$R^{CapGains}$	0.232	0.20	0.00	1.03	1.197	1.47
R^{Year}	0.445	0.44	-0.47	1.88	0.526	0.78
Money Market Fund Specific:						
$R^{CapGains}$	0.001	0.00	0.00	0.00	4.460	19.10
R^{Year}	0.600	0.55	-0.83	2.59	0.921	2.79

Panel D: Asset Class Excess Returns

Index	Mean	Std	Min	Max	Skew	Kurt	Beta	$\hat{OR}$
Equity	0.621	4.50	-20.85	19.09	-0.768	3.49	0.970***	-2.526**
Hybrid	0.358	2.76	-12.72	8.44	-0.917	2.71	0.583***	-1.372*
Corporate Fixed Income	0.411	1.49	-8.02	6.65	-0.504	4.15	0.167***	-0.235
Government Fixed Income	0.085	1.22	-6.58	3.99	-0.740	3.23	0.069***	0.545
Money Market	0.201	1.29	-2.75	12.07	4.066	30.48	-0.044*	0.629

Panel E: Asset Class Net Flow Correlations

Asset Class	Equity	Hybrid	Corporate Fixed Income	Government Fixed Income
Hybrid	0.625***	—	—	—
Corporate Fixed Income	0.343***	0.484***	—	—
Government Fixed Income	0.203***	0.496***	0.718***	—
Money Market	-0.200***	-0.150***	-0.070	-0.040

Panel F: Asset Class Net Exchange Correlations

Asset Class	Equity	Hybrid	Corporate Fixed Income	Government Fixed Income
Hybrid	0.292***	—	—	—
Corporate Fixed Income	0.252***	0.187***	—	—
Government Fixed Income	0.196***	0.116**	0.607***	—
Money Market	-0.730***	-0.380***	-0.490***	-0.470***

Table 4: Regression Results for U.S. Asset Class Net Flows

We report coefficient estimates from jointly estimating the following regression for each U.S. asset class in a GMM framework:

$$
\begin{aligned}
NetFlow_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R_{i,t}^{Year} + \mu_{i,CapGains}R_{i,t}^{CapGains} + \mu_{i,Nov}Nov_t \\
+\mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t + \mu_{i,Feb}Feb_t + \mu_{i,Savings}Savings_{t-1} \\
+\rho_{i,1}NetFlow_{i,t-1} + \rho_{i,3}NetFlow_{i,t-3} + \epsilon_{i,t}.
\end{aligned}
\tag{1}
$$

The data used to estimate the model span February 1985 through December 2006. The monthly net flows are computed as sales, minus redemptions, plus exchanges in, minus exchanges out, all divided by the previous month's total net assets. The explanatory variables are defined in the text. In Panel A we present coefficient estimates with HAC robust t-tests in parentheses. At the bottom of Panel A we present the value of adjusted R^2 for each estimation, a Wald χ^2 test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald χ^2 test statistic for the presence of up to 12 lags of ARCH (both with 12 degrees of freedom). The test for ARCH is a standard LM test of order 12. See Engle (1982). To perform the test for autocorrelation, we augment the regression with 12 lags of the residuals, estimate MacKinnon and White (1985) bootstrap heteroskedasticity-consistent standard errors with OLS and test for the joint significance of these terms. Panel B contains joint test statistics. The first is a χ^2 statistic (with 5 degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly zero across the asset classes, the second is a χ^2 statistic (with 4 degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly equal to each other across the asset classes, and the third is the Hansen (1982) χ^2 goodness-of-fit test of the model based on the optimized value of the objective function produced by GMM. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. We use the full set of explanatory variables as instruments for the regression. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Table 4 continues on next page

Table 4, Continued

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Equity	Hybrid	Corporate Fixed Income	Government Fixed Income	Money Market
μ	-0.767***	-1.321***	-1.409***	-1.263***	1.225*
	(-3.66)	(-4.22)	(-4.08)	(-4.20)	(1.82)
$\mu_{\hat{OR}}$	-0.185**	-0.154*	-0.270**	0.039	1.442***
	(-2.15)	(-1.93)	(-2.36)	(0.45)	(5.32)
μ_{Ads}	0.240***	0.231**	-0.465***	-0.167*	-0.935***
	(2.59)	(2.35)	(-4.01)	(-1.77)	(-3.78)
$\mu_{R^{Year}}$	0.007	0.026	0.065	-0.079	0.327**
	(0.54)	(1.14)	(1.50)	(-1.35)	(2.42)
$\mu_{Savings}$	0.443***	0.857***	1.322***	1.214***	-0.227
	(3.69)	(4.43)	(6.03)	(6.32)	(-0.54)
$\mu_{CapGains}$	-0.019***	-0.059***	-0.137**	-1.339***	72.487
	(-3.32)	(-5.50)	(-2.04)	(-14.1)	(0.38)
μ_{Nov}	0.102*	0.141**	0.085	-0.471***	1.017***
	(1.74)	(2.10)	(0.88)	(-7.73)	(5.66)
μ_{Dec}	0.062	-0.521***	-0.239***	-0.531***	0.854***
	(1.00)	(-6.24)	(-3.49)	(-10.9)	(3.40)
μ_{Jan}	0.408***	0.377***	0.529***	0.393***	-0.634**
	(5.98)	(5.14)	(8.44)	(6.55)	(-2.27)
μ_{Feb}	0.036	-0.134**	-0.009	-0.108*	-0.097
	(0.62)	(-2.29)	(-0.11)	(-1.84)	(-0.54)
ρ_1	0.430***	0.481***	0.521***	0.626***	0.007
	(21.06)	(16.76)	(27.31)	(40.11)	(0.24)
ρ_3	0.310***	0.352***	0.263***	0.280***	0.401***
	(16.37)	(11.68)	(12.70)	(13.47)	(10.86)
R^2	0.509	0.730	0.679	0.909	0.248
AR(12)	18.81*	3.89	16.85	15.47	19.63*
ARCH(12)	38.36***	63.74***	39.40***	46.19***	33.95***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	39.7*** [5]
$\mu_{\hat{OR}}$ equivalent across series	39.6*** [4]
Test of Over-Identifying Restrictions	51.3 [80]

Table 5: Regression Results for U.S. Asset Class Net Exchanges

In this table we report coefficient estimates from jointly estimating the following regression for each of the U.S. asset classes in a GMM framework:

$$NetExchange_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t} + \rho_{i,1}NetExchange_{i,t-1}$$

$$+\rho_{i,3}NetExchange_{i,t-3} + \epsilon_{i,t}. \quad (2)$$

The data used to estimate the model span February 1985 through December 2006. The monthly net exchanges are computed as exchanges in minus exchanges out. The dependent variable is monthly fund net exchanges as a proportion of the previous month's TNA. The explanatory variables are defined in the text. In Panel A we present coefficient estimates with HAC robust t-tests in parentheses. At the bottom of Panel A we present the value of adjusted R^2 for each estimation, a Wald χ^2 test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald χ^2 test statistic for the presence of up to 12 lags of ARCH (both with 12 degrees of freedom). The test for ARCH is a standard LM test of order 12. See Engle (1982). To perform the test for autocorrelation, we augment the regression with 12 lags of the residuals, estimate MacKinnon and White (1985) bootstrap heteroskedasticity-consistent standard errors with OLS and test for the joint significance of these terms. Panel B contains joint test statistics. The first is a χ^2 statistic (with 5 degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly zero across the fund asset classes, the second is a χ^2 statistic (with 4 degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly equal to each other across the asset classes, and the third is the Hansen (1982) χ^2 goodness-of-fit test of the model based on the optimized value of the objective function produced by GMM. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. We use the full set of explanatory variables as instruments for the regression. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.109***	0.024	0.306***	0.131***	-0.137***
	(2.73)	(1.08)	(5.91)	(2.76)	(-3.84)
$\mu_{\hat{OR}}$	-0.152***	0.010	-0.106**	0.105***	0.212***
	(-4.29)	(0.62)	(-1.97)	(3.08)	(4.72)
μ_{Ads}	-0.086**	-0.009	-0.308***	-0.131***	0.168***
	(-2.12)	(-0.44)	(-6.37)	(-2.99)	(4.58)
$\mu_{R^{Year}}$	-0.001	-0.014***	0.045***	0.075***	0.029**
	(-0.32)	(-3.86)	(2.58)	(4.27)	(2.42)
$\mu_{CapGains}$	-0.015***	-0.006***	-0.110***	-0.414***	-22.21***
	(-8.32)	(-3.02)	(-5.55)	(-13.2)	(-4.33)
ρ_1	0.050***	0.620***	0.200***	0.198***	0.190***
	(2.89)	(24.44)	(8.72)	(9.37)	(10.12)
ρ_3	0.156***	0.224***	0.057***	-0.020	0.070***
	(10.48)	(8.56)	(2.76)	(-0.94)	(4.99)
R^2	0.0731	0.6315	0.0876	0.1892	0.0667
AR(12)	10.40	9.08	18.86*	8.70	16.07
ARCH(12)	11.73	17.94	18.26	18.20	36.18***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	61.3*** [5]
$\mu_{\hat{OR}}$ equivalent across series	41.4*** [4]
Test of Over-Identifying Restrictions	50.5 [80]

Table 6: Classification of Canadian Funds

We construct a set of four asset classes (equity, hybrid, fixed income, and global fixed income) from the ten Investment Funds Institute of Canada (IFIC) categories of funds available. The ten IFIC categories are listed, alongside the more detailed Canadian Investment Funds Standards Committee (CIFSC) categories.

IFIC Category	CIFSC Category	Asset Class
Global and International Equity	Asia Pacific Equity	Equity
	Asia Pacific ex-Japan Equity	Equity
	Emerging Markets Equity	Equity
	European Equity	Equity
	Global Equity	Equity
	Global Small/Mid Cap Equity	Equity
	International Equity	Equity
	Japanese Equity	Equity
Domestic Equity	Canadian Dividend and Income Equity	Equity
	Canadian Equity	Equity
	Canadian Focused Equity	Equity
	Canadian Focused Small/Mid Cap Equity	Equity
	Canadian Income Trust Equity	Equity
	Canadian Small/Mid Cap Equity	Equity
Sector Equity	Financial Services Equity	Equity
	Health Care Equity	Equity
	Natural Resources Equity	Equity
	Precious Metals Equity	Equity
	Real Estate Equity	Equity
	Science and Technology Equity	Equity
U.S. Equity	North American Equity	Equity
	U.S. Equity	Equity
	U.S. Small/Mid Cap Equity	Equity
Domestic Balanced	Canadian Equity Balanced	Hybrid
	Canadian Fixed Income Balanced	Hybrid
	Canadian Neutral Balanced	Hybrid
Global Balanced	2010 Target Date Portfolio	Hybrid
	2015 Target Date Portfolio	Hybrid
	2020 Target Date Portfolio	Hybrid
	2020+ Target Date Portfolio	Hybrid
	Global Equity Balanced	Hybrid
	Global Fixed Income Balanced	Hybrid
	Global Neutral Balanced	Hybrid
	Tactical Balanced	Hybrid
Specialty	Alternative Strategies	Hybrid
	Miscellaneous (including Geographic Equity, Commodity, Income and Real Property, Leveraged, Other, Sector Equity, and Undisclosed Holdings)	Hybrid
Domestic Fixed Income	Canadian Fixed Income	Fixed Income
	Canadian Inflation Protected Fixed Income	Fixed Income
	Canadian Long Term Fixed Income	Fixed Income
	Canadian Short Term Fixed Income	Fixed Income
Money Market	Canadian Money Market	Fixed Income
	Canadian Synthetic Money Market	Fixed Income
	U.S. Synthetic Money Market	Fixed Income
	U.S. Money Market	Fixed Income
Global and High Yield Fixed Income	Global Fixed Income	Global Fixed Income
	High Yield Fixed Income	Global Fixed Income

Table 7: Summary Statistics on Canadian Monthly Percentage Asset Class Net Exchanges, Explanatory Variables, and Associated Returns to Holding These Funds

In this table we present summary statistics on Canadian monthly fund percentage net exchanges, and explanatory variables over January 1992 through November 2010, for a total of 227 months (with the exception of R^{Year}, the return-chasing measure, for which the data starts in January of 1993). Flows data are from the Investment Funds Institute of Canada (IFIC), and returns were calculated using fund flow and total net asset changes available from IFIC. The returns are in excess of the 30-day T-bill rate, available from CRSP. $R^{CapGains}$ is the capital gains measure and equals the cumulated return to holding the fund from the previous January 1 (the start of the tax year for mutual funds in Canada) to the month $t-1$, and 0 for January. Unlike the U.S., mutual funds in Canada did not face the U.S. Tax Reform Act of 1986, and tax reporting on capital gains follows the tax year, January through December. R^{Year} is the one-year moving average of fund percentage returns, to capture return chasing. For each set of fund flows and returns we present the mean monthly values (Mean), standard deviation (Std), minimum (Min), maximum (Max), skewness (Skew) and kurtosis (Kurt). For excess returns we also present the CAPM beta and the coefficient estimate on the onset/recovery variable, estimated as described in Table 3. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Panel A: Asset Class Percentage Net Exchanges

Index	Mean	Std	Min	Max	Skew	Kurt
Equity	0.017	0.27	-1.29	1.25	0.460	4.71
Hybrid	0.113	0.39	-2.65	1.64	-1.673	14.08
Global Fixed Income	-0.192	1.04	-6.30	3.86	-1.497	11.17
Fixed Income	-0.142	0.49	-2.22	1.73	-0.280	3.22

Panel B: Explanatory Variables

Index	Mean	Std	Min	Max	Skew	Kurt
Equity Fund Specific:						
$R^{CapGains}$	1.675	8.17	-36.64	26.07	-0.517	3.36
R^{Year}	0.450	1.25	-3.53	2.88	-0.855	0.66
Hybrid Fund Specific:						
$R^{CapGains}$	5.334	9.85	-19.20	40.50	1.391	2.53
R^{Year}	0.777	1.04	-1.84	3.77	0.480	1.19
Global Fixed Income Fund Specific:						
$R^{CapGains}$	0.626	7.98	-26.88	20.05	-1.052	3.40
R^{Year}	0.370	0.86	-2.53	1.95	-1.296	2.47
Fixed Income Fund Specific:						
$R^{CapGains}$	1.058	4.01	-15.11	8.37	-2.129	6.80
R^{Year}	0.282	0.37	-1.18	0.85	-2.381	6.46

Panel C: Asset Class Excess Returns

Index	Mean	Std	Min	Max	Skew	Kurt	Beta	$\hat{OR}$
Equity	0.196	3.63	-15.45	9.10	-0.848	1.86	0.721***	-1.758
Hybrid	0.548	3.49	-9.97	33.77	4.217	38.58	0.456***	-1.231
Global Fixed Income	0.123	2.75	-26.45	16.92	-3.123	44.05	-0.015	1.131**
Fixed Income	0.022	1.27	-15.46	3.17	-8.220	99.51	0.011	0.443*

Panel D: Asset Class Net Exchange Correlations

Asset Class	Equity	Hybrid	Fixed Income
Hybrid	-0.140**	—	—
Global Fixed Income	-0.390***	0.129*	—
Fixed Income	-0.780***	-0.160**	0.215***

Table 8: Regression Results for Canadian Asset Class Net Exchanges

In this table we report coefficient estimates from jointly estimating the following regression for each of the asset classes in a GMM framework based on Canadian data:

$$NetExchange_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,R^{Year}}R_{i,t}^{Year} + \mu_{i,CapGains}R_{i,t}^{CapGains} + \rho_{i,1}NetExchange_{i,t-1} + \rho_{i,3}NetExchange_{i,t-3} + \rho_{i,6}NetExchange_{i,t-6} + \epsilon_{i,t}. \quad (3)$$

The data used to estimate the model span January 1993 through December 2006. The monthly net exchanges are computed as exchanges in minus exchanges out. The dependent variable is monthly fund net exchanges as a proportion of the previous month's TNA. The explanatory variables are defined in the text. In Panel A we present coefficient estimates with HAC robust t-tests in parentheses. At the bottom of Panel A we present the value of adjusted R^2 for each estimation, a Wald χ^2 test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald χ^2 test statistic for the presence of up to 12 lags of ARCH (both with 12 degrees of freedom). The test for ARCH is a standard LM test of order 12. See Engle (1982). To perform the test for autocorrelation, we augment the regression with 12 lags of the residuals, estimate MacKinnon and White (1985) bootstrap heteroskedasticity-consistent standard errors with OLS and test for the joint significance of these terms. Panel B contains joint test statistics. The first is a χ^2 statistic (with 4 degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly zero across the fund asset classes, the second is a χ^2 statistic (with three degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly equal to each other across the asset classes, and the third is the Hansen (1982) χ^2 goodness-of-fit test of the model based on the optimized value of the objective function produced by GMM. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. We use the full set of explanatory variables as instruments for the regression. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Equity	Hybrid	Global Fixed Income	Fixed Income
μ	0.006	-0.016**	-0.219***	-0.110***
	(0.68)	(-2.00)	(-5.65)	(-5.73)
$\mu_{\hat{OR}}$	-0.093**	-0.180***	0.338**	0.270***
	(-2.07)	(-4.24)	(2.23)	(2.80)
$\mu_{R^{Year}}$	0.032***	0.049***	-0.053	0.098*
	(4.16)	(3.20)	(-1.27)	(1.86)
$\mu_{CapGains}$	-0.001	-0.001	0.006	-0.011**
	(-1.36)	(-0.59)	(1.51)	(-2.30)
ρ_1	0.228***	0.440***	0.229***	0.278***
	(6.86)	(9.23)	(9.05)	(8.21)
ρ_3	0.053***	0.179***	0.061***	0.066***
	(2.76)	(5.81)	(3.34)	(2.81)
ρ_6	0.033	0.070***	0.040	0.071***
	(1.50)	(3.99)	(1.55)	(2.86)
R^2	0.0759	0.3832	0.0748	0.1076
AR(12)	13.98	25.64**	5.85	19.05*
ARCH(12)	14.90	38.77***	30.11 ***	9.01

