# Internet Appendices for "Seasonal Asset Allocation: Evidence from Mutual Fund Flows"

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August 2014

## Appendix 1: 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 A1.1, alternative return chasing measures in Section A1.2, use of a seasonal-depression incidence measure in place of the onset/recovery variable in Section A1.3, and including or excluding monthly dummy variables in Section A1.4. The data, explanatory variables, and table construction are as defined in the text, unless indicated otherwise.

For the robustness checks described in Sections A1.1, A1.2, and A1.3, we use U.S. data as described in Section III, 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 A1.1, replacing $R_{i,t}^{Year}$ with alternate return chasing measures in Section A1.2, and replacing $OR_t$ with an alternate seasonal depression measure in Section A1.3):

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

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

We postpone discussing which regression models are estimated in Section A1.4 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.

### A1.1 Alternative Capital Gains Overhang Proxies

Tables A1.1 through A1.20 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 VII. Tables A1.1 through A1.10 employ net flows as the dependent variable and Tables A1.11 through A1.20 employ net exchanges. In all cases, the finding of statistically significant seasonally opposing flows in risky versus safe fund categories remains.

### A1.2 Alternative Return Chasing Measures

Tables A1.21 through A1.28 contain results based on different measures for return chasing, including a one-month lagged return or a mean monthly return averaged over the prior one, two, or three quarters, rather than a mean monthly return averaged over the prior 12 months. (Tables A1.21 through A1.24 correspond to net flows and Tables A1.25 through A1.28 correspond to net exchanges.) In all cases, the findings with respect to seasonal variation in flows are robust to these alternate measures.

### A1.3 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 A1.29 (net flows) and A1.30 (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.

### A1.4 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 V and VI). Table A1.31 contains results based on estimating the primary U.S. net flows specification (see Equation (1) and Table 3) excluding the dummy variables for November, December, January, and February. Table A1.32 contains results based on estimating the primary U.S. net exchanges specification (see Equation (2) and Table 4) with the addition of the dummy variables for November, December, January, and February. Table A1.33 contains results based on estimating the primary Canadian net exchanges specification (see Equation (3) and Table 7) with the addition of the dummy variables for November, December, January, and February. Table A1.34 contains results based on estimating the primary Australian net flows specification (see Equation (4) and Table 9) 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 A1.1**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.198*** | 0.331*** | 0.130*** | -0.045 | 0.632*** |
| | ( 6.17) | ( 6.59) | ( 2.66) | ( -1.22) | ( 5.81) |
| $\mu_{Dec}$ | 0.173*** | -0.394*** | -0.233*** | -0.162*** | 0.624*** |
| | ( 6.09) | ( -9.16) | ( -5.27) | ( -6.15) | ( 4.23) |
| $\mu_{Jan}$ | 0.411*** | 0.416*** | 0.628*** | 0.350*** | -0.653*** |
| | ( 9.86) | ( 10.63) | ( 14.27) | ( 12.16) | ( -4.48) |
| $\mu_{Feb}$ | -0.004 | -0.142*** | 0.005 | -0.094*** | -0.113 |
| | ( -0.12) | ( -5.18) | ( 0.10) | ( -2.70) | ( -1.20) |
| $\rho_1$ | 0.402*** | 0.488*** | 0.511*** | 0.592*** | 0.070*** |
| | ( 31.93) | ( 26.36) | ( 39.39) | ( 51.45) | ( 4.39) |
| $\rho_3$ | 0.313*** | 0.349*** | 0.275*** | 0.253*** | 0.337*** |
| | ( 34.49) | ( 16.87) | ( 21.81) | ( 20.76) | ( 18.06) |
| $\rho_6$ | -0.007 | 0.006 | 0.028** | 0.080*** | 0.112*** |
| | ( -0.71) | ( 0.41) | ( 2.38) | ( 7.31) | ( 7.24) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.2**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.196*** | 0.282*** | 0.109** | -0.174*** | 0.632*** |
| | ( 5.59) | ( 5.80) | ( 2.26) | ( -4.64) | ( 5.33) |
| $\mu_{Dec}$ | 0.163*** | -0.439*** | -0.246*** | -0.319*** | 0.722*** |
| | ( 5.23) | ( -8.81) | ( -5.91) | ( -12.1) | ( 4.27) |
| $\mu_{Jan}$ | 0.393*** | 0.491*** | 0.628*** | 0.523*** | -0.743*** |
| | ( 8.44) | ( 11.47) | ( 14.22) | ( 17.87) | ( -4.62) |
| $\mu_{Feb}$ | -0.003 | -0.119*** | 0.015 | -0.067* | -0.135 |
| | ( -0.07) | ( -3.92) | ( 0.29) | ( -1.78) | ( -1.26) |
| $\rho_1$ | 0.426*** | 0.503*** | 0.504*** | 0.646*** | 0.073*** |
| | ( 33.89) | ( 32.52) | ( 36.57) | ( 51.94) | ( 4.41) |
| $\rho_3$ | 0.324*** | 0.362*** | 0.275*** | 0.267*** | 0.336*** |
| | ( 28.83) | ( 20.58) | ( 23.67) | ( 18.55) | ( 19.22) |
| $\rho_6$ | -0.027** | 0.014 | 0.039*** | 0.070*** | 0.109*** |
| | ( -2.27) | ( 1.15) | ( 3.26) | ( 5.40) | ( 6.85) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.3**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.192*** | 0.302*** | 0.123** | -0.124*** | 0.673*** |
| | ( 5.50) | ( 6.49) | ( 2.57) | ( -3.53) | ( 5.79) |
| $\mu_{Dec}$ | 0.162*** | -0.425*** | -0.218*** | -0.256*** | 0.768*** |
| | ( 5.50) | ( -8.92) | ( -5.41) | ( -10.7) | ( 4.77) |
| $\mu_{Jan}$ | 0.401*** | 0.467*** | 0.613*** | 0.442*** | -0.747*** |
| | ( 9.18) | ( 11.29) | ( 15.13) | ( 14.64) | ( -4.74) |
| $\mu_{Feb}$ | -0.005 | -0.129*** | 0.001 | -0.103*** | -0.113 |
| | ( -0.14) | ( -4.15) | ( 0.01) | ( -2.75) | ( -1.20) |
| $\rho_1$ | 0.427*** | 0.503*** | 0.504*** | 0.638*** | 0.070*** |
| | ( 34.93) | ( 31.12) | ( 37.78) | ( 53.93) | ( 4.10) |
| $\rho_3$ | 0.325*** | 0.364*** | 0.277*** | 0.267*** | 0.337*** |
| | ( 31.48) | ( 21.42) | ( 23.58) | ( 18.65) | ( 19.29) |
| $\rho_6$ | -0.028** | 0.012 | 0.038*** | 0.073*** | 0.104*** |
| | ( -2.53) | ( 0.95) | ( 3.12) | ( 6.10) | ( 6.96) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.4**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.164*** | 0.271*** | 0.148*** | -0.017 | 0.689*** |
| | ( 4.56) | ( 7.40) | ( 2.62) | ( -0.55) | ( 5.89) |
| $\mu_{Dec}$ | 0.154*** | -0.392*** | -0.225*** | -0.146*** | 0.651*** |
| | ( 4.97) | ( -8.90) | ( -5.74) | ( -6.14) | ( 4.09) |
| $\mu_{Jan}$ | 0.419*** | 0.403*** | 0.631*** | 0.542*** | -0.675*** |
| | ( 11.91) | ( 11.57) | ( 15.63) | ( 19.24) | ( -4.74) |
| $\mu_{Feb}$ | 0.031 | -0.217*** | 0.124*** | 0.103*** | 0.015 |
| | ( 0.94) | ( -7.06) | ( 2.94) | ( 2.94) | ( 0.18) |
| $\mu_{rho_1}$ | 0.433*** | 0.520*** | 0.516*** | 0.647*** | 0.050** |
| | ( 33.33) | ( 32.72) | ( 42.56) | ( 55.22) | ( 2.56) |
| $\mu_{rho_3}$ | 0.291*** | 0.352*** | 0.247*** | 0.168*** | 0.356*** |
| | ( 24.99) | ( 19.14) | ( 20.58) | ( 14.42) | ( 21.92) |
| $\mu_{rho_6}$ | -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 | $\chi^2$ [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 A1.1

