

# Risk

*matters*

Edition 4

## Volatility: Plotting a course

08

Ensuring investment  
**risk** matches your  
clients' needs

12

Staying on track  
– Consumers, risk  
and investments

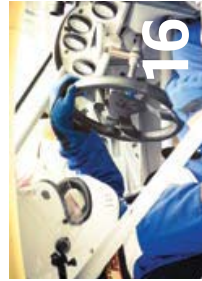
16

Taking Smart Risk  
– Constructing an  
Asset Allocation

22

Biographies  
About the  
contributors

# Contents



## Welcome

We are now onto the fourth edition of *Risk matters* magazine, and we would like to thank you our readers for making this publication a success. You can now read past and present issues at [www.riskmattersonline.co.uk](http://www.riskmattersonline.co.uk). As part of our efforts to constantly improve how we communicate with our clients we would love to hear some feedback from you. So please don't hesitate to get in touch with us at [investor.services@allianzgi.co.uk](mailto:investor.services@allianzgi.co.uk).

A key theme in this month's issue is understanding how risk affects us on a psychological level. In the ever-advancing area of behavioural finance it seems we can learn a lot about how we should invest, and some of these ideas are covered here. It strikes me that by understanding how we as individuals perceive risk we can choose better investment propositions that are able to help us all reach our life goals, with an investment journey that is suited to our needs. We at Allianz Global Investors anticipate that behavioural finance will become an increasingly important part of investing, and hope to help you learn more about it through this publication and others.

I hope you enjoy the read.

**Nick Smith**  
Managing Director  
and Head of Retail Sales for  
Europe excluding Germany

**Allianz**  
Global Investors

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## 04 VOLATILITY: PLOTTING A COURSE

- 04 Two scenarios
- 06 Benefits
- 06 How to achieve more consistent returns

## 08 ENSURING INVESTMENT RISK MATCHES YOUR CLIENTS' NEEDS

- 10 Contextualising risk
- 10 Constructing risk rated solutions
- 11 Achieving compliant recommendations
- 11 The role of the adviser

## 12 STAYING ON TRACK – CONSUMERS, RISK AND INVESTMENTS

- 14 Money in the bank
- 14 Residential property
- 14 Timing
- 14 The Binary approach
- 14 The nature of diversification
- 14 Communication
- 14 Wealth management or financial planning
- 15 What is risk anyway?

## 16 TAKING SMART RISK – CONSTRUCTING AN ASSET ALLOCATION

- 18 Strategic Asset Allocation (SAA) – Taking Smart Risk...
- 20 Understand. Act.

## 22 BIOGRAPHIES & DISCLAIMER

- 22 Biographies
- 23 Disclaimer

# Volatility: Plotting a course

“... it is not only returns that matter but their path; thus applying a volatility-constrained approach to investing is likely to improve your chances of staying invested, and over the long term, your returns.”



**Nick Smith** is Managing Director and Head of Retail Sales for Northern Europe excluding Germany

For all investors a key question when constructing a portfolio is whether we try to achieve the maximum return, or whether we try to achieve the maximum return at an acceptable level of risk. The latter of these two scenarios is now becoming the prevalent view in the asset management industry – and with just cause. Research over the last 10 years has taught us that as investors we are often irrational. History shows us that if we buy equities and hold them over the long run we stand a good chance of being well rewarded. However, we cannot cope easily with the volatility of this

investment, particularly on the downside. This volatility causes us to lose our composure, move to cash and erode our returns. It is therefore clear that it is not only returns that matter but their path; thus applying a volatility-constrained approach to investing is likely to improve your chances of staying invested, and over the long term, your returns.

## Two scenarios

In order to understand the impact of the path of returns we can look at two similar investors who are both looking for returns of 4% p.a. (per

annum) from their £50,000 investment. Investor A achieves this return by using a well-diversified portfolio in order to consistently deliver 4% p.a. throughout the 18-year life of their investment. Investor A is well rewarded, with their £50,000 turning into £101,290 (see figure 1).

The second investor uses a much less diversified portfolio, and therefore suffers from greater volatility; this would impact on their path of returns and, perhaps, their behaviour. We know that we are often irrational, and given this we could assume that investor B

might not be able to cope with the volatility of their returns. We might expect them to act in a more human way. Therefore in their less diversified portfolio investor B loses 4% in year 1; due to this loss they move their portfolio to cash, therefore getting 0% in year 2; after a year on the side-lines they decide to reinvest in year 3 as the market rises, gaining 16%. This would therefore achieve returns of -4%, 0% and then 16%, again a return of 4% p.a. (see figure 2).

Due to investor B losing their composure and disinvesting in 1 year out of 3 they have diminished their returns, earning £5936 less

than investor A, despite having the same annualised return; this is over 10% of their initial investment (see figure 3).

While these are hypothetical examples, we can learn one key lesson from this path of returns. Given usual behaviour patterns, which is that many investors are unable to cope with high levels of volatility and will divest, the volatility of returns can damage the long-term earning potential of the investment even more. In these investment paths we have also failed to take into account the effect of inflation, taxes and dealing charges. The

Figure 1: Investor A



Figure 2: Investor B

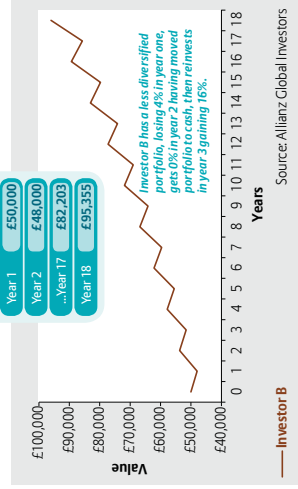
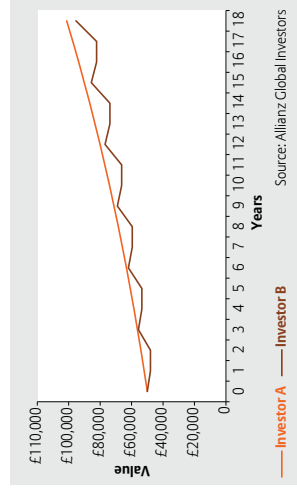


Figure 3: Investors A and B



These hypothetical examples are for illustration only and do not represent any performance of an actual investment.

effect of all three of these factors could be much greater on investor B than investor A, making the difference between the two portfolios even greater.

