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MAGAZINE

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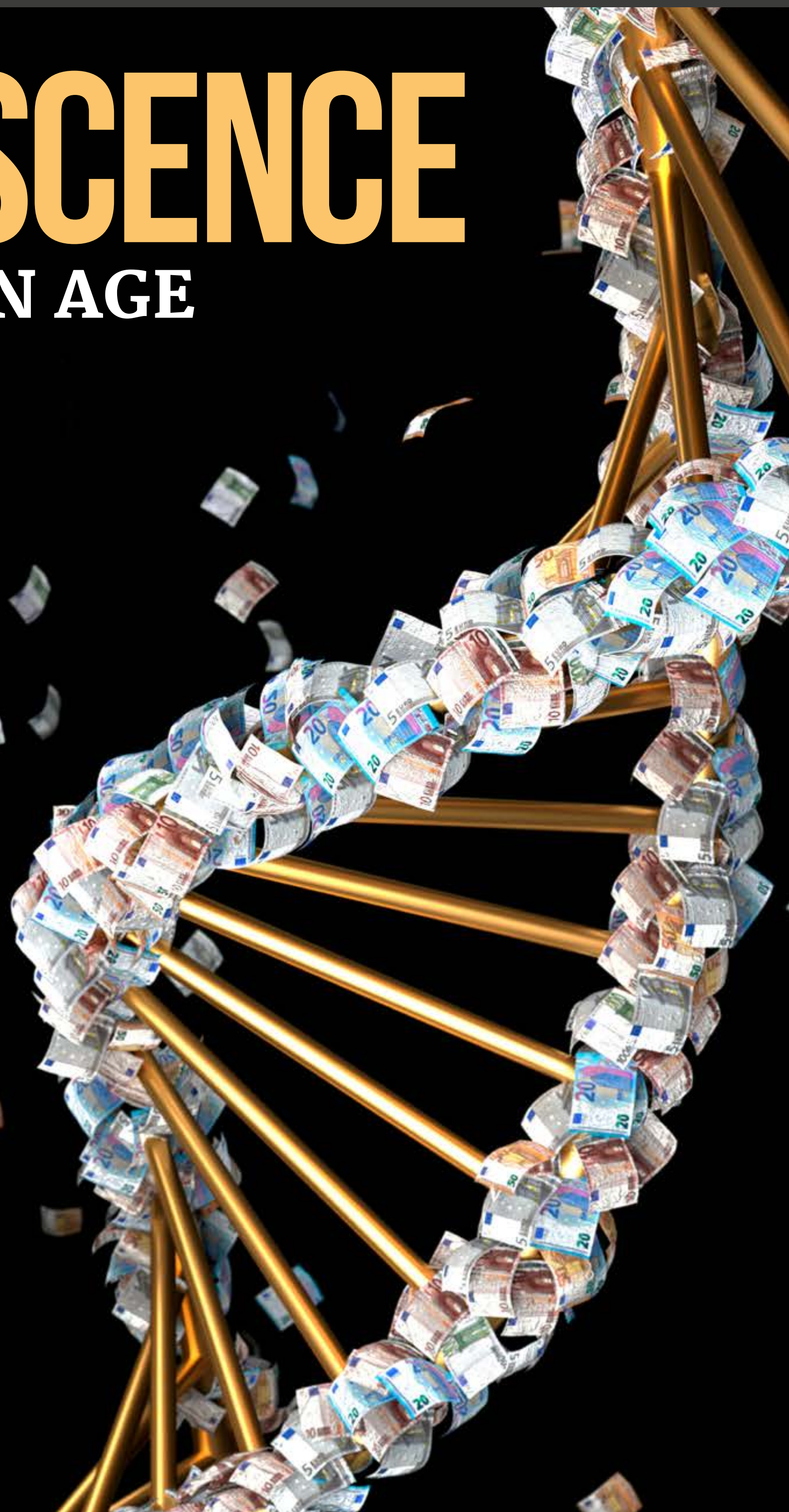
JUVENESCENCE

INVESTING IN AN AGE OF LONGEVITY



PLUS...

AUBREY DE GREY

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HIGH-YIELD STOCKS

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COMMERCIAL PROPERTY

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WELCOME

Dear Reader,

This month's issue offers you access to an unprecedented all-star line-up of contributors.

First up is our regular contributor, Jim Mellon. His 6th book is out now, and as many of you will know, all of his previous books put their finger on the pulse of emerging investment trends.

His latest thesis: "Human longevity will be the world's biggest industry. It will replace the entire healthcare system. It will revolutionise our lives."

Besides Jim, whose views you can find on page 6, we have asked a whole number of hard-hitting experts to give us their thoughts and advice on investing into longevity-related companies.

Victor Hill needs no introduction, and you'll find his extensive report (page 10) a useful high-level introduction to the entire subject. Victor has also identified a few listed companies that anyone can easily invest in.

Aubrey de Grey is someone you may know from his countless appearances in the mainstream media. He is the scientist famous for claiming that the first human to live to 1,000 years may already be alive, and his presentations have been watched by millions. I caught Aubrey during a visit to London, and he is my first sparring partner for a new series of interviews I am launching, starting with this issue. You'll find me picking Aubrey's brain on page 20.

Our editorial director, James Faulkner, managed to get hold of Al Chalabi, the co-author of Jim Mellon's book and an investor, entrepreneur, and advisor with decades' worth of experience. Al's views are featured on page 24.

Nick Sudbury, our resident fund expert, is writing about funds that help you enjoy a longer, wealthier retirement (page 28); and last but certainly not least, the inimitable Alan Steel is sharing his advice about financial planning in an age of increasing lifespans (page 34).

I doubt you'll be able to find a similarly high-calibre group of experts writing about longevity and investing in any other investment publication in the UK. The latest issue is one that my team is particularly proud of.

Would you like to send me some feedback on our e-magazine? You can always reach me at swen@masterinvestor.co.uk, and I reply to all emails.

Best regards,

Swen Lorenz
Editor, Master Investor Magazine

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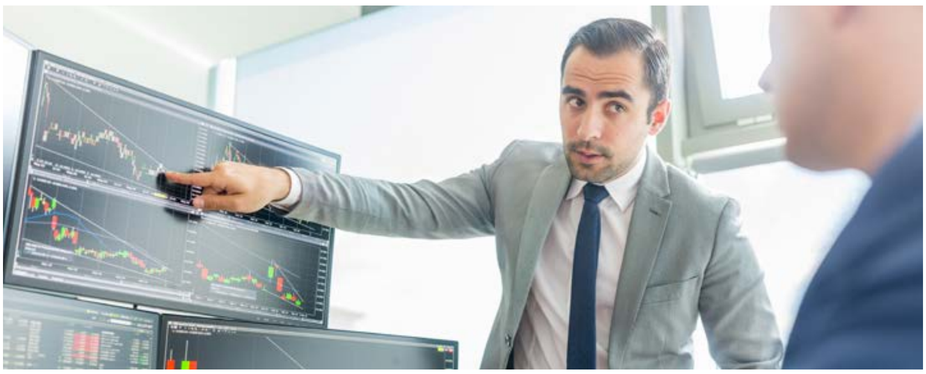
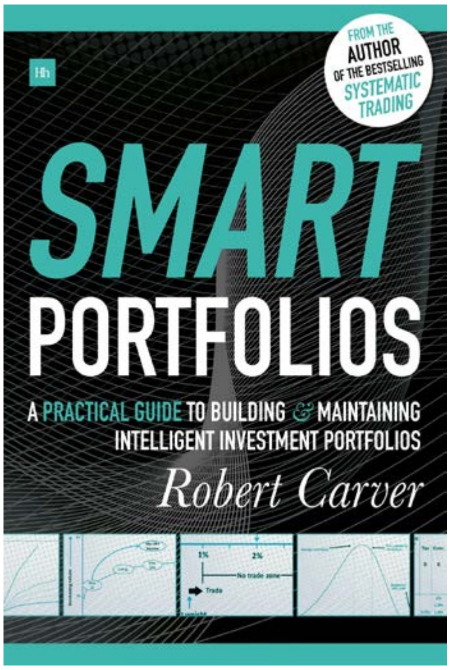




BY JIM MELLON

MELLON ON THE MARKETS

What to write about this month? Victor Hill has already – and brilliantly – covered Catalonia, and I have banged on about Longevity long enough (pun intended). But the latest book (*Juvenescence*) is now out – at last – and the launch party for journos, collaborators as well as friends and family, at the Oxford and Cambridge Club in London last week – with the wonderful Aubrey de Grey in attendance – went well and in a suitably jolly (bibulous!) and juvenescent manner. From MI, Swen, Evil, Leo and Amanda were there. We are putting a great team together.

Markets continue to defy gravity, notwithstanding all of the evident (at least to old market grizzlies like me, Bill Blain and Evil Knievil) pointers that there is more froth than a tired old Starbucks latte in global markets.

In the last month, I really thought gold would break out from a well-travelled range, and it hasn't – at least, not yet. But I still think it will, as will silver and all of the rest of the metals complex. So remain patient – gold et al are climbing the proverbial wall of worry – and winter is coming! So stay snug as a (gold) bug with your yellow metal stuffed at the bottom of the bed.

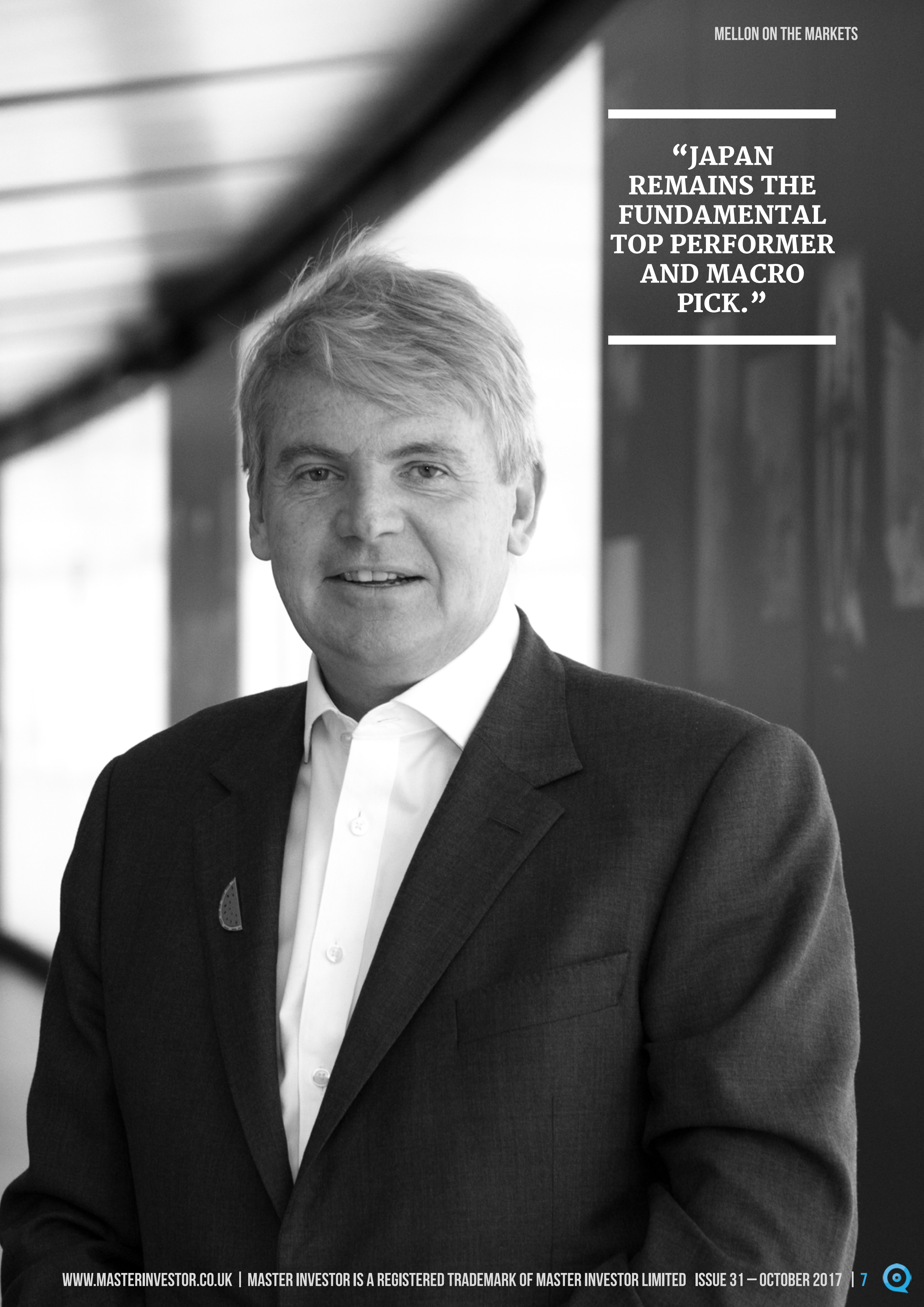
Japan remains the fundamental top performer and macro pick, and the land of the rising index is another must have for the Master Investor portfolio. Indeed, if the yen weakens, it seems to do even better, and I really think that if you haven't got any Japanese exposure, you better get your buying boots on now. I see 25,000 on the Nikkei in about a year's time – and among major markets, there is no upside available like that one.

In fact, there is quite a lot of downside, and as I keep on saying (and am now being proven at least a little bit right), a lot of that is concentrated in the FAANG (Facebook, Amazon, Apple, Netflix and Google) stocks in the US which are now as over-owned as hula hoops in the 1950s and pet rocks in the 1970s – with similar prospects for long-term endurance.

So, a gold-tilted portfolio, leavened with Japan and short FAANGs, seems appropriate. If you are into bond trading, the short side is working quite well as yields are rising almost everywhere. The stats may not reveal it, but I am convinced that inflation is taking off. Go into a London pub, order a glass of wine or a pint of beer and tell me that there isn't inflation – there is. It's just insidious and less visible than it used to be.

Also, the pitchforks are coming out – the gig economy workers, egged on by men like Jeremy Corbyn and decked out in Maoist hats, are asking for more – and they'll get it. I think that despite automation, which is now becoming the bore subject du jour (but which is important nonetheless), we need to recognise that labour conditions are tightening and inflation will result.

At the same time as inflation is on the rise, our glorious government talks of modest tax giveaways, but actually does what all governments



"JAPAN REMAINS THE FUNDAMENTAL TOP PERFORMER AND MACRO PICK."

have been doing for years – devising ways of extracting more money from the citizenry to redistribute as it sees fit. If I had any position of influence, I would urge the British government to raise minimum wages dramatically, and slash in-work benefits. This would have the effect of making people in low paid jobs want to work longer than the 16 hours that many of them work in order to qualify for government (read: *taxpayer*) handouts and would start to redistribute some of the money from fat cat corporations to individuals.

Does that sound Corbynite? In a way, yes, but if we (i.e. we conservatives and libertarians) don't do something now, capitalism, in the tooth-and-claw way he describes it, will be doing the destructive work for him. I can think of nothing worse than having unreconstructed Momentum (that is, *downwards* momentum) types in charge of the finances.

I am heartened to see that Mrs Merkel didn't entirely get her own way in Germany, and also that things aren't going as smoothly for M. Macron as his Jupiterian inclinations would like. It's good to see the smug Europhiles get a bloody nose, as they turn their eyes to the disaster unfolding in Spain.

On Europe, we ain't seen nothing yet. There will undoubtedly be a time when we can short the euro with impunity, but it isn't today. Too big a current account surplus, too many challenges for the principal competing forex options, and a bit premature for the crashing out of Italy. But gosh, there will be money to be made!

We have more or less completed the seed round for Juvenescence (the company) and will have two of the top dogs, Greg and Dec, present at the next Master Investor show, in March next year. The round has been fully subscribed by a small number of professional investors. If you have no other reason to come, please do so just to meet these guys. It is a compelling story and a must follow for every serious investor.

Turning away from the filthy lucre for just a second, and towards health in general, it is now proven that doing word puzzles are a big promoter of avoiding dementia. My girlfriend and I are addicted to Word Storm (no financial interest, hand on heart!) and do it every day. The only dementia we are likely to get is from the ultra-competitive fashion that we go about playing it! For fear of getting into trouble, I am not commenting on our scores!

The reason I bring this up is because we are literally in the dog days of summer for many markets. VIX (volatility measure) is at a very low point, everyone is complacent and something somewhere will break. Trade with caution, and notwithstanding the low returns, cash isn't too bad to hold.

As a final aside, **Avation (LON:AVAP)**, a long-term exhibitor at the Master Investor Show, produced another amazing set of results. This is a really good company and my retirement account (which I intend to draw on in around 2100) is stuffed with them.

Happy Hunting!

Jim Mellon

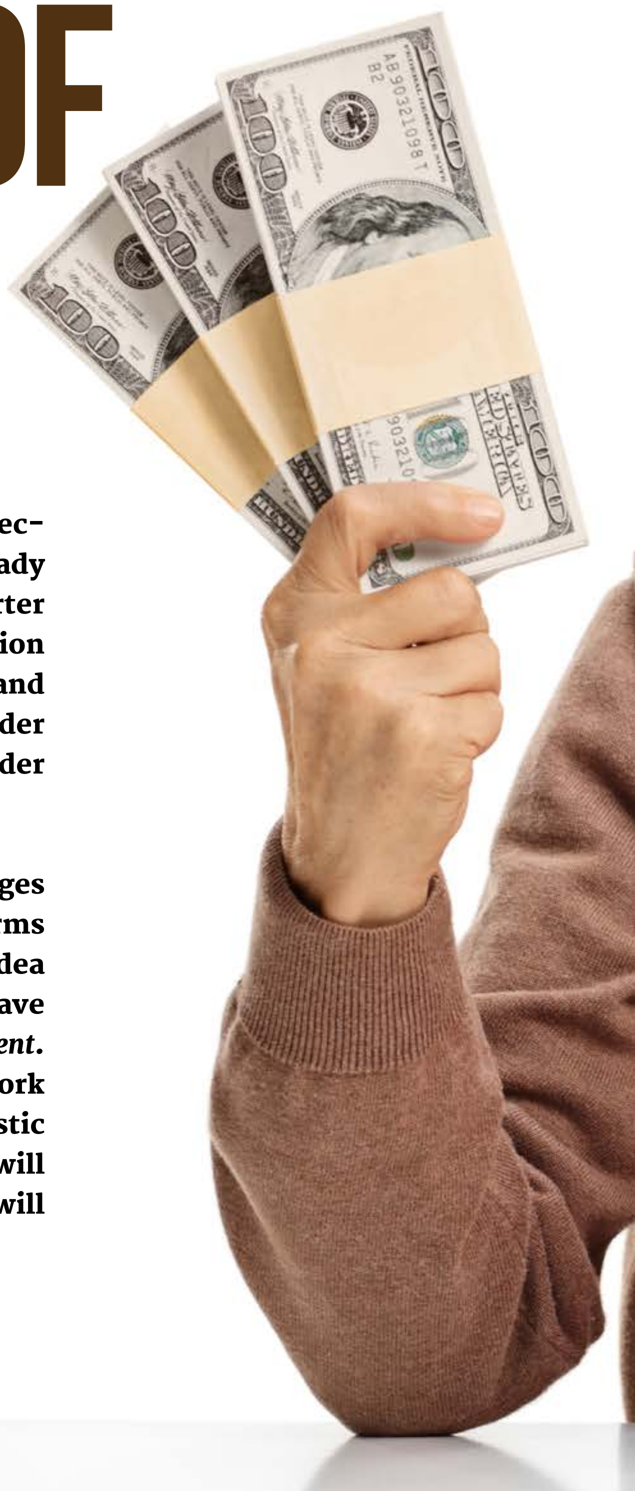
About Jim

Jim is a visionary entrepreneur with a flair for identifying emerging global trends enabling him to build a worldwide business empire. He is amongst the top 10% in the "Sunday Times Rich List" (Britain's equivalent to the Forbes list). He predicted the credit crunch of 2007-08 in a book entitled "Wake Up! Survive and Prosper in the Coming Economic Turmoil". Jim followed this with "The Top 10 Investments for the Next 10 Years" (2008) and then "Top Ten Investments to Beat the Crunch!" (2009). His monthly "Mellon on Markets" column has gained him cult status among investors. He holds a master's degree in Politics, Philosophy and Economics from Oxford University.

BY VICTOR HILL

OPPORTUNITIES IN FOCUS

HOW TO INVEST IN AN AGE OF LONGEVITY



So people are going to live longer. And old age will not necessarily mean infirmity. The demographics are already changing rapidly: by 2045 over-65s will make up one quarter of the population in the UK – that will be nearly 19 million citizens. This trend is even more pronounced in Japan and Germany. Companies that offer goods and services to older citizens therefore have a rapidly growing market. And older people have the most assets and thus spending power.

This month I want to identify opportunities and challenges offered by growing grey power – and the change of norms and attitudes that this will entail. For one thing, the idea of *retirement* itself should be quietly junked, just as we have already junked the idea of *continuous lifetime employment*. Only the very wealthy will be able to afford to give up work completely. Thus over-65s will increasingly be enthusiastic members of the workforce, if usually part-timers. They will run marathons and take adventurous holidays. They will also incur huge medical bills…

Welcome to a silver-grey future.

Old is cool (almost)

60 is the new 40, and 70 is the new 50 – or so we are told. 80 is... but you get the idea – there are more and more of our citizens around who are chronologically challenged and yet are still living active, fulfilling and enjoyable lives. Once old age was something people dreaded; now, it is for many who enjoy good health and financial security, the time of their life. "Old" is no longer synonymous with being worn out.

Better medicine, improved diets, a more proactive approach to fitness, and, most of all, rising prosperity have combined to change the nature of our final decades. The old will never be able to outshine the young on *Britain's Got Talent* or *Love Island* – but they will give them a run for their money.

Sir Mick Jagger is 73 – though not as well preserved, if I may say so, as Sir Cliff Richard, 77. Dame Judi Dench is 82. June Spencer, who plays Peggy Wooley in BBC R4's The Archers, is 98. They are all still working, entertaining and making money.

In the USA a man of 70 years old has a two percent chance of mortality in the next year. In 1940 that milestone was reached at just the age of 56. In 1950 just five percent of the world's population was over 65; by 2015 that had reached eight percent. But that figure will double to 16 percent by 2050. And the UN estimates that the number of over-85s going forward will rise at twice the rate of over-65s.

Demographic evolution

The global population is still growing but the population of the Earth is getting older, especially in developed countries where fertility rates are low. A report published by the UK Office of National Statistics in March this year predicts that the proportion of over-65s in the UK population will increase from the current level of around 18 percent to just under 25 percent by 2045. The fastest growth will be amongst centenarians. In 1917 Britain had just 24 centenarians but that figure today is nearly 15,000.

New ways to live in old age

The conventional wisdom is that in our declining years we are headed towards institutional care. There are levels of care commensurate with our levels of infirmity. The term *old people's home* is rightly out of use (being patronising) but a *care home* can mean many things – from a salubrious country house hotel catering for the elderly, to a drab clinical facility for the bed-bound. For those nearing end-of-life there are then *nursing homes* where most of the staff are qualified paramedics.

There are other ways of thinking about how we live out our *golden years* (as the Americans say). **Renaissance Villages**, whose corporate slogan is *impeccable living*, is rolling out a network of high quality retirement developments (called villages) across the UK, targeted at people over 65 years old.

One of Renaissance's latest villages is being completed in leafy Liphook, Hampshire. As well as spacious apartments, the village offers a bar, a swimming pool, a gym (and why not?) an events space (cinema), a snooker room and a library. Residents can live in their apartments and cook for themselves if they so wish, but there are communal dining facilities as well. In the event of any medical emergency or accident such as a fall, they can press an emergency button to summon qualified help.

"THE UN ESTIMATES THAT THE NUMBER OF OVER-85s GOING FORWARD WILL RISE AT TWICE THE RATE OF OVER-65s."

Another provider of accommodation solutions for the elderly is **Wren Retirement Living**. Wren advertises itself as offering a collection of hand-picked, characterful period properties that have been converted into unique *retirement environments*. Wren Retirement Living provides a varied support service for their clients according to an individual's specific needs. It describes its warden-assisted retirement apartments as living *home-from-home*. Wren is owned by Birmingham-based **Healthcare Management Solutions Ltd.** which also offers advisory services to prospective investors who are looking to invest in the care home sector.

Other players in this space in the UK include **Churchill Retirement Living** and the housebuilder **McCarthy & Stone PLC** **(LON:MCS)** (see panel).

Year	UK Population	0-15 years %	15-65 years %	65+ years %
1975	56,226,000	24.9	61.0	14.1
1985	56,554,000	20.7	64.1	15.2
1995	58,025,000	20.7	63.4	15.8
2005	60,413,000	19.3	64.7	15.9
2015	65,110,000	18.8	63.3	17.8
2025	69,444,000	18.9	60.9	20.2
2035	73,044,000	18.1	58.3	23.6
2045	76,055,000	17.7	57.8	24.6

Financial engineering for the elderly

The French have developed, over many years, a unique system for people of a certain age with a significant property asset to continue to live in the manner to which they have become accustomed. It is called *viager* – and anyone who has seen the movie *My Old Lady* with Kevin Kline, Maggie Smith and Kristin Scott Thomas will know what it is. The elderly owner sells the property via a respectable agent to an investor who will inherit the property when he or she (the owner) passes away. Of

course the nub is – as in the film – you just don't know how long the elderly person is going to live. (And you might end up marrying her daughter). This is a Gallic variant of the actuarial conundrum.

The Anglo-Saxon version – *equity release* – provided by big insurers like **Liverpool Victoria** (a mutual) is much less romantic, though increasingly popular. LV provides an easy-to-use calculator on its website. Currently the average amount advanced to elderly persons UK-wide who opt for equity release is £85,668 – but in London that figure is £150,783. One upshot of this kind of financing is that the younger generation, already mired in debt and unable to get onto the housing ladder, will inherit less than their parents did.

