



Alternative Thinking

Bad Habits and Good Practices

Good investing results require both good investments and good investors. This report focuses on the latter. It discusses three potentially bad investing habits — multiyear return chasing, underdiversification, and comfort-seeking — and contrasting good practices that can influence long-run performance.

Third Quarter 2014

AQR Capital Management, LLC
Two Greenwich Plaza
Greenwich, CT 06830

p: +1.203.742.3600
f: +1.203.742.3100
w: aqr.com

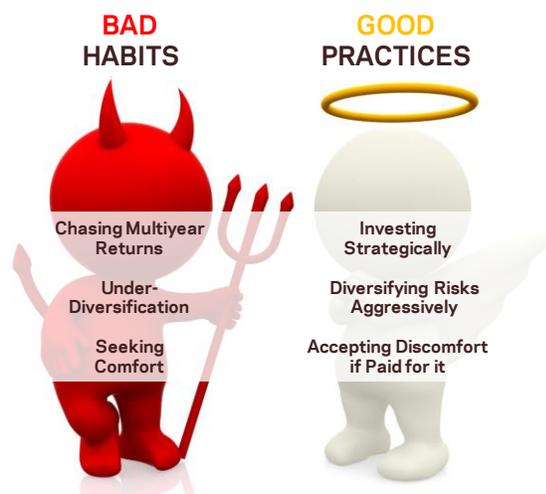
Introduction

Good investing results require both good investments and good investors. This report focuses on the latter and addresses some of the habits (from which we, too, are not immune) that may hinder long-term investment performance.

Exhibit 1 lists three important and prevalent bad investing habits — multiyear procyclicality, under-diversification and comfort seeking. Each is broad and manifests itself in various ways, so we provide examples and evidence related to each, and summarize their possible behavioral explanations. The habits can be partly overlapping, reinforcing each other.

For each bad habit there is a contrasting good practice, and we discuss these briefly at the end of the report. We hope that recognizing and addressing bad habits and biases such as these can improve investors' (and investment managers') long-term results. Please note that while this paper focuses on end-investors, we have spent our careers also battling, and not always successfully, these same bad habits in ourselves — so please take this as commiseration and shared experience, not lecturing.

Exhibit 1 | Three Bad Habits and Good Practices



Source: AQR.

Bad Habit 1: Chasing Multiyear Returns

Procyclic investing is often cited as the premier bad habit.¹ Many investors buy multiyear winners and sell multiyear laggards — whether asset classes, strategy styles, single stocks or funds. This is not surprising, since the human tendency to extrapolate is one of our strongest behavioral biases.

Chasing winners over the past few months may actually be profitable, as financial markets tend to exhibit momentum (continuation, persistence, trends) over multi-month horizons up to a year. However, there is good evidence that at multiyear horizons, financial markets tend to exhibit more mean-reversion than continuation. Unfortunately, it is at this horizon that reallocation decisions tend to be made, making us momentum investors at reversal (multiyear) horizons.

Procyclicality for institutional investors at three- to five-year horizons may reflect typical performance evaluation periods. Many investors understandably lack patience when facing years of underperformance even if they are aware of the limited predictive ability in past performance and the high transition costs (including, in case of performance fees, the forfeited high-water mark option). Academic advice to wait even longer for statistically significant evidence is not realistic for many investors. What else can they do? We admit that it is easier to identify the problem than to offer satisfactory solutions. At the end of this section we propose some constructive answers to this quandary, but even these are hard to implement. Multiyear return chasing evaluation periods would not be so prevalent if it were otherwise.

Procyclic flows reinforce the so-called value effect as they make rich things richer and cheap things cheaper. At worst, some investors may enter a market near its peak despite exorbitant valuation

¹ For example, Ang and Kjaer (2011) write “we describe the two biggest investment mistakes made by investors that cause them to forfeit their long-horizon advantage: procyclical investing and misalignments between asset owners and delegated managers.”

levels or capitulate near the bottom. Statistical evidence is often only borderline significant, partly because we have a limited number of observations of multiyear reallocation decisions, but participants in boards and investment committees seem to agree that multiyear return chasing is a pervasive pattern.

Illustrative Examples and Evidence

Ill-timed Investor Flows: The best-known indirect evidence comes from the gap between (time-weighted) *investment* returns and (dollar-weighted) *investor* returns. Numerous studies have shown that the average returns investors have experienced are lower than the average returns for investments, because of investors' ill-timed activity (net inflows after high returns and before low returns). Dichev (2007) shows that the dollar-weighted returns (internal rates of return) U.S. stock investors earned between 1926 and 2002 were 1.3% lower than the time-weighted (buy and hold) market returns of the NYSE/AMEX indices. The gap was an even wider 5.3% for NASDAQ investors (1973-2002) mainly due to the heavy inflows during the late-1990s tech bubble/bust.

Firms such as Dalbar and Morningstar update these results regularly and attract much attention in the financial press. These analyses are typically done at the aggregate market level but similar patterns are shown for some individual stocks, industries, countries, and even the hedge fund industry. This type of indirect analysis has some shortcomings² and may overstate the negative case. We prefer more