**Table A1.5**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.179*** | 0.217*** | 0.167*** | -0.021 | 0.789*** |
| | ( 4.12) | ( 6.86) | ( 2.85) | ( -0.68) | ( 7.03) |
| $\mu_{Dec}$ | 0.156*** | -0.302*** | -0.232*** | -0.179*** | 0.842*** |
| | ( 5.34) | ( -7.59) | ( -5.62) | ( -7.11) | ( 5.30) |
| $\mu_{Jan}$ | 0.299*** | 0.339*** | 0.556*** | 0.448*** | -0.804*** |
| | ( 9.42) | ( 9.68) | ( 12.46) | ( 15.71) | ( -5.00) |
| $\mu_{Feb}$ | -0.015 | -0.191*** | 0.179*** | 0.102*** | 0.093 |
| | ( -0.44) | ( -5.66) | ( 3.92) | ( 2.60) | ( 1.01) |
| $\rho_1$ | 0.474*** | 0.513*** | 0.442*** | 0.609*** | 0.047*** |
| | ( 46.24) | ( 30.12) | ( 31.58) | ( 44.63) | ( 2.83) |
| $\rho_3$ | 0.324*** | 0.408*** | 0.139*** | 0.100*** | 0.373*** |
| | ( 24.80) | ( 18.72) | ( 12.26) | ( 8.95) | ( 19.66) |
| $\rho_6$ | -0.050*** | -0.025** | -0.013 | -0.006 | 0.075*** |
| | ( -4.48) | ( -1.99) | ( -0.99) | ( -0.49) | ( 4.61) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.6**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.315*** | 0.479*** | -0.037 | -0.422*** | 0.797*** |
| | ( 8.83) | ( 8.51) | ( -0.61) | ( -12.8) | ( 8.06) |
| $\mu_{Dec}$ | 0.284*** | -0.281*** | -0.400*** | -0.558*** | 0.880*** |
| | ( 7.04) | ( -7.36) | ( -7.89) | ( -15.8) | ( 7.43) |
| $\mu_{Jan}$ | 0.440*** | 0.438*** | 0.637*** | 0.497*** | -0.625*** |
| | ( 10.42) | ( 11.08) | ( 14.26) | ( 12.97) | ( -3.93) |
| $\mu_{Feb}$ | 0.014 | -0.136*** | 0.013 | -0.073** | -0.089 |
| | ( 0.39) | ( -4.71) | ( 0.28) | ( -1.99) | ( -0.86) |
| $\rho_1$ | 0.413*** | 0.505*** | 0.506*** | 0.670*** | 0.067*** |
| | ( 29.29) | ( 26.48) | ( 46.26) | ( 71.23) | ( 3.66) |
| $\rho_3$ | 0.325*** | 0.362*** | 0.280*** | 0.270*** | 0.317*** |
| | ( 34.73) | ( 19.99) | ( 28.20) | ( 23.45) | ( 17.66) |
| $\rho_6$ | -0.015 | -0.000 | 0.033*** | 0.063*** | 0.111*** |
| | ( -1.37) | ( -0.02) | ( 3.05) | ( 5.11) | ( 7.02) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.7**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.303*** | 0.452*** | 0.317*** | 0.038 | 1.195*** |
| | ( 8.20) | ( 6.51) | ( 7.00) | ( 0.99) | ( 9.14) |
| $\mu_{Dec}$ | 0.275*** | -0.287*** | -0.028 | -0.084** | 1.264*** |
| | ( 6.51) | ( -6.35) | ( -0.61) | ( -2.57) | ( 7.87) |
| $\mu_{Jan}$ | 0.436*** | 0.432*** | 0.633*** | 0.492*** | -0.635*** |
| | ( 10.59) | ( 10.37) | ( 14.47) | ( 13.69) | ( -3.95) |
| $\mu_{Feb}$ | 0.015 | -0.135*** | 0.006 | -0.087** | -0.129 |
| | ( 0.39) | ( -4.31) | ( 0.13) | ( -2.38) | ( -1.29) |
| $\rho_1$ | 0.417*** | 0.497*** | 0.520*** | 0.672*** | 0.065*** |
| | ( 29.05) | ( 25.90) | ( 41.38) | ( 63.41) | ( 3.42) |
| $\rho_3$ | 0.325*** | 0.365*** | 0.280*** | 0.260*** | 0.341*** |
| | ( 33.04) | ( 20.99) | ( 25.63) | ( 19.82) | ( 18.26) |
| $\rho_6$ | -0.017 | 0.002 | 0.029** | 0.055*** | 0.105*** |
| | ( -1.52) | ( 0.15) | ( 2.55) | ( 4.67) | ( 6.26) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.8**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.154*** | 0.292*** | 0.304*** | 0.041 | 1.204*** |
| | ( 5.65) | ( 7.59) | ( 6.16) | ( 0.92) | ( 8.82) |
| $\mu_{Dec}$ | 0.136*** | -0.455*** | -0.030 | -0.081** | 1.322*** |
| | ( 5.58) | ( -9.33) | ( -0.62) | ( -2.24) | ( 6.92) |
| $\mu_{Jan}$ | 0.434*** | 0.437*** | 0.637*** | 0.498*** | -0.628*** |
| | ( 10.42) | ( 9.82) | ( 14.43) | ( 14.15) | ( -4.07) |
| $\mu_{Feb}$ | 0.020 | -0.135*** | 0.008 | -0.085** | -0.132 |
| | ( 0.53) | ( -4.23) | ( 0.17) | ( -2.32) | ( -1.31) |
| $\rho_1$ | 0.427*** | 0.505*** | 0.521*** | 0.673*** | 0.065*** |
| | ( 31.35) | ( 32.12) | ( 41.00) | ( 62.66) | ( 3.41) |
| $\rho_3$ | 0.326*** | 0.368*** | 0.281*** | 0.258*** | 0.344*** |
| | ( 32.44) | ( 21.74) | ( 25.01) | ( 20.06) | ( 19.12) |
| $\rho_6$ | -0.023** | -0.004 | 0.025** | 0.052*** | 0.105*** |
| | ( -2.11) | ( -0.36) | ( 2.34) | ( 4.35) | ( 7.12) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.9**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.153** | 0.356*** | 0.245*** | -0.127** | 0.811*** |
| | ( 2.54) | ( 6.87) | ( 3.55) | ( -2.56) | ( 4.89) |
| $\mu_{Dec}$ | 0.128*** | -0.327*** | -0.124* | -0.260*** | 1.000*** |
| | ( 3.14) | ( -4.97) | ( -1.73) | ( -6.73) | ( 4.63) |
| $\mu_{Jan}$ | 0.432*** | 0.426*** | 0.623*** | 0.494*** | -0.696*** |
| | ( 8.88) | ( 8.79) | ( 11.82) | ( 10.87) | ( -3.66) |
| $\mu_{Feb}$ | 0.002 | -0.138*** | 0.003 | -0.077* | -0.105 |
| | ( 0.04) | ( -3.86) | ( 0.05) | ( -1.77) | ( -0.88) |
| $\rho_1$ | 0.429*** | 0.511*** | 0.517*** | 0.671*** | 0.059*** |
| | ( 28.25) | ( 21.96) | ( 32.54) | ( 50.61) | ( 2.71) |
| $\rho_3$ | 0.320*** | 0.363*** | 0.272*** | 0.261*** | 0.331*** |
| | ( 25.94) | ( 16.96) | ( 19.03) | ( 16.43) | ( 15.48) |
| $\rho_6$ | -0.016 | -0.004 | 0.028* | 0.051*** | 0.117*** |
| | ( -1.23) | ( -0.28) | ( 1.92) | ( 3.62) | ( 5.36) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.10**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | -0.011 | 0.189*** | 0.393*** | -0.470*** | 1.212*** |
| | ( -0.42) | ( 5.82) | ( 9.54) | ( -14.9) | ( 13.13) |
| $\mu_{Dec}$ | -0.022 | -0.570*** | 0.047 | -0.536*** | 1.244*** |
| | ( -0.90) | ( -14.4) | ( 1.08) | ( -17.1) | ( 11.13) |
| $\mu_{Jan}$ | 0.372*** | 0.485*** | 0.711*** | 0.333*** | -0.584*** |
| | ( 13.89) | ( 18.83) | ( 25.71) | ( 14.75) | ( -6.12) |
| $\mu_{Feb}$ | -0.016 | -0.114*** | 0.047 | -0.104*** | -0.121 |
| | ( -0.64) | ( -5.50) | ( 1.45) | ( -3.83) | ( -1.64) |
| $\rho_1$ | 0.417*** | 0.482*** | 0.501*** | 0.566*** | 0.072*** |
| | ( 56.20) | ( 48.99) | ( 55.28) | ( 64.63) | ( 6.74) |
| $\rho_3$ | 0.316*** | 0.361*** | 0.277*** | 0.245*** | 0.343*** |
| | ( 58.62) | ( 40.23) | ( 39.03) | ( 28.34) | ( 25.04) |
| $\rho_6$ | -0.030*** | 0.014* | 0.027*** | 0.126*** | 0.106*** |
| | ( -4.62) | ( 1.81) | ( 3.10) | ( 14.43) | ( 9.56) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1