Some older people are also exploring new solutions, especially the generation of ex-hippies and their sympathisers. Communal living, Buddhist monasteries, senior flat-shares (often ladies-only) are happening on both sides of the Atlantic. Actually, this is very positive news. Single person households are most likely to be in food and fuel poverty and are also the most environmentally unfriendly. Moreover, an elderly person who lives alone is more vulnerable than one who lives in a community: there should always be someone to get help in the case of an emergency. Inspired by the ultra-successful **Airbnb**, there are already portals for elderly folk wishing to live together.

The elderly are one of the groups worst hit by the era of near zero interest rates. Historically, provident folk accumulated a nest egg for their old age on which they could hope to receive perhaps six or eight per cent interest every year. For some, that might have been enough to live on. Since the Credit Crunch that important source of income has been denied them. There are **NS&I** savings bonds available only to over-65s but they are in very limited supply.

"MANY PEOPLE IN THE UK REGARD THEIR HOME AS THE ULTIMATE SOURCE OF FINANCE TO SEE THEM THROUGH THEIR FINAL YEARS IN A CARE HOME."

The care home business is growing

According to the Lang & Buisson Care of Older People UK Market Report 2016-17, the UK care home market was worth £15.7 billion in 2016, meaning that it accounts for approximately one percent of GDP – so it is bigger than say biotechnology or fintech. And it has been growing at a compound annual rate of three percent over the past five years, mainly driven by the growth of the privately-paid sector of the market which grew by six percent over this period.

Pure self-payers now account for 49 percent (by value) of the total market but only occupy 44 percent of care home places, but they pay a premium rate compared with local authority funded care homes. It is difficult to compare care homes as there is no universally accepted grading system, as there is for hotels, for example. But a standard but good care home will cost around £30,000 per annum and an up-market one with pleasant views and gardens may cost up to £50,000 per annum. The average rate now in the UK, according to Lang & Buisson is £31,200.

Many people in the UK regard their home as the ultimate source of finance to see them through their final years in a care home. But the ultimate cost depends on how many years an elderly person will reside there. A recent study by Newcastle University found that men spent on average the last 2.4 years of their lives in care, while for women the figure was three years. Yet if longevity is going to increase by as much as *Juvenescence* predicts, a person aged 90 who enters a care home might look forward to spending another 25 years there. That is going to pose a serious financial challenge as it would cost much more than the value of the average home.

The state-funded segment of the market is already facing serious challenges. It is no coincidence that one of the key policy issues which emerged in the June UK general election campaign

"A COMBINATION OF FALLING FERTILITY RATES AND LENGTHENING LONGEVITY WILL INCREASE THE *DEPENDENCY RATIO* ACROSS THE GLOBE."

was that of *social care* – that is, how the state is going to pay for residential care of the elderly who are unable to finance themselves. The real policy issue is to what extent people with assets (e.g. houses) should be obliged to use those to fund their care home needs. Despite the **Dilnot Commission Report** on Social care, which was published in 2011, there is still no political consensus on this issue[i].

The increase in the **NHS Funded Nursing Care (NHS FNC)** programme has relieved some of the pressure on care providers in areas where people are more reliant on the state to pay their fees. This is a scheme whereby hospitals can obtain funding for elderly folk who need to be transferred to long-term residential care. It was a response to the epidemic of so-called *bed blocking* in UK hospitals. There is a risk, however, that this boost will be eroded as cash-strapped councils face new challenges not least the increase in staff costs driven by the rise in the National Living Wage.

Then there is the question of profitability. If returns are insufficient for operators and investors in the care home sector, capacity – already insufficient in the UK – will fall at a time when demand is rising due to demographics. And the fewer spaces available in the privately-paid sector, the more the state will have to pick up the slack.

For now, most care homes rely on a mixed clientele of privately-paid and state-funded residents. However, at a local level, markets are typically more polarised towards one type of funding or the other. About 15 percent of over-85s require residential care, according to pension analysts **Hymans Robertson**. Obviously the number of over-85s is set to continue to increase – but the question is whether increases in well-being can outpace demographics. If people can live to 100 years in excellent physical shape they will not require residential care. It is therefore difficult to forecast future demand.

Affording old age

A combination of falling fertility rates and lengthening longevity will increase the *dependency ratio* across the globe. This is the ratio of people in the labour market – normally considered all those between the ages of 15 to 64 – to those who are retired.

National statisticians tend to count everyone who is in receipt of a state retirement pension as "retired" even though, as we know, a lot of people in the UK and elsewhere collect their state pensions and continue to work as before. Ask: Ken Clarke, 77, MP for Rushcliffe, Sir Vince Cable, 74, MP for Twickenham, or John Humphreys, 74 of BBC R4's *Today Programme*.

This dependency ratio is set to fall from 13 percent in 2015 to an estimated 38 percent by the end of the century. All things being equal, this will lead to desperate labour shortages. Except that we know that we are just now embarking on a massive programme of robotisation in which all but the most skilled jobs – and those requiring human empathy – will be taken on by machines.

So it turns out that, once again in human history, necessity is the mother of invention. Robots are entering our lives now because the artificial intelligence (AI) required to drive them is

only just becoming available in the digital age; but also because we desperately need them because of demographic evolution. It is no coincidence that the nation keenest on robotics is the one with the biggest demographic deficit – Japan.

The pension problem

Spending on retirement pensions and healthcare currently takes up 16 percent of GDP in OECD countries but will rise to 25 percent by the end of the century. It is going to become increasingly difficult to pay pensions to people with a good chance of becoming centenarians for the last four decades of their lives if they have only paid in for the previous four decades.

Clearly, people will have to work for longer. And if they are fit and active, most will welcome this. A number of advanced countries have already started to increase the age at which the state retirement pension becomes available. In the UK this is rising incrementally from 65 years old today to 68 for those retiring after 2037. The pension age has been similarly extended in Germany. Unfortunately, however, these modest restrictions to state pension benefits will not be enough to avoid severe fiscal stress on the part of governments.

The first country to introduce state retirement pensions was the German Empire under Bismarck in the 1880s. The pension age then was 70 – later reduced to 65. But the average life

"IN AMERICA, ACCORDING TO THE MARKET RESEARCH FIRM NIELSEN, THE OVER-50s ACCOUNT FOR ABOUT 70 PERCENT OF ALL DISPOSABLE INCOME."

expectancy in Prussia at the time was just 45. Today, 90 percent of the world's population can expect to live to 65 and more than half of those who get there can look forward to another 20 years of life thereafter, half of those free from disability. So to protect governments from going broke we may one day need to get back to the idea that state pensions should be reserved for those who live beyond the normal lifespan – which today in the UK is 79.4 years for men and 83.1 years for women.

Many over-65s in countries like the UK have saved up personal pension pots to be used in parallel with their state pensions. But the income from those pensions will be determined in large part by annuity rates offered by the large life insurance companies. These are driven by actuarial considerations – so, all things being equal, longer human life spans will mean lower annuity rates and therefore lower pensions. It is true that annuity rates are also a function of the yields on long-term government bonds – gilts in the UK – which are, in turn, driven by macroeconomic factors. But lengthening longevity means that either we shall have to cash in our pension pots later or accept smaller pensions.

There is also the question of whether the major life insurance companies like **Aviva (LON:AV)** or **Prudential (LON:PRU)** have correctly priced the annuity contracts that they have already written. If existing annuitants live materially longer than expected the life insurers will, long-term, be much out-of-pocket. Their prospects have already been damaged by near-zero interest rates. It may be that the entire sector is already fatally undermined.

The silver dollar

In America, according to the market research firm **Nielsen**, the over-50s account for about 70 percent of all disposable income. Moreover, that demographic is more in control of its leisure time. No surprise then that the travel sector has developed niche products for over-65s – of which the far-and-away winner is the cruise market.

Readers who have been on cruises will know that elegant over-65s are well represented. On a cruise, passengers can be as active or inactive as they wish – there is something for all. Most new-generation cruise ships even have state-of-the-art medical facilities on-board. But adventure holidays are also much in demand by 65-74 year-olds. They are also the demographic which spends most on speciality food and up-market wine.

There is yet trouble in silver paradise. While divorce rates in America, Australia and Britain are actually in slow decline after their pre-Credit Crunch peak, sadly divorces amongst the over-65s are rising. (Americans horridly call these *silver splits*.) The reasons for this are debated – but one can speculate. Many 70-year-olds still feel something like they did in their 50s; and if you met your partner in your 20s then by the time you are in your 70s you will have had a half century to get to know each other.

Not everyone will like this, but dating websites for the over-60s are booming. There is, of course, a predominance of women as they still live longer than men. Though, true, the gap in longevity is slowly closing as men don't die in accidents and wars as much as they once did. Though, worldwide, the number of men who die of prostate cancer is catching up with the number of women who die of breast cancer[ii].

There are even *companionship* sites such as **Stitch.com** which bring together mainly older women to talk about their (normally dreadful) online dating experiences. It has about 85,000 members. There is some evidence that older users are more prepared to pay subscriptions for online services – but they are also more prone to cancel if dissatisfied.

Elderly folk in the UK are increasingly using the online portals of the supermarket majors such as **Sainsbury's (LON:SBRY)** and **Tesco (LON:TSCO)** to buy groceries and have them delivered to the door. Wearable medical technology is also set to see massive growth in the over-65 demographic.

The received wisdom is that the elderly are technophobes, but this is a misconception – though it is true they sometimes need guidance. Nearly one in ten over-65s in the UK has a **Facebook (NASDAQ:FB)** account and uses it to keep up with friends and family. For that reason **Churchill Retirement Living** emphasises that its retirement apartments are connected to the fastest broadband networks.

Five niche players profiting from increased longevity

Dechra Pharmaceuticals PLC (LON:DPH) is a FTSE-listed veterinary group. Dogs and cats, which are increasingly kept by over-60s as companions, are also living longer. On 04 September it posted a 45 percent leap in half-year revenues. Sales grew to £359 million, up from £247 million in the previous year. The number of animal companions in Europe is roughly static though it is growing slightly in the US – but they are living longer and increasingly have medical insurance and veterinary care plans. Dechra's market capitalisation has risen 14-fold since the company was first listed in 2000. The company is expanding internationally through both organic growth and acquisition. Recently, they have expanded into Mexico, Australia and New Zealand. Dechra's medicines include *Vetoryl* which treats Cushing's disease in dogs and *Felimazole* which treats hypothyroidism in cats. It produces anaesthetics for dogs and horses at its facility in Skipton, Yorkshire.

Saga PLC (LON:SAGA) is a British company and part of the FTSE-100 index which focuses on the needs of the over-50s, offering insurance, medical and travel services. It has an estimated 2.7 million customers. The company operates from several sites in East Kent. Last year it had revenues of £871 million and operating income of £193 million. Saga Holidays provides package holidays and tours. It owns and operates the cruise ships *MS Saga Pearl* and *MS Saga Sapphire* and also owns and operates the Bel Jou Hotel in St Lucia. Its new ship, *Spirit of Discovery*, will be operational in June 2019. Saga Services provides a wide range of insurance products and legal services including motor insurance. Saga Personal Finance provides savings accounts, credit cards and a wide range of financial products. The shares have hardly risen at all over 12 months, in line with the UK insurance sector.

Carnival Corporation PLC (LON:CCL) is the British holding company of the largest cruise operator in the world. The group owns some of the best-loved ocean holiday brands such as AIDA Cruises, Costa Cruises, Cunard, Holland America and P&O. It had revenues of $16.389 billion in 2016 and operating income of just over $3 billion. The company has a fleet of over 100 liners and a permanent staff of 120,000. Its shares have enjoyed a smooth upward trajectory over the last 12 months but came off somewhat in September. At time of writing it is trading at a P/E of just over 17.

Fitbit (NYSE:FIT) is one of the world's leading manufacturers of wearable fitness and medical tracking technology. It has a range of devices aimed at seniors. Some devices just track exercise undertaken and intensity while others can also track key cardiovascular parameters such as pulse and blood pressure. The California-based company had revenues of $1.73 billion last year though it has yet to turn a profit. Its shares have faltered of late after poor reviews of its iconic smartwatch. They are down from around $15 12 months ago to around $6 at time of writing. A buying opportunity?

McCarthy & Stone (LON:MCS) describes itself as the UK's leading retirement housebuilder with approximately a 70 percent market share. Their privately owned retirement apartments feature a House Manager who ensures the smooth running of the complex (a cross between a French-style concierge and a UK-style warden). They have CCTV entry systems, communal lounges and often well-tended communal gardens. Since its foundation in the late 1970s MCS has built over 50,000 retirement apartments at over 1,000 locations right across the UK. On 16 September MCS announced that full-year revenue had reached record levels as selling prices for its retirement homes hit an all-time high. The average selling price exceeded £273,000 per unit for the first time, up from £264,000 in 2016[iii]. At time of writing the shares, which have been flat this year are trading on a P/E of under 12.

"THE CAREER PATHS OPEN TO 21ST-CENTURY CITIZENS ARE GOING TO BE MUCH MORE VARIED AND FLEXIBLE THAN THOSE OF THEIR GRANDPARENTS – AND THAT WILL MOST BENEFIT THE OLD."

Older people in the workplace

It's not just over-65s who sometimes wonder if they are wanted in the workplace. Anecdotally, one hears of over-50s who feel that their age goes against them in the jobs market. Many commentators now view ageism as a form of discrimination that needs to be addressed, just like racism or homophobia. A recent study by the University of Kent at Canterbury found that age stereotypes can strongly affect people's choices about whom to hire. If one of two equally well-qualified job candidates is described as having stereotypically *young* characteristics, and the other has stereotypically *old* characteristics, the *young* candidate is more likely to be selected[iv].

Moreover, over the years the older generation have been sent conflicting messages from policy-makers: we can't afford your pension; but, on the other hand, you should do the right thing and make way for young blood.

Older workers are not generally as agile as younger workers, it is true; but what they lack in athleticism they often make up for in social skills, reliability and an excellent work ethic. (For one thing, they don't need as much sleep as young people). Moreover, they are good team workers and are not generally looking for promotion and are therefore less inclined to participate in the Machiavellian machinations of office politics. (Though I'm not sure that applies to Sir Vince.)

A survey by **Aegon (AMS:AGN)** the Dutch insurer recently found that more than half of the over-55s they consulted wanted to make a transition to part-time work as they approached 65 – but less than a quarter thought their employer would permit this.

Ultimately, the cost of employing older staff has been skewed by the fact that, in the traditional organisation, pay increases with age. So, in order that older workers should not be disadvantaged vis-à-vis younger staff members, automatic age-related pay rises will have to be abandoned. The same goes for the age-related freebies offered by governments which, in the UK, include bus passes and free TV licences. Few members of the House of Lords pay for their own bus fares – while the Palace of Westminster cleaners do.

The gig economy and the sharing economy are just made for the new cohort of over-65s who wish to work part-time. It turns out that about a quarter of **Uber**'s drivers are over-50s (who will be disproportionately hit by the recent decision of the Mayor of London to ban them). Figures for **Lyft** (Uber's San Francisco rival) are not known; but we do know that many drivers gig for both firms at the same time. **Wahve**, based in New York, employs hundreds of former finance and insurance professionals mostly in their 60s and 70s. The company's name stands for *Work at Home Vintage Experts.*

Mature Americans, Britons, Japanese and Koreans are also setting up new businesses in increasing numbers. Big Japanese corporations have long since sought to find jobs for over-55s in friendly companies within their *kai* or network. **Hyundai (KRX:005380)** even sponsors start-ups by mature employees.

If seniors work part-time, there are many other socially useful things they can do to fill up the rest of the day – from caring for relatives or grandchildren to working in Britain's expanding network of charity shops which sustain the high streets of many a provincial market town. In the UK, the work of the **National Trust** and **National Trust for Scotland** is made possible by enthusiastic volunteers of a certain age. Seniors are needed as never before.

The *Seven Ages of Man*… Or was that three?

Shakespeare sketched out the seven ages of man: infant, schoolboy, lover, soldier, justice, pantaloon (*With spectacles on nose and pouch on side*) and, finally, *second childishness and mere oblivion/ Sans teeth, sans eyes, sans taste, sans everything*[v]. The Bard, who died aged just 52, had a bleak view of man's inevitable decline with age – no doubt based on his lived experience that, given the state of healthcare and medicine in 1599, most oldies were toothless and useless.

But the 20th-century idea of a three-stage life is still deeply ingrained: education, work, retirement. In fact, such ideas are transient social constructs. The notion is now taking root that life – personal and professional – is a journey on the course of which we can spend time working, in education (re-training or re-skilling – whatever you want to call it) and resting (on sabbatical, as the academics say), and then working again – either full-time or part-time for an employer or as a freelancer in the gig economy. The career paths open to 21st-century citizens are going to be much more varied and flexible than those of their grandparents – and that will most benefit the old.

Our deepest fear: dementia

In all this Brave New World of extended longevity the worry is that, as life expectancy extends, so more of us will fall prey to the degenerative diseases of old age – of which the most feared is dementia, particularly Alzheimer's. Such conditions render people unable to look after themselves, meaning that they become reliant on the support of carers within the family or on the services of homes that cater for dementia sufferers – which do not come cheap.

The search for a cure for Alzheimer's has been advancing slowly in recent years. Last year there was some encouraging news on this front which I hope to explore soon[vi].

The future of death

As the great JM Keynes stated: *In the long-run we are all dead.* The question is how we go. Well, the Grim Reaper has been fired. He was so off-trend. He always turned up too early and was just so miserable. And such a male chauvinist!

Instead, we've hired Thanata. She's an emotionally intelligent Japanese android who takes you step-by-step into that *undiscovered country from whose bourn/ No traveller returns*... She'll sort out your will for you; you can decide together your funeral music – and of course the order of service. You'll have your affairs beautifully in order. But you'll still go there in the end – listening to Mahler, or plainsong, or *Hancock's Half Hour* (whatever you want)... And, simultaneously, you'll announce your departure on social media with generous pre-prepared thanks to all who have loved you and you have loved...

Action

The sectors that are most likely to benefit from the rapidly rising over-65 demographic are: housebuilders which specialise in retirement living, care home chains (of which few are listed); cruise line operators; manufacturers of wearable medical technology; robotics pioneers (especially Japanese ones); pharmaceuticals (especially firms investing in anti-dementia medication); and asset managers. These are all highly investible sectors in their own right but which can only flourish in the age of *Juvenescence*.

About Victor

Victor is a financial economist, consultant, trainer and writer, with extensive experience in commercial and investment banking and fund management. His career includes stints at JP Morgan, Argyll Investment Management and World Bank IFC.

i **See: https://www.nuffieldtrust.org.uk/news-item/funding-social-care-a-reflection-on-the-dilnot-commission?gclid=CjwKCAjwxo3OBRBpEiwAS7X62ROifPQhP261ZcqnA705_cEH0d1zGD6eX6TzP_ETZV9iVS_yZE0rshoCHggQAvD_BwE**

ii **https://prostatecancerfree.org/prostate-cancer/?gclid=CjwKCAjwjJjOBRBVEiwAfvnvBAmu3uY-mVj4lkmKePiUndb86MmAqn47Ev8T9FPaoFBVikbwn7G7jRoCzToQAvD_BwE claims that 300,000 men will die of prostate cancer this year. http://www.who.int/cancer/detection/breastcancer/en/index1.html says that 508,000 women died from breast cancer in 2011.**

iii **See: http://www.proactiveinvestors.co.uk/companies/news/183510/mccarthy-stone-says-full-year-revenue-at-record-levels-as-selling-prices-for-its-retirement-homes-hit-all-time-high-183510.html**

iv **See: https://www.kent.ac.uk/news/society/9330/too-old-to-hire-research-confirms-age-discrimination**

v ***As You Like It*, Act II Scene VII, spoken by the melancholy Jacques.**

vi **See: http://www.independent.co.uk/news/science/alzheimers-disease-dementia-breakthrough-new-drug-scientists-a7218481.html#gallery**

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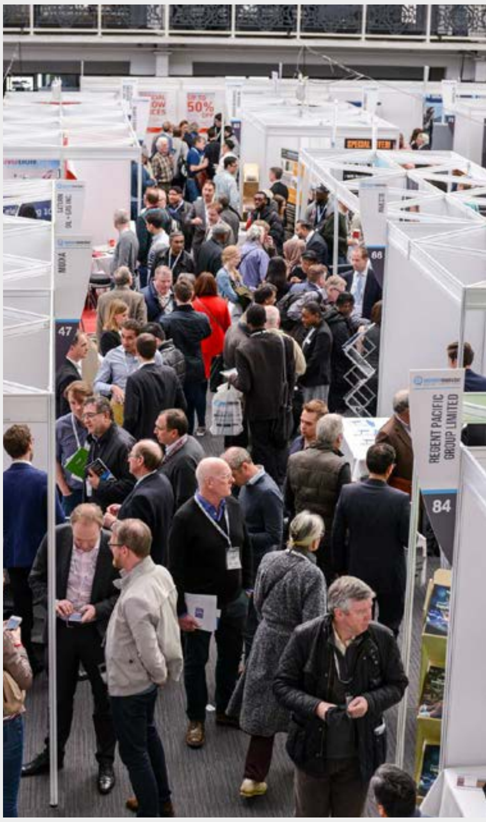

GET IN TOUCH

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BY SWEN LORENZ

10 QUESTIONS FOR...

AUBREY DE GREY

Swen Lorenz speaks with the man who, probably more than anyone else in the world, has become the face and voice of longevity research. His TED Talk "A Roadmap to End Aging" has been viewed 3.3 million times and translated into 30 languages. The London-born and Cambridge-educated author and biomedical gerontologist is currently the Chief Science Officer of the SENS Research Foundation (http://www.sens.org) and editor-in-chief of the academic journal Rejuvenation Research.

Swen Lorenz: In a 2014 interview, you stated that immortality research has a funding problem. Given that no one wants to die that's surprising to hear. Why was funding so hard to come by, and what has changed in the past three years, if anything?

Aubrey de Grey: *First,* ***please*** *don't call it "immortality research". Part of the answer to your question is that journalists with sensationalism in their agenda use that kind of language to describe something that is in fact merely medical research, and thereby they make it sound like science fiction and entertainment, rather than a valid and valuable quest that merits financial support. Other reasons are that the research is perceived to be at too early a stage to have demonstrated that it will eventually succeed, and that the goal of indefinite health may in some poorly-explained way go against the laws of nature. Things have indeed got much better in the past few years, though, with a small but growing band of investors getting seriously involved as more and more of the science reaches an investible stage.*

SL: ***Please help us to understand the market. How does it break down into different sectors, and are there numbers available for them? As we understand it there seems to be a rough dividing line between products that deal with the symptoms of ageing (e.g. anti-wrinkle creams and dietary supplements); products that are aimed at conventional diseases which in turn increases lifespans (e.g., cancer therapies); and there are efforts aimed at actual immortality, such as your research. Is this the right way to look at it?***

AdG: *That is very far from being the right way to look at it. Yes, there is a huge difference between cosmetic anti-aging products and efforts to treat the internal damage of aging, but beyond that it is all about reducing the amount of damage in the body. What you are calling "actual immortality" is nothing of the kind - our research is just more comprehensive than research focused on one or another specific aspect of aging. Also, it's incorrect (though popular) to view cancer as a conventional disease - cancer is part of aging. So the way the market will break down in the near future, as a proper understanding of these biological realities emerges, is that outside of cosmetic interventions there will be ones that slow down the creation of damage, such as dietary supplements, and ones that reverse the accumulation of damage by repairing pre-existing damage, which is what our research is focused on. There will not*

"WHAT GETS ME OUT OF BED IN THE MORNING IS THE SIMPLE FACT THAT EVERY DAY BY WHICH I HASTEN THE DEFEAT OF AGING EQUATES TO 100,000 LIVES SAVED."

"THE MEDICAL DEFEAT OF AGING IS FEASIBLE BECAUSE IT CAN BE ACHIEVED BY COMPREHENSIVE PREVENTATIVE MAINTENANCE, JUST LIKE THE WAY WE KEEP VINTAGE CARS WORKING AS WELL AS THEY DID WHEN THEY WERE BUILT."

be much of a distinction between therapies focused on individual components of aging and ones that try to address the whole of aging, because the latter will be simply combinations of the former.

SL: There have been high-profile commercial investments into longevity research from the likes of multi-billionaire Peter Thiel, the earliest investor in Facebook and one of the true visionaries of Silicon Valley. He has also made donations to longevity research, and he once told the Washington Post: "I've always had this really strong sense that death was a terrible, terrible thing....I prefer to fight it." Is Mr Thiel making actual investments in the conventional sense, or might he simply be using his wealth to buy himself extra time on this planet?

AdG: *Peter is both donating philanthropically to SENS Research Foundation and investing in start-up companies that are taking the relevant science forward commercially. For sure he wants to benefit from these therapies if they reach prime time in time for him.*

SL: I told my mother about your research when I saw her for her 67th birthday last weekend. She laughed it off and said, "That man sounds crazy!" What's your elevator pitch that what you are doing is actually feasible and has a good chance of succeeding?

AdG: *The medical defeat of aging is feasible because it can be achieved by comprehensive preventative maintenance, just like the way we keep vintage cars working as well as they did when they were built. There's a lot that we still don't understand about the mechanisms of aging, but that's not a problem, because in order to do such maintenance, you only need two things: a thorough description of the types of damage that need to be repaired, which we can be pretty confident that we already have (since it hasn't been added to in any major way for 35 years), and a set of feasible interventions that will repair each of the types of damage. The latter is arriving fast: bits of it, such as stem cell therapies for cell loss and immunotherapies for extracellular waste, are already working well in the clinic.*

SL: Your contemporary Ray Kurtzweil is known to swallow a large number of health supplements and pills every day. As they say, shake him, and you'll hear the pills rattling inside him. On the other hand, when I listened to one of your talks in London, I saw you drinking a beer. How do you approach the challenge of increasing your lifespan at this point?