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	24.9*** [4]
$\mu_{\hat{OR}}$ equivalent across series	22.9*** [3]
Test of Over-Identifying Restrictions	33.2 [60]

Table 9: Summary Statistics & Regression Results for Australian Equity Fund Net Flows and Returns

In this table we present summary statistics on Australian monthly percentage net flows and explanatory variables for January 1991 through December 2007. Net flows and equally-weighted monthly fund return data are from Morningstar. R^{Year} is the one-year moving average of fund percentage returns, to capture return chasing. $R^{CapGains}$ is the capital gains measure and equals the cumulated return to holding the fund from the previous July 1 (the start of the tax year in Australia) to the month $t-1$, and 0 for July. We present the mean monthly values (Mean), standard deviation (Std), minimum (Min), maximum (Max), skewness (Skew) and kurtosis (Kurt). For excess returns we also present the CAPM beta and the coefficient estimate on the onset/recovery variable, offset by six months from its U.S. counterpart to align with the southern hemisphere seasons, estimated as described in Table 3. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Panel A: Equity Fund Flows

Index	Mean	Std	Min	Max	Skew	Kurt
Equity Percentage Net Flow	0.452	0.59	-1.01	1.98	-0.042	-0.41
$R^{CapGains}$	6.177	8.74	-11.55	32.60	0.495	-0.27
R^{Year}	1.133	0.95	-1.52	3.96	-0.350	0.41

Panel B: Equity Fund Excess Returns

Index	Mean	Std	Min	Max	Skew	Kurt	Beta	$\hat{OR}$
Equity	0.876	3.15	-11.32	7.65	-0.520	0.58	0.522***	0.3822

Table 10: Regression Results for Australia Equity Fund Net Flows

We report coefficient estimates from estimating the following regression with GMM using Australian data:

$$NetFlow_{i,t} = \mu_i + \mu_{\hat{OR}_{South}}\hat{OR}_{South_t} + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t} + \mu_{i,May}May_t$$
$$+\mu_{i,Jun}Jun_t + \mu_{i,Jul}Jul_t + \mu_{i,Aug}Aug_t + \rho_1 NetFlow_{t-1} + \rho_2 NetFlow_{t-2}$$
$$+\rho_3 NetFlow_{t-3} + \epsilon_{i,t}, \tag{4}$$

The data used to estimate the model span January 1992 through December 2006. The monthly net flows for each fund are estimated as the fraction change in total net assets, minus the investment return of the fund; flows are then aggregated across all equity funds. The explanatory variables are defined in the text. In Panel A we present coefficient estimates with HAC robust t-tests in parentheses. At the bottom of Panel A we present the value of adjusted R^2 for each estimation, a Wald χ^2 test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald χ^2 test statistic for the presence of up to 12 lags of ARCH (both with 12 degrees of freedom). The test for ARCH is a standard LM test of order 12. See Engle (1982). To perform the test for autocorrelation, we augment the regression with 12 lags of the residuals, estimate MacKinnon and White (1985) bootstrap heteroskedasticity-consistent standard errors with OLS and test for the joint significance of these terms. For this case we have no panel with joint tests. We have only one series so that the joint tests on onset/recovery are redundant. The Hansen (1982) χ^2 goodness-of-fit joint test of the model is not valid as we have an exactly identified system. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. We use the full set of explanatory variables as instruments for the regression. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Australia Equity
μ	-0.029
	(-0.64)
$\mu_{Onset of SAD-South Hemi.}$	-0.359**
	(-2.39)
$\mu_{R^{Year}}$	0.054
	(1.07)
$\mu_{CapGains}$	0.003
	(0.50)
μ_{May}	0.217**
	(2.17)
μ_{June}	-0.159
	(-1.09)
μ_{July}	-0.220
	(-1.35)
μ_{August}	0.287***
	(2.59)
ρ_1	0.219***
	(3.90)
ρ_2	0.383***
	(5.29)
ρ_3	0.251***
	(3.72)
R^2	0.592
AR(12)	14.78
ARCH(12)	10.67

Supplementary Appendices S1, S2, & S3:

Available Online or From the Authors On Request

Appendix S1:
Exploring Alternative Capital Gains Overhang Proxies, Alternative Return Chasing Measures, Use of Seasonal Depression Incidence Instead of Onset/Recovery, and Inclusion/Exclusion of Monthly Dummy Variables

In this appendix we provide four sets of robustness checks, exploring alternate capital gains overhang proxies in Section A.1, alternative return chasing measures in Section A.2, use of a seasonal-depression incidence measure in place of the onset/recovery variable in Section A.3, and including or excluding monthly dummy variables in Section A.4. The data, explanatory variables, and table construction are as defined in the text, unless indicated otherwise.

For the robustness checks described in Sections A.1, A.2, and A.3, we use U.S. data as described in Section IV, and we report coefficient estimates from jointly estimating the net flows (or net exchanges) regression model for each of the asset classes in a GMM framework (replacing $R_{i,t}^{CapGains}$ with alternate capital gains overhang measures in Section A.1, replacing $R_{i,t}^{Year}$ with alternate return chasing measures in Section A.2, and replacing OR_t with an alternate seasonal depression measure in Section A.3):

$$\begin{aligned} NetFlow_{i,t} &= \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R_{i,t}^{Year} + \mu_{i,CapGains}R_{i,t}^{CapGains} \\ &+\mu_{i,Nov}Nov_t + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t + \mu_{i,Feb}Feb_t + \mu_{i,Savings}Savings_{t-1} \\ &+\rho_{i,1}NetFlow_{i,t-1} + \rho_{i,3}NetFlow_{i,t-3} + \rho_{i,6}NetFlow_{i,t-6} + \rho_{i,12}NetFlow_{i,t-12} + \epsilon_{i,t} \end{aligned} \quad (1)$$

$$\begin{aligned} NetExchange_{i,t} &= \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R_{i,t}^{Year} \\ &+\mu_{i,CapGains}R_{i,t}^{CapGains} + \rho_{i,1}NetExchange_{i,t-1} + \rho_{i,3}NetExchange_{i,t-3} \\ &+\rho_{i,6}NetExchange_{i,t-6} + \rho_{i,12}NetExchange_{i,t-12} + \epsilon_{i,t}. \end{aligned} \quad (2)$$

We postpone discussing which regression models are estimated in Section A.4 until we reach that section. All the Appendix models have additional lags of the dependent variable included as an additional robustness check; results are very similar when using the more parsimonious models for autocorrelation presented in the main text.

S1.1 Alternative Capital Gains Overhang Proxies

Tables S1.1 through S1.20 contain results based on estimating Equations (1) and (2), sequentially replacing $R_{i,t}^{CapGains}$ with each of the ten alternative capital gains overhang proxies defined in Section VIII. Tables S1.1 through S1.10 employ net flows as the dependent variable and Tables S1.11 through S1.20 employ net exchanges. In all cases, the finding of statistically significant seasonally opposing flows in risky versus safe fund categories remains.

S1.2 Alternative Return Chasing Measures

Tables S1.21 through S1.28 contain results based on different measures for return chasing, including a one month lagged return or a one, two, or three quarter return moving average rather than a one year moving average. (Tables S1.21 through S1.24 correspond to net flows and Tables S1.25 through S1.28 correspond to net exchanges.) In all cases, the findings with respect to seasonal variation in flows are robust to these alternate measures.

S1.3 Use of Incidence Instead of Onset/Recovery

To explore robustness of the results to the way we capture seasonal depression, we estimate the net flow and net exchange models making use of seasonal-depression incidence (i.e. levels) rather than onset/recovery (i.e., flows), with results presented in Tables S1.29 (net flows) and S1.30 (net exchanges). We find qualitatively identical results based on the incidence measures. There is economically large and statistically significant evidence of seasonal flows between safe and risky categories of mutual funds.

S1.4 Inclusion/Exclusion of Monthly Dummy Variables

In this section, we explore robustness of the results to the inclusion/exclusion of monthly dummy variables. In addition to the U.S. data, we also use Canadian and Australian data (as described in Sections VI and VII). Table S1.31 contains results based on estimating the primary U.S. net flows specification (see Equation (1) and Table 4) excluding the dummy variables for November, December, January, and February. Table S1.32 contains results based on estimating the primary U.S. net exchanges specification (see Equation (2) and Table 5) with the addition of the dummy variables for November, December, January, and February. Table S1.33 contains results based on estimating the primary Canadian net exchanges specification (see Equation (3) and Table 8) with the addition of the dummy variables for November, December, January, and February. Table S1.34 contains results based on estimating the primary Australian net flows specification (see Equation (4) and Table 10) excluding the dummy variables for May, June, July, and August. In each and every case, the qualitative result of opposing flows in risky versus safe fund categories due to seasonally varying risk aversion and the statistical significance of the effect remains strong.

Table S1.1
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 1:
Past Realized Capital Gains Plus Predicted Capital Gains for Month t

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.856***	-1.448***	-1.681***	-1.732***	1.660***
	(-6.08)	(-9.09)	(-7.64)	(-10.2)	(3.63)
$\mu_{\hat{OR}}$	-0.196***	-0.186***	-0.374***	0.058	1.147***
	(-4.03)	(-3.95)	(-5.88)	(1.18)	(7.23)
μ_{Ads}	0.266***	0.150***	-0.527***	-0.125**	-0.886***
	(4.04)	(2.97)	(-6.57)	(-2.40)	(-5.15)
$\mu_{R^{Year}}$	0.015**	0.018	0.089***	-0.132***	0.101
	(2.03)	(1.17)	(2.69)	(-4.15)	(1.21)
$\mu_{Savings}$	0.491***	1.018***	1.502***	1.474***	-0.501*
	(6.04)	(10.57)	(11.04)	(13.46)	(-1.90)
$\mu_{CapGainsProxy1}$	-0.025***	-0.066***	0.096***	-1.066***	-171.2**
	(-8.31)	(-12.2)	(2.78)	(-19.9)	(-2.09)
μ_{Nov}	0.198***	0.331***	0.130***	-0.045	0.632***
	(6.17)	(6.59)	(2.66)	(-1.22)	(5.81)
μ_{Dec}	0.173***	-0.394***	-0.233***	-0.162***	0.624***
	(6.09)	(-9.16)	(-5.27)	(-6.15)	(4.23)
μ_{Jan}	0.411***	0.416***	0.628***	0.350***	-0.653***
	(9.86)	(10.63)	(14.27)	(12.16)	(-4.48)
μ_{Feb}	-0.004	-0.142***	0.005	-0.094***	-0.113
	(-0.12)	(-5.18)	(0.10)	(-2.70)	(-1.20)
ρ_1	0.402***	0.488***	0.511***	0.592***	0.070***
	(31.93)	(26.36)	(39.39)	(51.45)	(4.39)
ρ_3	0.313***	0.349***	0.275***	0.253***	0.337***
	(34.49)	(16.87)	(21.81)	(20.76)	(18.06)
ρ_6	-0.007	0.006	0.028**	0.080***	0.112***
	(-0.71)	(0.41)	(2.38)	(7.31)	(7.24)
ρ_{12}	0.044***	-0.030***	-0.136***	-0.011*	0.234***
	(5.44)	(-3.37)	(-13.2)	(-1.70)	(10.97)
R^2	0.5125	0.7321	0.6918	0.906	0.3186
AR(12)	13.60	5.52	14.61	9.00	11.52
ARCH(12)	39.98***	63.03***	50.65***	55.03***	25.16**

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	101.4*** [5]
$\mu_{\hat{OR}}$ equivalent across series	101.3*** [4]
Test of Over-Identifying Restrictions	46.8 [120]

Notes: We estimate Equation (1), using an alternate measure of capital gains overhang. One, two, and three asterisks denote significance at the 10, 5, and 1 percent level respectively, based on two-sided tests. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. We use the full set of explanatory variables as instruments for the regression.

Table S1.2
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 2:
Predicted Cumulative Returns

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.749***	-1.645***	-1.660***	-1.178***	2.035***
	(-5.24)	(-10.9)	(-7.55)	(-5.76)	(3.61)
$\mu_{\hat{OR}}$	-0.194***	-0.309***	-0.403***	-0.250***	1.216***
	(-3.72)	(-6.32)	(-5.94)	(-4.37)	(6.72)
μ_{Ads}	0.243***	0.226***	-0.492***	-0.149***	-0.915***
	(3.15)	(4.49)	(-5.99)	(-2.78)	(-5.08)
$\mu_{R^{Year}}$	0.058***	-0.106***	0.026	-0.304***	0.336**
	(4.75)	(-5.78)	(0.66)	(-5.73)	(1.98)
$\mu_{Savings}$	0.382***	0.959***	1.483***	0.907***	-0.750**
	(5.04)	(10.16)	(11.27)	(6.85)	(-2.47)
$\mu_{CapGainsProxy2}$	-0.005***	0.017***	0.009**	0.034***	-0.024
	(-4.60)	(7.06)	(2.03)	(6.75)	(-1.27)
μ_{Nov}	0.196***	0.282***	0.109**	-0.174***	0.632***
	(5.59)	(5.80)	(2.26)	(-4.64)	(5.33)
μ_{Dec}	0.163***	-0.439***	-0.246***	-0.319***	0.722***
	(5.23)	(-8.81)	(-5.91)	(-12.1)	(4.27)
μ_{Jan}	0.393***	0.491***	0.628***	0.523***	-0.743***
	(8.44)	(11.47)	(14.22)	(17.87)	(-4.62)
μ_{Feb}	-0.003	-0.119***	0.015	-0.067*	-0.135
	(-0.07)	(-3.92)	(0.29)	(-1.78)	(-1.26)
ρ_1	0.426***	0.503***	0.504***	0.646***	0.073***
	(33.89)	(32.52)	(36.57)	(51.94)	(4.41)
ρ_3	0.324***	0.362***	0.275***	0.267***	0.336***
	(28.83)	(20.58)	(23.67)	(18.55)	(19.22)
ρ_6	-0.027**	0.014	0.039***	0.070***	0.109***
	(-2.27)	(1.15)	(3.26)	(5.40)	(6.85)
ρ_{12}	0.014	-0.034***	-0.120***	-0.084***	0.228***
	(1.56)	(-3.83)	(-11.0)	(-13.5)	(11.18)
R^2	0.5069	0.729	0.6913	0.9012	0.3169
AR(12)	13.14	4.10	12.72	8.88	11.21
ARCH(12)	34.94***	62.77***	46.94***	49.88***	30.05***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	72.7*** [5]
$\mu_{\hat{OR}}$ equivalent across series	64.6*** [4]
Test of Over-Identifying Restrictions	46.3 [120]

Notes: See the notes to Table S1.1

Table S1.3
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 3:
Predicted Cumulative Returns Less Distributions

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.723***	-1.701***	-1.752***	-1.425***	1.506***
	(-4.99)	(-10.9)	(-7.41)	(-7.09)	(2.90)
$\mu_{\hat{OR}}$	-0.201***	-0.274***	-0.359***	-0.099*	1.331***
	(-3.89)	(-6.04)	(-5.34)	(-1.95)	(7.63)
μ_{Ads}	0.241***	0.223***	-0.503***	-0.147***	-1.007***
	(3.18)	(4.66)	(-6.18)	(-2.69)	(-5.74)
$\mu_{R^{Year}}$	0.058***	-0.097***	0.018	-0.311***	0.726***
	(4.74)	(-5.24)	(0.44)	(-6.02)	(5.06)
$\mu_{Savings}$	0.362***	1.027***	1.584***	1.160***	-0.396
	(4.72)	(10.58)	(11.00)	(9.24)	(-1.39)
$\mu_{CapGainsProxy3}$	-0.005***	0.015***	0.009**	0.037***	-0.095***
	(-4.87)	(6.23)	(2.22)	(7.80)	(-5.80)
μ_{Nov}	0.192***	0.302***	0.123**	-0.124***	0.673***
	(5.50)	(6.49)	(2.57)	(-3.53)	(5.79)
μ_{Dec}	0.162***	-0.425***	-0.218***	-0.256***	0.768***
	(5.50)	(-8.92)	(-5.41)	(-10.7)	(4.77)
μ_{Jan}	0.401***	0.467***	0.613***	0.442***	-0.747***
	(9.18)	(11.29)	(15.13)	(14.64)	(-4.74)
μ_{Feb}	-0.005	-0.129***	0.001	-0.103***	-0.113
	(-0.14)	(-4.15)	(0.01)	(-2.75)	(-1.20)
ρ_1	0.427***	0.503***	0.504***	0.638***	0.070***
	(34.93)	(31.12)	(37.78)	(53.93)	(4.10)
ρ_3	0.325***	0.364***	0.277***	0.267***	0.337***
	(31.48)	(21.42)	(23.58)	(18.65)	(19.29)
ρ_6	-0.028**	0.012	0.038***	0.073***	0.104***
	(-2.53)	(0.95)	(3.12)	(6.10)	(6.96)
ρ_{12}	0.016*	-0.035***	-0.122***	-0.086***	0.215***
	(1.69)	(-3.99)	(-11.2)	(-13.9)	(10.68)
R^2	0.5068	0.7286	0.6914	0.9013	0.3249
AR(12)	13.26	4.28	14.09	9.32	11.70
ARCH(12)	34.79***	62.13***	47.14***	50.34***	28.48***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	77.5*** [5]
$\mu_{\hat{OR}}$ equivalent across series	76.7*** [4]
Test of Over-Identifying Restrictions	46.4 [120]

Notes: See the notes to Table S1.1

Table S1.4
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 4:
Two Year Cumulative Returns

