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Long-Term Investing in a Short-Term World How Psychology and Incentives Shape the Investment Industry

When our long-term competitive position improves as a result of . . . almost unnoticeable actions, we describe the phenomenon as “widening the moat.” And doing that is essential if we are to have the kind of business we want a decade or two from now. We always, of course, hope to earn more money in the short-term. But when short-term and long-term conflict, widening the moat *must* take precedence. If a management makes bad decisions in order to hit short-term earnings targets . . . no amount of subsequent brilliance will overcome the damage that has been inflicted.

Warren E. Buffett
Berkshire Hathaway Letter to Shareholders (2005) ¹

Wall Street has a tendency to overemphasize short-term benefits at the expense of long-term benefits . . . There is a reward given to pursue short-term actions that provide a short-term benefit at the expense of long-term value to your company.

Doug Geoga
Hyatt Hotels ²

Short Termism

You see it all the time: a baseball fan’s mood rises or falls based on a ten-game stretch in a long season; an investment manager is heralded or derided for a quarter’s results; investors dump, or euphorically buy, a stock after an earnings release. **These scenarios share a common feature—a heavy focus on short-term results. In every case, a short-term emphasis can hinder intelligent long-term decisions and perspective.**

Laments about short termism come from many quarters, yet no person or group appears able to stop its inexorable pull. But the swell in short-term thinking presents an opportunity as well as a challenge. Individuals who can, under the proper conditions, think and act with a long-term perspective stand to benefit from the short-term focus of others.

Companies, investors, and investment managers are the main actors involved in capital markets short termism. The interaction between these groups, their respective and often conflicting incentives, and today’s information torrent all combine to shape behavior.

The Causes . . .

Before discussing how to take advantage of short termism, it’s worth discussing why a myopic view is so prevalent today. Doing so, we can point to at least four sources, which are not mutually exclusive:

Incentives. That individuals respond to incentives is one of the most powerful lessons in economics. In recent decades, three noteworthy changes shifted incentives, encouraging a short-term focus. First, many companies revamped executive compensation. Second, investors increasingly outsourced investment decisions to external advisors, instead of making the decisions themselves. Finally, many investment firms changed their ownership structure from partnerships to financial conglomerates.

We will discuss these incentive shifts in detail to observe how they prompted a change in behavior. Also, the continuous interaction of companies, investors, and investment managers means that one group's behavioral change can, and often does, affect the others.

Psychology. A fascinating and relevant line of research addresses the effects of stress. For most animals, physical threats trigger the stress response. If and when the threat passes, the animal settles back to a balanced state. Humans generally face psychological stress, though we still respond physically by pumping blood, releasing adrenaline, sharpening senses, shutting down long-term operations like digestion, reproduction, and the immune system. The problem for humans: psychological stress is often chronic. As a result, the body finds itself in crisis every day. Stress's normal symptoms—high blood pressure, reproductive problems, and frequent illness—reflect this mostly-human condition.

Moreover, stress mobilizes you for the short term and ignores the long term. Just as there's no use worrying about next week if a lion is chasing you, there's no need to consider three-year investment returns if you're likely to get fired for poor three-month results. ³ Heightened stress undoubtedly encourages a short-term mindset.

Psychology also comes into play when individuals intend to make good decisions but fall prey to certain decision-making pitfalls, including the availability bias, the recency bias, and loss aversion. We will point out how these biases undermine the decision making of each group.

Information. The media, companies, and financial advisors churn out an extraordinary amount of information every day. Naturally, an investor requires information to make decisions. But investors must also make a crucial distinction between noise and signal.

Consider the metaphor of a series of coin tosses. Assuming a fair coin, the long-term signal is an evenly-split ratio between heads and tails, revealing itself with repeated trials. However, a short series of tosses may show a ratio vastly different than fifty-fifty. Investors operating in the realm of noise have a hard time making reasoned long-term judgments.

The media, Wall Street analysts, and other financial pundits are paid to generate information. But the vast majority of it is noise. As Nassim Taleb puts it, "People do not realize that the media is paid to get your attention. For a journalist, silence rarely surpasses any word."⁴ More information creates more noise and more market reaction, without generating insight or value.

