

The Reluctant Retirement Trader: Do Asset Returns Overcome Inertia?



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**THE IMPROVING FINANCIAL LITERACY AND
RESHAPING FINANCIAL BEHAVIOR
CONFERENCE**

**MAY 14-15, 2009
COLUMBIA CLUB, INDIANAPOLIS**



Retirement Investors and Inertia

• 53% of surveyed investors not interested in financial training
(Source: Macfarland, Marconi and Utkus 2004)

• Only 18.5% of group studied figured out how much they needed to save, developed a plan and was able to stick with it (Source: Lusardi and Mitchell 2005)

• In an experiment, 20% of those with below average literacy chose the default option compared to 2% of those with above
(Source: Agnew and Szykman 2003)

• Those with lower financial literacy 30% less likely to participate in a 401(k) plan
(Source: Agnew, Szykman, Utkus and Young 2009)

• Average investor trades once every 3.85 years (Source: Agnew, Balduzzi and Sunden 2003)

- **Why should we care about retirement investors?**
 - Individuals face a growing responsibility for their own financial security at retirement
 - ✦ Many individuals lack experience and interest in investing in the market
 - Studies have documented many behavioral mistakes made by 401(k) participants
 - ✦ Default bias, familiarity bias, 1/n heuristic, excessive extrapolation, etc.
 - Additional studies have shown that lack of financial literacy can make investors more susceptible to mistakes

- **What is inertia?**
 - Previous research has shown that 401(k) participants rarely trade in their retirement accounts
 - ✦ This is in sharp contrast to trading behavior in brokerage accounts (Source: Odean 1999)

Goal of this Study



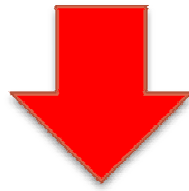
- To examine whether some 401(k) participants are reacting within the day (contemporaneously) to market returns
- To calculate what the potential utility cost of a positive feedback trading strategy would be for a participant
- To discuss what the findings' implications are for financial education programs



**Do Investor's
React to
Returns?
Anecdotal
Evidence**

- On January 22, 2008, the Dow Jones Index fell 500 points during intraday trading, ...

Dow Jones fell
500 points



Hewitt 401(k) Index
transfers up 11 times

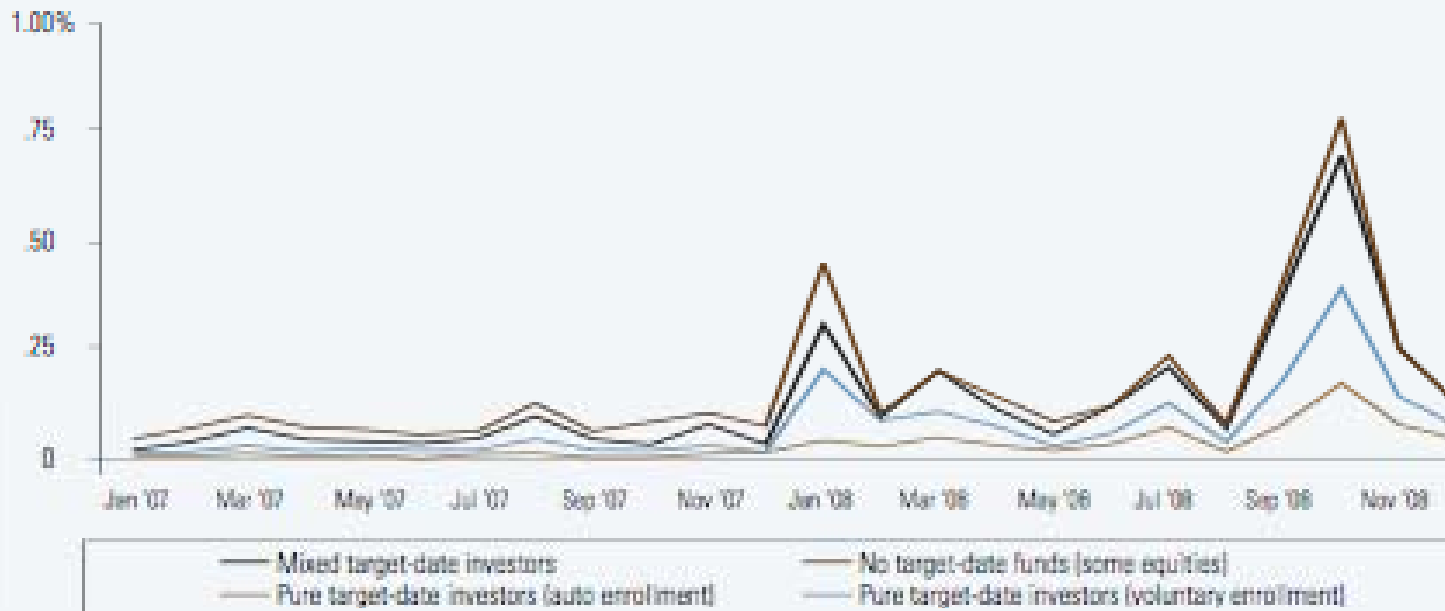
while the Hewitt Index recorded
transfers at eleven times their
normal level

Vanguard Report 2008



- While Vanguard reports only a marginal increase in trading in 2008, the number of participants that abandoned equity showed large spikes during months of key equity downturns in 2008 (Source: Mottola and Utkus 2009)