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.991***	-1.579***	-1.856***	-1.146***	-0.182
	(-7.84)	(-9.75)	(-8.63)	(-7.28)	(-0.37)
$\mu_{\hat{OR}}$	-0.248***	-0.276***	-0.417***	-0.025	1.142***
	(-5.40)	(-6.17)	(-6.88)	(-0.57)	(8.03)
μ_{Ads}	0.179***	0.111**	-0.606***	-0.300***	-0.925***
	(2.96)	(2.52)	(-8.08)	(-5.13)	(-5.63)
$\mu_{R^{Year}}$	0.047***	0.061***	0.053	0.387***	0.443***
	(4.52)	(3.75)	(1.32)	(9.34)	(2.86)
$\mu_{Savings}$	0.575***	1.046***	1.687***	0.980***	0.799***
	(7.96)	(10.23)	(12.68)	(9.57)	(2.63)
$\mu_{CapGainsProxy4}$	-0.001***	-0.004***	0.002	-0.022***	-0.021***
	(-3.06)	(-4.87)	(1.12)	(-9.02)	(-3.02)
μ_{Nov}	0.164***	0.271***	0.148***	-0.017	0.689***
	(4.56)	(7.40)	(2.62)	(-0.55)	(5.89)
μ_{Dec}	0.154***	-0.392***	-0.225***	-0.146***	0.651***
	(4.97)	(-8.90)	(-5.74)	(-6.14)	(4.09)
μ_{Jan}	0.419***	0.403***	0.631***	0.542***	-0.675***
	(11.91)	(11.57)	(15.63)	(19.24)	(-4.74)
μ_{Feb}	0.031	-0.217***	0.124***	0.103***	0.015
	(0.94)	(-7.06)	(2.94)	(2.94)	(0.18)
μ_{rho_1}	0.433***	0.520***	0.516***	0.647***	0.050**
	(33.33)	(32.72)	(42.56)	(55.22)	(2.56)
μ_{rho_3}	0.291***	0.352***	0.247***	0.168***	0.356***
	(24.99)	(19.14)	(20.58)	(14.42)	(21.92)
μ_{rho_6}	-0.031**	0.003	0.037***	-0.005	0.077***
	(-2.39)	(0.20)	(3.03)	(-0.43)	(4.88)
$\mu_{rho_{12}}$	0.063***	-0.030***	-0.137***	0.031***	0.246***
	(8.16)	(-4.09)	(-14.8)	(4.44)	(12.58)
R^2	0.5217	0.7241	0.6621	0.8297	0.3395
AR(12)	12.62	4.85	12.59	11.73	8.54
ARCH(12)	28.26***	66.32***	45.01***	17.14	29.71***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	248.9*** [5]
$\mu_{\hat{OR}}$ equivalent across series	248.9*** [4]
Test of Over-Identifying Restrictions	46.5 [140]

Notes: See the notes to Table S1.1

Table S1.5
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 5
Three Year Cumulative Returns

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.776***	-1.357***	-1.848***	-1.619***	0.105
	(-6.41)	(-9.05)	(-7.81)	(-8.69)	(0.15)
$\mu_{\hat{OR}}$	-0.160***	-0.212***	-0.444***	-0.055	1.421***
	(-3.78)	(-5.38)	(-7.54)	(-1.26)	(10.18)
μ_{Ads}	0.116**	0.034	-0.705***	-0.356***	-0.975***
	(2.11)	(0.65)	(-10.9)	(-6.41)	(-6.67)
$\mu_{R^{Year}}$	0.024***	-0.020	0.187***	0.327***	0.439***
	(2.67)	(-1.35)	(7.09)	(8.88)	(3.88)
$\mu_{Savings}$	0.476***	0.932***	1.785***	1.419***	0.676
	(6.26)	(9.85)	(12.02)	(11.75)	(1.46)
$\mu_{CapGainsProxy5}$	-0.001***	0.001	-0.001	-0.020***	-0.017***
	(-3.98)	(1.34)	(-0.47)	(-12.3)	(-4.03)
μ_{Nov}	0.179***	0.217***	0.167***	-0.021	0.789***
	(4.12)	(6.86)	(2.85)	(-0.68)	(7.03)
μ_{Dec}	0.156***	-0.302***	-0.232***	-0.179***	0.842***
	(5.34)	(-7.59)	(-5.62)	(-7.11)	(5.30)
μ_{Jan}	0.299***	0.339***	0.556***	0.448***	-0.804***
	(9.42)	(9.68)	(12.46)	(15.71)	(-5.00)
μ_{Feb}	-0.015	-0.191***	0.179***	0.102***	0.093
	(-0.44)	(-5.66)	(3.92)	(2.60)	(1.01)
ρ_1	0.474***	0.513***	0.442***	0.609***	0.047***
	(46.24)	(30.12)	(31.58)	(44.63)	(2.83)
ρ_3	0.324***	0.408***	0.139***	0.100***	0.373***
	(24.80)	(18.72)	(12.26)	(8.95)	(19.66)
ρ_6	-0.050***	-0.025**	-0.013	-0.006	0.075***
	(-4.48)	(-1.99)	(-0.99)	(-0.49)	(4.61)
ρ_{12}	0.049***	-0.059***	-0.147***	-0.005	0.244***
	(5.82)	(-7.91)	(-13.4)	(-0.55)	(13.53)
R^2	0.5929	0.7188	0.4787	0.6771	0.3722
AR(12)	21.78**	2.36	7.86	12.54	9.91
ARCH(12)	20.14*	60.42***	52.71***	10.93	31.21***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	159.2*** [5]
$\mu_{\hat{OR}}$ equivalent across series	155.7*** [4]
Test of Over-Identifying Restrictions	52.3 [120]

Notes: See the notes to Table S1.1

Table S1.6
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 6:
Predicted Capital Gains, Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.771***	-1.694***	-1.537***	-1.014***	1.629***
	(-6.35)	(-11.5)	(-7.56)	(-5.86)	(3.62)
$\mu_{\hat{OR}}$	-0.223***	-0.250***	-0.376***	-0.099**	1.160***
	(-4.18)	(-4.70)	(-5.41)	(-1.99)	(6.40)
μ_{Ads}	0.252***	0.147***	-0.563***	-0.139**	-0.896***
	(3.60)	(2.78)	(-7.14)	(-2.54)	(-4.88)
$\mu_{R^{Year}}$	0.016*	0.006	0.115***	-0.017	0.094
	(1.94)	(0.38)	(3.94)	(-0.46)	(0.89)
$\mu_{Savings}$	0.376***	1.076***	1.446***	0.785***	-0.483**
	(5.96)	(11.94)	(11.28)	(7.02)	(-2.01)
$\mu_{CapGainsProxy6}$	-0.025***	-0.054***	0.300***	0.882***	-1338***
	(-4.34)	(-3.68)	(6.94)	(12.25)	(-28.3)
μ_{Nov}	0.315***	0.479***	-0.037	-0.422***	0.797***
	(8.83)	(8.51)	(-0.61)	(-12.8)	(8.06)
μ_{Dec}	0.284***	-0.281***	-0.400***	-0.558***	0.880***
	(7.04)	(-7.36)	(-7.89)	(-15.8)	(7.43)
μ_{Jan}	0.440***	0.438***	0.637***	0.497***	-0.625***
	(10.42)	(11.08)	(14.26)	(12.97)	(-3.93)
μ_{Feb}	0.014	-0.136***	0.013	-0.073**	-0.089
	(0.39)	(-4.71)	(0.28)	(-1.99)	(-0.86)
ρ_1	0.413***	0.505***	0.506***	0.670***	0.067***
	(29.29)	(26.48)	(46.26)	(71.23)	(3.66)
ρ_3	0.325***	0.362***	0.280***	0.270***	0.317***
	(34.73)	(19.99)	(28.20)	(23.45)	(17.66)
ρ_6	-0.015	-0.000	0.033***	0.063***	0.111***
	(-1.37)	(-0.02)	(3.05)	(5.11)	(7.02)
ρ_{12}	0.022**	-0.033***	-0.139***	-0.104***	0.237***
	(2.46)	(-3.89)	(-14.0)	(-16.1)	(11.70)
R^2	0.506	0.7271	0.6931	0.9017	0.3353
AR(12)	14.99	4.60	15.05	12.31	17.02
ARCH(12)	37.03***	58.13***	52.26***	52.19***	27.93***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	57.2*** [5]
$\mu_{\hat{OR}}$ equivalent across series	53.6*** [4]
Test of Over-Identifying Restrictions	46.5 [120]

Notes: See the notes to Table S1.1

Table S1.7
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 7:
For Equity/Hybrid Classes: Predicted Capital Gains, Nov/Dec Only;
For Corporate Bond, Government Bond, Money Market Classes:
Cumulative Returns for Past Fiscal Year, Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.796***	-1.697***	-1.558***	-1.318***	2.054***
	(-6.37)	(-11.2)	(-6.56)	(-7.33)	(4.46)
$\mu_{\hat{OR}}$	-0.220***	-0.253***	-0.367***	-0.081*	1.135***
	(-4.26)	(-4.67)	(-5.32)	(-1.68)	(6.34)
μ_{Ads}	0.276***	0.156***	-0.539***	-0.129**	-0.944***
	(4.55)	(3.20)	(-7.51)	(-2.46)	(-5.31)
$\mu_{R^{Year}}$	0.017**	0.007	0.126***	-0.012	0.381***
	(2.13)	(0.51)	(4.00)	(-0.31)	(3.20)
$\mu_{Savings}$	0.373***	1.073***	1.430***	0.975***	-0.822***
	(5.21)	(11.09)	(9.21)	(8.52)	(-3.24)
$\mu_{CapGainsProxy7}$	-0.023***	-0.049***	-0.021***	-0.027***	-0.102***
	(-5.09)	(-3.01)	(-4.44)	(-6.11)	(-7.39)
μ_{Nov}	0.303***	0.452***	0.317***	0.038	1.195***
	(8.20)	(6.51)	(7.00)	(0.99)	(9.14)
μ_{Dec}	0.275***	-0.287***	-0.028	-0.084**	1.264***
	(6.51)	(-6.35)	(-0.61)	(-2.57)	(7.87)
μ_{Jan}	0.436***	0.432***	0.633***	0.492***	-0.635***
	(10.59)	(10.37)	(14.47)	(13.69)	(-3.95)
μ_{Feb}	0.015	-0.135***	0.006	-0.087**	-0.129
	(0.39)	(-4.31)	(0.13)	(-2.38)	(-1.29)
ρ_1	0.417***	0.497***	0.520***	0.672***	0.065***
	(29.05)	(25.90)	(41.38)	(63.41)	(3.42)
ρ_3	0.325***	0.365***	0.280***	0.260***	0.341***
	(33.04)	(20.99)	(25.63)	(19.82)	(18.26)
ρ_6	-0.017	0.002	0.029**	0.055***	0.105***
	(-1.52)	(0.15)	(2.55)	(4.67)	(6.26)
ρ_{12}	0.022**	-0.032***	-0.130***	-0.086***	0.225***
	(2.48)	(-3.36)	(-14.2)	(-13.5)	(11.58)
R^2	0.5061	0.727	0.6924	0.9008	0.3245
AR(12)	14.65	4.68	14.63	9.45	11.65
ARCH(12)	37.05***	58.01***	47.16***	51.20***	31.45***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	56.4*** [5]
$\mu_{\hat{OR}}$ equivalent across series	53.3*** [4]
Test of Over-Identifying Restrictions	46.4 [120]

Notes: See the notes to Table S1.1

Table S1.8
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 8:
For Equity/Hybrid Classes: Predicted Cumulative Returns Less Distributions, Nov/Dec Only;
For Corporate Bond, Government Bond, Money Market Classes: Cumulative Returns for Past Fiscal Year, Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.688***	-1.685***	-1.613***	-1.345***	1.899***
	(-5.64)	(-10.8)	(-6.69)	(-7.43)	(4.31)
$\mu_{\hat{OR}}$	-0.219***	-0.249***	-0.376***	-0.085*	1.150***
	(-4.26)	(-4.79)	(-5.69)	(-1.70)	(6.60)
μ_{Ads}	0.270***	0.171***	-0.541***	-0.127**	-0.912***
	(3.73)	(3.29)	(-7.25)	(-2.29)	(-5.07)
$\mu_{R^{Year}}$	0.013	-0.002	0.118***	-0.003	0.390***
	(1.54)	(-0.14)	(3.65)	(-0.08)	(3.04)
$\mu_{Savings}$	0.310***	1.055***	1.469***	0.986***	-0.753***
	(4.80)	(10.86)	(9.61)	(8.66)	(-3.14)
$\mu_{CapGainsProxy8}$	0.002	0.004	-0.019***	-0.027***	-0.105***
	(1.52)	(1.54)	(-4.67)	(-5.81)	(-7.36)
μ_{Nov}	0.154***	0.292***	0.304***	0.041	1.204***
	(5.65)	(7.59)	(6.16)	(0.92)	(8.82)
μ_{Dec}	0.136***	-0.455***	-0.030	-0.081**	1.322***
	(5.58)	(-9.33)	(-0.62)	(-2.24)	(6.92)
μ_{Jan}	0.434***	0.437***	0.637***	0.498***	-0.628***
	(10.42)	(9.82)	(14.43)	(14.15)	(-4.07)
μ_{Feb}	0.020	-0.135***	0.008	-0.085**	-0.132
	(0.53)	(-4.23)	(0.17)	(-2.32)	(-1.31)
ρ_1	0.427***	0.505***	0.521***	0.673***	0.065***
	(31.35)	(32.12)	(41.00)	(62.66)	(3.41)
ρ_3	0.326***	0.368***	0.281***	0.258***	0.344***
	(32.44)	(21.74)	(25.01)	(20.06)	(19.12)
ρ_6	-0.023**	-0.004	0.025**	0.052***	0.105***
	(-2.11)	(-0.36)	(2.34)	(4.35)	(7.12)
ρ_{12}	0.021**	-0.031***	-0.129***	-0.084***	0.224***
	(2.49)	(-3.46)	(-12.7)	(-13.6)	(11.12)
R^2	0.505	0.7265	0.6924	0.9008	0.3245
AR(12)	13.27	4.21	14.4	9.35	11.63
ARCH(12)	37.49***	59.79***	47.68***	51.18***	31.30***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	63.1*** [5]
$\mu_{\hat{OR}}$ equivalent across series	58.7*** [4]
Test of Over-Identifying Restrictions	46.8 [120]

Notes: See the notes to Table S1.1

Table S1.9
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 9:
Cumulative Equity Returns Used for All Fund Categories,
Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.671***	-1.701***	-1.634***	-1.231***	1.711***
	(-4.08)	(-8.73)	(-6.09)	(-4.94)	(2.73)
$\mu_{\hat{OR}}$	-0.217***	-0.242***	-0.332***	-0.068	1.173***
	(-3.69)	(-4.21)	(-4.11)	(-1.15)	(5.83)
μ_{Ads}	0.254***	0.171***	-0.525***	-0.159**	-0.883***
	(2.96)	(2.59)	(-5.61)	(-2.36)	(-4.23)
$\mu_{R^{Year}}$	0.015	0.025	0.104***	-0.054	0.076
	(1.43)	(1.26)	(2.92)	(-1.15)	(0.64)
$\mu_{Savings}$	0.308***	1.054***	1.486***	0.952***	-0.548
	(3.59)	(8.95)	(9.11)	(6.01)	(-1.55)
$\mu_{CapGainsProxy9}$	0.002	-0.004**	-0.006*	0.001	-0.014**
	(0.97)	(-2.37)	(-1.88)	(0.66)	(-2.47)
μ_{Nov}	0.153**	0.356***	0.245***	-0.127**	0.811***
	(2.54)	(6.87)	(3.55)	(-2.56)	(4.89)
μ_{Dec}	0.128***	-0.327***	-0.124*	-0.260***	1.000***
	(3.14)	(-4.97)	(-1.73)	(-6.73)	(4.63)
μ_{Jan}	0.432***	0.426***	0.623***	0.494***	-0.696***
	(8.88)	(8.79)	(11.82)	(10.87)	(-3.66)
μ_{Feb}	0.002	-0.138***	0.003	-0.077*	-0.105
	(0.04)	(-3.86)	(0.05)	(-1.77)	(-0.88)
ρ_1	0.429***	0.511***	0.517***	0.671***	0.059***
	(28.25)	(21.96)	(32.54)	(50.61)	(2.71)
ρ_3	0.320***	0.363***	0.272***	0.261***	0.331***
	(25.94)	(16.96)	(19.03)	(16.43)	(15.48)
ρ_6	-0.016	-0.004	0.028*	0.051***	0.117***
	(-1.23)	(-0.28)	(1.92)	(3.62)	(5.36)
ρ_{12}	0.024**	-0.029***	-0.123***	-0.083***	0.233***
	(2.31)	(-2.76)	(-9.83)	(-11.7)	(9.13)
R^2	0.5049	0.7264	0.6919	0.9002	0.3174
AR(12)	13.58	5.12	14.07	8.55	10.86
ARCH(12)	37.30***	62.05***	48.67***	51.97***	32.40***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	45.6*** [5]
$\mu_{\hat{OR}}$ equivalent across series	43.4*** [4]
Test of Over-Identifying Restrictions	43.4 [120]

Notes: See the notes to Table S1.1

Table S1.10
Dependent Variable: U.S. Net Flows
Capital Gains Proxy 10:
Multiple Proxies: Past Realized Capital Gains, Cumulative Returns (Nov/Dec Only), and Cumulative Returns Plus Predicted Return for Month t