**Table A1.11**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.096*** | 0.060*** | 0.140*** | 0.028* | -0.119*** |
| | ( 6.45) | ( 8.05) | ( 6.41) | ( 1.68) | ( -6.68) |
| $\mu_{Dec}$ | 0.118*** | -0.043*** | -0.020 | -0.009 | 0.005 |
| | ( 8.16) | ( -6.19) | ( -1.26) | ( -0.63) | ( 0.30) |
| $\mu_{Jan}$ | 0.127*** | 0.011 | 0.171*** | 0.044*** | -0.304*** |
| | ( 8.21) | ( 1.08) | ( 9.28) | ( 3.49) | ( -25.5) |
| $\mu_{Feb}$ | 0.039** | 0.034*** | 0.018 | -0.020 | -0.023 |
| | ( 2.20) | ( 4.25) | ( 0.84) | ( -1.15) | ( -1.55) |
| $\rho_1$ | 0.013 | 0.601*** | 0.214*** | 0.156*** | 0.160*** |
| | ( 1.26) | ( 48.26) | ( 16.07) | ( 9.11) | ( 11.03) |
| $\rho_3$ | 0.160*** | 0.169*** | 0.046*** | -0.079*** | 0.085*** |
| | ( 17.73) | ( 12.82) | ( 3.57) | ( -7.70) | ( 10.48) |
| $\rho_6$ | 0.054*** | 0.127*** | -0.057*** | 0.079*** | 0.201*** |
| | ( 6.78) | ( 9.20) | ( -4.99) | ( 7.28) | ( 22.10) |
| $\rho_{12}$ | -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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.12**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.098*** | 0.052*** | 0.114*** | -0.022 | -0.119*** |
| | ( 5.64) | ( 7.39) | ( 5.76) | ( -1.39) | ( -6.40) |
| $\mu_{Dec}$ | 0.107*** | -0.051*** | -0.041** | -0.071*** | 0.010 |
| | ( 7.64) | ( -7.59) | ( -2.57) | ( -5.57) | ( 0.50) |
| $\mu_{Jan}$ | 0.111*** | 0.020* | 0.195*** | 0.082*** | -0.287*** |
| | ( 7.66) | ( 1.81) | ( 9.32) | ( 6.40) | ( -26.4) |
| $\mu_{Feb}$ | 0.031** | 0.038*** | 0.041* | -0.015 | -0.023* |
| | ( 2.03) | ( 4.70) | ( 1.84) | ( -0.88) | ( -1.66) |
| $\rho_1$ | 0.047*** | 0.606*** | 0.205*** | 0.247*** | 0.156*** |
| | ( 4.98) | ( 43.49) | ( 17.00) | ( 17.66) | ( 13.10) |
| $\rho_3$ | 0.196*** | 0.174*** | 0.045*** | 0.022* | 0.089*** |
| | ( 22.38) | ( 13.20) | ( 3.56) | ( 1.94) | ( 11.55) |
| $\rho_6$ | 0.055*** | 0.135*** | -0.050*** | 0.130*** | 0.207*** |
| | ( 6.54) | ( 10.38) | ( -3.87) | ( 12.65) | ( 19.28) |
| $\rho_{12}$ | -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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.13**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.099*** | 0.055*** | 0.136*** | 0.003 | -0.123*** |
| | ( 5.89) | ( 7.96) | ( 6.96) | ( 0.17) | ( -6.97) |
| $\mu_{Dec}$ | 0.102*** | -0.050*** | -0.023 | -0.046*** | 0.011 |
| | ( 7.28) | ( -7.18) | ( -1.48) | ( -3.72) | ( 0.53) |
| $\mu_{Jan}$ | 0.113*** | 0.015 | 0.174*** | 0.053*** | -0.287*** |
| | ( 7.68) | ( 1.49) | ( 9.36) | ( 3.99) | ( -27.9) |
| $\mu_{Feb}$ | 0.033** | 0.036*** | 0.027 | -0.034** | -0.028** |
| | ( 2.22) | ( 4.38) | ( 1.33) | ( -2.02) | ( -2.17) |
| $\rho_1$ | 0.047*** | 0.609*** | 0.207*** | 0.248*** | 0.151*** |
| | ( 5.12) | ( 40.10) | ( 17.32) | ( 18.56) | ( 12.34) |
| $\rho_3$ | 0.197*** | 0.174*** | 0.042*** | 0.017 | 0.084*** |
| | ( 22.51) | ( 13.29) | ( 3.11) | ( 1.43) | ( 11.36) |
| $\rho_6$ | 0.055*** | 0.134*** | -0.053*** | 0.125*** | 0.208*** |
| | ( 7.18) | ( 10.08) | ( -4.24) | ( 12.54) | ( 19.01) |
| $\rho_{12}$ | -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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.14**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.070*** | 0.059*** | 0.134*** | 0.004 | -0.112*** |
| | ( 4.59) | ( 8.30) | ( 6.51) | ( 0.30) | ( -7.62) |
| $\mu_{Dec}$ | 0.094*** | -0.043*** | -0.023 | -0.047*** | 0.015 |
| | ( 6.53) | ( -6.05) | ( -1.11) | ( -3.94) | ( 0.99) |
| $\mu_{Jan}$ | 0.139*** | 0.013 | 0.190*** | 0.078*** | -0.321*** |
| | ( 10.00) | ( 1.18) | ( 11.18) | ( 5.77) | ( -28.0) |
| $\mu_{Feb}$ | 0.025 | 0.034*** | 0.081*** | 0.050*** | -0.039** |
| | ( 1.60) | ( 4.61) | ( 3.89) | ( 2.99) | ( -2.56) |
| $\mu_{rho_1}$ | 0.033*** | 0.613*** | 0.186*** | 0.295*** | 0.162*** |
| | ( 3.61) | ( 45.23) | ( 15.34) | ( 25.56) | ( 15.24) |
| $\mu_{rho_3}$ | 0.211*** | 0.168*** | 0.039*** | 0.050*** | 0.092*** |
| | ( 20.48) | ( 11.99) | ( 3.19) | ( 4.57) | ( 11.60) |
| $\mu_{rho_6}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.15**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.063*** | 0.061*** | 0.149*** | -0.010 | -0.132*** |
| | ( 3.58) | ( 7.51) | ( 7.98) | ( -0.75) | ( -7.47) |
| $\mu_{Dec}$ | 0.094*** | -0.036*** | -0.009 | -0.041*** | 0.004 |
| | ( 7.59) | ( -5.06) | ( -0.48) | ( -2.87) | ( 0.26) |
| $\mu_{Jan}$ | 0.059*** | 0.034*** | 0.202*** | 0.052*** | -0.276*** |
| | ( 4.67) | ( 3.62) | ( 10.39) | ( 3.44) | ( -25.2) |
| $\mu_{Feb}$ | -0.006 | 0.030*** | 0.083*** | 0.054*** | 0.008 |
| | ( -0.36) | ( 3.47) | ( 4.50) | ( 3.06) | ( 0.64) |
| $\rho_1$ | 0.136*** | 0.619*** | 0.232*** | 0.242*** | 0.254*** |
| | ( 15.96) | ( 45.97) | ( 19.00) | ( 20.99) | ( 24.06) |
| $\rho_3$ | 0.141*** | 0.173*** | 0.040*** | -0.012 | 0.056*** |
| | ( 15.60) | ( 14.40) | ( 3.53) | ( -0.94) | ( 6.87) |
| $\rho_6$ | 0.092*** | 0.128*** | -0.068*** | 0.067*** | 0.211*** |
| | ( 10.78) | ( 10.33) | ( -5.45) | ( 6.49) | ( 19.71) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.16**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.251*** | 0.108*** | 0.079*** | 0.038*** | -0.115*** |
| | ( 11.38) | ( 12.11) | ( 4.36) | ( 3.07) | ( -9.86) |
| $\mu_{Dec}$ | 0.268*** | 0.000 | -0.089*** | -0.008 | 0.016 |
| | ( 12.53) | ( 0.01) | ( -5.37) | ( -0.58) | ( 1.17) |
| $\mu_{Jan}$ | 0.135*** | 0.012 | 0.175*** | 0.068*** | -0.304*** |
| | ( 8.25) | ( 1.11) | ( 8.68) | ( 5.54) | ( -26.4) |
| $\mu_{Feb}$ | 0.039** | 0.036*** | 0.021 | -0.022 | -0.024* |
| | ( 2.49) | ( 4.40) | ( 1.08) | ( -1.21) | ( -1.73) |
| $\rho_1$ | 0.013 | 0.615*** | 0.214*** | 0.264*** | 0.156*** |
| | ( 1.50) | ( 42.71) | ( 15.83) | ( 19.25) | ( 13.07) |
| $\rho_3$ | 0.177*** | 0.168*** | 0.054*** | 0.012 | 0.085*** |
| | ( 18.32) | ( 13.43) | ( 4.68) | ( 1.09) | ( 10.83) |
| $\rho_6$ | 0.072*** | 0.124*** | -0.057*** | 0.112*** | 0.204*** |
| | ( 8.19) | ( 8.44) | ( -4.02) | ( 10.30) | ( 19.78) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.17**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.245*** | 0.106*** | 0.209*** | -0.077*** | -0.100*** |
| | ( 9.94) | ( 9.90) | ( 9.39) | ( -6.34) | ( -6.45) |
| $\mu_{Dec}$ | 0.267*** | 0.000 | 0.047** | -0.119*** | 0.025 |
| | ( 11.97) | ( 0.03) | ( 2.33) | ( -9.51) | ( 1.49) |
| $\mu_{Jan}$ | 0.134*** | 0.013 | 0.175*** | 0.063*** | -0.300*** |
| | ( 8.07) | ( 1.27) | ( 8.92) | ( 4.78) | ( -24.4) |
| $\mu_{Feb}$ | 0.041** | 0.035*** | 0.021 | -0.018 | -0.024 |
| | ( 2.54) | ( 4.16) | ( 0.98) | ( -0.94) | ( -1.60) |
| $\rho_1$ | 0.012 | 0.613*** | 0.220*** | 0.256*** | 0.159*** |
| | ( 1.25) | ( 43.22) | ( 21.77) | ( 22.27) | ( 15.22) |
| $\rho_3$ | 0.176*** | 0.172*** | 0.060*** | 0.018* | 0.086*** |
| | ( 20.07) | ( 12.55) | ( 4.69) | ( 1.67) | ( 11.81) |
| $\rho_6$ | 0.074*** | 0.126*** | -0.061*** | 0.122*** | 0.202*** |
| | ( 8.37) | ( 8.35) | ( -4.60) | ( 12.65) | ( 19.87) |
| $\rho_{12}$ | -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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.18**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.068*** | 0.049*** | 0.209*** | -0.075*** | -0.098*** |
| | ( 4.86) | ( 8.73) | ( 11.69) | ( -5.81) | ( -6.81) |
| $\mu_{Dec}$ | 0.089*** | -0.053*** | 0.046*** | -0.115*** | 0.025 |
| | ( 8.07) | ( -9.26) | ( 2.65) | ( -7.60) | ( 1.64) |
| $\mu_{Jan}$ | 0.132*** | 0.014 | 0.174*** | 0.063*** | -0.300*** |
| | ( 8.34) | ( 1.30) | ( 9.01) | ( 4.73) | ( -25.1) |
| $\mu_{Feb}$ | 0.036** | 0.034*** | 0.018 | -0.017 | -0.024 |
| | ( 2.22) | ( 4.14) | ( 0.88) | ( -0.87) | ( -1.55) |
| $\rho_1$ | 0.048*** | 0.610*** | 0.214*** | 0.255*** | 0.157*** |
| | ( 5.58) | ( 45.99) | ( 15.11) | ( 18.85) | ( 14.34) |
| $\rho_3$ | 0.193*** | 0.178*** | 0.060*** | 0.020* | 0.089*** |
| | ( 20.88) | ( 12.33) | ( 4.95) | ( 1.81) | ( 10.55) |
| $\rho_6$ | 0.063*** | 0.129*** | -0.058*** | 0.121*** | 0.199*** |
| | ( 7.43) | ( 8.59) | ( -4.34) | ( 11.97) | ( 18.64) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.19**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.073*** | 0.061*** | 0.161*** | -0.018 | -0.105*** |
| | ( 2.88) | ( 6.43) | ( 4.77) | ( -0.82) | ( -4.25) |
| $\mu_{Dec}$ | 0.084*** | -0.040*** | 0.002 | -0.061*** | 0.027 |
| | ( 4.53) | ( -5.23) | ( 0.06) | ( -3.70) | ( 1.17) |
| $\mu_{Jan}$ | 0.125*** | 0.011 | 0.168*** | 0.065*** | -0.295*** |
| | ( 6.40) | ( 0.89) | ( 7.59) | ( 4.13) | ( -19.3) |
| $\mu_{Feb}$ | 0.034* | 0.034*** | 0.019 | -0.021 | -0.022 |
| | ( 1.82) | ( 3.80) | ( 0.89) | ( -0.91) | ( -1.26) |
| $\rho_1$ | 0.049*** | 0.609*** | 0.216*** | 0.269*** | 0.158*** |
| | ( 4.44) | ( 34.16) | ( 13.26) | ( 16.02) | ( 10.53) |
| $\rho_3$ | 0.195*** | 0.180*** | 0.058*** | 0.023* | 0.088*** |
| | ( 18.34) | ( 9.86) | ( 3.96) | ( 1.83) | ( 8.90) |
| $\rho_6$ | 0.062*** | 0.128*** | -0.049*** | 0.117*** | 0.202*** |
| | ( 6.37) | ( 7.32) | ( -2.65) | ( 8.96) | ( 16.57) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.20**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | -0.024*** | 0.032*** | 0.178*** | -0.292*** | -0.094*** |
| | ( -2.65) | ( 5.50) | ( 13.87) | ( -24.6) | ( -9.71) |
| $\mu_{Dec}$ | -0.001 | -0.071*** | 0.026* | -0.302*** | 0.027** |
| | ( -0.21) | ( -11.2) | ( 1.81) | ( -26.8) | ( 2.42) |
| $\mu_{Jan}$ | 0.099*** | 0.018** | 0.194*** | 0.026** | -0.288*** |
| | ( 9.50) | ( 2.44) | ( 12.42) | ( 2.51) | ( -36.1) |
| $\mu_{Feb}$ | 0.027** | 0.038*** | 0.033* | -0.028** | -0.020** |
| | ( 2.40) | ( 7.01) | ( 1.92) | ( -2.01) | ( -2.23) |
| $\rho_1$ | 0.037*** | 0.598*** | 0.183*** | 0.147*** | 0.157*** |
| | ( 6.12) | ( 69.70) | ( 21.02) | ( 15.29) | ( 21.80) |
| $\rho_3$ | 0.173*** | 0.172*** | 0.031*** | -0.069*** | 0.089*** |
| | ( 29.06) | ( 20.65) | ( 3.80) | ( -9.30) | ( 15.67) |
| $\rho_6$ | 0.037*** | 0.134*** | -0.075*** | 0.093*** | 0.202*** |
| | ( 7.88) | ( 19.23) | ( -11.7) | ( 13.06) | ( 37.47) |
| $\rho_{12}$ | -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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate measure of capital gains overhang.