Figure 1. Monthly equity abandonment rates by investor type



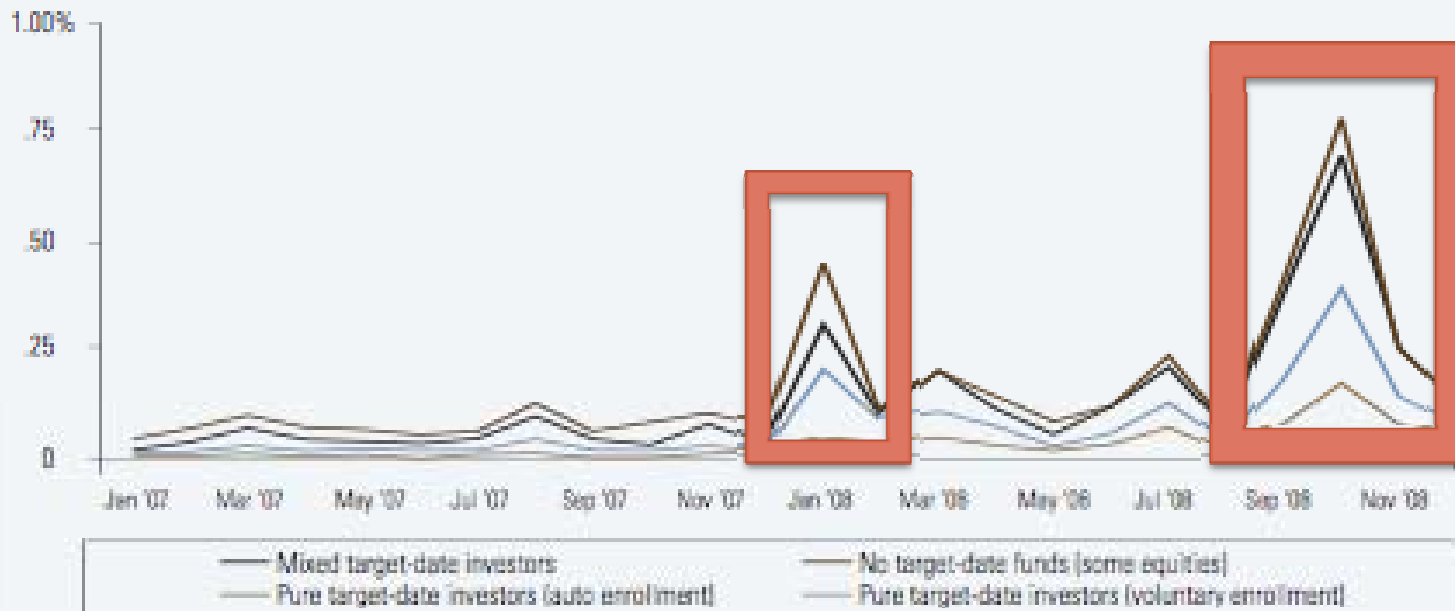
Source: Vanguard, 2009.

Vanguard Report 2008



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Figure 1. Monthly equity abandonment rates by investor type



Source: Vanguard, 2009.



Description of Data Used in Study

- **Important features of Hewitt Associates 401(k) Index data**
 - Transfer activity for nearly 1.5 million 401(k) participants
 - Daily data from August 4, 1997 to September 30, 2002
 - 6 asset classes studied (GIC, Bond, Balanced, Large Equity, Medium Equity and Small Equity)
 - Representative of participant behavior in large plans
- **Daily market returns for asset class benchmarks from Datastream**
- **Intraday S&P 500 data from Tick Data**
- **Macroeconomic data from 28 major macroeconomic announcements from Bloomberg**