Rate of change. The apparent acceleration of the rate of change for businesses creates a final source of shorter time horizons. For example, the average asset life in corporate America declined by a third in the last thirty years or so. Said differently, a chief financial officer today needs to generate an appropriate rate of return over roughly ten years, while his mid-1970s predecessor could wait fifteen years.

Further, empirical studies suggest U.S. companies face a shrinking period of sustainable competitive advantage—a shift that is not limited to technology companies.⁵ On one level a shorter time horizon makes sense, but markets still appear to have too much needless activity.

The Costs . . .

Why should we care if the world is more short-term oriented? First, **more activity is costly.** Research shows that active trading, which economists often attribute to overconfidence, leads to lower portfolio returns.⁶ The resulting performance degradation reflects transaction and market impact costs. Estimates suggest these costs are 70 basis points a year for the average mutual fund—with a higher total for active traders and a lower amount for less active funds.⁷

Next, **in a probabilistic field like investing, a short-term focus doesn't allow you to capture the system's signal.** We can liken this to predicting a baseball team's full season record based on a sample of a few games. Humans, as natural pattern seekers, have a well-documented tendency to believe that a small series of numbers, or results, reflect the larger series. Psychologists show how this belief leads to suboptimal decisions.⁸

Finally, **corporate managers who make decisions to bolster short-term results at the expense of long-term performance risk damaging the value of the businesses they run.** Trade loading is a good example of this behavior. In the 1980s some cigarette manufacturers sold excessive inventory to their customers in advance of cigarette price increases. The extra volume goosed short-term earnings but forfeited future sales, accelerated excise tax payments, extended customer payment terms, and provided customers with a stale product.⁹ Similar behavior continues today. As Buffett suggests in the opening quotation, decisions to make short-term targets at the expense of a business's long-term competitive position can inflict irreversible damage.

The Caveats . . .

Before continuing, two points merit attention. First, the short-term actions of market participants remain distinct from the horizon of the market itself. To understand the market's time horizon, you need to look directly at asset prices. Studies of asset prices show the market reflects ten or more years of future cash flows in today's prices. For example, the expected dividends over the next five years account for less than 20 percent of the value of the Dow Jones Industrial Average. In sum, investors make short-term bets on what are ultimately long-term outcomes.

Second, not all market participants should be long-term oriented all of the time. Indeed, there are successful short-term investment strategies. And if all investors were long-term oriented, markets would lose diversity—a crucial ingredient in market efficiency.¹⁰ The problem arises when investors confuse their objective with their strategies. Too often, investors mix an objective to deliver superior long-term returns with strategies and behaviors rooted in short termism.

We now turn to the three groups, and discuss the changes they have seen and what those changes mean for a shortening time horizon.

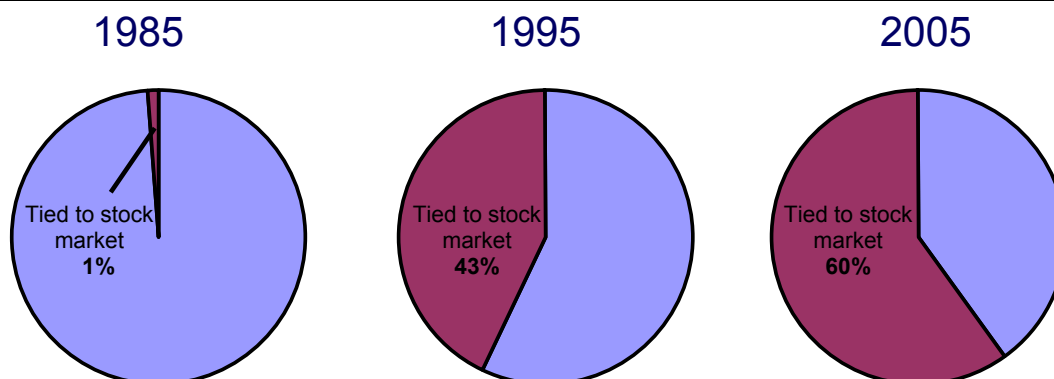
Corporations

As early as the 1930s, researchers pointed out potential conflicts of interest between professional business managers and the owners, or shareholders.¹¹ Michael Jensen and William Meckling formalized the idea of agency costs in a famous 1976 paper, where they noted, “there is good reason to believe that the agent [manager] will not always act in the best interests of the principal [owner].”¹² In plain words, what may be good for the executive may not be good for the shareholders.

