Investment Horizons

Issue 5, 2016

THOUGHT LEADERSHIP AT SCHRODERS

Facing up to sugar
Uncovering small caps
Valuing consistency
Restating inflation
Re-evaluating correlation
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Towards a brighter horizon

We hope the latest edition of Investment Horizons gives a flavour of the breadth of our research at Schroders. From small caps to the shortcomings of correlation, what unifies all the articles is our aim to help investors along the path to investment success.

In travelling that road, it is vital for investors to have an understanding of the broad market environment in which they operate. Our first piece therefore looks at the food and beverage sector. We have used our in-house expertise to think laterally, noting the troubling similarities between the health issues faced by the food and drink market and those that tobacco companies have had to deal with over the past 25 years.

In investment, the particular is almost as important as the general. Our second piece highlights a number of often quite idiosyncratic reasons why smaller companies remain worthy of investors’ attention. A contrarian call, perhaps, but often it is the brave who win the day.

We should never forget that investment is simply a means to an end. And one of the most important ends is saving for a pension. The emphasis has often been on raising contributions, but we believe that this is unrealistic beyond a certain level. Instead, we have turned to long-term investment history, concluding that generating reasonably consistent returns during the savings phase is likely to be a more fruitful and realistic aim if pension promises are to be met.

In our last two pieces we discuss two measures crucial to the functioning of markets. The measurement of inflation is vital both to investors and to a much wider population beyond. We have analysed the economic literature and concluded that it is highly likely that inflation has been overstated by official measures for many years, at least in the US. This could have serious ramifications, not only for gauging the true level of economic output, but also for pension providers, who may be over-providing benefits.

Correlation is another concept that is much used and, we would argue, abused. Part of the problem is a misunderstanding of its limitations. We have therefore looked at how correlation works, what we should expect of it and – more importantly – what we shouldn’t.

As ever, we hope that one or more of our articles spark your interest. If so, we hope they will stimulate you enough to get in touch so that we can discuss our ideas with you in person.

Yours sincerely,

Gavin Ralston, Head of Thought Leadership
Does “Big Food” face a showdown over sugar?

Our research suggests that the rise in sugar consumption around the world could create serious problems for the food and beverage sector. Central to this risk are a number of health problems – such as diabetes, high blood pressure and obesity – collectively known as metabolic syndrome and thought to be linked to excessive consumption of sugar. Indeed, we suggest that there are similarities between major food and beverage companies (“Big Food”) and major tobacco companies (“Big Tobacco”), which have been severely hit by massive fines and legal settlements over the last 25 years or so. This could have serious ramifications for investors1.

Obesity is rising fast (Figure 1), but it just represents one of a range of diseases encompassed by metabolic syndrome. In reality, therefore, the syndrome affects an even greater proportion of the world’s population at a rapidly rising rate. A growing number of scientific studies are attempting to prove the link between the syndrome and sugar, while governments and consumers are increasingly aware of the mooted relationship. As a result, sales of processed food and sugary carbonated soft drinks are in decline (Figure 2). Despite this trend, many Big Food companies’ product portfolios are still dominated by such products.

Figure 1: Obesity is on the rise across the world...

Source: OECD Obesity Update, June 2014.

The global food and beverage industry is largely self-regulated, although there has been a notable shift towards greater external regulation in the last 18 months. The key areas of focus have been labelling and restrictions on marketing to children. For example, the US Food and Drug Administration has proposed changes to nutritional labels for food and beverage products. In addition, there are increasing restrictions on advertising, with governments banning TV advertising of unhealthy products to children in Mexico and France. In the US, San Francisco city officials have unanimously approved an ordinance requiring advertisements for sugary drinks to include a warning that extra sugar can lead to health problems2.

1 These issues are discussed more fully in the long version of this article at www.schroderstalkingpoint.com
So far taxation of unhealthy ingredients, such as sugars, has had only limited take-up, even if public concern is rising. The notable exception is the UK, where the government recently announced a graduated tax on makers of sugar-sweetened drinks. Litigation is a much bigger unknown. Our view is that companies with sales exposure to the US face the greatest risk. The majority of class action lawsuits filed have focused on allegations of false advertising and misleading marketing, rather than on product liability. Thus far, all cases have been settled out of court for figures in the low millions of dollars. So it does not appear at this stage that litigation risk and lower sales are material to the investment case, but we believe there is a high probability that this may change in the medium term. Our research has identified three catalysts that could transform Big Food into Big Tobacco:

Catalyst 1: Increased concern from medical and public health organisations, and higher awareness amongst consumers

In the past two years we have seen a shift in focus from fat to sugar by medical and public health organisations. In 2014, the World Health Organisation halved its recommended daily limit for calories from sugar to 5% of an individual’s diet. This concern was echoed by the British Medical Association in 2015, when it recommended a 20% tax on sugary soft drinks. Consumer awareness is reflected in several trends. These include lower fast food and carbonated soft drink sales, metabolic syndrome sufferers actively choosing to change their diets and lifestyle and consumers increasingly questioning ingredients and nutritional content.

Catalyst 2: Demographics and rising healthcare costs

With a growing global population and increasing rates of metabolic syndrome, global healthcare costs are soaring. It is estimated that obesity alone accounts for 21% of US healthcare spending. In the UK, the number of people diagnosed with diabetes has jumped by 60% in the past 10 years, mostly caused by excessive sugar consumption. Indeed, diabetes now accounts for 10% of the National Health Service drugs bill.

Catalyst 3: New scientific evidence linking sugar consumption with metabolic syndrome

The final catalyst would be independent scientific evidence proving product liability, which is where the biggest settlements were made in Big Tobacco cases. Were this to emerge as an issue and to stand up in court, then current marketing claims would be undermined, potentially opening up a new source of litigation. Here there is significant legacy risk for Big Food. High sugar content dates back to the low-fat trends seen in the 1970s, when sugar was added to “low fat” products to maintain their taste. Thus far, while evidence linking sugar with metabolic syndrome is increasing, it is not yet at the level to shift the balance against Big Food.

3 Diabetes cases soar by 60% in past decade, says charity Diabetes UK, BBC, August 2015.
4 Diabetes uses 10% of NHS drugs bill, BBC, 12 August 2015.
Similar trends have resulted in serious consequences for Big Tobacco over the last 25 years. The first wave of litigation was in the 1950s, but it was not until the 1990s that lawsuits started to bite. They were triggered by leaked cigarette company documents showing that companies were aware of the addictive nature of tobacco.

