

Russell Research

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Defensive equity: Is the market mispricing risk?

Intuitively, investors might expect stocks that are less risky than other stocks – stocks we refer to as defensive stocks – to deliver lower returns than the broad market over the long term. That does not seem to have been the case, however. Among the factors that have been suggested as contributing to this apparent anomaly is the widespread use of market-relative benchmarking by mutual funds and institutional accounts. For investors who expect this defensive effect to persist, the strategy offers the possibility of a reduction in portfolio risk and a more attractive trade-off between risk and reward.

Risk should have a risk premium

It would seem to be a fairly uncontroversial assertion that those who take on risk will, in general, expect to be paid for doing so. Because the prospect of lower risk is attractive to investors, they should choose a higher risk alternative only if they expect a reward for doing so. In the absence of this expectation, they would avoid the higher-risk asset, and this would lead to a shift in the supply/demand balance. Prices would adjust until an adequate risk premium was restored. This is, for example, the main explanation given for why equities have delivered higher returns than bonds over the long term, and for why bonds have delivered higher returns than cash, and it is the main reason why we would expect that pattern to hold in the future.

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Some stocks are riskier than others

It would likewise seem to be self-evident that some stocks are riskier than others. This is the case no matter which exact definition of risk is used: volatility of stock returns, beta, idiosyncratic risk, leverage, earnings stability, etc. By any measure, not all stocks are the same.

Again, one might expect that riskier stocks would command a risk premium, and that we should observe higher returns from them over the long run than are available on the broad market.

Contrary to that expectation, however, there is a substantial body of evidence that no such risk premium exists.

Key findings from the academic research: no evidence of a risk premium for risky stocks

This body of evidence has an impressive pedigree. For example, Fama and French's 1992 paper "The Cross-Section of Expected Stock Returns" is one of the best known and most influential finance papers ever written, laying a foundation for the analysis of portfolios along the lines of large cap/small cap and value/growth that remains widely used to this day. That paper places as much emphasis, however, on the observation that beta does not explain stock returns as on the observation that size and style do.¹ The abstract² reads (in full):

Two easily measured variables, size and book-to-market equity, combine to capture the cross-sectional variation in average stock returns associated with market β , size, leverage, book-to-market equity, and earnings-price ratios. Moreover, when the tests allow for variation in β that is unrelated to size, the relation between market β and average return is flat, even when β is the only explanatory variable.

And the paper bluntly notes: "In a nutshell, market β seems to have no role in explaining the average returns on NYSE, AMEX and NASDAQ stocks for 1963–1990."

More recently, Blitz and van Vliet (2007) examined global stock returns over the 21-year period 1986–2006 and found not merely the absence of a risk premium, but a negative correlation between returns and increasing risk (in this case, they looked at both the volatility of returns and the beta.) They found that this pattern applied no matter where in the world they looked: there was a negative correlation within the U.S., within Europe, within Japan, within the emerging markets. It seems to be a remarkably robust effect.

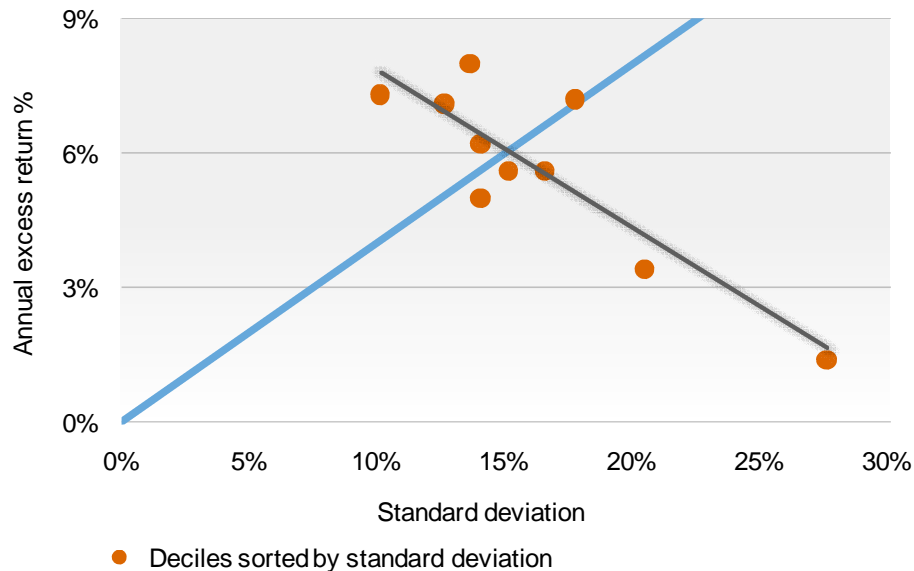
Chart 1 below summarizes these findings at the global market level. Stocks were divided into ten deciles according to their three-year trailing volatility. The chart shows the average returns that each of these ten groups went on to generate, along with the volatility of those returns. As would be expected, the stocks with highest trailing volatility tended to continue to be more volatile – but, notably, the more volatile stocks also tended to have the lowest returns.

