

Popular Delusions

Why we overpay for excitement (and the secret pleasure of being boring)

Dylan Grice
(44) 20 7762 5872
dylan.grice@sgcib.com

One of the most common questions we get is whether or not now is a good time to be buying quality names in the stock market. Our answer is almost always yes because we think quality is *systematically* underpriced. High risk offers high excitement, not high returns, because excitement is overvalued. Quality names are boring, and “boring” is undervalued. As our resident SG dividend fetishist Andy Laphorne says, quality isn’t just for Christmas.

■ Regular readers will be aware of the bias we have on these pages towards the so-called “quality” names in the equity market. The reason is that high risk doesn’t always equal higher return. Indeed, although higher quality stocks carry the sort of lower risk which is supposed to attract a low return, we’ve consistently found them to be higher return. Quality stocks, in other words, seems to possess that attribute most desirable to the long-term investor: systematic undervaluation. The easiest way to show this is to compare the returns of stock portfolios constructed by their market betas (see chart below). It seems compelling enough: the outperformance has persisted over a lengthy period of time after all.

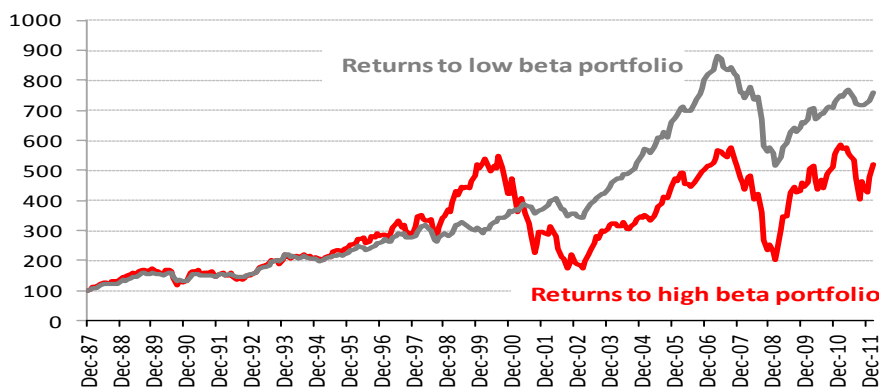
■ Yet something apparently true isn’t necessarily something actually true. Unfortunately we don’t know how persistent that anomaly is because we only have a few decades worth of data. For all we know it’s not a systematic mispricing at all, but a reflection of something artificial. Maybe it’s as ephemeral and fake as “the great moderation”.

■ So here in the office we’ve all been thinking hard about it. We’ve thought and we’ve thought, and we’ve discussed and we’ve argued ... and we still don’t know. But we have a theory. And we think Antti Ilmanen’s idea that “high risk” securities attract a “lottery ticket” premium is closer to being right than wrong. We also think that the same psychological tendency that overvalues lottery tickets *undervalues* quality stocks, as their robust business models and solid balance sheets do tend to be quite boring. So our best guess at the moment is that the mispricing of quality is indeed systematic. It reflects something permanent (our psychological hardwiring) rather than something transient (the fads of macroeconomic theory).

Global Strategy Team
Albert Edwards
(44) 20 7762 5890
albert.edwards@sgcib.com

Dylan Grice
(44) 20 7762 5872
dylan.grice@sgcib.com

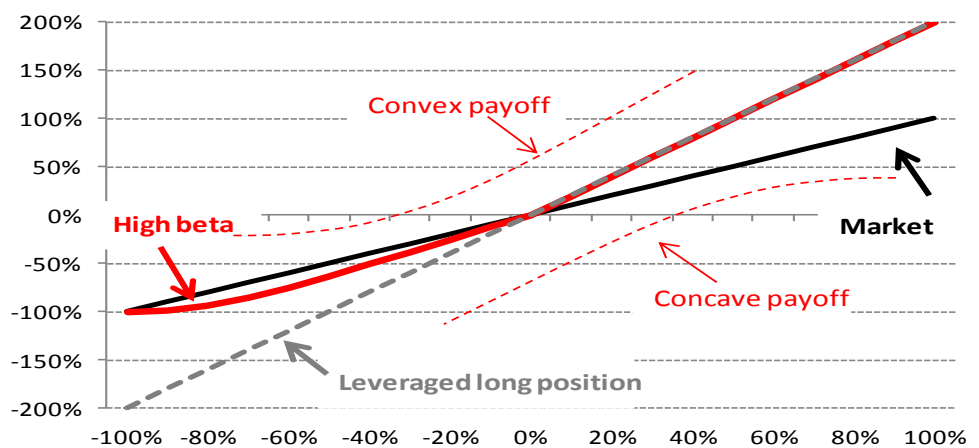
High risk equals low return: historic outperformance of low beta stocks