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.838***	-1.481***	-1.715***	-1.232***	1.973***
	(-9.74)	(-15.6)	(-9.46)	(-9.64)	(6.63)
$\mu_{\hat{OR}}$	-0.147***	-0.279***	-0.518***	0.003	1.088***
	(-4.99)	(-8.36)	(-12.4)	(0.07)	(8.90)
μ_{Ads}	0.270***	0.221***	-0.516***	-0.102***	-0.896***
	(6.88)	(6.31)	(-10.8)	(-2.77)	(-7.54)
$\mu_{CumulativeReturnsNov/Dec}$	0.006***	-0.002	-0.029***	-0.022***	-0.109***
	(4.42)	(-0.90)	(-8.55)	(-5.97)	(-11.4)
$\mu_{CumulativeReturnsPlusPredicted}$	-0.007***	0.014***	0.021***	0.021***	0.014
	(-7.75)	(8.40)	(6.22)	(6.06)	(1.12)
$\mu_{PastRealizedCapitalGains}$	-0.029***	-0.065***	0.084***	-1.545***	31.994
	(-15.3)	(-17.4)	(3.05)	(-35.4)	(0.46)
$\mu_{R^{Year}}$	0.057***	-0.071***	0.014	-0.204***	0.274**
	(6.10)	(-5.78)	(0.49)	(-6.16)	(2.26)
$\mu_{Savings}$	0.513***	0.950***	1.455***	1.185***	-0.809***
	(10.03)	(16.47)	(12.62)	(15.33)	(-4.86)
μ_{Nov}	-0.011	0.189***	0.393***	-0.470***	1.212***
	(-0.42)	(5.82)	(9.54)	(-14.9)	(13.13)
μ_{Dec}	-0.022	-0.570***	0.047	-0.536***	1.244***
	(-0.90)	(-14.4)	(1.08)	(-17.1)	(11.13)
μ_{Jan}	0.372***	0.485***	0.711***	0.333***	-0.584***
	(13.89)	(18.83)	(25.71)	(14.75)	(-6.12)
μ_{Feb}	-0.016	-0.114***	0.047	-0.104***	-0.121
	(-0.64)	(-5.50)	(1.45)	(-3.83)	(-1.64)
ρ_1	0.417***	0.482***	0.501***	0.566***	0.072***
	(56.20)	(48.99)	(55.28)	(64.63)	(6.74)
ρ_3	0.316***	0.361***	0.277***	0.245***	0.343***
	(58.62)	(40.23)	(39.03)	(28.34)	(25.04)
ρ_6	-0.030***	0.014*	0.027***	0.126***	0.106***
	(-4.62)	(1.81)	(3.10)	(14.43)	(9.56)
ρ_{12}	0.041***	-0.036***	-0.124***	-0.028***	0.228***
	(7.06)	(-7.48)	(-15.9)	(-5.87)	(20.09)
R^2	0.5154	0.7334	0.6944	0.9115	0.325
AR(12)	15.79	5.13	14.51	11.64	11.21
ARCH(12)	37.01***	64.28***	41.38***	43.30***	31.72***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	255.3*** [5]
$\mu_{\hat{OR}}$ equivalent across series	234.4*** [4]
Test of Over-Identifying Restrictions	48.7 [160]

Notes: See the notes to Table S1.1

Table S1.11
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 1:
Past Realized Capital Gains Plus Predicted Capital Gains for Month t

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.103***	0.040***	0.264***	0.166***	-0.094***
	(3.71)	(3.03)	(8.87)	(5.69)	(-3.81)
$\mu_{\hat{OR}}$	-0.148***	0.032***	-0.093***	0.155***	0.253***
	(-6.83)	(3.03)	(-2.94)	(6.19)	(8.83)
μ_{Ads}	-0.088***	-0.017	-0.358***	-0.139***	0.166***
	(-3.37)	(-1.32)	(-12.5)	(-5.28)	(6.57)
$\mu_{R^{Year}}$	-0.002	-0.015***	0.096***	0.092***	0.013*
	(-0.83)	(-5.39)	(8.28)	(10.54)	(1.88)
$\mu_{CapGainsProxy1}$	-0.017***	-0.010***	-0.058***	-0.485***	-15.00***
	(-16.7)	(-8.09)	(-5.30)	(-24.9)	(-4.20)
μ_{Nov}	0.096***	0.060***	0.140***	0.028*	-0.119***
	(6.45)	(8.05)	(6.41)	(1.68)	(-6.68)
μ_{Dec}	0.118***	-0.043***	-0.020	-0.009	0.005
	(8.16)	(-6.19)	(-1.26)	(-0.63)	(0.30)
μ_{Jan}	0.127***	0.011	0.171***	0.044***	-0.304***
	(8.21)	(1.08)	(9.28)	(3.49)	(-25.5)
μ_{Feb}	0.039**	0.034***	0.018	-0.020	-0.023
	(2.20)	(4.25)	(0.84)	(-1.15)	(-1.55)
ρ_1	0.013	0.601***	0.214***	0.156***	0.160***
	(1.26)	(48.26)	(16.07)	(9.11)	(11.03)
ρ_3	0.160***	0.169***	0.046***	-0.079***	0.085***
	(17.73)	(12.82)	(3.57)	(-7.70)	(10.48)
ρ_6	0.054***	0.127***	-0.057***	0.079***	0.201***
	(6.78)	(9.20)	(-4.99)	(7.28)	(22.10)
ρ_{12}	-0.001	-0.063***	-0.113***	-0.048***	-0.032***
	(-0.07)	(-5.60)	(-10.0)	(-4.79)	(-4.06)
R^2	0.0964	0.6524	0.1093	0.2297	0.1557
AR(12)	9.77	9.22	17.01	9.16	7.61
ARCH(12)	11.17	13.48	19.80*	25.06**	58.64***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	189.5*** [5]
$\mu_{\hat{OR}}$ equivalent across series	142.8*** [4]
Test of Over-Identifying Restrictions	48.5 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.12
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 2:
Predicted Cumulative Returns

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.059**	0.010	0.224***	0.060**	-0.106***
	(2.22)	(0.80)	(7.11)	(2.36)	(-4.24)
$\mu_{\hat{OR}}$	-0.138***	0.013	-0.142***	0.015	0.217***
	(-5.73)	(1.38)	(-4.43)	(0.55)	(7.69)
μ_{Ads}	-0.103***	-0.015	-0.348***	-0.137***	0.170***
	(-4.03)	(-1.28)	(-12.1)	(-5.70)	(6.78)
$\mu_{R^{Year}}$	0.022***	-0.029***	0.031*	-0.060***	-0.037***
	(5.79)	(-8.43)	(1.90)	(-4.01)	(-3.51)
$\mu_{CapGainsProxy2}$	-0.003***	0.002***	0.008***	0.015***	0.005***
	(-7.46)	(5.35)	(4.12)	(9.29)	(4.79)
μ_{Nov}	0.098***	0.052***	0.114***	-0.022	-0.119***
	(5.64)	(7.39)	(5.76)	(-1.39)	(-6.40)
μ_{Dec}	0.107***	-0.051***	-0.041**	-0.071***	0.010
	(7.64)	(-7.59)	(-2.57)	(-5.57)	(0.50)
μ_{Jan}	0.111***	0.020*	0.195***	0.082***	-0.287***
	(7.66)	(1.81)	(9.32)	(6.40)	(-26.4)
μ_{Feb}	0.031**	0.038***	0.041*	-0.015	-0.023*
	(2.03)	(4.70)	(1.84)	(-0.88)	(-1.66)
ρ_1	0.047***	0.606***	0.205***	0.247***	0.156***
	(4.98)	(43.49)	(17.00)	(17.66)	(13.10)
ρ_3	0.196***	0.174***	0.045***	0.022*	0.089***
	(22.38)	(13.20)	(3.56)	(1.94)	(11.55)
ρ_6	0.055***	0.135***	-0.050***	0.130***	0.207***
	(6.54)	(10.38)	(-3.87)	(12.65)	(19.28)
ρ_{12}	-0.002	-0.044***	-0.097***	-0.057***	-0.031***
	(-0.26)	(-4.26)	(-7.34)	(-6.27)	(-4.06)
R^2	0.0787	0.6492	0.1081	0.157	0.1559
AR(12)	9.73	9.23	17.53	10.32	7.16
ARCH(12)	8.90	15.13	18.05	23.08**	58.99***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	101.5*** [5]
$\mu_{\hat{OR}}$ equivalent across series	67.4*** [4]
Test of Over-Identifying Restrictions	45.3 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.13
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 3:
Predicted Cumulative Returns Less Distributions

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.056**	0.016	0.259***	0.102***	-0.105***
	(2.07)	(1.39)	(8.55)	(3.90)	(-4.39)
$\mu_{\hat{OR}}$	-0.144***	0.019**	-0.106***	0.081***	0.222***
	(-6.24)	(2.00)	(-3.51)	(3.39)	(8.05)
μ_{Ads}	-0.103***	-0.015	-0.353***	-0.134***	0.183***
	(-4.04)	(-1.28)	(-12.4)	(-5.51)	(7.72)
$\mu_{R^{Year}}$	0.018***	-0.027***	0.043***	-0.040***	-0.072***
	(4.39)	(-8.79)	(3.21)	(-2.77)	(-6.81)
$\mu_{CapGainsProxy3}$	-0.003***	0.002***	0.006***	0.014***	0.013***
	(-5.71)	(5.61)	(3.94)	(8.37)	(9.57)
μ_{Nov}	0.099***	0.055***	0.136***	0.003	-0.123***
	(5.89)	(7.96)	(6.96)	(0.17)	(-6.97)
μ_{Dec}	0.102***	-0.050***	-0.023	-0.046***	0.011
	(7.28)	(-7.18)	(-1.48)	(-3.72)	(0.53)
μ_{Jan}	0.113***	0.015	0.174***	0.053***	-0.287***
	(7.68)	(1.49)	(9.36)	(3.99)	(-27.9)
μ_{Feb}	0.033**	0.036***	0.027	-0.034**	-0.028**
	(2.22)	(4.38)	(1.33)	(-2.02)	(-2.17)
ρ_1	0.047***	0.609***	0.207***	0.248***	0.151***
	(5.12)	(40.10)	(17.32)	(18.56)	(12.34)
ρ_3	0.197***	0.174***	0.042***	0.017	0.084***
	(22.51)	(13.29)	(3.11)	(1.43)	(11.36)
ρ_6	0.055***	0.134***	-0.053***	0.125***	0.208***
	(7.18)	(10.08)	(-4.24)	(12.54)	(19.01)
ρ_{12}	-0.001	-0.046***	-0.104***	-0.063***	-0.033***
	(-0.10)	(-4.59)	(-8.58)	(-7.06)	(-4.00)
R^2	0.0769	0.6489	0.1079	0.1555	0.1597
AR(12)	10.49	8.98	17.99	9.85	7.85
ARCH(12)	9.02	15.40	18.78*	23.03**	60.15***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	149.1*** [5]
$\mu_{\hat{OR}}$ equivalent across series	85.5*** [4]
Test of Over-Identifying Restrictions	45.9 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.14
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 4:
Two Year Cumulative Returns

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.056**	0.019*	0.395***	0.133***	-0.102***
	(2.47)	(1.66)	(10.73)	(4.72)	(-4.49)
$\mu_{\hat{OR}}$	-0.157***	0.023**	-0.141***	0.096***	0.259***
	(-6.44)	(2.47)	(-3.95)	(4.44)	(8.67)
μ_{Ads}	-0.093***	-0.018	-0.432***	-0.164***	0.176***
	(-3.97)	(-1.56)	(-12.6)	(-6.21)	(6.99)
$\mu_{R^{Year}}$	0.015***	-0.010***	0.247***	0.159***	0.043***
	(4.36)	(-2.72)	(15.91)	(10.90)	(2.88)
$\mu_{CapGainsProxy4}$	-0.001***	-0.000	-0.011***	-0.009***	-0.002**
	(-5.52)	(-1.25)	(-14.8)	(-13.2)	(-2.38)
μ_{Nov}	0.070***	0.059***	0.134***	0.004	-0.112***
	(4.59)	(8.30)	(6.51)	(0.30)	(-7.62)
μ_{Dec}	0.094***	-0.043***	-0.023	-0.047***	0.015
	(6.53)	(-6.05)	(-1.11)	(-3.94)	(0.99)
μ_{Jan}	0.139***	0.013	0.190***	0.078***	-0.321***
	(10.00)	(1.18)	(11.18)	(5.77)	(-28.0)
μ_{Feb}	0.025	0.034***	0.081***	0.050***	-0.039**
	(1.60)	(4.61)	(3.89)	(2.99)	(-2.56)
μ_{rho_1}	0.033***	0.613***	0.186***	0.295***	0.162***
	(3.61)	(45.23)	(15.34)	(25.56)	(15.24)
μ_{rho_3}	0.211***	0.168***	0.039***	0.050***	0.092***
	(20.48)	(11.99)	(3.19)	(4.57)	(11.60)
μ_{rho_6}	0.031***	0.131***	-0.077***	0.071***	0.207***
	(3.20)	(10.22)	(-6.18)	(7.10)	(19.83)
$\mu_{rho_{12}}$	0.080***	-0.051***	-0.105***	-0.050***	-0.025***
	(8.50)	(-5.89)	(-9.07)	(-5.71)	(-3.84)
R^2	0.0882	0.6492	0.1471	0.2061	0.1656
AR(12)	10.04	11.12	16.03	11.92	8.10
ARCH(12)	63.59***	12.29	16.15	4.57	108.14***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	325.0*** [5]
$\mu_{\hat{OR}}$ equivalent across series	154.0*** [4]
Test of Over-Identifying Restrictions	46.4 [140]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.15
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 5
Three Year Cumulative Returns

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.065**	0.014	0.427***	0.238***	-0.125***
	(2.50)	(0.98)	(11.33)	(8.46)	(-4.54)
$\mu_{\hat{OR}}$	-0.137***	0.020*	-0.139***	0.088***	0.263***
	(-6.24)	(1.88)	(-4.25)	(4.78)	(9.09)
μ_{Ads}	-0.087***	-0.011	-0.419***	-0.176***	0.196***
	(-3.51)	(-0.73)	(-12.1)	(-6.71)	(6.88)
$\mu_{R^{Year}}$	0.015***	-0.014***	0.113***	0.164***	0.020*
	(4.95)	(-4.21)	(10.92)	(11.57)	(1.84)
$\mu_{CapGainsProxy5}$	-0.001***	-0.000	-0.006***	-0.013***	-0.001
	(-6.43)	(-1.16)	(-10.6)	(-22.8)	(-1.46)
μ_{Nov}	0.063***	0.061***	0.149***	-0.010	-0.132***
	(3.58)	(7.51)	(7.98)	(-0.75)	(-7.47)
μ_{Dec}	0.094***	-0.036***	-0.009	-0.041***	0.004
	(7.59)	(-5.06)	(-0.48)	(-2.87)	(0.26)
μ_{Jan}	0.059***	0.034***	0.202***	0.052***	-0.276***
	(4.67)	(3.62)	(10.39)	(3.44)	(-25.2)
μ_{Feb}	-0.006	0.030***	0.083***	0.054***	0.008
	(-0.36)	(3.47)	(4.50)	(3.06)	(0.64)
ρ_1	0.136***	0.619***	0.232***	0.242***	0.254***
	(15.96)	(45.97)	(19.00)	(20.99)	(24.06)
ρ_3	0.141***	0.173***	0.040***	-0.012	0.056***
	(15.60)	(14.40)	(3.53)	(-0.94)	(6.87)
ρ_6	0.092***	0.128***	-0.068***	0.067***	0.211***
	(10.78)	(10.33)	(-5.45)	(6.49)	(19.71)
ρ_{12}	0.028***	-0.059***	-0.121***	-0.084***	-0.045***
	(4.07)	(-6.03)	(-10.5)	(-7.39)	(-6.03)
R^2	0.0907	0.6568	0.1477	0.2581	0.2024
AR(12)	14.19	12.64	11.60	10.55	20.58*
ARCH(12)	60.62***	12.06	10.98	3.28	55.28***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	157.2*** [5]
$\mu_{\hat{OR}}$ equivalent across series	83.1*** [4]
Test of Over-Identifying Restrictions	54.1 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.16
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 6:
Predicted Capital Gains, Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.040	0.026**	0.229***	0.051*	-0.096***
	(1.49)	(1.97)	(6.50)	(1.91)	(-4.05)
$\mu_{\hat{OR}}$	-0.169***	0.020*	-0.108***	0.081***	0.252***
	(-6.32)	(1.92)	(-3.41)	(3.23)	(9.40)
μ_{Ads}	-0.096***	-0.024*	-0.350***	-0.135***	0.166***
	(-3.72)	(-1.82)	(-10.6)	(-5.60)	(7.22)
$\mu_{R^{Year}}$	-0.001	-0.016***	0.090***	0.060***	0.007
	(-0.32)	(-5.77)	(7.87)	(5.58)	(1.00)
$\mu_{CapGainsProxy6}$	-0.034***	-0.018***	0.111***	-0.090***	-35.95***
	(-12.3)	(-8.44)	(7.91)	(-4.14)	(-9.18)
μ_{Nov}	0.251***	0.108***	0.079***	0.038***	-0.115***
	(11.38)	(12.11)	(4.36)	(3.07)	(-9.86)
μ_{Dec}	0.268***	0.000	-0.089***	-0.008	0.016
	(12.53)	(0.01)	(-5.37)	(-0.58)	(1.17)
μ_{Jan}	0.135***	0.012	0.175***	0.068***	-0.304***
	(8.25)	(1.11)	(8.68)	(5.54)	(-26.4)
μ_{Feb}	0.039**	0.036***	0.021	-0.022	-0.024*
	(2.49)	(4.40)	(1.08)	(-1.21)	(-1.73)
ρ_1	0.013	0.615***	0.214***	0.264***	0.156***
	(1.50)	(42.71)	(15.83)	(19.25)	(13.07)
ρ_3	0.177***	0.168***	0.054***	0.012	0.085***
	(18.32)	(13.43)	(4.68)	(1.09)	(10.83)
ρ_6	0.072***	0.124***	-0.057***	0.112***	0.204***
	(8.19)	(8.44)	(-4.02)	(10.30)	(19.78)
ρ_{12}	0.000	-0.048***	-0.117***	-0.076***	-0.030***
	(0.03)	(-4.56)	(-9.37)	(-8.03)	(-3.99)
R^2	0.0899	0.6505	0.1093	0.149	0.1555
AR(12)	14.23	16.38	17.45	11.18	7.37
ARCH(12)	9.33	13.72	17.62	26.72***	58.59***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	168.4*** [5]
$\mu_{\hat{OR}}$ equivalent across series	89.0*** [4]
Test of Over-Identifying Restrictions	46.1 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.17
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 7:
For Equity/Hybrid Classes: Predicted Capital Gains, Nov/Dec Only;
For Corporate Bond, Government Bond, Money Market Classes:
Cumulative Returns for Past Fiscal Year, Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.042	0.029**	0.228***	0.073***	-0.104***
	(1.52)	(2.33)	(6.74)	(2.79)	(-4.22)
$\mu_{\hat{OR}}$	-0.173***	0.020*	-0.108***	0.083***	0.254***
	(-6.04)	(1.93)	(-3.16)	(3.46)	(8.87)
μ_{Ads}	-0.098***	-0.025**	-0.356***	-0.144***	0.171***
	(-3.53)	(-1.99)	(-11.1)	(-6.25)	(7.02)
$\mu_{R^{Year}}$	-0.001	-0.017***	0.101***	0.031***	0.013*
	(-0.33)	(-6.27)	(8.60)	(2.82)	(1.75)
$\mu_{CapGainsProxy7}$	-0.034***	-0.018***	-0.007***	0.015***	-0.003**
	(-11.9)	(-7.47)	(-4.56)	(9.96)	(-2.17)
μ_{Nov}	0.245***	0.106***	0.209***	-0.077***	-0.100***
	(9.94)	(9.90)	(9.39)	(-6.34)	(-6.45)
μ_{Dec}	0.267***	0.000	0.047**	-0.119***	0.025
	(11.97)	(0.03)	(2.33)	(-9.51)	(1.49)
μ_{Jan}	0.134***	0.013	0.175***	0.063***	-0.300***
	(8.07)	(1.27)	(8.92)	(4.78)	(-24.4)
μ_{Feb}	0.041**	0.035***	0.021	-0.018	-0.024
	(2.54)	(4.16)	(0.98)	(-0.94)	(-1.60)
ρ_1	0.012	0.613***	0.220***	0.256***	0.159***
	(1.25)	(43.22)	(21.77)	(22.27)	(15.22)
ρ_3	0.176***	0.172***	0.060***	0.018*	0.086***
	(20.07)	(12.55)	(4.69)	(1.67)	(11.81)
ρ_6	0.074***	0.126***	-0.061***	0.122***	0.202***
	(8.37)	(8.35)	(-4.60)	(12.65)	(19.87)
ρ_{12}	-0.000	-0.049***	-0.118***	-0.081***	-0.030***
	(-0.01)	(-4.92)	(-9.46)	(-8.49)	(-3.97)
R^2	0.0899	0.6505	0.1081	0.1557	0.1554
AR(12)	14.28	16.29	17.23	10.39	7.35
ARCH(12)	9.38	13.76	17.89	25.79**	58.48***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	162.5*** [5]
$\mu_{\hat{OR}}$ equivalent across series	80.2*** [4]
Test of Over-Identifying Restrictions	46 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.18
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 8:
For Equity/Hybrid Classes: Predicted Cumulative Returns Less Distributions, Nov/Dec Only;
For Corporate Bond, Government Bond, Money Market Classes: Cumulative Returns for Past Fiscal Year, Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.028	0.022*	0.217***	0.066**	-0.101***
	(1.01)	(1.68)	(5.92)	(2.20)	(-4.04)
$\mu_{\hat{OR}}$	-0.158***	0.024**	-0.107***	0.083***	0.250***
	(-5.69)	(2.35)	(-3.08)	(3.32)	(8.60)
μ_{Ads}	-0.077***	-0.017	-0.347***	-0.137***	0.166***
	(-2.87)	(-1.33)	(-9.97)	(-5.22)	(6.63)
$\mu_{R^{Year}}$	-0.005**	-0.018***	0.104***	0.031***	0.012
	(-2.11)	(-6.09)	(8.16)	(2.60)	(1.58)
$\mu_{CapGainsProxy8}$	0.002***	0.001**	-0.007***	0.014***	-0.003*
	(3.45)	(2.26)	(-5.38)	(9.90)	(-1.87)
μ_{Nov}	0.068***	0.049***	0.209***	-0.075***	-0.098***
	(4.86)	(8.73)	(11.69)	(-5.81)	(-6.81)
μ_{Dec}	0.089***	-0.053***	0.046***	-0.115***	0.025
	(8.07)	(-9.26)	(2.65)	(-7.60)	(1.64)
μ_{Jan}	0.132***	0.014	0.174***	0.063***	-0.300***
	(8.34)	(1.30)	(9.01)	(4.73)	(-25.1)
μ_{Feb}	0.036**	0.034***	0.018	-0.017	-0.024
	(2.22)	(4.14)	(0.88)	(-0.87)	(-1.55)
ρ_1	0.048***	0.610***	0.214***	0.255***	0.157***
	(5.58)	(45.99)	(15.11)	(18.85)	(14.34)
ρ_3	0.193***	0.178***	0.060***	0.020*	0.089***
	(20.88)	(12.33)	(4.95)	(1.81)	(10.55)
ρ_6	0.063***	0.129***	-0.058***	0.121***	0.199***
	(7.43)	(8.59)	(-4.34)	(11.97)	(18.64)
ρ_{12}	0.009	-0.046***	-0.117***	-0.080***	-0.028***
	(0.90)	(-4.55)	(-9.33)	(-8.25)	(-3.61)
R^2	0.0752	0.6474	0.108	0.1556	0.1553
AR(12)	10.47	8.12	17.23	10.47	7.30
ARCH(12)	10.04	15.15	17.70	25.75**	58.00***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	175.5*** [5]
$\mu_{\hat{OR}}$ equivalent across series	77.7*** [4]
Test of Over-Identifying Restrictions	45 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.19
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 9:
Cumulative Equity Returns Used for All Fund Categories,
Nov/Dec Only