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¹These findings hint at a point to which we will return later in this paper – that the risk effect is a question distinct from size or style.

² Fama, E., French, K. (1992) "The Cross-Section of Expected Stock Returns". *The Journal of Finance* 47(2), 427-465. Retrieved from: <http://www.jstor.org/pss/2329112>.

Chart 1: Blitz and van Vliet 1986-2006 (global) find that higher risk has been associated with lower returns

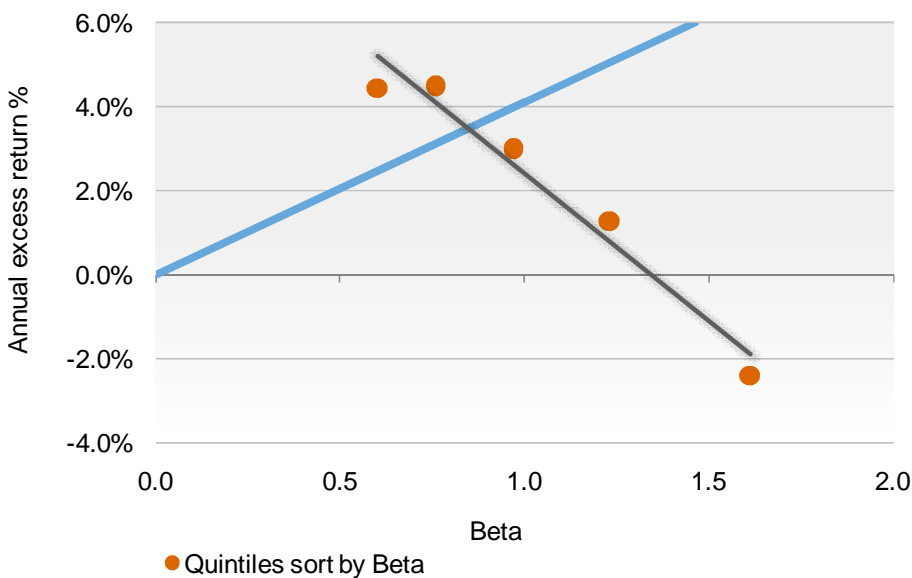


Source: Blitz & van Vliet, The Volatility Effect: Lower Risk without Lower Return, Journal of Portfolio Management, April 2007
 Research based on historical data and is not a guarantee of future results.

In another recent study, Baker, Bradley and Wurgler (2011) extended that analysis to cover the period 1968–2008. Their study focused on the U.S. stock market and found, once again, an inverse relationship between risk and return.

In chart 2 we show their results: these are based on quintiles derived from trailing beta.