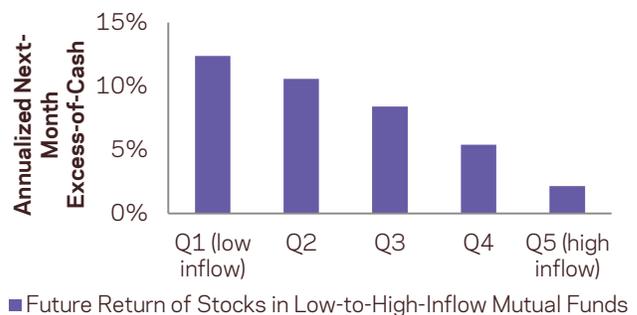
² Two qualifiers are in order. First, the typical evidence does not reveal that certain investor groups gain at the expense of others (say, institutions earn from retail) because the data used are about aggregate cash distributions in the stock market. Instead, market returns and investor returns differ due to net issuance over time (aggregate net inflows must amount to net new issuance), which seems consistent with firms' market timing ability as issuers (Baker and Wurgler 2002). Second, Hayley (2012) stresses that the gap between time-weighted and dollar-weighted returns reflects two distinct effects: the correlation of investor cashflows with (i) future asset returns, and (ii) past asset returns. Both correlations tend to alter the dollar-weighted return, but only the first affects investors' expected wealth. The second generates a hindsight bias. Hayley shows that the latter has been empirically bigger, at least for U.S. equity markets. Dollar-weighted returns have been low because aggregate investment flows chased past returns, less because they predicted low future returns.

direct analysis of predicting investment returns with investor flows.

For this direct evidence, we present key results from some of the best-known academic studies which indicate that large inflows predict low future returns. These examples cover retail and institutional flows as well as selection of single stocks, asset classes and fund managers.³

Mutual Fund Flows: Frazzini and Lamont (2008) show that retail investor money has tended to flow into mutual funds that hold stocks with low subsequent returns. Specifically, the study analyzes mutual fund flows and single-stock returns between 1980 and 2003 using a flow indicator of what types of stocks are owned by funds experiencing big inflows. High-inflow stocks underperform low-inflow stocks over the next month by 0.85% (**Exhibit 2** shows the annualized gap of 10% ($12 * 0.85\%$) between lowest-quintile and highest quintile stocks when sorting on the past three years' flows). The authors add that the main underperformance occurs 6 to 30 months after the inflow and that this evidence is related to the value effect and retail investors' chasing past performance.

Exhibit 2 | Stocks in High-Inflow Mutual Funds Tend to Subsequently Underperform



Source: Frazzini and Lamont (2008). Past performance is not a guarantee of future performance.

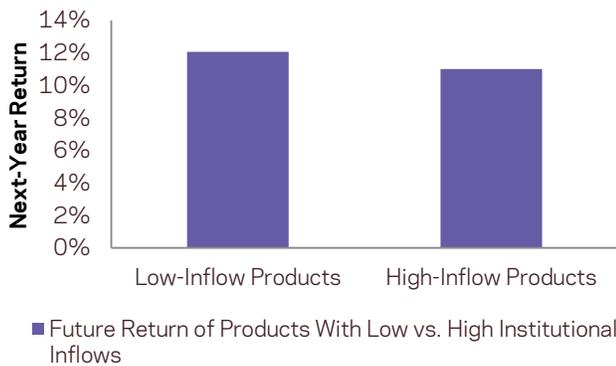
³ This evidence does leave us with the puzzle that if both retail and institutional investors lose money with their ill-timed reallocation flows, who makes the gains? (This is sort of a flipside to the challenge "Who is on the other side?" we pose to the many well-rewarded regularities we try to exploit.) A partial answer may be issuing firms (cf. footnote 2), but anecdotally, firms were not great market timers when they implemented many share buybacks in 2007 and few in 2009. We do not have an answer, nor have we seen one in the literature, making this a research challenge for the future.



Institutional Investors’ Allocation Decisions:

Stewart *et al.* (2009) analyze institutional plan sponsor allocation activity over time (based on the PSN database of institutional products 1984-2007). They document that investment products receiving contributions subsequently underperform products experiencing withdrawals. The difference is statistically significant although the gap shown in **Exhibit 3** is relatively modest (about 1% p.a.). The bar chart contrasts past-year flows and next-year returns, but similar patterns hold for returns over the next three- to five-years, as well as for various subcategories (domestic/international/global equities and bonds). Most of the post-flow underperformance is due to product (manager) selection rather than category (asset class) reallocation, but both contribute.

Exhibit 3 | Institutional Plan Sponsors Allocate to Products That Subsequently Underperform Mildly



Source: Stewart *et al.* (2009) Past performance is not a guarantee of future performance.

Firing and Hiring Decisions: Goyal and Wahal (2008) drill into U.S. pension plan sponsors’ timing when firing and hiring investment managers. **Exhibit 4** shows that replacing managers has been clearly procyclic (no surprise there) and (more surprisingly) fired managers tended to later mildly outperform their hired replacements. This analysis uses two-year return windows before and after the event (412 paired fire/hire decisions between 1996 and 2003, an admittedly limited sample), but the patterns are similar with one- to three-year windows.

Exhibit 4 | Plan Sponsors’ Fire/Hire Decisions



Source: Goyal and Wahal (2008). Past performance is not a guarantee of future performance.

Contrasting Flow and Return Patterns: There is evidence that investors chase short-term returns as well as long-term returns. The former has presumably benefited them, the latter not. Ang, Goyal and Ilmanen (“AGI” 2014) focus on this tension between multiyear procyclic investor flows and multiyear mean-reverting returns.

AGI (2014) use annual data from CEM Benchmarking on evolving U.S. pension funds’ asset allocations between 1990 and 2011 to provide direct evidence on pension funds’ pro-cyclic tendencies. **Exhibit 5** indicates that a positive return in one asset class (domestic or international stocks or bonds) results in an increase in target policy weights of that asset class not just in the same and subsequent year but for several years (the purple bars are positive every year).