Though it often appears in today's headlines, the chasm between CEO wealth and shareholder wealth is by no means a new topic. In 1990, Jensen and Kevin Murphy wrote, “Our analysis of performance pay and top-management incentives for more than 2,000 CEOs in three samples spanning five decades indicates that the relation between CEO wealth and shareholder wealth is small and has fallen by an order of magnitude in the last 50 years.”¹³

Concerns over agency costs waned somewhat in the 1980s, as many observers believed an active market for corporate control would mitigate these costs. The active market for corporate control also gave rise to a major shift in executive compensation: boards started tying management pay directly to the stock price. Exhibit 1 shows this evolution over the past twenty years or so. In the mid-1980s, virtually no chief executive pay was tied to the stock price. By the mid-1990s, that ratio—fueled by employee stock option grants—surpassed 40 percent. Today, approximately 60 percent of CEO pay is market-related.

Exhibit 1: CEO Pay is More Tied to the Stock Price than Ever Before



Source: Brian J. Hall and Jeffrey B. Liebman, "Are CEOs Really Paid Like Bureaucrats?" *NBER Working Paper* 6213, October 1997; "2004 CEO Compensation Survey and Trends," *Wall Street Journal/Mercer Human Resource Consulting*, May 2005; LMCM estimates.

With their paychecks linked to stock price performance, CEOs quite naturally sought to maximize the value of their stock price. Along the way, many of them have gone badly awry by fixating on the single metric they believe drives value: earnings per share growth. This fixation evolved despite voluminous evidence in the academic literature showing the tenuous link between EPS growth and value creation.¹⁴

We believe the focus on EPS growth results from what psychologists call the availability bias, or the tendency to base assessments on widely-available, versus relevant, information. A financial executive survey by John Graham, Campbell Harvey, and Shiva Rajgopal provides sobering evidence of the laser-like focus on EPS.¹⁵ The executives report the relative importance of "earnings are in a class by themselves" for financial reporting. The executives cite four reasons:

1. Investors need a simple metric that summarizes corporate performance.
2. EPS gets the broadest distribution and coverage by the media.
3. Focus on EPS makes the analyst's task easier.
4. Analysts evaluate a firm's progress based on whether a company hits consensus EPS.

A focus on EPS may not be bad because EPS growth and value creation are clearly not mutually exclusive. But a more alarming survey finding is that almost 80 percent of the executives said they would give up economic value in exchange for smooth earnings. Clearly, shareholders do not benefit from the trade of accounting results for value creation over the long term.

Is the managerial focus on EPS a problem? We think so. Our concerns are based on a number of research findings and practical considerations.

First, academic research shows companies that tied CEO compensation more closely to the value of the stock and option holdings in the 1990s saw greater use of discretionary accruals to manipulate EPS.¹⁶ The researchers define accruals as the difference between earnings and cash flow from operations. While the researchers don't dismiss stock-based incentives, they conclude that "high-powered incentives based on stock price performance seem likely to work best when

coupled with careful consideration of managers' opportunities to exploit these incentives through the discretion that they enjoy in reporting their firms' performance."¹⁶

Another valuable strand of research examines the relationship between corporate actions and the institutional shareholder base.¹⁷ Based on twenty years of data, Brian Bushee places institutional investors into one of three categories: transient, quasi-indexer, and dedicated. (See Exhibit 2.) Transient institutions have high turnover and small stakes. Quasi-indexers have low turnover and small stakes. Low turnover and large investment stakes characterize dedicated institutions.

Exhibit 2: Percentage Breakdown of Institutional Investor Categories

Quasi-indexers	61 %
Transients	31
<u>Dedicated</u>	<u>8</u>
Total	100%

Source: Brian Bushee, "Identifying and Attracting the 'Right' Investors: Evidence on the Behavior of Institutional Investors," *Journal of Applied Corporate Finance*, Vol. 16, 4, Fall 2004, 28-35.