Chart 2: Baker, Bradley and Wurgler 1968-2008 (U.S.) find that higher risk has been associated with lower returns



Source: Baker, Bradley & Wurgler, Benchmarks as Limits to Arbitrage: Understanding the Low Volatility Anomaly, Financial Analysts Journal Jan/Feb 2011
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The volatility factor in risk models

Another way to look at this question is to use a risk factor model. These models decompose portfolio returns into returns associated with various factors, such as size, momentum, beta and so on. In BARRA's risk model, for example, one of the factors is volatility. Since volatility is a form of risk, it might be expected that the return associated with this factor should – over the long run at least – be positive. There have certainly been some time periods in which this was the case: 1999/2000, 2004 and 2009/2010, for example. But there have also been times when exposure to this factor was a significant detractor from portfolio performance, notably 2001–2003, 2008 and – remarkably – the whole nine-year period 1982–1990. There is scant evidence of any systematic positive reward associated with this risk factor.

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A possible explanation: benchmarking

The Baker, Bradley and Wurgler paper argues that part of the explanation for the pattern of observed returns lies in the almost-universal use of market-relative benchmarking for mutual funds and institutional investment accounts. The objective to which these portfolios are managed is to beat the broad market. To the extent that risk is considered at all, it is the market-relative risk measure of tracking error. A stock with low risk may behave quite unlike the broad market and hence have a high tracking error.

In other words, even though the end investor would (as we argued at the outset) find lower-risk stocks to be more attractive (if expected returns were equal), that is not taken into account at all in the way the objectives of most institutional portfolios are set up. In this structure, there is no mechanism by which the investor's preference for lower-risk stocks would find its way into portfolio decisions. In the absence of a mechanism for translating risk into portfolio decisions, there is no reason to suppose that a risk premium should exist.

This is a compelling argument. The pattern of behavior on which it is based is widely observable, and the growth of institutional investment and of mutual funds in recent decades means that the majority of stock market investment is now carried out by professional investors whose goal is to beat the broad market – with no incentive to prefer stocks that have lower risk.

This could explain why low-risk stocks have not underperformed high-risk – or why, for example, they would underperform by less than the capital asset pricing model [see Sharpe (1964)] would suggest they should. But it is not on its own sufficient to explain why low-risk stocks have actually *out*performed high-risk. Among the other reasons that have been suggested for the observed results are money managers' confidence in their active stock-picking skills (after all, the payoff for skill – in the event of their being right – is highest on volatile stocks) or an asymmetric reward system (the benefits of being a top-performing fund are very much greater than those of being an average fund, and bonuses can be exceptionally large in the event of great success but cannot be clawed back in the face of significant underperformance).

In the absence of a mechanism for translating risk into portfolio decisions, there is no reason to suppose that a risk premium should exist.

The benchmarking argument seems to us to be the most obviously plausible of the explanations that have been put forward and, quite possibly, a contributing factor to the observed results. If benchmarking is indeed a major reason for the absence of any risk premium between stocks, then the effect may be persistent. The use of market-relative benchmarks is widespread, and that seems unlikely to change significantly in the short term.

Defensive and dynamic stock indexes as aids to analysis

To further explore this effect, we will use the recently launched Russell Stability Index series. This divides the broad market into a defensive part and a dynamic part.³ This division is based in part on trailing volatility, but also takes into account three fundamental measures of risk: the variability of earnings, the debt-to-equity ratio (leverage) and the return on assets (a proxy for the strength of the business model).

Defensive and dynamic indexes are described in more detail in Hintz (2010.)

Defensive is not a repackaging of value

The existence of a defensive index allows us to test the connection between defensive (low-risk) stocks and other stock factors, notably value. On the surface, for example, one might expect to see a connection between defensive investment and value investment, since value stocks tend to exhibit lower volatility than growth.

However, defensive turns out to be a factor distinct from value, especially when we use a definition of “defensive” that does not rely exclusively on trailing volatility. By construction, the most important component of the value/growth dimension is the price of a stock: all definitions of value investment rest on a price-to-something ratio of some sort. Price, however, is not an input to the definition of a defensive stock.

What is more, we observe within the defensive universe a number of traits that would more commonly be associated with growth stocks: a higher-than-average price-to-book ratio, for example; higher return on assets; and low leverage. A flavor of the variations in stock styles is provided in Table 1 below (data is based on index constituents as of January, 2011).