In 1998, the attorneys general of 46 US states and four of the largest tobacco companies agreed to the so-called Master Settlement Agreement. This led to a minimum payment of $206 billion over 25 years, banned certain advertising, and increased education about the risks of tobacco. Both the Master Settlement and the subsequent 2005 WHO Framework Convention on Tobacco Control have had a significant impact on tobacco company costs, reputation and sales. Since these events, tobacco stocks have often performed well, but this has reflected the industry’s strong pricing power along with surging demand from developing countries.

Our research has highlighted clear similarities between Big Tobacco and Big Food:

Science and proof of causation: Big Tobacco argued in the 1950s that product consumption was down to personal responsibility and that illnesses had multiple causes. Causation may be harder to prove with food, given that metabolic syndrome sufferers have consumed multiple products. However, as more scientific evidence emerges, it may be simpler to prove causation by ingredient type.

Ability to self-regulate: Both Big Food and pre-1990s Big Tobacco have (or had) powerful industry lobbies and the ability to self-regulate. The decision in San Francisco to add health warnings to sugary drinks advertising is the first tangible example of Big Food losing its power to regulate itself.

Soaring healthcare costs: As with tobacco, governments have an incentive to recoup healthcare costs resulting from the sale of harmful food products. This could come from a sugar tax or litigation.

Addictive ingredient: Unlike nicotine, the addictive nature of sugar has yet to be legally tested. Again, this relates to catalyst three – the need for more robust science proving causation.

In summary, we believe that Big Food is nearing the stage that Big Tobacco was at in the early 1980s, just before product liability was proved and the major litigation began. We believe that two of the three catalysts highlighted above are already materialising. The lack of a third catalyst is the only thing protecting Big Food from being exposed to material litigation risk.

We believe there are two possible outcomes from all this that will affect the Big Food sector. Their effects on valuations are summarised in the diagram below.

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### Risk
- Increased regulations
- Sugar tax
- Tobacco-like product warnings
- Lost sales
- Changing consumer trends

### Catalysts:
1. Consumers and public health
2. Healthcare costs
3. Science

### Outcome
- Lower sales
- Litigation costs
- Reputational damage
- Sector looks expensive
- Exposed to M&A and activist investors

### Valuation
**Current impact:**
- Lower future growth rates
- Higher cogs

**Potential future impact:**
- Litigation costs, liabilities and potential write-downs = lower multiples due to lower growth and profitability

*Cost of goods sold. Source: Schroders.

1. Valuation impact based on current trends, with no litigation

From our research we conclude that the industry may already be facing financial pressures. Increased consumer awareness of sugar and its associated health risks poses a threat to the sales and growth rates which drive valuations. Lower demand for high-sugar food and drinks will result in lower-than-consensus forecast sales and growth rates for Big Food groups, which will also be required to increase their research and development spending.

“We believe that Big Food is nearing the stage that Big Tobacco was at in the early 1980s, just before the major litigation and product liability was proven.”
Big Food is losing out as consumers switch towards healthier, unprocessed foods, particularly in developed markets such as North America, Australia and Europe. However, we believe certain firms are well placed to increase market share. A prime example is WhiteWave Foods, a US-listed company producing healthier food products, which is the fastest growing company in the US food and beverage sector over a four-year period. However, there are also opportunities for more traditional companies to catch up on their innovation lag and create healthier product portfolios by acquiring smaller, private, health food companies.

2. Valuation impact if all three catalysts have been triggered, leading to large scale litigation

All companies in the sector are exposed to legacy risk from decades of selling sugary processed food and beverages. To account for this potential risk, a slight discount should be applied to the valuation. We propose increasing the cost of equity for companies exposed to potential litigation.

Assessing the nutritional profile of product portfolios is challenging, given the limited information from labelling and poor disclosure at product portfolio level across Big Food. However, the Access to Nutrition Index (AtN) provides an independent review of a company’s product portfolio, nutrition strategy and access to nutritious and affordable products.

In 2013, we analysed those consumer companies that Schroders holds that are also included in the Access to Nutrition Index so that we could use its product portfolio score. The results in Figure 3 show the companies most exposed to the greatest risk (circled) through their exposure to developed markets and a low product portfolio score in terms of nutrition:

**Figure 3: Lower nutritional value is likely to spell higher risk**


Conclusions

The demand for processed food and fizzy drinks is not going to disappear overnight. However, consumer behaviour is changing and tastes are evolving as people become more aware of the impact on their health. Big Food has been slow to adapt, focusing more on cost than innovation. The similarities with Big Tobacco are now becoming clearer and the increasing pressure from consumers, public health bodies and governments is changing the way investors need to think about sector valuations. We believe that forecasts need to reflect slower growth rates and higher research and development spending. Moreover, there is the risk of litigation, which would become a real threat if independent scientific research establishes a link between metabolic syndrome and excessive sugar consumption. Together, this could have an impact on Big Food akin to that which has ravaged the tobacco industry.

Elly Irving, Environmental, Social and Governance Analyst
The case for small caps in a world of deflation and disruption

The recent underperformance of a number of small cap markets has prompted suggestions that the traditional arguments in their favour no longer hold. We disagree. As we enter a period of unprecedented disruption and deflationary growth, we argue that small caps can bring a number of unique characteristics to a wider portfolio.

Over the last 30 years, the case for investing in small caps has been debated extensively. The long-term statistics certainly suggest that smaller companies do indeed outperform larger ones (Figure 1). There is less agreement on the reasons. The explanations range from the contention that small caps offer a risk premium in return for lower liquidity, that limited research means any new information has a bigger impact on the shares, and/or that small companies in aggregate tend to grow faster than larger ones. Whatever the case, even though US small caps have underperformed large by over 10% in the last two years, their outperformance over a longer period is dramatic. So what of the future?

In truth, the outlook for all investors is murky. Everything from disruptive technology to persistent low growth is making it easier to pick losers than winners. The challenges span the waterfront, from environmental concerns that put a question mark over the future of the carbon-based economy, to advances in artificial intelligence that could undermine the position of over 230 million knowledge workers around the world.

In these circumstances, and contrary to received wisdom, we think more winners may be found amongst the mass of lesser-known and under-researched smaller companies than amongst their larger brethren. With innovation and technological advances moving at an unprecedented pace, companies that are nimble and less burdened by layers of management may be better equipped to keep up with these changes. In this environment, having a strong brand, a large installed base and a wide distribution network are not necessarily assets anymore. Instead we are seeing a new generation of winners that are “capital light” and have a strong online presence. As industries evolve

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in this direction, barriers to entry are reduced and innovations progress faster, creating increasing opportunities for small companies.