AdG: *I'm more focused on the humanitarian aspect: what gets me out of bed in the morning is the simple fact that every day by which I hasten the defeat of aging equates to 100,000 lives saved. Also, I have drawn a much better metabolic set of cards than Ray, so the supplements that he takes would not help me much, even if they are helping him.*

SL: You inherited £10.5 million from your mother and donated £8.4 million of that to your research foundation. I read you used the rest of the funds to buy yourself a property. Do you believe in pension plans and how are you personally taking care of your financial needs in a potentially very, very long life? How to find the cash to live another 800 years?

AdG: *I'll worry about that later.*

SL: Do you own any investments in the longevity space? If so, can you divulge a few names? In addition to / failing that, what would you NOT invest into?

AdG: *I'm not the investing type, and anyway I have no funds left to invest.*

SL: Do you believe it's more likely that one organisation will have a breakthrough discovery and become the "Google of life-extension" (but 10 times bigger!), or will it be more likely that there'll be a whole number of winners in the sector?

AdG: *I'm quite sure there will be a large number of winners, because the repair of different types of damage requires very different techniques.*

SL: In 2011, the US government introduced the "Regenerative Medicine Promotion Act" to foster research in the area. Has the UK government been pro-active in supporting the quest for longevity? We note with interest that you are basing yourself in California half of the year. Should investors bother looking at UK companies at all?

AdG: *I'm actually based in California the whole time now. But for sure, investors should be looking worldwide. No government has been proactive in supporting bona fide anti-aging research; the US legislation you mention is focused on the application of regenerative medicine to recognised disease, not to aging.*

SL: Your foundation is also a potential investment, though it's one that is focussed on having positive impact on humanity rather than to make anyone rich. Tell us why supporting your foundation is a positive investment for anyone who wants to help us all escape death?

AdG: *The main reason to support SENS Research Foundation, other than the philanthropic goal of hastening the defeat of aging and saving lives, is that our major donors have privileged access to our funded research and researchers, and thereby are placed in the best position to be founding investors in that research as and when it is spun out (and indeed to influence the spinning-out process itself). The Foundation remains an indispensable engine-room of the for-profit industry as it emerges.*

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BY JAMES FAULKNER

A BEHIND THE SCENES LOOK AT JUVENESCENCE

AN EXCLUSIVE INTERVIEW WITH THE BOOK'S CO-AUTHOR AL CHALABI

In this exclusive interview for Master Investor Magazine, our Editorial Director James Faulkner taps into the DNA of *Juvenescence* with Jim Mellon's co-author, Al Chalabi. We uncover the genesis of the ideas that formed the basis of the book, how readers can get the best out of it, and Al's five tips for a long and healthy life.

James Faulkner: Hi Al, thanks for taking the time to speak to Master Investor. For those who don't know, could you explain who you are and how you started writing with Jim?

Al Chalabi: *I grew up in the UK and studied engineering. After graduating I lived in Canada, the US and France before settling down in Hong Kong, where I have been living for some 20 years. During my time in Hong Kong, I have worked in the finance, real estate and technology sectors for a number of organisations but I have had my own business now for almost 10 years. It's a company that sources opportunities in commercial real estate for investors in Asia. It also advises technology and healthcare companies and supports them in raising capital.*

I first met Jim within a year or so of moving to Hong Kong in 1997, as he used to live there and I ended up working for one of his companies for a while. We became good friends and stayed in touch even though Jim left Hong Kong in the early 2000s. It was during one of his visits to Hong Kong in 2003 (I remember the year well as Hong Kong was in the midst of its SARS outbreak and the whole territory was eerily quiet) that Jim and I started discussing the idea of writing a book together. We could see that across all western economies, debt levels (government, household and corporate) were on an unsustainable path and that a day of reckoning was on the cards. We then spent two years researching, writing and refining our manuscript and by the end of 2005, "Wake Up! Survive and Prosper in the Coming Economic Turmoil" was released. We enjoyed the experience of writing together and "Juvenescence" is our sixth collaborative effort.

> **"THERE WERE SO MANY NEW DEVELOPMENTS IN THIS SECTOR THAT WE HAD BARELY SCRATCHED THE SURFACE WHEN WRITING ABOUT IT IN *FAST FORWARD*."**

JF: *Juvenescence* is a book about the medical and financial possibilities of advances in health technologies. How did you decide that this field should be the subject of your latest book?

AC: *Jim and I first started to develop our knowledge of the life sciences sector back in 2012 when we started our research for "Cracking the Code". We were amazed by just how rapidly this sector was advancing. We put this down to the confluence of two events, the first being the completion of the sequencing of the human genome in 2003; the second was the ever increasing processing power of computers, which made it possible to get relatively quick results on tests and analyses that previously would have taken years. The year that "Cracking the Code" was published (2014) proved to be a great year for investors in the life sciences sector.*

So when Jim and I started to think about a theme for a new book in mid 2016, we looked back to our most recent work, "Fast Forward", to see if there were any chapters in it that we could develop and update as a book in itself. We found ourselves drawn to Chapter 2, which is entitled "Life Extension" and concluded that there were so many new developments in this sector that we had barely scratched the surface when writing about it in "Fast Forward". So we decided that life extension, or human longevity as it is also known, would be the subject of our new book.

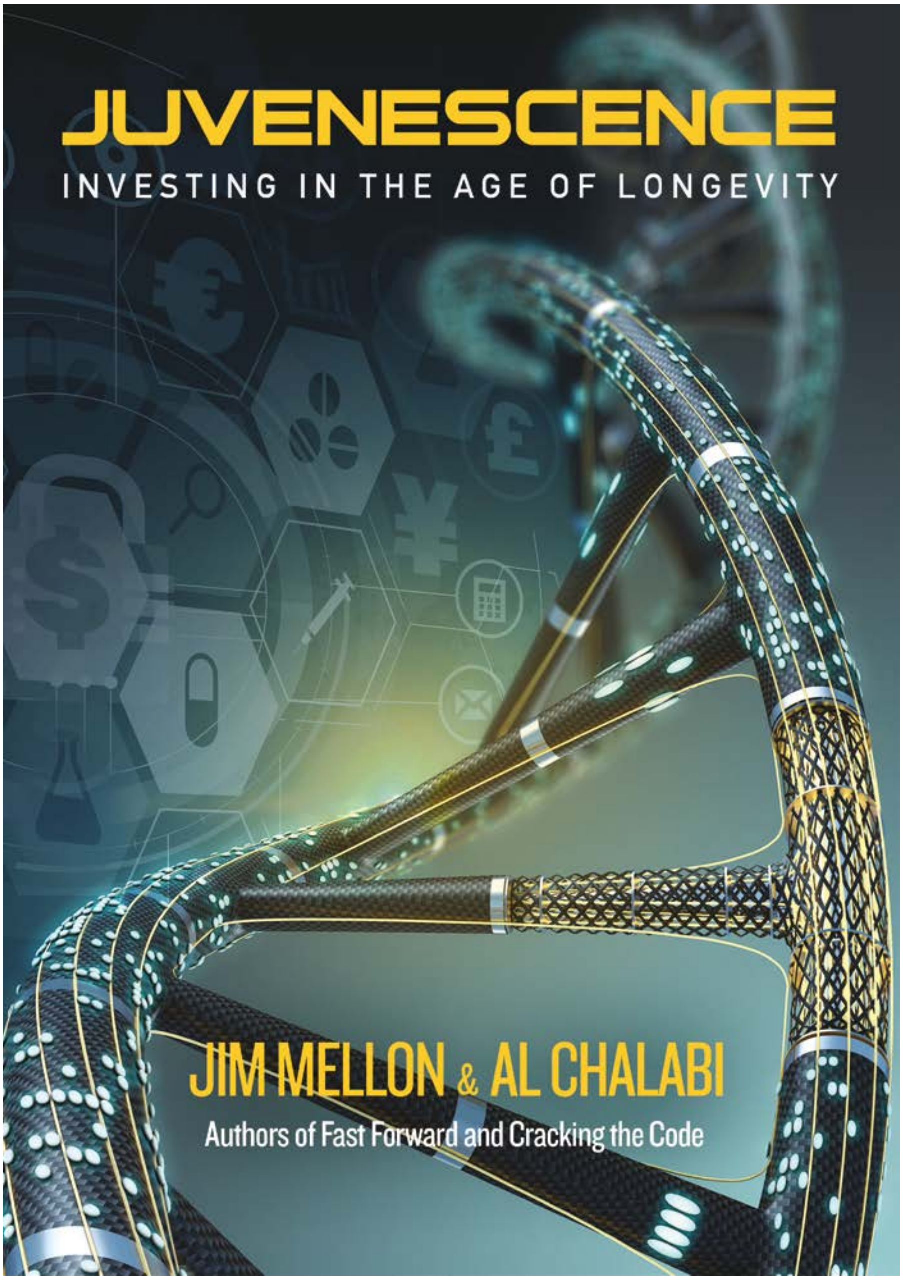
"I AM LIVING IN THE IDEAL PLACE TO RESEARCH AND WRITE ABOUT LONGEVITY."

JF: I think this is the most technically complex of your books so far. How long has it taken you and Jim to get from that initial concept to publication with such a high level of detail?

AC: *Fortunately, we were not entirely new to life sciences, having first started reading about the sector in 2012 when researching and writing "Cracking the Code". That said, I agree that it is an incredibly complex topic and we are certainly not scientists, but we do have inquisitive minds, which helps. There are still many unanswered questions into the causes of ageing and not all longevity/ anti-ageing scientists are in agreement, but today the subject is being taken more seriously and getting the attention it deserves and with it the funding it needs to advance.*

JF: With some of the most exciting opportunities in biogerontology being in privately held companies, how can ordinary investors get the best returns from the sector?

AC: *That is true, ordinary investors will not have access to the privately held companies, but they can assemble a portfolio of listed companies. In the book there is a chapter dedicated to companies that investors may wish to consider for their portfolios, many of which are publically listed. It is important to spread the risk across a number of companies and include some that are more established, such as* ***Amgen (NASDAQ:AMGN)*** *and* ***Novartis (VTX:NOVN)****. The science of longevity is an emerging sector and so comes with high risk, just as investing*



in early stage tech or mining companies does. That risk is best managed through diversification.

JF: What advice would you give to readers who might not have the capital necessary to get exposure to the themes explored in the book via individual stocks? Are there any collective investments that may come in handy?

AC: *There are a few ETFs out there that may be of interest: one is by iShares and is called* ***Ageing Population (AGED)****; another is by Global X, called* ***Longevity Thematic (LNGR)****. More information can be found about them on the iShares and Global X websites respectively.*

JF: You are based in Hong Kong, while most of the firms covered in the book are in America, Europe and Russia. Are you seeing any interesting developments in the longevity field in your region that investors should bear in mind?

AC: *Interestingly, Hong Kong has had the world's longest average life expectancy since 2011, which is when it nudged Japan off the number one spot. The average lifespan for women in Hong Kong is now 87.32 years, and the average for men is 81.24. This is based on data released by Japan's Health and Welfare Ministry in July 2017. So actually, I am living in the ideal place to research and write about longevity. I think the reasons behind Hong Kong's long average life expectancy can be attributed to a world class healthcare system plus the fact that Hong Kong is a hilly, densely populated area, which means that its inhabitants end up walking far more than the average person living in the West does. Car ownership is low and the use of public transport is extensive.*

> **"I THINK THAT INVESTMENT OPPORTUNITIES IN THE BIOSCIENCES SECTOR WILL DELIVER GREAT RETURNS FOR MANY YEARS TO COME."**

JF: As well as information on how to make money in the sector, the book also gives some advice on how to live to enjoy the fruits of your investments. What would you say are the best decisions our readers could make on this front?

AC: *The best advice I can give to those wanting to live a longer life in good health is to (1) not smoke; (2) avoid eating refined sugars and processed meats as much as possible; (3) exercise regularly, even if it's just a 30 minute walk – it will make a huge difference to your overall health; (4) sleep 7 to 8 hours every night; and (5) eat a wide variety of fruits and vegetables, and use plenty of garlic and olive oil when cooking.*

These steps will help promote a healthy weight and reduce the risk of developing diseases such as cancer, cardiovascular disease and diabetes.

JF: Finally, what's next? Where do you think investors should be looking for fresh ideas beyond biosciences?

AC: *There's no easy answer to that one, but I think that investment opportunities in the biosciences sector will deliver great returns for many years to come. We are only just starting to understand the human body's instruction code and as our knowledge improves, we will develop the ability to change "lines of code" in our DNA to fix or even prevent diseases. What could have more of an impact on mankind than that?*

BY NICK SUDBURY

FUNDS IN FOCUS

9 FUNDS FOR A LONGER, WEALTHIER RETIREMENT

The increase in average life expectancy is great news for all of us, but the main challenge is that it makes funding our retirement considerably more expensive. Unfortunately the problem is compounded by the low annuity rates that are the traditional way of generating a pension, with a fund of £100,000 only buying a 65-year-old an annual inflation-linked income of £3,165.

An annuity is an insurance contract that pays a fixed or rising level of income for the rest of the purchaser's life. Until the new pension freedoms were introduced in April 2015, most people with a defined contribution pension – where your income depends on how much you save – had little option but to use the money they had accumulated to buy one of these products.

Before the financial crisis this wasn't a huge problem because the annuity rates, which are linked to 15-year government bond yields, were fairly reasonable. For example, in September 2007, a pension fund of £100,000 would have bought a 65-year old a single life, level annuity of just under £7,500 per annum. This has since fallen to £5,120.

Annuities that increase in line with inflation are even more expensive, but they are often the better option given the length of time that some of us will have to rely on the income. A pension fund of £100,000 would currently buy a 65-year old a single life, RPI linked annuity with a five-year guarantee of just £3,165.

The combination of longer life expectancy, historically low government bond yields, and the pension reforms have made annuity rates extremely unattractive. This has encouraged large numbers of pensioners to take advantage of the new pension freedoms by opting for income drawdown or taking out their entire pension in a single lump sum.

In the six-month period from October 2016 to March 2017 there were 83,687 new drawdown plans, compared to 33,561 new annuities, while 150,806 people cashed in their entire pension fund in one go. Compared to the same period a year earlier, annuity sales were down by 16%, with the number of new drawdown arrangements increasing by 4% and full encashments up by 18%.

"THE COMBINATION OF LONGER LIFE EXPECTANCY, HISTORICALLY LOW GOVERNMENT BOND YIELDS, AND THE PENSION REFORMS HAVE MADE ANNUITY RATES EXTREMELY UNATTRACTIVE."

The new pension freedoms

The new pension freedoms that were introduced in April 2015 have made it possible for those with defined contribution pensions to access their fund in a variety of ways. This includes the nuclear option of taking it all out in a single lump sum.

A more conservative alternative is income drawdown, where the money remains invested with retirees able to take out whatever income they want as and when they need it. Unlike an annuity they keep full control of their assets and can pass on the residual value to their beneficiaries in a tax-efficient manner.

Drawdown enables people to grow their capital for longer and to vary

"THE NEW PENSION FREEDOMS THAT WERE INTRODUCED IN APRIL 2015 HAVE MADE IT POSSIBLE FOR THOSE WITH DEFINED CONTRIBUTION PENSIONS TO ACCESS THEIR FUND IN A VARIETY OF WAYS."

the income according to their personal circumstances, but it also exposes them to an ongoing level of market risk. Because of this, in most cases it would only be suitable for those with other reliable sources of income to meet their everyday expenses, such as an adequate company pension.

Drawdown investors need to bear in mind that it is harder to make up for any losses when you need to continue to take an income from the same investments, although there are several safeguards that you can put in place to minimise the potential risk. The most obvious of these is to make sure that you have a well-diversified portfolio and the easiest way to do this is to invest in a range of managed funds.

Another important consideration is not to take out too high a level of income that it depletes the remaining value of your fund. This is best achieved by limiting the withdrawals to the natural yield of your portfolio, which means that you will only take out the income and not the capital to live on.

Investment trusts

When investing for income drawdown, investment trusts have a natural advantage over open-ended finds like OEICs and unit trusts as they don't have to distribute all of the income that accrues in their accounting year. Those domiciled in the UK can transfer up to a maximum of 15% of their annual income to their revenue reserves, while their offshore equivalents have no upper limit whatsoever.

"WHEN INVESTING FOR INCOME DRAWDOWN, INVESTMENT TRUSTS HAVE A NATURAL ADVANTAGE OVER OPEN-ENDED FINDS LIKE OEICs AND UNIT TRUSTS AS THEY DON'T HAVE TO DISTRIBUTE ALL OF THE INCOME THAT ACCRUES IN THEIR ACCOUNTING YEAR."

Investment trusts that prudently build up a revenue reserve can use the money to smooth the dividends in subsequent years. This enables them to make up for any dips in the market so that investors are able to enjoy a steadily increasing level of income, which is exactly what you want once you are retired.

The Association of Investment Companies (AIC) has identified 21 investment trusts that have successfully upped their dividends each year for at least the last 20 years. Four of them have done so for the last 50 years, they are: **City of London (LON:CTY)**, **Bankers (LON:BNKR)**, **Alliance Trust (LON:ATST)** and **Caledonia Investments (LON:CLDN)**.

Bankers is managed by Alex Crooke of Janus Henderson Investors and aims to achieve long-term capital growth in excess of the FTSE All-Share index and dividend growth of more than the increase in the RPI. It does this via a broadly diversified portfolio of UK and international equities.

At the end of July there were a total of 198 holdings with the two main geographic allocations being the UK and the US with both accounting for

around 26% of the portfolio and the majority of the rest divided between Europe, the Pacific region and Japan. It has total assets of just over £1 billion.

“DRAWDOWN ENABLES PEOPLE TO GROW THEIR CAPITAL FOR LONGER AND TO VARY THE INCOME ACCORDING TO THEIR PERSONAL CIRCUMSTANCES, BUT IT ALSO EXPOSES THEM TO AN ONGOING LEVEL OF MARKET RISK.”

Over the last 10 years the shares are up by 153%, which is more than double the return from the FTSE All-Share and the fund is now yielding 2.3% with quarterly distributions. The ongoing charges are 0.52% and the shares are trading on a 3% discount to NAV.

There are more than 100 investment trusts that pay a quarterly dividend. This makes it feasible to put together a diversified income drawdown portfolio with different payment dates that generates a roughly equal monthly income.

UK Equity Income

Someone who retires in their early sixties could spend 25 to 30 years in retirement, so it is important that funds held in a drawdown portfolio can consistently increase their level of income and capital value by more than inflation. One area of the market that has managed to do this is the UK Equity Income sector.

Research by the AIC using data from Morningstar shows that £100,000 invested into the average UK Equity Income investment trust on 31 December 1996 would have generated an initial annual income of £3,700 by the end of 1997. By 31 December 2016 the income would have grown to £8,516 as the annual dividend growth over the period was 4.5%, which was almost 2% ahead of inflation.

Over the 20 years investors would have received £119,872 of income from this portfolio, while the capital value would have more than doubled to £226,907.

One of the constituents of the sector is the £519 million **Murray Income (LON:MUT)** trust. It is yielding 4.2% and has increased its dividends for each of the last 43 years.

The fund was created in 1923 and aims to achieve a high and growing income with capital growth via a portfolio of UK equities. It has a concentrated 47-stock portfolio with the largest positions being Unilever, Glaxo, British American Tobacco and Prudential.

MUT is run by Charles Luke of Aberdeen Asset Management and after a difficult period in 2014/15 the performance has started to pick up. Before the dip the shares tended to trade at a premium to NAV, but they have since been de-rated and are currently available on an 8.5% discount.

When investing in this sort of fund it is important to be aware that a larger proportion of the UK stock market's aggregate earnings are being paid out in dividends than ever before. This means that it is essential that the manager carefully selects companies that have the ability to pay a sustainable and growing dividend over the long-term.

Murray Income is paying out all of its annual revenue in the form of quarterly dividends, which would make it vulnerable if some of its largest holdings had to cut back, except that it

has built up about 75% of the annual payout in its revenue reserves. These would be available to cover any shortfall.

Open-ended funds

There is no equivalent smoothing facility available to open-ended funds, as all the income received in their accounting year has to be paid out. The downside to this is that there is more of a risk that drawdown investors could experience a sudden and unexpected fall in their investment income.

One thing in their favour though is that they offer a much greater choice. A 60-year old could potentially spend 20 to 30 years in retirement, so someone in the early stages of drawdown might want a higher risk fund that offers greater capital growth, whereas someone in their 70s would probably prefer a more cautious alternative.

Chelsea Financial Services recommends **F&C MM Navigator Distribution**, a multi-manager, multi-asset fund that is run by Rob Burdett and Gary Potter and is yielding 4.4%. They have worked together for more than 20 years and have developed a unique skill in finding specialist funds from boutique managers with a focus on sustainable high yield.

The firm also likes the **Rathbone Strategic Growth Portfolio**, which is a slightly different type of multi-asset fund that targets risk first and then looks to maximise returns. The manager and his team aim to achieve a long-term total return of between 3% and 5% above the CPI over a minimum five-year period with a targeted risk budget of two-thirds of the volatility of global equities as measured by the MSCI World Equity index. It has a low yield of about 1.4%.

They also recommend **JOHCM UK Dynamic**, which is a small fund that is rapidly gaining a reputation as a strong performer across a variety of market conditions. The manager, Alex Savvides, invests in UK companies that are undergoing substantial positive change that is unrecognised in the current share price. Each holding must also pay a dividend with the fund currently yielding 3.4%.

About Nick

Nick Sudbury is an experienced financial journalist who has written extensively for a range of investment publications aimed at both private and institutional investors. Before moving into journalism he worked both as a fund manager and as a consultant to the industry. He is a fully qualified accountant and has an MBA with finance specialism.

FUND OF THE MONTH – The City of London Investment Trust

The City of London Investment Trust (LON:CTY) aims to provide long-term growth in income and capital by mainly investing in UK equities. It is run by Job Curtis who has a conservative approach to stock selection with a preference for higher yielding shares.

CTY one of the largest investment trusts operating in the UK Equity Income sector and Curtis has put together a diversified portfolio of 107 holdings with the largest positions including the likes of HSBC, Royal Dutch Shell, British American Tobacco, Diageo and Unilever.

Over the last 10 years the shares have risen by 111% compared to the 73% increase in the FTSE All-Share benchmark. It has low ongoing charges of 0.43% and an attractive dividend yield of 4.1% with quarterly payments that are fully covered by the annual income. The revenue reserves are equivalent to around 85% of the full year dividend.

Fund Facts

Name:	City of London Investment Trust (CTY)
Type:	Investment Trust
Sector:	UK Equity Income
Total Assets:	£1,534m
Launch Date:	1891
Current Yield:	4.1%
Gearing:	6%
Ongoing Charges:	0.43%
Manager:	Job Curtis
Website:	www.janushenderson.com

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Personal Investing

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BY ALAN STEEL

DEATH & TAXES

I NEVER THOUGHT I'D LIVE TO BE A HUNDRED

I appreciate that for most of us financial planning is like watching paint dry. And after all there's plenty of time to start thinking about all that stuff. But is there? Have you ever sat down and given any thought to what happens if you live too long or die too soon? There's a fair chance you'll qualify for one of them. When was the last time you gave any real thought to how your finances would stack up if you were to snuff it tomorrow or lived much longer than you'd assumed?

Dying too soon is dead simple to protect against, if you forgive the pun. Get cheapo life cover. It's called Term Assurance. Buy lots of it and stick it in a simple Trust to make sure your loved ones aren't left high and dry while lawyers and HMRC fight it out divvying up your life savings. While you're at it go check what happens to your pension pot after an inconvenient death. And for goodness sake go get a will organised. It's astonishing how many just don't get round to it.

I've heard some crazy excuses for not bothering with a will, even from wealthy and otherwise switched-on professionals and entrepreneurs. Here's a couple of crackers. "Everybody knows that when you die all the money goes to your wife". Not. And how about this one? "The reason I haven't a will yet is that I'm superstitious. I'm worried once I draw up a will, I'll die." No kidding. Both were multi-millionaires. One has died. Wonder what his wife made of the shambles she was left with?

The most common reason given for not getting round to having a will or updating an existing one is "I've plenty of time". Ever experienced what it's like picking up the pieces when somebody didn't bother with a will because they'd plenty of time? Trust me, it's a nightmare. It's worth remembering that even the Titanic had lifeboats. Not enough, as it turned out. Don't let that happen to your family.

Now for the harder bit: living too long. Let me share a story with you. There's this wise man, a Professor of Economics, and he goes on holiday in Ireland with his family, driving in the country in search the country pile he'd booked for the week. His road map is rendered useless a few miles from Dublin thanks to the country folks' fun activity of removing signposts, especially at crossroads. Outcome? They're lost.

Soon they come to an old chap sitting by the side of the road. Does he know the directions to their rented pile? Turns out he's doubly certain, *to be sure to be sure*. He points north and says to keep on this main road, then a mile and a half before coming to a hump back bridge you take a left. The wise economist thanks the old chap and drives off a few miles before realising they'd have to drive all the way to the bridge, then turn round, drive back a mile and a half

"I'VE HEARD SOME CRAZY EXCUSES FOR NOT BOTHERING WITH A WILL, EVEN FROM WEALTHY AND OTHERWISE SWITCHED-ON PROFESSIONALS AND ENTREPRENEURS."

SOMRERK WITTHAYANANT / Shutterstock.com

"LET'S FACE IT: WE ALL KNOW THAT OVER OUR LIFESPAN BROCCOLI IS MUCH BETTER FOR US, BUT RIGHT NOW A CHOCOLATE FIX IS MUCH MORE FUN. THAT'S WHY WE DON'T TAKE PENSION/LONG-TERM PLANNING SERIOUSLY."

and take a right. Life, however, doesn't offer you that second chance.

When you get to your choice of retirement, part or full, if you've under-provided and miscalculated, there's no turning back the clock. Congratulations. You're guaranteed to live too long with too little.

I've lost count of the reports released recently that make grim reading for the financial prospects of the majority in retirement. Yet no matter how much has been written over the last forty years about the risk of just scraping by after the salary stops, too many of us apparently think there's still plenty of time to think about it. Or that maybe something will just turn up. If you're banking on a lottery win be aware you've more chance, I'm told by a statistician with too much time on his hands, of being knocked down on the M6 by a donkey.