**More Reasons
to Study
Retirement
Asset Transfers
Only**

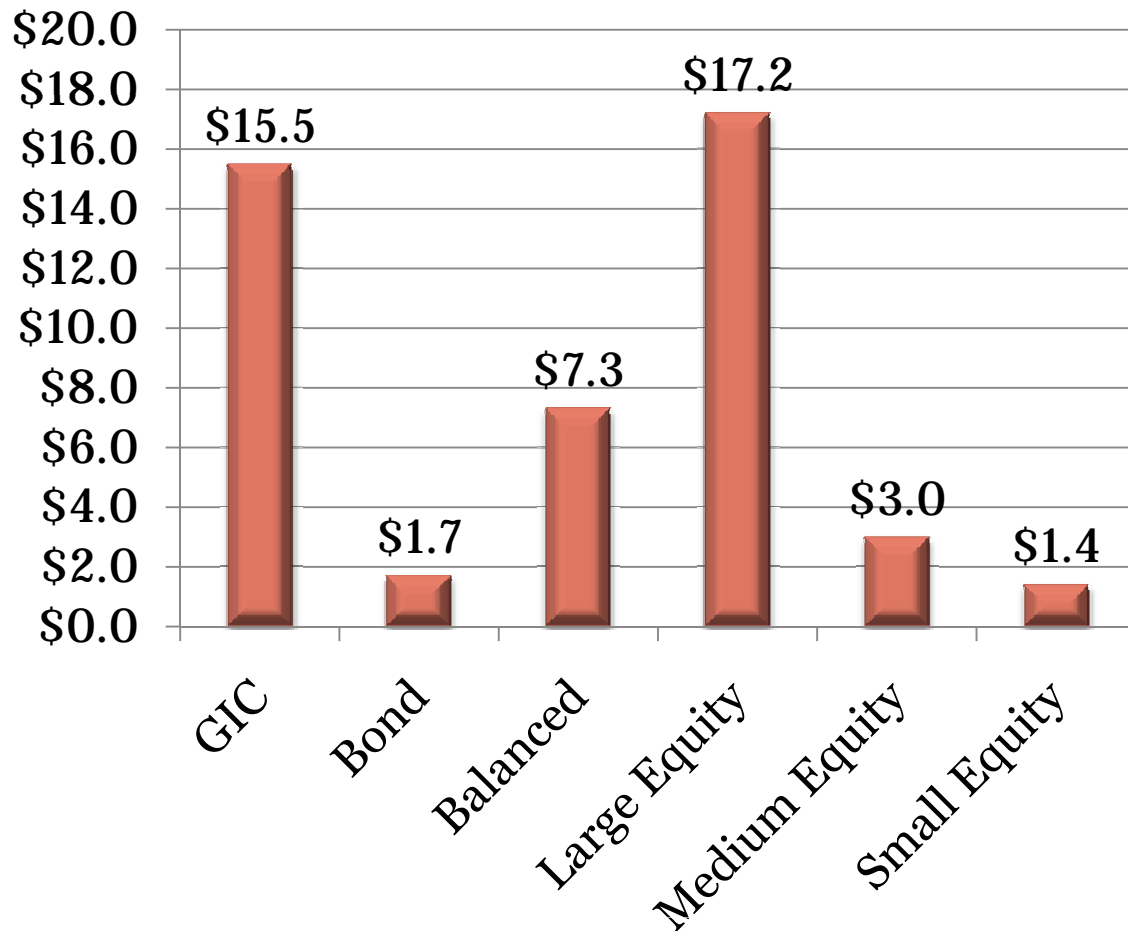
- **Non-retirement account activity can be easily dominated by large institutional investors and wealthy individuals**
- **The timing of transfers are investor-initiated unlike contributions and some distributions**
- **401(k) transfers are free of tax implications**



Summary Statistics: Daily Average Balances

Timeframe: 8/4/1997-9/30/2002

Mean Dollar Balances (in Billions)