Exhibit 5 | Pension Fund Target Policy Weights “Chase” Returns Over Several Years

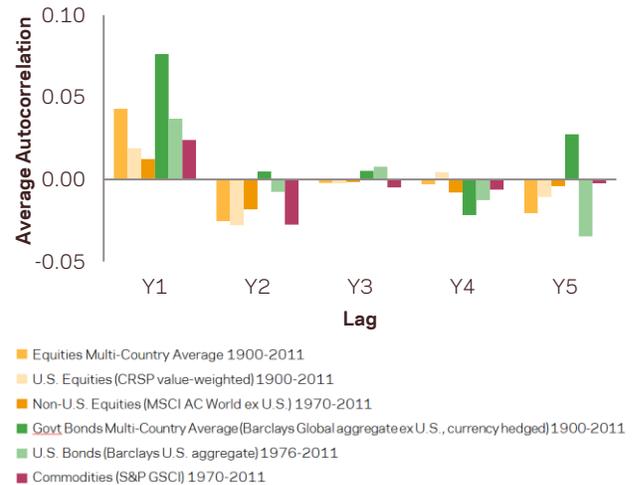


Source: Ang, Goyal and Ilmanen (2014). The figure shows stylized impulse response functions to a +10% return shock at time t for (i) asset class returns (based on partial autocorrelation coefficients based on U.S. and non-U.S. stock and bond returns between 1900 and 2011), and for (ii) pension fund policy weights, i.e., target asset class allocations across U.S. and non-U.S. stocks and bonds (panel regression results using annual data for 1990–2011 among 573 U.S. pension funds, from CEM Benchmarking). For illustrative purposes only.

In contrast, financial market returns tend to exhibit clear momentum patterns over one year but thereafter reversal patterns tend to dominate (the green bars in Exhibit 5 are negative in years $t + 2$ and $t + 4$, suggesting that the continuing return-chasing allocations into the asset class in the previous year lost money). Exhibit 6 documents average autocorrelations for several asset classes over long histories; beyond the first year these tend to be negative or near zero.⁴ A comparison of Exhibits 5 and 6 suggests that pension funds in aggregate have not profitably captured the shift from momentum to reversal tendencies in asset returns beyond the one-year horizon; but instead keep chasing returns over multiyear horizons.

⁴ There is evidence of negative autocorrelations at even longer horizons than shown here. For example, Zakamulin (2013) shows that past 15-year returns predict next 15-year returns between 1871 and 2011 with a statistically significant negative sign. Zakamulin also surveys the literature and discusses the many econometric problems that plague long-horizon predictability studies.

Exhibit 6 | One-Year Momentum and Multiyear Reversal Tendencies in Asset Class Returns



Source: Ang, Goyal and Ilmanen (2014). The figure shows for each asset class the average autocorrelation of lagged monthly returns in the previous 12 months (Y1), and in months lagged by 13–24 (Y2), 25–36 (Y3), 37–48 (Y4), 49–60 (Y5). The series include a multi-country composite of non-U.S. equities (equally weighted with a gradually growing country universe), U.S. equities, a multi-country composite of government bonds (equally weighted with a gradually growing country universe), and S&P GSCI commodity index. The sample period is indicated next to each asset class. For illustrative purposes only.

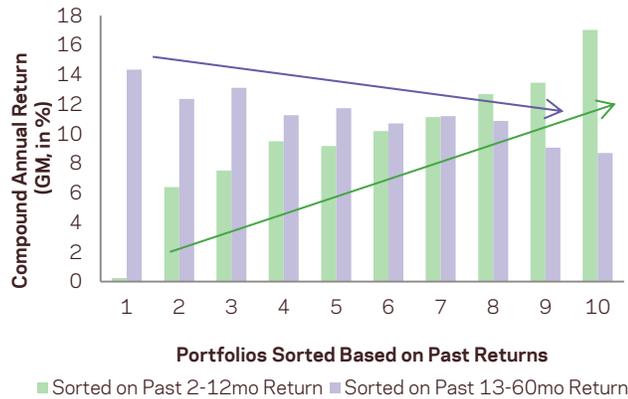
The above evidence was at the asset-class level, but the patterns are similar and perhaps stronger within stock markets. The original evidence on long-term return reversals from DeBondt and Thaler (1985) on U.S. stock selection was later contrasted by evidence for one-year momentum from Jegadeesh and Titman (1993) and Asness (1994). Exhibit 7 highlights both patterns in the long-run average returns of past-performance sorted U.S. stock portfolios. When sorting on one-year performance, the decile portfolios with high past-year returns subsequently outperform the decile portfolios with low past-year returns. When sorting on five-year performance excluding the past year, we observe the opposite pattern. Cross-sectional one-year momentum and multiyear reversal patterns are also evident in other countries, as well as in cross-country returns in many asset classes.⁵ Ironically, and much of our point, many investors are able to withstand underperformance over one year, but

⁵ See Asness, Moskowitz and Pedersen (2013) and Asness, Ilmanen, Israel and Moskowitz (2014), among others.



draw the line at three to five years — precisely when such underperformance empirically predicts (even if mildly) higher future returns.

Exhibit 7 | One-Year Momentum and Long-Term Reversal Patterns in U.S. Stock Returns, 1931-2013



Source: AQR, Ken French data library. Past performance is not a guarantee of future performance.

A rarely measured variant of this bad habit involves changes in acceptable investment universes or “investable” assets as well as in benchmark or policy portfolios. Such changes are typically multiyear procyclic — and are rarely compared to the counterfactual of not having made this decision.

Even an investor who claims to follow the ultimate passive buy-and-hold approach must decide which assets it deems investable. Almost always, qualifying for “investability” follows strong multiyear performance and losing investability follows severe losses. For instance, when did most investors extend their equity portfolios to include emerging markets or frontier markets, when did they extend their fixed-income portfolio to include high-yield bonds or CMBS/ABS, and when did they decide to disinvest? The case of alternative asset classes is even clearer: real estate, infrastructure, timber, farmland, commodities, private equity, private credit and hedge funds all became increasingly widely-held after extended benign periods, and these decisions were often reconsidered if persistent losses followed.