I've got more sobering news for you. Your future standard of living is in your hands now. Oh and by the way let me let you into a secret. Time accelerates as you get older despite what Einstein said. Ancient readers (like me) will remember British comedienne Thora Hird who famously said "When I was 40 I went into the kitchen to make myself a cup of tea and when I came out , to my horror, I found I was 65".

Broccoli and chocolate

Part of a presentation I used to give about the need for disciplined long-term successful investment featured a slide called "A Straight Line to Retirement or an Uphill Struggle?" This simple diagram went well with another slide featuring a plate of Broccoli and a pile of Chocolate.

Let's face it: we all know that over our lifespan broccoli is much better for us, but right now a chocolate fix is much more fun. That's why we don't take pension/long-term planning seriously.

There's plenty of time for that. And we prove it by imagining a straight line between now and retirement. Twenty years? Well let's enjoy chocolate for another five then we'll take the broccoli seriously. It's only a quarter of the time after all. And we need new cars and more holidays. I could use a new iPhone, too.

Problem is it's not a straight line. It's an uphill struggle. Take any decent return earned in tax-free growth pension pots, and if you pay contributions to them for say twenty years the eventual fund value will be X. Miss the first five years and contribute for the remaining fifteen years gives you a fund of only half X. Einstein was right about this one. Compound interest is the secret ingredient in building long term wealth. Rule of 72! The earlier you start the bigger your pension fund and the better your lifestyle when the salary stops.

When in 1899 Otto von Bismarck (by the way he was 74 then) introduced the idea of a minimum state retirement pension he intended it to be aimed at the poor and only payable from age 70. Having presumably received advice from actuaries it's little wonder so little was paid out given average life expectancy at birth at the time was only 45 years. And if you did survive to 70 in poverty (a tall order) your average life expectancy by then was a mere two years. (As a matter of interest the US equivalent "state pension" was set up in 1935 providing benefits from age 65 when average life expectancy at birth was only 62.)

The problem is that these days people are living much longer on average. Take the differences between remaining life expectancy for retirees in 1970 and now. A male aged 70 in 1970 could expect to only have another nine and a half years of state pension benefit, whereas now he can expect an extra fifteen years, on average. Across the board for both men and women there's been increases in the last 50 years of over 50% in remaining life expectancy at age 70.

And before the current longevity innovations studied by Jim Mellon in his new book *Juvenescence* kick in to extend life spans, already the number of over 90-year-olds in the UK has risen from 67,000 in 1970 and 228,000 in 1991 to over half a million five years ago. And given the number of baby boomers around, the number of over 90-year-olds is projected to break through one million by 2027 and not far short of two million ten years later. Ouch! What's that going to do to state pension costs and private pension scheme deficits? It doesn't bear thinking about.

So unless you fancy lightening the financial load by being born in Blackpool (lowest life expectancy for boys) or Middlesborough (same for girls), if you want to have a decent standard of life in later years you really have to be prepared to get your own act together. I can't see the state continuing to be able to afford much more, can you? And if you're not prepared to take proper pension planning seriously I'd advise you to be nice to your kids because they'll choose your nursing home one day.

In the old days pension planning was straightforward for many. Being members of final salary schemes meant all the investment or inflation risks were taken over by employers. You retired and were promised a guaranteed pension for life which also protected your partner's income after your death. And you probably received increases over the years.

Or you had private pensions with decent guaranteed income levels or the chance to buy income on the open market... they were called annuities. This used to be quite acceptable up to the mid-1990s but as UK interest rates fell to levels not seen since the 17th century, and as UK Gilt yields followed them, annuity rates fell sharply. To get an idea of just how low they are now consider the best rate available to a would-be client of 56 keen to take his transfer value from his final salary scheme. He wondered what the rate would be for a 3% increasing income with a decent level of widow's pension should he die before her.

"IF YOU'RE NOT PREPARED TO TAKE PROPER PENSION PLANNING SERIOUSLY I'D ADVISE YOU TO BE NICE TO YOUR KIDS BECAUSE THEY'LL CHOOSE YOUR NURSING HOME ONE DAY."

It was only 2.7% BEFORE TAX. Yes folks... For every £100,000 purchase, that's a gross income in year one of £2,700. At 3% increase each year it will take 24 years for the income to double (not including inflation, of course). No wonder thousands are opting for "drawdown" instead. But how are they going to manage risk? How do they select a sensible income level? What about investment returns? Or charges? How will they cope emotionally with a stockmarket crash? If you're 65 today and going to live to 90 I'd imagine there will be a few over the next 25 years.

What about health issues? What about your exposure to scams? The experience since Osborne's so called Pensions Freedom shows the over-65s are vulnerable to financial conmen. Divorce? For years there's been over 100,000 divorces in the UK every year for the over-60s. Ouch. Already there are almost two million "older" divorcees, up five-fold since 1991. Imagine what any of these could do to your income levels.

Cloud Cuckoo Land

A Financial Advice Market Review of the over-55s with pension pots found that the majority of them neither wanted independent advice nor were willing to pay for it. 60% said they didn't need any, 28% said it was a waste of time. In a September survey, 77% of those questioned said they preferred investing without any advice. Only 13% of men said they were willing to pay for it, but the average amount they were prepared to pay was probably less than their annual car insurance. Aarrghh!
And there are still too many older savers hoping the high interest rate glory days of the 1970s and 1980s will return. In a survey a year ago 80% with pension pots said they didn't want to buy an annuity, but roughly the same percentage when asked what income they'd want said they desired one that was guaranteed to last until they and their spouse had died. That's an annuity. Doh!

To thrive financially in retirement it's quite simple. Start investing, using pension opportunities first, as young as you can. Invest on a long-term basis for growth. Take experienced independent advice after asking around for recommendations. Aim for at least £1 million in today's value in the kitty, hoping to top that up with any extra the state can continue to chip in. Make this a priority. It's broccoli not chocolate otherwise. Cloud Cuckoo Land beckons. And let me I assure you, that's for the birds.

About Alan

Alan Steel rose to prominence in the financial sector after being the first person to put pen to paper to accuse Equitable Life of rampant mis-selling. A true champion of the ordinary saver/investor, Alan founded Alan Steel Asset Management in 1975, and now has over £1 billion under management. Visit the company website at www.alansteel.com.

This is the personal view of Alan and is not advice. Readers should take personalised independent advice on such matters.

BY RICHARD GILL, CFA

FROM ACORNS TO OAK TREES

BOOST HEALTH AND WEALTH WITH THESE SMALL CAP STARS

Tying in with the theme of this month's Master Investor Magazine I have taken a look through the London listed small cap companies which in some way or another are contributing to or benefiting from human longevity or people having increasingly healthy lifestyles. The background behind the industry is well covered elsewhere in the magazine so let's get straight on with my top three small cap stocks to improve your health and possibly your wealth.

The Gym Group

According to the Office for National Statistics, people are shunning the twin vices of drinking and smoking in their droves in favour of more healthy lifestyles. Recent figures show that from 2000 to 2016 the percentage of over 16s who were smokers fell from 26.8% to 15.8%. On the booze side of things, from 2005 to 2016 the percentage of over 16s who had drunk alcohol in the week before being interviewed fell from 73% to 63%. So in the words of Adam Ant, *"don't drink, don't smoke, what do you do?"* You go to the gym of course...

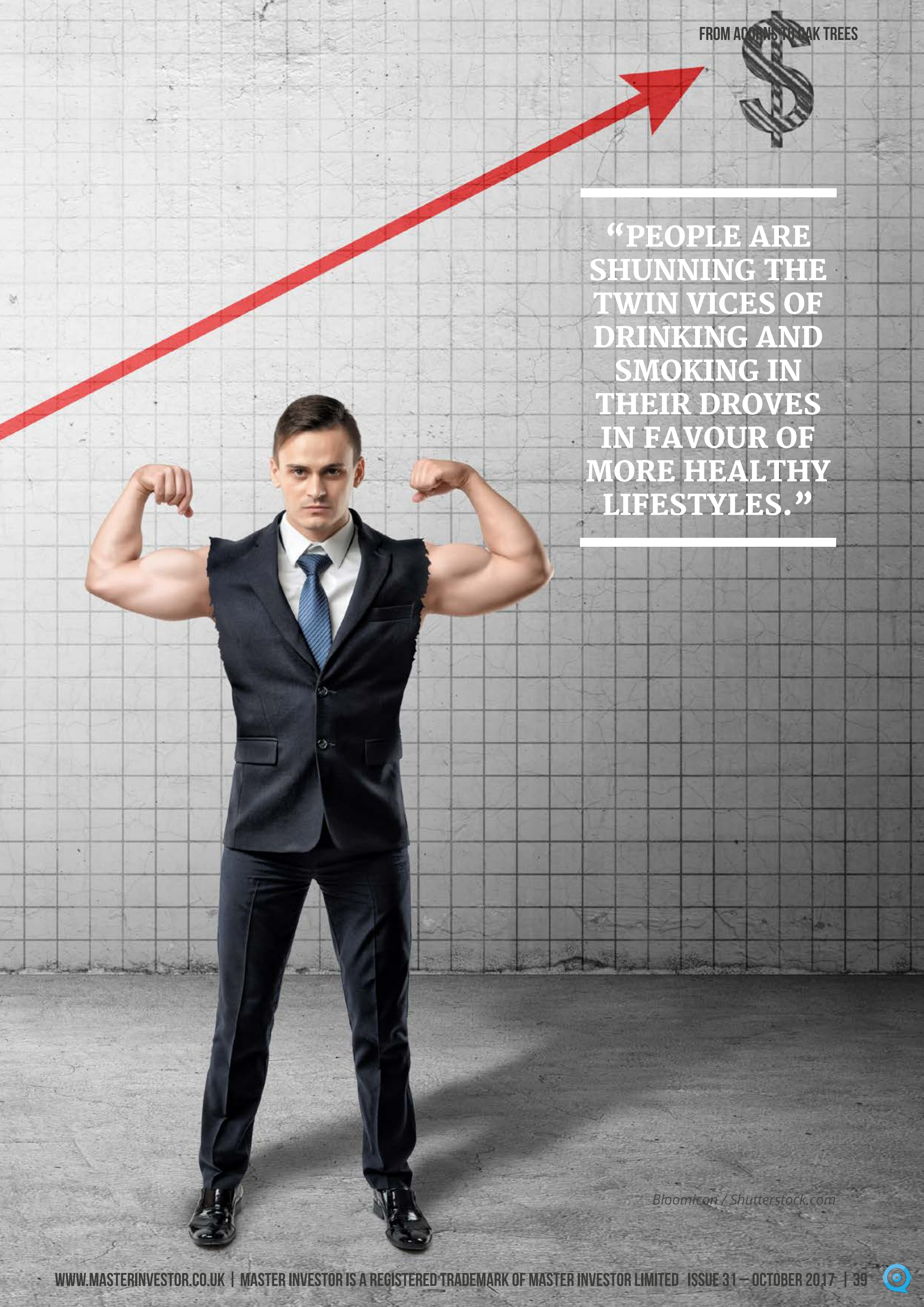
Muscling in on the low cost gym

AIM listed treadmill and dumbbell owner **The Gym Group (LON:GYM)** is a fast growing business which opened its first site in Hounslow in 2008. Since then it has grown to operate a total of 98 low cost gyms across the country as at 15th September this year. That makes it the second largest player in the low cost gym market behind Pure Gym, which has around 180 sites.

The low cost area of the gym market has been the real driver of the private gym industry over the past few years, with there being a total of 515 sites at March 2017, up from 450 a year earlier. These account for an estimated 15% of the market value and 35% of membership in the private sector. Gym Group's customers are getting themselves a bargain, with the average revenue per member per month just £14.28 in the first half of the current financial year.

Not only is membership cheap, when signing up to one of the company's gyms customers are given the freedom to come and go as they please without being forced to sign a contract. Other features include gyms being open 24 hours a day, seven days a week, free Wi-Fi, the latest fitness equipment and new ranges of free and paid-for studio exercise.

Because revenues are not quite as high as other operators in the indus-



“PEOPLE ARE SHUNNING THE TWIN VICES OF DRINKING AND SMOKING IN THEIR DROVES IN FAVOUR OF MORE HEALTHY LIFESTYLES.”

Bloomicon / Shutterstock.com

try Gym Group must therefore operate a lean and efficient business model. Underpinning this is a technology driven ethos which keeps overheads down, with customers only able to sign up online or through dedicated kiosks in the gyms. This lowers costs due to there being no requirement for sales and marketing teams and associated administrative expenses.

Fit financials

Revenue growth has been strong in the past few years on the back of an ambitious but steady opening strategy. Between 2012 and 2016 sales grew by a compound annual growth rate (CAGR) of 34.8% to £73.5 million. Results for the six months to June 2017 showed further growth, with revenues up by 18.8% at £42.8 million and adjusted pre-tax profits up by 41.7% at £6.5 million. The performance was mainly driven by an increase in the number of gyms from 80 to 95 and membership numbers increasing by 19.8% to 508,000.

> **“THE COMPANY EXPECTS TO OPEN 20 NEW SITES UNDER ITS ORGANIC ROLLOUT PROGRAMME IN 2017.”**

Operating cash flow for the period (measured as adjusted EBITDA less working capital and maintenance capex) was strong at £12.98 million. However, with the group investing heavily in expansion (£11.2 million of costs mainly spent on fitting out new gyms) the total net cash inflow for the period was £0.58 million. That left net debt at the period end at the comfortable level of £4.6 million. As a result of the pleasing performance an interim dividend of 0.3p was declared, up 20% on the first half of the previous year.

Six new gyms were opened in the first half of the year and the company expects to open 20 new sites under its organic rollout programme in 2017 having opened 15 new sites in 2016 and 19 new sites in 2015. The company is also looking at making bolt-on acquisitions as a way of accelerating its rollout.

On that note, following the period end Gym Group has acquired 18 gyms from Lifestyle Fitness for £20.5 million in cash. The sites, mainly located in the Midlands and North of England, made a total EBITDA (excluding central costs) of £3.45 million in the 12 months to December 2016 on revenues of £11.1 million. That equates to an attractive looking EBITDA purchase multiple of just under six times, and with a net book value of £19.2 million Gym Group is only paying a modest premium to NAV. The purchase will be funded from current financing facilities, with existing capex facilities also extended by a further £10 million. The deal is forecast to be significantly earnings enhancing by 2019 as a result of growth in membership from the acquired sites.

Weight for the shares to rise

Since listing on AIM in November 2015 shares in Gym Group have risen from the IPO price of 195p to currently change hands for 208.75p. That capitalises the business at £267.7 million. The ride has not been smooth however, with the shares hitting an all-time high of 274p in April 2016 before falling to a low of 159p just six months later and then recovering in 2017.

At the current price Gym Group shares trade on a multiple of 23 times market consensus forecasts for around 9p of earnings in the 2018 financial year. That may look rather expensive at first glance but I believe it is good value given the company's medium-term and long-term prospects on the back of its well thought-out and manageable expansion strategy. As newly opened gyms continue to grow to maturity (typically 24 months after opening) both revenues and profits should continue to grow over the coming years, with increasing economies of scale enjoyed as costs are spread over a wider base. Analysts at Berenberg Bank have a 300p target for the shares, which suggests 44% upside from here.

Science in Sport

When you go to the gym, or take part in any other physical activity such as running, football or tennis, you want to give your best performance. That's where the next company comes in, helping both professional athletes and amateur sports enthusiasts alike to beat the competition with its range of advanced nutrition products.

Spun out of AIM listed food development company Provexis in June 2013,

SiS
SCIENCE IN SPORT

Science in Sport (LON:SIS) is a rapidly expanding sports nutrition company. From bases in London and Nelson, Lancashire, it develops, manufactures and markets a range of performance enhancing products. The company's products are sold in a range of retail channels, including specialist sport retailers, major grocers, high street retailers and e-commerce websites.

"SCIENCE IN SPORT HAS INVESTED HEAVILY IN ITS BRANDS OVER THE PAST FEW YEARS."

The core brands and product ranges include SiS GO, a range of energy powders, isotonic gels, energy bars and hydration tablets; SiS REGO, protein-based recovery powders and bars; and SiS Protein, products designed to contribute to athletes' lean muscle mass growth and maintenance. Crucially for professional athletes, all SiS products are tested and accredited by Informed Sport, a quality assurance program for sports nutrition products which tests for banned substances.

Science in Sport has invested heavily in its brands over the past few years and continues to do so, with sales & marketing costs making up almost 80% of operating expenses in the first half of the current financial year. The brand is further enhanced by associations with professional teams and clubs, including the company being the official sports nutrition supplier to the Team Sky cycling riders and a number of professional football clubs. It also employs a number of former Olympians as brand ambassadors, including cycling legend Sir Chris Hoy.

No dopes

Science in Sport operates in a global sport nutrition market which, according to analysts at Zion Market Research, was worth $28.37 billion in 2016. Driven by factors such as rising demand from lifestyle and recreational users, along with increasing disposable incomes in emerging markets, Zion sees the market growing at a CAGR of around 8.1% between 2017 and 2022. The company has already seen the benefits of market growth, with revenues having risen from £5.5 million in the year to March 2013 to £12.2 million in the 12 months to December 2016 – the year end was changed in 2014. However, the business remains loss making reflecting its current strategy to invest in brand awareness, driving e-commerce and expanding into International markets.

Results for the six months to June this year were released in mid-September and showed revenue growth of 28% in the period to £8.27 million. Driving the performance were an 87% increase in sales from the e-commerce platform and international sales growth of 55% following increased investment in the US and Italian markets. Despite an increase in raw material costs gross margins remained flat at 58.8% as efficiencies at the Nelson manufacturing facility came through.

While there was an underlying loss of £1.14 million at the operating level (which excludes non-cash charges) the core UK and EU business broke even in the first half. The balance sheet showed net cash of £3.9 million at the period end, down from £6.7 million 12 months earlier following the increased investment overseas and in the e-commerce platform and systems. Science is Sport is moving closer to profitability however, with the core UK and EU business expected to be profitable at EBITDA level for the full year, with the overall group EBITDA loss forecast to be broadly in line with expectations.

Run with the shares?

Despite the business remaining loss making, initial investors in Science in Sport have seen the shares rise from

the IPO price of 56p to the current 72.5p, capitalising the company at £33 million. Trading has been volatile however, with lows of 45p seen in April 2014 and a high of 95p being hit in February this year.

Valuing a business which is currently loss making and investing heavily in growth is a challenge. The hope is that revenues can continue growing at their current levels while costs are held stable and scale benefits come through. In my opinion profits don't look like coming for another two financial years at least so investors must take a long-term view on the shares. Notably, several well-known small cap fund managers have large stakes in the business including Downing, which holds 15.16%, and Gervais Williams' Miton Asset Management, which owns a 5.21% stake.

Primary Health Properties

As the population increases and people live longer, demand for healthcare service should also rise steadily. For example, in its recent Five Year Forward View report the NHS estimated health care demand growth of 2.7-2.8% per annum to 2020/21 based upon a 10-year average. Looking further out, the UK Office for Budget Responsibility suggests that health care spending could range from 7.8% to 16.6% of GDP in 2061 compared with just 6.8% in 2016/17.

One company which looks set to benefit from this expected increase in healthcare spending is FTSE Small Cap listed **Primary Health Properties (LON:PHP)**. The company was founded by Managing Director, Harry Hyman, in 1995 and has grown to become a leading investor in modern primary healthcare facilities. The company also has the benefit of being a real estate investment trust (REIT), a legal structure which dictates that at least 90% of earnings must be distributed to shareholders as dividends.

"PHP'S CONTRACTED RENT ROLL CURRENTLY STANDS AT JUST OVER £70 MILLION."

PHP's current portfolio comprises of a total of 304 assets with a gross value of in excess of £1.3 billion. The majority of the assets are leased to the likes of general practitioners (GPs), government health service organisations and other healthcare providers such as pharmacies and dentists. The focus is on investing in assets which can deliver long-term rental income, with additional potential for capital gains.

In terms of rental income, PHP's contracted rent roll currently stands at just over £70 million per annum. This provides a long-term, predictable income stream and enables the company to pursue a progressive dividend policy. Providing further visibility, 91% of its rent roll is funded directly or indirectly by the NHS in the UK or the Health Service Executive in Ireland, with the portfolio benefiting from an outstanding occupancy rate of 99.7%. The average lease term remaining to first break or expiry across the portfolio weighted by contracted rental income is also strong at 13.3 years.

Well run operation

PHP has an excellent long-term track record of growing revenues, asset value and dividends. Like many companies in the commercial property sector it suffered during the downturn of 2008/9, seeing the worth of its portfolio fall due to lower valuations. But compared to companies operating in the retail & industrial sectors it weathered the storm very well, remaining profitable at the operating level and paying consistent dividends. This reflects the underlying resilience of the healthcare property market.

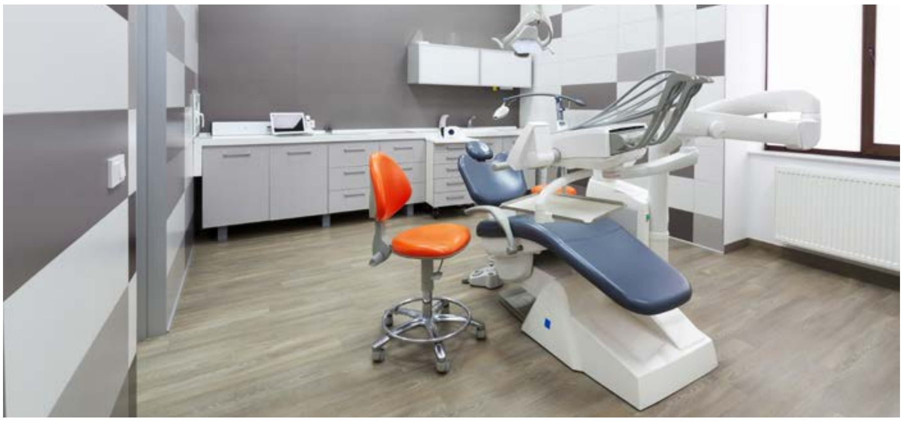
Over the last ten financial years (2006 to 2016) net rental income has grown at a CAGR of just under 20% to £66.6 million, with NAV up by a CAGR of 22.5% to £545 million. Notably for income investors, the company has delivered 21 years of unbroken dividend growth since launch.

The latest figures, for the six months to June 2017, showed net rental income up by 8.1% to £34.8 million and EPRA earnings per share up by 8.3% to 2.6p. Helped by a surplus on property valuation of £29.9 million for the period the EPRA Net Asset Value per share (which adds back the value of certain swaps and movements in the value of the company's convertible bond) increased by 5.5% to stand at 96.1p at the period end.

PHP Primary Health Properties

Total debt at the period end stood at £678.8 million, with PHP being funded by a mix of bank borrowings and convertible loan notes. The average cost of debt reduced by 39 basis points during the first half to 4.26%, with the average weighted maturity of the debt facilities being 5.8 years. Headroom of £96.5 million from existing facilities provides sufficient funds to continue investing in the portfolio.

Following the results the company announced a further expansion of its portfolio via the acquisition of Chelmsley Associates Limited, owner of the Croft Medical Centre, a modern, purpose built primary care centre in Chelmsley Wood, Birmingham. The property, fully let to the partners of a GP practice with an unexpired lease term of over 23 years, was bought for £4.67 million, a price equivalent to the company's NAV.



Healthy yield

Underpinned by sound demographic fundamentals and government backed income I believe PHP is a solid, quality company which should continue to grow well into the future. At the current price of 122.25p the shares trade at a premium of 27% to the last EPRA NAV measure but I believe this is justified given the predictable revenue stream and track record of rising dividends. Income seekers also have the benefit of the company making quarterly payments. With three 1.31p payments having been paid so far this year investors look set for a total annual payment of 5.24p per share, which equates to an attractive yield of 4.29%.

About Richard

Richard Gill is an investment analyst with over a decade's experience of analysing small/mid cap equities. He is the Head of Research at Align Research. Richard qualified with the Chartered Financial Analyst (CFA) designation in 2012 and was awarded PLUS Markets Financial Writer of the Year at the 2008 PLUS Awards. He has been a judge at the Small Cap Awards from 2013 to 2017.

BY JOHN KINGHAM

DIVIDEND HUNTER

UNEARTHING BARGAINS AMONG HIGH-YIELD STOCKS

Every now and then I like to take a look at the highest yielding stocks in the market. Not to buy them of course, because the dividend yield on its own is a crude tool at the best of times. Instead, I'm interested in finding out which companies have crashed and burned, and what lessons I can take (for free) from their various situations. One major recurring theme is the excessive use of debt, so this month I want to ram home the importance of avoiding highly indebted companies, using a series of embarrassing examples (embarrassing because management should know better). As a bonus, one of these companies may actually be a bargain.

In each of these five examples I'm going to look at the ratio of debt and pension obligations to the company's five-year average earnings. In my experience the debt ratio should be below four to be considered remotely prudent, whilst the pension ratio should be less than ten. Anything more than that is asking for trouble.

Carillion PLC (dividend yield 42%)

- **Share price: 44p**
- **5-Year average profits: £141 million**
- **Total borrowings: £689 million**
- **Pension liabilities: £3,378 million**
- **Dividend status: Suspended**

Carillion's **(LON:CLLN)** current dividend yield is an incredible 42%. Of course, that's based on last year's dividend and the dividend has since been suspended, so don't expect to invest and actually get that 42% payout. A suspended dividend is bad enough, but for existing shareholders the 90% share price decline since 2015 was probably far more painful.

So why exactly did things go so badly for Carillion? There are lots of reasons, but its financial obligations definitely made the situation much, much worse.

For a start, Carillion operates in the cyclical construction industry, where lumpy revenues from large and irregular projects are the order of the day. As such, it would be a good idea (in my opinion) for the company to keep debt levels and other fixed costs to a minimum.