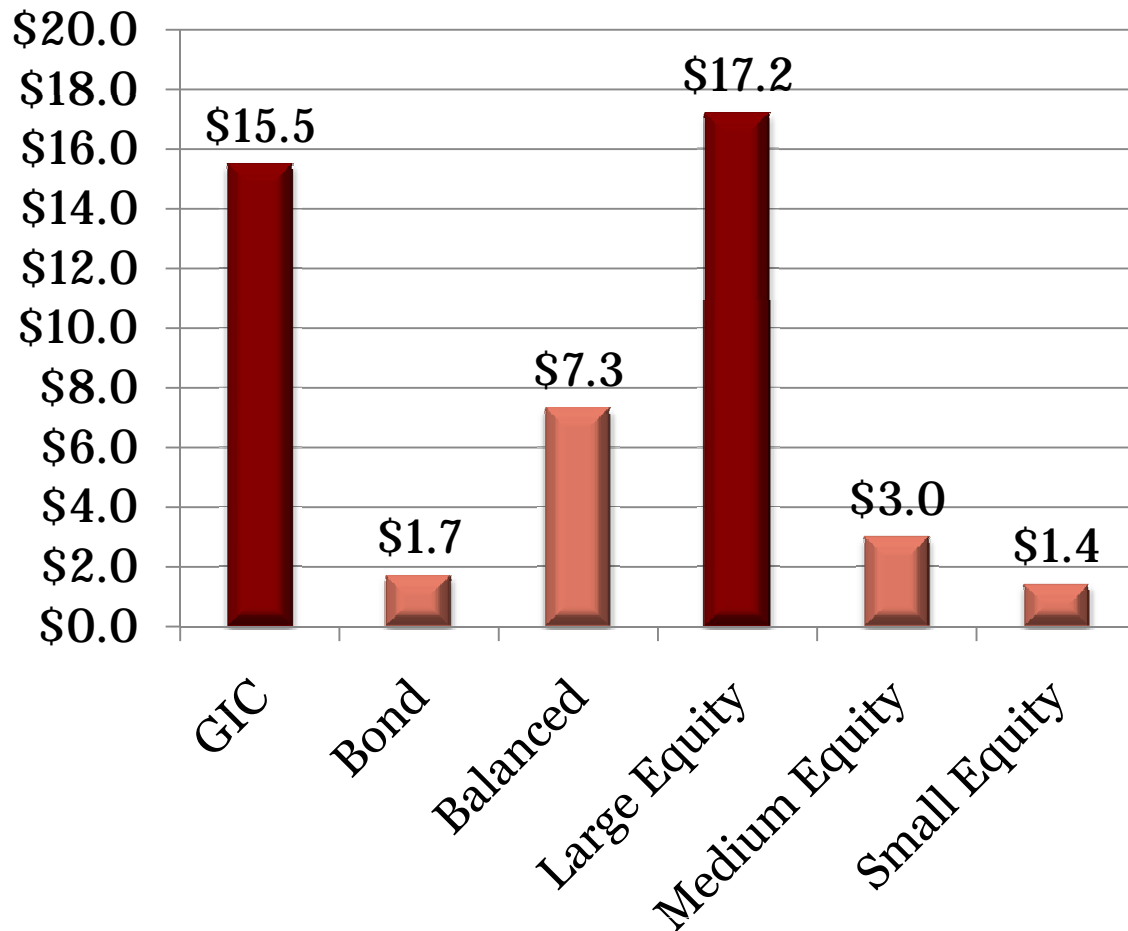


Summary Statistics: Daily Average Balances

Timeframe: 8/4/1997-9/30/2002

Large Equity and GIC are the largest asset classes in terms of dollar balances

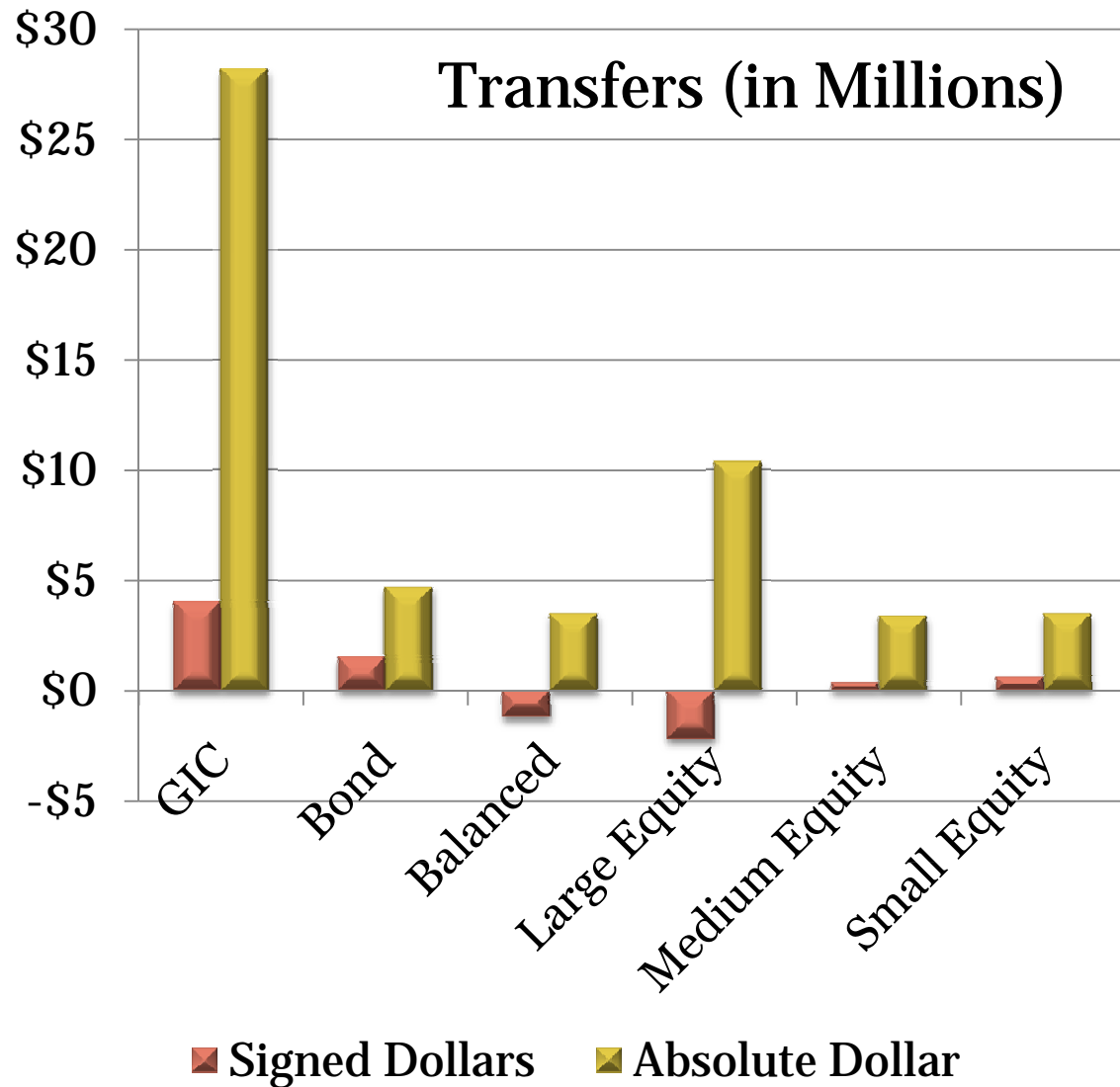
Mean Dollar Balances (in Billions)