Behavioral Explanations

We believe any list of the behavioral biases that might explain multiyear procyclic investing surely starts with extrapolation, our millennia-old tendency to learn from patterns and expect their continuation. This extrapolation bias is supported by various social effects — herding, conventionality, peer risk⁶ and sentiment. As noted earlier, some degree of extrapolation is appropriate, yet extending it to multiyear horizons can be excessive.⁷

But this leads to an important question: if the use of 3-5 year performance is problematic for selecting strategies or managers, *what else can investors do?* Many academics argue that even *longer* evaluation periods are needed, as 3-5 years often don’t offer enough data to reach a statistically meaningful conclusion. While this may be theoretically true, it is hard to implement in the real world due to various institutional needs. To realistically improve patience and to rely less on the return experience, investors need to spend even more time evaluating the merits of a strategy (or a manager) *before* investing and only select the ones they really have faith in and ability to stick with.⁸ Investors should consider other decision criteria besides past performance (e.g., people, philosophy, process) and develop an understanding of the reasonable range of outcomes. If then the investment or manager disappoints over a multiyear horizon, again one should look at other things in addition to return. For example, one can ask whether the environment changed in a way that would undermine the original investment thesis, whether the underperformance reflected changing relevant market valuations

⁶ Peer risk can trigger peer chasing, buying whatever is popular among peer institutions. Even if you are not naturally a return chaser, if you face peer risk and peers chase returns, then it may force you to do so. Such herding might be exactly the worst kind, since collectively you and your peers might be big enough to push market prices away from fair values.

⁷ Apart from extrapolation, a run of losses can trigger a visceral need to “do something” even when statistically poor performance may have been a bad draw.

⁸ Investors can also aim to reduce excessive reallocations by favoring investments that are well-diversified internally and thus less susceptible to short-term outcomes for individual strategies or asset classes. Indeed one general benefit of building a better-diversified strategic portfolio (see next section) may be to lessen the need for return-driven reallocations.

during the evaluation period, or whether the manager team changed. Correlations to risk factors or to other managers can help assess whether the manager behaved as expected or changed its approach. For investments intended as diversifiers it is especially relevant whether they provided the expected low correlations.⁹

Bad Habit 2: Under-Diversification

Many investors underappreciate or underutilize the benefits of diversification in various ways. Some value it but have less in their portfolios than they think. We believe the most serious diversification problems for institutional investors are home bias and excessive dependence on equity market risk.

Illustrative Examples and Evidence

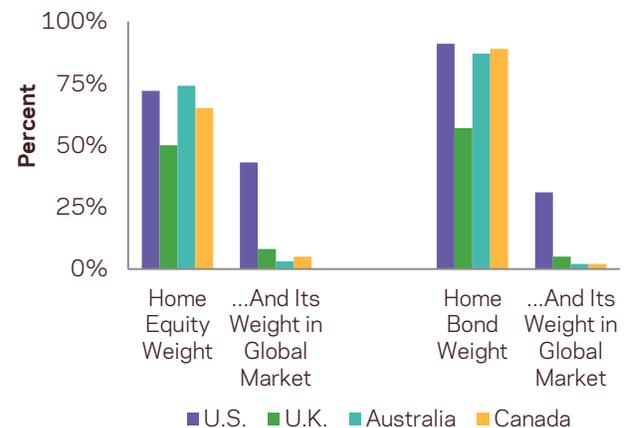
Security Concentration: Individual investors often hold just a few stocks. Worse, their main holding may well be the company they work for (partly because it is one of the default choices for retirement saving). This compounds investment risk with employment risk, as Enron employees painfully learned. Fortunately, greater access to well-diversified mutual funds and better default choices in retirement saving have mitigated these problems.¹⁰ For founders and proprietors of an individual company, risk concentration can remain extreme for decades.

Institutional investors rarely concentrate their risks among a few single stocks but may fall prey to other forms of under-diversification.

Home Bias: For most investors, the weights of own-country assets in their portfolios exceed global market-cap weights. **Exhibit 8** shows some country estimates from 2010. Home bias has been declining over time but remains significant in every country and may be especially extreme in emerging

economies. A 2013 Towers Watson Global Pension Assets study finds that the share of domestic equities over total equities in pension asset allocations has fallen in a range of developed economies, on average, from 65% in 1998 to 47% in 2012; the corresponding figures for bonds are 88% and 83%. Critics claim that diversification fails when most needed, during sharp market declines. It is true that the risk concentration caused by home bias does not seem to matter much over short horizons when returns are highly correlated across countries, but over longer horizons international diversification meaningfully mitigates downside risks. Home-biased investors remain unnecessarily exposed to country-specific secular bear markets.¹¹

Exhibit 8 | Home Bias Is Prevalent: Own-Country Assets' Weight in Investor Portfolios Exceeds Their Weight in Global Markets



Source: Phillips, Kinniry and Donaldson (2012). For illustrative purposes only.

Excessive Equity-Directional Risk: Many investors who consider themselves well-diversified are arguably anything but. Most institutions allow their portfolios to be dominated by one source of risk: equity market direction. This might reflect the illusion of diversification: you hold a large number of diverse assets and still the portfolio has a single driving risk source.¹² For example, 60/40 stock/bond

⁹ To be clear, we are not saying that investors should never abandon a strategy. Here we outlined some key ideas but we will share our more detailed thoughts on this complex topic in the future.

¹⁰ See Goetzmann and Kumar (2008) and Blanchett (2013).