**Table A1.21**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.074* | 0.152*** | 0.171*** | -0.556*** | 0.551*** |
| | ( 1.82) | ( 2.99) | ( 3.44) | ( -13.7) | ( 4.45) |
| $\mu_{Dec}$ | 0.061* | -0.549*** | -0.196*** | -0.615*** | 0.726*** |
| | ( 1.66) | ( -10.2) | ( -4.67) | ( -18.0) | ( 4.41) |
| $\mu_{Jan}$ | 0.426*** | 0.385*** | 0.645*** | 0.303*** | -0.520*** |
| | ( 10.47) | ( 9.53) | ( 14.58) | ( 8.46) | ( -3.15) |
| $\mu_{Feb}$ | 0.010 | -0.167*** | -0.017 | -0.106*** | -0.284*** |
| | ( 0.28) | ( -5.83) | ( -0.41) | ( -2.74) | ( -2.71) |
| $\rho_1$ | 0.470*** | 0.465*** | 0.518*** | 0.555*** | 0.110*** |
| | ( 36.22) | ( 22.51) | ( 32.13) | ( 39.55) | ( 6.87) |
| $\rho_3$ | 0.291*** | 0.378*** | 0.293*** | 0.248*** | 0.348*** |
| | ( 27.59) | ( 15.42) | ( 25.04) | ( 19.31) | ( 18.40) |
| $\rho_6$ | -0.028** | 0.004 | 0.039*** | 0.114*** | 0.121*** |
| | ( -2.27) | ( 0.27) | ( 3.26) | ( 8.56) | ( 7.73) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

**Table A1.22**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.055 | 0.201*** | 0.115** | -0.599*** | 0.593*** |
| | ( 1.40) | ( 4.39) | ( 2.00) | ( -16.4) | ( 4.85) |
| $\mu_{Dec}$ | 0.050 | -0.509*** | -0.221*** | -0.659*** | 0.638*** |
| | ( 1.21) | ( -10.8) | ( -4.58) | ( -20.3) | ( 4.19) |
| $\mu_{Jan}$ | 0.429*** | 0.406*** | 0.645*** | 0.326*** | -0.596*** |
| | ( 9.36) | ( 10.61) | ( 15.23) | ( 10.01) | ( -3.96) |
| $\mu_{Feb}$ | 0.007 | -0.168*** | -0.006 | -0.105** | -0.124 |
| | ( 0.20) | ( -6.07) | ( -0.13) | ( -2.55) | ( -1.42) |
| $\rho_1$ | 0.444*** | 0.452*** | 0.559*** | 0.604*** | 0.080*** |
| | ( 34.29) | ( 24.43) | ( 38.87) | ( 52.13) | ( 5.75) |
| $\rho_3$ | 0.323*** | 0.370*** | 0.311*** | 0.233*** | 0.341*** |
| | ( 28.72) | ( 18.71) | ( 30.95) | ( 18.07) | ( 18.25) |
| $\rho_6$ | -0.036*** | 0.013 | 0.016 | 0.096*** | 0.118*** |
| | ( -2.95) | ( 0.90) | ( 1.36) | ( 6.99) | ( 7.76) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

**Table A1.23**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.069 | 0.184*** | 0.146** | -0.571*** | 0.599*** |
| | ( 1.62) | ( 3.90) | ( 2.34) | ( -13.8) | ( 5.11) |
| $\mu_{Dec}$ | 0.043 | -0.514*** | -0.215*** | -0.641*** | 0.647*** |
| | ( 1.18) | ( -10.8) | ( -4.90) | ( -20.5) | ( 4.27) |
| $\mu_{Jan}$ | 0.415*** | 0.431*** | 0.625*** | 0.313*** | -0.621*** |
| | ( 9.00) | ( 10.68) | ( 13.90) | ( 9.77) | ( -4.15) |
| $\mu_{Feb}$ | -0.002 | -0.124*** | -0.025 | -0.113*** | -0.113 |
| | ( -0.05) | ( -4.78) | ( -0.54) | ( -2.92) | ( -1.36) |
| $\rho_1$ | 0.430*** | 0.461*** | 0.540*** | 0.585*** | 0.073*** |
| | ( 32.18) | ( 23.42) | ( 37.71) | ( 45.66) | ( 4.89) |
| $\rho_3$ | 0.322*** | 0.346*** | 0.297*** | 0.249*** | 0.335*** |
| | ( 29.26) | ( 16.92) | ( 30.11) | ( 21.76) | ( 17.69) |
| $\rho_6$ | -0.022* | 0.015 | 0.035*** | 0.105*** | 0.115*** |
| | ( -1.95) | ( 0.96) | ( 3.30) | ( 8.10) | ( 6.58) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

**Table A1.24**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.071 | 0.167*** | 0.166*** | -0.565*** | 0.629*** |
| | ( 1.64) | ( 3.67) | ( 2.81) | ( -13.4) | ( 5.10) |
| $\mu_{Dec}$ | 0.044 | -0.538*** | -0.195*** | -0.635*** | 0.664*** |
| | ( 1.14) | ( -11.6) | ( -5.19) | ( -19.4) | ( 4.26) |
| $\mu_{Jan}$ | 0.423*** | 0.418*** | 0.630*** | 0.302*** | -0.668*** |
| | ( 10.41) | ( 10.10) | ( 15.36) | ( 9.00) | ( -4.52) |
| $\mu_{Feb}$ | 0.001 | -0.140*** | -0.006 | -0.110*** | -0.107 |
| | ( 0.02) | ( -4.93) | ( -0.13) | ( -2.66) | ( -1.13) |
| $\rho_1$ | 0.425*** | 0.477*** | 0.524*** | 0.572*** | 0.068*** |
| | ( 33.11) | ( 25.58) | ( 38.60) | ( 47.20) | ( 3.81) |
| $\rho_3$ | 0.326*** | 0.357*** | 0.284*** | 0.244*** | 0.333*** |
| | ( 33.41) | ( 17.38) | ( 25.26) | ( 21.26) | ( 16.33) |
| $\rho_6$ | -0.018 | -0.000 | 0.035*** | 0.114*** | 0.116*** |
| | ( -1.47) | ( -0.04) | ( 3.12) | ( 8.58) | ( 7.05) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (1), using an alternate return chasing proxy.

**Table A1.25**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.031** | 0.037*** | 0.079*** | -0.158*** | -0.117*** |
| | ( 2.05) | ( 4.45) | ( 3.47) | ( -7.64) | ( -7.90) |
| $\mu_{Dec}$ | 0.048*** | -0.062*** | -0.063*** | -0.175*** | 0.002 |
| | ( 3.24) | ( -7.41) | ( -3.35) | ( -10.5) | ( 0.11) |
| $\mu_{Jan}$ | 0.113*** | 0.010 | 0.150*** | 0.033** | -0.311*** |
| | ( 6.42) | ( 0.98) | ( 7.40) | ( 2.47) | ( -23.0) |
| $\mu_{Feb}$ | 0.035*** | 0.033*** | 0.021 | -0.021 | -0.008 |
| | ( 2.59) | ( 5.07) | ( 1.06) | ( -1.14) | ( -0.66) |
| $\rho_1$ | 0.023* | 0.579*** | 0.245*** | 0.221*** | 0.157*** |
| | ( 1.82) | ( 40.97) | ( 14.76) | ( 12.85) | ( 12.47) |
| $\rho_3$ | 0.172*** | 0.179*** | 0.082*** | -0.029*** | 0.083*** |
| | ( 20.50) | ( 13.15) | ( 6.52) | ( -3.05) | ( 10.01) |
| $\rho_6$ | 0.051*** | 0.124*** | -0.029** | 0.119*** | 0.200*** |
| | ( 5.56) | ( 8.91) | ( -2.42) | ( 12.44) | ( 19.05) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

**Table A1.26**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.031* | 0.030*** | 0.074*** | -0.163*** | -0.121*** |
| | ( 1.73) | ( 3.63) | ( 3.14) | ( -8.75) | ( -7.49) |
| $\mu_{Dec}$ | 0.053*** | -0.064*** | -0.079*** | -0.181*** | 0.003 |
| | ( 3.56) | ( -7.51) | ( -4.14) | ( -11.1) | ( 0.20) |
| $\mu_{Jan}$ | 0.122*** | 0.012 | 0.136*** | 0.027** | -0.308*** |
| | ( 7.14) | ( 1.33) | ( 7.48) | ( 2.04) | ( -21.7) |
| $\mu_{Feb}$ | 0.040** | 0.036*** | 0.001 | -0.024 | -0.028* |
| | ( 2.41) | ( 4.51) | ( 0.06) | ( -1.23) | ( -1.71) |
| $\rho_1$ | 0.054*** | 0.612*** | 0.258*** | 0.226*** | 0.162*** |
| | ( 4.16) | ( 40.31) | ( 17.43) | ( 14.81) | ( 13.80) |
| $\rho_3$ | 0.188*** | 0.169*** | 0.126*** | 0.002 | 0.080*** |
| | ( 18.97) | ( 12.22) | ( 8.81) | ( 0.20) | ( 9.38) |
| $\rho_6$ | 0.037*** | 0.109*** | -0.029** | 0.110*** | 0.196*** |
| | ( 4.13) | ( 8.26) | ( -2.49) | ( 11.75) | ( 21.49) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

**Table A1.27**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.027 | 0.038*** | 0.085*** | -0.160*** | -0.116*** |
| | ( 1.55) | ( 4.57) | ( 3.46) | ( -8.83) | ( -6.58) |
| $\mu_{Dec}$ | 0.053*** | -0.059*** | -0.059*** | -0.171*** | 0.008 |
| | ( 3.67) | ( -6.87) | ( -3.14) | ( -9.90) | ( 0.47) |
| $\mu_{Jan}$ | 0.119*** | 0.013 | 0.154*** | 0.025* | -0.301*** |
| | ( 6.34) | ( 1.37) | ( 8.24) | ( 1.89) | ( -20.9) |
| $\mu_{Feb}$ | 0.039** | 0.036*** | 0.009 | -0.028 | -0.024* |
| | ( 2.31) | ( 4.56) | ( 0.39) | ( -1.56) | ( -1.77) |
| $\rho_1$ | 0.036*** | 0.589*** | 0.214*** | 0.189*** | 0.161*** |
| | ( 3.27) | ( 37.09) | ( 17.52) | ( 12.93) | ( 13.97) |
| $\rho_3$ | 0.172*** | 0.166*** | 0.063*** | -0.027** | 0.081*** |
| | ( 19.10) | ( 12.53) | ( 5.13) | ( -2.56) | ( 9.79) |
| $\rho_6$ | 0.050*** | 0.123*** | -0.041*** | 0.116*** | 0.200*** |
| | ( 5.94) | ( 9.21) | ( -3.33) | ( 12.88) | ( 22.66) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