Source: SG Cross Asset Research

Before going through what we think though, I'm going to start with what GMO's David Cowan and Sam Wilderman think and a [brilliant paper](#) they published late last year (if you haven't read the piece already I think you should). In summary, they think the idea that high beta stocks offer a way for asset managers to simply leverage into a market rally isn't quite correct. While a leveraged long position in stocks risks a maximum potential loss in excess of 100% of equity (a 2x levered portfolio can lose 200% of equity), the maximum potential loss embedded in a long position in high beta stocks is capped at 100%. Thus, Cowan and Wilderman characterise the prospective payoff for a high beta portfolio as "leverage with protection" and having a shape which is convex to the market. The following chart compares the stylised payoff in thick red with an unlevered market portfolio, and a 2x levered portfolio.

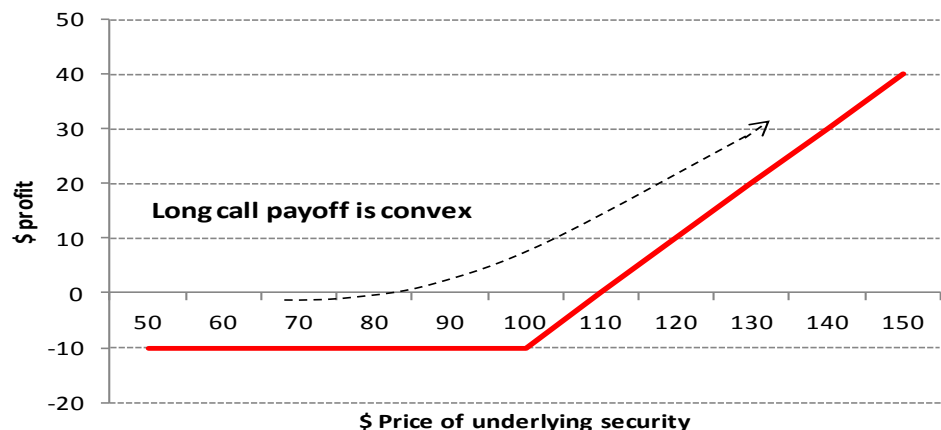
Stylised convex payoff for high beta stocks, versus leveraged long position on the market



Source: SG Cross Asset Research

The classic payoff giving protected downside and levered upside is a naked long call option. A standard text book payoff for a long call option with a strike price of \$100, costing \$10, is shown below.

Profit at expiry for long call option



Source: SG Cross Asset Research

So, having protected downside with levered upside is like being long the market *plus* being long call options on the market, with even more attractive convexity. The authors show that the relationship of monthly changes in a high beta portfolio to the market is indeed convex, as shown in this stylised example.

Convexity of high beta portfolio to the market

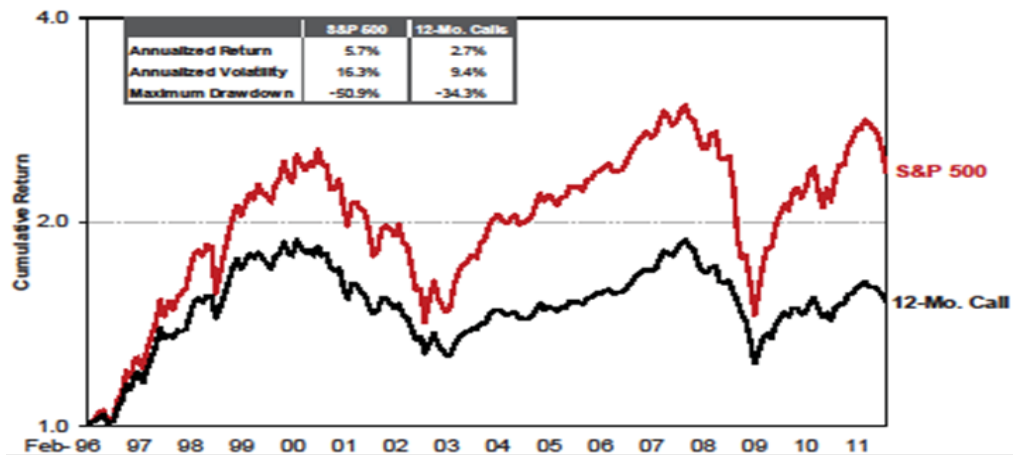


Source: SG Cross Asset Research

But of course, who doesn't want upside without downside? It's a very attractive prospect that can make buying call options expensive. A portfolio of high beta stocks implicitly embedded with such convex optionality should therefore come bundled with that same cost too. The following chart shows what sort of cost should be expected. It's taken from GMO's piece (with permission) and shows that buying call options on the market isn't generally a profitable long-term strategy – or, at least, not relative to owning the market outright. Convexity, in other words, appears to be overpriced.