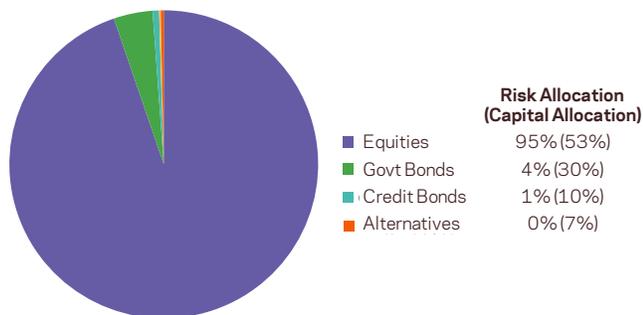
¹¹ See Asness, Israelov and Liew (2011).

¹² Another example of "illusion of diversification" involves investors choosing a (too) large number of active managers with similar mandates. Typically, the manager-specific alpha gets diversified away, while



portfolios generally have at least 90% risk concentration in equities, mainly because equities are more volatile than most other investments. **Exhibit 9** shows the risk allocation for a typical U.S. corporate pension plan; the results are similar for public pension plans, endowments and foundations. Even some supposedly diversifying return sources such as alternative asset classes (private equity, hedge funds, etc.) or “smart beta” (long-only style tilts to market-cap portfolios) do not materially help, as they often are highly correlated with equities. In aggregate, all investors cannot avoid equity concentration because the global all-asset market-cap portfolio is dominated by equity directional risk, but any particular investor can certainly choose to be better diversified.

Exhibit 9 | Risk Allocation of a Typical U.S. Corporate Pension Plan in 2013



Sources: Callan, AQR. Risk allocations are calculated based on AQR volatility and correlation estimates.

Under-diversification from Tactical or Strategic Tilts: Tactical timing usually involves a concentrated bet. In most cases investors need to have exceptionally good timing skills before they even offset the forgone diversification from such bets. In other words, “timing” begins at a disadvantage from giving up diversification. The bar on requisite timing skills is especially high if the starting portfolio is well-balanced.¹³ This does not mean investors should never engage in tactical timing, but it does considerably raise the hurdle for doing so.

systematic risks (and fees) drive the portfolio performance.

¹³ See Tactical Tilts and Forgone Diversification (2014).

Even investors who make strategic style tilts often focus on just one style (say, value) although its negative correlation with another style (say, momentum or quality) begs for style diversification.

Missing the Forest for the Trees: Many investors focus on single line items in the portfolio instead of viewing it as a whole. For example, boards may give more attention to a small allocation in a volatile investment that has a large percentage loss (which is unexceptional given the volatility and which has limited portfolio impact), while ignoring a larger allocation in a low-volatility investment (even when it has a more exceptional loss compared to its volatility and a larger impact on the whole portfolio).¹⁴

Behavioral Explanations

One broad explanation for under-diversification is “narrow framing.” Investors view parts and not the whole portfolio, and thus underappreciate the role of diversification. It is easier to delve into one attention-grabbing investment than into its interactions with the rest of the portfolio. Correlations are inherently a more complex concept than expected returns or even volatilities.

Turning to more specific aspects of under-diversification, the need for familiarity and so-called ambiguity aversion may be the primary drivers of home bias and the preference for own-company stock. Another bias, overconfidence, is a key explanation for concentrated risks in single stocks and tactical timing bets.

Leverage aversion may be the most important explanation for equity-concentrated portfolios. Better risk-balanced portfolios may offer higher long-run Sharpe ratios than risk-concentrated portfolios (cf. Exhibit 9) but managers must use

¹⁴ As an illustrative example, if you manage a fund with 25% volatility target and experience a -2 standard deviation year (-50% vs the mean), the board may only talk about you. Another fund with a 5% volatility target and a comparable -2 standard deviation year (-10%) could stay under the board’s radar screen even if the dollar investment into it were much larger and it had a larger portfolio impact. Worse, a fund with a 2% volatility target and a -4 standard deviation year (-8%) might not come up even if its losses were much more exceptional.

leverage to convert these to higher expected returns (either through better balancing returns across asset classes, or through introducing more long/short factors that are not very correlated with equities). Many institutions prefer no leverage, or often embedded leverage, to direct leverage (even to making unlevered investments in a levered vehicle). Equity markets conveniently embed the leverage of companies that are partly debt-financed.¹⁵

Bad Habit 3: Seeking Comfort

Some investors seek comfort when selecting investments, whether individual securities or asset classes, instead of judging them purely on risk/reward merits. Such “familiar and convenient” investments can be structurally overpriced and thus deliver lower long-term returns. Conversely, investors underutilize comfort-challenging tools (leverage, shorting and derivatives) that could be used to improve risk diversification. Staying in the comfort zone can imply leaving Sharpe ratio on the table.

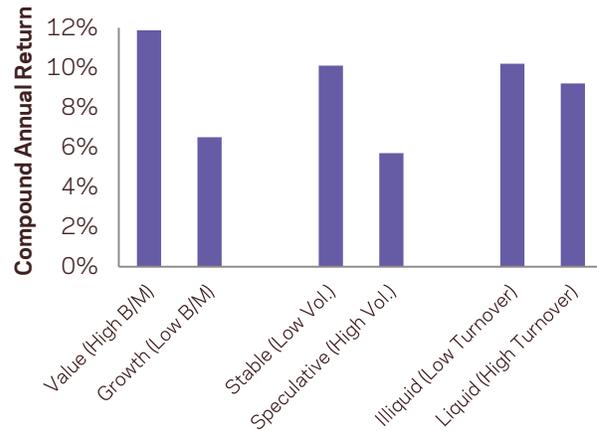
Illustrative Examples and Evidence

Equity Risk. As described earlier, most portfolios are dominated by equity risk. We add here that for many investors, the fact that their peers share this problem makes equity market risk more bearable. This may consequently make equity risk less rewarded in the long run than it would be if it were a “less comfortable” investment.

