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**IN BRIEF**

Behavioral finance is a field of study that emphasizes the importance of human psychology in financial markets, leveraging research that demonstrates how human beings are wired to make decisions that contradict statistical evidence. Investment strategies rooted in behavioral finance seek not only to avoid the pitfalls of irrational behavior but also to exploit the opportunities that arise from investors' illogical decisions.

The following themes of behavioral finance show how many poor investment choices are a result of human nature:

- Recency Effect
- Loss Aversion
- Herd Behavior
- Overconfidence
- Representativeness

Elements of these themes are driving many of the trends in the current market environment, including long-term investors' preference for fixed income investments over equities despite evidence suggesting that equities are relatively more attractive. Separating emotion from investing requires patience and discipline, but history suggests that investors who remain committed to their long-term strategy are more likely to achieve their investment goals compared to those who base investment decisions on short-term market volatility.

“Risk on, risk off” was the mantra for 2011. Assets perceived as risky moved en masse as investors adjusted their portfolios in response to unexpected sources of distress and updates on known problems—the European debt crisis, political strife in the Middle East, the earthquake and subsequent tsunami in Japan and the credit rating of debt issued by the United States.

In the first quarter 2012, improving U.S. economic data and aggressive measures taken by the European Central Bank to curb the region's debt crisis sustained investors' appetite for risk, helping U.S. equities to rally and outperform fixed income

# Irrational Investing: The impact on long-term investment goals

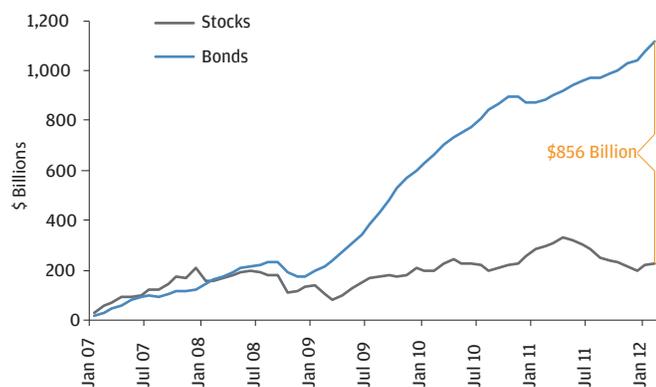
securities. While the first-quarter stock market rally followed a period of heightened volatility, stock prices have experienced an upward trend during the last three years. Yet, despite this strong momentum, retail investors have poured assets into fixed income securities, expressing a strong preference for their perceived safety (**Exhibit 1**, below).

This current preference for bonds over equities is not unique to retail investors. With the credit crisis and ensuing market correction in 2008 still fresh in the minds of institutional investors, the recent focus of many seems to be on capital preservation. According to the Milliman 2012 Pension Funding Survey, the allocation to fixed income in the 100 largest U.S. pension funds has been steadily increasing since 2009. In fact, as of March 5, 2012, the average allocation to fixed income among the top 100 U.S. defined pension funds was higher than the average allocation of assets invested in equities, as these pension plans had an average of 41% of their net assets allocated to fixed income securities compared to only 38% for equities.

There is no doubt that fixed income securities are an essential part of any well-diversified portfolio. However, investors' recent rotation into bonds is likely less a function of their desire for diversification and more a result of their aversion to loss. Studies show that people tend to strongly prefer avoiding losses versus acquiring gains.<sup>1</sup> Odds are often ignored and rational decision making is abandoned as a result of people's aversion to loss. Unfortunately, this behavior can stifle investment goals, which generally require a long-term commitment.

Pension funds investing to meet the long-term liability of income distributions should also maintain a long-term investment horizon. Yet, the asset allocation decisions of

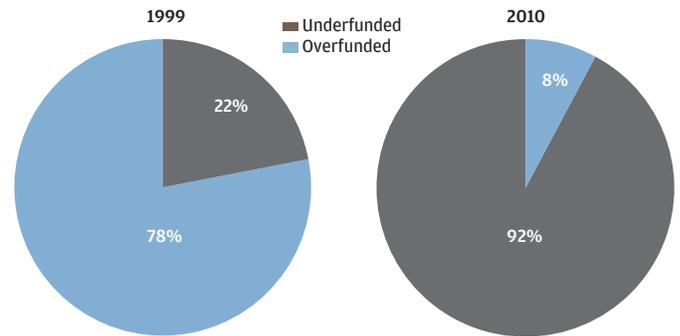
**EXHIBIT 1: FUND FLOWS INDICATE A STRONG PREFERENCE FOR FIXED INCOME OVER EQUITIES**