Summary Statistics: Daily Transfers

Timeframe: 8/4/1997-
9/30/2002

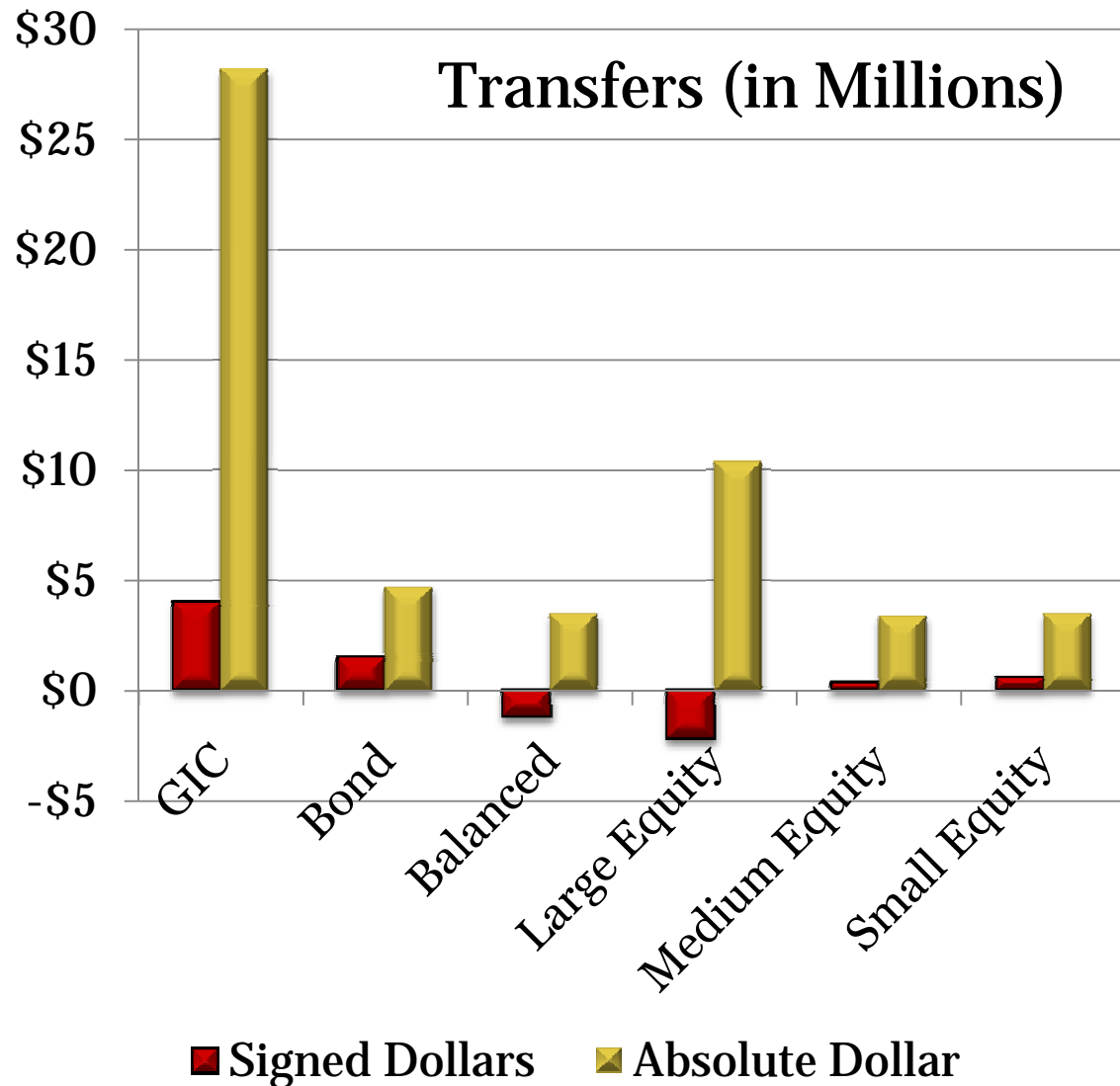




Summary Statistics: Daily Transfers

Timeframe: 8/4/1997-
9/30/2002

Signed Dollar Transfers are an indicator of the direction of the flows



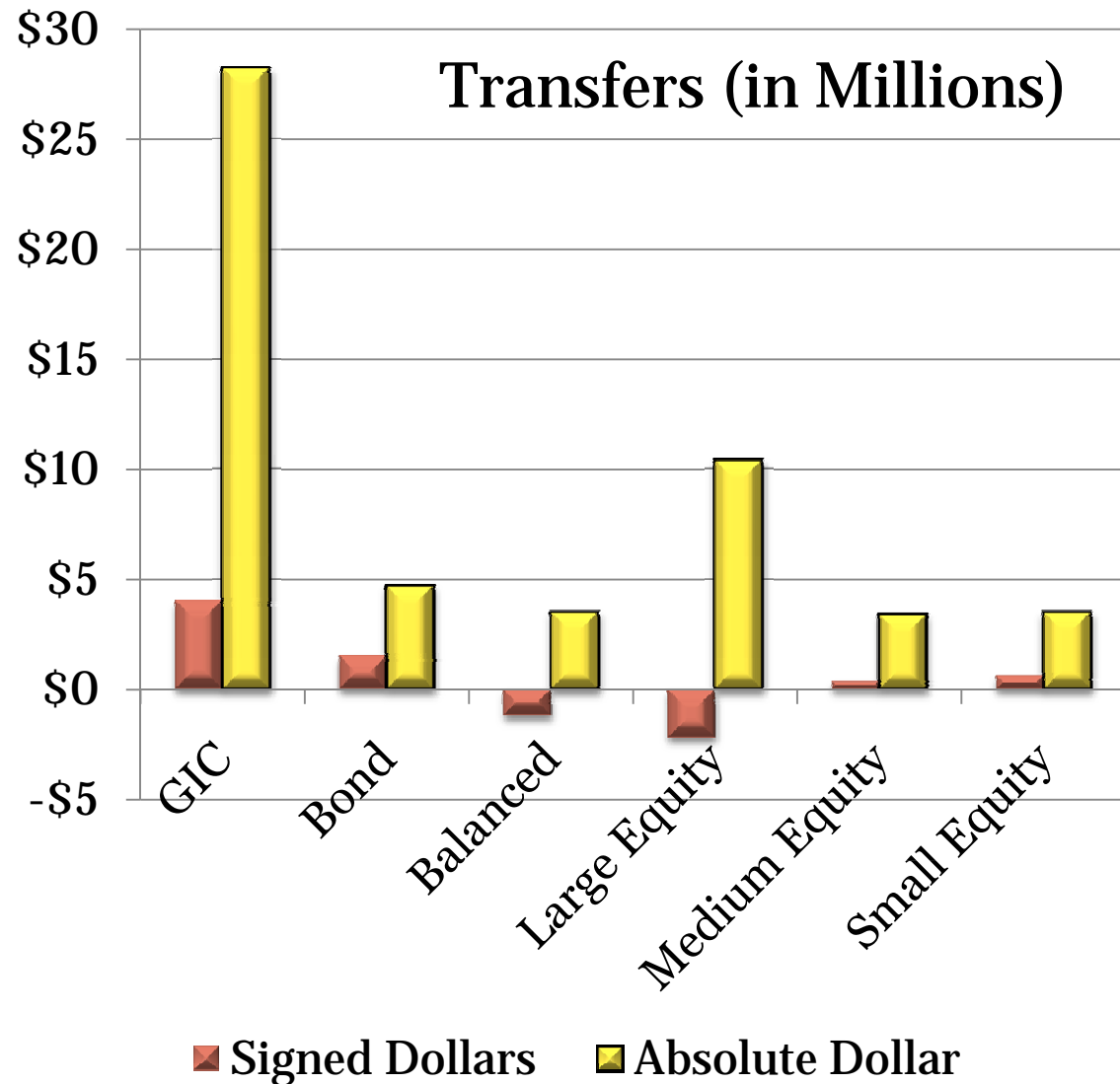


Summary Statistics: Daily Transfers

Timeframe: 8/4/1997-9/30/2002