**Table A1.28**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.015 | 0.033*** | 0.083*** | -0.158*** | -0.112*** |
| | ( 0.89) | ( 3.91) | ( 3.77) | ( -9.66) | ( -6.34) |
| $\mu_{Dec}$ | 0.045*** | -0.065*** | -0.059*** | -0.166*** | 0.009 |
| | ( 3.18) | ( -7.41) | ( -3.12) | ( -9.66) | ( 0.48) |
| $\mu_{Jan}$ | 0.122*** | 0.011 | 0.162*** | 0.032** | -0.303*** |
| | ( 7.12) | ( 1.10) | ( 8.41) | ( 2.26) | ( -24.3) |
| $\mu_{Feb}$ | 0.036** | 0.034*** | 0.011 | -0.028 | -0.024* |
| | ( 1.98) | ( 4.57) | ( 0.51) | ( -1.37) | ( -1.69) |
| $\rho_1$ | 0.046*** | 0.603*** | 0.202*** | 0.165*** | 0.161*** |
| | ( 4.18) | ( 42.31) | ( 14.99) | ( 10.94) | ( 12.93) |
| $\rho_3$ | 0.184*** | 0.172*** | 0.049*** | -0.054*** | 0.084*** |
| | ( 23.27) | ( 13.28) | ( 4.24) | ( -4.84) | ( 10.32) |
| $\rho_6$ | 0.051*** | 0.123*** | -0.054*** | 0.096*** | 0.200*** |
| | ( 6.83) | ( 8.57) | ( -4.25) | ( 8.31) | ( 22.58) |
| $\rho_{12}$ | -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 | $\chi^2$ [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 A1.1, with the following exception: We estimate Equation (2), using an alternate return chasing proxy.

**Table A1.29**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.135*** | 0.197*** | 0.281*** | -0.639*** | 0.021 |
| | ( 2.98) | ( 4.50) | ( 3.53) | ( -12.1) | ( 0.14) |
| $\mu_{Dec}$ | 0.135*** | -0.514*** | -0.048 | -0.706*** | -0.030 |
| | ( 3.20) | ( -10.5) | ( -0.78) | ( -15.3) | ( -0.18) |
| $\mu_{Jan}$ | 0.481*** | 0.466*** | 0.780*** | 0.219*** | -1.327*** |
| | ( 10.64) | ( 10.13) | ( 13.72) | ( 4.81) | ( -7.69) |
| $\mu_{Feb}$ | 0.072* | -0.080*** | 0.146*** | -0.174*** | -0.651*** |
| | ( 1.86) | ( -2.79) | ( 3.28) | ( -4.34) | ( -6.65) |
| $\rho_1$ | 0.416*** | 0.488*** | 0.525*** | 0.572*** | 0.065*** |
| | ( 32.12) | ( 27.47) | ( 40.66) | ( 48.29) | ( 3.97) |
| $\rho_3$ | 0.314*** | 0.358*** | 0.271*** | 0.245*** | 0.318*** |
| | ( 33.06) | ( 18.82) | ( 24.25) | ( 17.83) | ( 15.14) |
| $\rho_6$ | -0.021** | -0.004 | 0.029*** | 0.119*** | 0.129*** |
| | ( -2.06) | ( -0.34) | ( 2.61) | ( 8.42) | ( 7.86) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, 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 16 of the main text for details):

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

**Table A1.30**
**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) |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | 0.141*** | 0.056*** | 0.119*** | -0.259*** | -0.263*** |
| | ( 6.31) | ( 5.14) | ( 3.44) | ( -11.5) | ( -8.99) |
| $\mu_{Dec}$ | 0.174*** | -0.047*** | -0.023 | -0.282*** | -0.152*** |
| | ( 7.78) | ( -5.25) | ( -0.74) | ( -13.2) | ( -5.03) |
| $\mu_{Jan}$ | 0.244*** | 0.021* | 0.212*** | -0.067*** | -0.459*** |
| | ( 10.55) | ( 1.79) | ( 7.38) | ( -3.41) | ( -19.6) |
| $\mu_{Feb}$ | 0.128*** | 0.036*** | 0.054** | -0.115*** | -0.148*** |
| | ( 6.69) | ( 3.96) | ( 2.34) | ( -6.68) | ( -7.19) |
| $\rho_1$ | 0.031*** | 0.604*** | 0.200*** | 0.162*** | 0.163*** |
| | ( 3.14) | ( 44.80) | ( 15.45) | ( 10.25) | ( 12.64) |
| $\rho_3$ | 0.170*** | 0.179*** | 0.034*** | -0.069*** | 0.079*** |
| | ( 19.85) | ( 12.11) | ( 2.74) | ( -6.52) | ( 9.09) |
| $\rho_6$ | 0.049*** | 0.123*** | -0.062*** | 0.090*** | 0.198*** |
| | ( 6.09) | ( 8.72) | ( -4.75) | ( 7.97) | ( 20.21) |
| $\rho_{12}$ | -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 | $\chi^2$ [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 A1.1, 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 16 of the main text for details):

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

**Table A1.31**
**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) |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\rho_1$ | 0.406*** | 0.445*** | 0.484*** | 0.586*** | 0.094*** |
| | ( 32.59) | ( 22.71) | ( 32.51) | ( 45.88) | ( 6.59) |
| $\rho_3$ | 0.289*** | 0.378*** | 0.275*** | 0.262*** | 0.323*** |
| | ( 31.53) | ( 18.52) | ( 24.53) | ( 18.80) | ( 16.71) |
| $\rho_6$ | -0.014 | -0.006 | 0.038*** | 0.101*** | 0.105*** |
| | ( -1.26) | ( -0.40) | ( 3.19) | ( 6.40) | ( 6.63) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate a modified version of Equation (1), excluding the monthly dummy variables:

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

**Table A1.32**
**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 |
|---|---|---|---|---|---|
| $\mu$ | 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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.026 | 0.038*** | 0.070*** | -0.167*** | -0.117*** |
| | ( 1.62) | ( 4.97) | ( 3.24) | ( -10.6) | ( -7.12) |
| $\mu_{Dec}$ | 0.049*** | -0.065*** | -0.078*** | -0.181*** | 0.010 |
| | ( 3.64) | ( -8.87) | ( -4.53) | ( -11.0) | ( 0.53) |
| $\mu_{Jan}$ | 0.127*** | 0.008 | 0.160*** | 0.033** | -0.303*** |
| | ( 7.79) | ( 0.85) | ( 8.33) | ( 2.30) | ( -24.2) |
| $\mu_{Feb}$ | 0.040** | 0.034*** | 0.013 | -0.030 | -0.021 |
| | ( 2.35) | ( 4.40) | ( 0.63) | ( -1.56) | ( -1.41) |
| $\rho_1$ | 0.036*** | 0.607*** | 0.201*** | 0.165*** | 0.163*** |
| | ( 3.81) | ( 43.27) | ( 15.87) | ( 10.40) | ( 12.80) |
| $\rho_3$ | 0.171*** | 0.169*** | 0.035*** | -0.064*** | 0.083*** |
| | ( 19.87) | ( 12.24) | ( 2.78) | ( -6.54) | ( 9.59) |
| $\rho_6$ | 0.049*** | 0.128*** | -0.061*** | 0.088*** | 0.203*** |
| | ( 6.20) | ( 9.23) | ( -5.17) | ( 8.56) | ( 23.00) |
| $\rho_{12}$ | 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 | $\chi^2$ [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 A1.1, with the following exception: We estimate a modified version of Equation (2), including the monthly dummy variables:

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

**Table A1.33**
**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 |
|---|---|---|---|---|
| $\mu$ | -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) |
| $\rho_1$ | 0.229*** | 0.461*** | 0.265*** | 0.308*** |
| | ( 6.71) | ( 10.07) | ( 10.42) | ( 9.62) |
| $\rho_3$ | 0.068*** | 0.237*** | 0.052** | 0.087*** |
| | ( 3.58) | ( 7.09) | ( 2.56) | ( 3.41) |
| $\rho_6$ | 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 | $\chi^2$ [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 A1.1, 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:

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

**Table A1.34**
**Dependent Variable: Australian Net Flows**
**Robustness Check: Exclusion of Dummy Variables for May, June, July, and April**

| Parameter | Equity (t-test) |
|---|---|
| $\mu$ | -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) |
| $\rho_1$ | 0.129** |
| | ( 2.50) |
| $\rho_2$ | 0.272*** |
| | ( 3.70) |
| $\rho_3$ | 0.264*** |
| | ( 3.81) |
| $\rho_6$ | 0.131* |
| | ( 1.65) |
| $\rho_{12}$ | 0.153** |
| | ( 2.55) |
| $R^2$ | 0.5779 |
| AR(12) | 13.34 |
| ARCH(12) | 12.49 |

Notes: See the notes to Table A1.1, 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:

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

## Appendix 2: Including the Financial Crisis Period

In the main text, we present results based on a sample period that excludes the financial crisis, to avoid the possibility that reallocations between risky and safe categories of funds driven by the crisis itself might drive the findings. In this appendix we extend the sample to include the financial crisis by using the full sample of data provided to us by ICI, ending in January 2010. Results appear in Tables A2.1 and A2.2. The primary results remain qualitatively unchanged, with a significantly negative $\hat{OR}$ coefficient estimate for the equity asset class and a significantly positive estimate for the money market class.