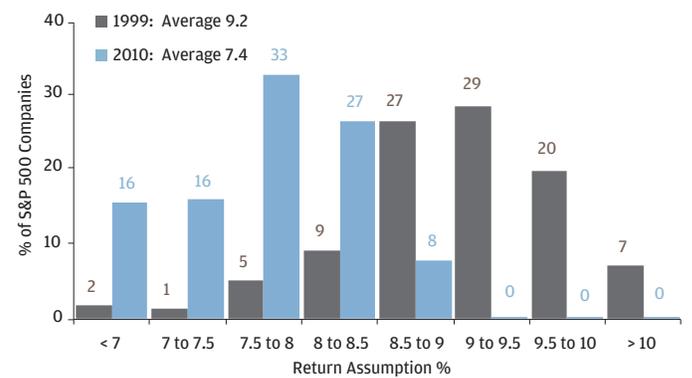
Source: ICI, J.P. Morgan Asset Management. Data are as of 3/16/12. Includes both mutual funds and ETFs.

<sup>1</sup> Daniel Kahneman's prospect theory.

**EXHIBIT 2A: DEFINED BENEFIT PLANS: FUNDED STATUS**



**EXHIBIT 2B: PENSION RETURN ASSUMPTIONS**

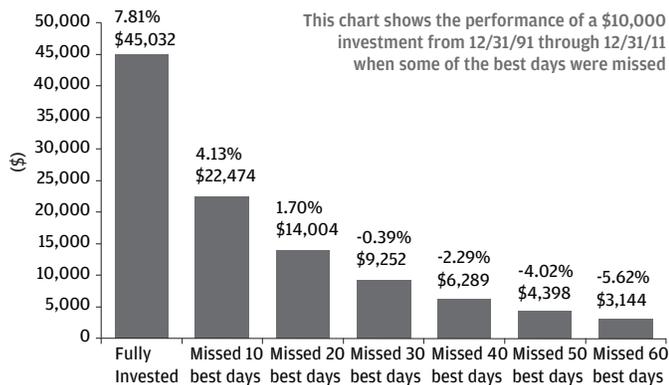


Source: NACUBO (National Association of College and University Business Officers), Towers Watson, Compustat/FactSet, J.P. Morgan Asset Management. Pension Return Assumption based on all available and reported data from S&P 500 Index companies. Funded Status based on 351 companies reporting pension funding status as of 3/31/11. Return assumption bands are inclusive of upper range. All information is shown for illustrative purposes only. Data are as of 12/31/10.

many pension plans in the past three years suggest that they are basing their investment decisions on recent history. Worse still, in the first decade of the 2000s, the majority of defined benefit plans shifted from over to underfunded, while decisions to lower risk exposure have dragged down the assumptions for their average annual return going forward (**Exhibit 2A, 2B** above).

Risk should be calibrated to meet investment objectives. Over the long term, insufficient exposure to risk can be just as detrimental to investment performance as excessive risk. Very simply, investors cannot avoid taking risk and still achieve their longer-term investment goals. While the tactical rebalancing of a portfolio is an important step to successful investing, overreacting to short-term market volatility by rotating in and out of equities can significantly erode returns (**Exhibit 3**, on the following page).