Thus, a strategy that combines buying the market with buying calls on it should yield a return which reflects that performance drag. Cowan and Wilderman argue this is precisely what happens with a high beta portfolio.

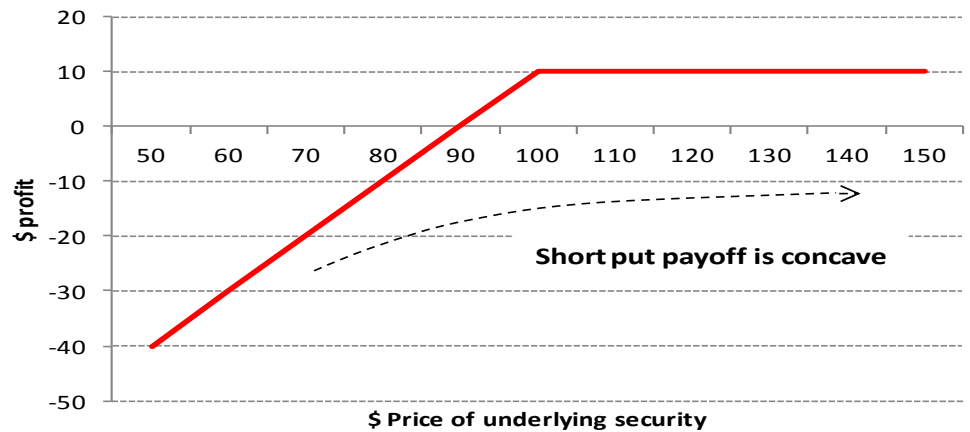
Performance of call buying strategy versus the market



Source: Cowan and Wilderman

But Cowan and Wilderman then take the analysis a step further. While convex payoffs which limit downside yet capture upside might be overvalued, the opposite is true of concave strategies, which instead limit upside in return for accepting downside. The simplest concave strategy is that of selling put options. The next chart shows another text book example, a returns profile for selling a \$100 strike put for \$10.

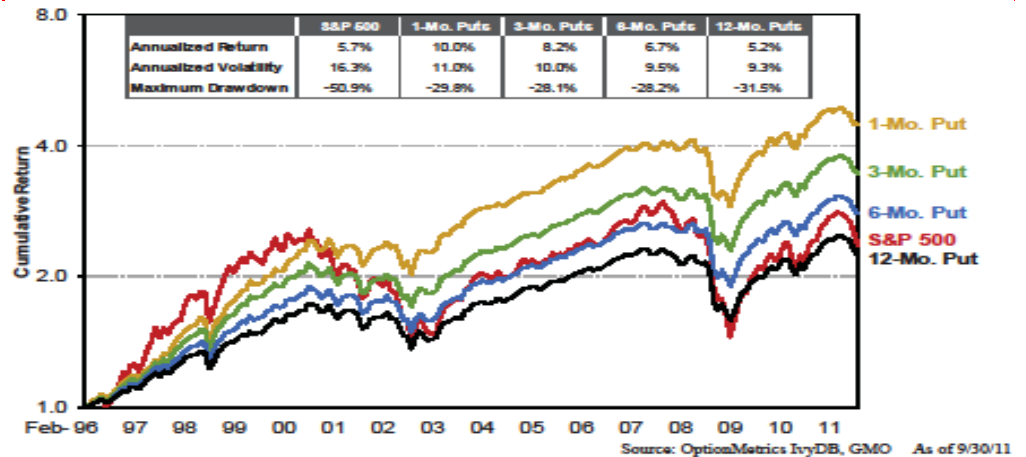
Profit at expiry for shorting a put



Source: Cowan and Wilderman

And since this is such a psychologically unattractive prospect, it tends to be offered only at a very high price. Such a high price, in fact, that as the following chart shows, naked put selling is a very good way to earn risk premium.