However, periods of disruptive innovation inevitably create losers as well as winners. One classic period was the dot com bubble. During most of this time, the US small cap index underperformed the large cap index (Figure 2, left). However, a very different story emerges when the small cap universe is broken down into sectors. Smaller pharmaceutical, biotechnology and software companies outperformed the US S&P 500 Index of larger companies, whereas traditional industries, such as banking and retailing, lagged behind (Figure 2, right). This shows how vital it is to be able to actively pick winners when disruption occurs.

**Figure 2: Dissecting the dot com bubble**

What often handicaps traditional companies when it comes to developing or adopting a disruptive innovation is the fear of cannibalising their existing revenues. In contrast, smaller and newer companies not tied to an established product have more incentive to direct resources to the next disruptive innovation. Medical technology is a good example of this. Historically, incumbent providers of medical equipment, such as video scopes for internal examinations, focused on reusable technology that is high margin, but also expensive. Clearly, these incumbents had little incentive to produce a lower-cost alternative as such a course would have eaten into demand for their existing products. This allowed Ambu, a small cap technology company with fewer existing sales to defend, to launch a single-use alternative which was both cheaper and came with a lower risk of infection. Not surprisingly, this has allowed Ambu to disrupt the existing market and gain market share.

There are, of course, a number of examples of large technology suppliers operating in markets where the “winner takes all”. Here the so-called FANG companies with dominant technology (Facebook, Amazon, Netflix and Google) often use their substantial cash reserves to buy up smaller competitors. For investors in the shares of these publicly-traded small companies, this is clearly good news, even if it may limit their opportunities for making even larger gains.

Of course, not all small technology companies are publicly quoted. With return prospects low, venture capital financing is popular and often more readily available than other sources of finance (Figure 3 overleaf). In this environment, innovative companies may remain private long after the development stage, denying investors the chance to piggy-back on rapid growth. For example, the electric car manufacturer Tesla floated when it was valued at over $2 billion, while the app-based taxi group Uber remains private and is already worth over $50 billion. However, we would argue that the publicly listed universe of companies still provides ample opportunity to find disrupters. For example, at the end of February, the technology sector accounted for 3.8% of the FTSE SmallCap Index, more than twice the figure for either the FTSE All-Share or the FTSE 100 indices. In the tech-heavy NASDAQ index in the US, about 65% of the constituents by number are valued at $500 million or less.

“Smaller and newer companies not tied to an established product have more incentive to direct resources to the next disruptive innovation.”

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4 Source: FTSE Group and NASDAQ.
Beyond these general characteristics, we would identify a number of specific areas where smaller companies enjoy advantages not necessarily shared by their larger rivals:

**Unfilled niches:** Success can come by moving into a gap in the market that others may be too large to occupy profitably. Xing, a German-based professional network platform provider, is an example. It has grown by running a career-based network exclusively for German speakers, an area that may have been of less interest to larger players. Similarly, specialist Japanese restaurant booking system Kakaku.com now dominates the market in Japan, while competitors such as OpenTable have aimed for the global market. The rapidly growing market for safety products is another niche that offers fertile ground for smaller companies. For instance, the industrial protective clothing market is expected to grow at 11.5% per year until 2022, boosting protective clothing suppliers such as Ansell. This is an example of a smaller company that has been around for a while, yet remains well placed to capitalise on changes in the market around it. Ansell shows that companies don’t need to be constantly innovating in order to grow. Smaller companies may already be in a niche which undergoes a step change in demand due to external factors, essentially being in the right place at the right time.

**Pricing power:** Smaller companies’ ability to focus on a niche market should be particularly important now, when deflation is a threat. At such times, the ability to set and maintain prices becomes increasingly important. Normally, larger, more dominant companies have much greater pricing power than smaller companies. However, even smaller producers may be able to dominate a niche, command a high degree of pricing power and thereby provide some protection against deflation.

YOOX Group is one example of a company which dominates a niche. YOOX offers online fashion retailers such as Net-a-Porter greater global reach and local expertise, with its unrivalled network of logistics and digital centres around the world. YOOX is likely to have greater pricing power as luxury retailers who want to distribute globally will be significantly disadvantaged if they use a less comprehensive distributor, even if they are cheaper. On the other hand, large distributors like Amazon, with less focus on luxury brands, may be unattractive to these kinds of retailers.

**Better balance sheets:** Surprisingly, quoted small caps may also boast sounder finances than large listed stocks. Certainly, they are less likely to undertake share buybacks, which tend to increase financial gearing. Some $58 billion of debt raised in the second quarter of 2015 was spent on buybacks or dividends, at the time the highest figure on record. Much of this seems to have been expended by larger companies, which are much more likely to have buyback schemes than mid and small caps (Figure 4). For companies with a large market share, this is likely to be one of the few ways they can boost growth in the current low-growth economic climate.

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6 Bloomberg and Sundial Capital Research.
Investment impact: Smaller companies may offer investors a better way to tap into changing consumer trends. Thus, a number of well-established small caps are thriving on the back of the growth in specialist nutrition. Smaller companies that were traditionally producers of commodities, such as palm oil producer AAK or natural extracts company Naturex, are seeing increasing demand as society becomes more health conscious. Similarly, trends for larger companies to cut costs can be a big boost for smaller, niche providers. One such is RIB Software, whose products help to increase efficiency in the use of resources in construction projects. While these changes may benefit large companies as well, they are likely to have a greater impact on the earnings of smaller companies which may specialise in producing only one or two products.

Lower profile: The good name of a well-known company is easily tarnished by bad publicity, as Google, Starbucks and Volkswagen can testify from recent events. By contrast, smaller companies often operate under less media and market scrutiny than their larger rivals. Indeed, they may benefit from larger companies’ efforts to avoid adverse headlines. For example, supply chains are now consolidating around reliable and reputable suppliers as larger companies seek to mitigate the risk of possible scandal. An example of this is the high-quality textile manufacturer ECLAT, which has benefited from shifting its business towards ethical, high-quality fabric production, at the expense of larger scale manufacturers which have traditionally focused more on quantity than on quality.

Conclusions

Given the outlook for low economic growth and increasing technological disruption, we believe investors should pay particular attention to small caps. This environment will make life hard for large companies, whereas smaller companies have the opportunity to gain market share and grow faster than the market. At a time of unprecedented technological, social and regulatory change, small companies may be able to operate “below the radar” and dominate niches which are likely to grow in light of these changes. For investors, each investment will need to be evaluated on a company by company basis. They should not rely on the assumption that the small cap premium will operate universally. Being able to sort the wheat from the chaff will be vital to the success of a small cap portfolio.