**EXHIBIT 3: IMPACT OF BEING OUT OF THE MARKET**



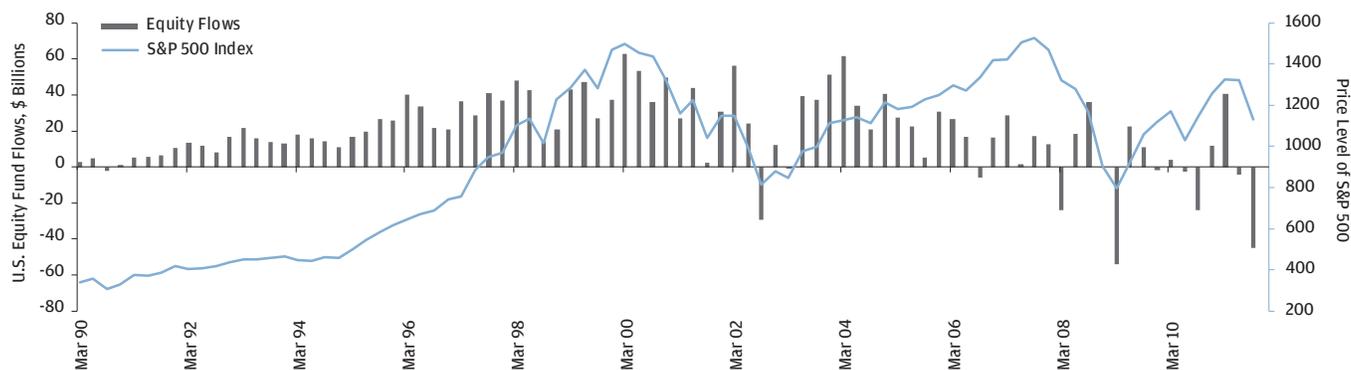
Source: Prepared by J.P. Morgan Asset management using data from Lipper. 20-year annualized returns are based on the S&P 500 Total Return Index, an unmanaged, capitalization-weighted index that measures the performance of 500 large capitalization domestic stocks representing all major industries. Past performance is not indicative of future returns. An individual cannot invest directly in an index. Data as of December 31, 2011

When investors do try to time the market, historical data suggests that they ratchet up risk and lower risk at just the wrong times. Consider **Exhibit 4**, which maps flows into equity mutual funds versus the return of the S&P 500 Index.

Notice how more and more money starts to flow into stocks as the return of the S&P 500 Index increases. Investors also pull money out of stocks as the return of the S&P 500 Index drops, in both cases assuming that the most recent trajectory of stock prices will continue.

Based on stock returns from January 1, 1950 through December 31, 2011, this behavior is counter intuitive. During this 61 year time period, risky assets provide greater upside and less downside risk at longer investment horizons. For example, the worst 1-year return for U.S. small-cap stocks was

**EXHIBIT 4: INOPPORTUNE INVESTING**



Source: J.P. Morgan Asset Management, Morningstar. Data includes flows through September 2011 and includes ETFs.

-45.9%. Expand the investment horizon and the downside risk for investors is sharply reduced. The worst 10-year rolling return for U.S. small cap stocks was 3.2%. Held for 20 years, the worst return an investor would have experienced is 8.1%, while the best 20-year return for government bonds is only a fraction better (**Exhibit 5**, on the following page). Despite this evidence, investors still buy and sell stocks based on short-term fluctuations in stock prices.

**Themes of behavioral finance**

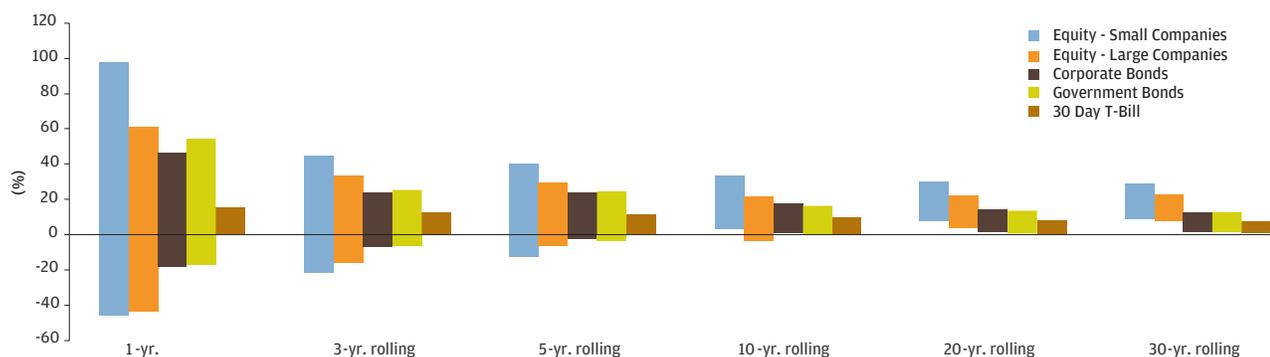
Buying and selling stocks based on short-term fluctuations is referred to as the **Recency Effect** in behavioral finance, a field of study that emphasizes the importance of human psychology in financial markets. In addition to the **Recency Effect** and **Loss Aversion**, behavioral finance examines how behavior such as **Herd Behavior**, **Overconfidence** and **Representativeness** impact investment decisions.