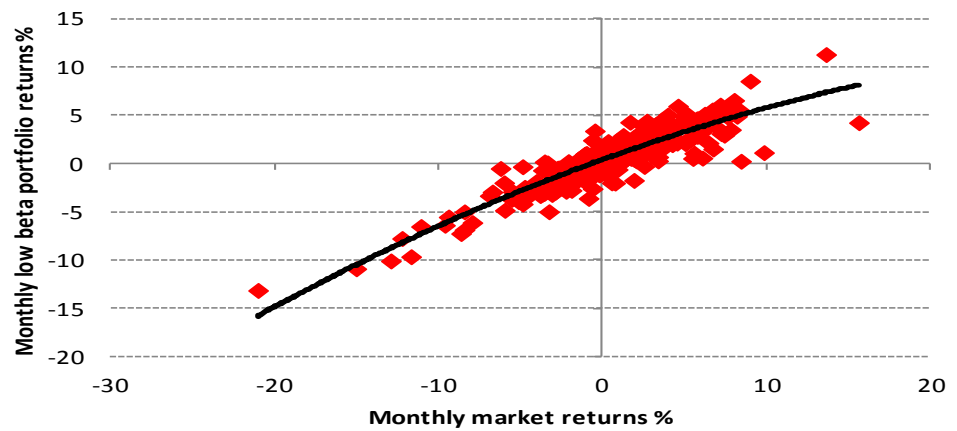
Performance of put selling strategy versus the market



Source: Cowan and Wilderman

Since low beta portfolios are concave, they resemble exactly such a strategy. In effect, low beta portfolios have short puts embedded in them, with their owners taking as much downside risk as the market, but with a capped upside. So the returns of low beta stocks therefore embed the attractive returns of put option writing.

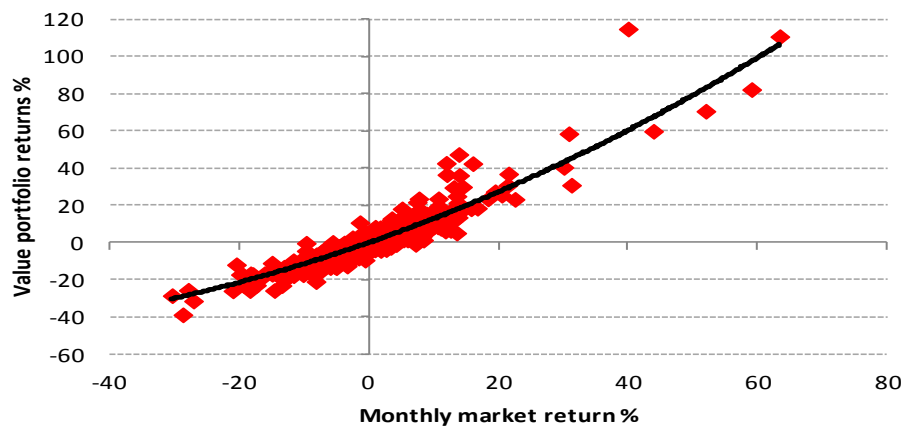
Low beta portfolios are concave to the market



Source: SG Cross Asset Research

Also, a tendency towards overpaying for convexity doesn't mean that all convex payoffs are necessarily overvalued. If you think about it, buying assets with limited downside but plenty of upside is a perfect description of value investing, where a margin of safety is the primary mechanism for limiting downside risk. The following chart shows that a standard value portfolio consisting of the lowest decile price-to-book value stocks is also convex to the market. Yet by construction this portfolio (and its convexity) are *underpriced*.

Cheap/Value portfolios (defined by low price to book ratios) are convex too (1929-2011)



Source: SG Cross Asset Research

Nevertheless, the idea that, all else equal, convexity will be overpriced relative to concavity has great intuitive appeal to me because it fits with what we know about the psychology of circumstantial change. As embodied in prospect theory, losses have roughly twice the psychological impact of gains. We're hardwired to overpay for loss mitigation.