Katie Green, Official Institutions, and Matthew Dobbs, Head of Global Small Cap
Consistent returns are the key to better pensions

One of the biggest questions facing individuals is how to fund an adequate retirement. It is a question that elicits many responses. To try to provide a few practical answers, we tested a variety of contribution, investment and pension payment policies against more than 300 years of UK equity and bond history. We concluded that trying to raise contribution levels beyond certain limits is unlikely to be viable. A more fruitful way of ensuring better results would be to minimise swings in investment performance. This would result in better outcomes for pensioners, without requiring unrealistic investment performance or contribution rates.

We looked at UK equity, bond, interest rate and inflation data going back to 1694, overlaying them with alternate pension saving and paying (“accumulation” and “decumulation”) strategies. The UK was chosen because it offers possibly the longest run of financial data available. We would imagine that the 300 years covered provide a representative sample of financial experience that might be applicable to most other countries in the world. Certainly, as the table suggests, earlier outcomes were not out of line with more recent data. Inevitably, however, the reliability of the older numbers is uncertain, particularly those dating from before 1800.

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<td>Nominal return on equities</td>
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<td>4.9%</td>
<td>8.8%</td>
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<td>Nominal return on bonds</td>
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<tr>
<td>Nominal return on 60/40*</td>
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<td>4.6%</td>
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<td>Inflation</td>
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<td>Real equities</td>
<td>5.7%</td>
<td>5.0%</td>
<td>5.0%</td>
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<tr>
<td>Real bonds</td>
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<tr>
<td>Real 60/40*</td>
<td>5.4%</td>
<td>4.7%</td>
<td>4.1%</td>
<td>4.8%</td>
</tr>
</tbody>
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*Denotes a 60% equities, 40% bonds portfolio. Source: All return data in this article are sourced from Global Financial Data. Bond returns have been proxied – using Bank of England Base Rate (BoE) 1695–1700, 60% Consols and 40% BoE 1700–1932, and the UK 10-year government bond total return index 1932–2015. Equity data since 1962 are from the UK-FTSE All Share Index. Inflation since 1947 is the UK Retail Prices Index.

A key question is how long people are likely to live in retirement (longevity). For this article, we assumed a pension drawdown period of 30 years – longer than current survival rates in retirement in many developed countries, but perhaps not unrealistic for future generations. We have not considered the use of any form of longevity insurance, although we think this is likely to be necessary for most people.

“We concluded that trying to raise contribution levels beyond certain limits is unlikely to be viable.”
We have assumed salary increases of 1% a year above inflation throughout the working career, which looks fair in the light of history. For our “target” pension payment, we have used 65% of final salary, which is close to the 70% recommended by the OECD. We then factored in inflation through the retirement years using the UK’s Retail Prices Index (RPI).

So what level of savings is required to fund a reasonable level of income drawdown in retirement? If we start by assuming a contribution rate of 8% of salary before fees and charges, in line with the post-2018 target of the UK’s NEST state-sponsored scheme, salary inflation of roughly 1% above retail price inflation, and 100% invested in UK equities, our accumulated balance after 40 years of saving would have resulted in a median “pot” that was equivalent to 7.5 times final salary.

Having accumulated these savings, we then estimated how much would be left at the end of the drawdown period as a multiple of that final salary. To the extent that we ran out of money during this time, we assumed the drawdowns carried on as a negative balance. Figure 1 shows the 30-year drawdown results with the starting balance accumulated from our 8% contributions above. The level of annual pension income drawdown has been set at a low 42% of final salary. This is the rate that, for a median result, uses up the entire starting balance, although the variability of the outcomes is enormous and highly cyclical.

Figure 1: Low contributions and volatile assets create unpredictable pensions

![Figure 1: Low contributions and volatile assets create unpredictable pensions](image)

“Contributions: 8% of salary; drawdown: 42% of salary; 100% equity portfolio. Source: As per table on p.10 and Schroders.

If we assume more conservative investment portfolios, the range of outcomes narrows slightly, but the median result deteriorates markedly. For instance, a balanced portfolio of 60% equities and 40% bonds would typically have resulted in a median deficit of 6.8 times final salary (assuming a 42% pension), while 100% UK bonds would have resulted in a median deficit of 11.5 times final salary. Put another way, for the median outcome to be zero (the “perfect” drawdown rate where we run out of money at 30 years) in a 60/40 portfolio, then the level of final salary that can be supported as a pension falls to only 35%.

Figure 2: Upping contribution and drawdown rates only increases unpredictability

![Figure 2: Upping contribution and drawdown rates only increases unpredictability](image)

“Contributions: 12.4% of salary; drawdown: 65% of salary; 100% equity portfolio. Source: As per table on p.10 and Schroders.”
Clearly an 8% accumulation is far too low to support pension outcomes that are likely to be acceptable for most people. If instead we ask what is a realistic contribution rate to support 65% of final salary for 30 years, assuming a 100% equity investment, the required contribution rate (such that the median 30-year drawdown result of all time periods is zero) is about 12.4% of salary (Figure 2, previous page).

The results suggest that, while on average the pension should be adequate, the dispersion of likely outcomes remains very large (and for long periods of time). If we used our more balanced 60/40 portfolio with the same payout rate, the required contribution rate rises to about 14.8%, but the range of outcomes remains large (Figure 3). Between the (quite good) 25th percentile and the (quite bad) 75th percentile the results are between + or − 14 times final salary at the end of the decumulation process. Note that the average real return of the 100% equities portfolio is 5.4% a year, while for the balanced (60/40) portfolio it is only 4.8% a year – a small difference in returns has a very big impact on results.

Figure 3: Reducing risks in the portfolio does little for consistency

The nub of the issue here is that the outcomes from either an aggressive 100% UK equities strategy or a more balanced 60/40 strategy are simply far too volatile over quite long periods of time. Consider instead the same 14.8% contribution rate with the same 30-year drawdown at 65% of final salary, but rather than a fixed weight to equities or bonds, a constant real return is earned over time. If we modelled a real return rate of 4.8% (the same as the average for the balanced fund), the median end result of the decumulation period rises to 16 times final salary and there is only one observation in history when the drawdown requirements are not met – and even that is only marginal: the funds run out after 29 years (Figure 4).