**Benefits**

The benefits of a volatility-targeted approach are threefold. Firstly, from a purely investment perspective if you are able to deliver more consistent returns over the long term, and avoid significant drawdowns, due to Siegel's paradox\* you are able to deliver greater returns.

Secondly, if we look at the behavioural biases that we know exist, we can see that investors are likely to behave more like investor B when faced by volatility. Therefore, if we are able to deliver a smoother ride which is able to meet expectations which are clear from the outset, investors are more likely to keep their composure. If we are able to keep our composure and remain invested, we will maintain some risk in the portfolio, allowing us to potentially deliver better long-term returns.

For those investors who have a regulatory responsibility, it makes sense to apply a volatility-targeted approach. In the UK, for example, the regulator has specified that:

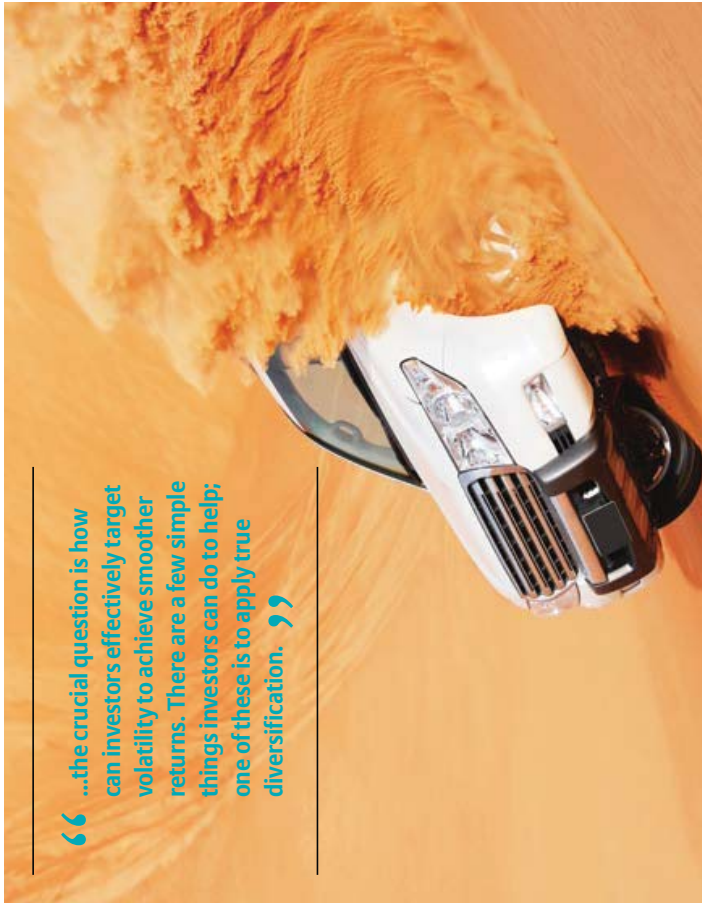
*"Where a firm creates or uses risk-rated portfolios as part of its CIP (Centralised Investment Proposition), it must ensure the portfolios align accurately with the risk descriptions and outputs from any risk profiling tool it employs."*

The above indicates that where a client's risk tolerance is established it is crucial to invest in a portfolio that adheres to this risk level. By targeting this you can ensure that an investor's risk tolerance and their portfolios are aligned.

**How to achieve more consistent returns**

Finally, the crucial question is how can investors effectively target volatility to achieve smoother returns. There are a few simple things investors can do to help, one of these is to apply true diversification. In this edition of Risk matters Wolfgang Mader talks about how to create a robust strategic asset allocation. We feel that despite some problems when correlations break down such as in 2008, diversification still remains the main driver in maintaining a consistent level of volatility in a portfolio. While this is no guarantee of returns, a well-diversified portfolio which is able to adhere to the risk tolerances of the investor is a vital tool in generating good

“...the crucial question is how investors can effectively target volatility to achieve smoother returns. There are a few simple things investors can do to help; one of these is to apply true diversification.”



longer-term returns. Investors also need to think harder about how they allocate between asset classes as markets move, and how they rebalance their portfolios. By using an active asset allocation correctly, investors should be able to smooth out some volatility, by capturing upside exposure and reducing downside exposure.

1. FSA: Assessing suitability: Replacement business and centralised investment propositions. April 2012. Chapter 4.11.

**Siegel's Paradox**

Siegel's paradox states that if a fixed fraction of a given amount of money is lost and then the same fraction of the remaining amount is gained, the result is less than the original amount. For example if an investor has £10,000 and loses 10%, and then gains 20% he has made £10,800 overall. Another investor has £10,000 and makes 10% with no losses. The different results are reflected below.

Investor 1: £10,000 - £1,000 = £9,000 + £1,800 = £10,800

Investor 2: £10,000 + £1,000 = £11,000

The difference between these two returns is Siegel's paradox.

# Ensuring investment risk matches your clients' needs

Risk is a difficult, multifaceted topic and advisers have a vital role in explaining it to their clients, says Bruce Moss, eValue's Strategy Director



**Bruce Moss** is the founder and strategy director of eValue, one of the UK's leading providers of analysis, forecasting and planning solutions.

**F**ew people like to think about risk. We live in an uncertain world, and risk is everywhere. Even lying in bed with the duvet over your head does not eliminate all risk – the house could go up in flames or a meteor could hit the building! So to get us through the day, what most of us do is think about something else. Risk is put to the back of our minds, and if we do think about it we tend to be eternal optimists. It won't happen to me!

