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Investors Behaving Badly: An Analysis of Investor Trading Patterns in Mutual Funds

by Gavin Quill

The thesis of this article is that, despite the tremendous proliferation of educational materials and raw market information available to investors, investors too often act irrationally or contrary to their own best financial interests. In this article, we examine the evidence that investor behavior is frequently detrimental to the achievement of investors' long-term goals. The picture that emerges from this analysis is one of investors who have lost a good portion of their potential returns because of the excessive frequency and poor timing of their trading activities.

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The famous Random Walk theory of investing maintains that nobody can predictably and consistently "beat the market," no matter what his or her investment strategy may be. This theory sees the world as one populated by essentially rational investors who have sufficient access to relevant market information to enable them to quickly recognize opportunities as they emerge and pitfalls as they begin to manifest. An individual cannot beat a market full of rational and well-informed competitors.

While this may seem incontrovertible in theory, in practice we find substantial and consistent evidence to the contrary. The problem is not a lack of universally accessible and reasonably accurate information, for this has increased almost exponentially over the past two decades. Rather, the issue is the inability of investors to appropriately interpret and apply this mountain of information in the construction and maintenance of their portfolios.

To put it bluntly, the empirical evidence concerning what investors actually do with their money demonstrates quite emphatically that, all too often, investors act irrationally or contrary to their own best financial interests. In this paper, we examine the evidence that investor behavior is frequently detrimental to the achievement of their long-term goals.

To do this, we explore in detail the mutual fund trading patterns established over the past decade to substantiate that, indeed, investors do behave badly. In other words, investors, on average, do not act appropriately from the perspective of achieving their long-term investment goals. Since this may be a controversial assertion to some, we endeavor to go beyond opinion and anecdote to explore what the available data really shows.

First, we'll examine the issue of mutual fund redemption rates, turnover and the trend in average holding periods by fund investors. Then, we'll present an elaborate flow-weighted returns analysis, which compares the returns investors actually experienced with what they might have achieved if they had behaved more "rationally."

Redemption Rates, Turnover And Holding Periods

We hear about the wisdom and benefits of being a buy-and-hold investor. We are constantly counseled not to worry about market fluctuations, to establish an asset allocation appropriate to our goals and risk tolerance, and to stick with that allocation for the long run until our goals are met or until they change. This is the constant refrain of most academics and the majority of financial advisors and planners. Yet, as with most important things in life, it is far easier to have the right intentions than it is to act on them.

The frequent repetition of the axiom of buy-and-hold investing clearly has had an impact on investor attitudes about the right strategy for producing the best long-term results. It has also influenced their self-perception in terms of what kind of investor they actually are.

When asked whether they personally adhere to a buy-and-hold philosophy, the overwhelming majority of investors say they do. This is true even today, despite the well-documented emergence of a segment of heavy traders. The question is whether investors, on average, are living up to the strategy they say they believe in. Most honestly think that they are, but unfortunately the evidence portrays a very different picture.

Let's begin by considering the issue of mutual fund redemption rates. On any given day, a certain percentage of investors redeem some or all of their mutual fund holdings, for a wide variety of reasons. There are certainly many legitimate reasons to sell a fund holding. The investment may have met its goal, the goal may have changed or the life event (college, home purchase, retirement) for which the money was originally invested may have arrived. But such occurrences are few and far between for any individual. This is why people can talk about investing for the long haul, having in mind periods of 10, 20 or even 30 years or more.

We define annual redemption rates as the total dollars redeemed in a given year as a percent of starting assets. Every

redemption rate can be translated into an implied holding period. For instance, if an investor has a consistent 50 percent redemption rate, this means that they are redeeming half of their assets each year and that over a two-year period they would have liquidated all of their investment in a particular fund. This yields an implied holding period of two years. Table 1 illustrates how a variety of redemption rates translate into implied holding periods.