**Table A2.1**
**Dependent Variable: U.S. Net Flows**
**Including the Financial Crisis Period**

**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) |
|---|---|---|---|---|---|
| $\mu$ | -0.645*** | -0.777*** | -0.041 | -0.375** | 0.631 |
| | ( -4.51) | ( -4.58) | ( -0.27) | ( -2.07) | ( 0.83) |
| $\mu_{\hat{OR}}$ | -0.286*** | -0.194** | -0.211** | 0.021 | 2.181*** |
| | ( -3.43) | ( -2.24) | ( -2.12) | ( 0.23) | ( 5.56) |
| $\mu_{Ads}$ | 0.162* | 0.285*** | -0.407*** | -0.093 | -0.857** |
| | ( 1.68) | ( 3.29) | ( -3.82) | ( -0.97) | ( -2.50) |
| $\mu_{R^{Year}}$ | 0.041*** | 0.013 | -0.016 | -0.147*** | 0.449** |
| | ( 3.76) | ( 0.78) | ( -0.54) | ( -3.00) | ( 2.47) |
| $\mu_{Savings}$ | 0.430*** | 0.471*** | 0.379*** | 0.602*** | 0.129 |
| | ( 6.43) | ( 5.15) | ( 4.27) | ( 5.19) | ( 0.31) |
| $\mu_{CapGains}$ | -0.022*** | -0.068*** | -0.101 | -1.282*** | 173.31 |
| | ( -3.91) | ( -6.95) | ( -1.40) | ( -11.5) | ( 1.03) |
| $\mu_{November}$ | -0.002 | 0.164** | 0.065 | -0.428*** | 0.982*** |
| | ( -0.02) | ( 2.30) | ( 0.75) | ( -6.42) | ( 5.40) |
| $\mu_{December}$ | 0.020 | -0.472*** | -0.190*** | -0.574*** | 0.518** |
| | ( 0.33) | ( -7.05) | ( -3.04) | ( -9.91) | ( 2.06) |
| $\mu_{January}$ | 0.363*** | 0.409*** | 0.584*** | 0.474*** | -0.829** |
| | ( 4.42) | ( 5.95) | ( 8.41) | ( 6.51) | ( -2.53) |
| $\mu_{February}$ | -0.032 | -0.068 | -0.012 | 0.014 | 0.498*** |
| | ( -0.55) | ( -1.19) | ( -0.16) | ( 0.20) | ( 2.63) |
| $\rho_1$ | 0.357*** | 0.509*** | 0.575*** | 0.644*** | 0.159*** |
| | ( 13.48) | ( 16.80) | ( 28.79) | ( 29.65) | ( 7.19) |
| $\rho_3$ | 0.296*** | 0.329*** | 0.287*** | 0.304*** | 0.237*** |
| | ( 12.16) | ( 10.33) | ( 13.10) | ( 12.07) | ( 6.37) |
| $R^2$ | 0.4346 | 0.7117 | 0.6582 | 0.8807 | 0.1781 |
| AR(12) | 16.28 | 4.14 | 16.36 | 5.18 | 13.15 |
| ARCH(12) | 42.66*** | 76.22*** | 47.50*** | 52.80*** | 2.97 |

**Panel B: Systems Equations Joint Tests**

| Joint Tests Across Indices | $\chi^2$ [degrees of freedom] |
|---|---|
| $\hat{OR}$ jointly equal to 0 across series | 37.3*** [5] |
| $\hat{OR}$ equivalent across series | 37.0*** [4] |
| Test of Over-Identifying Restrictions | 45.7 [80] |

Notes: See the notes to Table 3, with the following exception: The sample period is February 1985 through January 2010.

**Table A2.2**
**Dependent Variable: U.S. Net Exchanges**
**Including the Financial Crisis Period**

**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) |
|---|---|---|---|---|---|
| $\mu$ | 0.182*** | 0.045** | 0.311*** | 0.149*** | -0.133*** |
| | ( 4.30) | ( 2.14) | ( 6.52) | ( 3.54) | ( -3.44) |
| $\mu_{\hat{OR}}$ | -0.134*** | 0.007 | -0.065 | 0.108*** | 0.177*** |
| | ( -3.72) | ( 0.31) | ( -1.34) | ( 2.93) | ( 4.37) |
| $\mu_{Ads}$ | -0.167*** | -0.027 | -0.299*** | -0.106*** | 0.170*** |
| | ( -4.01) | ( -1.28) | ( -6.71) | ( -2.83) | ( 4.36) |
| $\mu_{R^{Year}}$ | 0.006 | -0.016*** | 0.028** | 0.004 | 0.015* |
| | ( 1.48) | ( -3.46) | ( 2.23) | ( 0.24) | ( 1.84) |
| $\mu_{CapGains}$ | -0.017*** | -0.007*** | -0.096*** | -0.376*** | -20.97*** |
| | ( -9.94) | ( -3.80) | ( -4.94) | ( -12.1) | ( -4.35) |
| $\rho_1$ | 0.006 | 0.545*** | 0.203*** | 0.207*** | 0.173*** |
| | ( 0.33) | ( 20.77) | ( 9.17) | ( 9.27) | ( 9.14) |
| $\rho_3$ | 0.075*** | 0.266*** | 0.071*** | 0.097*** | 0.067*** |
| | ( 3.57) | ( 9.93) | ( 3.65) | ( 4.91) | ( 4.24) |
| $R^2$ | 0.0403 | 0.5345 | 0.0855 | 0.1582 | 0.0580 |
| AR(12) | 9.25 | 10.54 | 19.88* | 10.87 | 16.44 |
| ARCH(12) | 13.22 | 26.33*** | 22.43** | 25.10** | 41.06*** |

**Panel B: Systems Equations Joint Tests**

| Joint Tests Across Indices | $\chi^2$ [degrees of freedom] |
|---|---|
| $\hat{OR}$ jointly equal to 0 across series | 40.7*** [5] |
| $\hat{OR}$ equivalent across series | 28.9*** [4] |
| Test of Over-Identifying Restrictions | 49.2 [80] |

Notes: See the notes to Table 4, with the following exception: The sample period is February 1985 through January 2010.

## Appendix 3: Retail Investors Only

Recall that individuals hold 90 percent of total mutual fund assets according to the ICI (2014). While institutions clearly hold a relatively small fraction of overall mutual fund assets, flows driven by institutions may nevertheless swamp those driven by retail investors. To evaluate this possibility, we now consider the subset of the ICI data pertaining to the holdings of retail investors only, excluding data associated with institutional investors. We present detailed summary statistics, correlations between asset-class flows, and regression results based on retail-only flows, analogous to results presented above for the total of retail and institutional flows. Table A3.1 contains summary statistics for the retail flows, analogous to Table 2. Table A3.2 contains regression results, analogous to Table 3, based on the retail-only net flows data. Table A3.3 contains regression results, analogous to Table 4, based on the retail-only net exchanges data.

The results based on retail investors only are qualitatively very similar to those for the aggregate flows. Specifically, after controlling for other known regularities, we find for both net flows and net exchanges that the equity asset-class category has a statistically significant negative onset/recovery coefficient estimate, and the mutual fund has a statistically significant positive coefficient estimate. The intermediate-risk categories have coefficient estimates of various signs, with coefficient magnitudes in between those of the riskiest and safest categories.

## Table A3.1: Summary Statistics on U.S. Monthly Percentage Asset Class Net Exchanges, Explanatory Variables, and Associated Returns to Holding These Funds, Retail Investors Only

This table contains summary statistics on U.S. monthly fund percentage net flows, percentage net exchanges, explanatory variables, and returns over February 1996 through December 2006, coming from retail investor fund holdings only, for a total of 131 months. Our sample is restricted by lack of retail flow data prior to 1996. 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 mean monthly fund percentage return over the prior 12 months, 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 | 0.404 | 0.53 | -1.95 | 1.86 | -0.416 | 2.73 |
| Hybrid | 0.230 | 0.53 | -1.63 | 1.29 | -1.047 | 2.10 |
| Corporate Fixed Income | 0.539 | 0.78 | -1.72 | 2.26 | -0.456 | 0.38 |
| Government Fixed Income | -0.074 | 0.82 | -2.34 | 4.13 | 1.038 | 5.18 |
| Money Market | 0.051 | 2.09 | -6.05 | 5.60 | 0.040 | 0.65 |

**Panel B: Asset Class Percentage Net Exchanges**

| Index | Mean | Std | Min | Max | Skew | Kurt |
|---|---|---|---|---|---|---|
| Equity | -0.009 | 0.15 | -0.82 | 0.28 | -1.604 | 6.82 |
| Hybrid | -0.076 | 0.19 | -0.93 | 0.23 | -2.031 | 6.53 |
| Corporate Fixed Income | -0.001 | 0.27 | -0.75 | 0.94 | -0.144 | 1.43 |
| Government Fixed Income | -0.083 | 0.30 | -0.94 | 1.88 | 2.018 | 14.58 |
| Money Market Money Market | 0.074 | 0.45 | -1.45 | 1.41 | 0.087 | 1.62 |

Table A3.1 continues on next page

## Table A3.1, Continued

**Panel C: Explanatory Variables**

| Index | Mean | Std | Min | Max | Skew | Kurt |
|---|---|---|---|---|---|---|
| **Equity Fund Specific:** | | | | | | |
| $CapGains$ | 3.188 | 3.02 | 0.00 | 8.55 | 0.448 | -1.37 |
| $R^{Year}$ | 0.765 | 1.37 | -3.04 | 3.02 | -0.877 | -0.02 |
| **Hybrid Fund Specific:** | | | | | | |
| $CapGains$ | 2.421 | 2.20 | 0.00 | 6.63 | 0.311 | -1.56 |
| $R^{Year}$ | 0.628 | 0.68 | -0.93 | 2.13 | -0.152 | -0.26 |
| **Corporate Fixed Income Fund Specific:** | | | | | | |
| $CapGains$ | 0.512 | 0.37 | 0.00 | 1.10 | -0.015 | -1.51 |
| $R^{Year}$ | 0.338 | 0.37 | -0.57 | 1.07 | -0.386 | 0.29 |
| **Government Fixed Income Fund Specific:** | | | | | | |
| $R^{Year}$ | 0.239 | 0.27 | -0.49 | 0.77 | -0.629 | -0.09 |
| $CapGains$ | 0.211 | 0.16 | 0.00 | 0.52 | 0.307 | -1.09 |
| **Money Market Fund Specific:** | | | | | | |
| $R^{Year}$ | -0.110 | 1.25 | -4.18 | 0.91 | -2.638 | 5.57 |
| $CapGains$ | 0.000 | 0.00 | 0.00 | 0.00 | 3.027 | 7.41 |

**Panel D: Asset Class Excess Returns**

| Index | Mean | Std | Min | Max | Skew | Kurt | Beta | $\hat{OR}$ |
|---|---|---|---|---|---|---|---|---|
| Equity | 0.488 | 4.38 | -15.88 | 9.18 | -0.756 | 0.93 | 1.031*** | -0.1416 |
| Hybrid | 0.335 | 2.48 | -9.79 | 5.73 | -0.804 | 1.68 | 0.613*** | 0.1934 |
| Corporate Fixed Income | 0.132 | 1.21 | -3.78 | 2.93 | -0.136 | 0.27 | 0.116*** | 0.2798 |
| Government Fixed Income | -0.044 | 0.91 | -2.20 | 2.06 | -0.148 | -0.46 | -0.016 | 0.9012** |
| Money Market | -0.017 | 1.01 | -4.57 | 6.40 | 1.626 | 17.37 | -0.004 | -0.0408 |