There is another alternative, which is to understand and manage risks. Most well-run companies adopt this approach. Risk management involves identifying possible risks, quantifying their impact, if things go wrong, adopting measures to reduce risk exposures,

and where necessary putting in place contingency plans – how to get by if the worst should happen. Whilst detailed risk management and contingency plans of the sort undertaken by companies would be excessive for ordinary investors, there are some simple ideas which should be adopted. The first step for a company is to understand what are the key business functions that would severely affect its profits, or even its survival, if something were to go wrong. For retail investors this translates to understanding their financial goals and priorities, and the impact of risk on the potential outcomes – most obviously inflation and poor investment returns. Advisers have a key role here and, in the new post-RDR (Retail Distribution Review) world, it is an excellent opportunity to demonstrate the value of advice. ▶

### Contextualising risk

When considering risk, it is important to understand its impact on future financial plans and objectives. Typical financial objectives are:

- Retirement with an income goal normally expressed as a percentage of current earnings at an anticipated retirement date;
- The repayment of a home loan by a specified age;
- Funding school fees;
- Capital growth or, at least, capital preservation in real terms; and
- Income generation from capital.

Whilst, this list is not exhaustive, other objectives can normally be described as a capital sum or income stream at a future date.

For a retail investor, risk needs to be translated into the impact on these goals. For example, what is the risk of not achieving the desired retirement income at the specified retirement age, what might a reasonable worst case shortfall be in the home loan repayment? These risks are time-dependent and in the case of retirement income dependent on the cost of buying an annuity at some date in the future. Stochastic forecasting uniquely offers a way to quantify these risks, and the chances of their occurrence. The chances of achieving a goal can be easily assessed, together with the likelihood and size of potential shortfalls.

This approach for advisers to discuss risk with clients may seem inconsistent with the use of a psychometric risk questionnaire. It is not. The aim is to put the vague concept of risk in context. This is precisely what the Financial Services Authority ("FSA") intended in its March 2011 guidance on risk profiling and investment suitability. Done well, a discussion of risk, and how it can be managed, can enhance a client's perception of the value of financial advice.

Whilst risk questionnaires are important and very useful, their purpose is simply to divide the population into "risk buckets". There is no absolute linkage between a risk profile and an

investment strategy or asset allocation to which it is mapped. The process is to divide up a sensible spectrum of asset allocations, from very cautious to speculative. These asset allocations are to a considerable extent illustrative, and there is no guarantee that they are suitable to meet clients' differing objectives. To take account of clients' goals, the asset allocations need to be term-dependent. A moderately cautious investor will have a very different asset allocation if his goal is five years away rather than 25 years away.

### Constructing risk rated solutions

The FSA, when it published its guidance in March 2011, focused a lot of attention on the construction and use of risk questionnaires (one questionnaire in widespread use at the time had to be withdrawn rapidly due to serious flaws in its construction). However, there was little guidance on how to ensure that investment recommendations are appropriate, and match a client's attitude to risk. The FSA did stress very clearly that it was vital for investment recommendations to be "suitable", but sadly offered no help on how to achieve this. However, there were some useful pointers, for example the FSA said,

*"Even where the risk profile of the customer is correctly assessed, the product or portfolio (and underlying asset-allocation) does not always match this profile. This can be due to a failure to select investments that match the risk a customer is willing and able to take or a failure to take account of all aspects of a customer's investment objectives and financial situation."*

The FSA also made it clear that:

*"(Adviser) Firms remain responsible for assessing suitability, including assessing the risk a customer is willing and able to take, even when using tools. Tool providers have a role to provide clear supporting information to firms that will use the tools, to help them use them as designed."*

Fund risk ratings can provide some help to advisers with the selection of suitable investment solutions for their clients.

Nevertheless there are considerable differences in the methodology used in these ratings.

The most ubiquitous risk rating is the CSER European standard. This uses up to five years of historical data and, in theory, puts funds into seven risk categories. The methodology has been heavily criticised for compressing the risk classification into a few central bands, which does not adequately enable investors to distinguish between different funds. Furthermore, because the risk rating is based on historical data, it is not stable. It has been argued that this undermines one of CSER's key objectives, which is that the indicator should be reasonably robust over time in differing market conditions. This failing will be true of any rating system based on historical data, although it can be ameliorated to some extent by using a longer period of historic data (which, of course, for many funds will not be available) or by using a relative rating system against cash and equities. The other problem is the absence of any linkage between a historic rating and the risk profiles determined by the particular risk questionnaire which an adviser may be using.

A better approach is to use a forward-looking risk rating, based on how the fund is invested. Stochastic asset models normally used to do this, so that the fund's sensitivity is assessed against a wide range of different economic scenarios. This overcomes the problem associated with historic fund ratings, which are rooted in a specific period of investment market conditions. The other feature of this approach is that the risk rating of the funds can be linked with the output from some of the leading risk profile questionnaires.

At face value this means that an adviser can know which fund to select. However, a risk rated or target risk fund cannot "take ... account of all aspects of a customer's investment objectives and financial situation", so advisers must understand their client's circumstances and objectives. A key element of this is the investment time horizon – an investor with a

balanced or moderate attitude to risk will need a different fund depending on the investment time horizon.

### Achieving compliant recommendations

Key issues for the adviser to understand are:

- The methodology involved in the rating (a regulatory requirement since the adviser has to take responsibility for the rating);
- How the risk of each fund varies with term, and hence which fund to pick and if the client has existing assets, how these should be taken into account in selecting a new fund.