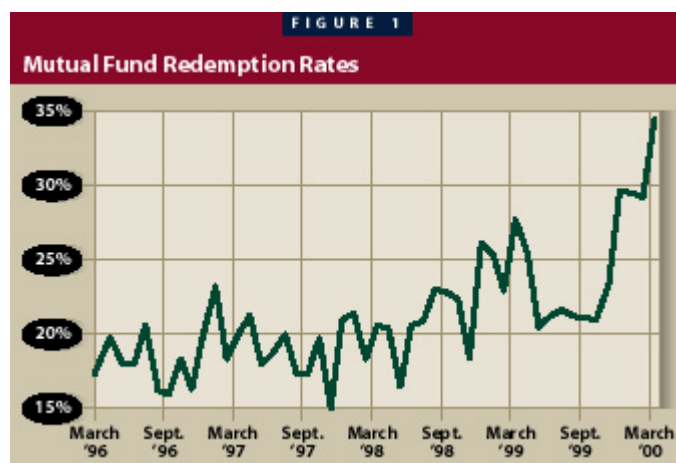
TABLE 1

Translating Redemption Rates to Holding Periods

Annual Redemption Rate	Implied Holding Period
5%	20 Years
10%	10 Years
20%	5 Years
33%	3 Years
50%	2 Years
100%	1 Year
200%	1/2 Year

As you can see, an investor's redemption rate would have to be no more than ten percent (translating to ten years) in order to legitimately describe his or her trading pattern as long-term. What has been the actual experience of mutual fund investors in recent years?

To answer this question, we used aggregate mutual fund industry data on redemptions and assets. We calculated monthly redemption rates by dividing redemptions by starting assets and then annualized these figures. Figure 1 illustrates the results for the four-year period from 1996–2000 for long-term funds (stock and bond funds, excluding money market funds).



We learn from Figure 1 that

- Redemption rates have been on the rise over this period.
- At the start of this period, redemption rates averaged 18.6 percent, while in 2000, redemption rates spiked to an average of 31.1 percent.
- The implied holding period for mutual funds is currently only 2.9 years, significantly shorter than the 5.5-year holding period 4 years earlier.
- As equity markets rose to nosebleed levels, so too did the volatility and turnover of investor mutual fund holdings. As markets have gone up, holding periods have gone down.
- Rising redemption rates provide empirical support for the notion that investors have been “behaving badly,” getting into and out of funds much more frequently.

Table 2 shows us how average holding periods have been declining steadily. Remember that this is the inverse of redemption rates rising steadily.

TABLE 2

Mutual Fund Implied Holding Periods

	Years
3/31/96	5.5
3/31/97	5.0
3/31/98	4.8
3/31/99	3.6
3/31/00	2.9

The most important observation from this data is not that the trend in holding periods has been downward, but that none of these figures comes anywhere close to a reasonable definition of long term. Even the 5.5-year average from 1996 is only half of what could minimally be called long term.

Investors may think they are adhering to a buy-and-hold philosophy, but the data makes it clear that, on average, they are falling short by a wide margin and that the gap between perception and reality has widened sharply in recent years.

Redemption Rates by Distribution Channel

Next we drill down into these figures to see if there are any differences in terms of distribution channels. This will help us to determine whether professional advice makes any difference in bringing investors closer to their stated goals.

The industry segregates data for wholesale funds and direct-marketed funds. We use these categories as proxies for funds that come with some degree of professional advice versus those bought by do-it-yourselfers. Table 3 shows the results, where we learn that

1. Direct-channel redemption rates surpassed corresponding wholesale channel redemption rates for every month studied except one.
2. Direct-channel redemptions averaged 18.0 percent in 1996, increasing to 30.5 percent through March in 2000.
3. During this time span, wholesale channel redemption rates increased from 13.8 percent to 25.4 percent.
4. The differential between direct and wholesale redemption rates has widened in 2000.
5. As of March 2000, the direct holding period was 3.3 years versus 3.9 years for wholesale.

From this analysis it is clear that investors who choose to go it alone have consistently higher redemption rates and shorter implied holding periods, while investors who take advantage of professional advice are more likely to be able to stick to their declared intentions to invest for the long term.

TABLE 3

Annual Redemption Rates by Channel

Redemption Rates (Annual Average)	1996	1997	1998	1999	2000
Direct Channel	18.0%	18.5%	20.6%	22.0%	30.5%
Wholesale Channel	13.8%	15.0%	17.5%	19.6%	25.4%
Disadvantage of Direct Over Wholesale	4.3%	3.5%	3.1%	2.4%	5.0%

Redemption Rates by Investment Objective

By looking at the data by investment objective, we get a clear view of just how pervasive the problem of short holding periods really is. The low average figures we have shown are not the result of one or two particularly volatile asset classes. While there is a wide variation in redemption rates by objective (from 21 percent to 80 percent), funds in even the least heavily traded objectives are held for less than five years. Again, this is a far cry from even the lowest end of the long-term range (10 to 30-plus years). Table 4 shows redemption rates for the major equity categories.