Signed Dollar Transfers are an indicator of the direction of the flows

Absolute Dollar Transfers provide information on the absolute size

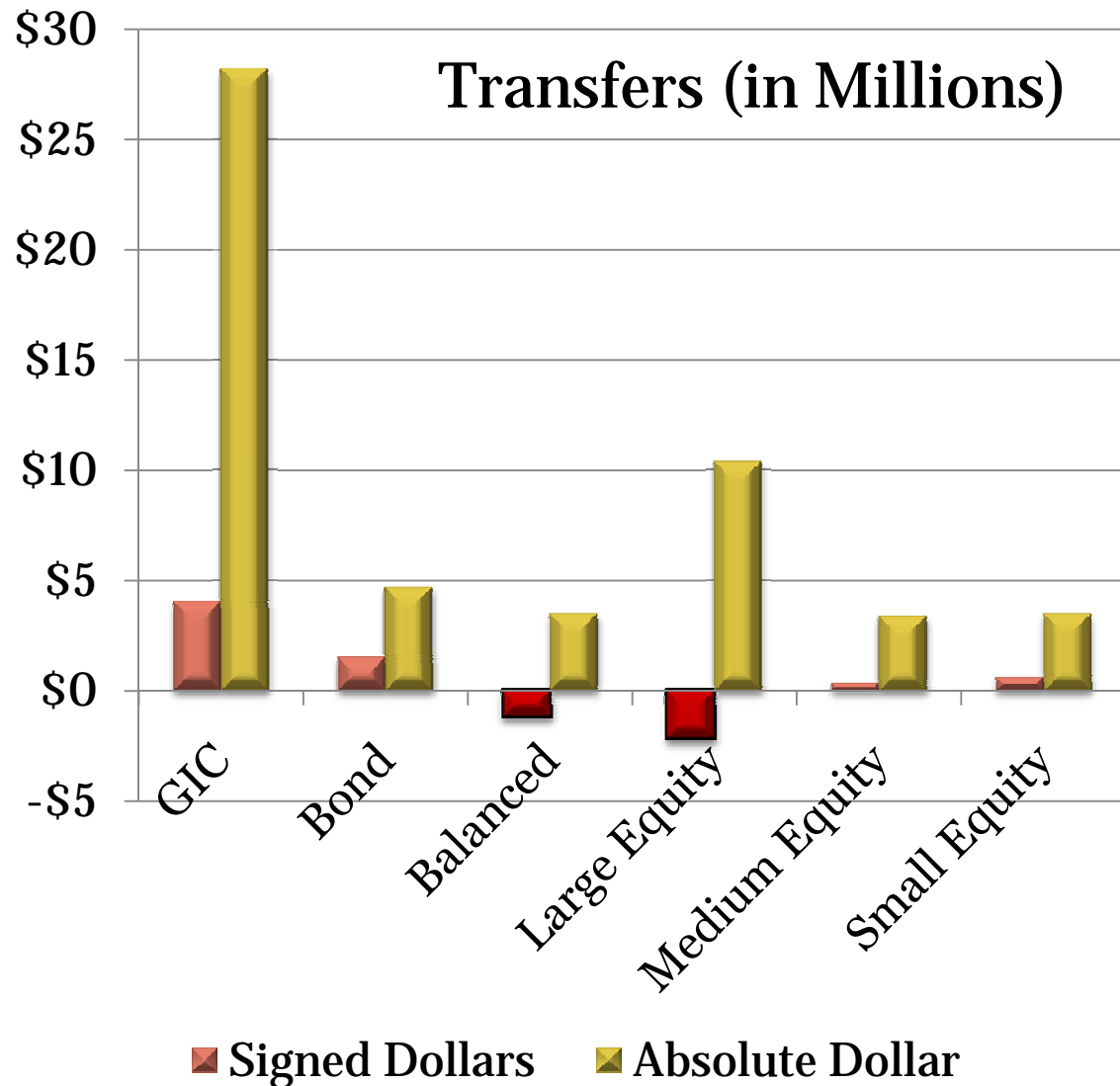




Summary Statistics: Daily Transfers

Timeframe: 8/4/1997-
9/30/2002

Signed daily dollar flows are on average positive except for
Balanced and Large Equity