Bushee's analysis shows that companies with active investor relations efforts, including frequent earnings guidance and news, attract transient investors. These investors, however, are quick to sell when a string of favorable earnings breaks. Further, his research suggests firms with a large percentage of transient investors will more likely manage EPS by cutting research and development spending.

While the causality may not be crystal clear—companies that manage EPS attract transient investors or transient investors compel companies to manage EPS—the evidence suggests companies kick off the feedback loop. Disclosure policies above and beyond legal requirements are a corporate choice. Bushee summarizes by suggesting, "perhaps the most important step that managers could take would be to discourage transient ownership by refusing to manage (that is, smooth) reported earnings."

Notwithstanding the substantial costs associated with issuing earnings guidance, two-thirds of companies continue to do so today.¹⁸ While guidance is perceived to enhance communication, companies also point to lower volatility and peer group participation as reasons to offer forecasts.

The empirical results, however, do not square with corporate perception. A recent McKinsey study failed to find any improvement in valuation, shareholder returns, or volatility as a result of guidance.¹⁹ Further, the researchers found when companies start earnings guidance, their stock's trading volume increases, consistent with elevated interest of transient investors. The study's authors instead advocate disclosing information that relates to the underlying business value drivers.

Academics also found that companies engaging in frequent earnings guidance will more likely sacrifice long-term growth in order to satisfy short-term earnings objectives. This analysis focuses primarily on changes in R&D spending.²⁰

Research also shows companies ceasing EPS guidance tend to have weak earnings and stock price performance. The analysis suggests poor performance more likely motivates managers to give up guidance rather than other "altruistic" reasons. The study concludes elimination of guidance hurts prices more because of a negative signal about future financial performance than because of the guidance cessation itself.²¹

Finally, a recent study shows the stock market premium for companies meeting or slightly beating consensus EPS has vanished in the post-Sarbanes-Oxley world. This finding holds with the view investors are more skeptical of firms meeting or beating EPS estimates subsequent to the wave of corporate scandals in the early 2000s.²²

In summary, corporations today focus more on the short term than they did in the past. This is partially appropriate, as the shift in the global competitive landscape has reduced asset lives. Further, companies focused on the short term may be willing to face and address problems on a timelier basis than a company focused on the long term.²³

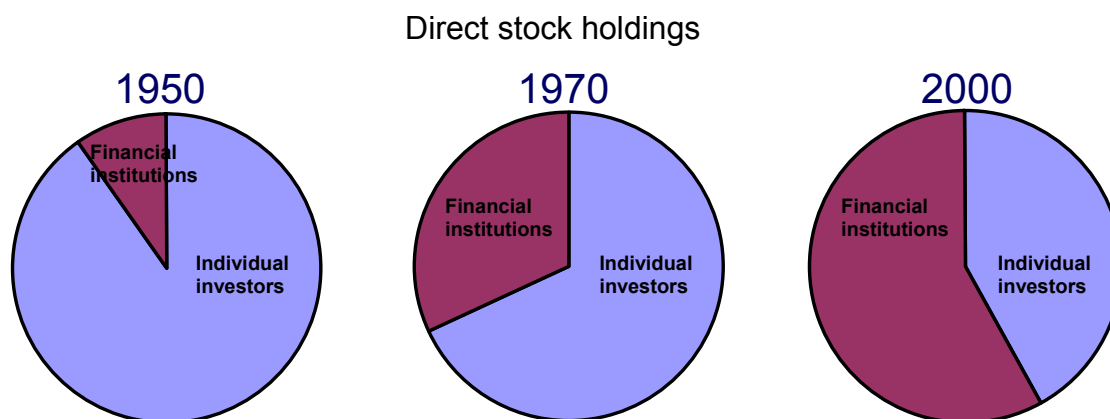
Ironically, many of today's issues reflect unintended consequences of trying to minimize agency costs. Starting earnestly in the 1980s, companies recognized the importance of delivering shareholder returns. The result has been a massive increase in the percentage of CEO pay tied to stock price results. But rather than internalizing the principles of shareholder value, many managers—because of the availability bias—defaulted to a near-messianic focus on EPS growth.²⁴ The companies most focused on earnings growth attracted transient investors who, in turn, demanded more guidance and growth, fueling an untenable cycle.