Growth/Glamour: Investors’ excessive multiyear extrapolation of past growth is one possible reason value stocks tend to outperform growth/glamour stocks in the long run and asset returns exhibit multiyear mean reversion (see the first pair of bars in **Exhibit 10** for some empirical evidence). Academics have debated for decades how much value versus growth/glamour pricing reflects

behavioral factors such as these versus rational risks. We’d argue both matter.¹⁶

Exhibit 10 | Historical Performance of Value vs. Growth Stocks, Stable vs. Speculative Stocks, and Illiquid vs. Liquid Stocks, February 1988–March 2014



Source: AQR, MSCI. We sort stocks within each country based on different characteristics – book-to-market ratio (as in Asness-Frazzini (2013)) as well as past-year volatility and share turnover (both negated). We construct five equal-weighted quintile portfolios on all three dimensions and aggregate country results by MSCI (developed market) weights. We show compound returns for top and bottom quintile portfolios. For illustrative purposes only.

Lotteries and Insurance: To the extent investors *like* risky investments, it tends to be the variety with a promise of large upside — lottery-ticket-like assets — rather than the variety where the downside risk looms large. Fear of left-tail risk drives many investors to overpay for crash protection, especially with a recent crash fresh in the memory. Not surprisingly, both lottery-ticket-like and insurance-buying strategies (in financial markets as elsewhere) have delivered low long-run returns. For example, the middle pair of bars in **Exhibit 10** provides evidence that less-volatile stocks have in recent decades outperformed their more volatile (and lottery-like) peers.¹⁷

Smoothed Returns: Many investors like and thus overpay for the possibility of smoothed returns,

¹⁵ See Asness, Frazzini and Pedersen (2012), Frazzini and Pedersen (2014). We readily concede that this form of leverage, being of usually longer maturity, may indeed be a safer form of leverage, but leverage it remains.

¹⁶ See Asness, Moskowitz and Pedersen (2013), Ilmanen (2011) for more empirical evidence as well as discussion on risk-based explanations to the value effect besides these behavioral explanations.

¹⁷ See Ilmanen (2012) for more evidence on lotteries and insurance.



which may explain why historical illiquidity premia on private assets are slimmer than seems warranted. (In this case it's the appearance of "smoothness" that comes from an inability to get timely marking to market, not actual smoothness).¹⁸ The last pair of bars in Exhibit 10 suggests that even within stock markets the historical reward for illiquidity has been modest.

Investor preference for stable income could make yield-seeking (carry) strategies structurally expensive as these provide smooth income (though less-smooth capital gains/losses). However, empirically, carry strategies have tended to be profitable in the long run. Notably, while "pure" implementations of carry investing have shown attractive characteristics, some complex and costly sell-side products have shown only mixed success, as in many cases they are designed to provide yield at the expense of (sometimes hidden) risks.¹⁹

Embedded Leverage: Likewise, many investors seem to overpay for embedded leverage to avoid direct leverage. Leverage aversion can explain the higher risk-adjusted returns of low-beta stocks (documented for most countries and industries studied), defensive investments in other asset classes, as well as the relative pricing across options and exchange-traded funds. It is also possible to identify from holdings data which investors are more leverage averse: retail investors and mutual funds have tended to favor stocks with beta above one, while private equity and Warren Buffett have preferred to lever up stocks with beta below one.²⁰

As noted above, we believe that direct leverage is a useful tool for achieving efficient risk diversification and its risks can be manageable when leverage is combined with highly liquid assets (say, exchange-

traded futures) and plentiful free cash. In contrast, mixing leverage and illiquidity is a seriously bad habit, especially when illiquid assets are funded with short-term debt and/or funded with a daily mark-to-market requirement.

Behavioral Explanations

Seeking comfort may come at a price if investors derive utility from, and pay for, characteristics of investments other than their return and risk. Various cognitive errors, headline risk aversion, groupthink, peer following and other social pressures all contribute.

We would emphasize conventionality as a potentially costly provider of comfort. It is never fun to lose money but it is even worse to be "wrong and alone." Keynes warned long ago about the dangers of failing unconventionally. It is hard to imagine that conventionality would not influence market pricing and prospective rewards.

Other Bad Habits

The three habits highlighted in this report are not the only ones that may harm performance. There is plenty of literature on other bad habits, especially related to wastefulness and governance, so we offer one paragraph on each.

Some investors overtrade; many investors trade cost-inefficiently (not considering whether ex ante benefits exceed ex ante trading costs, not executing patiently, ignoring tax implications, etc.); and, of course, active investing cannot work for everyone, given its zero-sum nature. French (2008) estimates that in recent decades active equity investors have paid 0.67% p.a. in their quest for superior returns. We would emphasize the wastefulness of "paying alpha fees for beta returns" — earlier through closet-indexing long-only funds, today through the many hedge funds that charge "2 and 20" while delivering large amounts of market beta. We believe investors still pay insufficient attention to the fee implications of bundling bulk beta with more valuable (uncorrelated) return sources.

¹⁸ See DeJong and Driessen (2013) who argue that illiquidity premia are empirically more apparent within liquid asset classes than in alternatives.

¹⁹ See Ilmanen (2011) and Koijen et al. (2013). Explanations for why carry strategies are rewarded in the long run include tail risks and limited upside / larger downside in certain (not all) carry strategies, characteristics that many investors dislike.

²⁰ See Frazzini and Pedersen (2012), Frazzini and Pedersen (2014). Note that leverage aversion, together with lottery preferences, has likely contributed to the pattern seen in the middle pair of bars in Exhibit 10.