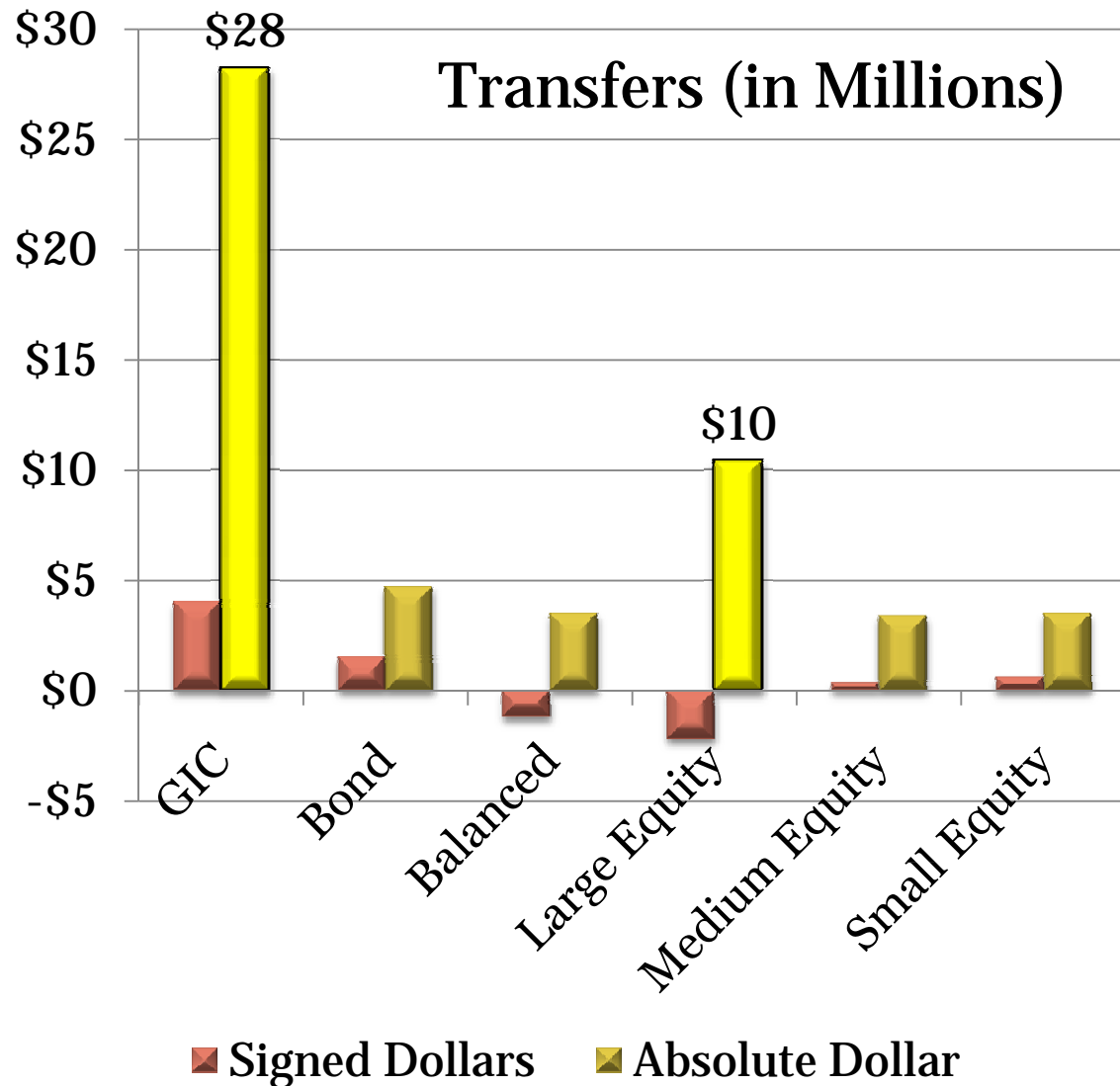




Summary Statistics: Daily Transfers

Timeframe: 8/4/1997-
9/30/2002

GIC and Large Equity
on average have the
highest absolute
transfers





Cross-Correlations of Transfers and Returns

Timeframe: 8/4/1997-9/30/2002

GIC and Bond Transfers are positively related to each other

		Transfers	
Asset Classes		GIC	Bond
Transfers	GIC	1.00	
	Bond	0.33**	1.00
	Balanced	-0.25**	-0.21**
	Large Equity	-0.35**	-0.39**
	Medium Equity	-0.53**	-0.39**
	Small Equity	-0.46**	-0.28**



Cross-Correlations of Transfers and Returns

Timeframe: 8/4/1997-9/30/2002

Balanced and Equity transfers are positively related to each other

	Transfers				
Asset Classes	Balanced	Large Equity	Medium Equity	Small Equity	
Transfers Balanced	1.00				
Large Equity	0.51**	1.00			
Medium Equity	0.38**	0.54**	1.00		
Small Equity	0.25**	0.30**	0.49**	1.00	



Cross-Correlations of Transfers and Returns

Timeframe: 8/4/1997-9/30/2002

Balanced and Equity fund transfers are negatively related to GIC and Bond transfers

Taken together, this evidence suggests that investors tend to shift funds between equities and cash or bonds