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.029	0.018	0.225***	0.042	-0.090***
	(0.95)	(1.24)	(5.53)	(1.23)	(-3.11)
$\mu_{\hat{OR}}$	-0.150***	0.020*	-0.104***	0.087***	0.240***
	(-4.97)	(1.73)	(-2.66)	(2.90)	(7.28)
μ_{Ads}	-0.077***	-0.017	-0.342***	-0.123***	0.157***
	(-2.60)	(-1.16)	(-8.72)	(-3.97)	(5.40)
$\mu_{R^{Year}}$	-0.004	-0.014***	0.088***	0.058***	0.004
	(-1.49)	(-4.10)	(5.92)	(4.15)	(0.59)
$\mu_{CapGainsProxy9}$	0.001	-0.000	-0.002*	0.001**	-0.000
	(1.34)	(-1.23)	(-1.89)	(2.03)	(-0.63)
μ_{Nov}	0.073***	0.061***	0.161***	-0.018	-0.105***
	(2.88)	(6.43)	(4.77)	(-0.82)	(-4.25)
μ_{Dec}	0.084***	-0.040***	0.002	-0.061***	0.027
	(4.53)	(-5.23)	(0.06)	(-3.70)	(1.17)
μ_{Jan}	0.125***	0.011	0.168***	0.065***	-0.295***
	(6.40)	(0.89)	(7.59)	(4.13)	(-19.3)
μ_{Feb}	0.034*	0.034***	0.019	-0.021	-0.022
	(1.82)	(3.80)	(0.89)	(-0.91)	(-1.26)
ρ_1	0.049***	0.609***	0.216***	0.269***	0.158***
	(4.44)	(34.16)	(13.26)	(16.02)	(10.53)
ρ_3	0.195***	0.180***	0.058***	0.023*	0.088***
	(18.34)	(9.86)	(3.96)	(1.83)	(8.90)
ρ_6	0.062***	0.128***	-0.049***	0.117***	0.202***
	(6.37)	(7.32)	(-2.65)	(8.96)	(16.57)
ρ_{12}	0.012	-0.051***	-0.114***	-0.080***	-0.030***
	(0.96)	(-3.86)	(-7.91)	(-7.11)	(-3.25)
R^2	0.075	0.6474	0.1075	0.1486	0.1548
AR(12)	10.83	11.52	17.05	11.02	7.28
ARCH(12)	10.10	14.92	18.84*	25.76**	57.99***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	120.6*** [5]
$\mu_{\hat{OR}}$ equivalent across series	67.3*** [4]
Test of Over-Identifying Restrictions	43.6 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.20
Dependent Variable: U.S. Net Exchanges
Capital Gains Proxy 10:
Multiple Proxies: Past Realized Capital Gains, Cumulative Returns (Nov/Dec Only), and Cumulative Returns Plus Predicted Return for Month t

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.133***	0.023***	0.227***	0.235***	-0.115***
	(7.57)	(2.66)	(12.58)	(12.91)	(-6.87)
$\mu_{\hat{OR}}$	-0.129***	0.022***	-0.131***	0.197***	0.217***
	(-7.48)	(2.85)	(-6.62)	(12.83)	(11.21)
μ_{Ads}	-0.101***	-0.010	-0.347***	-0.152***	0.179***
	(-6.25)	(-1.24)	(-18.6)	(-9.98)	(10.25)
$\mu_{CumulatedReturnsNov/Dec}$	0.004***	0.001*	-0.012***	0.021***	-0.007***
	(12.06)	(1.79)	(-12.0)	(19.89)	(-5.74)
$\mu_{CumulatedReturnsPlusPredicted}$	-0.005***	0.002***	0.009***	-0.004***	0.009***
	(-11.2)	(4.73)	(7.50)	(-3.30)	(11.24)
$\mu_{PastRealizedCapitalGains}$	-0.016***	-0.007***	-0.107***	-0.628***	-16.76***
	(-25.4)	(-9.57)	(-13.2)	(-43.6)	(-5.57)
$\mu_{R^{Year}}$	0.025***	-0.026***	0.072***	0.083***	-0.046***
	(7.29)	(-10.5)	(6.65)	(6.83)	(-6.83)
μ_{Nov}	-0.024***	0.032***	0.178***	-0.292***	-0.094***
	(-2.65)	(5.50)	(13.87)	(-24.6)	(-9.71)
μ_{Dec}	-0.001	-0.071***	0.026*	-0.302***	0.027**
	(-0.21)	(-11.2)	(1.81)	(-26.8)	(2.42)
μ_{Jan}	0.099***	0.018**	0.194***	0.026**	-0.288***
	(9.50)	(2.44)	(12.42)	(2.51)	(-36.1)
μ_{Feb}	0.027**	0.038***	0.033*	-0.028**	-0.020**
	(2.40)	(7.01)	(1.92)	(-2.01)	(-2.23)
ρ_1	0.037***	0.598***	0.183***	0.147***	0.157***
	(6.12)	(69.70)	(21.02)	(15.29)	(21.80)
ρ_3	0.173***	0.172***	0.031***	-0.069***	0.089***
	(29.06)	(20.65)	(3.80)	(-9.30)	(15.67)
ρ_6	0.037***	0.134***	-0.075***	0.093***	0.202***
	(7.88)	(19.23)	(-11.7)	(13.06)	(37.47)
ρ_{12}	-0.012**	-0.053***	-0.104***	-0.062***	-0.032***
	(-2.24)	(-7.98)	(-17.8)	(-10.9)	(-6.79)
R^2	0.0961	0.6513	0.1191	0.247	0.1577
AR(12)	12.17	9.45	17.17	12.57	6.85
ARCH(12)	9.96	14.19	15.44	15.84	59.24***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	488.9*** [5]
$\mu_{\hat{OR}}$ equivalent across series	377.1*** [4]
Test of Over-Identifying Restrictions	49 [160]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

Table S1.21
Dependent Variable: U.S. Net Flows
Return Chasing Proxy: Lagged One Month Return ($R1Month$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.791***	-1.505***	-1.552***	-1.136***	1.758***
	(-6.17)	(-11.1)	(-6.55)	(-5.71)	(4.07)
$\mu_{\hat{OR}}$	-0.180***	-0.164***	-0.385***	0.093*	1.146***
	(-3.69)	(-3.28)	(-5.10)	(1.86)	(7.32)
μ_{Ads}	0.267***	0.212***	-0.527***	-0.098*	-0.918***
	(4.72)	(3.76)	(-7.92)	(-1.86)	(-5.28)
$\mu_{R1Month}$	-0.013***	0.039***	0.013	0.022*	-0.174***
	(-4.95)	(10.40)	(1.21)	(1.88)	(-3.81)
$\mu_{Savings}$	0.466***	1.003***	1.447***	1.107***	-0.472*
	(6.55)	(13.45)	(9.29)	(8.42)	(-1.95)
$\mu_{CapGains}$	-0.028***	-0.065***	0.056	-1.568***	13.550
	(-8.47)	(-10.7)	(1.34)	(-19.0)	(0.15)
μ_{Nov}	0.074*	0.152***	0.171***	-0.556***	0.551***
	(1.82)	(2.99)	(3.44)	(-13.7)	(4.45)
μ_{Dec}	0.061*	-0.549***	-0.196***	-0.615***	0.726***
	(1.66)	(-10.2)	(-4.67)	(-18.0)	(4.41)
μ_{Jan}	0.426***	0.385***	0.645***	0.303***	-0.520***
	(10.47)	(9.53)	(14.58)	(8.46)	(-3.15)
μ_{Feb}	0.010	-0.167***	-0.017	-0.106***	-0.284***
	(0.28)	(-5.83)	(-0.41)	(-2.74)	(-2.71)
ρ_1	0.470***	0.465***	0.518***	0.555***	0.110***
	(36.22)	(22.51)	(32.13)	(39.55)	(6.87)
ρ_3	0.291***	0.378***	0.293***	0.248***	0.348***
	(27.59)	(15.42)	(25.04)	(19.31)	(18.40)
ρ_6	-0.028**	0.004	0.039***	0.114***	0.121***
	(-2.27)	(0.27)	(3.26)	(8.56)	(7.73)
ρ_{12}	0.039***	-0.035***	-0.132***	-0.019***	0.231***
	(4.05)	(-4.26)	(-11.4)	(-2.68)	(11.69)
R^2	0.5148	0.7364	0.6906	0.911	0.3204
AR(12)	15.68	5.43	14.71	10.87	11.08
ARCH(12)	37.32***	71.98***	50.56***	45.48***	30.60***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	85.3*** [5]
$\mu_{\hat{OR}}$ equivalent across series	83.3*** [4]
Test of Over-Identifying Restrictions	46.6 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

Table S1.22
Dependent Variable: U.S. Net Flows
Return Chasing Proxy: Lagged One Quarter Return ($R1Quarter$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.824***	-1.610***	-1.466***	-1.416***	1.834***
	(-6.52)	(-11.7)	(-6.20)	(-6.63)	(4.15)
$\mu_{\hat{OR}}$	-0.175***	-0.124**	-0.362***	0.186***	1.115***
	(-3.61)	(-2.45)	(-4.27)	(3.35)	(7.53)
μ_{Ads}	0.300***	0.219***	-0.494***	-0.053	-0.914***
	(5.83)	(4.17)	(-7.24)	(-0.98)	(-5.60)
$\mu_{R1Quarter}$	-0.017***	0.071***	-0.089***	-0.151***	-0.024
	(-3.76)	(8.46)	(-5.23)	(-10.7)	(-0.53)
$\mu_{Savings}$	0.472***	1.045***	1.422***	1.332***	-0.570**
	(6.38)	(12.42)	(9.50)	(10.17)	(-2.35)
$\mu_{CapGains}$	-0.028***	-0.063***	0.002	-1.727***	-5.391
	(-8.29)	(-9.38)	(0.05)	(-25.0)	(-0.06)
μ_{Nov}	0.055	0.201***	0.115**	-0.599***	0.593***
	(1.40)	(4.39)	(2.00)	(-16.4)	(4.85)
μ_{Dec}	0.050	-0.509***	-0.221***	-0.659***	0.638***
	(1.21)	(-10.8)	(-4.58)	(-20.3)	(4.19)
μ_{Jan}	0.429***	0.406***	0.645***	0.326***	-0.596***
	(9.36)	(10.61)	(15.23)	(10.01)	(-3.96)
μ_{Feb}	0.007	-0.168***	-0.006	-0.105**	-0.124
	(0.20)	(-6.07)	(-0.13)	(-2.55)	(-1.42)
ρ_1	0.444***	0.452***	0.559***	0.604***	0.080***
	(34.29)	(24.43)	(38.87)	(52.13)	(5.75)
ρ_3	0.323***	0.370***	0.311***	0.233***	0.341***
	(28.72)	(18.71)	(30.95)	(18.07)	(18.25)
ρ_6	-0.036***	0.013	0.016	0.096***	0.118***
	(-2.95)	(0.90)	(1.36)	(6.99)	(7.76)
ρ_{12}	0.041***	-0.029***	-0.134***	-0.014*	0.229***
	(3.97)	(-3.68)	(-12.6)	(-1.91)	(12.00)
R^2	0.5138	0.7368	0.6929	0.9124	0.3165
AR(12)	15.51	4.84	14.23	12.38	10.04
ARCH(12)	39.11***	65.78***	52.72***	42.32***	29.19***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	100.5*** [5]
$\mu_{\hat{OR}}$ equivalent across series	94.2*** [4]
Test of Over-Identifying Restrictions	47.5 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

Table S1.23
Dependent Variable: U.S. Net Flows
Return Chasing Proxy: Lagged Two Quarter Return ($R2Quarters$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.823***	-1.536***	-1.477***	-1.402***	1.926***
	(-6.48)	(-10.3)	(-6.20)	(-7.21)	(4.51)
$\mu_{\hat{OR}}$	-0.171***	-0.180***	-0.367***	0.117**	1.144***
	(-3.84)	(-3.45)	(-4.92)	(2.17)	(6.88)
μ_{Ads}	0.287***	0.173***	-0.515***	-0.082*	-0.917***
	(5.06)	(3.37)	(-7.45)	(-1.66)	(-5.49)
$\mu_{Savings}$	0.474***	1.021***	1.432***	1.345***	-0.646***
	(6.78)	(12.02)	(9.69)	(10.64)	(-2.62)
$\mu_{R2Quarters}$	-0.010*	0.091***	-0.054**	-0.164***	0.036
	(-1.67)	(7.17)	(-2.28)	(-4.27)	(0.64)
$\mu_{CapGains}$	-0.028***	-0.067***	0.008	-1.719***	15.614
	(-8.51)	(-10.3)	(0.16)	(-25.4)	(0.16)
μ_{Nov}	0.069	0.184***	0.146**	-0.571***	0.599***
	(1.62)	(3.90)	(2.34)	(-13.8)	(5.11)
μ_{Dec}	0.043	-0.514***	-0.215***	-0.641***	0.647***
	(1.18)	(-10.8)	(-4.90)	(-20.5)	(4.27)
μ_{Jan}	0.415***	0.431***	0.625***	0.313***	-0.621***
	(9.00)	(10.68)	(13.90)	(9.77)	(-4.15)
μ_{Feb}	-0.002	-0.124***	-0.025	-0.113***	-0.113
	(-0.05)	(-4.78)	(-0.54)	(-2.92)	(-1.36)
ρ_1	0.430***	0.461***	0.540***	0.585***	0.073***
	(32.18)	(23.42)	(37.71)	(45.66)	(4.89)
ρ_3	0.322***	0.346***	0.297***	0.249***	0.335***
	(29.26)	(16.92)	(30.11)	(21.76)	(17.69)
ρ_6	-0.022*	0.015	0.035***	0.105***	0.115***
	(-1.95)	(0.96)	(3.30)	(8.10)	(6.58)
ρ_{12}	0.040***	-0.024***	-0.132***	-0.019***	0.231***
	(4.10)	(-2.72)	(-12.1)	(-2.62)	(11.78)
R^2	0.5117	0.7349	0.6909	0.9116	0.3165
AR(12)	15.47	5.64	13.71	13.26	10.17
ARCH(12)	38.60***	67.19***	53.08***	46.04***	30.42***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	79.2*** [5]
$\mu_{\hat{OR}}$ equivalent across series	77.3*** [4]
Test of Over-Identifying Restrictions	47.3 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