However, in recent years Carillion threw that idea out of the window and loaded up with hundreds of millions of pounds of additional debt. Today its total borrowings of £689 million dwarf its recent average profits of £141 million by a factor of almost five to one. That puts Carillion comfortably outside one of my most important investment rules:

- **INVESTMENT RULE: Only invest in a cyclical company if its debt to average profit ratio is below four**

Those high debts are bad enough, but Carillion manages to combine them with an enormous defined benefit pension scheme as well. Its scheme has total liabilities of £3,378 million, some 24-times the company's average profits. This massively breaks another of my investment rules:

- **INVESTMENT RULE: Only invest in a company if its pension liability to average profit ratio is below 10**

"WITH DEBTS LIKE THAT IT'S NO SURPRISE THE COMPANY HAS HIT THE BUFFERS."

As a final nail in Carillion's coffin, the pension scheme has a massive funding deficit of more than £800 million. That deficit is effectively another form of debt, so the company's actual total "debts" are the previously mentioned £689 million plus that £800 million deficit. That's a total debt of almost £1,500 million, which is an astonishing ten-times the company's average profits. With debts like that it's no surprise the company has hit the buffers.

"HIGH LEVELS OF DEBT SHOW THAT MANAGEMENT ARE ACTIVELY WILLING TO TAKE HIGH RISKS, OR ARE UNAWARE JUST HOW RISKY DEBT IS. EITHER WAY, THAT'S NOT THE SORT OF MANAGEMENT TEAM I'D WANT RUNNING ONE OF MY COMPANIES."

Provident Financial PLC (dividend yield 17%)

- **Share price: 794p**
- **5-Year average profits: £209 million**
- **Total borrowings: £911 million**
- **Pension liabilities: £758 million**
- **Dividend status: Suspended**

Provident Financial (LON:PFG) has been in the news recently because it's had some serious problems. It's also one of Neil Woodford's holdings, and currently the media is very bearish about poor old Mr Woodford (although to be fair, he's neither poor nor old).

As with Carillion, the yield is extremely attractive, except you'll never receive that dividend because it has already been cancelled. The shares are also down an incredible 80% over the last six months or so.

How did things get so bad? Provident is a financial services business, which is a cyclical sector. So like Carillion, business volatility should be expected and debts should therefore be kept low. But once again, that wasn't the case.

At first glance, Provident's borrowings come to £1,852 million, almost nine-times the company's average profits of £209 million. This is obviously much more than my debt rule will allow, but there's a catch; £941 million of those borrowings are actually retail deposits in its bank business, which doesn't really count as "borrowings". So ignoring those deposits, Provident's actual borrowings fall to £911 million. This is a mere 4.4-times the company's average profits, but that's still slightly above my preferred maximum.

Provident also has a defined benefit pension scheme, although at £758 million it's not very large, and is less than four-times the company's average profits. The scheme is also in surplus, which is of course very good news.

So in Provident's case I don't think excessive debts were a primary cause of its current problems, but the debts are still perhaps overly large for a cyclical business and very probably made the company's situation more difficult than it otherwise would have been.

Just as importantly, high levels of debt show that management are actively willing to take high risks, or are unaware just how risky debt is. Either way, that's not the sort of management team I'd want running one of my companies.

Petrofac PLC (dividend yield 12%)

- **Share price: 443p**
- **5-Year average profits: £305 million**
- **Total borrowings: £1,929 million**
- **Pension liabilities: N/A**
- **Dividend status: Cut by 42%**

Petrofac (LON:PFC) is a company close to my heart because I've been a shareholder since early 2014. Back then, this oil and gas services company (which, like Carillion and Provident, trades in a cyclical sector) had borrowings of just £824 million, about two and a half-times its then average profits of £330 million. There was (and still is) no defined benefit pension scheme, so its total financial liabilities were well inside my comfort zone.

For better or worse, I cannot realistically influence the management of companies I invest in, so they are free

"DESPITE PETROFAC BEING A CYCLICAL BUSINESS WHERE PROFITS HAVE DECLINED FOLLOWING THE OIL PRICE COLLAPSE OF RECENT YEARS, MANAGEMENT SAW FIT TO MORE THAN DOUBLE TOTAL BORROWINGS TO ALMOST £2 BILLION."

to do dangerous things like load up on excessive amounts of debt as they see fit. And that's more or less what Petrofac started to do after I'd invested.

Despite Petrofac being a cyclical business where profits have declined following the oil price collapse of recent years, management saw fit to more than double total borrowings to almost £2 billion. Debts are now over six-times average profits, which I think is dangerously high.

Given this massive increase in debt I must say it comes as no surprise that Petrofac has run into major problems. Annoyingly, but perhaps sensibly given the current situation, its dividend has been cut by 42%. This is yet another example of how increasing borrowings can boost returns in the short-term, but the end result is a very delicate structure which can break under the slightest amount of stress.

Perhaps I should have sold Petrofac when it first started to pile on debt in late 2014 and into 2015? That's one way to avoid holding highly indebted companies, but these things are rarely so clear cut, as I'm sure you know. Petrofac's decline was not inevitable and it's entirely possible that it could have avoided its current problems, in which case selling in 2015 might have been a mistake. However, if I do eventually sell Petrofac at a loss then I will definitely revisit the idea of selling companies when their debts become excessive.

Interserve PLC (dividend yield 10%)

- **Share price: 81p**
- **5-Year average profits: £14 million**
- **Total borrowings: £465 million**
- **Pension liabilities: £951 million**
- **Dividend status: Suspended**

Unlike Petrofac, which has so far lost me money, **Interserve (LON:IRV)** is a company whose share price more than doubled while I was a shareholder from 2011 and 2013. I sold out because the market was gradually becoming more and more optimistic about this support services business (which is also a cyclical sector) and its ability to generate excellent returns for shareholders. I sold out at just over 500p, which I thought was expensive, although the shares eventually went as high as 700p. Today the shares sit some 90% below that level and investors will never see the quoted 10% dividend yield because the dividend has already been suspended.

In terms of debt, when I invested in Interserve in 2011 its borrowings were £90 million, little more than double its then-average profits of £42 million. Fast forward to today and the company has debts of £465 million compared to average profits of just £14 million. To be fair, those average profits are low because of a heavy loss last year. Excluding that loss would increase recent average earnings to £48 million, but the company's debts are still extremely high at almost ten-times that amount.

On top of that, Interserve has a £951 million pension scheme. That's almost 20-times the company's average prof-

> **"AS USUAL, THE CEO AND CFO HAVE LEFT THE BUILDING, BUT THAT IS LITTLE CONSOLATION FOR SHAREHOLDERS WHO HAVE COLLECTIVELY LOST HUNDREDS OF MILLIONS OF POUNDS IN A SHORT PERIOD OF TIME."**

its and is yet another massive red flag (back in 2011 I didn't look at pension liabilities, so I was blissfully unaware of this risk).

The pension scheme has a £40 million deficit and adding that debt to the company's existing borrowings of £465 million gives a total debt of £515 million. That's more than ten-times the company's average profits, and the picture is much worse if we don't exclude last year's loss.

From this distance it looks as if Interserve is yet another company that got itself into trouble by overreaching its true abilities, aided by an excessive use of borrowed funds. As usual, the CEO and CFO have left the building, but that is little consolation for shareholders who have collectively lost hundreds of millions of pounds in a short period of time.

Connect Group PLC (dividend yield 9%)

- **Share price: 103p**
- **5-Year average profits: £39 million**
- **Total borrowings: £151 million**
- **Pension liabilities: £532 million**
- **Dividend status: Not cut or suspended**

Connect Group (LON:CNCT), the ex-WH Smiths distributor of magazines, newspapers and other things, is slightly different from the rest of this list. For one thing, its 9% yield is not quite double digit, but more importantly its dividend is, for now at least, uncut.

With a dividend yield of 9% I think it's fair to say that the market expects the dividend to be reduced or perhaps even scrapped. So far though, management have not even hinted that this is a possibility. In fact, at the company's interim results in April the dividend went up by 3% rather than down.

Why is the market so negative? I'm sure there are lots of reasons, but an obvious one is that the company's core business of delivering physical magazines and newspapers in long-term decline.

Another cause for concern, or perhaps it's a cause for celebration, is Connect's decision to sell its Education & Care (E&C) business. Unlike the rest of Connect Group's businesses, the E&C business acted as a wholesaler and supplier of goods rather than just a distributor. The E&C business is being sold so that Connect can focus on its core competency of distribution, which I think is a very good idea. Another good idea is that more than £50 million of the cash proceeds will be used to pay down some of the company's debts.

At £151 million, Connect's current debts are just under four-times its average profits of £39 million. That gives the company a debt to average profits ratio of 3.9, which is just about acceptable according to my debt investment rule. But it's close enough that I would still classify Connect as highly indebted.

However, with the sale of the E&C business the company's debts should come down to about £100 million, which is much more reasonable. Disposing of the E&C business will also reduce operating profits by about £8 million, but this will be offset by a reduction in debt interest payments of perhaps £2 million. So the end result for post-tax profits will be a reduction of perhaps £6 million, or thereabouts. That will reduce normalised post-tax profits from 2016's £43 million down to perhaps £37 million, although of course there's always a lot of uncertainty about future profits.

With profits reduced to about £37m and debts reduced to about £100m, the company's debt to profit ratio will be about 2.7, which I think is quite reasonable.

How might this affect the dividend? Since the reduction in profits is around 15%, normalised earnings per share might drop from the current 17p to perhaps 14p, with the usual levels of uncertainty. The 2016 dividend was 9.5p, so that divided would still be covered 1.5-times over. Free cash is currently 15p per share, so that might drop to say 13p (with lots of uncertainty), which also still covers the dividend.

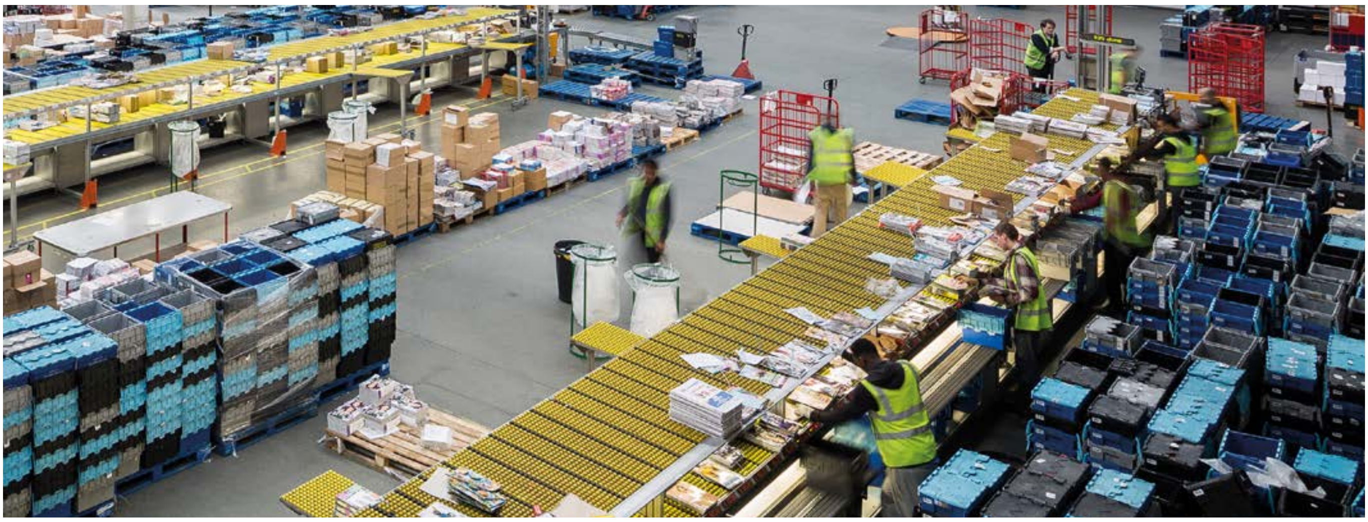
This is all a bit speculative, but in my opinion the dividend cover might be a bit thin, but it's not yet a situation which obviously demands a dividend cut.

So excessive borrowings are not a major problem for Connect, but its pension scheme might be. At £532 million its pension liabilities are more than 13-times its average profits of £39 million (the sale of the E&C business shouldn't make much difference to this ratio). Such a large pension scheme is a major risk because any future deficit could easily be large enough to cause the company serious problems.

However, the pension scheme's assets currently exceed its liabilities, giving the pension a £140 million surplus. In percentage terms that's a 21% surplus, which is very large. This means that despite its massive size, Connect's pension scheme is unlikely to be a problem in the near future.

This creates an interesting situation. Although Connect's pension scheme breaks my rule about large pensions, I think the short-term risks from the pension are relatively small. The company will also have reasonably prudent debt levels in the near future. On top of that, Connect does not seem to be facing an immediate crisis and yet its dividend yield is 9%. It's also the ninth highest-rated stock on my stock screen.

As you might have guessed, I'm beginning to think that Connect could make a sensible investment, albeit a slightly high risk one. Right now I'm undecided, but unless I've missed some hidden danger there's a good chance I'll put three or four percent of my portfolio into Connect Group at some point over the next few months.

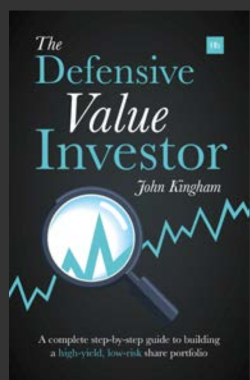


About John

John Kingham is the managing editor of UK Value Investor, the investment newsletter for defensive value investors which he began publishing in 2011. With a professional background in insurance software analysis, John's approach to high yield, low risk investing is based on the Benjamin Graham tradition of being systematic and fact-based, rather than speculative.

John is also the author of *The Defensive Value Investor: A Complete Step-By-Step Guide to Building a High Yield, Low Risk Share Portfolio*.

His website can be found at: www.ukvalueinvestor.com.



BY FILIPE R. COSTA

THE MACRO INVESTOR

HOW TO PLAY THE MONETARY POLICY DISASTER

"I do not think it is an exaggeration to say history is largely a history of inflation, usually inflations engineered by governments for the gain of governments."

- Friedrich August von Hayek

Is this really the "new normal"?

More than a decade after the collapse of the financial sector, and at a time when the U.S. economy is operating near full potential, investors still believe that the Federal Reserve will continue on its largely dovish path. With 10-year Treasury bonds yielding a tiny 2.3% and unemployment at a 16-year low, either investors are foolish or they expect interest rates to *normalise* to much lower levels than they did in the past.

Across the pond things aren't much different. Economic recovery has been gathering pace, but bond yields remain mostly unchanged while negative yields are not rare on maturities of up to seven years. Such a state of affairs is intriguing because there has always been a strong positive link between bond yields and economic growth. We are either living in changing times or the bond market is in a massive bubble, inflated by over-exuberant monetary policy, just waiting to be pricked. History suggests that the latter is most likely, which means all those investors concerned with a long-term horizon should be prepared for harsh times in the bond market. After all, the government has a great incentive to generate inflation – which they will, sooner or later.

The current state of monetary policy

The U.S. Federal Reserve decided to leave its key interest rate unchanged at its last meeting, after raising it two times so far this year (in March and June) to the current 1.25% level. But policymakers left the door open for an additional hike, which would likely be scheduled for December. Nevertheless, the accumulated rate hike would be unlikely to surpass 75 basis points (0.75%), which is too weak, taking into consideration the fact that rates have been sitting at their lowest level ever.

The Federal Reserve's chairwoman, Janet Yellen, has been demonstrating her confidence in the nation's economic performance, which explains her willingness to advance towards policy normalisation. This sentiment is also supported by other policymakers, including Robert Kaplan (Dallas Fed), Esther George (Kansas City Fed) and John Williams (San Francisco Fed). All of them point to an additional rate hike this year

“THE GOVERNMENT HAS A GREAT INCENTIVE TO GENERATE INFLATION – WHICH THEY WILL, SOONER OR LATER.”

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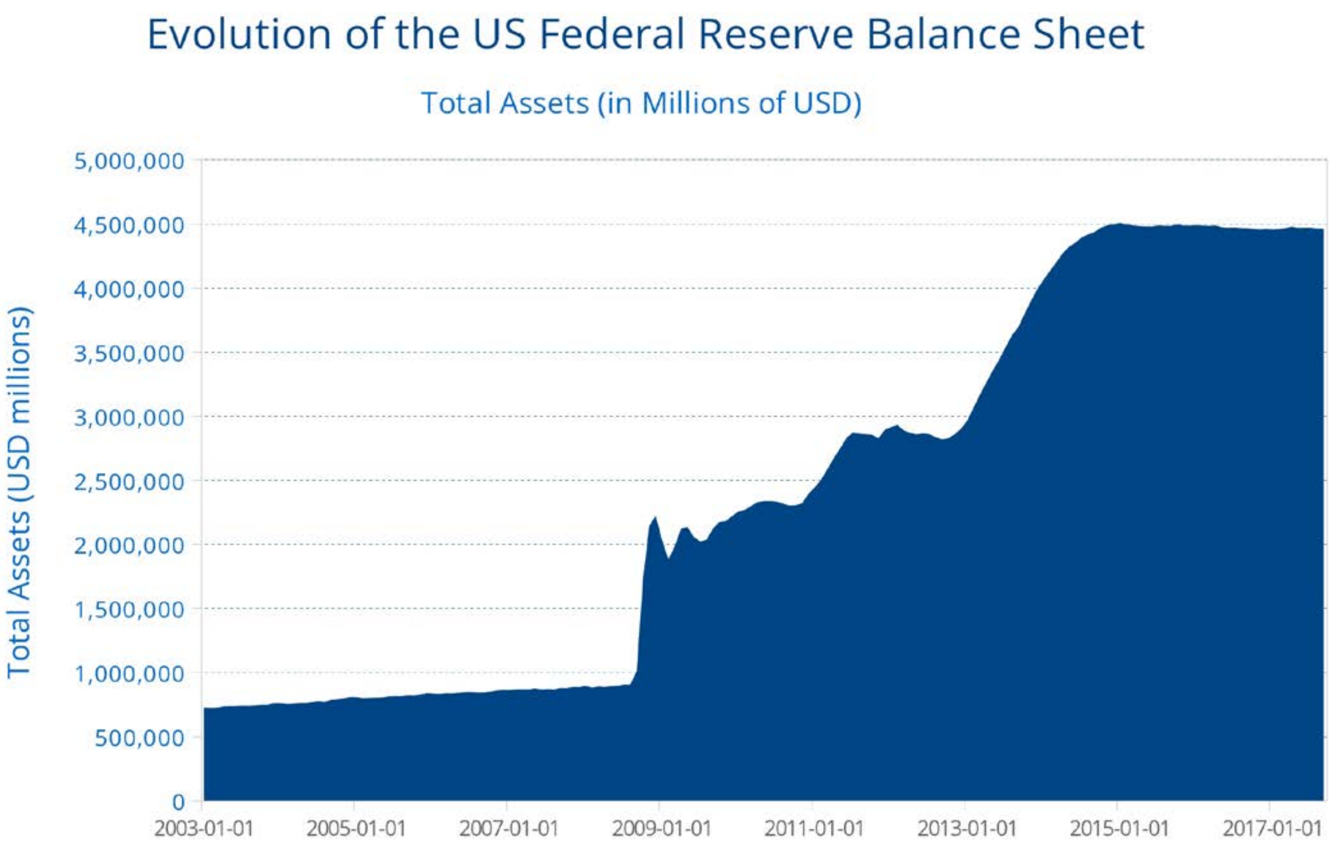
> **"POLICYMAKERS SEEM TO HAVE LOST THE LINK BETWEEN ECONOMIC ACTIVITY AND INFLATION."**

followed by another three next year. But, despite the positive mood, they remain cautious regarding the pace of rate increases. If everything goes as expected, the Fed funds rate will be sitting at 2.25% by the end of next year (assuming that each hike is 25 basis points, as in the past).

While rate normalisation usually spans over a few years, it also usually occurs at a much faster pace than what is expected this time round. Let's take as an example the period between 2001 and 2006. In 2001, the Federal Reserve started cutting interest rates to fight recession, until hitting a rate of 1.00% in June 2003. As the economy regained life, the Federal Reserve started policy normalisation, hiking the interest rate five times in 2004, from 1.00% to 2.25%. In the following year, the central bank pushed its key rate further to 4.25% over eight consecutive hikes. Some four additional hikes followed in 2006, and the interest rate was pushed to 5.25%. But this time the Federal Reserve left rates unchanged for seven years after cutting to a record low of 0.25% in December 2008. Since the end of 2015, when the first hike occurred, the Federal Reserve has pushed interest rates higher by just 100 basis points and has taken almost two years to do it. Clearly, we are living in extraordinary times in terms of monetary policy, as policymakers seem to have lost the link between economic activity and inflation.

The other facet of monetary policy is concerned with the accumulated portfolio of more than $4.5 trillion in assets purchased on the open market, which the Federal Reserve expects to start shrinking this month. However, no securities will be actively sold in the open market. The Federal Reserve will just allow the debt to mature without reinvesting the proceeds. This will lead to a very gradual decrease in its balance sheet, which is expected to still show more than $3 trillion in assets by 2021.



"THE CORRELATION BETWEEN MARKETS AND ECONOMIES HAS GROWN SO TIGHT THAT ANY DECREASE IN ECONOMIC ACTIVITY OR CREDIT AVAILABILITY IN ONE PLACE WILL QUICKLY TURN INTO TROUBLE ELSEWHERE."

In Europe, the situation isn't much different. The ECB is lagging behind the Federal Reserve because Europe has been more severely hit by the financial crisis due to a lack of economic integration and a misalignment between its member states. The central bank is keeping its massive asset purchase programme open and leaving its key interest rates at rock bottom. The eurozone economy is gathering pace but unemployment levels are still far from satisfactory. A large part of the sovereign bond spectrum is under water, requiring investors to pay for the privilege of lending money to eurozone governments. With the exception of Greece, all other eurozone members show negative yields for at least one maturity of their sovereign issues. These yields are clearly depressed and flattened by the ECB intervention and thus represent a huge risk for investors, as the only possible next step is a reversion of monetary policy. But for now, investors are betting the ECB will continue to purchase assets well into the future.

Ignoring interest rate risk

The last decade has been anything but normal by historical standards. The business cycle includes ups and downs and some financial crashes, but negative interest rates, massive asset purchases, and prolonged periods with very low interest rates are a new experiment in history. The financial crisis of 2007-2009 was epic in its proportions, quickly permeating the frontiers of the U.S. and pushing Europe towards an abyss that dented the whole Union. The correlation between markets and economies has grown so tight that any decrease in economic activity or credit availability in one place will quickly turn into trouble elsewhere.

Nevertheless, at this point, ten years after the economic trough, we would expect things to have mostly normalised. And they have, at least partially. Economic growth is increasing at a very decent pace in both the U.S. and Europe; unemployment is at a 16-year low in the U.S.; and all estimates point to an economy that is not wasting resources, operating near its full potential. But there is a missing link – inflation. The preferred Federal Reserve inflation gauge points to a 1.4% rise in prices, which is awfully low, from their perspective at least.

Janet Yellen believes that it is simply a matter of time until inflation shows up. Supported by the Phillips curve, she believes that when unemployment is very low, it is tougher to find workers, and companies need to raise the wages offered, which would later lead to rises in factor costs and the price of final products. In summary, inflation is expected to rise whenever an economy is operating near full employment. But the leniency of the central bank is becoming entrenched in investors' expectations, to the extent that they're happy with a 2.90% yield on a 30-year Treasury bond.

With the Federal Reserve targeting an inflation rate of 2%, and with inflation being just one of the many risks involved in a 30-year bond, the real rate of return that is left is effectively less than 0.50%, if indeed it is positive at all. If interest rates rise a little more and the yield on such a bond increases by 200 basis points to 4.9% (still below its historical average), investors stands to lose 30% on their investment. Certainly, bond yields are highly unlikely to rise by 200 basis points in a single day, but even if that takes ten years to transpire the loss will by then correspond to a 20% loss on the price of the bond. Interest rate risk should therefore be considered a major source of risk for long-term bonds and should never be ignored.

Bond Performance Simulation

Base Case: *A 30-year bond paying an annual coupon at a rate of 2.00%, with an implied yield of 2.00%, issued at par.*

Analysis: *The table summarises the impact on bond prices of a yield change in 5, 10 and 20-years time.*

Impact on Bond Price of a Change in Yield

New Yield	in 5-years	in 10-years	in 20-years
2.00%	***1000.0***	***1000.0***	***1000.0***
2.50%	907.9	922.1	956.2
3.00%	825.9	851.2	914.7
4.00%	687.6	728.2	837.8
5.00%	577.2	626.1	768.4

Impact on Bond Price of a Change in Yield (% chg.)

Yield	5Y Bond	30Y Bond	100Y Bond
2.00%	***0.0%***	***0.0%***	***0.0%***
2.50%	-9.2%	-7.8%	-4.4%
3.00%	-17.4%	-14.9%	-8.5%
4.00%	-31.2%	-27.2%	-16.2%
5.00%	-42.3%	-37.4%	-23.2%

Source: own calculations

But, if there is some degree of foolishness in the U.S., madness is a better word to describe what's happening in Europe, where governments are issuing century-long bonds. The government of Austria (which is *99 years old*) has just issued a 100-year bond at a yield of 2.10%. If the ECB is credible enough and the inflation rate averages 2% over a period of 100 years, there's only 0.10% left as real interest. That's pretty low after taking into consideration the short government track record. Additionally, and using the same logic used for the 30-year Treasury bond above, interest rate risk is huge in a century-long bond issue. If the yield were to rise by 200 basis points to 4.1% today, the bond price would decline 48%. If the rise occurs in 10 years' time, the loss will be around 47%, and if such change occurs in 50 years' time, the loss will still be 43%. A small increase in the yield to 3.1% in 10 years' time leads to a loss of 32% in the bond price.

The sensitivity of the price of a long-term bond to changes in interest rates should not be taken lightly. Investors extending the duration of their bond portfolio as a way of improving returns should carefully weigh the risks – which are huge. A much better way of improving returns is to invest in equities instead, for which risks decline substantially over the longer term[i].