Investment Management

Corporate finance researchers have long recognized the importance of agency costs. Surprisingly, academics have not fully recognized agency costs in the investment business—essentially the role of financial institutions.²⁵ Clearly, the interests of investors and investment managers are not perfectly aligned, and evidence suggests principal/agent relationships have an impact on asset pricing beyond what standard models capture.²⁶

The dearth of discussion about the delegated agent may reflect the relative recency of the issue. (See Exhibit 3.) In 1950, individuals directly controlled over 90 percent of corporate equities. Today, individuals hold less than 40 percent of equities with the bulk now held by mutual funds, pension funds, and insurance companies. Responsibility has steadily and forcefully migrated from principal to agent.

Exhibit 3: From Principals to Agents



Source: John Bogle, "The Relentless Rules of Humble Arithmetic," *Speech: 60th Anniversary Conference of the Financial Analyst Journal*, February 10, 2005.

How has this affected the behavior of the investment industry and asset pricing? A logical place to start is the distinction between the investment profession and business.²⁷ The investment profession is dedicated to delivering superior results for fund shareholders; practitioners tend to be long-term oriented, contrarian, and patient. The investment business is about gathering assets and generating fees for the investment company as opposed to the fund holders.

While there is nothing wrong with a healthy business, and such health assures the investment firm has the resources to support the profession, conflicts do arise when the pendulum swings too far from the profession toward the business. Specifically, problems occur when delivering investment returns takes a back seat to generating fees for the investment firm. Marketing takes precedence over markets. Industry luminaries, including Jack Bogle and David Swensen, have argued this point forcefully.²⁸

Bogle marshals two pieces of evidence to show the detrimental effects of this shift for fund holders. He starts by noting one proxy for differentiating a marketing firm from a management firm is the number of funds they offer. Using data prepared by Fidelity Investments covering 54 of the largest investment firms (representing about 85 percent of the industry's assets) from 1994 to 2003, Bogle compared the overall investment performance of the firms with fewer funds versus those with an extensive offering. (See Exhibit 4.) He found the focused firms performed much better, and that 36 of the 37 lowest ranked spots belonged to marketing-oriented organizations.

Exhibit 4: Number of Funds versus Investment Returns

Shading highlights firms that manage fifteen or fewer funds

Firm	Equal-Weighted Outperformance	No. of Funds	Firm	Equal-Weighted Outperformance	No. of Funds	Firm	Equal-Weighted Outperformance	No. of Funds
Dodge & Cox	98	4	Waddell & Reed	61	45	Eaton Vance	49	73
First Eagle	97	5	USAA	61	31	Morgan Stanley Adv.	49	50
Calamos	91	8	Oppenheimer	60	48	Goldman Sachs	49	34
So. Eastern/Longleaf	90	3	MFS	59	61	The Hartford	48	33
American Funds	79	26	Prudential	59	49	Putnam	47	54
Royce	79	14	New York Life	58	22	John Hancock	47	35
Harris Associates	77	7	US Bancorp	57	37	Dreyfus	45	126
Vanguard	76	75	Columbia Mgmt.	56	72	Delaware	44	56
PIMCO	76	31	AllianceBernstein	55	57	Strong	44	42
Franklin Templeton	71	10	Banc One	54	36	Thrivent Financial	44	25
T. Rowe Price	71	72	Neuberger Berman	54	14	Trusco	43	24
Janus	70	21	Lord Abbett	53	27	Merrill Lynch	40	58
ING	69	60	Scudder	52	65	Aim	39	62
Nuveen	65	26	Van Kampen	52	43	Nations Funds	38	42
American Century	64	54	Federated	52	37	American Express	37	60
WM Advisors	64	15	Evergreen	51	57	BlackRock	36	32
Davis	62	7	Citigroup	50	57	Pioneer	33	24
Fidelity	62	207	Wells Fargo	50	39	JP Morgan	32	38

Source: Fidelity Investments. Data presented in John C. Bogle, "The Relentless Rules of Humble Arithmetic," *Financial Analyst Journal*, November/December 2005. Equal-weighted outperformance rankings ignore the impact of sales charges and include only A-class shares.