Taking each of these points in turn, methodology varies widely. As mentioned above, some ratings are based on the short-term history of the fund, and there will be a tendency for these ratings to be unstable, and vary as market conditions change. Prospective risk ratings using a stochastic asset model are generally a more reliable and stable indicator of fund risk. Here it is important to understand the quality of the stochastic model used. If the model is simply a Mean Variance Co-Variance (MVC) model it will not be able to handle term dependency i.e. the apparent risk of a fund will not vary, however long the client's investment time horizon.

A good stochastic model will produce a full range of economic scenarios – known as an economic scenario generator (ESG). It will take account of all plausible economic and investment events in a consistent manner. Inflation forecasts are an integral part of the model, as are forecasts of future bond yields used to determine the cost of buying an annuity at an anticipated retirement date. Allowance for "real world" features such as the term dependency of returns and volatility are possible with an ESG. Asset strategies can therefore be constructed to minimise an investor's risk of failing to meet a goal at a designated time in the future. By the same token, an ESG enables the risk of a fund to be assessed over the different durations associated with a client's objectives.



## “ Firms remain responsible for assessing the risk a customer is willing and able to take, even when using tools. ”

For advisers offering an initial and on-going full portfolio reviewing service, the choice of a risk rated fund will need to take account of the level of risk in any portfolio of existing assets which the client has. The FCA has made it clear that selling good or adequately performing existing assets, and buying a risk rated/target risk fund with additional costs, simply to ensure that the portfolio matches the customer's risk profile, is unlikely to be an acceptable outcome. Software solutions are available to make it easy for advisers to risk rate existing assets, and decide which risk rated fund or funds to recommend. In this way advisers' recommendations can take account of existing assets, the duration of their investment objectives, and match clients' risk profiles.

### The role of the adviser

It is clearly the FCA's intention that the adviser should take full responsibility for ensuring that investment recommendations are suitable, and take account of their "customer's invest-

ment objectives and financial situation". Fund managers can help by risk rating their funds, but fund managers cannot know about clients' investment objectives or other assets which they may hold to meet these objectives. It is clearly the adviser's role to understand their clients' circumstances, and to ensure that they understand the methodology they are using to risk assess the investments they are recommending. Advisers should relish this role because it can add considerable value to their clients, and can provide them with an important on-going role helping them achieve their investment goals, without incurring an unacceptable level of risk. ●

The FSA became FCA (Financial Conduct Authority) and PRA (Prudential Regulatory Authority) in April 2013.

eValue www.evalueit.com provides market-leading analysis, forecasting and planning solutions that enable both advisers and consumers to understand the potential risk and return from different investment choices. Our solutions are used by around a quarter of a million investors, as well as 80% of the UK's Financial Services companies and 50% of its financial advisers.

# Staying on track – consumers, risk and investments

BRENDAN LLEWELLYN



Brendan Llewellyn runs strategic consultancy Marketing Edge, and is a Director of Adviser Home, helping financial advisers run, develop and market their practice.

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and [www.adviserhome.com](http://www.adviserhome.com)

**B**ehavioural Finance tells us that we do not, normally, make rational decisions. In particular we know that retail investors do not, overall, make the most of the investment opportunities before them. But we need to acknowledge that investment decisions are usually made with advice, and that the investment providers also play their part in the whole process. Conceptions and misconceptions about “risk” play a central role in all this. We consider what the professionals in the process, the advisers and the providers, can do to help retail investors achieve better outcomes. ▶

## Investor mistakes

Too much money in the bank

Too much money in residential property

Too little invested when markets are low

Too much invested when markets are high

A binary approach – confident or not

Phantom diversification

## Consequences

A near 100% risk of real loss in return for a very low risk of nominal loss

Usually in a single stock – your house. So asset class risk, locational risk, and very low liquidity

A loss in annual terms of 20% of the growth from a regular investment – buy and hold strategy

As above, and a greater exposure to downside risk to capital

Breaks the Buffet maxim – invest frequently and often

Unexpected investment outcomes – affecting investor confidence



“ We should not take the findings of the Behavioural Economists as immutable portraits of human nature; people are receptive to informed persuasive argument, and this is where the adviser comes into his own. ”

### Money in the bank

Retail bank deposits stand at £1.3 trillion<sup>2</sup>. Everyone needs a degree of liquidity, but this level of commitment to cash indicates more than a desire for access to capital. It represents a de facto investment strategy where cash, an asset which will rarely deliver positive real returns, is a core long-term holding. One of the causes of this is the fear investors have of losing their capital. Yet such reliance on cash is only rational if the opportunity cost of real asset investment forgone is properly explored. We believe that a consumer's satisfaction curve reflects a greater degree of concern at a loss than pleasure at a gain. But the adviser with a close, professional relationship with a client can influence this preference set. We should not take the findings of the Behavioural Economists as immutable portraits of human nature; people are receptive to informed persuasive argument, and this is where the adviser comes into his own.

### Residential property

In the UK the capital gains tax exemption of the primary residence gives some rationale for this national obsession, but the extraordinary weighting to property – it's the UK's largest single asset class with £4.2 trillion tied up – perpetuates unhelpful myths like 'my home is my pension'. Moreover, the majority have just one holding – the house they live in. This creates an extra risk dimension – the asset class might be buoyant, but just not where you live. Or your area might be buoyant, but just not your street, or your type of property. So an individual with £2m net wealth, including a home with £1.75m equity, runs a profoundly imbalanced and highly risked portfolio; he may not see it quite like that, but the adviser can at least advise that such an imbalance constitutes a distinctive investment view – at those levels it's not just about somewhere nice to live.

### Timing

This is not so much about deliberate attempts to second guess the market. It's more the fact that stock market inflows correlate with market levels.

In a Cass Business School Study (2010) the impact of this was stated as an equivalent to a 20% reduction in annual return<sup>3</sup>. In the same study, institutional investors achieved par, that is, their returns reflected the market's returns.