As human beings, we usually suffer from behavioural biases like anchoring and representativeness, which lead us to rely too heavily on a single piece of evidence and to give too much weight to recent evidence while disregarding the more distant past. These biases certainly help explain why investors are taking the most recent developments in monetary policy too seriously and making inferences for a very distant future, completely disregarding the ups and downs of the past. Just because monetary policy is more on the accommodative side today doesn't mean it will remain unmodified for the next 10, 20 or 100 years. In fact, as the economy grows faster, the odds for interest rate increases also increase (see Panel 1).

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Panel 1 – The Taylor Rule

Like many other central banks, the Federal Reserve doesn't follow any explicit rules regarding the instruments it uses to accomplish its mandates. While it targets a quantified price stability goal (consumer price inflation of no more than 2% per year), it has discretion to choose the best way to accomplish it. But it is common for policymakers to check their numbers against a few rules, with the most well-known being the Taylor Rule. The Taylor rule is a simple policy rule that sets a central bank nominal interest rate in terms of the gap between the observed inflation and the target inflation, the gap between observed GDP growth and potential GDP growth and the long-term real interest rate. According to this rule, the nominal rate should be set in the following way:

$$i = r^* + \pi + 0.5 (\pi - \pi^*) + 0.5 (y - y^*)$$

Where:

i = nominal policy rate
r^* = real long-term interest rate
π = observed rate of inflation
π^* = target inflation rate
y = real output growth
y^* = real potential output growth

The rule is relatively straightforward to understand (albeit difficult to implement). If inflation rises, the central bank must hike its key nominal rate, as expected. If output rises, the central bank should also hike its nominal rate, due to nascent inflation pressures. The idea behind this comes from what is known as the Phillips curve, which recognises that when GDP growth nears its potential, corporations find it more difficult to hire, as they are competing with one another for new workers. As a consequence, wages start rising, leading to an increase in production costs and ultimately in consumer prices. To prevent these inflationary pressures, the nominal interest rate should be hiked when the economy is operating near full employment.

Taylor estimated the real interest rate to be around 2%. When observed inflation is at 2% and the economy is growing exactly at full potential, the nominal interest rate should be 4%. If Taylor is right, we should expect nominal rates to normalise to 4%, and 10-year Treasury yields to rise to 5-6%.

However, because inflation has been persistently below target and doesn't seem to accelerate even in a situation where unemployment is at a 16-year low, some believe the real interest rate is now lower, maybe 1% or 0.5%, which would cut the expected nominal policy rate to 3% or even 2.5%. But, even if we accept this as reasonable, the yield on a 10-year Treasury bond would still have to rise to 4.5-5%.

"IF THERE IS SOME DEGREE OF FOOLISHNESS IN THE U.S., MADNESS IS A BETTER WORD TO DESCRIBE WHAT'S HAPPENING IN EUROPE."

Panel 2 – The lost link with inflation

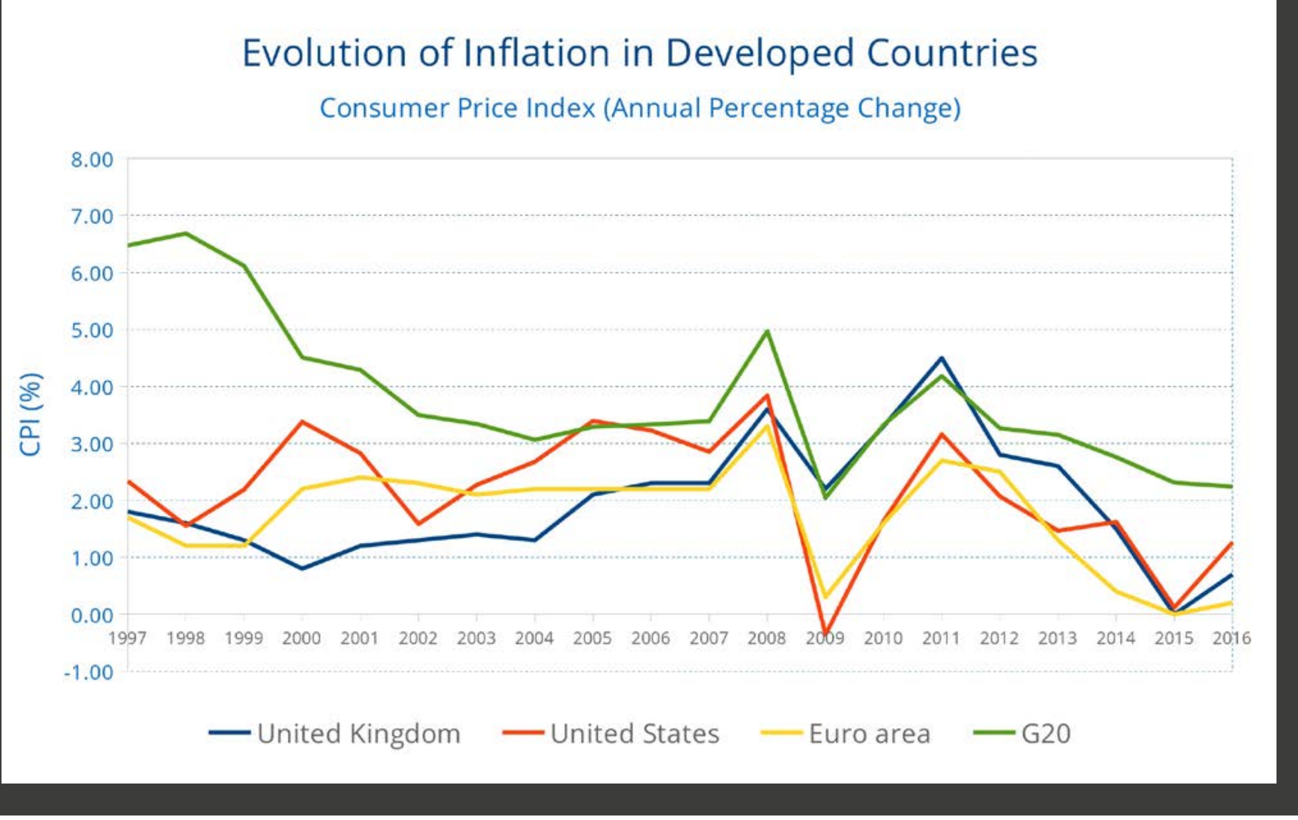
The Austrian School of Economics has always been very critical of the inflation targeting framework under which central banks usually operate. Nobody knows for sure the reliability of an index that tracks thousands (if not millions) of prices. If, due to technological progress, we could suddenly produce double the quantity produced with the same factors, prices would halve. In such a setting, it wouldn't make much sense if a central bank jumped into the market cutting interest rates and increasing liquidity in a desperate attempt to boost demand and prices. In this case, deflation would not be a result of declining demand but rather the positive consequence of improvements in the supply side.

"If there is an attempt to prevent prices from adjusting to their market-clearing levels in the face of cost efficiencies and greater supply, the result can only be imbalances and distortions in the market. Eventually, the adjustments must conform to the reality of supply and demand".[ii]

With the above idea in mind, Claudio Borio[iii], head of the monetary and economic department at the Bank for International Settlements, has been arguing against the current path taken by policymakers. His view is that globalisation and technological progress have weakened the link between spare capacity and inflation rates. The entry of low-cost producers and cheap labour into the global economy put downward pressure on consumer prices. Companies are now global and extend their activities around the world looking for cost efficiencies. Until there is full convergence, the downward pressure on prices will remain, which means central banks would face severe challenges if they were to set policy against a blind 2% inflation target.

"To the extent that disinflationary pressures result from forces such as globalization or technology, they should be generally benign: they would reflect favourable supply side developments as opposed to damaging demand weakness," says Claudio Borio. "At a minimum, this suggests lengthening the horizon over which it would be desirable to bring inflation back toward target", he argues.

What Borio means is that central banks may need to hike interest rates faster than inflation levels require.



"INVESTORS EXTENDING THE DURATION OF THEIR BOND PORTFOLIO AS A WAY OF IMPROVING RETURNS SHOULD CAREFULLY WEIGH THE RISKS – WHICH ARE HUGE."

How to play the central bank mess

If central banks were very successful in driving down the two-digit inflation levels of the 1980s, they are now clueless on the missing link with inflation (see Panel 2). Janet Yellen expects the famous Phillips curve to play its role and drive prices higher in an overheating economy. But if that doesn't happen next year, she will remain cautious and eventually reduce the pace of interest rate hikes. But long-term bond investors should mostly ignore what's going on now to concentrate on what's going to happen over a prolonged period of time. With interest rates at such low levels, one shouldn't expect them to remain at these levels forever, in particular when facing investment time horizons of 30 years or more. If inflation doesn't show up, financial imbalances will, as the result of prolonged periods of high liquidity. One way or another, central banks will be pressed to hike interest rates and to avoid cutting them so furiously in the future.

At this point, the risks of an interest rate rise largely outweigh the risks of an interest rate decline. Investors should then pass on government debt issued with maturity tags of 50, 70 and 100 years, yielding little more than 2%. In terms of speculation, the only reasonable trade is to sell whatever possible in the longer spectrum of the yield curve. One suggestion would be to sell the **iShares EUR Government Bond 15-30Y (IBGL)**. The expected impact on bond prices of a small change in interest rates is too good to be missed. Long-term investors should avoid bonds at all costs, because the potential for losses is massive. But there is still great upside potential in equities, in particular in Europe, where the recovery has just begun. Some options are **iShares MSCI EMU ETF (EZU)**, **iShares MSCI Germany ETF (EWG)**, and **Lyxxor MSCI Europe ETF (JC5)**.

About Filipe

Filipe's specialisation is monetary policy, macro issues and behavioural finance where he allies the practical experience of several years of trading with academic credentials. Filipe teaches courses on Financial Markets and Monetary Economics at the University of Oporto Faculty of Economics, helping traders maximise profits and better manage risk.

i See "Contrarian Investment Strategies: The Psychological Edge", David Dreman (2012)

ii "Monetary Central Planning and the State", Richard M. Ebeling (2015)

iii "The Globalisation of Inflation: The Growing Importance of Global Value Chains", Raphael Auer, Claudio Borio and Andrew Filardo (2017)

BY SAMUEL RAE

FORENSIC FOREX

TRADING THE MAJOR CURRENCIES AGAINST A BACKDROP OF UNCERTAINTY

If I was asked for one word to describe current trends in the global financial asset markets right now it would be uncertainty. Uncertainty surrounding near-term geopolitical, military and economic activity is about as high as it has been as compared to any point in the last half decade and this is translating to some real volatility across a range of asset markets, from major currency pairs to metals to US equities.

I am a currency trader so the Forex markets are my primary focus against this backdrop of opacity. Forming a fundamental bias with any degree of certainty as to where a particular currency is going to go in relation to another is tough of late, making my trading that little bit more difficult.

My primary strategy is technically driven, so it's not the end of the world, but I use a fundamentally-rooted approach to position sizing (and, by proxy, the risk I take on with each trade), so forming some degree of bias is necessary. Hard right now, but necessary. With this in mind, then, here is a look at what I deem the primary inputs associated with the major currencies and how these inputs play off against one another to help me put together some semblance of fundamental strategy.

Europe and the euro – German politics

Let's kick things off with Europe and the euro. The overriding news out of Europe right now is the German election and the unexpected rise of the nationalist Alternative for Germany (AfD) party. Chancellor Merkel was able to hold onto her office, but the seeming shift in national sentiment has brought with it a large degree of volatility for the euro, driven primarily by the (I'm going to use that word again) uncertainty surrounding a coalition government.

"WITH THE POTENTIAL FOR NEAR-TERM INSTABILITY, THE EURO IS SLIPPING AND, IN MY OPINION, LOOKS SET FOR CONTINUED WEAKNESS."

The eurozone is heavily reliant on stability in Germany and, at times, the nation has single-handedly propped up the single currency region. With the potential for near-term instability, the euro is slipping and, in my opinion, looks set for continued weakness as we head into the final quarter of 2017.

The US dollar – Interest rates and Trump

Moving on to the US dollar, it's all about interest rates right now. Sure, the potential for military unrest is rooted in what's happening in North Korea and Donald Trump's ongoing feud with Kim Jong-un, but as far as the financial markets are concerned (and aside from a degree of safe haven capital shift), interest rates are at the forefront of volatility inputs. And it's looking like the Federal Reserve is set to continue with its plan to gradually raise interest rates over the coming 12 months (with one raise likely before the end of year) as well as start liquidating $4.5 trillion it holds in financial assets.

Over the coming months, therefore, I expect the US dollar to steadily appreciate in value and this sets up a nice long-term trade in the EURUSD.

Take a quick look at the chart below.


0.1500
May
6
13
Jun
10

"WHEN THE ELECTION IS OVER AND ABE INEVITABLY TAKES THE TOP SPOT, I EXPECT TO SEE THE YEN REGAIN MUCH OF ITS LOST STRENGTH AGAINST THE US DOLLAR."

As the chart shows, the EURUSD has formed something of a head and shoulders pattern on the four-hour chart and I judge a neck line somewhere in and around the 1.1800 level. With a bearish EURUSD bias, as outlined above, I can enter a short trade in this pair with a degree of confidence and so the trade is as follows: short entry on a break below 1.1800 towards a target of 1.1700, with a stop loss 1.1850 serving to take me out of the position if the markets turn against me.

So that's the euro and the dollar, what about the yen?

Japan and the yen – Shinzo Abe's snap election

Again, just as is the case in Europe, it's all about politics right now in Japan. Prime Minister Shinzo Abe has called a snap election in October and while he has a pretty good chance of maintaining his position, fears of a political vacuum forming are translating to some domestic currency weakness and pushing the yen down against most of its major counterparts.

I don't expect this weakness to last long. When the election is over and Abe inevitably takes the top spot, I expect to see the yen regain much of its lost strength against the US dollar.

From a trading perspective, then, there are two plays I am keeping an eye out for near term. They haven't actually materialised yet, so the entry levels aren't confirmed, but my bias is short EURJPY and the same (short) USDJPY – once the Japanese elections are over. The former is a more aggressive bias, given that I am short euro on its own, but I won't have any problem entering short against the US dollar (in favor of the yen), at least near term, if a signal presents itself.

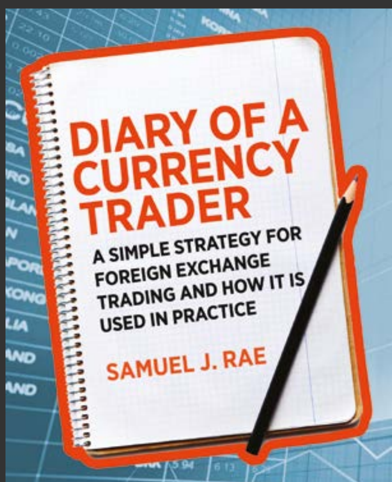
As far as levels to watch are concerned, 110.5 is a key region in the USDJPY and 131 flat could be a major break point in the EURJPY.

About Samuel

Having completed his Economics BSc Degree in Manchester, Samuel Rae quickly discovered that the retail Forex industry was for him. A short foray into the corporate world drove him to search for an alternative to the more traditional ways of making a living, and in becoming a retail trader he has achieved exactly that.

Through persistent market participation and extensive education he has grown to become a specialist in both fundamental and technical analysis.

His personal trading style combines classic candlestick analysis with a simple, logical and risk management driven approach to the financial markets – a strategy that is described and demonstrated in his *Diary of a Currency Trader*.



BY DAVID JONES

CHART NAVIGATOR

HOW TO SPOT TREND REVERSAL AND CONTINUATION PATTERNS

Some people will dismiss technical analysis and charting as just squiggly lines on a chart – and I for one am not the biggest fan of the chart pattern approach to trading or investing. That aside, there are often sound changes or shifts in investor sentiment that underpin the various patterns that are a major part of technical analysis for some chartists, so it is a topic that is worthy of coverage.

Whilst technical analysis is a broad subject, one area that has been at its core since the beginning is the idea of chart patterns. Some of these can be quite subjective at the best of times, and easier to spot with the benefit of hindsight – which is not too helpful to those of us without a time machine as part of our investing toolkit. But they can still be useful for some – broadly speaking they can be divided into "reversal" or "continuation" patterns.

Reversal patterns suggest that a trend that has been in place for some time is on the turn, which can give us the signal to either take profits on an existing position, or open up a new trade or investment in the direction of the anticipated new trend. Continuation patterns can be a signal that a sideways move in the current trend is just a pause before it resumes its previous direction – some would see this as an opportunity to jump on board that particular trend. Let's take a look at some of the more popular patterns from both camps below.

Trend Reversal: Double Bottom

The psychology behind a double bottom is really straight forward enough. Ahead of the pattern, the share is weak then makes a low and recovers. As with previous rallies in the downtrend, this subsequent bounce back runs out of steam and the price turns lower once more.

The expectation is for the downtrend to continue and for the previous low to be broken. But unlike before, that previous low is not broken and starts to show first signs of support – the share price starts to rise. We have the start of a suspected double bottom pattern – is market sentiment turning and that previous low is now seen as something of a bargain price? The pattern is said to be complete when the previous high just before that second low is broken. Some chartists will use patterns such as this to generate price targets. With double bottoms it is the "height" of the pattern projected from the breakout point – that gives us the target.

The example below is FTSE100 company **RELX (LON:RELX)**. The two lows are highlighted with the circle and the dashed red line coming in around 1,275p is the high that has to be broken to confirm this is a valid double bottom pattern. The share price makes a decisive move through this level, confirming the pattern.

"REVERSAL PATTERNS SUGGEST THAT A TREND THAT HAS BEEN IN PLACE FOR SOME TIME IS ON THE TURN."

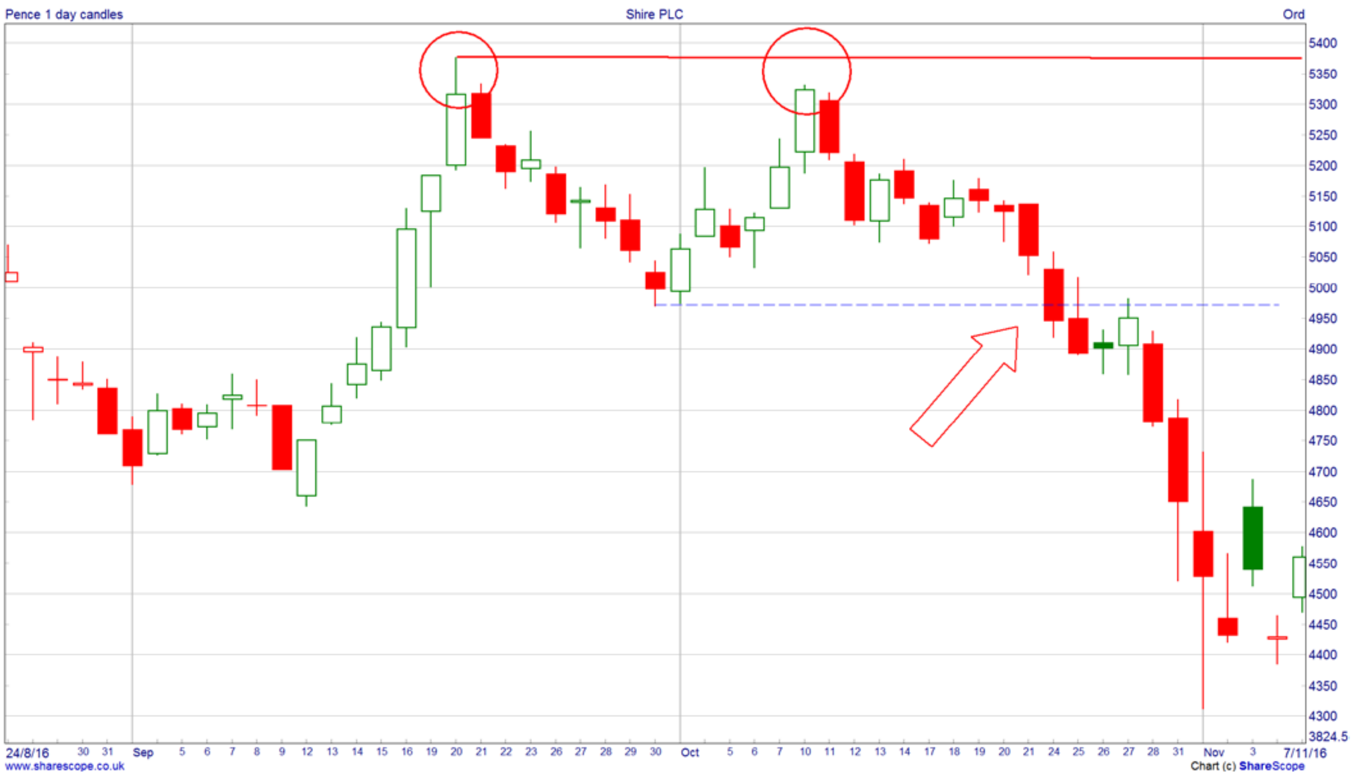
The "height" of the pattern runs from 1,185p through to 1,275p, which is 90p in height. This gives a target of 1,365p from the point of the breakout, which ended up being achieved very quickly.

Trend Reversal: Double Top

Not surprisingly, for every positive reversal pattern on a chart there is a negative one that suggests an uptrend – or indeed bounce in a downtrend – is coming to an end. If we flip over a double bottom then this gives us the double top pattern. The psychology is a mirror image of what happens when a double bottom is formed. With a double top, there is a previous rally in the share price that hits a high, before pulling back slightly. This does not yet change the previous uptrend. The assumption for now is that the drop back is just a normal pullback within that main uptrend. But as the price pushes higher once again it fails

"NOT ALL PATTERNS ARE A SIGNAL THAT A TREND IS ABOUT TO REVERSE DIRECTION."

to break through that previous rally high and the trend does not hit higher highs. This is the first sign that a double top may be in the offing. As with a



double bottom, the breakout through the previous level is the sign that the pattern is completed and the height of the pattern can be used to try and forecast an objective.

Our example here is **Shire (LON:SHP)** from December. The share price hits 5,375p and then drops back a little over 6% before recovering. But the recovery fails to break the previous high before dropping and breaking that previous low which is around 4,975p. The double top is confirmed with a target of 400p from the breakout point (5,375-4,975). So a drop to 4,575p is the double top's target which is achieved over the course of the next couple of weeks.

Trend Reversal: Head & Shoulders

The cynical observer of patterns could be forgiven for thinking that chartists can come up with some sort of significance for every possible market movement – a view that is not without some weight! So when something is not quite a double top or a double bottom it could actually be a head and shoulders. Again as this is a reversal pattern, there needs to be a prior trend to reverse – either up or down.

If we choose an uptrend as our example, the market is progressing steadily

higher making higher highs and lows, but the latest high does not break the previous high. This lets us draw a form of sloping support known as the "neckline". When this is broken, that is the completion of the head and shoulders pattern, with most people using the height of the "head" (the middle extreme) as the target from the neckline break. The example below of **Experian (LON:EXPN)** is hopefully a clear-cut one. The height of the "head" runs from 1,580p through to 1,720p – a difference of 140p. The neckline break of 1,580p then gives a target of 1,440p, which took a few weeks to be achieved but the head and shoulders did work out in this example.

Trend Continuation: Triangle

Not all patterns are a signal that a trend is about to reverse direction. Prices don't move in a straight line and there are always periods of consolidation within both up and down trends, which are just a pause before the trend resumes.

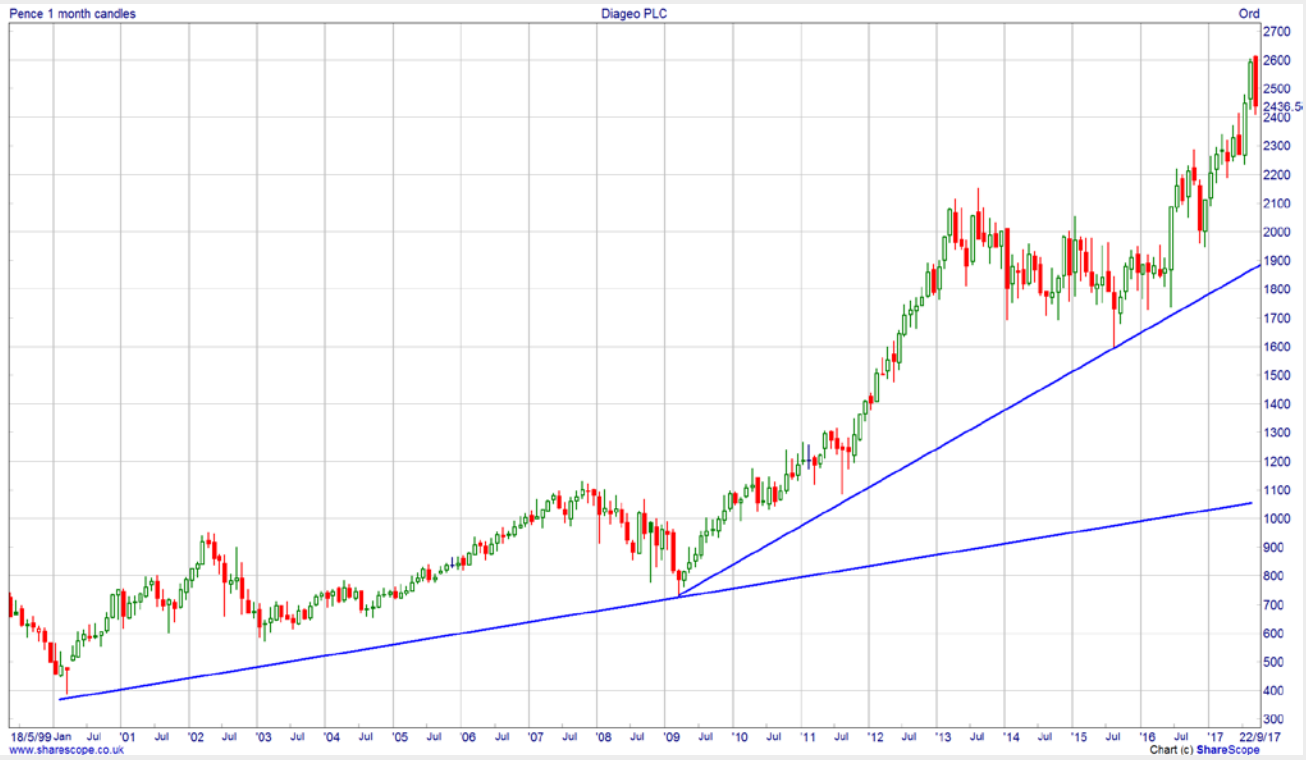
A common pattern formed during these is the triangle. The price swings get smaller and tighter, forming two shorter converging trends and marking out the triangle shape. At some point the price has to breakout of this pattern and the expectation with triangles is that the breakout will continue that previous trend. The breakout is the signal to buy or sell and the target is the "height" of the triangle at its base. The example shown is **Unilever (LON:ULVR)** which spent a couple of months going sideways after a strong trend previously. The break through the 4,080p level showed the triangle had completed. The pattern was around 200p high, so the target following this break was for a move to at least 4280p and for the trend to continue.