TABLE 4

Annual Redemption Rates by Broad Equity Category

Average Redemption Rates	1996	1997	1998	1999	2000
All Equity	17.4%	19.0%	21.6%	23.5%	31.1%
International Equity	16.6%	21.5%	29.7%	35.1%	41.9%
Domestic Equity	17.6%	18.6%	20.3%	21.8%	29.4%

Here are several important observations about redemptions at the investment objective level:

- For the 1996–March 2000 period, redemption rates increased for each and every investment objective
- For the 1996–2000 period, redemption rates more than doubled for 13 of the 29 objectives examined
- Redemptions have increased across the board, but the increases are most pronounced for international and global products
- In the international equity objective, redemption rates surged to 68 percent in March 2000, four times greater than their levels in 1996
- Average holding periods declined by more than four years in the international equity, income-mixed, corporate general, income-equity, asset allocation and national short-term municipal bond objectives

Redemption Rates by Channel And Objective

We next look further into the issue of direct-marketed funds. Is this phenomenon consistently true across objectives, or are the averages skewed by extreme results from one or two specific objectives? Here is what we found:

TABLE 5

Implied Holding Periods for Selected Core Equity Objectives by Distribution Channel

In Years, as of March 31, 2000

Investment Objective	Wholesale	Direct
Aggressive Growth	3.5	2.8
Global Equity	5.1	2.3
International Equity	2.1	1.3

- In every major objective, directly marketed fund redemption rates were higher than for their wholesale-distributed counterparts. This shows the consistency of the direct market turnover problem relative to advisor-sold funds.
- In five out of the nine core equity objectives, direct redemption rates surpassed wholesale redemption rates by at least 15 percent (as of March 31, 2000). This shows that the magnitude of the difference is not trivial.
- In six of the nine core equity objectives, direct market redemption rates increased at a greater rate than wholesale redemptions over the 1996 to March 2000 period. This shows that the direct fund holding period problem is getting worse compared with advisor-sold funds.

To this point, we have provided clear documentation of a disturbing reality: Despite their best intentions, the actual behavior of mutual fund investors is more consistent with that of a short-term mindset. Rather than implementing the long-term buy-and-hold strategy recommended by academics and professionals as the best means to achieve long-term goals, investors are only holding on to their funds for an average of roughly three years.

We established that this high turnover problem has existed for many years, but that it has accelerated notably, especially over the past year. We have seen that it is particularly acute within the direct-marketed channel, where investors do not benefit from the insights of a professional advisor. Finally, we saw that this phenomenon was consistent across every objective and asset class, whether equity or bond, domestic or international.

The data shows quite convincingly that there is a massive disconnect between what investors say they prefer to do and what they believe they are doing, versus what history has shown they have actually done with their mutual fund investments. They are simply churning their investments more than they think, and if the academics are right, far more than should be consistent with the achievement of their long-term financial goals.

Flow-Weighted Return Analysis: Why Turnover Hurts

We may have demonstrated that investors turn over their portfolios more often than they think or desire, and we know that academics and financial professionals tell us that this is potentially an unwise investing habit. But do we have evidence that this behavior has actually hurt investors? We'll address that issue next.

Many thorough studies have been done over the years that powerfully demonstrate the deleterious effects of high investment turnover. That is why the need to take a long-term investment perspective has become almost axiomatic to many. Below we offer our own analysis of this issue, focusing in on the mutual fund industry over the past decade.

There is no doubt that some investors, whether by luck or skill (and luck has a great deal more to do with it than people think), are able to generate better short-term returns through more frequent trading. A subset of these has even been able to do so over longer time periods. But we must not confuse the exception with the rule. The average investor consistently underperforms as a result of excessive turnover.

To demonstrate this, we performed a series of flow-weighted return analyses. We did this in order to determine whether the trading decisions investors made either helped or hurt them relative to the available returns for someone who simply bought and held or dollar-cost-averaged into a mutual fund. What we found was that average returns achieved by the funds and the returns actually realized by the average investor often diverged significantly, and that this divergence was almost always to the detriment of the investor.

Our research into mutual fund industry net cash flows over the past ten years shows that investors too frequently buy and sell at sub-optimal times. Rather than buying low and selling high, investors too often do exactly the opposite. Instead of buying when an asset class is relatively cheap (and therefore with higher future potential), they tend to buy when it is relatively expensive (when much of the opportunity has already been realized).