**Herd Behavior** describes how individuals in a group can act together without planned direction. The term pertains to the behavior of animals in herds and to human conduct during activities such as stock market bubbles and crashes, sporting events and everyday decision-making. Stock market trends often begin and end with periods of frenzied buying (bubbles) or selling (crashes). Many observers cite these episodes as clear examples of herding behavior that is irrational and driven by emotion—greed in the bubbles, fear in the crashes. Individual investors join the crowd of others in a rush to get in or out of the market.

Meanwhile, **Overconfidence**, a behavior regularly exhibited by individuals in which they overestimate their knowledge, underestimate risks, and exaggerate their ability to control events, leads investors to market timing, often causing them

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EXHIBIT 5: RISKY ASSETS PROVIDE GREATER UPSIDE AND LESS DOWNSIDE AT LONGER INVESTMENT HORIZONS



Source: Ibbotson, J.P. Morgan Asset Management. Annual total returns, January 1960–December 2011. Equity–Small Companies are represented by a combination of Dimensional Fund Advisors U.S. 9-10 Small Company Strategy and an historical series developed by Professor Rolf W. Banz. Equity–Large Companies are represented by the S&P 500. Corporate Bonds are represented by the Citigroup Long-Term High-Grade Corporate Bond Index. Government bonds are represented by Center for Research in Security Prices U.S. Treasury Series. 30 Day T-Bills are represented by the U.S. Treasury Bill index.

to sell winners too early and hold onto losers for far too long. A stark example of investors’ overconfidence is highlighted in a study by Dalbar, Inc., which utilized the net of aggregate mutual fund sales, redemptions, and exchanges to show that the average equity investor achieved an annualized return of 2.3% from January 1, 1991 through December 31, 2010 versus 9.14% for the S&P 500 Index and 10.65% for an actively managed U.S. large cap core investment strategy in the top 25 percentile.

**Representativeness** describes how people tend to judge the probability or frequency of a hypothesis by considering how much the hypothesis resembles available data. In a social experiment, psychologists Amos Tversky and Daniel Kahneman provided people with the following information and then asked them the question below:

*Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.*

Which is more probable?

- Linda is a bank teller.
- Linda is a bank teller and is active in the feminist movement.

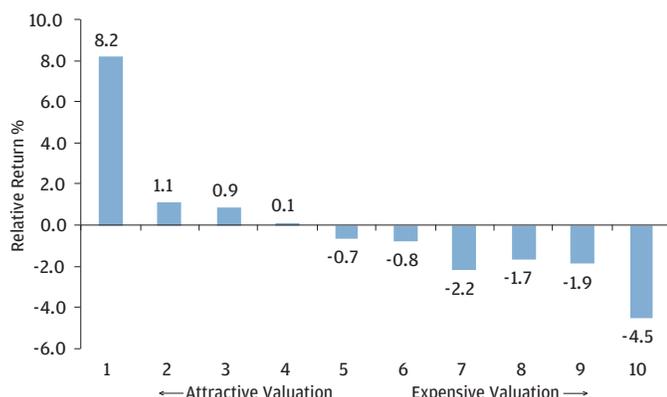
85% of the participants in the experiment incorrectly chose option two. The probability of two events occurring together is always less than or equal to the probability of either one occurring alone—if Linda is active in the feminist movement AND a bank teller, she is always a bank teller. Yet most people focused on the data insinuating that Linda was active in the

feminist movement and gave the wrong answer, an example of how **Representativeness** can impact the choices that people make.

As these themes of behavioral finance remind us, human beings are wired to make decisions that contradict statistical evidence—many poor investment choices are a result of human nature. Separating emotion from investing requires patience and discipline, but history suggests that investors who remain committed to their long-term strategy are more likely to achieve their investment goals when compared to those who base investment decisions on short-term market volatility. Opportunistically rebalancing a diversified portfolio over a long-term investment horizon can guard against irrational behavior. However, before investors look for opportunities to rebalance, they must first establish their investment objectives and create a portfolio that makes sense for their long-term needs and goals.