**Panel E: Asset Class Net Flow Correlations**

| Asset Class | Equity | Hybrid | Corporate Fixed Income | Government Fixed Income |
|---|---|---|---|---|
| Hybrid | 0.212** | 1.00*** | 0.403*** | -0.03 |
| Corporate Fixed Income | -0.13 | 0.403*** | 1.00*** | 0.625*** |
| Government Fixed Income | -0.63*** | -0.03 | 0.625*** | 1.00*** |
| Money Market | -0.27*** | -0.28*** | -0.00 | 0.143 |

**Panel F: Asset Class Net Exchange Correlations**

| Asset Class | Equity | Hybrid | Corporate Fixed Income | Government Fixed Income |
|---|---|---|---|---|
| Hybrid | 0.028 | 1.00*** | 0.291*** | -0.02 |
| Corporate Fixed Income | -0.38*** | 0.291*** | 1.00*** | 0.598*** |
| Government Fixed Income | -0.70*** | -0.02 | 0.598*** | 1.00*** |
| Money Market | -0.49*** | -0.19** | -0.03 | 0.183** |

**Table A3.2: Regression Results for U.S. Asset Class Net Flows, Retail Investors Only**

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

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

The data used to estimate the model span February 1996 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 $\chi^2$ test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald $\chi^2$ 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 $\chi^2$ 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 $\chi^2$ 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) $\chi^2$ 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 A3.2 continues on next page

**Panel A: Parameter Estimates and Diagnostic Statistics**

| Parameter or Statistic | Equity | Hybrid | Corporate Fixed Income | Government Fixed Income | Money Market |
|---|---|---|---|---|---|
| $\mu$ | -0.367 | -0.698*** | -1.031* | -0.526 | -5.720*** |
| | (-1.03) | (-2.99) | (-1.77) | (-1.36) | (-2.77) |
| $\mu_{\hat{OR}}$ | -0.211*** | 0.069* | -0.041 | 0.231*** | 1.325*** |
| | (-3.09) | (1.84) | (-0.38) | (3.50) | (4.70) |
| $\mu_{Ads}$ | 0.197*** | 0.226*** | -0.435*** | -0.180** | -1.136*** |
| | (3.83) | (3.63) | (-4.33) | (-2.05) | (-4.75) |
| $\mu_{R^{Year}}$ | 0.061*** | -0.021 | -0.157*** | 0.246*** | -0.005 |
| | (5.51) | (-1.23) | (-3.02) | (4.58) | (-0.10) |
| $\mu_{Savings}$ | 0.137 | 0.405** | 1.162*** | 0.563** | 4.659*** |
| | (0.53) | (2.18) | (2.95) | (2.15) | (3.24) |
| $\mu_{CapGains}$ | 0.016*** | -0.024*** | -0.074 | -0.732*** | 532.04* |
| | (4.27) | (-3.09) | (-1.07) | (-7.23) | (1.77) |
| $\mu_{November}$ | 0.259*** | 0.037 | 0.289*** | -0.358*** | 0.553*** |
| | (6.24) | (1.05) | (4.06) | (-7.60) | (3.27) |
| $\mu_{December}$ | 0.011 | -0.220*** | -0.274*** | -0.446*** | 3.208*** |
| | (0.36) | (-8.04) | (-3.57) | (-9.56) | (15.50) |
| $\mu_{January}$ | 0.386*** | 0.250*** | 0.494*** | 0.349*** | -4.074*** |
| | (8.05) | (7.36) | (8.77) | (11.44) | (-20.3) |
| $\mu_{February}$ | -0.052 | -0.109*** | 0.197*** | 0.206*** | 0.948*** |
| | (-0.93) | (-4.11) | (2.89) | (3.65) | (5.62) |
| $\rho_1$ | 0.353*** | 0.749*** | 0.604*** | 0.699*** | 0.077*** |
| | (16.14) | (28.77) | (20.68) | (31.83) | (2.98) |
| $\rho_3$ | 0.104*** | 0.075*** | 0.079*** | 0.027 | 0.259*** |
| | (5.65) | (3.60) | (3.23) | (1.42) | (14.24) |
| $R^2$ | 0.4479 | 0.7068 | 0.5037 | 0.67 | 0.5892 |
| AR(12) | 18.13 | 10.89 | 16.18 | 12.87 | 23.46 ** |
| ARCH(12) | 9.18 | 15.18 | 9.94 | 8.54 | 6.39 |

**Panel B: Systems Equations Joint Tests**

| Joint Tests Across Indices | $\chi^2$ [degrees of freedom] |
|---|---|
| $\hat{OR}_t$ jointly equal to 0 across series | 30.9 *** [5] |
| $\hat{OR}_t$ equivalent across series | 27.0*** [4] |
| Test of Over-Identifying Restrictions | 26.1 [80] |

## Table A3.3: Regression Results for U.S. Asset Class Net Exchanges, Retail Investors Only

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:

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

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

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 $\chi^2$ test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald $\chi^2$ 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 $\chi^2$ 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 $\chi^2$ 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) $\chi^2$ 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 | Corporate Fixed Income | Government Fixed Income | Money Market |
|---|---|---|---|---|---|
| $\mu$ | -0.027*** | -0.059*** | 0.154*** | 0.012 | 0.433*** |
| | (-2.82) | (-7.04) | (7.93) | (0.53) | (11.30) |
| $\mu_{\hat{OR}}$ | -0.027*** | 0.053*** | 0.032 | 0.021 | 0.294*** |
| | (-2.81) | (7.40) | (1.41) | (1.32) | (5.27) |
| $\mu_{Ads}$ | -0.004 | 0.065*** | -0.117*** | -0.041* | -0.310*** |
| | (-0.51) | (8.23) | (-5.96) | (-1.74) | (-8.73) |
| $\mu_{R^{Year}}$ | 0.027*** | -0.011*** | -0.084*** | 0.095*** | -0.027*** |
| | (14.54) | (-4.68) | (-6.97) | (7.60) | (-6.79) |
| $\mu_{CapGains}$ | -0.001* | -0.004*** | 0.001 | -0.138*** | -466.7*** |
| | (-1.75) | (-5.85) | (0.09) | (-8.47) | (-10.50) |
| $\rho_1$ | 0.162*** | 0.773*** | 0.433*** | 0.514*** | -0.235*** |
| | (12.01) | (58.79) | (36.11) | (63.23) | (-9.56) |
| $\rho_3$ | -0.015 | 0.030*** | 0.037*** | 0.035** | 0.100*** |
| | (-1.58) | (2.82) | (3.61) | (2.44) | (6.20) |
| $R^2$ | 0.142 | 0.6473 | 0.2316 | 0.3495 | 0.1212 |
| AR(12) | 16.54 | 8.22 | 19.19* | 12.32 | 39.35*** |
| ARCH(12) | 2.94 | 25.64** | 21.38** | 5.76 | 17.48 |

| Joint Tests Across Indices | $\chi^2$ [degrees of freedom] |
|---|---|
| $\hat{OR}_t$ jointly equal to 0 across series | 233.4 *** [5] |
| $\hat{OR}_t$ equivalent across series | 157.2 *** [4] |
| Test of Over-Identifying Restrictions | 28.9 [80] |

## Appendix 4: 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 A4.1 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 A4.2 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 A4.3, 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:[60]

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

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.

[60] 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 7.

## Table A4.1: 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 A4.2: 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 mean monthly fund percentage return over the prior 12 months, 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 A4.2 continues on next page

**Table A4.2, 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 A4.2 continues on next page

**Table A4.2, 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 A4.3: 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:

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

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 $\chi^2$ test statistic for the presence of up to 12 lags of autocorrelation (AR), and a Wald $\chi^2$ 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 $\chi^2$ 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 $\chi^2$ 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) $\chi^2$ 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 |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | 0.087 | -0.373*** | -0.179*** | 0.260*** | 2.168*** |
| | ( 1.54) | ( -11.7) | ( -2.67) | ( 5.78) | ( 12.43) |
| $\mu_{Dec}$ | 0.096** | -0.365*** | -0.781*** | -0.062 | 1.583*** |
| | ( 2.39) | ( -9.87) | ( -14.2) | ( -1.56) | ( 10.50) |
| $\mu_{Jan}$ | 0.331*** | 0.219*** | 0.120*** | 0.381*** | -0.413** |
| | ( 8.67) | ( 6.24) | ( 2.81) | ( 10.93) | ( -2.54) |
| $\mu_{Feb}$ | 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 A4.3 continues on next page

**Table A4.3, Continued**

**Panel B: Parameter Estimates and Diagnostic Statistics**

| Parameter or Statistic | Government General | Government Medium-, Short-Term | Munis | Money Market |
|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | -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) |
| $\mu_{Nov}$ | -0.260*** | -0.725*** | -0.219*** | 1.249*** |
| | ( -2.76) | ( -7.82) | ( -4.57) | ( 13.62) |
| $\mu_{Dec}$ | -0.463*** | -0.685*** | -0.450*** | 0.700*** |
| | ( -5.45) | ( -7.11) | ( -10.5) | ( 5.66) |
| $\mu_{Jan}$ | -0.228** | -0.095 | 0.422*** | -0.063 |
| | ( -2.51) | ( -1.51) | ( 12.26) | ( -0.49) |
| $\mu_{Feb}$ | 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 | $\chi^2$ [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 5: Additional Details on Several Explanatory Variables

### A5.1 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 A5.1 illustrates the 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.[61] 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.[62] For instance, suppose that a fund realized a capital gain of one hundred 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

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

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

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 VII, 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 1.

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.

**A5.2 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 individuals 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 1 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.

**A5.3 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 individual 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.

## Table A5.1: 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 |

## Appendix 6: Conditional Splits of the Data

Here we perform sub-sample analysis as an alternate way to consider whether various factors such as seasonality in fund sales, fund redemptions, equity returns, or fund capital gains lead to the seasonal patters we see in fund flows. We undertake this analysis by conditioning the flows data on the basis of high versus low values of these variables and then examining whether the seasonal pattern in flows is consistent across the sub-samples. Briefly, we find evidence that the seasonality in flows is consistent across the various splits of the data. Whether sales, redemptions, equity returns, or capital gains are above or below median, we find seasonal variation in equity and money market flows that is consistent with seasonally varying investor risk aversion.