Using net inflows (sales minus redemptions) into mutual funds, we find that investors frequently tend toward a form of momentum investing, heavily purchasing funds in sectors that have had stellar recent performance, and ignoring or selling out of funds in sectors that have recently underperformed.

Because investors, on average, tend to buy the wrong things at the wrong times, the more frequently they trade, the worse their expected results will tend to be because their timing mistakes will be compounded. Too often, they will buy into a hot fund or asset class just as it is peaking, ride it down and then switch into the next hot objective just as it is reaching its top. They would have been much better off if they had bought a diversified portfolio and held it steady for ten years or more, or if they had dollar-cost-averaged into their riskier equity selections.

Again, a small minority may have done better either through extreme intelligence or extreme good fortune, just as in casinos where card counters and very lucky people defy the odds to win. It is not impossible to imagine an investor who trades frequently in the opposite direction of the previous example, buying low and selling high, and compounding this over and over. This is what the average investor thinks he or she is actually doing, but the data below proves that exactly the reverse is true.

To create a proxy for average investor return, we flow-weighted the actual returns provided by mutual funds in each Morningstar investment category during the 1990s. We looked at each month across the decade and calculated the subsequent returns for the following one-, two- and three-year holding periods. We then totaled and averaged all of the one-, two- and three-year return figures to produce an average unweighted Morningstar category return for each of the three holding periods. These unweighted figures can be viewed as a proxy for results if an investor had dollar-cost-averaged across the entire period.

We then weighted these figures for the actual net flows that these funds attracted throughout the period. When investors placed a bigger bet on a particular category or month, that number was weighted more heavily. Conversely, if flows were smaller, representing lack of investor interest or even net redemptions, that month was weighted less heavily. Flow-weighted returns are a general proxy for the returns that the average investor actually received based on his or trading decisions. The process is somewhat obtuse, but nevertheless it is statistically sound and the results as conveyed in Table 6 are very revealing:

TABLE 6

Investors Timing Badly, Missing the Easy Returns

Flow-weighted Returns versus Unweighted Returns

Annualized returns	1-Year	2-Year	3-Year
Average Unweighted Morningstar Category Return	11.74%	11.01%	10.92%
Average Flow-Weighted Morningstar Category Return	6.68%	7.13%	8.70%
Unweighted Advantage	5.05%	3.88%	2.22%
Number of investment categories in which unweighted returns surpassed flow-weighted returns (out of 48)	37	42	37
Percent of investment categories in which unweighted returns surpassed flow-weighted returns (out of 48)	77%	88%	77%
Cumulative Returns	1-Year	2-Year	3-Year
Average Unweighted Morningstar Category Return	11.74%	23.23%	36.47%
Average Flow-Weighted Morningstar Category Return	6.68%	14.71%	28.44%
Unweighted Advantage	5.05%	8.52%	8.03%
Growth of \$10,000	1-Year	2-Year	3-Year
Average Unweighted Morningstar Category Return	\$11,174	\$12,323	\$13,647
Average Flow-Weighted Morningstar Category Return	\$10,668	\$11,477	\$12,844
Unweighted Advantage	\$506	\$846	\$803

- Unweighted returns exceed flow-weighted returns in the vast majority of cases
- The differential between average and flow-weighted returns is usually significant and often substantial
- The average return achieved by investors for the one-year period after their investment was made was more than five percentage points less than if they had followed a mechanical dollar-cost-averaging approach
- Investor results underperformed unweighted results in roughly 80 percent of the Morningstar categories across all three time periods

What difference do these results make to an average investor? Over time, they can be quite important. For instance, if we use the 3-year annualized figures from Table 6 and extrapolate them out for 25 years, we find that \$10,000 would grow to roughly \$123,000 using the unweighted returns, but would only reach about \$70,000 adjusted for investor behavior. This represents an opportunity loss of \$53,000. This is only a rough hypothesis, but it really brings home the reality that investor activity is hurting their ability to maximize returns and to achieve their long-term financial goals.

If we look at specific Morningstar categories, we find some very extreme examples of investors chasing performance but showing up late to the party. The most pronounced manifestations of this trend are found in the most volatile asset classes. For example, during the period studied, investors in Latin American funds underperformed the average return of these funds by nearly 30 percent over the subsequent average one-year holding period, while investors in small-growth funds trailed their category average by 22 percent.