"AT THE CORE OF A CHARTING APPROACH TO INVESTMENT SHOULD BE LOOKING TO JUMP ON BOARD TRENDS."

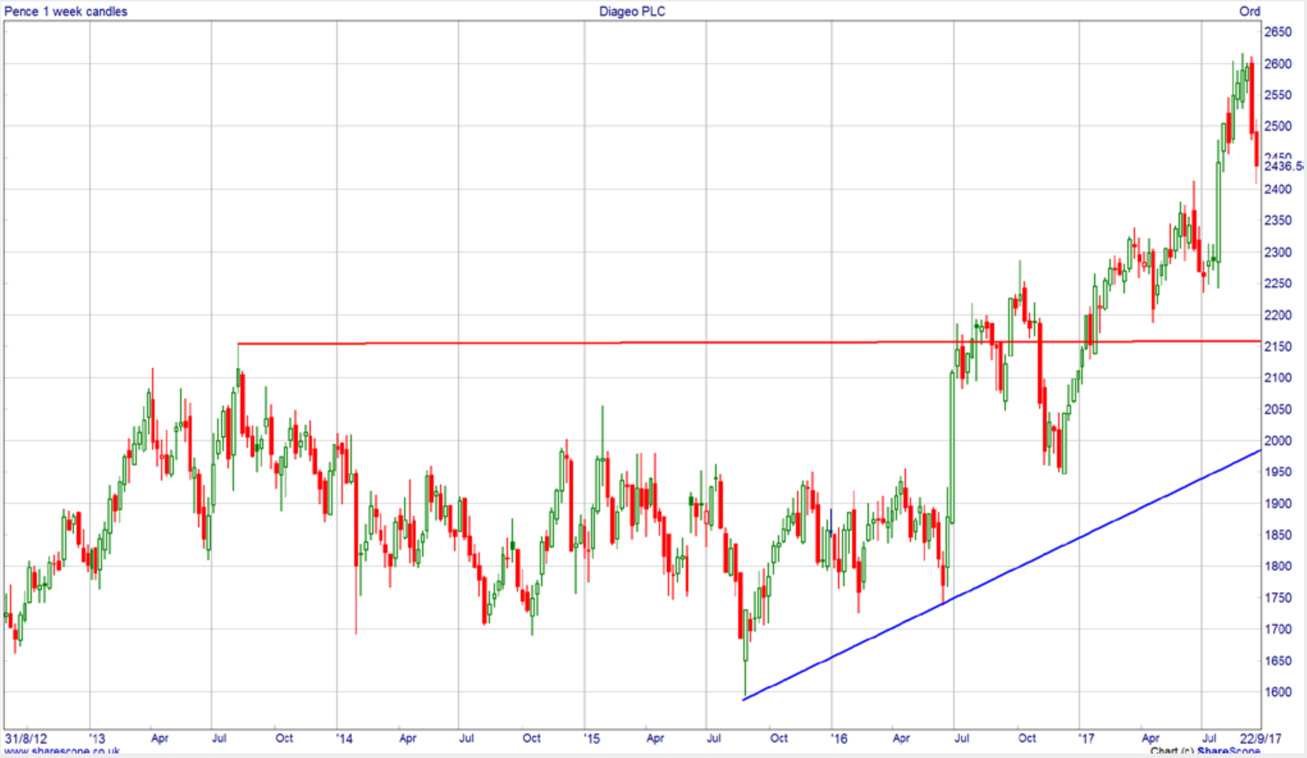
CHART OF THE MONTH – Diageo

There are lots of different ways of applying technical analysis to a chart. Whether you like a graphical approach – looking at some of the patterns already discussed – or a more numerical approach using moving averages, stochastics and relative strength indicators, there are enough alternatives to keep you staring at the squiggly lines for many hours. But with all this technology at our fingertips there is a basic truism that is often forgotten. And that is that markets trend, whether up, down or sideways. It is rare that a share doubles in value overnight – it takes a while to get to wherever it is going to, and at the core of a charting approach to investment should be looking to jump on board trends.

This month's chart has trends going back many years. First, look at the bigger picture for **Diageo (LON:DGE)** over the last 17 years. Can you spot a trend? You don't need multi-coloured moving averages to see which way the trend has gone – and this accelerated in 2009.



So we have a couple of very long-term uptrends for this particular share. Let's bring things a little more up to date by having a look at the last few years.



There are a couple of interesting things on this chart. From July 2013 through to the end of last year the 2,100p/2,150p area was a real barrier to progress – the share price could not get through. This has all changed and a breakout on a chart is often considered a positive sign – the next leg higher is underway. This did eventually prove to be the case with the share price touching 2,600p in September 2017. No market moves in a straight line of course – but pullbacks in a trend can be viewed as opportunities to buy. At the time of writing, Diageo has weakened but many chartists would expect that strength to come back in and another attempt be made on the 2,600p+ zone.

About David

David Jones qualified as a technical analyst in 1995 and started his City career as a currency analyst. He then went on to work for trading companies CMC Markets and IG Group as Chief Market Strategist. Since leaving the industry in 2013 he has been a presenter on BBC5Live's Wake up to Money programme and the Chartist for Shares magazine. He is an active trader and private investor.

BY FILIPE R. COSTA

HOW TO INVEST LIKE...

JAMES O'SHAUGHNESSY

"Finding exploitable investment opportunities does not mean it's easy to make money, however. To do so requires the ability to consistently, patiently, and slavishly stick with a strategy, even when it's performing poorly relative to other methods."

— James O'Shaughnessy, *"What Works On Wall Street"*

What works on Wall Street

For more than a year, I have been distilling the investment strategies followed by master investors; those with a great talent to systematically pick equities that consistently beat the market over long time horizons. I usually start by asking myself a few binary questions about the strategies followed by these investors to identify their style: *Is this strategy pursuing value or growth? Does it target small or large capitalisations? Is it more on the aggressive or the conservative side?* These are some of the key questions I always ask to help identify an investor's style.

But today we're going to look at an investor for whom there are no straight answers regarding the above questions. James O'Shaughnessy is not a value or growth investor, he doesn't target any specific level of risk, and he is not concerned with picking equities within some specific market capitalisation range. He's a quantitative research specialist; someone who loves to collect huge amounts of historical data to then crunch the numbers and come out with strategies that work. In the end, it is not a matter of growth or value but rather a matter of following what works on Wall Street. O'Shaughnessy believes that historical data is all that matters to develop a sound investment process and to unfold a strategy that works over long periods of time.

While the methods followed by O'Shaughnessy require an extensive quantitative analysis and a deep back-testing on every piece of fundamental data, the resulting strategies are so simple that the reader can follow them with relative ease. When I say ease, I mean that the reader will be able to implement these strategies with the help of just some standard screening software, right after reading this column. O'Shaughnessy has always advocated an exhaustive procedure to find the most significant factors that should be added to a strategy to make it work, but he also advocates a parsimonious use of factors in the ultimate decision-making process, such that everyone could understand and implement it.

We will start with O'Shaughnessy's view on what is needed to become a successful active investor and then take a detailed look at his investment strategies and how to implement them.

Who is James O'Shaughnessy?

James O'Shaughnessy, 57, was born and raised in Minnesota. He studied international economics and business diplomacy at the School of Foreign Service of Georgetown University and graduated with a BA in economics

"THE RESULTING STRATEGIES ARE SO SIMPLE THAT THE READER CAN FOLLOW THEM WITH RELATIVE EASE."

from the University of Minnesota in 1986. His interest in the stock market began at an early age, when he started to manually track data for the 30 companies that constitute the Dow Jones Industrial Average.

Two years after graduating, O'Shaughnessy started his own business – O'Shaughnessy Capital Management Inc. – and began consulting with large pension funds and foundations. By then, his interests in quantitative equity analysis, research decisions and investment models were growing and he started developing the foundations for what would later become a real investment business. In 1991, O'Shaughnessy moved his family to Greenwich, Connecticut, to be closer to New York, where his business was concentrated.

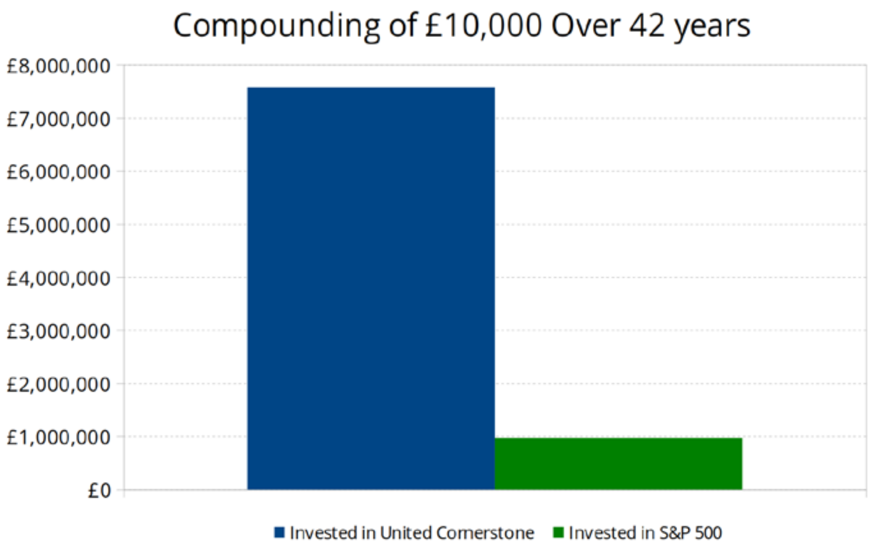
O'Shaughnessy's passion for the numbers led him to conduct an extensive and in-depth quantitative analysis on equities. Using data from the Compustat databases (which are mainly used for academic purposes), he crunched numbers for the period between the early 1950s and the mid 1990s in order to understand the importance of each fundamental ratio and technical indicator for equity selection. When back-testing such a huge amount of data, he understood what really works and selected a few indicators that are key to picking the stocks with the best odds of out-performing the market over time. His analysis allowed him to sort all possible kinds of investment approaches in terms of risk-adjusted returns, to then build his "United Cornerstone" strategy, which is a mix of growth and value styles. In fact, the "United Cornerstone" is a combination of two different models: the "Cornerstone Growth" model and the "Cornerstone Value" model.

In the 42-year period under study, the "United Cornerstone" mix returned 17.1% per year while the S&P 500 returned 11.5%. While at first sight the 5.6% spread may not seem huge, an example helps discern the power of compounding on small spreads: Someone who invested £10,000 with the S&P500 at the beginning of the period would have ended up with £967,000. If he had opted to invest in the Cornerstone mix, he would have ended up with £7.6 million.

"IN THE 42-YEAR PERIOD UNDER STUDY, THE 'UNITED CORNERSTONE' MIX RETURNED 17.1% PER YEAR WHILE THE S&P 500 RETURNED 11.5%."

The thorough research on historical data conducted by O'Shaughnessy led him to author several books. *What Works on Wall Street* is the most well-known, where he describes how investors should use fundamental and technical data to develop a sound and very simple investment strategy, one that is able to achieve superior returns.

In 1996, O'Shaughnessy decided to put his research to good use and he started his own investment funds, initially giving life to "Cornerstone Growth" and "Cornerstone Value". In 2001, his team moved to Bear Stearns Asset Management, where O'Shaughnessy served as senior managing director and executive director of Systematic Equity. But later, in 2007, he reached an agreement to spin out Systematic Equity from Bear Stearns Asset Management and formed O'Shaughnessy Asset Management LLC. He currently serves as chairman, chief executive and chief investment officer of the company. O'Shaughnessy Asset Management has increased its funds offering over time, and currently provides 15 investment funds targeting different styles.



How to become a successful investor

One of the most intriguing claims made by O'Shaughnessy is that almost any simple strategy can beat the market. Simple indicators like price-to-book or price-to-sales are great proxies for value and enough to unfold an investment strategy that is able to outperform the overall market, according to his research. Notwithstanding this, only a few investors beat the market. How can that be?

The most important part about an investment strategy comes in the form of being able to "consistently, patiently, and slavishly stick with a strategy, even when it's performing poorly relative to other methods". Emotions are and will always be the greatest threat to investment returns, causing investors to often ditch their long-term plans and replace them with "hot" strategies that are working at the time. One known feature about investment decisions is that most investors use recent past performance as indication of future performance, and thus tend to choose equities and funds that are currently outperforming, while disregarding the longer-term. A disciplined implementation of a sound strategy is all that is really needed, but is something that is really difficult to achieve.

O'Shaughnessy believes that there are two major mistakes active investors make:

1. **Reacting emotionally to a market sell-off and liquidating their holdings at the worst of times;**

quietbits / Shutterstock.com

2. **Selling out of an active strategy that is doing worse than some benchmark over some short period (for him, even three years is considered short).**

Most investors are unable to succeed in avoiding these two mistakes, and therefore should not engage in active investment. In order to succeed, investors must go through a check list that can be summarised in seven points:

1. Have a long-term perspective

This point is common across most (if not all) master investors reviewed in this column. The focus should always be on the longer-term, which should be considered a term of 10, 20 or even 30 years.

In *Contrarian Investment Strategies: The Psychological Edge*, David Dreman shows that while bonds seem a more conservative investment than equities, reality tells a different story. When the investment horizon is increased, equity risk drops significantly and becomes much lower than fixed income risk. Following a similar perspective, O'Shaughnessy believes investors should learn to patiently wait and avoid performance chasing as well as other emotionally-driven actions that lead to the poorhouse.

2. Value process over outcome

There is always too much emphasis on results instead of the focus being on the process leading to those results. Performance is certainly the single most important indicator, but over short periods of time a good performance may just be the result of chance. Investors should concentrate on understanding the underlying process behind a strategy to evaluate if it can deliver consistent profits over time. For example, many strategies worked well during the dot-com bubble but the profits achieved were given up over time, proving the processes behind the strategies to be deficient.

3. Generally ignore forecasts and predictions

O'Shaughnessy believes that (and many studies corroborate this idea) professional forecasts and predictions do not add value to the investment process, and that investors should not rely on them.

4. Be patient and persistent

As David Dreman always said, *"Patience is a rare but necessary commodity"*. An investor with the best of strategies can't avoid going through periods of underperformance. What he needs to do is patiently stick with his strategy, if it proves right in the extensive back-tests conducted over long periods of time.

5. Have a strong mental attitude

Emotions are the worst enemy of an investor. Developing a plan is important in order to automate (to a certain degree) how one reacts to a situation instead of relying on an emotionally-driven action.

6. Think in terms of probabilities

Just because something looks undervalued, it doesn't mean it will rise. It's always a matter of implicit probabilities. In extending investment horizon and using a few criteria to select equities, an investor improves the probabilities of winning. Professional sports betters usually have this part very well developed as their betting is always a matter of comparing probabilities with the offered odds.

7. Be highly disciplined

It seems easy until the market goes against an investor and he throws in the towel. Just suppose you have a very sound investment strategy and today is 19 October 1987, when the Dow retreated more than 20%. Would you stick to your plan?

For those who can implement the above points, there are some good compound benefits to be reaped over time. But, as explained, it is not easy, because for one reason or another, there will always be pressure for an active investor to change his plans.

O'Shaughnessy's strategy

Unlike other investors, O'Shaughnessy doesn't mind deviating from an investment style to optimise returns. While he offers many alternative ways of building a portfolio – some more growth-oriented, others more tailored to picking large capitalisations, and so on – his optimal portfolio is a mix of two portfolios: one value-oriented and the other more growth-oriented. The backtests on this show an average annual return of 17.10% in the period between 1955 and 1996, which includes 18.52% from a growth strategy and 15.06% from a value strategy. More recently, Validea has shown very good results in replicating these portfolios. Since 2003, the O'Shaughnessy mix has delivered a total return of 235.7%, which is 85.0% above the return of the S&P 500, providing an annual return around 9.0%.

The "United Cornerstone" portfolio is then a mix of the "Cornerstone Growth" portfolio and the "Cornerstone Value". While all these portfolios rely on extensive research over Compustat databases, the number of filters used to build them is just four for the growth portfolio and five for the value one, and they're both easy to replicate and adapt as needed. Let's take a closer look at them.

Cornerstone Growth Strategy

The main idea behind this strategy is to invest in good growth stocks without overpaying for them. Some stocks that pass through growth filters may just be too expensive, and therefore adding a filter that could relate price with fundamental value could improve the results. That's exactly what O'Shaughnessy does.

1. Market capitalisation

O'Shaughnessy starts with a simple filter on market capitalisation such that he is able to get the smaller growth companies without incurring the risk of investing in illiquid ones. He imposes a market capitalisation threshold of at least $200 million. Variations do exist and investors may adapt to the exact market. The main idea is to always put the threshold at the minimum value needed to avoid illiquid equities.

2. Earnings persistence

Growth companies are improving earnings from year to year. For a stock to pass the filter, the EPS for the last available year should be greater than the EPS from the previous year. Investors may opt to add a tighter filter by requiring EPS to increase each year for the last five-year period instead. In practical terms, such a filter would look like this:

EPS (2016) > EPS (2015) > EPS (2014) > EPS (2013) > EPS (2012)

3. Price-to-sales ratio

A second filter requires the price-to-sales ratio to be less than 1.5. In his research, O'Shaughnessy found out that the price-to-sales ratio is the single best indicator of a stock's value and predictor of its future value. When added to a growth strategy it guarantees that an investor is not entering too late and overpaying for potential growth.

A growth strategy can do dramatically better by adding this value factor (alternatives would be using price-to-earnings or price-to-book, even though both are, in O'Shaughnessy's eyes, inferior).

4. Relative strength

Like the price-to-sales ratio, the last filter used is also not exactly a growth filter but rather a momentum indicator. In the original *What Works on Wall Street*, O'Shaughnessy uses one-year relative strength. An investor should filter equities through the first three criteria and then rank them from highest to lowest using the fourth criterion. A list of 10, 20 or 50 can then be chosen.

"IN HIS RESEARCH, O'SHAUGHNESSY FOUND OUT THAT THE PRICE-TO-SALES RATIO IS THE SINGLE BEST INDICATOR OF A STOCK'S VALUE AND PREDICTOR OF ITS FUTURE VALUE."

This filter implies that a stock should have been outperforming the overall market for the last one-year period. In his most recent update, O'Shaughnessy adds two additional filters relating to relative strength before ranking the final list by one-year relative strength in descending order. He requires the three-month relative strength and the six-month relative strength to both be positive. The main idea behind adding these filters is to avoid stocks that show growth and value but are out-of-favour.

When it comes to choosing a single indicator to pick equities, the relative strength is one of the worst. Investors should never buy equities that are out-of-favour just for the sake of expecting reversion. All master investors reviewed in this column who pick unfavourable equities always add a few other criteria to make sure that underperformance is driven by emotional factors and not fundamental ones. A strategy relying on the single criterion of picking low relative strength stocks performs poorly. But, when mixed with other indicators, it works like a powerful market timing indicator.

The mix of these four criteria is beautifully simple and constitutes a powerful growth investment strategy. But this is not a pure growth strategy; it is rather a momentum-driven growth strategy that is value-tested.

Cornerstone Value Strategy

The value strategy developed by O'Shaughnessy targets large, well-known companies, with strong cash-flows, which pay solid dividends. The strategy relies on five filters.

1. Market capitalisation

Because the strategy looks for well established businesses, the threshold for market capitalisation is now put much higher. O'Shaughnessy requires equities to have a market capitalisation of at least $1 billion. These are companies which usually produce solid and stable earnings.

2. Price-to-book ratio

The price-to-book ratio has been extensively used by value investors as a filter to pick value. In using a low threshold for this ratio, an investor guarantees that he is not paying too much above the book value, which ensures a good safety net in case things go in the wrong direction. O'Shaughnessy requires the price-to-book to be less than 1.5.

3. Price-to-earnings ratio

O'Shaughnessy found out that the resulting volatility of a portfolio built on a single value factor is too volatile. Adding other ways to capture value decreases such volatility. He then adds a filter requiring that price-to-earnings is less than the overall market average.

4. Dividend yield

Usually, large stocks paying dividends tend to outperform the market. To capture this dimension, O'Shaughnessy adds a filter requiring the dividend yield to be greater than the average dividend yield.

5. Price-to-cashflow

Companies with strong cash flows are typically the value-oriented investments that this strategy looks for. After selecting all stocks that pass the above four criteria, O'Shaughnessy ranks the list by price-to-cashflow, from lowest to highest. He then chooses 10, 20 or 50 stocks.

Implementing the strategies

Let's now try to implement O'Shaughnessy's filters to get a shortlist of growth stocks and another for value stocks. First of all, investors need to consider their investment universe, which can be constituted by US equities, UK equities, AIM equities, or anything else. O'Shaughnessy worked with the Compustat database and then the market averages he considered were averages for the Compustat database universe. In our case, we use the London Stock Exchange as our universe and choose the FTSE All-Share index as our reference for averages.

To get a shortlist of growth stocks, let's implement the following filters:

- Market capitalisation > £200 million
- Last normalised EPS > Previous normalised EPS
- Price-to-sales ratio < 1.5
- Rank filtered list by one-year relative strength, in descending order
- Choose the 10 highest ranked equities

To get a shortlist of value stocks, let's implement the following filters:

- Market capitalisation > £1 billion
- Price-to-book ratio < 1.5
- Price-to-earnings ratio < FTSE All-Share average price-to-earnings ratio
- Dividend yield > FTSE All-Share average dividend yield
- Rank filtered list by price-to-cashflow, in ascending order
- Choose the 10 highest ranked equities

In the end we have 10 growth stocks and 10 value stocks, which can be mixed in a single portfolio, similar to the "United Cornerstone". Investors can easily add more stocks by going down in the ranks. This portfolio should be rebalanced every year. That's all it requires.

"Short-circuit" your emotions

James O'Shaughnessy is one of the most interesting investors I have reviewed in this column, in particular because of the value he adds for the reader. On the one hand, O'Shaughnessy is a man of science, someone who digs deep through historical data to crunch the numbers and find out what's going on and what really works across different market trends. On the other hand, his final selection process has always been kept really simple and can be easily tested and implemented by any investor. O'Shaughnessy's strategies don't require huge resources or quantitative knowledge from investors; all they require is time and patience. Investors should stick to them

"WHEN IT COMES TO CHOOSING A SINGLE INDICATOR TO PICK EQUITIES, THE RELATIVE STRENGTH IS ONE OF THE WORST."