Table S1.24
Dependent Variable: U.S. Net Flows
Return Chasing Proxy: Three Quarter Return ($R3Quarters$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.860***	-1.509***	-1.488***	-1.248***	1.966***
	(-6.83)	(-10.4)	(-6.59)	(-6.88)	(4.60)
$\mu_{\hat{OR}}$	-0.156***	-0.189***	-0.350***	0.119**	1.151***
	(-3.31)	(-3.75)	(-4.92)	(2.20)	(7.09)
μ_{Ads}	0.299***	0.189***	-0.533***	-0.109**	-0.903***
	(4.99)	(3.67)	(-7.59)	(-2.22)	(-5.01)
$\mu_{Savings}$	0.496***	1.022***	1.411***	1.226***	-0.704***
	(6.77)	(12.58)	(9.93)	(10.33)	(-2.81)
$\mu_{R3Quarters}$	-0.018**	0.047***	0.029	-0.071	0.108
	(-2.42)	(3.67)	(0.96)	(-1.64)	(1.52)
$\mu_{CapGains}$	-0.028***	-0.070***	0.027	-1.627***	28.926
	(-8.24)	(-11.6)	(0.62)	(-23.8)	(0.29)
μ_{Nov}	0.071	0.167***	0.166***	-0.565***	0.629***
	(1.64)	(3.67)	(2.81)	(-13.4)	(5.10)
μ_{Dec}	0.044	-0.538***	-0.195***	-0.635***	0.664***
	(1.14)	(-11.6)	(-5.19)	(-19.4)	(4.26)
μ_{Jan}	0.423***	0.418***	0.630***	0.302***	-0.668***
	(10.41)	(10.10)	(15.36)	(9.00)	(-4.52)
μ_{Feb}	0.001	-0.140***	-0.006	-0.110***	-0.107
	(0.02)	(-4.93)	(-0.13)	(-2.66)	(-1.13)
ρ_1	0.425***	0.477***	0.524***	0.572***	0.068***
	(33.11)	(25.58)	(38.60)	(47.20)	(3.81)
ρ_3	0.326***	0.357***	0.284***	0.244***	0.333***
	(33.41)	(17.38)	(25.26)	(21.26)	(16.33)
ρ_6	-0.018	-0.000	0.035***	0.114***	0.116***
	(-1.47)	(-0.04)	(3.12)	(8.58)	(7.05)
ρ_{12}	0.037***	-0.030***	-0.125***	-0.019***	0.228***
	(3.66)	(-3.69)	(-11.4)	(-2.86)	(11.83)
R^2	0.5121	0.7321	0.6904	0.911	0.3165
AR(12)	15.16	5.89	13.52	11.50	10.59
ARCH(12)	39.02***	63.67***	50.95***	45.68***	31.44***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	94.4*** [5]
$\mu_{\hat{OR}}$ equivalent across series	92.7*** [4]
Test of Over-Identifying Restrictions	47 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

Table S1.25
Dependent Variable: U.S. Net Exchanges
Return Chasing Proxy: One Month Return ($R1Month$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.099***	0.027*	0.324***	0.215***	-0.104***
	(3.52)	(1.96)	(10.25)	(7.61)	(-4.39)
$\mu_{\hat{OR}}$	-0.145***	0.019	-0.070**	0.172***	0.248***
	(-6.16)	(1.53)	(-2.12)	(7.60)	(7.97)
μ_{Ads}	-0.099***	-0.023*	-0.310***	-0.113***	0.171***
	(-3.65)	(-1.84)	(-10.2)	(-4.87)	(6.99)
$\mu_{R1Month}$	0.001	0.003***	-0.016***	-0.013***	0.017***
	(1.56)	(2.95)	(-3.20)	(-2.68)	(6.31)
$\mu_{CapGains}$	-0.014***	-0.008***	-0.088***	-0.552***	-15.58***
	(-11.6)	(-5.82)	(-6.04)	(-21.7)	(-3.85)
μ_{Nov}	0.031**	0.037***	0.079***	-0.158***	-0.117***
	(2.05)	(4.45)	(3.47)	(-7.64)	(-7.90)
μ_{Dec}	0.048***	-0.062***	-0.063***	-0.175***	0.002
	(3.24)	(-7.41)	(-3.35)	(-10.5)	(0.11)
μ_{Jan}	0.113***	0.010	0.150***	0.033**	-0.311***
	(6.42)	(0.98)	(7.40)	(2.47)	(-23.0)
μ_{Feb}	0.035***	0.033***	0.021	-0.021	-0.008
	(2.59)	(5.07)	(1.06)	(-1.14)	(-0.66)
ρ_1	0.023*	0.579***	0.245***	0.221***	0.157***
	(1.82)	(40.97)	(14.76)	(12.85)	(12.47)
ρ_3	0.172***	0.179***	0.082***	-0.029***	0.083***
	(20.50)	(13.15)	(6.52)	(-3.05)	(10.01)
ρ_6	0.051***	0.124***	-0.029**	0.119***	0.200***
	(5.56)	(8.91)	(-2.42)	(12.44)	(19.05)
ρ_{12}	0.007	-0.052***	-0.067***	-0.040***	-0.034***
	(0.78)	(-4.29)	(-6.66)	(-3.94)	(-3.63)
R^2	0.0871	0.6489	0.1053	0.225	0.1566
AR(12)	11.70	16.79	20.00*	11.36	6.67
ARCH(12)	10.70	14.80	18.25	17.82	58.06***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	167.6*** [5]
$\mu_{\hat{OR}}$ equivalent across series	119.9*** [4]
Test of Over-Identifying Restrictions	45.7 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

Table S1.26
Dependent Variable: U.S. Net Exchanges
Return Chasing Proxy: One Quarter Return ($R1Quarter$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.093***	0.031**	0.334***	0.225***	-0.102***
	(3.33)	(2.43)	(10.01)	(7.82)	(-4.61)
$\mu_{\hat{OR}}$	-0.158***	0.015	-0.101***	0.167***	0.246***
	(-6.40)	(1.38)	(-3.01)	(8.13)	(7.99)
μ_{Ads}	-0.081***	-0.017	-0.283***	-0.104***	0.165***
	(-3.07)	(-1.42)	(-8.86)	(-4.39)	(6.86)
$\mu_{R1Quarter}$	-0.009***	-0.007***	-0.054***	-0.039***	0.028***
	(-6.44)	(-5.03)	(-6.46)	(-5.62)	(6.73)
$\mu_{CapGains}$	-0.014***	-0.009***	-0.092***	-0.568***	-17.05***
	(-11.5)	(-6.45)	(-6.17)	(-22.0)	(-3.83)
μ_{Nov}	0.031*	0.030***	0.074***	-0.163***	-0.121***
	(1.73)	(3.63)	(3.14)	(-8.75)	(-7.49)
μ_{Dec}	0.053***	-0.064***	-0.079***	-0.181***	0.003
	(3.56)	(-7.51)	(-4.14)	(-11.1)	(0.20)
μ_{Jan}	0.122***	0.012	0.136***	0.027**	-0.308***
	(7.14)	(1.33)	(7.48)	(2.04)	(-21.7)
μ_{Feb}	0.040**	0.036***	0.001	-0.024	-0.028*
	(2.41)	(4.51)	(0.06)	(-1.23)	(-1.71)
ρ_1	0.054***	0.612***	0.258***	0.226***	0.162***
	(4.16)	(40.31)	(17.43)	(14.81)	(13.80)
ρ_3	0.188***	0.169***	0.126***	0.002	0.080***
	(18.97)	(12.22)	(8.81)	(0.20)	(9.38)
ρ_6	0.037***	0.109***	-0.029**	0.110***	0.196***
	(4.13)	(8.26)	(-2.49)	(11.75)	(21.49)
ρ_{12}	0.005	-0.055***	-0.062***	-0.037***	-0.030***
	(0.55)	(-4.79)	(-6.61)	(-3.03)	(-3.08)
R^2	0.0901	0.6501	0.1113	0.2291	0.1571
AR(12)	12.21	10.70	21.24 **	10.00	7.29
ARCH(12)	10.54	14.27	18.34	16.75	57.44***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	174.2*** [5]
$\mu_{\hat{OR}}$ equivalent across series	133.1*** [4]
Test of Over-Identifying Restrictions	45.7 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

Table S1.27
Dependent Variable: U.S. Net Exchanges
Return Chasing Proxy: Two Quarter Return ($R2Quarters$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.088***	0.025**	0.296***	0.218***	-0.097***
	(3.53)	(2.00)	(9.38)	(8.55)	(-4.06)
$\mu_{\hat{OR}}$	-0.143***	0.024**	-0.073**	0.159***	0.248***
	(-5.57)	(2.52)	(-2.27)	(6.86)	(7.82)
μ_{Ads}	-0.084***	-0.024**	-0.318***	-0.125***	0.160***
	(-3.36)	(-2.00)	(-10.7)	(-5.72)	(6.26)
$\mu_{R2Quarters}$	-0.002	0.003*	0.025**	0.005	0.025***
	(-1.03)	(1.89)	(2.52)	(0.47)	(5.25)
$\mu_{CapGains}$	-0.014***	-0.008***	-0.085***	-0.552***	-16.09***
	(-13.2)	(-5.70)	(-6.02)	(-21.9)	(-3.83)
μ_{Nov}	0.027	0.038***	0.085***	-0.160***	-0.116***
	(1.55)	(4.57)	(3.46)	(-8.83)	(-6.58)
μ_{Dec}	0.053***	-0.059***	-0.059***	-0.171***	0.008
	(3.67)	(-6.87)	(-3.14)	(-9.90)	(0.47)
μ_{Jan}	0.119***	0.013	0.154***	0.025*	-0.301***
	(6.34)	(1.37)	(8.24)	(1.89)	(-20.9)
μ_{Feb}	0.039**	0.036***	0.009	-0.028	-0.024*
	(2.31)	(4.56)	(0.39)	(-1.56)	(-1.77)
ρ_1	0.036***	0.589***	0.214***	0.189***	0.161***
	(3.27)	(37.09)	(17.52)	(12.93)	(13.97)
ρ_3	0.172***	0.166***	0.063***	-0.027**	0.081***
	(19.10)	(12.53)	(5.13)	(-2.56)	(9.79)
ρ_6	0.050***	0.123***	-0.041***	0.116***	0.200***
	(5.94)	(9.21)	(-3.33)	(12.88)	(22.66)
ρ_{12}	0.007	-0.053***	-0.077***	-0.036***	-0.030***
	(0.83)	(-4.29)	(-7.49)	(-3.52)	(-3.82)
R^2	0.0872	0.6483	0.1048	0.2239	0.1561
AR(12)	11.33	9.76	18.00	10.12	7.40
ARCH(12)	10.66	14.09	18.04	17.44	58.21***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	138.8*** [5]
$\mu_{\hat{OR}}$ equivalent across series	96.1*** [4]
Test of Over-Identifying Restrictions	46.5 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

Table S1.28
Dependent Variable: U.S. Net Exchanges
Return Chasing Proxy: Three Quarter Return ($R3Quarters$)

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.098***	0.034***	0.284***	0.196***	-0.110***
	(3.92)	(2.70)	(9.41)	(6.50)	(-4.83)
$\mu_{\hat{OR}}$	-0.127***	0.029***	-0.078**	0.174***	0.245***
	(-5.26)	(3.03)	(-2.34)	(6.59)	(7.98)
μ_{Ads}	-0.071***	-0.018	-0.338***	-0.136***	0.168***
	(-2.95)	(-1.60)	(-11.7)	(-5.14)	(7.04)
$\mu_{R3Quarters}$	-0.018***	-0.010***	0.070***	0.068***	0.035***
	(-6.33)	(-4.08)	(6.07)	(7.82)	(6.28)
$\mu_{CapGains}$	-0.015***	-0.009***	-0.099***	-0.560***	-15.80***
	(-13.4)	(-6.33)	(-8.04)	(-23.6)	(-3.70)
μ_{Nov}	0.015	0.033***	0.083***	-0.158***	-0.112***
	(0.89)	(3.91)	(3.77)	(-9.66)	(-6.34)
μ_{Dec}	0.045***	-0.065***	-0.059***	-0.166***	0.009
	(3.18)	(-7.41)	(-3.12)	(-9.66)	(0.48)
μ_{Jan}	0.122***	0.011	0.162***	0.032**	-0.303***
	(7.12)	(1.10)	(8.41)	(2.26)	(-24.3)
μ_{Feb}	0.036**	0.034***	0.011	-0.028	-0.024*
	(1.98)	(4.57)	(0.51)	(-1.37)	(-1.69)
ρ_1	0.046***	0.603***	0.202***	0.165***	0.161***
	(4.18)	(42.31)	(14.99)	(10.94)	(12.93)
ρ_3	0.184***	0.172***	0.049***	-0.054***	0.084***
	(23.27)	(13.28)	(4.24)	(-4.84)	(10.32)
ρ_6	0.051***	0.123***	-0.054***	0.096***	0.200***
	(6.83)	(8.57)	(-4.25)	(8.31)	(22.58)
ρ_{12}	-0.000	-0.061***	-0.087***	-0.038***	-0.032***
	(-0.01)	(-4.61)	(-9.07)	(-3.42)	(-4.11)
R^2	0.0919	0.6495	0.1105	0.2303	0.1565
AR(12)	12.10	11.43	19.15*	9.93	7.41
ARCH(12)	10.69	14.72	18.93*	15.62	58.31***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	165.2*** [5]
$\mu_{\hat{OR}}$ equivalent across series	118.9*** [4]
Test of Over-Identifying Restrictions	47 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

Table S1.29
Dependent Variable: U.S. Net Flows
Seasonal Depression Measure: Incidence Rather than Onset/Recovery

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.924***	-1.587***	-1.743***	-1.203***	2.660***
	(-7.53)	(-11.2)	(-7.60)	(-6.78)	(7.44)
$\mu_{Incidence}$	-0.100***	-0.068	-0.217***	0.109**	0.944***
	(-2.74)	(-1.47)	(-3.79)	(2.30)	(7.80)
μ_{Ads}	0.388***	0.290***	-0.324***	-0.212***	-1.708***
	(7.60)	(5.05)	(-3.76)	(-3.76)	(-10.5)
$\mu_{R^{Year}}$	0.009	0.015	0.066**	-0.111***	0.123
	(1.25)	(1.00)	(2.08)	(-2.99)	(1.57)
$\mu_{Savings}$	0.475***	1.030***	1.467***	1.257***	-0.789***
	(6.03)	(12.64)	(10.05)	(10.34)	(-3.62)
$\mu_{CapGains}$	-0.027***	-0.071***	0.021	-1.630***	32.854
	(-7.87)	(-11.5)	(0.44)	(-25.1)	(0.34)
μ_{Nov}	0.135***	0.197***	0.281***	-0.639***	0.021
	(2.98)	(4.50)	(3.53)	(-12.1)	(0.14)
μ_{Dec}	0.135***	-0.514***	-0.048	-0.706***	-0.030
	(3.20)	(-10.5)	(-0.78)	(-15.3)	(-0.18)
μ_{Jan}	0.481***	0.466***	0.780***	0.219***	-1.327***
	(10.64)	(10.13)	(13.72)	(4.81)	(-7.69)
μ_{Feb}	0.072*	-0.080***	0.146***	-0.174***	-0.651***
	(1.86)	(-2.79)	(3.28)	(-4.34)	(-6.65)
ρ_1	0.416***	0.488***	0.525***	0.572***	0.065***
	(32.12)	(27.47)	(40.66)	(48.29)	(3.97)
ρ_3	0.314***	0.358***	0.271***	0.245***	0.318***
	(33.06)	(18.82)	(24.25)	(17.83)	(15.14)
ρ_6	-0.021**	-0.004	0.029***	0.119***	0.129***
	(-2.06)	(-0.34)	(2.61)	(8.42)	(7.86)
ρ_{12}	0.049***	-0.029***	-0.127***	-0.022***	0.238***
	(5.16)	(-3.61)	(-13.3)	(-3.19)	(11.73)
R^2	0.5108	0.731	0.6893	0.9111	0.3167
AR(12)	16.51	5.56	12.97	11.54	12.37
ARCH(12)	39.52***	63.44***	51.04***	45.51***	31.74***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{Incidence}$ jointly equal to 0 across series	97.8*** [5]
$\mu_{Incidence}$ equivalent across series	88.1*** [4]
Test of Over-Identifying Restrictions	47.1 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate a modified version of Equation (1), replacing OR_t with $Incidence_t$ (the instrumented incidence of seasonal depression in the population; see footnote 15 of the main text for details):

$$NetFlow_{i,t} = \mu_i + \mu_{i,Incidence}Incidence_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t}$$
$$+\mu_{i,Nov}Nov_t + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t + \mu_{i,Feb}Feb_t + \mu_{i,Savings}Savings_{t-1}$$
$$+\rho_{i,1}NetFlow_{i,t-1} + \rho_{i,3}NetFlow_{i,t-3} + \rho_{i,6}NetFlow_{i,t-6} + \rho_{i,12}NetFlow_{i,t-12} + \epsilon_{i,t}. \qquad (1')$$

Table S1.30
Dependent Variable: U.S. Net Exchanges
Seasonal Depression Measure: Incidence Rather than Onset/Recovery