We consider first sorting the flows data on the basis of the magnitude of contemporaneous equity fund returns. Investors exhibit flight-to-quality behavior during market periods when equity returns are anomalously low (see Schmidt, Timmermann, and Wermers (2010)). Combined with the fact that most of the notable U.S. stock market crashes have been clustered in the fall season, the seasonal pattern we observe in flows may be a simple consequence of investors responding to seasonality in returns, possibly unrelated to seasonality in risk aversion. In Panel A of Figure A6.1, we consider each of the equity and money market flows data sets sorted into two partitions on the basis of high versus low contemporaneous returns to the equity funds.[63] The top two plots in Panel A correspond to periods with equity fund returns above the 50th percentile of equity fund returns, and the bottom two plots of Panel A correspond to periods with returns below the 50th percentile. Naturally, the low-return periods include market crashes. In each plot, the thin horizontal line is the average fund-category flow across the conditional sub-set of data, and the thick dashed line is the monthly average fund-category flow across the conditional sub-set of data. For equity funds (the two left-most plots of Panel A), the annual average of the monthly flow is about 0.8 percent of TNA for the sub-sample of months with above-median equity class returns and the annual average of the monthly flow is about 0.4 percent of TNA for the sub-sample of months with below-average equity class returns. For both partitions of the equity flow data, we see the characteristic seasonal pattern with below-average flows in the fall and above-average flows in the winter/spring in both sub-samples. This suggests it is not seasonality in equity returns, per se, which drives the seasonal pattern in flows. Analogously for money market funds (the two right-most plots in Panel A), we see

[63] Specifically, we manipulated the data as follows. We compared a particular observation of equity returns for month $i$ in a given year (where $i$=1, $\cdots$, 12, representing January through December) to all equity returns values for month $i$ in the whole sample. Month $i$ observations above (below) month $i$ median returns were placed in the above (below) median sample split. (Note that our results are virtually identical if we form the high/low sample splits by comparing a particular month $i$ observation to the entire sample of returns observations instead of comparing it only to the other returns observations for month $i$.) Further, because we have less than 24 years of data, we have at best 12 observations for each sample split, which can lead to noisy data. Hence our plots are based on a three-month centered moving average smooth of the monthly mean flows. This smooths away some noise in the monthly averages without smoothing away the quarterly patterns in flows we expect to observe due to seasonality in depression.

the opposite pattern, on balance. Flows are typically above-average in the fall and below-average in the winter/spring. On balance, the seasonal pattern in flows cannot be easily dismissed as arising from a concentration of market crashes in the fall, leading us to conclude the seasonal variation in flows does not appear to be driven in large part by flight-to-quality behavior.

As an alternate way of capturing possible seasonal differences in the way investors respond to market conditions, we also consider returns arising from capital gains. Panel B of Figure A6.1 corresponds to sorting the flows data on the basis of contemporaneous capital gains realizations to equity funds.[64] (As shown in Table 2, money market funds realize virtually zero capital gains.) A desire to avoid pre-paying capital gains taxes associated with high equity-fund capital gains can lead investors away from equity funds and possibly into money market funds; see Appendix 5. Seasonality in this capital gains avoidance could explain the observed opposing pattern of flows between equity and money market funds, in the fall season at least. In the plots of Panel B, however, we consistently observe the expected patterns in equity and mutual fund flows, regardless of the high/low capital gains condition. Thus seasonality in capital gains does not seem to be the driving force behind the seasonal variation in flows that we study.

We turn now to consider mutual fund sales and redemptions, both of which are important components of net flows. Considering these variables helps us evaluate whether the availability and need for liquidity may drive flows. For example, seasonal peaks in liquidity arising from year-end bonuses and/or seasonal liquidity needs arising from tax deadlines and seasonal shopping habits could lead to seasonality in flows. Both sales and redemptions are integrated, thus we detrend each of the series by subtracting off the average sales or redemptions of the preceding 12 months. We form the partitions on the basis of the detrended data, and we present a moving average of the conditional flows in Panels C and D.[65] Panel C of Figure A6.1 contains plots of the flows data conditional on high versus low total fund sales (where the sales are calculated across all fund categories we study). Naturally, in high fund sales months we see higher fund flows on average, more pronounced for money market funds. Regardless of the sample split, however, equity fund flows are below average in the summer and fall and above average in the winter and spring. This pattern is reversed for the money market fund category; the pronounced seasonality we see in fund flows across our entire sample and various subsamples of time is repeated in this sample split of the data. Fund sales, high or low, do not drive the seasonality we document in fund flows. Even if sales are high relative to the past year, they are below (above) average for equity (money market) in the summer and fall and this reverses in the winter/spring. Similarly, we see in Panel D that high versus low fund redemptions do not drive the seasonality pattern in flows. That is, seasonality

[64]We form the sorts based on capital gains analogously to the formation based on equity returns as described in footnote 63.

[65]We form the sorts based on detrended sales and redemptions analogously to the formation based on equity returns as described in footnote 63.

in the need for liquidity, at least partially revealed by redemptions, seems unlikely to be the source of the seasonality we document in fund flows.

We performed a variety of additional untabulated checks, including sample splits based on total market returns (CRSP value-weighted total market returns), total NYSE (detrended) volume, total NYSE (detrended) turnover, equity fund volatility, total market equity volatility, and even cloud cover. Across these various analyses we find qualitatively identical results: the seasonal patterns we document in fund flows survives any of these high/low splits. We also performed analysis based on high/low splits based on terciles instead of above/below median, again finding qualitatively identical results.

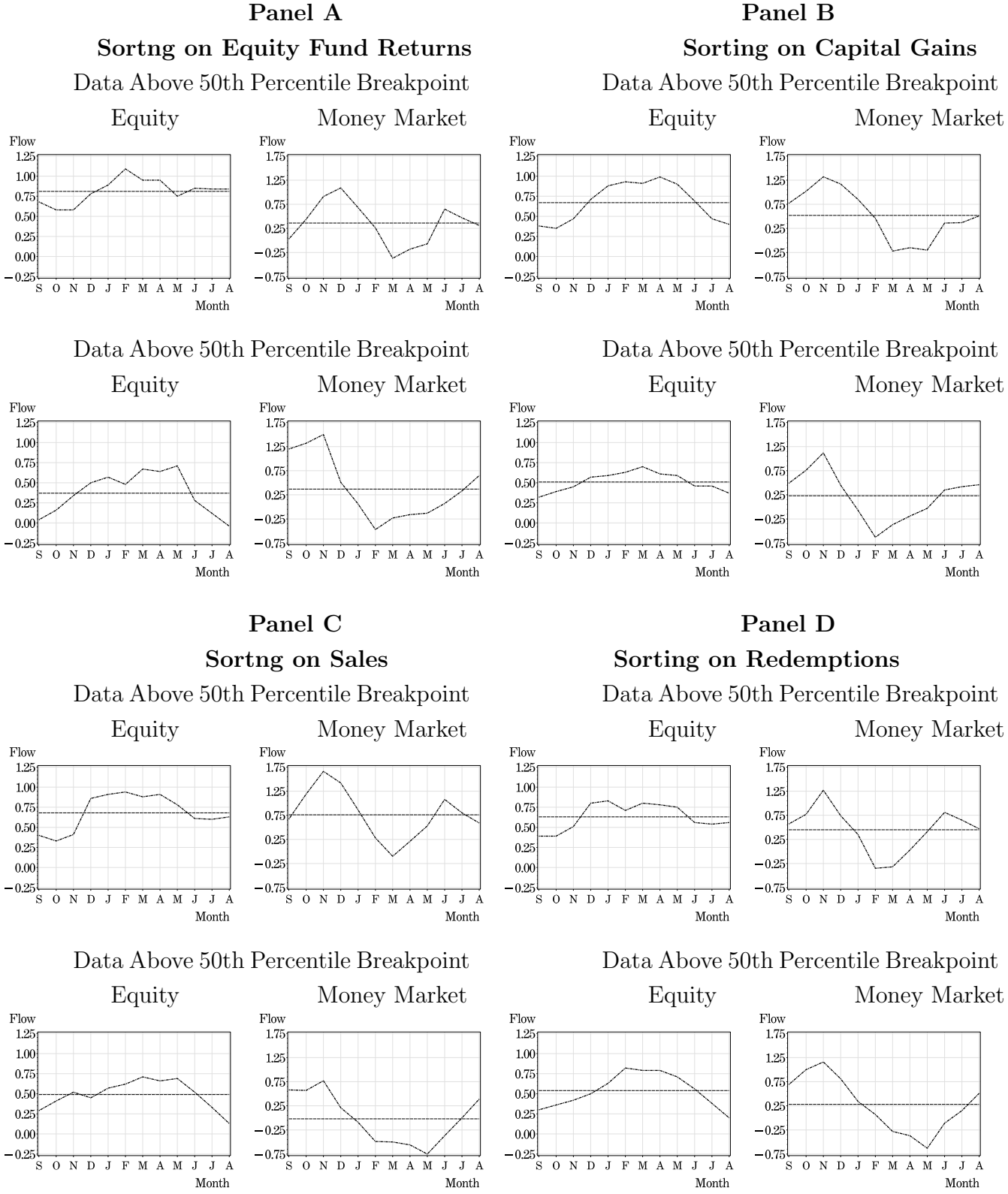


Figure 11: We form high/low sample splits on the basis of the 50th percentile of contemporaneous equity-fund returns (Panel A), contemporaneous equity-fund capital gains (Panel B), detrended sales (Panel C), and detrended redemptions (Panel D). The thin dashed line represents the annual average flow for the partition, and the thick dashed line represents the monthly average flow. In all cases, the plotted average monthly flows are smoothed with a three-month centered moving average. The data, provided by the Investment Company Institute, span 1985-02 through to 2006-12.

## Appendix 7: 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:

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

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 A7.1. 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 $\chi^2$ 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 $\chi^2$ 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 $\chi^2$ goodness-of-fit test indicates that the over-identifying moment restrictions we use to estimate the model are not rejected.

**Table A7.1: 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 |
|---|---|---|---|---|---|
| $\mu$ | -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) |
| $\mu_{Ads}$ | 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) |
| $\mu_{Nov}$ | -0.114 | -0.201 | 0.103 | -0.604** | 1.433*** |
| | ( -0.89) | ( -0.93) | ( 0.61) | ( -2.49) | ( 5.42) |
| $\mu_{Dec}$ | -0.133 | -0.778*** | -0.194 | -0.747*** | 0.821** |
| | ( -1.22) | ( -4.60) | ( -1.37) | ( -3.41) | ( 2.22) |
| $\mu_{Jan}$ | 0.258* | 0.099 | 0.280* | -0.004 | -0.173 |
| | ( 1.80) | ( 0.56) | ( 1.95) | ( -0.02) | ( -0.36) |
| $\mu_{Feb}$ | 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 | $\chi^2$ [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.

**Appendix References**


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