Figure 4: A steady rate of return transforms the consistency of outcomes

“The nub of the issue here is that the outcomes from either an aggressive 100% UK equities strategy or a more balanced 60/40 strategy are simply far too volatile.”
The obvious conclusion is that the biggest driver of sustainability of pension outcomes is the stability of real returns. Having the flexibility to adjust the investment policy to explicitly target real returns (which by definition requires an active approach to management) is the most important piece of the puzzle.

To draw all these threads together, we looked at the sensitivity of pension rates to a range of different assumptions. Figure 5 shows the median pension rate (as a percentage of the final salary) that can be supported for a 30-year drawdown based on different levels of contribution and different investment portfolios.

Figure 5: More consistency means the return target can be less demanding

We can see from the chart that contribution rates are important. Thus, for each 2% rise in contributions, the level of income in retirement rises by approximately 6% for a pure bond portfolio, 9% under a 60/40 portfolio, 11% in a 100% equity portfolio and more generally by around 2% for every 1% of real return that we earn. Arguably more striking is that the median results from a 4.8% a year real return portfolio are better than the median results from a 100% equity portfolio, even though the annual average return on the equity portfolio is 5.4%. This highlights the importance of sequencing risk in outcomes. The balanced fund with an average return of 4.8% had a substantially worse median result than the 4.8% real portfolio.

Given that there are practical limits to the amount that people are willing and able to save, we would argue that contributions are likely to prove less important than other factors. Contribution rates of between 12% and 15% of salary are probably as much as most people will be prepared to forgo to fund a final salary pension. The emphasis therefore needs to switch to both the level of returns and the order they come in. Indeed, the sequence of investment returns is a key driver of retirement outcomes, which is why consistency is so vital to achieving a secure retirement.

Conclusions

It is clear from our analysis that, if contribution levels are to be kept within realistic boundaries, asset managers and asset owners need to put much greater emphasis on the provision of stable real returns. In doing so, return targets could be made less ambitious and therefore more achievable. Absolute return and other hedge fund type strategies may prove useful here, as could some sort of volatility control overlay. We would not wish to minimise the difficulties of attempting to reach more certain targets but, if it can be shown that such targets are achievable, the benefit should be well worth paying for.

Greg Cooper, Head of Institutional, Asia Pacific
Is inflation overstated?

Correctly measuring inflation is crucial to understanding what is going on in the economy. It matters even more to anyone whose tax or pension is linked to an inflation benchmark. There should be no surprise, therefore, that the accuracy of official inflation measures is often the subject of heated debate. We have looked at one of the most influential, the US consumer price index (CPI), in the light particularly of the impact of new technology. We concluded that it has consistently overstated the rise in prices, something which could have widespread ramifications. Hundreds of millions of dollars of unnecessary social security and pension payments may have been made, while real GDP may have been consistently understated. And although the effects on markets and monetary policy are less clear cut, wrongly-recorded inflation may have introduced distortions to both.

One of the most far-reaching studies of the CPI was published in 1996 by a commission appointed by the US Senate to look at its use in government benefit programmes, chaired by Michael Boskin, an academic economist. The main conclusion was that CPI inflation was overstated by 1.1 percentage points a year as a result of several upward biases:

- The inability to adequately account for consumers switching expenditure between different expenditure categories, known as upper-level substitution bias.
- The inability to account for consumers switching between goods within an expenditure category, termed lower-level substitution bias.
- A quality and new goods bias arising when the CPI’s compiler, the US Bureau of Labor Statistics (BLS), failed to adjust sufficiently for the enhanced quality of goods and services. In addition, it was thought CPI missed the decline in the price of new goods between their being introduced to the market and going in to the index.
- Outlet bias as a result of consumers changing where they make their purchases, with the CPI not picking up the same goods being sold more cheaply at discount stores.

Figure 1 quantifies these four biases. It can be seen that substitution bias alongside quality change and new goods bias were believed to account for the majority of the overstatement of CPI.

The Boskin Report is just one of a handful of studies that have attempted to quantify the bias found in CPI. The consensus of these analyses is that CPI remains biased upwards in the region of 0.6 to 1.1 percentage points a year (see table). The latest studies put a high weighting on quality change and new goods bias. For this reason we have decided to explore this bias in some depth.

1 Here we are referring to CPI-U, which tracks prices typically paid by the urban consumer.
2 Toward A More Accurate Measure Of The Cost Of Living, Final Report to the Senate Finance Committee, December 1996. Note that in response to methodological improvements implemented by the Bureau of Labor Statistics in the years following the report, the Boskin Commission in 1999 estimated the total bias had fallen to 0.8 percentage points per annum. There have been no major changes to the formulation of the index since 2002, when expenditure weights started to be updated more frequently.
15

Figure 1: The Boskin Report mainly blamed quality and new goods for distorting inflation...

...and other studies have come to broadly similar conclusions

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<thead>
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<tr>
<td>Upper-level substitution bias</td>
<td>0.1 – 0.2</td>
<td>0.2</td>
<td>0.15</td>
<td>0.1</td>
<td>0.1</td>
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<tr>
<td>Lower-level substitution</td>
<td>0.3 – 0.4</td>
<td>0.25</td>
<td>0.25</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>New outlet</td>
<td>0.0 – 0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.05</td>
</tr>
<tr>
<td>Weighting**</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.05</td>
</tr>
<tr>
<td>Quality change</td>
<td>0.0 – 0.3</td>
<td>0.25</td>
<td>0.6</td>
<td>0.55</td>
<td>0.37</td>
</tr>
<tr>
<td>New goods</td>
<td>0.0 – 0.5</td>
<td>0.2</td>
<td>0.8</td>
<td>0.8</td>
<td>0.62</td>
</tr>
<tr>
<td>Total</td>
<td>0.4 – 1.5</td>
<td>1.0</td>
<td>1.1</td>
<td>0.8</td>
<td>0.62</td>
</tr>
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* Lebow, Roberts & Stockton did not specify point estimates.
** Lebow & Rudd (2001) define weighting bias as CPI weights being inaccurate in a manner that systematically overstates the change in the cost of living.

As it tracks the cost of a representative basket of goods and services over time, the CPI attempts to make adjustments for the changing quality of the underlying components. One example would be cars, which have become more reliable, safer and more fuel efficient over the years. Even more dramatic have been the improvements to mobile phones such as the iPhone. Failing to account accurately for these rapid changes in quality will inevitably lead to an upward bias to CPI.