Best/Worst Quarter Analysis

Another way to illustrate the reality of poor investor timing of mutual fund purchases is to focus on net flows following the best and worst periods for total returns. If the buy-low/sell-high approach to investing holds any merit (which of course it does), then we should expect fund flows to lead fund returns. That is, investors should choose to purchase more before subsequent returns begin to increase, not after their upward trend has mostly run its course. Once again, we find investors acting directly contrary to their own financial best interests.

Our methodology here was to take quarterly returns by Morningstar category and subsequent quarter net sales from 1990–1999. We sorted quarterly returns and extracted for the four periods with highest and lowest returns. Finally, after we compared the net sales for the quarter following these highs and lows, we found that

TABLE 7

Best Quarter / Worst Quarter Analysis (\$ Millions)

Category Names	Best 4 Qtr. Returns— Next Qtr. Net Sales	Worst 4 Qtr. Returns— Next Qtr. Net Sales	Differential	Best 4 Avg. Qtr. Return	Worst 4 Avg. Qtr. Return
Large Blend	\$13,158	\$7,148	\$6,011	16.30%	-8.57%
Large Growth	\$20,556	\$5,070	\$15,486	22.16%	-8.67%
Large Value	\$4,283	-\$2,943	\$7,226	13.79%	-9.70%
Mid-Cap Blend	-\$39	-\$112	\$72	17.53%	-10.93%
Mid-Cap Growth	-\$7,944	-\$108	\$8,052	27.09%	-13.86%
Mid-Cap Value	-\$1,662	-\$2,687	\$1,024	13.68%	-10.91%
Small Blend	\$411	\$84	\$327	18.00%	-13.89%
Small Growth	\$3,113	\$827	\$2,286	27.37%	-15.76%
Small Value	\$1,630	-\$874	\$2,504	17.29%	-14.05%

- Across all Morningstar categories, the average quarterly return in “best” quarters was 14 percent, as opposed to -9 percent in “worst” quarters.
- The difference in subsequent net sales was staggering. Following “best” quarters, inflows averaged \$91 billion per quarter, versus just \$6.5 billion in “worst” quarters. Who says investors don’t chase performance?
- Of the 48 Morningstar categories examined, in 42 cases, trailing net sales were higher in the “best” versus “worst” case. Of the six exceptions, four were international/global categories and two were domestic sector categories.
- The premise of flows following returns holds for all mainstream domestic equity objectives.
- Among core domestic equity categories, the differential between “best” and “worst” quarterly sales rates was greatest for large growth (\$15.5 billion) and mid-cap growth (\$8.1 billion) categories.

Conclusion and Observations

We have established that investors trade much more than they realize and much more than is conducive to the achievement of their financial plans. Investors think long-term in theory, but act according to short-term influences in practice. This excessive turnover, combined with a propensity to buy relatively over-valued investments and ignore relatively under-valued ones, has caused the average mutual fund investor to underperform substantially over the past decade. Thus, investor portfolios are performing badly because investors are “behaving badly.”

One of the primary goals of philosophy and psychology is to “know thyself.” This goal and admonition applies as much to the practical, technical and mundane as it does to the sublime. As we have seen, it definitely applies to our financial lives. Good financial decisions require a combination of financial knowledge, self-knowledge and the discipline to implement a plan dispassionately.

The explosion of available financial information has put the acquisition of financial knowledge within the grasp of many more investors than ever before. The danger is that we get too excited by this and forget the three-dimensional nature of sound decision making. The data is great, but it is simply not enough. It must be accurately interpreted, integrated with each individual’s unique financial and emotional/psychological profile and then executed in a disciplined fashion despite the unpredictability and turbulence of short-term events.

Very few people can do all three well. It is not impossible, just difficult. And fortunately, it is not necessary, since financial professionals are available who are able to contribute significantly to all three dimensions of successful financial planning.

First, their professional education equips them to better interpret the flood of available financial data. Second, they are trained to objectively assess an investor’s holistic financial profile and risk tolerance.

As part of their counseling function, they are able to actually help investors know themselves better. Finally, as a dispassionate third party, they lend an element of discipline to help investors stick with their long-term plans despite the many tempting but illusory opportunities that arise or the fearful but temporary threats that may emerge.

A good financial advisor may be the key ingredient in helping investors align their actions with their intentions, with the ultimate result being the achievement of their financial goals.