Transfers			
	Asset Classes	GIC	Bond
Transfers	GIC	1.00	
	Bond		
	Balanced	-0.25**	-0.21**
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Cross-Correlation s of Transfers and Returns

Timeframe: 8/4/1997-
9/30/2002

Equity returns are
negatively related to
transfers to GICs and
Bonds

		Transfers	
		Asset Classes	
Returns	Bond	GIC	Bond
		0.00	0.10**
	Large Equity	-0.48**	-0.21**
	Medium Equity	-0.44**	-0.24**
	Small Equity	-0.43**	-0.28**



Cross-Correlations of Transfers and Returns

Timeframe: 8/4/1997-9/30/2002

There is a positive correlation between equity returns and Balanced, Large Equity, Medium Equity and Small Equity funds

		Transfers			
		Balanced	Large Equity	Medium Equity	Small Equity
Returns	Bond				
	Large Equity	0.24**	0.16**	0.42**	0.35**
	Medium Equity	0.26**	0.20**	0.44**	0.35**
	Small Equity	0.25**	0.21**	0.45**	0.37**



Summary of the Findings So Far

- **Preliminary Findings:**
 - It appears that market movements may induce *some* investors to trade
 - Investors appear to shift funds between fixed income assets and equity assets
- **Potential problem with analysis:**
 - It is possible that the correlations we observe are a result of factors other than same-day returns relating to same-day transfers. For example,
 - ✦ Leads and lags of transfers and returns
 - ✦ Macro-economic events
 - ✦ Day-of-the-week effectsall may be influencing returns and transfers



VAR Analysis

VAR, or vector autoregression models, are used extensively in macroeconomics and finance to capture the dynamics of multiple time series in a simple framework

- **Solution:** To control for these effects, we examined the cross-correlations of the innovations from a VAR analysis
 - We used a 10 equation VAR with dependent variables including the six transfers and four benchmarks
 - The explanatory variables included the lagged values of dependent variables, contemporaneous and lagged values of 28 macro-economic surprises and dummy variables for days of the week.
- **VAR results:** The patterns observed in the simple correlation analysis persist



Direction of Causality?

Evidence and Theory Conflict

○ **Returns cause Transfers** Profits can be realized by trading equities at stale prices (Source: Chalmers, Edelen and Kadlec (2001), Greene and Hodges (2002))

○ **Transfers cause Returns** Some researchers find that equity-fund flows only correlate significantly with returns between 11 and 12 and the market close (Source: Edelen and Warner (2001), Goetzmann and Massa (2003))

- **Limitation of VAR: Do transfers cause returns or returns cause transfers?**
 - We replicate Edelen and Warner's (2001) analysis by testing whether morning and afternoon returns relate to daily asset transfers
 - If flows are responding to returns, there is no reason why the morning returns should be unrelated to the daily flows
- **We find that transfers are significantly related to morning *and* afternoon returns**
- **Our results suggest that an immediate response of transfers to returns is possible**



Potential Cost of Feedback Trading

○ Optimal Policy:
Continuous rebalancing to the optimum 50/50 allocation

○ Suboptimal 1:
Infrequent Rebalancing to optimum allocation

○ Suboptimal 2:
Infrequent Rebalancing, Feedback, $\frac{1}{2}$ Rule

○ Suboptimal 3:
Infrequent Rebalancing, Feedback, Extreme

- Given the evidence of feedback trading, we designed a simulation to test four different rebalancing strategies
- Infrequent trading calibrated to actual data
 - Occurs at random intervals with constant probability
- Feedback trading rules:
 - $\frac{1}{2}$ rule: reduces by half the existing allocation to the risk-free asset, if the equity return is above the mean and vice versa
 - Extreme rule: reduces the allocation to the risk-free asset to zero, if the equity return is above the mean and vice versa



Potential Cost of Feedback Trading

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○ Suboptimal 3:
Infrequent Rebalancing, Feedback, Extreme

- For each suboptimal strategy, we calculated the percentage of initial wealth that the suboptimal investor would be willing to give up to use the optimal policy instead
 - We call this the utility cost
- We studied how the turnover, standard deviation of transfers and correlation of transfers and returns from the simulation relate to earlier empirical findings
 - The two feedback strategies most closely match the empirical results



The Simulation Results

Utility cost is the percentage of initial wealth that the suboptimal investor would be willing to give up to use the optimal policy instead

Trading Policy	Utility Cost
Suboptimal Policy 1: Infrequent Rebalancing to Optimum	.41 %
Suboptimal Policy 2: Infrequent Rebalancing, Feedback, $\frac{1}{2}$ Rule	6.71 %
Suboptimal Policy 3: Infrequent Rebalancing, Feedback, Extreme	20.21 %



Summary of Main Findings

- Our findings provide evidence that *some* 401(k) investors are following positive feedback trading strategies
- We demonstrate through a simulation that there can be substantial utility costs associated with positive feedback trading strategies
- These findings suggest that individuals should be made aware of the costs of feedback trading



Challenges for Financial Education Programs

- Teaching individuals how to properly react to market volatility will be difficult because ...
 - some individuals have limited interest and experience investing
 - individuals may not need to apply the lesson until long after their instruction
- To make the lesson more easy to recall when necessary, more interactive methods may prove successful
 - For example, video games may help investors “experience” the consequences of different trading strategies
 - There is some evidence that stock market games and targeted video games improve literacy (*Source: Mandell 2008, Doorways to Dream Fund 2009*)