Governance problems highlighted in the literature include misalignment of incentives (agency problems); unclear roles between the board and the staff (e.g., a board micromanaging and spending most of its time on manager or stock selection or on market outlook instead of setting strategic investment policy); as well as related mismatches between responsibility, authority and accountability.²¹

Good Practices

There is a flipside of each bad habit, a good investment practice. We summarize some ideas on good practices but may return to this topic later. (We recognize that writing about good intentions can easily sound like preaching and ask readers to bear with us.) Finally, while some of the listed good practices are uncontroversial (widely agreed), others are merely our opinions and can be challenged.

1. Invest strategically. Choose what you believe in and (try to) stick with it in a consistent, disciplined and patient manner. Accept risks for their rewards but try to recognize your risk tolerance before a breaking point (“know thyself”). Be humble especially when it comes to tactical forecasts. Consider rebalancing to strategic risk targets as it at least helps to avoid selling near bottoms and buying near peaks.²²

2. Diversify risks aggressively. Focus on your portfolio and the possible relations between its components, not just those components individually. Avoid undue risk concentrations, including equity-market direction. Embrace intelligent risk taking, including tools (leverage, shorting and derivatives) that enable you to really diversify, though do not mix them with illiquid assets.²³ These tools can help diversify your risk

allocation (not just your dollar allocation, which is an easier task and often misleading).

3. Accept discomfort if paid to do so. This advice applies to both selecting investments and portfolio construction tools. Harvest return sources with strong evidence of giving a systematic long-run edge, such as asset class premia and certain “tried and true” style premia, such as value and momentum. Require both pervasive empirical evidence (in sample and out of sample) and economic rationale (look for unifying explanations, whether risk-based or behavioral). Always ask who is on the other side, making your gains sustainable. Learn from academia and from market history (your own and others’ mistakes). Dare to be unconventional if it helps, for example, applying tools that let you really diversify risks (cf. good practice #2).

Concluding Remarks

Replacing bad habits with good practices is not easy. Habits are behavioral routines that tend to occur unconsciously and in many cases become institutionalized over time. We hope that the examples and evidence in this report help investors identify some of these habits, as a step toward improving portfolio results over the long term.

²¹ See Bailey, Phillips and Richards (2011) and Wood (2006).

²² We will return in the future to the question how investors can decide when to abandon a strategy.

²³ Even with liquid assets these tools should be used within limits and with a few easily made but important policies for staying safe.



Related Studies

- Ang, Andrew, Amit Goyal and Antti Ilmanen, 2014, "Asset Allocation and Bad Habits," *Rotman International Journal of Pension Management*, forthcoming.
- Ang, Andrew, and Knut Kjaer, 2011, "Investing for the Long Run," in *A Decade of Challenges: A Collection of Essays on Pensions and Investments* (ed. by Tomas Franzen), 94-111, Andra AP-fonden - AP2.
- AQR *Client Publication*, 2014, "Tactical Tilts and Foregone Diversification."
- Asness, Clifford S., 1994, "Variables That Explain Stock Returns: Simulated and Empirical Evidence," Ph.D. Dissertation, University of Chicago.
- Asness, Clifford S., and Andrea Frazzini, 2013, "The Devil in HML's Details," *The Journal of Portfolio Management* 39(4), 49-68.
- Asness, Clifford S., Andrea Frazzini and Lasse H. Pedersen, 2012, "Leverage Aversion and Risk Parity," *Financial Analysts Journal* 68(1), 47-59.
- Asness, Clifford S., Antti Ilmanen, Ronen Israel and Tobias J. Moskowitz, 2014, "Investing With Style," *The Journal of Investment Management*, forthcoming.
- Asness, Clifford S., Roni Israelov and John M. Liew, 2011, "International Diversification Works (Eventually)," *Financial Analysts Journal* 67(3), 24-38.
- Asness, Clifford S., Tobias J. Moskowitz and Lasse H. Pedersen, 2013, "Value and Momentum Everywhere," *The Journal of Finance* 68(3), 929-985.
- Bailey, Jeffery V., Jesse L. Phillips and Thomas M. Richards, 2011, "A Primer for Investment Trustees," The Research Foundation of CFA Institute, January.
- Baker, Malcolm, and Jeffrey Wurgler, 2002, "Market Timing and Capital Structure," *The Journal of Finance* 57(1), 1-32.
- Blanchett, David, 2013, "Employer Stock Ownership in 401(k) Plans and Subsequent Company Stock Performance," Morningstar Investment Management, July.
- DeBondt, Werner F. M., and Richard Thaler, 1985, "Does the Stock Market Overreact?" *The Journal of Finance* 40(3), 793-805.
- De Jong, Frank, and Joost Driessen, 2013, "The Norwegian Government Pension Fund's Potential for Capturing Illiquidity Premiums," Norwegian Ministry of Finance, February.
- Dichev, Ilia D., 2007, "What Are Stock Investors' Actual Historical Returns? Evidence From Dollar-Weighted Returns," *American Economic Review* 97(1), 386-401.
- Frazzini, Andrea, and Owen A. Lamont, 2008, "Dumb Money: Mutual Fund Flows and the Cross-Section of Stock Returns," *Journal of Financial Economics* 88(2), 299-322.
- Frazzini, Andrea, and Lasse H. Pedersen, 2012, "Embedded Leverage," AQR Capital working paper.
- Frazzini, Andrea, and Lasse H. Pedersen, 2014, "Betting Against Beta," *Journal of Financial Economics* 111(1), 1-25.
- French, Kenneth R., 2008, "Presidential Address: The Cost of Active Investing," *The Journal of Finance* 63(4), 1537-1573.