According to Bogle's analysis, ownership of investment firms has also been important in shaping incentives. Of the 30 largest mutual fund companies today (based on year-end 2005 assets), only four are private. Of the other 26, financial conglomerates own 19 and the other 7 are publicly held. Large financial conglomerates tend to focus more on generating earnings than do the private investment firms that focus more on the profession. The data here also seem to strongly support this notion: the vast majority of the best-performing fund families were privately held, and public firms sat in 32 of the bottom 34 slots.²⁹ (See Exhibit 5.)

Exhibit 5: Investment Firm Ownership versus Investment Returns

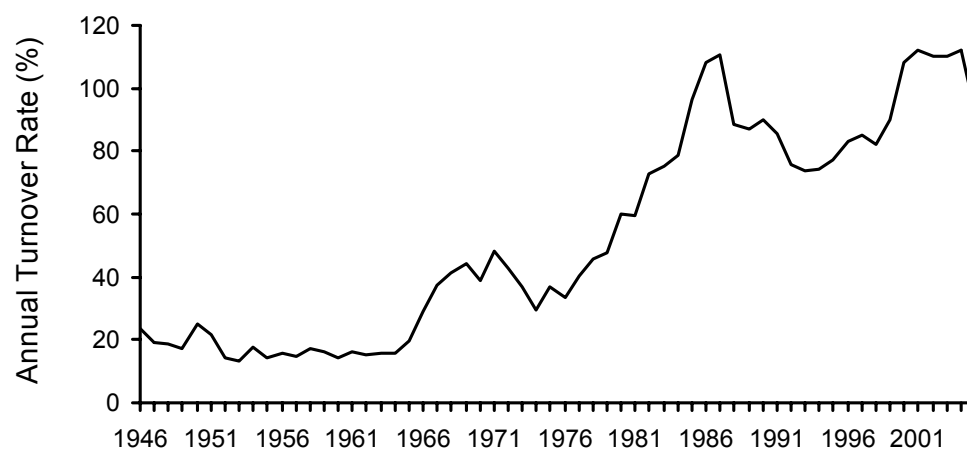
Shading represents private firms

Firm	Equal-Weighted Outperformance	Firm	Equal-Weighted Outperformance	Firm	Equal-Weighted Outperformance
Dodge & Cox	98	Waddell & Reed	61	Goldman Sachs	49
First Eagle	97	USAA	61	Morgan Stanley Adv.	49
Calamos	91	Oppenheimer	60	Eaton Vance	49
So. Eastern/Longleaf	90	Prudential	59	The Hartford	48
Royce	79	MFS	59	John Hancock	47
American Funds	79	New York Life	58	Putnam	47
Harris Associates	77	US Bancorp	57	Dreyfus	45
PIMCO	76	Columbia Mgmt.	56	Strong	44
Vanguard	76	AllianceBernstein	55	Delaware	44
T. Rowe Price	71	Banc One	54	Thrivent Financial	44
Franklin Templeton	71	Neuberger Berman	54	Trusco	43
Janus	70	Lord Abbett	53	Merrill Lynch	40
ING	69	Van Kampen	52	Aim	39
Nuveen	65	Scudder	52	Nations Funds	38
American Century	64	Federated	52	American Express	37
WM Advisors	64	Evergreen	51	BlackRock	36
Davis	62	Wells Fargo	50	Pioneer	33
Fidelity	62	Citigroup	50	JP Morgan	32

Source: Fidelity Investments. Data presented in John C. Bogle, "The Relentless Rules of Humble Arithmetic," *Financial Analyst Journal*, November/December 2005. Equal-weighted outperformance rankings ignore the impact of sales charges and include only A-class shares.

A closer look at how mutual fund managers react to incentives substantiates the broader perspective Bogle provides. Empirical research demonstrates that fund managers who face greater short-term performance pressure focus more on short-horizon investments.³⁰ The research suggests the short-term perspective of investors causes the investment manager's short-horizon focus. (See Exhibit 6.) If true, short-term manager behavior may affect stock prices, and encourages institutions to shirk their corporate governance responsibilities.