New goods bias also presents a challenge for accurate measurement of CPI. According to Boskin writing later, electrical equipment such as VCRs, microwave ovens and personal computers took a decade or more to be included in the CPI basket after they first came on the market3. The time period between such new goods arriving and being incorporated into the CPI generally sees a decrease in the price. This leads to a further upward bias in the index. Moreover, Broda and Weinstein are of the view that, even when new goods are rotated into or out of the sample, the BLS fails to account correctly for the quality upgrades that occur between rotations4.

“As it tracks the cost of a representative basket of goods and services over time, the CPI attempts to make adjustments for the changing quality.”

Several studies have estimated the size of the quality and new goods bias. Broda and Weinstein suggest there has been a 0.8 percentage point annual upward bias in CPI inflation between 1994 and 2003, attributing this to the BLS failing to account for quality upgrades in the product replacement process. Lebow and Rudd estimate quality change and new item bias to be just below 0.4 percentage points per year. Figure 2 demonstrates their findings, breaking down the headline quality bias into individual category contributions and comparing them to those reported in the Boskin Report.

Figure 2: The overestimate continues, but not as badly as before

*Lebow & Rudd use different consumption expenditure weights to those used in the Boskin Report. This accounts for the slight difference between the aggregated total of 0.69 shown here for Boskin and the 0.61 in the original report. Source: Lebow and Rudd, 2001.

One of the greatest drivers to the improved quality and efficiency of goods and services is technological change; so much so that many of the major consumer advances of the last several decades are now being combined in a single product. The iPhone is a classic example of how technology has reduced the need for a whole host of items, including cameras, CD players and GPS systems to name just a few.

Most of this extra convenience to the consumer is not picked up by CPI, which continues to measure the individual items separately. So whilst the price of an iPhone now is surely higher than a typical phone 10 years ago, the improved functionality and convenience should outweigh the measured price increase. However, price indices such as the CPI struggle to directly capture the enhanced quality of products like the iPhone. There may be an indirect price effect, however. If these products reduce demand for the goods and services they intend to replace, the prices of the latter may fall, dragging down CPI. The same argument can be used for how low cost apps developed in the last 10 years feed into CPI.

Correcting for the quality of digital content and software is particularly challenging. Much of the new digital content is offered to the consumer at little to no direct cost, thus its contribution to CPI is limited despite apparently improving our welfare. Moreover, even if any bias were corrected, it would have a limited effect. The “Information technology, hardware and services” category in the CPI, which includes digital content, has a weight of just 1.2% (based on 2013–2014 weights).

Hedonic adjustment is one of the methods the BLS uses to control for quality changes in goods and services. This methodology involves a regression which breaks down the price of a product into implicit prices for each important feature and component, for example processor speeds for computers. At the time it was introduced in 1987, it was aimed at adjusting the rent and homeowners’ equivalent rent sub indices of CPI to reflect an ageing housing stock. More recently, hedonic adjustment has increasingly been used in the construction of CPI sub indices where quality is improving, such as electronics and apparel. As a quality adjustment method though, hedonic adjustment is still only used only for a small number of goods.

If CPI is indeed overstated, it is likely to affect real output and productivity, government finances, private agreements and, in part, the formulation of monetary policy. Let us first consider the impact on real GDP. The national income and product accounts (NIPA) use the component CPI indices as inputs in calculating real GDP. However, the US Bureau of Economic Analysis (BEA), which is responsible for compiling NIPA, uses a different method to the BLS to aggregate real series. Known as a chained Fisher approach, this is expected to eliminate upper level substitution bias. Furthermore, the BEA makes some quality adjustments not made by the BLS.

The result is that the overstatement of CPI is not carried across in full to the consumption component of the national accounts, meaning it is potentially in the region of less than 0.5 percentage points per annum. Assuming a bias of 0.4 percentage points a year and consumption accounting for two thirds of US GDP, Boskin estimates an understatement of real GDP growth of approximately 0.25 percentage points per annum. Adjusting for a 0.25 percentage point a year under-recording of real GDP per capita since 1980 suggests the actual level rose 91.9% between 1980 and 2014, well above the official figure of 76.6%. This is equivalent to real GDP per capita in 2014 being 8.7% higher than official statistics report.

Miscalculation of inflation could help explain the apparently low level of productivity growth experienced by the US in recent years, implying that it had been stronger than officially recorded. However, we cannot say with certainty that the overstatement of CPI, and thus the understatement of GDP, explains the slowdown in US productivity growth. This would imply that the bias has increased in the last five years or so, which is not entirely clear, despite advances in technology.

The overstatement of CPI has major implications for government finances though. From a revenue perspective, tax brackets are regularly revised upwards in line with the CPI to keep them constant in real terms. With the overestimation of CPI, it is likely to be the case that tax brackets have been over-indexed, to the benefit of the consumer, with the government losing out on significant tax revenues as a result. Also weighing on government finances are outlays linked to CPI, such as social security payments. It is believed that one third of federal budget outlays are influenced each year by changes in CPI. Hundreds of millions of dollars of additional government debt have and will continue to be accumulated if estimates of CPI biases do turn out to be accurate and not accounted for.

Meanwhile, many private agreements, such as employment contracts and pension payments, are determined by CPI, at least in part. While workers and pensioners may celebrate, this will be viewed unfavourably by companies, whose expenses will be inflated, and by pension providers, whose liabilities will be overstated. Adjusting for the upward bias in CPI could therefore help bring about a reduction in the underfunded status of many pension plans.

Does an upward bias in consumer price indices cause monetary policy decisions to be fundamentally inconsistent with the underlying economy? Currently the Federal Reserve’s chosen measure of inflation uses the core personal consumption expenditure (PCE) price index. One of the motivating factors in 2000 for the Federal Reserve (Fed) switching to targeting PCE inflation rather than CPI inflation was based on the former suffering less from upward bias due to substitution effects.

Whilst this is not to say the Fed ignores CPI inflation, it does suggest it is aware of the upward bias. It would therefore be reasonable to assume a degree of upward bias is incorporated into the central bank’s 2% inflation target. So where the Fed’s idea of price stability is inflation of 2%, in reality it likely to be slightly lower once account is taken of measurement bias in consumer price indices. In Figure 3 we graph core PCE against core CPI inflation to illustrate the differences in the inflation measures.

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10 Dean Croushore, Revisions to PCE Inflation Measures: Implications for Monetary Policy, University of Richmond, 2007.
Between the end of 1960 and the end of 2015, core CPI inflation was on average 0.5 percentage points a year higher than core PCE inflation. Although this difference falls short of many estimates of the upward bias, it suggests monetary policy does target a measure of inflation that is likely to be closer on average to the true rate. However, the Fed still faces the difficulty of determining what the bias-adjusted target should be, made more challenging when the size of the bias is forever changing.