Noably, the UK structured products sector had equity markets were at their most depressed. It's regrettable that more defined outcomes are sought just when the opportunities for open-ended investments are at their greatest. Much of this concerns the understanding of risk – consumers can tend to think that when the environment is difficult and the markets are depressed, the chances of future loss are greater.

Nevertheless, this isn't all about consumer attitudes. The question for advisers is whether their own confidence correlates with market levels? Similarly, if an investment house is more likely to engage in fund launches, or to increase its marketing budgets during bull market highs, then it too is a co-conspirator in the buy-high pathology and its inevitable erosion of consumer's capital.

### The Binary approach

The institutional investors referred to in the Cass Business School Study were relatively successful because they, as custodians of pension scheme monies, needed to invest on a regular basis. Retail investors over the last 20 years have, largely as a result of regulation to depress high commission regular investment plans, moved more to an invest or not invest pattern. A key tenet from the Warren Buffet canon of tenets is "invest regularly and often". That way, the risk of adverse timing is managed. This is a matter of engendering a better understanding of investment risk – the risk, in particular, of not investing. It is also a matter of encouraging phasing where appropriate.

### The nature of diversification

The lay version of diversification is about the avoidance of a single basket of eggs; but this only works if the eggs, and indeed the baskets, and the road they take, have acceptably low correlations.

Too many mainstream equity funds are para trackers, and a portfolio of 10 funds may not have any material effect on "manager risk". Moreover, amongst more genuinely actively managed solutions certain themes, sectors or styles may be common to many of the funds – creating a concentration risk. Similarly, asset classes in certain markets can exhibit high levels of correlation.

We tend to think that passive funds, with their zero manager risk, are inherently low risk, but index funds have to mirror value changes within; no rebalancing takes place if a sub-sector gets overheated, indeed the index constituent weightings will be up-weighted to match that sub-sector. It falls to advisers to ensure that their clients' portfolios offer genuine diversification.

### Communication

Advisers have always made use of the long-term investment statistics showing the relatively small number of periods in the last 100 years when investors were more at risk in the market than out. Nevertheless, advisers are not the only people creating communication messages. If the market or the economy is in the doldrums then the media will, quite naturally, be full of bad news. So, the adviser has to become the most dominant communicator. In practice this will involve a range of techniques – face to face, regular newsletters, or just letters and a concerned ecnoms programme. The key to this is consistency; not more communication when the markets are high or low. The other crucial thing is to set expectations: at the start of a new client relationship, adviser and client must be ad idem on broad attitudes to value fluctuations.

### Wealth management or financial planning

The shift in emphasis from investment advice to financial planning is most applicable for clients at the accumulation stage. For this segment, the focus is on plans to match goals, with investment entirely as a means to an end. However, there are many investors beyond the accumulation stage who may take a more cautious attitude towards wealth preservation. Indeed, several clients will have a lower risk appetite for certain elements of



their portfolio – their pension fund for example. In their use of client risk profiling tools advisers can and should reflect this in their recommendations, and this sensitivity to client attitude should lead to greater long-term client satisfaction.

### What is risk anyway?

Risk is a contingency; reward is an outcome – so really there can be no sensible trade-off between the two. Risk is to certainty as gain is to loss. But consumers see risk as a synonym for loss. I ran a consumer workshop recently where an investment was considered low-risk because it hadn't fallen. Against this level of basic mis-comprehension the sophistication in risk profiling has a high risk of failing the consumer. The problem is that risk means what consumers think it means – not what we say it means. It's very hard for the investment sector, advisers and providers, to change the meaning of such basic words. Professionally necessary distinctions like

“... diversification is about the avoidance of a single basket of eggs; but this only works if the eggs, and indeed the baskets, and the road they take, have acceptably low correlations.”

“capacity for risk versus attitude or appetite for risk” may be counterproductive in terms of consumer communication. For one thing, capacity for risk is really about capacity for loss. But more fundamentally, risk is seen as a bad thing, so an undue focus on risk at the adviser level will tend not to have the desired results. By analogy, some years ago Alfa Romeo, in an attempt to address their reputation for rustiness, ran a TV commercial with one of their cars submerged in the North Sea for 12 months. It emerged rust-free, yet the post research showed

that Alfa's reputation as rust-prone was reinforced by the campaign! Neuro-Linguistic Programming practitioners would not be surprised by this – opposing a negative tends to confirm the negative. Advisers need to be very careful in their language – when in doubt, express things in the positive. ●

<sup>2</sup> Bank of England, September 2013.  
<sup>3</sup> Cass Business School, 2010.