Table 1: Selected examples of stocks with various styles

	Growth stocks	Value stocks
Dynamic stocks	American Express Best Buy Dell Ford Motor	Bank of America Dow Chemical Sprint Nextel Wells Fargo
Defensive stocks	Google IBM McDonald's Nike	AT&T Bristol Myers Squibb Disney PG&E

Source: Russell Index Group; index holdings as of January 2011

Different constituents mean different performance patterns. Most notably, in the 16-month period November 2007–February 2009, the U.S. stock market fell by 42%, and value stocks did slightly worse than that, falling by a total of 44%, while defensive stocks proved more robust, falling by 35%.⁴

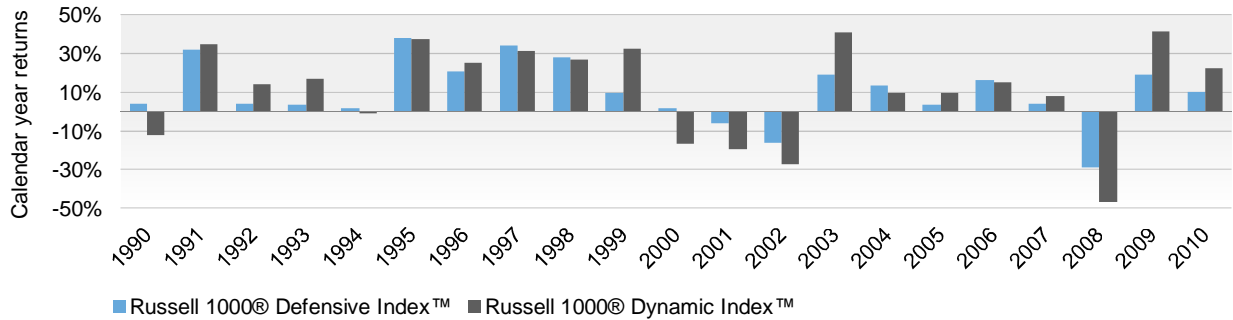
Indeed, as the return pattern below shows, the defensive index has been remarkably successful to date in mitigating the impact of falling markets: of the 21 full calendar years of research history available, the defensive index delivered negative returns in just three – and in each of these three it fell by materially less than the broad market.

Indeed, as the return pattern below shows, the defensive index has been remarkably successful to date in mitigating the impact of falling markets.

³ The methodology for separating the market into defensive and dynamic segments is broadly similar to that created by Russell for the long-established value and growth indexes, with stocks that clearly fall into one camp or the other being fully assigned to that part of the market, and others – those that lie in the middle – being partially assigned to each.

⁴ Russell 3000®, Russell 3000® Value and Russell 3000® Defensive indexes, respectively.

Chart 3: Defensive and dynamic index annual returns since 1990



Source: Russell Investments.

Indexes are unmanaged and cannot be invested in directly. Past performance is not indicative of future results.

Returns prior to June 2006 were constructed for research purposes. Historical returns were calculated using the same Russell methodology; however, application to the performance calculation may vary due to data sources, corporate actions, and the availability of historical data with respect to certain securities.

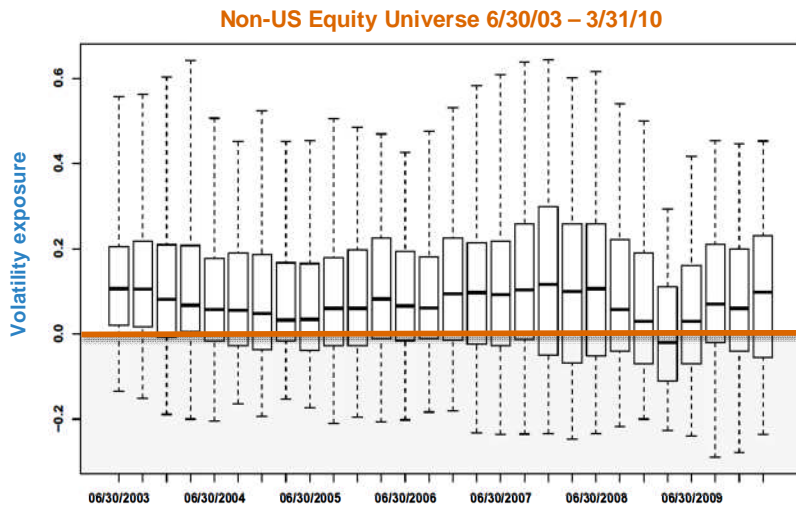
Active manager behavior: a preference for dynamic