Exhibit 6: Mutual Fund Turnover Rate



Source: Bogle Financial Markets Research Center, 2006. A mutual fund's annual turnover rate is a measure of the fund's trading activity during its previous fiscal year, expressed as a percentage of its average total assets.

Academic research also shows fund managers adjust the risk of their portfolios near the end of the year in order to increase assets under management. For instance, young funds tend to get more aggressive toward the end of the year when lagging the market. Also, funds well ahead of the market often take a more aggressive stance to achieve the highest possible performance ranking versus their peers.³¹

Asset pricing models generally assume either rational investors or a no-arbitrage assumption to attain market efficiency. While neither case provides fully for the role of agency costs, intriguing evidence suggests agent behavior may play an important role in asset pricing.

One line of thinking follows the relationship between the financial institutions garnering the lion's share of investor dollars and asset performance. The data show the outperformance of large capitalization stocks from 1980 to 2000 coincides directly with the rise of large financial institutions. The researchers argue the compositional shift in asset management increased the demand for large capitalization stocks and decreased the demand for small capitalization stocks, potentially accounting for 230 basis points of annual return premium for the large cap stocks.³²

The 2000s, of course, show a much different picture with much of the incremental asset growth coming in hedge funds. Estimates suggest the number of hedge funds has doubled since 2000, while the industry increased assets under management by \$1 trillion. The 2000s have also seen small capitalization stocks sharply outperform large capitalization stocks; this relative gain, no doubt, also reflects the overvaluation of the large cap stocks in 2000.

Keeping with the idea that the structure of the investment industry shapes investment outcomes, it is intriguing to note 43 percent of hedge fund equity holdings are in stocks with market capitalizations of \$5 billion or less (versus less than 26 percent for mutual funds) and almost 60 percent of hedge fund assets are in companies with market caps \$10 billion or less (compared with 37 percent for mutual funds).³³ Has the rise in hedge funds played a role in distorting the markets, just as the large institutions did in the 1990s?

Investors

Jack Bogle provides what may be the most sobering statistic in the investment industry: from 1983-2003, index funds tracking the S&P 500 returned 12.8 percent and the average mutual fund gained 10.0 percent annually. Meanwhile, the average investor only earned 6.3 percent annual returns.³⁴ This seemingly impossible result is attributable to one crucial variable: market timing. The Bogle data refer to average percentage changes, not dollar-weighted changes. When you consider the extraordinary proclivity for investors to invest in the wrong place at the wrong time, the data start to make sense.

For example, at the height of the technology and telecom bubble in the first quarter of 2000, investors poured a record \$140 billion into growth funds while pulling \$40 billion out of value funds. In the subsequent five years, value funds substantially outperformed growth funds.³⁵

Using over twenty years of market data, Evergreen Capital Management paired mutual fund flows with a valuation measure to generate buy and sell signals. High inflows and high valuation triggers a sell signal, while large outflows and cheap valuations mean buy. Following a sell signal—across various investment styles—the return of the investment strategy underperformed the S&P 500 by an average of 490 basis points over the subsequent two-year period. Buy signals generated an even more impressive 870 basis points of excess returns in two years. As noteworthy, the sell signal was reliable nearly 80 percent of the time, while the buy signal was accurate over 90 percent of the time.³⁶

Why do investors make this mistake? The most likely explanation is the recency bias, which says individuals tend to extrapolate recent outcomes without giving full weight to the full time series or prevailing circumstances. This bias defines one of the most reliable sources of inefficiency in the market. Recent academic research, spanning twenty years of data, shows the buying and selling patterns of individual investors provide a hard-to-beat contrary indicator. More specifically, researchers found heavy buying leads to above-average short-term results and below-market returns in the subsequent year. The mirror image holds true for stocks individuals sell.³⁷

Time will tell, but we can see evidence for recency bias and questionable investor flows in today's markets. (See Exhibit 7.) Funds dedicated to retail investors are seeing strong inflows in the sectors that have done well in the past five years, while interest in the groups that have done poorly is sparse. As Bill Miller noted, "People want to buy today what they should have bought 5 or 6 years ago; call it the 5 year psychological cycle."³⁸

Exhibit 7: The Recency Bias in Action?