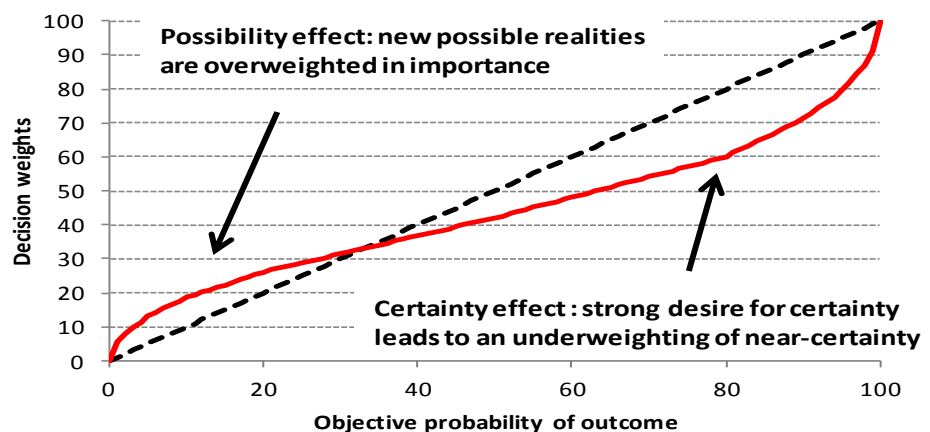
The psychology of change gives a useful lens with which to examine the subject and is touched on by Antti Ilmanen in his brilliant book *Expected Returns*. He said that, at the more extreme end of the spectrum, high risk securities might be overvalued because they contain an embedded "lottery ticket" not dissimilar to the call option embedded in a high beta portfolio.

Here it's important to understand that, at the extremes, small changes in likelihood have disproportionate effects. Imagine, for example, that you have a close friend or family member gravely ill in hospital. If the doctor tells you there's a treatment that will improve the chances of survival by 10%, what value should be placed on that treatment?

The answer is that it depends. Suppose the chances of survival without the treatment are 50% so that the treatment improves that chance to 60%. This is a welcome and valuable improvement. But now imagine a second case, where the chances of survival are exactly nil. From here, the treatment radically transforms the situation. Without it the patient will certainly die, but with it comes a different prospect altogether: the possibility of survival. With it now comes hope.

So even though the incremental change in probabilities is identical in each case, the significance of each change is very different. In the first case there were two possible outcomes – a good one and bad one – regardless of whether or not the treatment was taken. So in the first case the situation cannot be transformed by the treatment. But in the second case, the treatment adds a whole new realm of possibilities. It brings light to a situation which had hitherto been only dark and so has a much bigger weight in our decision making.

Objective probability and subjective importance



Source: Kahneman (2011), SG Cross Asset Research

This is known as the “possibility effect” and is well illustrated in the chart above, which I based on a table in Daniel Kahneman’s beautiful book *Thinking, fast and slow*. It shows that, according to the laboratory experiments conducted with Amos Tversky, the psychological importance (what Kahneman and Tversky called “decision weights”) associated with incremental probability changes depends on the starting point. If you begin at zero and run your eye from left to right across the horizontal axis, you’ll see that going from a probability of 0% to 10% has the ‘decision weight’ on the vertical axis go from 0 to 18. But as you continue right, a change in probabilities from 10% to 20% sees the decision weight rise only from 18 to 26. Thus, the first 10% improvement has more than *twice* the psychological importance of the second 10%.

The possibility effect explains why people over-estimate the likelihood of extreme events *after* they’ve happened. Prior to September 11th the idea of terrorists hijacking planes to such devastating effect was unthinkable. It was 0% probability in most people’s minds. But then it became all too possible. This new perceived possibility created a famously outsized effect as passenger miles on US airlines fell by 20% in some cases and travellers switched to their cars.

Gerd Gigerenzer estimated that in the following year there were nearly 1,600 more road fatalities than there otherwise would have been as a consequence.

The possibility effect helps explain why sports fixtures between unevenly matched competitors can be so popular too. It's not for the quality of the sporting contest (which is usually completely one sided) but for the *possibility* of a giant killing. It helps explain why people overpay for lottery tickets – playing the lottery opens up a potentially transformative positive life event.

But for our purposes if high beta/low quality stocks come with the possibility of drastically outsized triple-digit returns over a very short period of time, it seems plausible that investors overpay for them too. The stocks with the highest betas today are things like banks, steel companies, miners, airlines and autos, none of which have shown themselves to be great businesses over any length of time. Yet the bull case for each implies some spectacular upside, especially for those who “*get the timing right*” ...