# Taking Smart Risk – Constructing an Asset Allocation

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DR. WOLFGANG MADER AND DR. CHRISTIAN SCHMITT

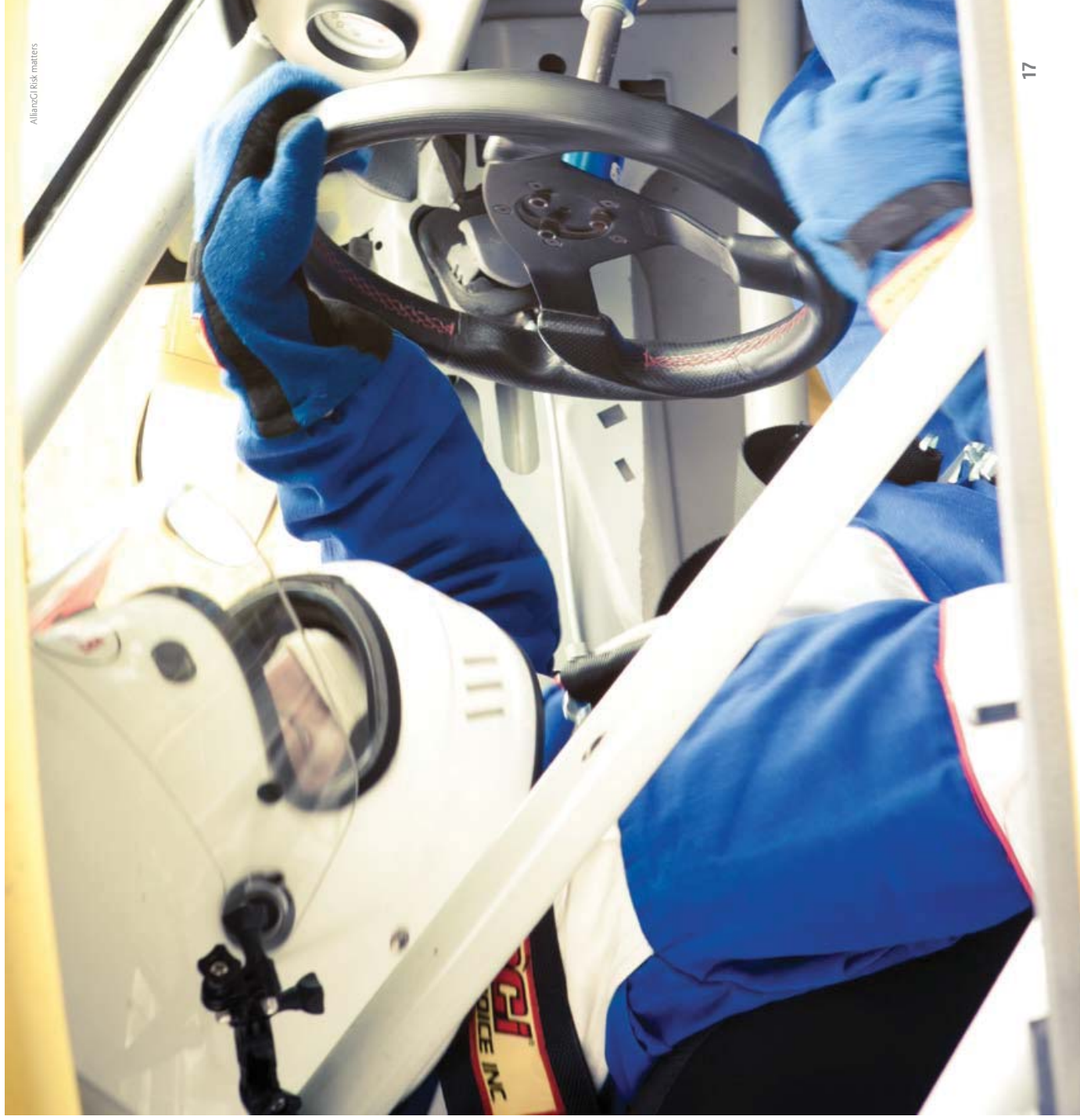
“ Strategic asset allocation is the most important determining factor for the portfolio return. However, generating an adequate return is a major challenge in today’s low interest-rate environment. ”



Dr. Wolfgang Mader is Director and Head of Asset Allocation Strategies at risklab GmbH



Dr. Christian Schmitt is Managing Director at risklab GmbH



The current market environment is characterised by low nominal interest rates and the potential of negative real returns. Our view is that despite the talk of tapering in the US, the low interest-rate environment will continue for some time to come. We also believe that we could see inflation begin to rise. As regular readers of *Risk matters* will be aware, we call this combination of low interest-rate policies and inflationary tendencies (and/or anticipated inflation) financial repression.

**Strategic Asset Allocation (SAA) – Taking Smart Risk...**

Strategic asset allocation (SAA) plays a pivotal role in determining the extent to which overall investment results fluctuate. This step is therefore the most elementary decision when deciding on an investment program. In our analysis, we took a closer look at what a strategic asset allocation should look like, given the current climate of financial repression. Although these are only simulations, and forecasts are no guarantee of future developments, the findings allow us to draw some interesting conclusions.

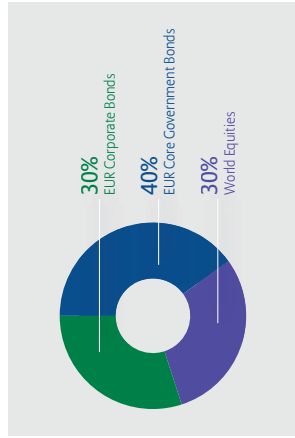
Our starting point is a portfolio consisting of 70% bonds (40% government bonds from core Eurozone countries and 30% corporate bonds) and 30% equities (developed markets) as is shown in figure 1.

Our analyses show that the simulated long-term annual return (ten-year horizon average) of the base portfolio – despite the significant share of equities – is only 2.9%. This is lower than the envisaged target return for a defensive investor, which is likely to be around 4%. These return expectations are accompanied by an anticipated volatility of 4.9%. Historically (since 2000) the returns realised as the result of such an allocation were at 4.2% annual return and 4.7% volatility. These attractive returns, which were predominantly the result of falling interest rates, seem unlikely to repeat themselves in the future.

When determining a better suited SAA, two basic steps are therefore necessary:

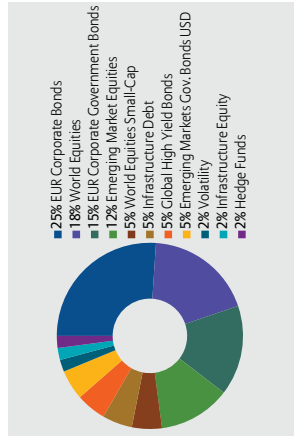
- Increasing the average share of return-generating risky assets in order to raise the portfolio's targeted returns.
- Broadening the investment universe beyond asset classes and regions, with an eye towards correlation structure and taking advantage of the potential for diversification. This makes it possible to reduce risk while keeping forecast returns steady.

Figure 1: Base Profile



Source: risklab.

Figure 2: Alternative Profile



Source: risklab.