Any such bias may have implications for the inflation premia built into bond yields. If inflation is materially lower than official figures suggest and is expected to remain so, bonds would look better value, as the inflation premium built into yields would be unnecessarily high. Furthermore, longer dated bonds would benefit disproportionately, given that their higher duration means they should benefit from lower interest rates than previously expected. However, it would not be unreasonable to assume the market already discounts some of the bias in CPI. And, of course, this assumes that the inflation component embedded in bond yields is directly linked to CPI. In reality the relationship may not be that significant.

The biases highlighted by the Boskin Report almost certainly go beyond the US and its markets. In the UK, for instance, academics have generally focused on the bias present in the retail price index (RPI), noting that it has a tendency to report a higher inflation rate than the UK’s own CPI. According to one study11, after factoring in the benefits associated with improving internet connections, CPI inflation would have been just over one percentage point a year lower than reported between 2006 and 2014. Assuming UK CPI suffers from the same biases as US CPI, this would suggest the measurement bias in UK consumer price inflation is not insignificant.

Conclusions

As the digital age advances, the quality of goods and services looks likely to become ever greater, while consumer spending patterns change ever more quickly. Against that background, CPI is likely to remain upwardly biased in the absence of any methodological adjustments. The consensus would suggest this bias is currently in the region of 0.5–1.0 percentage points a year. The resulting understatement of real GDP may help to explain the failure of productivity to rise since the crash of 2009. However, it also means that pension levels and tax bands may have been consistently set too high, pushing public debt to levels to which it need not have gone. The implications for bond markets and monetary policy are less clear cut. It would seem likely that market participants and policy makers alike may already correct for some of the deficiencies of inflation measures. That begs the question as to whether they are arriving at a better estimate and, if not, how can that be achieved? Finding the answers is likely to be something that will tax economists for many more years yet.

Marcus Jennings, Economist, and Keith Wade, Chief Economist and Strategist

Primer: taking correlations out of the black box

One of the most frequently used and misused statistics in investing is correlation. As with most things, we misuse it with the best of intentions. We tend to look at correlations where data is plentiful rather than assess the relationships we care most about. In this article we seek to highlight some of the challenges of using correlations. Overcoming them, we suggest, requires us to move from calculating correlations in a “black box” to using a more discerning approach. The impact on a portfolio can be significant.

To set the stage, we start with a short correlation quiz. Below are two figures that plot the cumulative returns of two pairs of assets. Look at each figure and decide whether the correlation is strongly positive, positive, about zero, negative, or strongly negative.

**Figure 1: Guess the correlation**

The answer is not obvious from a cursory glance. The two series on the left of Figure 1 share the same long-run trend, so they appear to be positively correlated. However, the short-term deviations from that trend are identically opposite, resulting in a correlation of -1.0. In contrast, the two series on the right of Figure 1 have opposite trends but share identical deviations from those trends, so the correlation is +1.0. There is clearly a divergence between intuition and reality. To understand it better we need to look at the underlying maths.

The formula below states that the correlation between two series is their covariance divided by the product of the volatility of each series. Since volatility is a function of standard deviation, which must be zero or positive, the sign of the correlation is determined by the sign of the covariance. Moreover, dividing by the product of the standard deviations means mathematically that the limits of the range of correlation must be -1.0 and +1.0.

\[
\rho = \frac{\text{Cov}(x, y)}{\sigma_x \sigma_y}
\]
To gain a fuller understanding we need to look more closely at covariance. The covariance of any two series measures how each varies around its average value. Thus, if \( x \) is greater than the average of \( x \) when \( y \) is greater than the average of \( y \), the covariance will be positive. If, on the other hand, \( x \) is greater than its average while \( y \) is less, or vice-versa, then the covariance will be negative. So the covariance (and therefore the correlation) measures the average relationship between two variables over some period, a relationship based on the frequency of the data and the average value of each series over that period at that frequency. Let’s analyse this more closely:

**Average relationship over some period:** In investing, correlation is mostly used to say something about how two assets will behave relative to each other in the future. If the future looks like the past and the relationship between the two assets is very stable, then the correlation will function as we hoped. However, if the correlation is not stable, as is often the case, then the near-term future may look very different from the average of the past.

**Relationship:** The relationship that is measured by the correlation compares two assets against their respective average values over the selected time period at the chosen data frequency. As the time period and/or the data frequency change, so the correlation is likely to change, leading in part to the instability just mentioned.

Figure 2 (left) plots a very simple example of two series where the correlation is a perfect +1.0. Figure 2 (right) extends the first chart by adding one more data point to each series. It may be only one more bit of data, but it makes a huge difference and underscores some key points:

- The correlation flips from +1.0 to almost -1.0. This highlights the instability of correlations.
- The average of each series changes with the period considered. The average shifts up for series 2 and down for series 1, so that even over the period where the correlation had previously been +1.0, the correlation is now negative, as all of the original values of series 2 are now below the new average and all of the original values of series 1 are now above the new average.
- Correlations are very susceptible to outlier data. The additional data point was a whopper and the correlations went from +1.00 to -0.94.

![Figure 2: What a difference a dot makes](image)

For illustrative purposes only. Source: Schroders.

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1 This can be stated mathematically thus:

\[
\text{Cov}(x, y) = \frac{1}{T} \sum_{t=1}^{T} (x_t - \bar{x})(y_t - \bar{y})
\]
What about the real world? Figure 3 below plots the correlation between the S&P 500 equity index and 10-year US Treasury bonds using daily data and a rolling 250-day window (which equates roughly to a year in trading days). This provides some evidence of the instability of the correlation between equities and bonds. Over this period from 1963–2015, the correlation ranges from a high near +0.70 to a low of -0.70%.

**Figure 3: Equity-bond correlation is a moveable feast (or famine)**


Additionally, the averages employed to calculate these correlations have not been very stable. Figure 4 demonstrates how they have changed for the S&P and Treasuries over this period. The maximum average daily return in any 250-day window over this period for the S&P was +23 basis points (bps) and the minimum was -22 bps. But the average of the average daily return for the 250-day rolling windows over the period was only 4 bps, with a standard deviation from that average of just 6 bps. It is clear that these averages have spent very little time near the average of their average values.