Just as the division of the market into large cap/small cap and value/growth has offered a platform for the analysis of investment manager behavior for many years, so has the division into defensive/dynamic done the same. Hintz (2010) describes its growing importance over the past 20 years as a style factor and an explanatory variable when analyzing equity manager performance.

We described earlier the BARRA volatility factor. We show below the extent of the exposure to that factor among managers in Russell’s research database across four manager universes: U.S. large cap equity, U.S. large cap growth equity, U.S. large cap value equity and non-U.S. equity. The floating bars show the high and low, 25th and 75th percentiles, and median values of exposure to this factor within each investment manager universe, with a zero value indicating no exposure. In two of these four cases, there has been a persistent bias on the average toward the volatility factor, although with substantial variability between managers.

Charts 4–7: Variations in manager exposure to the BARRA volatility factor

Chart 4: High volatility exposure in Russell Non-US equity manager universe



Source: BARRA research as of 8/31/10

Research based on historical data and is not a guarantee of future results.

Chart 5: Volatility exposure in US manager universes: U.S. Large cap growth

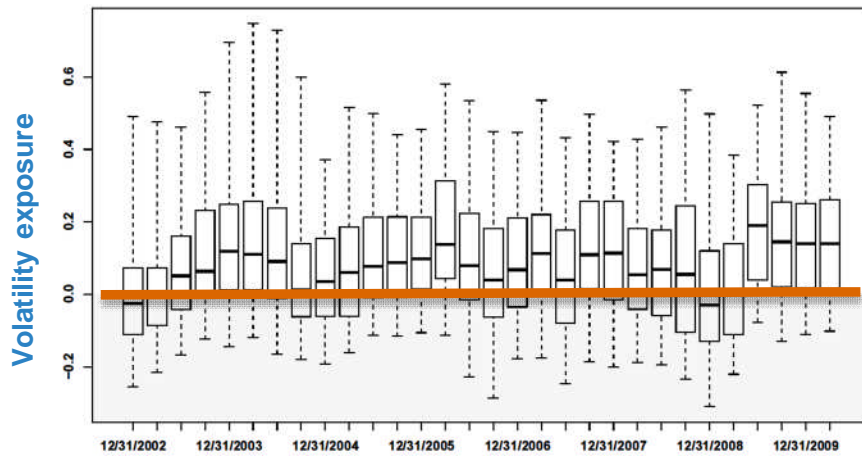


Chart 6: Volatility exposure in US manager universes: U.S. Large cap value

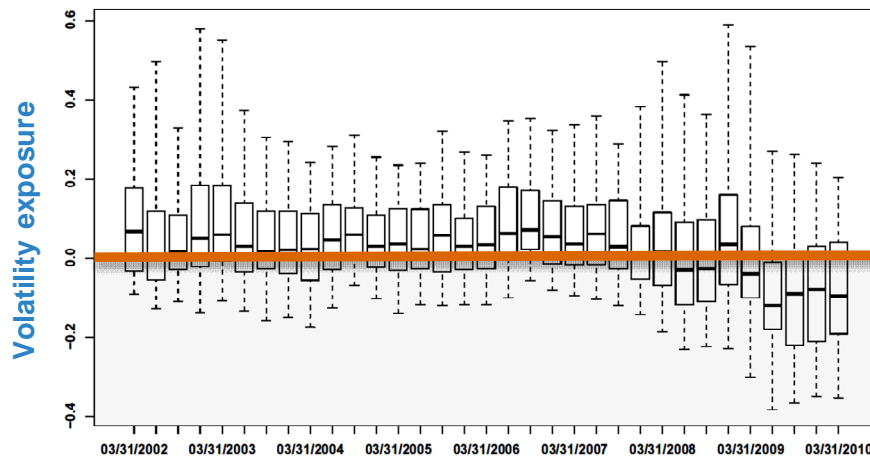
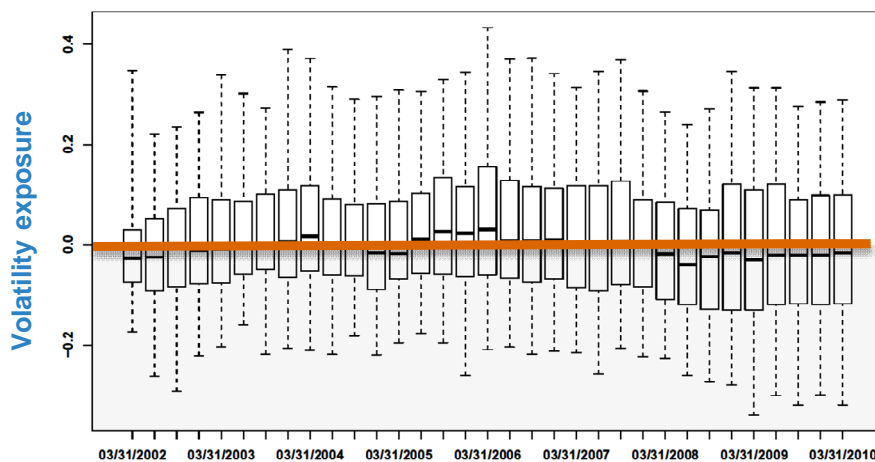


Chart 7: Volatility exposure in US manager universes: U.S. Large cap market oriented



Source: BARRA research as of 8/31/10

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This tendency to favor dynamic rather than defensive stocks translates into institutional portfolios at the aggregate level, which we observe (on the average) to share this bias.

The investor's response: time for a rethink?

All of which creates a need to reconsider the separation of asset allocation from implementation decisions, including the mandates and benchmarks that are given to investment managers and how we go about structuring equity portfolios.

There are a number of approaches that the concerned institution may take. The least disruptive is simply to be more deliberate in monitoring exposures: given what we have said so far, a minimum course of action would seem to be to check that there is no unintended bias in the equity portfolio. Clearly, active money managers may choose from time to time to tilt toward the dynamic part of the market; it is not these conscious active exposures that are the problem, but rather systematic or unintended biases such as those seen in some of the broad manager universes shown in Charts 4-7 above.