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	0.004	0.038***	0.245***	0.277***	0.036*
	(0.19)	(3.02)	(7.31)	(9.89)	(1.80)
$\mu_{Incidence}$	-0.173***	-0.022**	-0.079***	0.142***	0.225***
	(-7.92)	(-2.35)	(-2.86)	(7.85)	(7.90)
μ_{Ads}	0.048**	-0.014	-0.298***	-0.256***	-0.020
	(2.28)	(-1.13)	(-8.83)	(-9.74)	(-0.94)
$\mu_{R^{Year}}$	-0.007***	-0.014***	0.106***	0.088***	0.013**
	(-2.72)	(-5.44)	(8.67)	(9.61)	(2.00)
$\mu_{CapGains}$	-0.015***	-0.008***	-0.118***	-0.585***	-14.87***
	(-14.6)	(-6.67)	(-10.1)	(-28.3)	(-3.87)
μ_{Nov}	0.141***	0.056***	0.119***	-0.259***	-0.263***
	(6.31)	(5.14)	(3.44)	(-11.5)	(-8.99)
μ_{Dec}	0.174***	-0.047***	-0.023	-0.282***	-0.152***
	(7.78)	(-5.25)	(-0.74)	(-13.2)	(-5.03)
μ_{Jan}	0.244***	0.021*	0.212***	-0.067***	-0.459***
	(10.55)	(1.79)	(7.38)	(-3.41)	(-19.6)
μ_{Feb}	0.128***	0.036***	0.054**	-0.115***	-0.148***
	(6.69)	(3.96)	(2.34)	(-6.68)	(-7.19)
ρ_1	0.031***	0.604***	0.200***	0.162***	0.163***
	(3.14)	(44.80)	(15.45)	(10.25)	(12.64)
ρ_3	0.170***	0.179***	0.034***	-0.069***	0.079***
	(19.85)	(12.11)	(2.74)	(-6.52)	(9.09)
ρ_6	0.049***	0.123***	-0.062***	0.090***	0.198***
	(6.09)	(8.72)	(-4.75)	(7.97)	(20.21)
ρ_{12}	-0.001	-0.061***	-0.117***	-0.053***	-0.037***
	(-0.11)	(-5.39)	(-10.3)	(-4.74)	(-4.67)
R^2	0.0948	0.6501	0.1155	0.2329	0.1591
AR(12)	10.62	9.28	17.47	10.38	6.66
ARCH(12)	10.78	14.54	18.97*	15.24	60.26***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{Incidence}$ jointly equal to 0 across series	122.3*** [5]
$\mu_{Incidence}$ equivalent across series	111.4*** [4]
Test of Over-Identifying Restrictions	48.2 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate a modified version of Equation (2), replacing OR_t with $Incidence_t$ (the instrumented incidence of seasonal depression in the population; see footnote 15 of the main text for details):

$$NetExchange_{i,t} = \mu_i + \mu_{i,Incidence}Incidence_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R_{i,t}^{Year} + \mu_{i,CapGains}R_{i,t}^{CapGains}$$
$$+\mu_{i,Nov}Nov_t + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t + \mu_{i,Feb}Feb_t + \rho_{i,1}NetFlow_{i,t-1}$$
$$+\rho_{i,3}NetExchange_{i,t-3} + \rho_{i,6}NetExchange_{i,t-6} + \rho_{i,12}NetExchange_{i,t-12} + \epsilon_{i,t}. \qquad (2')$$

Table S1.31
Dependent Variable: U.S. Net Flows
Robustness Check: Exclusion of Dummy Variables for November, December, January, and February

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter	Equity (t-test)	Hybrid (t-test)	Corp. Bond (t-test)	Gov. Bond (t-test)	MMkt (t-test)
μ	-0.845***	-1.761***	-1.796***	-1.580***	2.241***
	(-7.02)	(-12.4)	(-7.57)	(-8.29)	(5.66)
$\mu_{\hat{OR}}$	-0.201***	-0.156***	-0.405***	-0.021	1.183***
	(-4.40)	(-3.67)	(-6.73)	(-0.43)	(7.66)
μ_{Ads}	0.274***	0.195***	-0.530***	-0.122**	-1.015***
	(4.23)	(3.50)	(-7.12)	(-2.17)	(-5.88)
$\mu_{R^{Year}}$	0.019**	0.038**	0.097***	-0.099**	0.121
	(2.52)	(2.53)	(3.20)	(-2.22)	(1.36)
$\mu_{Savings}$	0.517***	1.153***	1.619***	1.308***	-0.793***
	(7.89)	(13.68)	(11.12)	(10.28)	(-3.48)
$\mu_{CapGains}$	-0.032***	-0.052***	0.025	-0.975***	-34.99
	(-12.4)	(-10.4)	(0.64)	(-16.3)	(-0.44)
ρ_1	0.406***	0.445***	0.484***	0.586***	0.094***
	(32.59)	(22.71)	(32.51)	(45.88)	(6.59)
ρ_3	0.289***	0.378***	0.275***	0.262***	0.323***
	(31.53)	(18.52)	(24.53)	(18.80)	(16.71)
ρ_6	-0.014	-0.006	0.038***	0.101***	0.105***
	(-1.26)	(-0.40)	(3.19)	(6.40)	(6.63)
ρ_{12}	0.071***	-0.007	-0.109***	-0.044***	0.257***
	(7.87)	(-0.90)	(-10.5)	(-4.83)	(12.04)
R^2	0.4946	0.7078	0.6694	0.901	0.2979
AR(12)	18.18	5.51	10.92	23.14**	11.47
ARCH(12)	57.18***	67.40***	44.57***	45.00***	22.27**

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	100.2*** [5]
$\mu_{\hat{OR}}$ equivalent across series	98.5*** [4]
Test of Over-Identifying Restrictions	48.6 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate a modified version of Equation (1), excluding the monthly dummy variables:

$$NetFlow_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t}$$
$$+\rho_{i,1}NetFlow_{i,t-1} + \rho_{i,3}NetFlow_{i,t-3} + \rho_{i,6}NetFlow_{i,t-6} + \rho_{i,12}NetFlow_{i,t-12} + \epsilon_{i,t} \quad (1'')$$

Table S1.32
Dependent Variable: U.S. Net Exchanges
Robustness Check: Inclusion of Dummy Variables for November, December, January, and February

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Equity	Hybrid	Corporate Fixed Income	Government Fixed Income	Money Market
μ	0.086***	0.031**	0.283***	0.190***	-0.094***
	(3.41)	(2.41)	(9.83)	(6.64)	(-3.95)
$\mu_{\hat{OR}}$	-0.142***	0.029***	-0.075**	0.173***	0.245***
	(-6.31)	(2.93)	(-2.41)	(7.39)	(8.48)
μ_{Ads}	-0.080***	-0.012	-0.357***	-0.134***	0.163***
	(-3.21)	(-1.01)	(-12.4)	(-5.37)	(6.49)
$\mu_{R^{Year}}$	-0.003	-0.014***	0.107***	0.087***	0.013*
	(-1.47)	(-5.42)	(8.42)	(9.34)	(1.94)
$\mu_{CapGains}$	-0.015***	-0.008***	-0.117***	-0.589***	-14.53***
	(-14.5)	(-7.21)	(-9.85)	(-28.7)	(-3.58)
μ_{Nov}	0.026	0.038***	0.070***	-0.167***	-0.117***
	(1.62)	(4.97)	(3.24)	(-10.6)	(-7.12)
μ_{Dec}	0.049***	-0.065***	-0.078***	-0.181***	0.010
	(3.64)	(-8.87)	(-4.53)	(-11.0)	(0.53)
μ_{Jan}	0.127***	0.008	0.160***	0.033**	-0.303***
	(7.79)	(0.85)	(8.33)	(2.30)	(-24.2)
μ_{Feb}	0.040**	0.034***	0.013	-0.030	-0.021
	(2.35)	(4.40)	(0.63)	(-1.56)	(-1.41)
ρ_1	0.036***	0.607***	0.201***	0.165***	0.163***
	(3.81)	(43.27)	(15.87)	(10.40)	(12.80)
ρ_3	0.171***	0.169***	0.035***	-0.064***	0.083***
	(19.87)	(12.24)	(2.78)	(-6.54)	(9.59)
ρ_6	0.049***	0.128***	-0.061***	0.088***	0.203***
	(6.20)	(9.23)	(-5.17)	(8.56)	(23.00)
ρ_{12}	0.004	-0.062***	-0.116***	-0.055***	-0.031***
	(0.47)	(-5.24)	(-11.0)	(-5.39)	(-4.02)
R^2	0.0873	0.65	0.1145	0.2331	0.1555
AR(12)	10.77	10.32	17.63	10.99	7.54
ARCH(12)	10.61	14.34	18.72*	15.46	58.71***

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	167.3*** [5]
$\mu_{\hat{OR}}$ equivalent across series	117.3*** [4]
Test of Over-Identifying Restrictions	48.3 [120]

Notes: See the notes to Table S1.1, with the following exception: We estimate a modified version of Equation (2), including the monthly dummy variables:

$$\begin{aligned} NetExchange_{i,t} &= \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t} \\ &+\mu_{i,Nov}Nov_t + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t + \mu_{i,Feb}Feb_t + \rho_{i,1}NetExchange_{i,t-1} \\ &+\rho_{i,3}NetExchange_{i,t-3} + \rho_{i,6}NetExchange_{i,t-6} + \rho_{i,12}NetExchange_{i,t-12} + \epsilon_{i,t}. \end{aligned} \tag{2''}$$

Table S1.33
Dependent Variable: Canadian Net Exchanges
Robustness Check: Inclusion of Dummy Variables for November, December, January, and February

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Equity	Hybrid	Fixed Income	Global Fixed Income
μ	-0.022**	-0.064***	-0.053	-0.082***
	(-2.15)	(-6.79)	(-1.34)	(-3.32)
$\mu_{\hat{OR}}$	-0.100**	-0.192***	0.259**	0.310***
	(-2.25)	(-4.90)	(2.01)	(3.56)
$\mu_{R^{Year}}$	0.025***	0.044***	-0.222***	0.274***
	(2.90)	(3.14)	(-5.03)	(4.76)
$\mu_{CapGains}$	-0.001	-0.001	0.026***	-0.026***
	(-0.65)	(-0.48)	(4.12)	(-4.96)
$\mu_{November}$	0.203***	0.335***	-0.637***	-0.354***
	(4.58)	(7.18)	(-5.65)	(-4.13)
$\mu_{December}$	-0.031	0.008	-0.712***	0.210***
	(-1.13)	(0.36)	(-5.15)	(3.84)
$\mu_{January}$	0.217***	0.201***	0.485***	-0.532***
	(6.04)	(8.25)	(4.56)	(-9.41)
$\mu_{February}$	0.023	0.057	-0.263**	-0.100
	(0.63)	(1.61)	(-2.40)	(-1.26)
ρ_1	0.229***	0.461***	0.265***	0.308***
	(6.71)	(10.07)	(10.42)	(9.62)
ρ_3	0.068***	0.237***	0.052**	0.087***
	(3.58)	(7.09)	(2.56)	(3.41)
ρ_6	0.033	0.050***	0.055**	0.070***
	(1.60)	(3.35)	(2.29)	(2.64)
R^2	0.1466	0.4466	0.1493	0.223
AR(12)	22.44 **	6.29	7.06	17.81
ARCH(12)	12.68	40.15 ***	29.76 ***	11.27

Panel B: Systems Equations Joint Tests

Joint Tests Across Indices	χ^2 [degrees of freedom]
$\hat{OR}_t$ jointly equal to 0 across series	34 *** [4]
$\hat{OR}_t$ equivalent across series	34 *** [3]
Test of Over-Identifying Restrictions	34.3 [60]

Notes: See the notes to Table S1.1, with the following exception: We estimate a modified version of Equation (3), using net exchange data for Canadian asset classes, and including monthly dummy variables:

$$NetExchange_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t} + \mu_{i,Nov}Nov_t$$
$$+\mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t + \mu_{i,Feb}Feb_t + \rho_{i,1}NetExchange_{i,t-1}$$
$$+\rho_{i,3}NetExchange_{i,t-3} + \rho_{i,6}NetExchange_{i,t-6} + \rho_{i,12}NetExchange_{i,t-12} + \epsilon_{i,t} \quad (3')$$

Table S1.34
Dependent Variable: Australian Net Flows
Robustness Check: Exclusion of Dummy Variables for May, June, July, and April

Parameter	Equity (t-test)
μ	-0.140**
	(-2.20)
$\mu_{\hat{OR}_{South}}$	-0.435***
	(-2.82)
$\mu_{R^{Year}}$	0.106**
	(1.99)
$\mu_{CapGains}$	0.005
	(0.78)
μ_{ρ_1}	0.129**
	(2.50)
μ_{ρ_2}	0.272***
	(3.70)
μ_{ρ_3}	0.264***
	(3.81)
μ_{ρ_6}	0.131*
	(1.65)
$\mu_{\rho_{12}}$	0.153**
	(2.55)
R^2	0.5779
AR(12)	13.34
ARCH(12)	12.49

Notes: See the notes to Table S1.1, with the following exception: We estimate a modified version of Equation (4), using net flow data for the Australian equity class, and excluding monthly dummy variables:

$$NetFlow_{i,t} = \mu_i + \mu_{\hat{OR}_{South}} \hat{OR}_{South_t} + \mu_{i,R^{Year}} R_{i,t}^{Year} + \mu_{i,CapGains} R_{i,t}^{CapGains}$$
$$+\rho_1 NetFlow_{t-1} + \rho_2 NetFlow_{t-2} + \rho_3 NetFlow_{t-3} + \rho_{i,6} NetFlow_{i,t-6} + \rho_{i,12} NetFlow_{i,t-12} + \epsilon_{i,t} \qquad (4'')$$

Appendix S2: Alternate Classification of U.S. Funds

As a supplement to studying the five asset classes, we explored a less coarse classification of the ICI fund categories. In Table S2.1 we map the ICI categories into nine asset classes, allowing more variation in risk across the classes. Instead of "equity", we now consider "risky equity" and "safe equity." "Hybrid" remains as previously defined. "Corporate fixed income" is split into "global bond" and "corporate bond". "Government fixed income" is split into "munis," "medium and short-term government," and "general-term government." The "money market" class remains as previously defined. Table S2.2 contains summary statistics on the net flows, excess returns, and other variables for these nine asset classes, as well as correlations between net flows across classes.

In Table S2.3, we present results from estimating the following as a system of nine equations (across the expanded set of nine asset classes) using GMM and HAC standard errors:[62]

$$\begin{aligned} NetFlow_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R_{i,t}^{Year} + \mu_{i,CapGains}R_{i,t}^{CapGains} \\ +\mu_{i,Nov}Nov_t + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t \\ +\mu_{i,Feb}Feb_t + \mu_{i,Savings}Savings_{t-1} + \epsilon_{i,t}. \end{aligned} \tag{5}$$

Panels A and B contain coefficient estimates and some regression diagnostic statistics, and Panel C contains joint test statistics across the classes. We find the onset/recovery variable coefficient estimates are negative and significant for the risky equity, safe equity, hybrid, and U.S. corporate bond asset classes, with the equity case showing the largest economic magnitude of these four.

We find positive and significant coefficient estimates for the global corporate bond and money market classes. Once again, the money market coefficient estimate is the largest of all considered. Joint tests in Panel C support the notion that the safest and riskiest fund flows exhibit opposing seasonal cycles related to seasonally varying risk aversion and that the onset/recovery estimates are jointly statistically different from zero, again strongly rejecting the null of no seasonal effect.

[62] This is Equation (1) excluding lagged dependent variables (and estimated over nine asset classes instead of five). The results are very similar for a model with sufficient lags to purge autocorrelation. The model is fully detailed in Appendix S3.

Table S2.1: Classification of Funds into Enlarged Set of Nine Asset Classes

In this table we map funds from thirty investment objective categories into a set of nine asset classes, based on characteristics of the individual funds provided in the Investment Company Institute (2003) Mutual Fund Factbook. The asset classes are “Risky Equity,” “Safe Equity,” “Hybrid,” “U.S. Corporate Bond,” “Global Corporate Bond,” “General-Term Government,” “Medium and Short-Term Government,” “Munis,” and “Money Market.”

Number	ICI Fund	Asset Class (Based on Enlarged Set of Nine)
1	Aggressive Growth	Risky Equity
2	Growth	Risky Equity
3	Sector	Risky Equity
4	Emerging Markets	Risky Equity
5	Global Equity	Safe Equity
6	International Equity	Safe Equity
7	Regional Equity	Safe Equity
8	Growth and Income	Safe Equity
9	Income Equity	Safe Equity
10	Asset Allocation	Hybrid
11	Balanced	Hybrid
12	Flexible Portfolio	Hybrid
13	Income Mixed	Hybrid
14	Corporate - General	U.S. Corporate Bond
15	Corporate - Intermediate	U.S. Corporate Bond
16	Corporate - Short Term	U.S. Corporate Bond
17	High Yield	U.S. Corporate Bond
18	Global Bond - General	Global Bond
19	Global Bond - Short Term	Global Bond
20	Other World Bond	Global Bond
21	Government Bond - General	General-Term Government
22	Government Bond - Intermediate	Medium and Short-Term Government
23	Government Bond - Short Term	Medium and Short-Term Government
24	Mortgage Backed	Medium and Short-Term Government
25	Strategic Income	U.S. Corporate Bond
26	State Municipal Bond - General	Munis
27	State Municipal Bond - Short Term	Munis
28	National Municipal Bond - General	Munis
29	National Municipal Bond - Short Term	Munis
30	Taxable Money Market - Government	Money Market

Table S2.2: Summary Statistics on U.S. Monthly Percentage Flows for Nine Asset Classes

This table contains summary statistics on U.S. monthly percentage fund flows, explanatory variables, and returns over February 1985 through December 2006, for a total of 263 months for nine asset classes. Flows data are from the Investment Company Institute, and returns were calculated using fund flow and total net asset changes available from the Investment Company Institute. The returns in Panel C are in excess of the 30-day T-bill rate, with the 30-day T-bill rate available from CRSP. $R^{CapGains}$ is the capital gains measure based on cumulated fund percentage returns for November and December, and R^{Year} is the one moving average of fund percentage returns, to capture return chasing. For each set of fund flows and returns we present the mean monthly values (Mean), standard deviation (Std), minimum (Min), maximum (Max), skewness (Skew) and kurtosis (Kurt). For excess returns we also present the CAPM beta and the coefficient estimate on the onset/recovery variable, each estimated separately of the other. These coefficients are produced in a system-equation estimation using GMM and HAC standard errors. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. For instruments for the CAPM regression, we use the market return, a constant, and one lag of each excess return. We use the CRSP value-weighted total market return, including dividends for the market return. For instruments for the onset/recovery regression, we use the onset/recovery variable ($\hat{OR}$), a constant, and one lag of each excess return.