**Figure 4: Not so much moving averages as averages that are moving**


Correlation is often used to assess the diversification potential of various assets, but it should not be used blindly. Consider two series whose correlation is zero. Figure 5 (left) shows a scatter plot of the two series, where the lack of relationship is indicative of a correlation of zero. Intuition would suggest that an equally weighted combination of these two series would be very diversifying. Figure 5 (right) plots the first series against the equally weighted portfolio of series 1 and series 2. Here the relationship is very strong and the correlation is +0.95. What happened to diversification?
What happened is that by equally weighting two uncorrelated series, we created a third that looks strikingly similar to one of the originals (series 1). Interestingly, series 2 has a correlation of almost zero (+0.08) with the equally-weighted portfolio. The problem is that, because we have divided the covariance by the product of the volatilities of each series, the resulting correlations are blind to differences in the volatilities of the two series.

Series 1 is roughly three times more volatile than series 2, or roughly the same relationship as that between equity and bond volatility. Consequently, equal capital allocations have resulted in a portfolio that, because of the volatility differences, looks very like series 1. Clearly, correlation tells us nothing about how to weight assets to maximise the benefits of diversification. To extract better information from our correlations, we need to think harder both about what we expect correlations to be in the future and the data we use to calculate them. Our analysis will improve if we first answer some questions:

1. At what frequency do we care about the relationship between two assets?
2. What periods in the past are most representative of the period in the future we care about?
3. How much data do we have to crunch, given our frequency of interest and the number of historical periods similar to our expected future?

This analysis is fuelled by an understanding of the underlying drivers of asset returns. Three key drivers for equities and bonds over one- to three-year periods are surprises in real economic growth, real interest rates, and inflation. Equities respond positively to positive economic growth surprises and negatively to higher than expected real interest rates and inflation. Sovereign bonds generally respond negatively to surprises in any of these fundamental factors. So, if we expect positive growth surprises to dominate, then we would expect the equity-bond correlation to be negative. If, however, we expect interest rate and/or inflation surprises to dominate, then we would expect a positive correlation. If we are unsure which will dominate, we would expect correlations closer to zero.

Conclusions

In the current low return environment, investors cannot afford any sloppiness in portfolio construction. When it comes to correlations we need to recognize their limitations. At best they distil complex relationships into an average over a selected period at a certain frequency of observation. We need to be more careful about the data we use and better match the period and frequency of the data with the problem at hand. And we need to trust our intuition and think about what drives the relationship between assets and how that affects our expectations of their future correlation. With correlations, we need to step out of our black-box mindset and think a little harder about what we want and how that affects the process. Garbage in results in garbage out, no matter how many decimal places we use to calculate the result.

Kevin Kneafsey, Senior Adviser, Multi-asset Investment and Portfolio Solutions
Further reading: 
Investment Horizons

Issue 4, 2015

Retirement planning: an income strategy for old age
There is no one way to make increasingly inadequate pension savings cover ever-lengthening lives. However, we argue that any solution needs to combine investment income with longevity insurance.

Exploiting economic conditions to pursue growth with less risk
A good way of reducing risk is to position a portfolio to best address the prevailing economic environment. But investors first need to identify the environment and then be able to adapt to it.

Interest rates: are investors in for a nasty shock?
The consensus view is that interest rates will rise more slowly and peak at more lowly levels than before. Nonetheless, the underlying drivers of inflation remain, even if they are currently quiescent.

Putting a price on climate change
Our economics team has used the increasing body of academic research to try to quantify the financial effects of climate change, identify the main losers and highlight any winners, if there are any.

Is the spectre of illiquidity again stalking global bond markets?
There has been much debate about the state of liquidity in global bond markets since the crash of 2008–09. While some markets seem unaffected, we highlight others where alarm bells are starting to sound.

Issue 3, 2015

Building and measuring outcome-oriented investment strategies
Tools for measuring the performance of portfolios are often ill-suited to the investment problems they are aiming to solve. We suggest a more realistic alternative to capital-weighted benchmarks.

Why focusing on risk can result in better wealth preservation
Is it possible to strike a balance between generating sufficient growth and protecting invested capital? We have developed a portfolio solution that aims to achieve both goals.

Listed real estate: an unexpected buttress against rising rates?
Many wonder whether property will struggle with a possible rise in interest rates on the horizon. We argue that listed property can not only provide growth for a portfolio, but also diversification.

Can investors do well while also doing good?
Many investors are reluctant to embrace “sustainable” investing, fearful of the effect on performance. We highlight recent research that suggests such worries may be misplaced.

Have cars reached the end of the road in the developed world?
We believe developed country car markets are in structural decline. Future growth will only come from the emerging world. To thrive in this environment, car companies need strong brands or competitive costs, or both.
Harvesting bond returns as rates rise
We argue that it is still possible to generate bond returns by adopting an unconstrained, global strategy, able to allocate risk wherever it is rewarded, without being unduly tied by benchmarks.

Is volatility risk?
Low volatility can be the calm before the storm, while raised volatility can signal danger or opportunity. The key to determining which is to a large extent dependent on investors’ time horizons.

Should investors be increasing equity allocations to emerging markets?
We think it’s time to start taking a second look at emerging markets. The strategic case remains firm, while the tactical arguments for investing are increasingly compelling.

Tapping into behavioural biases can create repeatable returns
Investors often behave irrationally, taking shortcuts when making decisions that throw up opportunities for others. We identify some of the strategies that can be used to exploit these opportunities.

The hidden risks of going passive
Index-based investors may not always realise the risks they face. They may also be missing out on outperformance from better portfolio construction and certain types of active management.

Pointers towards a better pensions landscape
We outline a number of principles we think the defined contribution pensions industry should follow if it is to meet the needs of the increasing number of retired people who must provide for themselves.

Managing volatility for performance and safety
Many investors are looking for a way of reducing and, if possible, avoiding major losses. Measuring and managing volatility can offer an effective solution.

Putting a premium on risk
Simply owning different assets doesn’t amount to a diversified portfolio. A risk premia approach is a much better way to ensure that risk is being properly rewarded.

How chasing storms can generate uncorrelated returns
Insurance linked securities are becoming increasingly mainstream. Offering good returns and true diversification, we think they deserve a place in many more portfolios.

A framework for action in fixed income
Bond investors still need the certainty and income that fixed income has provided, but can’t see where returns are going. One answer is to loosen or break the link to benchmarks.

Is there a smarter alternative to smart beta?
Smart beta seems to offer active-like performance at a passive-like cost, but it’s no panacea. We outline a better way to achieve the same ends.

Engaging for alpha: why more involved fund managers can create better returns for all
The long-term effects on companies of decisions made by equity and bond holders are increasingly under scrutiny. We think fund managers can do better.