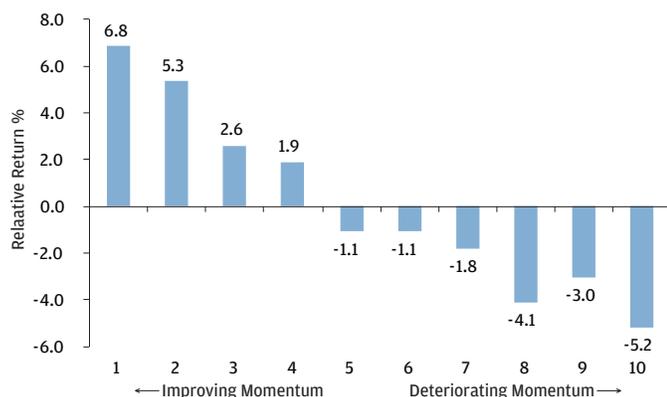
Once investment objectives are established, conviction in the process used to achieve them should stem from an understanding of the underlying asset classes and investment strategies used to build an investor’s portfolio. Investment strategies rooted in behavioral finance seek not only to avoid the pitfalls of irrational behavior but also to exploit the opportunities that arise from investors’ illogical decisions. These strategies are generally driven by sophisticated statistical models designed to rank stocks on a variety of factors including valuation, momentum and quality. Long/overweight positions are established in stocks identified as the most attractively valued (“cheap”) and/or exhibiting improving sentiment (momentum) and earnings quality. Stocks deemed “expensive” and/or with low momentum and earnings quality are held short or under weighted.

**EXHIBIT 6A: WHY VALUE INVESTING WORKS**



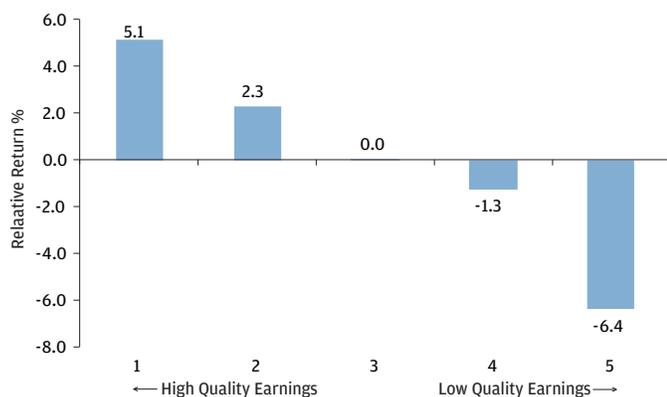
Source: Factset and J.P. Morgan Asset Management.

**EXHIBIT 6B: WHY MOMENTUM INVESTING WORKS**



Source: Factset and J.P. Morgan Asset Management.

**EXHIBIT 6C: WHY QUALITY INVESTING WORKS**



Source: FactSet and J.P. Morgan Asset Management. The above charts are shown for illustrative purposes only. Charts show relative performance of the largest 1,000 stocks assigned to deciles on the basis of our proprietary value, quality and momentum factors. The test period is from 1991 through 2010, deciles are rebalanced monthly and stocks are equal weighted. Decile performance results have certain inherent limitations. Unlike an actual performance record, decile results do not represent actual trading, liquidity constraints, fee schedules and transaction costs. Past performance is not indicative of future results. Total return assumes the reinvestment of income.

One of the tenets of these strategies is that cheap stocks tend to outperform expensive stocks over the long term. This market anomaly is a result of investors' tendency to be overly optimistic about past winners and overly pessimistic about past losers (**Overconfidence**), and ignore valuations, focusing instead only on the evidence that supports their investment thesis (**Representativeness**). Indeed, when stocks in the Russell 1000 Index were ranked into deciles on the basis of price/earnings ratios (with deciles rebalanced each month, from 1991 through 2010) excess returns for "cheaper" stocks exceeded those for the more expensive stocks (**Exhibit 6A**).