- Goetzmann, William N., and Alok Kumar, 2008, "Equity Portfolio Diversification," *Review of Finance* 12(3), 433-463.
- Goyal, Amit, and Sunil Wahal, 2008, "The Selection and Termination of Investment Management Firms by Plan Sponsors," *The Journal of Finance* 63(4), 1805-1847.
- Hayley, Simon, 2012, "Measuring Investors' Historical Returns: Hindsight Bias in Dollar-Weighted Returns," Cass Business School working paper.
- Ilmanen, Antti, 2011, *Expected Returns: An Investor's Guide to Harvesting Market Rewards*, (John Wiley & Sons, Chichester, England).
- Ilmanen, Antti, 2012, "Do Financial Markets Reward Buying or Selling Insurance and Lottery Tickets?" *Financial Analysts Journal* 68(5), 26-36.
- Jegadeesh, Narasimhan, and Sheridan Titman, 1993, "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency," *The Journal of Finance* 48(1), 65-91.
- Koijen, Ralph S.J., Tobias J. Moskowitz, Lasse H. Pedersen, and Evert B. Vrugt, 2013, "Carry," Booth School of Business working paper.
- Phillips, Christopher, Francis Kinniry and Scott Donaldson, 2012, "The Role of Home Bias in Global Asset Allocation Decisions," The Vanguard Group, June.
- Stewart, Scott D., John J. Neumann, Christopher R. Knittel and Jeffrey Heisler, 2009, "Absence of Value: an Analysis of Investment Allocation Decisions by Institutional Plan Sponsors," *Financial Analysts Journal* 65(6), 34-51.
- Wood, Arnold S., 2006, "Behavioral Finance and Investment Committee Decision Making," *CFA Institute Conference Proceedings Quarterly* 23(4), 29-37.
- Zakamulin, Valeriy, 2013, Mean Reversion and Long-Run Predictability of the Stock Market, University of Agder working paper.



Important Disclosures

This document has been provided to you solely for information purposes and does not constitute an offer or solicitation of an offer or any advice or recommendation to purchase any securities or other financial instruments and may not be construed as such. The factual information set forth herein has been obtained or derived from sources believed by the author and AQR Capital Management, LLC ("AQR") to be reliable but it is not necessarily all-inclusive and is not guaranteed as to its accuracy and is not to be regarded as a representation or warranty, express or implied, as to the information's accuracy or completeness, nor should the attached information serve as the basis of any investment decision. This document is intended exclusively for the use of the person to whom it has been delivered by AQR, and it is not to be reproduced or redistributed to any other person. The information set forth herein has been provided to you as secondary information and should not be the primary source for any investment or allocation decision. **This document is subject to further review and revision. Past performance is not a guarantee of future performance.**

Diversification does not eliminate the risk of experiencing investment loss.

Broad-based securities indices are unmanaged and are not subject to fees and expenses typically associated with managed accounts or investment funds. Investments cannot be made directly in an index.

This document is not research and should not be treated as research. This document does not represent valuation judgments with respect to any financial instrument, issuer, security or sector that may be described or referenced herein and does not represent a formal or official view of AQR.

The views expressed reflect the current views as of the date hereof and neither the author nor AQR undertakes to advise you of any changes in the views expressed herein. It should not be assumed that the author or AQR will make investment recommendations in the future that are consistent with the views expressed herein, or use any or all of the techniques or methods of analysis described herein in managing client accounts. AQR and its affiliates may have positions (long or short) or engage in securities transactions that are not consistent with the information and views expressed in this document.

The information contained herein is only as current as of the date indicated, and may be superseded by subsequent market events or for other reasons. Charts and graphs provided herein are for illustrative purposes only. The information in this document has been developed internally and/or obtained from sources believed to be reliable; however, neither AQR nor the author guarantees the accuracy, adequacy or completeness of such information. Nothing contained herein constitutes investment, legal, tax or other advice nor is it to be relied on in making an investment or other decision.

There can be no assurance that an investment strategy will be successful. Historic market trends are not reliable indicators of actual future market behavior or future performance of any particular investment which may differ materially, and should not be relied upon as such. Target allocations contained herein are subject to change. There is no assurance that the target allocations will be achieved, and actual allocations may be significantly different than that shown here. This document should not be viewed as a current or past recommendation or a solicitation of an offer to buy or sell any securities or to adopt any investment strategy.

The information in this document may contain projections or other forward-looking statements regarding future events, targets, forecasts or expectations regarding the strategies described herein, and is only current as of the date indicated. There is no assurance that such events or targets will be achieved, and may be significantly different from that shown here. The information in this document, including statements concerning financial market trends, is based on current market conditions, which will fluctuate and may be superseded by subsequent market events or for other reasons. Performance of all cited indices is calculated on a total return basis with dividends reinvested.

The investment strategy and themes discussed herein may be unsuitable for investors depending on their specific investment objectives and financial situation. Please note that changes in the rate of exchange of a currency may affect the value, price or income of an investment adversely.

Neither AQR nor the author assumes any duty to, nor undertakes to update forward looking statements. No representation or warranty, express or implied, is made or given by or on behalf of AQR, the author or any other person as to the accuracy and completeness or fairness of the information contained in this document, and no responsibility or liability is accepted for any such information. By accepting this document in its entirety, the recipient acknowledges its understanding and acceptance of the foregoing statement.

There is a risk of substantial loss associated with trading commodities, futures, options, derivatives and other financial instruments. Before trading, investors should carefully consider their financial position and risk tolerance to determine if the proposed trading style is appropriate. Investors should realize that when trading futures, commodities, options, derivatives and other financial instruments one could lose the full balance of their account. It is also possible to lose more than the initial deposit when trading derivatives or using leverage. All funds committed to such a trading strategy should be purely risk capital.

The white papers discussed herein can be provided upon request.