Panel A: Asset Class Fund Percentage Net Flows

Index	Mean	Std	Min	Max	Skew	Kurt
Risky Equity	0.561	1.00	-3.87	3.31	-0.538	2.12
Safe Equity	0.620	0.82	-2.55	4.25	0.861	2.99
Hybrid	0.795	1.36	-1.68	6.67	1.157	1.47
U.S. Corporate Bond	0.780	1.26	-2.42	5.84	0.979	1.98
Global Bond	1.917	9.67	-7.05	138.57	11.301	154.18
General-Term Government	0.626	3.58	-3.92	25.94	3.613	15.87
Medium and Short-Term Government	0.624	3.09	-5.00	15.25	2.472	6.74
Munis	0.615	1.47	-3.89	6.02	1.479	3.48
Money Market	0.378	2.01	-5.02	8.50	0.797	2.48

Table S2.2 continues on next page

Table S2.2, Continued

Panel B: Explanatory Variables

Index	Mean	Std	Min	Max	Skew	Kurt
Risky Equity Fund Specific:						
$R^{CapGains}$	4.144	3.57	0.00	14.37	0.827	0.36
R^{Year}	1.173	1.34	-3.70	3.50	-1.079	1.12
Safe Equity Fund Specific:						
$R^{CapGains}$	2.837	2.55	0.00	12.10	1.484	3.18
R^{Year}	1.195	1.18	-2.12	4.76	-0.324	0.86
Hybrid Fund Specific:						
$R^{CapGains}$	1.830	1.62	0.00	6.29	0.854	-0.28
R^{Year}	0.826	0.69	-0.98	2.22	-0.276	-0.49
U.S. Corporate Bond Fund Specific:						
$R^{CapGains}$	0.394	0.40	0.00	1.78	1.317	1.24
R^{Year}	0.775	0.54	-0.45	2.00	-0.164	-0.59
Global Bond Fund Specific:						
$R^{CapGains}$	0.959	1.30	0.00	5.87	2.409	5.97
R^{Year}	1.269	1.65	-0.88	8.50	2.301	6.46
General-Term Government Fund Specific:						
$R^{CapGains}$	0.338	0.32	0.00	1.32	0.929	-0.04
R^{Year}	0.539	0.51	-0.79	2.51	0.746	2.02
Medium and Short-Term Government Fund Specific:						
$R^{CapGains}$	0.122	0.14	0.00	0.58	1.521	1.67
R^{Year}	0.480	0.64	-0.55	3.10	1.391	3.14
Munis Fund Specific:						
$R^{CapGains}$	0.243	0.25	0.00	1.00	1.589	1.99
R^{Year}	0.508	0.44	-0.58	2.04	0.528	1.24
Money Market Fund Specific:						
$R^{CapGains}$	0.000	0.00	0.00	0.00	4.422	18.75
R^{Year}	0.508	0.37	-0.44	1.40	-0.470	0.33

Table S2.2 continues on next page

Table S2.2, Continued

Panel C: Fund Excess Returns

Index	Mean	Std	Min	Max	Skew	Kurt	Beta	$\hat{OR}$
Risky Equity	0.768	4.58	-23.05	11.90	-0.996	3.28	1.026***	-1.532**
Safe Equity	0.806	4.12	-18.91	31.74	0.769	13.70	0.834***	-1.960***
Hybrid	0.434	2.51	-10.80	8.44	-0.767	2.27	0.509***	-.9224**
U.S. Corporate Bond	0.384	1.34	-3.24	7.37	0.340	2.54	0.116***	-.3693*
Global Bond	0.933	4.74	-8.10	60.24	7.632	93.43	0.106***	0.5592
General-Term Government	0.089	1.47	-7.07	6.56	-0.064	3.25	0.005	0.8897***
Medium and Short-Term Government	0.033	1.34	-4.51	9.93	1.313	11.31	0.000	0.7380***
Munis	0.106	1.33	-6.34	4.19	-0.494	2.64	0.048***	0.6850***
Money Market	0.125	0.91	-2.75	5.98	1.317	7.74	-0.004	0.2552**

Panel D: Asset Class Net Flow Correlations

Asset Class	Risky Equity	Safe Equity	Corp. Hybrid	Corp. Bond - U.S.	Bond - Global	Govt. General	Govt. Med., Short	Munis
Safe Equity	0.634***	—	—	—	—	—	—	—
Hybrid	0.437***	0.747***	—	—	—	—	—	—
Corp. Bond - U.S.	0.233***	0.518***	0.525***	—	—	—	—	—
Corp. Bond - Global	0.029	0.214***	0.131**	0.220***	—	—	—	—
Govt. Bond - General	-0.060	0.254***	0.405***	0.579***	0.188***	—	—	—
Govt. Bond - Med., Short	0.015	0.300***	0.446***	0.704***	0.233***	0.895***	—	—
Munis	0.131**	0.453***	0.536***	0.797***	0.341***	0.708***	0.807***	—
Money Market	-0.124**	-0.157**	-0.130**	-0.095	0.046	-0.102*	-0.034	-0.023

Table S2.3: Regression Results for Enlarged Set of Nine Asset Class: Net Flows

In this table we report coefficient estimates from jointly estimating the following regression for each of nine asset classes in a GMM framework:

$$NetFlow_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R_{i,t}^{Year} + \mu_{i,CapGains}R_{i,t}^{CapGains}$$
$$+\mu_{i,Nov}Nov_t + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t$$
$$+\mu_{i,Feb}Feb_t + \mu_{i,Savings}Savings_{t-1} + \epsilon_{i,t}. \quad (5)$$

The data used to estimate the model span February 1985 through December 2006. The monthly net flows are computed as sales, minus redemptions, plus exchanges in, minus exchanges out, all divided by the previous month's total net assets. The explanatory variables are defined in the text. In Panels A and B we present coefficient estimates with HAC robust t-tests in parentheses. At the bottom of Panels A and B we present the value of adjusted R^2 for each estimation, a Wald χ^2 test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald χ^2 test statistic for the presence of up to 12 lags of ARCH (both with 12 degrees of freedom). The test for ARCH is a standard LM test of order 12. See Engle (1982). To perform the test for autocorrelation, we augment the regression with 12 lags of the residuals, estimate MacKinnon and White (1985) bootstrap heteroskedasticity-consistent standard errors with OLS and test for the joint significance of these terms. Panel C contains joint test statistics. The first is a χ^2 statistic (with 10 degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly zero across the fund asset classes, the second is a χ^2 statistic (with nine degrees of freedom) testing the null that the onset/recovery coefficient estimates are jointly equal to each other across the fund asset classes, and the third is the Hansen (1982) χ^2 goodness-of-fit test of the model based on the optimized value of the objective function produced by GMM. To calculate the standard errors we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. We use the full set of explanatory variables as instruments for the regression. One, two, and three asterisks denote significance at the 10 percent, 5 percent, and 1 percent level respectively, based on two-sided tests.

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Risky Equity	Safe Equity	Hybrid	Corporate Bond - U.S.	Corporate Bond - Global
μ	-0.403***	-3.032***	-5.259***	-6.279***	-23.99***
	(-2.59)	(-33.8)	(-36.8)	(-40.4)	(-40.8)
$\mu_{\hat{OR}}$	-0.785***	-0.423***	-0.209***	-0.464***	0.609***
	(-13.4)	(-11.0)	(-3.47)	(-6.93)	(3.55)
μ_{Ads}	-0.089	0.279***	-0.053	-0.826***	-1.664***
	(-1.27)	(6.39)	(-0.75)	(-13.4)	(-6.39)
$\mu_{R^{Year}}$	0.174***	0.192***	0.696***	1.053***	-0.047
	(25.14)	(47.78)	(53.77)	(56.75)	(-1.49)
$\mu_{Savings}$	0.520***	2.244***	3.905***	4.477***	16.292***
	(5.99)	(43.88)	(50.05)	(47.41)	(47.05)
$\mu_{CapGains}$	-0.001	-0.089***	-0.215***	0.359***	2.356***
	(-0.23)	(-50.2)	(-56.3)	(13.17)	(30.65)
μ_{Nov}	0.087	-0.373***	-0.179***	0.260***	2.168***
	(1.54)	(-11.7)	(-2.67)	(5.78)	(12.43)
μ_{Dec}	0.096**	-0.365***	-0.781***	-0.062	1.583***
	(2.39)	(-9.87)	(-14.2)	(-1.56)	(10.50)
μ_{Jan}	0.331***	0.219***	0.120***	0.381***	-0.413**
	(8.67)	(6.24)	(2.81)	(10.93)	(-2.54)
μ_{Feb}	0.126**	-0.069**	0.031	0.221***	1.152***
	(2.10)	(-2.16)	(0.55)	(4.46)	(5.46)
R^2	0.101	0.2924	0.3718	0.4866	0.1492
AR(12)	111.03***	134.15***	280.48***	114.51***	6.09
ARCH(12)	29.99***	92.42***	75.23***	49.75***	32.68***

Table S2.3 continues on next page

Table S2.3, Continued

Panel B: Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Government General	Government Medium-, Short-Term	Munis	Money Market
μ	-17.85***	-7.624***	-5.835***	0.514**
	(-53.7)	(-24.6)	(-31.7)	(2.03)
$\mu_{\hat{OR}}$	0.182	0.127	-0.058	1.384***
	(1.16)	(0.80)	(-0.75)	(11.11)
μ_{Ads}	-0.046	-0.753***	-0.370***	-0.647***
	(-0.29)	(-4.32)	(-3.81)	(-4.95)
$\mu_{R^{Year}}$	4.161***	3.380***	1.751***	0.915***
	(95.13)	(148.2)	(81.63)	(17.38)
$\mu_{Savings}$	10.789***	5.150***	3.985***	-0.112
	(65.42)	(35.65)	(43.61)	(-0.75)
$\mu_{CapGains}$	-0.626***	-3.355***	-0.722***	208.19***
	(-10.4)	(-49.3)	(-20.3)	(3.46)
μ_{Nov}	-0.260***	-0.725***	-0.219***	1.249***
	(-2.76)	(-7.82)	(-4.57)	(13.62)
μ_{Dec}	-0.463***	-0.685***	-0.450***	0.700***
	(-5.45)	(-7.11)	(-10.5)	(5.66)
μ_{Jan}	-0.228**	-0.095	0.422***	-0.063
	(-2.51)	(-1.51)	(12.26)	(-0.49)
μ_{Feb}	0.109	0.200**	0.180***	0.432***
	(0.93)	(2.04)	(3.40)	(6.11)
R^2	0.5895	0.7024	0.5843	0.0974
AR(12)	157.49***	203.97***	103.24***	49.06***
ARCH(12)	52.17***	101.05***	70.75***	56.37***

Panel C: Joint Tests on Onset/Recovery Coefficient Estimates

Joint Test Across Fund Asset Classes	χ^2 [Degrees of Freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	371.3*** [9]
$\mu_{\hat{OR}}$ equivalent across series	287.9*** [8]
Test of Over-Identifying Restrictions	50.8 [144]

Appendix S3: A Model for U.S. Net Flows Excluding Lagged Dependent Variable Terms

We explore the impact of excluding lagged dependent variables and instead adjust for autocorrelation with Hansen's (1982) GMM and Newey and West (1987, 1994) heteroskedasticity and autocorrelation consistent (HAC) standard errors. The regression model we estimate is as follows:

$$\begin{aligned} NetFlow_{i,t} = \mu_i + \mu_{i,\hat{OR}}\hat{OR}_t + \mu_{i,Ads}Ads_t + \mu_{i,R^{Year}}R^{Year}_{i,t} + \mu_{i,CapGains}R^{CapGains}_{i,t} \\ +\mu_{i,Nov}Nov_t + \mu_{i,Dec}Dec_t + \mu_{i,Jan}Jan_t \\ +\mu_{i,Feb}Feb_t + \mu_{i,Savings}Savings_{t-1} + \epsilon_{i,t}, \end{aligned} \qquad (5)$$

where i indexes the five U.S. mutual fund asset classes. Variables are defined as in the primary estimation introduced in the main text.

We estimate Equation (5) as a system of equations using Hansen's (1982) GMM and Newey and West (1987, 1994) HAC standard errors. To calculate standard errors, we follow Newey and West (1987, 1994) and use the Bartlett kernel and an automatic bandwidth parameter (autocovariance lags) equal to the integer value of $4(T/100)^{2/9}$. The instruments for the regression are constrained to the full set of explanatory variables. Results from estimating this set of equations are shown in Table S3.1. In Panel A we present coefficient estimates and two-sided t-tests. Our use of HAC standard errors is consistent with the strong statistical evidence of autocorrelation. The bottom of Panel A contains the adjusted R^2 for each asset class model and χ^2 statistics for testing for the presence of up to 12 lags of autocorrelation (AR) or ARCH. The test for ARCH is a standard LM test of order 12. To perform the test for autocorrelation, we augment the regression with 12 lags of the residuals, estimate MacKinnon and White (1985) bootstrap HAC standard errors with OLS, and test for the joint significance of these terms.

Consider first the coefficient estimates on the onset/recovery variable. The equity, hybrid, corporate, and government fixed income asset classes all have negative coefficients on $\hat{OR}_t$, but only equity fund flows display statistically significant negative effects, and equity funds also display the largest economic magnitude effect of these four. Recall that the onset/recovery variable itself is positive in the summer/fall and negative in the winter/spring (see Figure 1). Thus, the implication is that equity fund flows are expected to be below-average in the summer/fall and above-average in the winter/spring, as displayed in the unconditional plot in Figure 2. The onset/recovery variable is positive and statistically significant for the money market asset class, implying money market fund flows are expected to be above average in the summer/fall and below average in the winter/spring, again as we see unconditionally. The impact of advertising is again to divert flows from safe asset classes to risky asset classes, there is strong evidence of return-chasing and capital-gains avoidance. (Recall that average realized capital gains are virtually zero for the money market fund class, and only 24 basis points for the government versus roughly 3.5 percent for the equity fund class, hence the anomalously large estimate on the capital gains variable for the money market class is not economically meaningful.) The savings variable is strongly significantly positive for all classes of funds except the money market class, consistent with results in the paper.

Panel B contains statistics testing the joint significance of the onset/recovery coefficient estimates across the asset classes, using Wald χ^2 statistics based on the HAC covariance estimates. The first statistic tests whether the onset/recovery estimates are jointly equal to zero across the series. We strongly reject the null of no seasonal effect. The second joint statistic tests whether the onset/recovery coefficient estimates are jointly equal to each other, not necessarily zero. This null is strongly rejected as well, supporting the position that the safe and risky funds do indeed exhibit different seasonal cycles in flows related to the onset/recovery variable. The χ^2 goodness-of-fit test indicates that the over-identifying moment restrictions we use to estimate the model are not rejected.

Table S3.1: Regression Results for U.S. Asset Class Net Flows, No Autocorrelation Controls

Panel A: Parameter Estimates and Diagnostic Statistics

Parameter or Statistic	Equity	Hybrid	Corporate Fixed Income	Government Fixed Income	Money Market
μ	-1.771***	-5.523***	-6.712***	-9.194***	-0.073
	(-3.54)	(-7.38)	(-8.84)	(-6.34)	(-0.07)
$\mu_{\hat{OR}}$	-0.493***	-0.113	-0.379	-0.165	1.385***
	(-2.66)	(-0.34)	(-1.57)	(-0.38)	(4.17)
μ_{Ads}	0.042	-0.109	-0.688***	-0.503	-0.549
	(0.25)	(-0.36)	(-3.08)	(-1.19)	(-1.56)
$\mu_{R^{Year}}$	0.198***	0.607***	0.940***	2.701***	0.809***
	(7.63)	(8.28)	(10.15)	(11.69)	(4.82)
$\mu_{Savings}$	1.422***	4.157***	4.800***	6.214***	0.228
	(5.40)	(10.30)	(9.93)	(6.78)	(0.35)
$\mu_{CapGains}$	-0.033***	-0.212***	0.115	-1.699***	273.39
	(-3.09)	(-10.5)	(0.73)	(-4.60)	(1.35)
μ_{Nov}	-0.114	-0.201	0.103	-0.604**	1.433***
	(-0.89)	(-0.93)	(0.61)	(-2.49)	(5.42)
μ_{Dec}	-0.133	-0.778***	-0.194	-0.747***	0.821**
	(-1.22)	(-4.60)	(-1.37)	(-3.41)	(2.22)
μ_{Jan}	0.258*	0.099	0.280*	-0.004	-0.173
	(1.80)	(0.56)	(1.95)	(-0.02)	(-0.36)
μ_{Feb}	0.009	0.024	0.152	0.095	0.405*
	(0.08)	(0.18)	(1.17)	(0.53)	(1.73)
R^2	0.1964	0.3691	0.4557	0.6195	0.0955
AR(12)	178.35***	275.63***	122.73***	239.74***	49.10***
ARCH(12)	55.27***	75.66***	40.63***	62.98***	57.66***

Panel B: Joint Tests on Onset/Recovery Coefficient Estimates

Joint Test Across Asset Classes	χ^2 [Degrees of Freedom]
$\mu_{\hat{OR}}$ jointly equal to 0 across series	29.9*** [5]
$\mu_{\hat{OR}}$ equivalent across series	29.9*** [4]
Test of Over-Identifying Restrictions	43.6 [40]

Notes: One, two, and three asterisks denote significance at the 10, 5, and 1 percent level respectively, based on two-sided tests.

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