Similarly, stocks with improving earnings expectations tend to outperform over time. When stocks were ranked on the magnitude and direction of revisions to analysts' earnings forecasts, those expected to have more improved earnings outperformed those with less improved or declining analyst forecasts (**Exhibit 6B**). The stocks of companies with high quality earnings/management teams also tend to outperform over time (**Exhibit 6C**), as the **Overconfidence** of corporate management teams causes them to overpay for mergers and acquisitions and spend excessively on capital intensive projects that can be dilutive to shareholder value.

## Buying opportunity remains for long-term investors

Investors underexposed to risk in relation to their long-term investment goals may want to consider allocating more assets to equity strategies. As of the end of the first quarter 2012, the stock market's price-to-earnings ratio was below its historical average (**Exhibit 7**, on the following page), which has generally been a good purchasing opportunity for long-term investors. In fact, a study of the S&P 500 Index's returns from 1945 through 2011 indicates that investors who bought stocks when the market's price-to-earnings ratio was below average achieved an annualized average return of 15.9% during subsequent 3-year periods. This compares to an annualized average return of 6.8% for those investors who purchased stocks when the S&P 500 Index's price-to-earnings ratio was above its historical average.

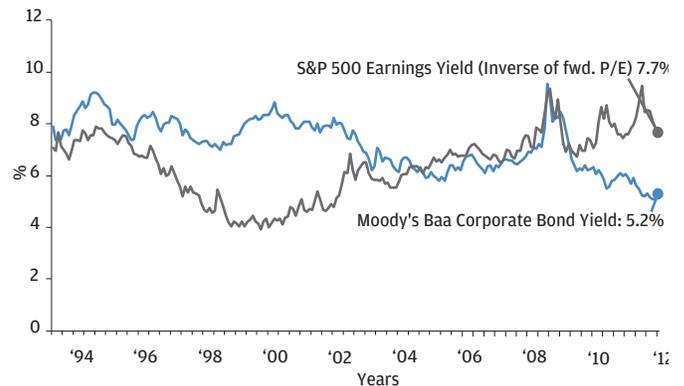
For those investors concerned that the first quarter 2012 market rally eliminated a buying opportunity, **Exhibit 8**, (on the following page) shows that stocks are still more attractive

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compared to fixed income investments, information that should be a particularly compelling call to action for long-term investors with an overweight to bonds.

Of course, behavioral finance implies that some investors will likely ignore this data, concentrate on the uncertainty in the current market and maintain their focus on capital preservation and underweight to equities. However, others may realize that their portfolios are not properly balanced to meet their long-term investment goals and take advantage of what 66 years of stock market data suggests may be an opportune time to buy stocks.

**EXHIBIT 8: STOCKS VERSUS BONDS**



Source: Standard & Poor's, Moody's, FactSet, J.P. Morgan Asset Management. Data are as of 3/31/12.

**EXHIBIT 7: BELOW AVERAGE VALUATION MEASURES**

Valuation Measure	Description	Latest	1-year ago	3-year avg.	5-year avg.	10-year avg.	15-year avg.
P/E	Price to Earnings	13.0x	13.2x	13.0x	13.1x	14.5x	16.9x
P/B	Price to Book	2.3	2.3	2.1	2.3	2.5	3.1
P/CF	Price to Cash Flow	8.9	8.8	8.4	8.7	9.9	11.1
P/S	Price to Sales	1.3	1.3	1.1	1.2	1.2	1.5
PEG	Price/Earnings to Growth	1.6	0.9	1.0	1.2	1.2	1.2
Div. Yield	Dividend Yield	2.1%	2.0%	2.2%	2.2%	2.0%	1.9%

Source: Standard & Poor's, FactSet, J.P. Morgan Asset Management. Price to Earnings is price divided by consensus analyst estimates of earnings per share for the next twelve months. Price to Book is price divided by book value per share. Data post-1992 include intangibles and are provided by Standard & Poor's. Price to Cash Flow is price divided by consensus analyst estimates of cash flow per share for the next twelve months. Price to Sales is calculated as price divided by consensus analyst estimates of sales per share for the next twelve months. PEG Ratio is calculated as NTM P/E divided by NTM earnings growth. Dividend Yield is calculated as consensus analyst estimates of dividends for the next twelve months divided by price. All consensus analyst estimates are provided by FactSet. Data are as of 3/31/12.

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