Figure 3

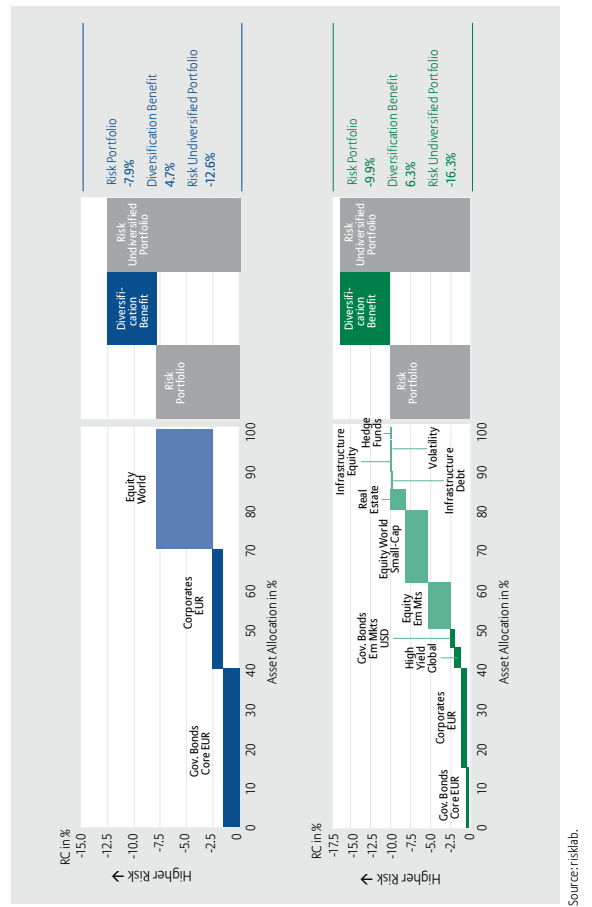
Risk & Return	Long-term Profile	Base Profile	Alternative Profile
Return (p.a.)		2.9%	4.0%
Volatility p.a.		4.9%	6.4%
Sharpe Ratio		0.28	0.39

CVaR <sup>1</sup>	Confidence Level	Base Profile	Alternative Profile
1 year	95%	-7.9%	-9.9%
5 years	95%	-9.2%	-9.5%

<sup>1</sup> Conditional Value at Risk (CVaR). Source: risklab.

Figure 4



Source: risklab.

To determine the quantitative effects in the SAA of a broader investment universe, we set up an alternative portfolio shown in figure 2. Herein the proportion of bonds was reduced by 20% in favour of equities and a 15% new investment in alternative asset classes, like infrastructure, real estate and hedge fund strategies. At the same time, diversification was increased by way of a wider spread within the bond and equities segment.

The alternative portfolio's long-term anticipated volatility, at 6.4%, is expected to be 1.5 percentage points per year higher than that of the base profile. Conditional Value-at-Risk (over the period of one year and at a confidence level of 95%) should also rise on the basis of our simulations, from -7.9% to -9.9%.

In the case at hand, re-risking would be necessary alongside diversification, indicating the need to provide an additional risk

budget to achieve target returns in the long term due to the current capital market situation. However, the increased risk is adequately compensated for, as demonstrated by the comparably higher Sharpe ratio (0.39 vs. 0.28).

Although the perception of an increased risk turns out to be true over the course of a single year, the alternative portfolio's CVaR level is comparable over a five-year period (see figure 3). This is a result of the alternative portfolio's higher anticipated returns in the long term, among other factors.

It is interesting to note that the historically lower volatility of the base portfolio appears deceptive at second glance. A future-oriented risk analysis reveals that the concentration risk in the base allocation is comparably high. The risk analysis, depicted as a risk cascade, shows the risk contribution of each asset class in relation to its share of

## Appendix to article

Asset Class	Benchmark	Currency	Expected Return (v.r.)	Expected Volatility (p.a.)	Historic Return (p.a.)	Historic Volatility (p.a.)
Gov Bonds EUR	IPM EMU Investment Grade Index	EUR	1.9%	5.4%	5.4%	3.8%
Gov Bonds Core EUR	BoIA ML AAA Euro Government Index	EUR	0.9%	4.5%	5.6%	3.9%
Gov Bonds US	BoIA ML US Treasury Index	EUR	1.0%	4.5%	6.0%	4.7%
Flanbridge	BoIA ML Euro Flanbridge Index	EUR	1.5%	2.4%	2.9%	2.7%
Covered Bonds EUR	BoIA ML Euro Covered Bond Index	EUR	2.2%	3.2%	5.2%	2.7%
Gov Bonds - L EUR	Barclays Euro Govt Infr-Linked Bond Index	EUR	1.6%	5.7%	5.6%	5.1%
Corporates EUR	BoIA ML Euro Corporate Index	EUR	2.4%	3.8%	5.4%	3.5%
Corp. Fin. EUR	BoIA ML Euro Financial Index	EUR	2.8%	4.6%	5.1%	4.2%
Corp. Fin. L EUR	BoIA ML Euro Financial Index	EUR	2.0%	4.7%	5.6%	4.2%
Gov Bonds UK	BoIA ML Euro Single-A Utilities Index	EUR	2.0%	10.7%	8.8%	10.4%
Gov Bonds Mkts USD	IPM Em Mkts Bond Global Div Index	hedged in EUR	3.7%	8.5%	11.0%	8.8%
Equity Europe	MSCI North America Net TR Index	EUR	6.0%	15.6%	0.9%	16.2%
Equity North America	MSCI Pacific Net TR Index	EUR	14.4%	14.4%	0.2%	16.2%
Equity Asia	MSCI Emerging Markets Net TR Index	EUR	5.7%	19.9%	6.0%	21.7%
Equity World	MSCI World Net TR Index	EUR	6.0%	13.7%	0.3%	15.1%
Equity World Small Cap	MSCI World Small Cap Net TR Index	EUR	6.5%	16.4%	5.9%	17.8%
Real Estate	UK IPD All-Property TR Index	EUR	3.7%	9.3%	4.5%	4.5%
Infrastructure Debt	BoIA ML Euro Single-A Utilities Index	EUR	3.1%	4.0%	6.5%	4.0%
Infrastructure Equity	BoIA ML Euro Single-A Utilities Index	EUR	6.0%	4.0%	0.0%	0.0%
Commodities	DILBS Commodity TR Index	hedged in EUR	4.5%	17.7%	4.9%	17.4%
Volatility	risklab Variance Premium Trading Index	EUR	5.1%	5.0%	7.2%	5.3%
Hedge Funds	HFR Fund of Funds Index	hedged in EUR	4.6%	5.1%	3.5%	5.4%
Private Equity	LPS50 TR Index	EUR	10.0%	18.1%	-3.0%	24.9%
Cash	EUR Libor 1 Month TR Index	EUR	1.5%	1.4%	2.5%	0.4%