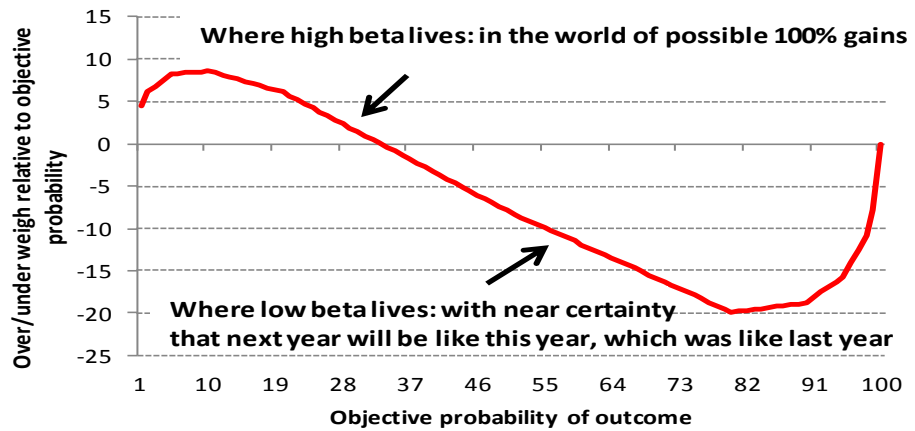
The idea can be taken a step further because, as the above chart also shows, moving towards complete certainty (i.e. 100% probability) exerts a similarly disproportionate influence. Think back to the example of a sick relative for whom your doctor offers a 10% improvement in his survival chances. Now though, suppose that his starting chances of survival are 90%, which means he's probably going to be fine ... *probably* ... but is *probably* reassuring enough in a situation like this? We want to know for *certain* that he'll be OK!

As the chart shows, according to Kahneman, people value that last 10% – the one that eliminates all risk – and this sees the decision weight rise from around 71 to 100, a 29 point increase. Compare that to the mere 6 point change as we go from 50% to 60% and the last 10% increase is nearly *five times* as valuable. This is known as the “certainty effect” and is even more powerful than the possibility effect.

The consequence of the certainty effect is that *near-certain* outcomes are undervalued. A common finding in experiments is that people prefer, say, a guaranteed \$90 to a 95% chance of \$100. In other words, a near-certain bet correctly valued \$95 will tend to be worth significantly less to most people. We undervalue near-certain outcomes. Yet this is exactly the world in which low beta/high quality stocks live. Cast your eyes down a screen of low beta stocks and you'll find yourself looking at food retailers, tobacco companies and regulated utilities. Forget the possibility of outsized returns in a few months. Last year was pretty much the same as the one before, and this year will probably be much the same as next ... *probably* ...

The next chart shows the difference between the objective probabilities and the decision weights from the previous chart. It shows the over-valuation of possibilities and the undervaluation of near-certainties. And if high beta/low quality stocks live in the world of possible triple-digit returns, attracting lottery ticket overvaluations, low beta/high quality stocks live in the world of near certainty, attracting the boredom discount.

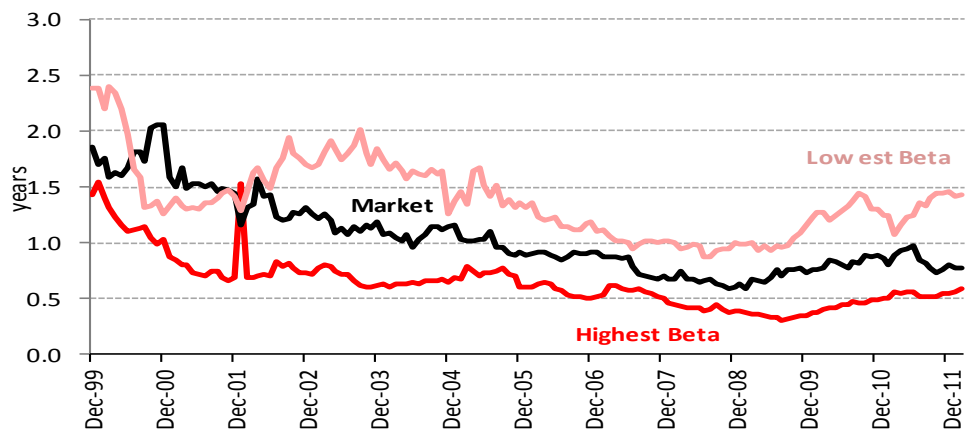
Objective probability and subjective importance



Source: SG Cross Asset Research

Of course, for this thinking to be correct we, like the guys at GMO, are making the assumption that the lower quality elements of the stock market are effectively more speculative. They are vehicles for trading with, not investing in. If that's close to the mark, therefore, we'd expect to see more activity in the high beta/lower quality names. The following chart shows exactly such a tendency, with estimated holding period for low beta (fifth quintile) portfolios to be almost three times higher than for high beta (top quintile) ones.