However, if the market is indeed mispricing risk, then that offers investors the prospect of creating a better asset allocation – one which can target the same expected return level with less risk.

The benefit of this can be roughly quantified as follows:

Defensive stocks have been consistently less volatile than the broad equity market. Historically, that reduction in volatility has been roughly 17%.⁵ The reduction in volatility that is achieved by favoring defensive stocks is therefore roughly equivalent to what would be achieved by reducing the allocation to equities by 17% – but the fall in expected return associated with a 17% reduction in the equity allocation is in excess of 1%.⁶ So the value of the risk reduction that is available appears to be significant: to achieve the same benefit by traditional asset allocation changes would mean giving up 1% or more in expected return.

Implementation of a defensive strategy

A defensive strategy could be put into effect by giving a money manager a defensive index as the performance benchmark, rather than a broad market index. This would have the effect of shifting the total portfolio toward a more defensive position. At the same time, the strategic policy allocation (the total fund benchmark return) would likely be adjusted to reflect this change.

There is, of course, a catch. The catch is that the benefit of this move, while real, is almost invisible within the current measurement and monitoring framework used by institutional investors. Few investors measure risk, so reducing it doesn't show up in many management reports. Within the framework of how we are accustomed to incentivizing (and monitoring) managers – and the framework of how those money managers go about performing their roles – there is no benefit to achieving lower risk. Even if investors care about risk, they are in that sense acting as if they don't.

So the same thing that makes the argument for the existence of a pricing anomaly so persuasive is that it is grounded in a practice – benchmarking – that we see every day and that makes perfect sense in the context of how institutional portfolios and mutual funds fit into the investment ecosystem. This is also the very same reason why it is difficult for investors to respond.