	<u>Last 5 year annual gain</u>	<u>Rydex Weighting</u>	<u>S&P 500 Weighting</u>
<u>Overweight</u>			
Energy	12.5%	27.2%	10.2%
Precious Metals	25.4%	18.9%	0.6%
<u>Underweight</u>			
Technology	-0.5%	2.8%	16.0%
Financials	7.2%	2.9%	21.1%

Note: All Data as of 3/31/06

Source: Bloomberg and S&P.

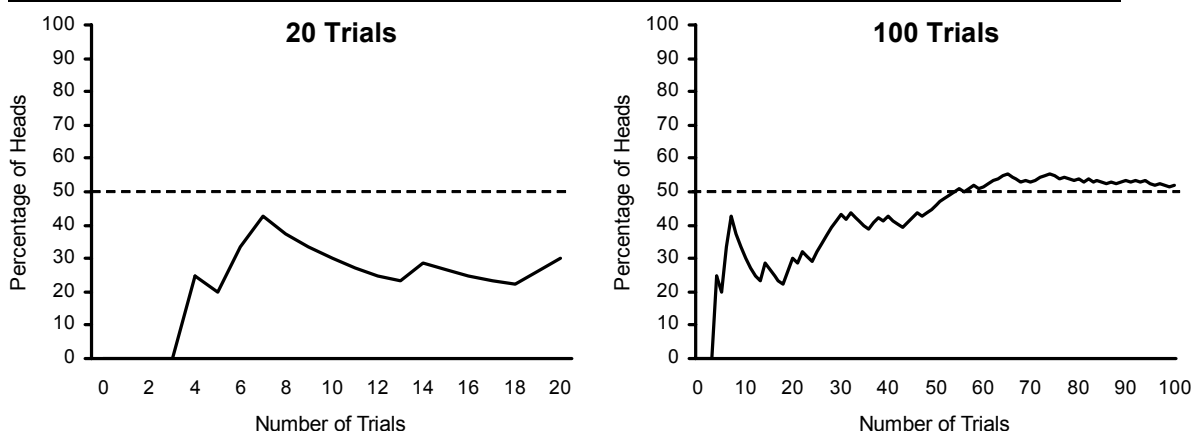
Taking Advantage of Short Termism

Now we have a clear picture of why short-term thinking pervades investing. First, competition is accelerating, requiring companies to be more nimble. Second, psychological factors, including the availability bias and the recency bias, encourage suboptimal behavior. Third, as the nature of executive compensation and the structure of the investment industry have changed, so too have incentives. Companies fixate more on short-term EPS, often to the detriment of long-term value, and some investment managers prioritize asset gathering over investment results. Finally, the cost of activity has dropped: investors can move assets around with less friction today than at any time in the past.

So how can an investor take advantage of short termism? One approach focuses on time arbitrage. Time horizon is a crucial consideration in any probabilistic field. In these systems, short-term results show mostly noise—the noise-to-signal ratio is very high. Over time, the signal reveals itself, and the noise-to-signal ratio drops. Short-term investors dwell mostly in the world of noise.

Let's go back to our simple coin-tossing example to demonstrate this point. Exhibit 8's left panel is the result of a 20-toss trial, and shows that 35 percent of the tosses came up heads. (We simulated these results with a random number generator). The panel on the right continues with the next 80 tosses in the series, and shows that the ratio settles very close to 50 percent over 100 flips. Even though we know the long-term signal is 50 percent, short-term noise can deviate substantially from long-term signal.

Exhibit 8: Noise versus Signal



Source: Michael J. Mauboussin, "Capital Ideas Revisited-Part 2," *Mauboussin on Strategy*, May 20, 2005.

Asset prices reflect a set of expectations.³⁹ If investors chasing noise create a set of expectations inconsistent with the long-term signal, an opportunity for time arbitrage arises. This arbitrage works only if the short-term focus creates a diversity breakdown—too few investors focused on the signal—and the signal becomes clear over time. So the critical considerations in navigating the investing world distill to psychology, incentives, and expectations. Intelligent investors remain highly aware of all three, and use them for the advantage of their fund holders.

Endnotes

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