Note: We use the risklab Variance Premium Trading Index as the benchmark for volatility in the historical analyses. The benchmark's exposure to the volatility risk premium is similar to that of this forward-looking data. We use the BoIA ML EUR Single A Utilities Index as the benchmark for infrastructure debt in the historical analyses. We consider this benchmark representative albeit exhibiting a lower duration than typical for the asset class. The forward-looking assumptions are based on expert input for a sample portfolio of EUR senior debt investments into construction and operational phase of Public Private Partnerships, in a top concession and regulated utilities. (Source: AllianzGI Infrastructure debt team). Note also that returns are stated before all fees, and that such returns will be decreased by asset management fees, but increased by commitment and front-ends paid directly by the borrower, the expected net effect of such fees is considered to be neutral and no greater than 0.1%. There are no representative, commercially available benchmarks for infrastructure equity as an asset class. Therefore, we currently use zero returns for the asset class in the historical analyses. The forward-looking assumptions are based on expert input for a mixture of 1/3 wind energy and 2/3 solar energy investments. (Source: AllianzGI Infrastructure equity team). For consistency of comparison across investment opportunities, infrastructure debt, infrastructure equity and private equity returns have been derived under the assumption of being already fully invested from the beginning, when, in fact, a more gradual accretion of investment is likely. Source: risklab, Allianz Global Investors, Period: 29/02/2000-03/03/2013. The hypothetical performance and simulations shown are for illustrative purposes only and do not represent actual performance; they are not a reliable indicator for future results.

### Input

Asset classes and benchmarks used for the base and alternative portfolio are as follows. The hypothetical performance and simulations shown describe the long term (10 years average) expectations of the yearly performances and volatilities of each asset class. The historical yields and volatilities (p.a.) were calculated in the time between 29/02/2000 and 31/03/2013.

### Forward-looking analyses

Forward-looking analyses are based on data from simulations of the risklab Economic Scenario Generator.

- Riskfree rate: expected long-term average annual return on the money market
- The expected returns and volatilities of the asset classes are derived from the current market conditions plus the long-term normative assumptions (which are expected to hold at the end of a 10-year period):
  - Inflation: 2% per annum
  - Yield of German government bonds (zero-coupon bonds): 1-year bond 3%, 10-year bond 4%
  - Spreads: swap 0.35%, A.O. 65%, A 0.8%, BBB 1%
  - Equity premium: developed markets 4%, emerging markets 5%

## “A greater focus on investing in high-potential asset classes is the first step in targeting adequate returns.”

A greater focus on investing in high-potential asset classes is therefore the first step in targeting adequate returns. Alongside this “re-risking” of the portfolio, broad diversification of investments plays a pivotal role, as the spreading of risks within the portfolio should principally lead to a more attractive risk/return profile.

But diversification alone is not enough to effectively limit risk over time. As the characteristics of high-risk investments change in phases of stress, and the losses within a portfolio can grow too serious, dynamic risk management is also a must. Such risk management can enable investors to effectively hedge losses, thereby protecting risk capital while still allowing them to profit from potential performance. ●

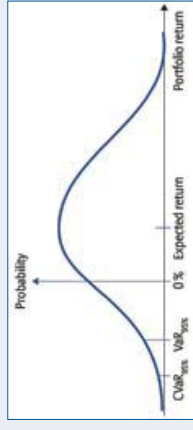
the portfolio, as well as the diversification effect (figure 4), which results from comparing the overall risk and the sum of the individual risks. It becomes apparent that the equities had the highest risk contribution in the portfolio. However, the alternative portfolio has a higher diversification effect, which increases substantially. As a result, investors in this scenario only need to accept additional risk for a higher anticipated return.

Looking back, the alternative portfolio may be associated with higher risks (more volatile), but the more balanced asset allocation should reduce the overall risk of the portfolio in the long term. This becomes particularly clear when we evaluate risk and return within a supposed inflationary climate. The analysis of the portfolios in various historical inflationary scenarios shows that the alternative portfolio delivered higher historically realised returns and a higher Sharpe ratio than the base portfolio during periods of rising inflation. It demonstrates that a more diversified portfolio has historically provided investors with a more solid footing for the anticipated climate of financial repression.

### Understand. Act.

Strategic asset allocation is the most important determining factor for the portfolio return. However, generating an adequate return is a major challenge in today's low interest-rate environment.

### Return and Risk



### Value-at-Risk (VaR)

For a given portfolio, probability and time horizon, VaR is defined as a threshold value such that the probability that the mark-to-market loss on the portfolio over the given time horizon exceeds this value – assuming normal markets and no trading in the portfolio – is the given probability level.

### Conditional-Value-at-Risk (CVAR)

The CVAR is calculated by assessing the likelihood (at a specific confidence level) that a specific loss will exceed the value at risk. Mathematically speaking, CVAR is derived by taking a weighted average between the value at risk and losses exceeding the value at risk.



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