This tendency to favor dynamic rather than defensive stocks translates into institutional portfolios at the aggregate level, which we observe (on the average) to share this bias.

So the value of the risk reduction that is available appears to be significant: to achieve the same benefit by traditional asset allocation changes would mean giving up 1% or more in expected return.

⁵ Estimate based on figures in Hintz (2010), which cite 25-year annualized standard deviation of Russell 3000® Index and Russell 3000® Defensive Index to June 30, 2010, as 15.9% and 13.2%, respectively.

⁶ Based on Russell's strategic return assumptions and on long-term historical experience.

Consider what would happen if the equity allocation were to be tilted toward defensive stocks.

- **Risk:** By construction, this approach targets lower risk. The volatility of the equity portfolio should be lower, as should the volatility of the total portfolio return and the volatility of the surplus return.⁷ These measures are important inputs to the strategic asset allocation process, but are given little attention in the ongoing monitoring of performance.
- **Return:** Returns will vary. Relative to the broad market, there will be periods of higher return and periods of lower return. This market-relative experience is likely to be highly episodic: history suggests that the cycle could prove to be at least 2–5 years long. To the extent that this defensive tilt is treated as a tilt away from a neutral (broad market) stance, it is therefore sure to appear, at times, to have been a failure.
- **Average expected return (return assumption):** For the reasons we have outlined above, there are strong grounds for believing that the average expected return will be above-market after adjusting for risk. However, even though there is evidence that defensive stocks have in the past outperformed the broad market before adjusting for risk, to expect this experience to persist indefinitely in the future may be optimistic. In other words, we would recommend that the return expectation be set above that of the capital market line, but no higher than that of the broad equity market.

In other words, because the benefit of defensive equity lies in the lower risk that it offers, both risk and return must be taken into account in judging its effectiveness.⁸ The investor should be clear from the outset what the goals of the portfolio are, and what constitutes success (both for the strategy itself and for the manager hired to implement it, whether in an active or a passive mandate).

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Reporting: look at risk, not tracking error

As well as paying more attention to risk when monitoring performance of a defensive portfolio, investors should de-emphasize tracking error as a risk measure and focus instead on absolute risk. In other words, it is not important whether a manager's tracking error relative to the market index was 1%, 3% or 10%. Whether the volatility of the returns was less than, equal to or higher than that of the market is important, however. This would be a simple but effective change of emphasis.

Closing thoughts: will the defensive effect really persist?

In closing, we would like to return to the question of the persistence of the defensive effect. Every successful investment strategy contains the seeds of its own destruction in the sense that as more investors adopt a strategy, the rewards become diluted. So even though broad market benchmarking is entrenched and there are some grounds for believing that the effect described in this paper will persist, a case could also be made that the effect could be reduced or corrected over the next few years, a case that becomes stronger with each paper published on the topic.

The immediate impact of such a repricing would be an increase in the value of defensive stocks relative to the broad market: there would be a one-off gain for holders of those stocks. In that sense, this possibility only adds to the appeal of the defensive approach.

⁷ For a defined benefit pension plan, the surplus return is the return of the assets relative to the liabilities. The volatility of this return is more closely connected to the volatility of required contributions than the volatility of the asset return is, which makes it an important risk measure.

⁸ While it is helpful to monitor both risk and return, it is generally best to keep these separate rather than to combine them into a single risk-adjusted measure such as the Sharpe ratio or alpha. Too much useful information can be lost in the attempt to reduce multiple dimensions of success to a single composite.

Subsequent to such a repricing, however, the attractiveness of the strategy would be much reduced, as the risk/return trade-off that we have described would have been altered to one that is more in line with traditional expectations. A re-evaluation would be necessary at that point.

For that reason, the question of timing needs to be addressed. As of the date of this writing, it does not appear that defensive stocks have been repriced. While performance was (relatively) strong in 2008, it was particularly weak in 2009 and 2010. So the train does not seem to have left the station, reassuring news for those considering defensive strategies.

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