Junk stocks seem to have a longer holding period (years)



Source: SG Cross Asset Research

The most common question we get when we recommend quality is whether or not its past outperformance has been simply because it started out cheap, or because there's something more going on. The possibility effect creates excitement. The near-certainty effect is a slightly anxious boredom. And we're hardwired to overvalue excitement and undervalue boredom. So I think it's the latter – because there is something more going on.

So we still have a bias towards quality in the stock market, and we think you should too.

APPENDIX

ANALYST CERTIFICATION

The following named research analyst(s) hereby certifies or certify that (i) the views expressed in the research report accurately reflect his or her or their personal views about any and all of the subject securities or issuers and (ii) no part of his or her or their compensation was, is, or will be related, directly or indirectly, to the specific recommendations or views expressed in this report: Dylan Grice

MSCI DISCLAIMER: The MSCI sourced information is the exclusive property of Morgan Stanley Capital International Inc. (MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, disseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI, Morgan Stanley Capital International and the MSCI indexes are service marks of MSCI and its affiliates or such similar language as may be provided by or approved in advance by MSCI.

FOR DISCLOSURES PERTAINING TO COMPENDIUM REPORTS OR RECOMMENDATIONS OR ESTIMATES MADE ON SECURITIES OTHER THAN THE PRIMARY SUBJECT OF THIS RESEARCH REPORT, PLEASE VISIT OUR GLOBAL RESEARCH DISCLOSURE WEBSITE AT <http://www.sgresearch.com/compliance.rha> or call +1 (212).278.6000 in the U.S.

The analyst(s) responsible for preparing this report receive compensation that is based on various factors including SG's total revenues, a portion of which are generated by investment banking activities.

Non-U.S. Analyst Disclosure: The name(s) of any non-U.S. analysts who contributed to this report and their SG legal entity are listed below. U.S. analysts are employed by SG Americas Securities LLC. The non-U.S. analysts are not registered/qualified with FINRA, may not be associated persons of SGAS and may not be subject to the FINRA restrictions on communications with a subject company, public appearances and trading securities held in the research analyst(s)' account(s): Dylan Grice, Société Générale London, Albert Edwards, Société Générale London

IMPORTANT DISCLAIMER: The information herein is not intended to be an offer to buy or sell, or a solicitation of an offer to buy or sell, any securities and has been obtained from, or is based upon, sources believed to be reliable but is not guaranteed as to accuracy or completeness. Material contained in this report satisfies the regulatory provisions concerning independent investment research as defined in MiFID. SG does, from time to time, deal, trade in, profit from, hold, act as market-makers or advisers, brokers or bankers in relation to the securities, or derivatives thereof, of persons, firms or entities mentioned in this document and may be represented on the board of such persons, firms or entities. SG does, from time to time, act as a principal trader in equities or debt securities that may be referred to in this report and may hold equity or debt securities positions. Employees of SG, or individuals connected to them, may from time to time have a position in or hold any of the investments or related investments mentioned in this document. SG is under no obligation to disclose or take account of this document when advising or dealing with or on behalf of customers. The views of SG reflected in this document may change without notice. In addition, SG may issue other reports that are inconsistent with, and reach different conclusions from, the information presented in this report and is under no obligation to ensure that such other reports are brought to the attention of any recipient of this report. To the maximum extent possible at law, SG does not accept any liability whatsoever arising from the use of the material or information contained herein. This research document is not intended for use by or targeted to retail customers. Should a retail customer obtain a copy of this report he/she should not base his/her investment decisions solely on the basis of this document and must seek independent financial advice.

The financial instrument discussed in this report may not be suitable for all investors and investors must make their own informed decisions and seek their own advice regarding the appropriateness of investing in financial instruments or implementing strategies discussed herein. The value of securities and financial instruments is subject to currency exchange rate fluctuation that may have a positive or negative effect on the price of such securities or financial instruments, and investors in securities such as ADRs effectively assume this risk. SG does not provide any tax advice. Past performance is not necessarily a guide to future performance. Estimates of future performance are based on assumptions that may not be realized. Investments in general, and derivatives in particular, involve numerous risks, including, among others, market, counterparty default and liquidity risk. Trading in options involves additional risks and is not suitable for all investors. An option may become worthless by its expiration date, as it is a depreciating asset. Option ownership could result in significant loss or gain, especially for options of unhedged positions. Prior to buying or selling an option, investors must review the "Characteristics and Risks of Standardized Options" at <http://www.optionsclearing.com/publications/risks/riskchap.1.jsp>.

Notice to French Investors: This publication is issued in France by or through Société Générale ("SG") which is authorised and supervised by the Autorité de Contrôle Prudentiel and regulated by the Autorité des Marchés Financiers.

Notice to U.K. Investors: This publication is issued in the United Kingdom by or through Société Générale ("SG"), London Branch. Société Générale is a French credit institution (bank) authorised and supervised by the Autorité de Contrôle Prudentiel (the French Prudential Control Authority). Société Générale is subject to limited regulation by the Financial Services Authority ("FSA") in the U.K. Details of the extent of SG's regulation by the FSA are available from SG on request. The information and any advice contained herein is directed only at, and made available only to, professional clients and eligible counterparties (as defined in the FSA rules) and should not be relied upon by any other person or party.

Notice to Polish Investors: this document has been issued in Poland by Societe Generale S.A. Oddzial w Polsce ("the Branch") with its registered office in Warsaw (Poland) at 111 Marszałkowska St. The Branch is supervised by the Polish Financial Supervision Authority and the French "Autorité de Contrôle Prudentiel". This report is addressed to financial institutions only, as defined in the Act on trading in financial instruments. The Branch certifies that this document has been elaborated with due diligence and care.

Notice to U.S. Investors: For purposes of SEC Rule 15a-6, SG Americas Securities LLC ("SGAS") takes responsibility for this research report. This report is intended for institutional investors only. Any U.S. person wishing to discuss this report or effect transactions in any security discussed herein should do so with or through SGAS, a broker-dealer registered with the SEC and a member of FINRA, with its registered address at 1221 Avenue of the Americas, New York, NY 10020. (212)-278-6000.

Notice to Canadian Investors: This document is for information purposes only and is intended for use by Permitted Clients, as defined under National Instrument 31-103, Accredited Investors, as defined under National Instrument 45-106, Accredited Counterparties as defined under the Derivatives Act (Québec) and "Qualified Parties" as defined under the ASC, BCSC, SFSC and NBSC Orders

Notice to Singapore Investors: This document is provided in Singapore by or through Société Générale ("SG"), Singapore Branch and is provided only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289. Recipients of this document are to contact Société Générale, Singapore Branch in respect of any matters arising from, or in connection with, the document. If you are an accredited investor or expert investor, please be informed that in SG's dealings with you, SG is relying on the following exemptions to the Financial Advisers Act, Cap. 110 ("FAA"): (1) the exemption in Regulation 33 of the Financial Advisers Regulations ("FAR"), which exempts SG from complying with Section 25 of the FAA on disclosure of product information to clients; (2) the exemption set out in Regulation 34 of the FAR, which exempts SG from complying with Section 27 of the FAA on recommendations; and (3) the exemption set out in Regulation 35 of the FAR, which exempts SG from complying with Section 36 of the FAA on disclosure of certain interests in securities.

Notice to Hong Kong Investors: This report is distributed in Hong Kong by Société Générale, Hong Kong Branch which is licensed by the Securities and Futures Commission of Hong Kong under the Securities and Futures Ordinance (Chapter 571 of the Laws of Hong Kong) ("SFO"). This document does not constitute a solicitation or an offer of securities or an invitation to the public within the meaning of the SFO. This report is to be circulated only to "professional investors" as defined in the SFO.

Notice to Japanese Investors: This publication is distributed in Japan by Societe Generale Securities (North Pacific) Ltd., Tokyo Branch, which is regulated by the Financial Services Agency of Japan. This document is intended only for the Specified Investors, as defined by the Financial Instruments and Exchange Law in Japan and only for those people to whom it is sent directly by Societe Generale Securities (North Pacific) Ltd., Tokyo Branch, and under no circumstances should it be forwarded to any third party. The products mentioned in this report may not be eligible for sale in Japan and they may not be suitable for all types of investors.

Notice to Australian Investors: This document is issued in Australia by Société Générale (ABN 71 092 516 286) ("SG"). SG is regulated by APRA and ASIC and holds an AFSL no. 236651 issued under the Corporations Act 2001 (Cth) ("Act"). The information contained in this document is only directed to recipients who are wholesale clients as defined under the Act.

<http://www.sgcib.com>. Copyright: The Société Générale Group 2012. All rights reserved.

This publication may not be reproduced or redistributed in whole in part without the prior consent of SG or its affiliates.