AN APPLICATION OF O'SHAUGHNESSY GROWTH STRATEGY TO UK SHARES

Symbol	Name	Market Cap. (m)	EPS > 1y ago EPS	Price-to-Sales	Rel. Strength (1y)	Industry
COA	Coats Group PLC	£1102.5	ok	1.0	147.6	Industrials
EVR	Evraz PLC	£4159.2	ok	0.7	77.2	Basic Materials
CVR	Conviviality Retail PLC	£689.8	ok	0.4	71.5	Consumer Services
MGNS	Morgan Sindall PLC	£610.4	ok	0.2	69.2	Industrials
GFTU	Grafton Group PLC	£1884.9	ok	0.8	51.4	Industrials
VSVS	Vesuvius PLC	£1592.2	ok	1.1	50.1	Industrials
RPS	RPS Group PLC	£615.3	ok	1.0	49.6	Industrials
SSPG	SSP Group PLC	£2422.4	ok	1.2	49.1	Consumer Services
VTC	Vitec Group (The) PLC	£421.8	ok	1.1	46.4	Industrials
TTG	TT electronics PLC	£367.8	ok	0.6	46.3	Industrials

AN APPLICATION OF O'SHAUGHNESSY VALUE STRATEGY TO UK SHARES

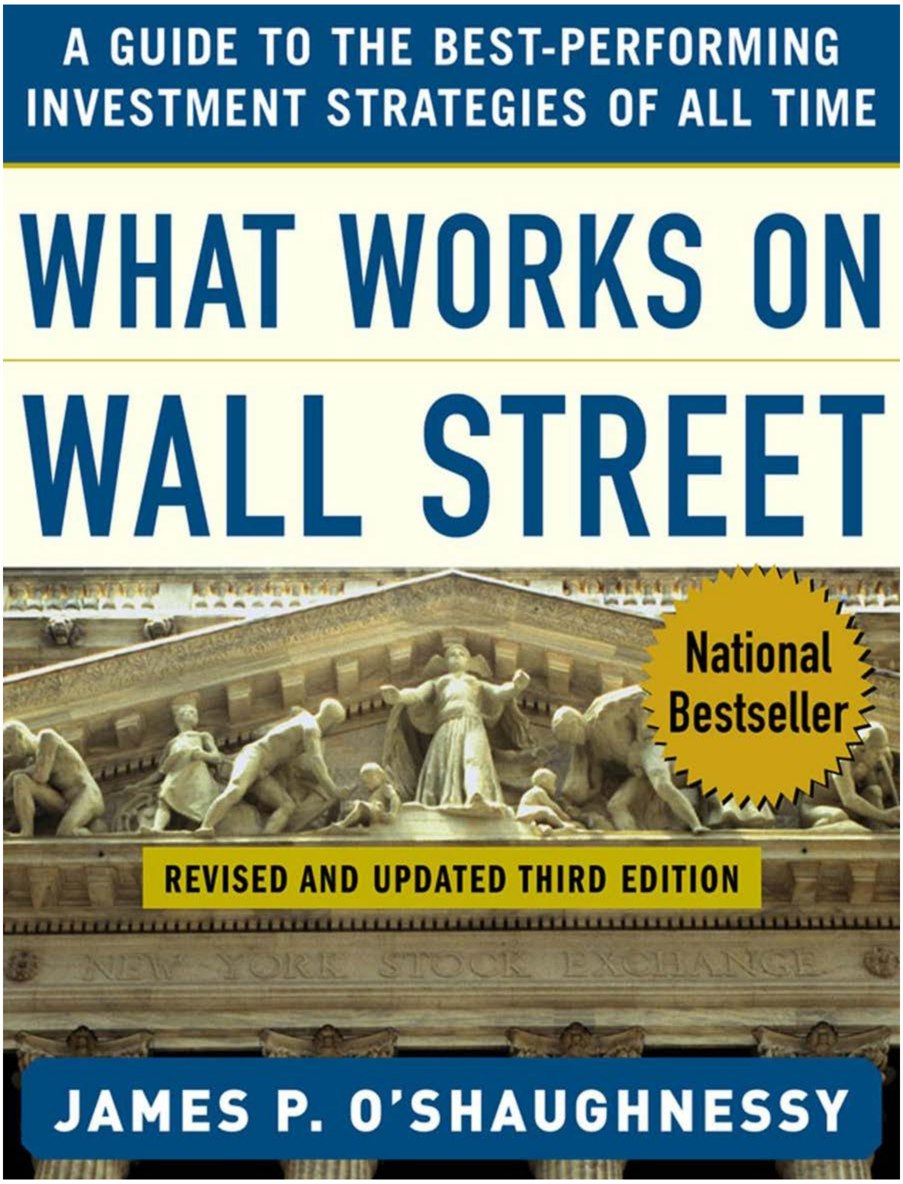
Symbol	Name	Market Cap. (m)	Price-to-Book	Price-to-Earnings	Dividend Yield	Price-to-Free cash flow	Industry
WG.	Wood Group (John) PLC	£2489.7	1.4	18.3	4.2	43.5	Oil & Gas
INPP	Int. Public Part. Ltd	£3398.3	1.2	9.7	4.0	38.5	Financials
TCAP	TP ICAP PLC	£2715.0	1.4	12.6	3.4	27.5	Financials
TPK	Travis Perkins PLC	£4005.9	1.4	13.1	3.1	26.0	Industrials
BVS	Bovis Homes Group PLC	£1405.1	1.4	11.9	4.2	23.8	Consumer Goods
HSTN	Hansteen Holdings PLC	£1109.7	1.1	7.3	4.4	22.9	Financials
KGF	Kingfisher PLC	£7356.9	1.0	12.2	3.3	19.1	Consumer Services
GNK	Greene King PLC	£2236.4	0.9	8.1	5.9	18.0	Consumer Services
DC.	Dixons Carphone PLC	£2011.7	0.7	5.6	6.4	17.7	Consumer Services
PSON	Pearson PLC	£4711.4	1.1	8.6	9.1	15.1	Consumer Services

and avoid the temptation of ditching underperforming stocks.

The last word goes to O'Shaughnessy himself:

"I passionately believe that investors who manage to short-circuit their underlying emotions by following a simple equity asset allocation plan with consistent discipline will vastly outperform those who are unable to do so, whatever the overall market environment. By letting the data of 108 years inform us – rather than listening to what a talking head is saying right now on the TV or internet – we can see the simple truth that using simple, straightforward and time-tested investment strategies leads to the best overall results in virtually all market environments."

"COMPANIES WITH STRONG CASH FLOWS ARE TYPICALLY THE VALUE-ORIENTED INVESTMENTS THAT THIS STRATEGY LOOKS FOR."



About Filipe

Filipe has been a contributor to Master Investor since the earliest years. His specialisation is monetary policy, macro issues and behavioural finance where he allies the practical experience of several years of trading with academic credentials. Filipe in fact teaches courses on Financial Markets and Monetary Economics at the University of Oporto Faculty of Economics, helping traders maximise profits and better manage risk.

BY CARL SHAVE

BRICKS & MORTAR

SHOULD YOU SWITCH FROM RESIDENTIAL TO COMMERCIAL PROPERTY?

For investors who choose to put their money into bricks and mortar, there are a number of decisions to make. Do you invest directly by purchasing buy-to-let property, or indirectly via a real estate investment trust or peer-to-peer property lending? Do you buy property as an individual, or do so via a limited company structure? And, crucially, do you invest in residential or commercial property?

Both residential and commercial property investment have seen their ups and downs over the years; in the face of a changing economic landscape and housing market shifts brought about by Brexit, is now the time to get commercial?

Aftermath of the Brexit vote

When Britain voted to leave the European Union on 23 June 2016, the commercial property market – in common with many other segments of the economy – showed worrying signs of a slowdown. The looming period of uncertainty the referendum instigated – both in terms of the broader economic picture, and specifically the future prospect of companies exiting the UK as a result of Brexit – saw many UK investors exercise caution in the months immediately following the vote.

August 2016 saw the total deal value of UK commercial property at £1.57 billion; that represented a massive 25% drop from the previous month, the lowest volume of deals ever recorded for an August, and the lowest August deal value seen since the height of the credit crunch in 2009. However, the broader indications in the months since – and input from foreign investors – paint a somewhat less gloomy picture.

While overall investment in commercial property dipped following the Brexit vote, the corresponding drop in value of the pound saw overseas property investors getting in on the action: net foreign investment in commercial property in August 2016 hit £855 million, which was a higher figure than in each of the preceding three months.

Continuing growth in confidence in the sector was certainly borne out in 2017 Q1, with London alone seeing £4.9 billion in total transactions from January to March – the highest quarterly total since 2014, and a considerable improvement on the 2016 Q3 figure of £3.2 billion. Again, foreign investment played its part in this, with overseas investors accounting for 80% of all London commercial transactions by volume.

Regular surveys such as the RICS UK Commercial Property Market Survey show a market that is still cautious about the longer-term economic prospects that Brexit will bring, but which is generally resilient and stable, with sentiment improving quarter-on-quarter since the initial

"WHILE OVERALL INVESTMENT IN COMMERCIAL PROPERTY DIPPED FOLLOWING THE BREXIT VOTE, THE CORRESPONDING DROP IN VALUE OF THE POUND SAW OVERSEAS PROPERTY INVESTORS GETTING IN ON THE ACTION."

impact of the vote. Property values haven't been affected to any significant degree – other than in some areas of London where a price correction has arguably been on the cards for some time – and yields remain fairly steady. As many analysts have pointed out over the past few months, commercial property can be resilient in the face of economic and political turbulence, not least because it is so diversified. Diversifying investment between offices, shops, warehouses, industrial premises, leisure property and other commercial buildings means that, even should a particular sector of the economy take a hit due to Brexit or any other circumstances, the overall effect on a portfolio of investments can often be ameliorated.

Commercial property or buy to let?

While it's true that many people are still making very good money from traditional residential buy to let, a number of recent changes in legislation have made it a less attractive prospect than it might have been a few years ago. Changes in stamp duty on the purchase of a second or subsequent property, and an alteration to the mechanism for claiming tax relief on mortgage interest payments, mean that some landlords are reconsidering their buy-to-let options, with some incorporating their buy-to-let businesses as limited companies, and others shifting from residential to commercial property investment.

Tax changes phasing in between now and 2020 mean that buy-to-let landlords, who had previously been able to treat mortgage interest as tax deductible at their prevailing tax rate (up to 45% for additional-rate taxpayers) will now only be able to claim tax relief at the basic rate of 20%. For some, this could mean the difference between making a profit on a property and making a loss; those with the narrowest margin between mortgage interest payments and monthly rental income would be hardest hit.

"COMMERCIAL PROPERTY CAN BE RESILIENT IN THE FACE OF ECONOMIC AND POLITICAL TURBULENCE, NOT LEAST BECAUSE IT IS SO DIVERSIFIED."

In January 2017 the *Telegraph* reported that the number of buy-to-let landlords shifting to commercial property has trebled in the past three years; taking this route can, however, mean shifting your investment strategies. Residential buy-to-let yields are typically lower than for commercial property, but other than in the face of a house-price crash – whether caused by Brexit or other factors – the capital appreciation compensates for this.

Commercial property, on the other hand, is less reliable if you're dependent upon capital growth, but typically provides higher yields. This, combined with the fact that rent is often collected quarterly in advance, can provide for strong cash flow. Tenancy periods are typically longer in commercial property than residential, although the flipside of this is that void periods are also potentially longer. Another advantage is that some commercial property related costs – such as repairs and maintenance, and insurance – are typically borne by the tenant rather than the landlord.

Forming a limited company

For many landlords, the recent changes to tax rules have led to a shift in how they operate their business – moving from an individual sole-trader approach, to forming a limited company. In terms of profits and cash flow the advantages of this – especially for higher and additional-rate taxpayers – are plain to see.

Under the new tax regime, higher and additional-rate taxpayers will pay tax on profits at their prevailing rate (40% or 45%) and will only be able to claim tax relief on mortgage interest at the basic rate (20%). However, under a limited company structure, profits would be taxed at the corporation tax rate: currently 19%, dropping to 17% from April 2020. Funds drawn from the company would be taxed at the prevailing income tax and dividend tax rates, however these payments can be structured to minimise tax liability.

There is one short-term hit to be aware of if you do decide to opt for a limited company structure: if you want to move existing properties in your portfolio from personal to company ownership, then you effectively have to sell the property to the limited company, and that sale would be subject to capital gains tax and potentially stamp duty, as well as mortgage-related fees.

There's one final caveat to consider if you're thinking about shifting your buy-to-let dealings from an individual to limited company basis: although there has been nothing explicit to indicate the possibility, there is always a chance that in the future the government might choose to close this "loophole" in the face of so many buy-to-let landlords taking advantage of the limited company option.

Commercial property pitfalls

Investment in commercial property is quite a different beast to residential buy to let, and it's important to be aware of the differences and potential pitfalls of commercial investment. I've already mentioned that significant capital growth is less likely in commercial property than residential; commercial property prices tend to be more volatile.

It's also important to properly vet the trading history and viability of commercial tenants, for example by obtaining their accounts from Companies House; due diligence is vital, perhaps to a greater degree than residential letting, because the potential for rental arrears and a lengthy void period is arguably greater if your business tenant becomes insolvent. If you are buying the commercial property with a sitting tenant, ask the seller about their relationship with the tenant; have there been any previous problems with the business meeting its rent commitments?

Commercial leases are by their nature more complicated than the assured shorthold tenancy agreement typically used in residential letting, and this can add considerable legal fees into the equation. As part of the conveyancing process, your solicitor will also need to check with the local planning authority to ensure that the property is able to be used for the intended business purposes.

The final consideration is obtaining lending for commercial property purchase. Commercial property mortgages are available from some mainstream lenders and a number of more specialist niche lenders, but securing commercial lending is rarely as straightforward as obtaining a buy-to-let mortgage for a residential property. Lenders are less likely to lend on an interest-only basis, particularly long term, and many don't offer fixed rates on commercial property mortgages; this could be problematic if and when the Bank of England base rate starts to rise. Some lenders will only lend for the term of the existing lease; you may also find lenders reluctant to lend on vacant properties. Smaller lenders and challenger banks do tend to be more flexible, but you often pay higher interest rates in exchange for flexibility.

Do your homework

Investment in commercial property has both pros and cons in comparison with traditional residential buy to let, and it's certainly not a venture to be entered into lightly. However, at a time when shifts in government policy have had a very real impact on buy-to-let landlords' overall profitability and income, the relatively high yields that can be obtained in comparison with residential letting are making it an attractive proposition for many.

If you are considering this option, due diligence is key – do your research to understand your options and obligations in terms of owning commercial property and leasing to a business. Take the time you need to investigate your funding and mortgage options – for example, will you need bridging finance? And as a final suggestion: if possible, attend at least one property auction to get an understanding of the process before making your first commercial property purchase.

About Carl

Carl is a seasoned commentator on financial matters and one of the minds behind Just Mortgage Brokers. He has worked in the mortgage industry for over 20 years, first working for a high street lender, before departing to set up and run his own branch of mortgage brokers back in 2002.

SEPTEMBER 2017

YOUR VIEW

We invite reader comments and discussions on our social media channels as well as in the comments section below each blog article. Readers can post using their real name or a pseudonym.

Every month, we pick some of the most interesting comments and exchanges, and print them in our magazine.

Thanks to the calibre of our readership, we get some incredibly insightful, thought-provoking and informative comments and emails. By passing some of them on, we hope that readers are also able to connect and learn from one another – and maybe catch up in person at one of the events we organise!

All comments reflect the individual reader's view. They have been edited for grammar, spelling and punctuation.

The Trouble with Tesla? – Electric cars!

Are electric cars as environmentally friendly and as economically favourable as they are cracked up to be? Victor Hill is having doubts.

"Victor you are a rock star! Tesla fanboys are totally missing the point about the electrification of cars. It's just a change of drive train; it's not a revolution of any kind. It's like changing the wheels on your car to a certain style and calling it a revolution! Incumbent auto heavyweights are still there because they were the best at cut-throat competition in the 100-year-old car manufacturing business. Tesla, the new kid on the block, was weaned on selling boutique luxury electric cars to Silicon Valley millionaires (or some air head who took out $100K on a bank loan to buy Tesla). Nissan and GM are the true revolutionaries of mass market EV having produced original GM Ev1 and Nissan Leaf. Now Tesla wants to join the big boys in the ring and duke it out over domination of the mass car market. Good luck to the new kid, but heavyweights are in it for the full 10 rounds, and more than likely the new kid will wind up on the mat from outright KO!"

- David Jacobi

"This article is a very welcome reality check on electric car development. However, the flaw I would point out is that your assessment is mainly based on current car models and current technologies and I would suggest that the future is less certain than implied by your article because of the possibility of developing technologies further. I would also observe that governments and local authorities do indeed implement irrational policies (you only need to look at current recycling policies to realise this) because they are driven by political rather than academic reasoning and this could lead to much wider usage of electric vehicles than is warranted by the technology."

- John Scrivens

"Thank you for your thoughts. However, you omit the possibility that hydrogen fuel cell technology might come to the rescue. Hydrogen produced from renewables is simply another "battery" or way of storing energy. However, it has the massive advantage of being able to power a vehicle for many hundreds of miles – not the 150 or so that existing battery technology allows. A hydrogen fuel cell does not wear out – like a lithium-ion battery. I note today that the Pau municipal authority has announced the adoption of hydrogen fuel cell technology for their bus fleet."

- Robin Andrews

£350 million a week? Who's lying?

Boris Johnson has resurrected the Brexit referendum chestnut that the EU costs the UK £350 million a week. Victor Hill delves into the numbers.

"Let's not throw the baby out with the bathwater. Yes, the Costa element needs to be revised for a number of reasons but the point about import duties is news to me. I think we have known for years that matters such as the agricultural subsidies have been skewed in favour of certain non-UK members and I think that this is partly a reason for the hostility towards the EU by many UK voters but it is often good to remind ourselves of these things. Also the issue about VAT reclaims is news to me. So, on balance, thank you for an interesting article."

-Nigie

A mixture of sad and pathetic

Simon Cawkwell, AKA Evil Knievil, with his latest trading and gambling exploits – writing exclusively for Master Investor.

"I don't think Sadiq Khan is mad. He probably thinks he made a mistake getting the Mayor of London job as by waiting a few months he could have been given a senior position alongside Corbyn. Make no mistake, his aim now is to become leader of the Labour Party believing he can unite the Party and replace Corbyn. Meanwhile, he does what is necessary to create a good image for himself with the London electorate: frighten Uber into complying to TFL demands and then placate Uber users, particularly the young by encouraging , 'return to the fold' talks. I expect him to jump on the PFI bandwagon. I have been pressing my local MP for a considerable time to investigate the legality of the NHS borrowings and high interest payments. I suspect a large number of PFI contracts are no longer valid because the borrowing entity has been replaced – my local trust went into what was described as 'Administration' some years ago. I think some rights could be transferred but liabilities would only be covered by novation and this did not take place. Of course, no politician wants to put PFI in doubt because it is an easy way of raising funds and they do not bother about the 8–10% interest the hospitals are required to pay now and in the future."

- Gordon Watson

Dyson to electrify the West Country

Simon Cawkwell, AKA Evil Knievil, with his latest trading and gambling exploits – writing exclusively for Master Investor.

"Unlike Tesla, Dyson begins with perhaps the most experience in the non-Chinese world of mating lithium batteries to rare earth permanent magnet motors. Albeit these were small relatively low power systems, Dyson clearly has an edge. I think that if Dyson hires good automotive engineers he should be rapidly at least on a par with the existing electric vehicle makers. I agree that Tesla is vastly overvalued; the question is: Is the total electrification of personal transportation, the goal of the politicians and greens, practical or even possible? This question will soon be tested."

- Jack Lifton

BY RICHARD GILL, CFA

BOOK REVIEW

SMART PORTFOLIOS

A PRACTICAL GUIDE TO BUILDING & MAINTAINING INTELLIGENT INVESTMENT PORTFOLIOS

BY ROBERT CARVER

The idea behind the common saying, "Don't put all your eggs in one basket", has been around in some form or another for thousands of years. To take one example, in Ecclesiastes 11:2, the Old Testament highlights the benefits of diversifying your assets – *"Divide your portion to seven, or even to eight, for you do not know what misfortune may occur on the earth"*, proclaims wise old King Solomon.

More recently, the benefits of diversification in investments have been advanced by portfolio theory, an area of finance pioneered by the economist Harry Markowitz. The field is concerned with using maths to put together a portfolio of assets so that the (theoretical) expected return is maximised for a given level of risk taken on.

But even divine inspiration and the cream of academia is not enough to convince some investors to spread their wealth over a number of different asset types.

For example, a recent study by retail focussed global asset management company, AMG Funds, found that only 42% of its US investors were able to identify reasons for the importance of diversification in investing. The situation is worse amongst Millennials, with the survey finding just one in ten understand the benefits of a varied portfolio. The consequences of this lack of knowledge could be seriously damaging to wealth in both the short and long term, with an absence of diversity in a portfolio exposing investors to higher risk and more volatile swings in the value of their assets.

"CARVER WORKED AS A PORTFOLIO MANAGER FOR AHL WHERE HE CREATED THE HEDGE FUND'S FUNDAMENTAL GLOBAL MACRO STRATEGY AND THEN MANAGED ITS MULTI-BILLION DOLLAR FIXED INCOME PORTFOLIO."

A solution to that problem comes in the form of the second book from author Robert Carver, *Smart Portfolios.*

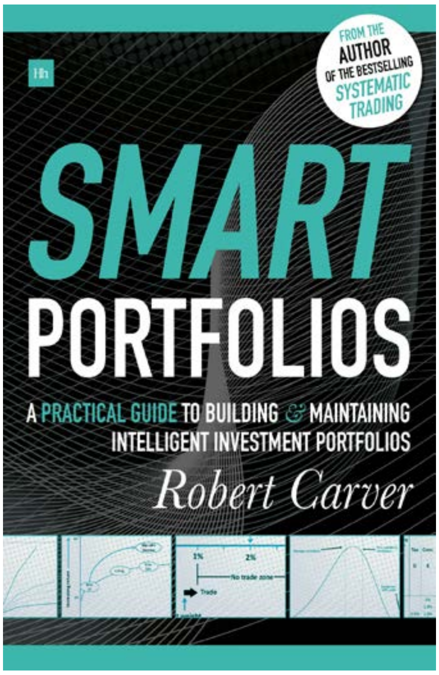
Carver is an independent investor, trader and writer who spent over a decade working in the City of London before retiring from the industry in 2013. He graduated with bachelors and masters degrees in Economics before starting life in the investment industry by trading exotic derivative products for Barclays Investment Bank. Carver then worked as a portfolio manager for AHL where he created the hedge fund's fundamental global macro strategy and then managed its multi-billion dollar fixed income portfolio.

He is also the author of *Systematic Trading,* a book which helps investors to develop systems to make and execute trading and investing decisions, and, putting his money where his mouth is, he manages his own portfolio using the methods written about in his books.

Picking a portfolio

In *Smart Portfolios* Carver shows how investors can build their own multi-asset investment portfolios by following a simple step-by-step process and applying a range of general principals, or rules of thumb. Anyone can apply the methods discussed, regardless of attitude to risk, size of investment pot or

"*SMART PORTFOLIOS* IS A VERY DETAILED, PRACTICAL AND COMPREHENSIVE GUIDE FOR ANYONE INTERESTED IN BUILDING A PORTFOLIO OF ASSETS."



financial goals. Mainly covering collective funds, equities and bonds, Carver also teaches how to rebalance a portfolio over time to take into account changes in asset prices.

The book is divided into four parts, with the first focussing on the theory behind portfolios. This includes key concepts such as risks, returns, uncertainty and the all-important notion of portfolio optimisation – in simple terms the best portfolio will have the highest expected return for a given level of risk. While the theory can get a bit complicated at times, Carver describes it in a simple manner, crucial for understanding the rest of the book.

In part two we then look at applying the theory to create portfolios by using a *top-down* view, in other words starting with a wider view of the markets, taking decisions on which specific asset classes to invest in before allocating cash to specific companies, bonds or funds. This is an important section as many academic studies point out that asset allocation is frequently the main driver of investment returns. It also highlights one of the key concepts of portfolio management – investing in one asset class to offset any losses in others and thus reduce overall risk. Practical advice on how to build a complete portfolio is given, along with several case studies in the final chapter accounting for individual investors' risk tolerances and available funds.

The first two chapters assume that future returns from certain assets cannot be predicted with certainty but in part three the author discusses what to do if you think that returns can be predicted to some degree. Here, the book provides some "smart forecasting" models which can be used to predict future returns, along with tips on how they can be used to decide how to assign asset weights to a portfolio.

Finally, part four looks at what to do after the portfolio has been built and investments change in value over time. It is inevitable that portfolio asset weightings will diverge from their initial allocations so Carver advises on how these can be rebalanced in an efficient and low cost manner. The book is supported by several appendices which point towards further background reading for both the amateur and more advanced investor, along with details on the assumptions used throughout the book.

A smart investment

Coming in at over 500 pages, *Smart Portfolios* is a very detailed, practical and comprehensive guide for anyone interested in building a portfolio of assets and increasing their long-term wealth. A review of this length can only provide a brief overview of the content so it really must be read and applied in practice to be fully appreciated.

While the book is mainly aimed at professional investors, such as financial advisors and wealth managers, those private investors who have been in the markets for some years will be able to use it to apply more advanced methods to their investment strategies. That said, there is no complicated mathematics used, technical terms are defined at their first point of use, with the content being easily accessible for anyone who has a decent foundation of financial knowledge.

Of course, following the advice and suggested procedures in the book will not guarantee that investors' portfolios will outperform. But given the author's experience and knowledge in the field the probability of that happening might just be a little higher.

About Richard

Richard Gill is an investment analyst with over a decade's experience of analysing small/mid cap equities. He is the Head of Research at Align Research. Richard qualified with the Chartered Financial Analyst (CFA) designation in 2012 and was awarded PLUS Markets Financial Writer of the Year at the 2008 PLUS Awards. He has been a judge at the Small Cap Awards from 2013 to 2017.

BY TIM PRICE

THE FINAL WORD

THE 1930s: A WARNING FROM HISTORY

If what you were 'taught' about the Great Depression is anything like my school time experience, it will go something like this: There was a Great Crash in 1929, which ushered in hard times, notably in the US. Someone called Franklin Delano Roosevelt then rode in to the rescue, and set up a bewildering array of interventionist state agencies to right the economy. Erm… that's it. Or is it?

If more than one of my school history lessons was devoted to the history of 1930s North America, I doubt it. So while I despair at the apparent lack of history teaching in our schools that can be the only thing accounting for why so many young Britons a) voted Labour at the last election and b) are happy to march under a flag with a hammer and sickle upon it, I should probably start polishing the windows of my own glass house before I elect to throw stones at those of others.

Can there be any historical episode more relevant to our current financial environment than that of the Great Depression? This is why it was a revelation to me to discover that the wholly insubstantial school-age coverage that I received on the topic might well have been wrong in just about every fundamental aspect.

You can buy a paperback copy of Murray Rothbard's *America's Great Depression* for about £7 on Amazon. I can go one better. Through the ever-excellent Mises website you can download a PDF copy for free. Reading this book changed my entire outlook on the topic of government intervention in markets and the economy. I suggest it will change yours too.

A preamble: The US financial commentator James Grant offers a dress rehearsal for the full-blown Depression experience in his recent book, *The Forgotten Depression: 1921: the crash that cured itself.* The clue is in the title. In 1921, the US economy experienced a post-war deflationary slump. Woodrow Wilson and Warren Harding immediately snapped into action and… did precisely nothing. The economic storm quickly blew itself out.

In matters of the economy, while prevention may be better than cure, intervention most certainly is not. The post-1929 experience of the US shows this in spades. The one quote I remember from that history lesson was from US Treasury Secretary Mellon. Faced with a slowing economy after the Crash, he urged the US administration, somewhat luridly, to "Liquidate labour, liquidate stocks, liquidate the farmers, liquidate real

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estate", and so "purge the rottenness" from the system.

Seen through the interventionist prism of our own times, he sounds like a James Bond villain. But the US government, of course, did no such thing. The then President Hoover gathered industrial leaders together and coerced them into maintaining wage rates. The New Deal itself arrived under Hoover, not Roosevelt. But FDR massively expanded the programme.

Whenever crisis comes, politicians feel obligated to do something, and just as importantly, to be seen to be doing something. The practical utility of action is squashed under the driving imperatives of the electoral cycle. As Rothbard puts it,

> "Mr. Hoover met the challenge of the Great Depression by acting quickly and decisively, indeed almost continuously throughout his term of office, putting into effect 'the greatest program of offence and defence' against depression ever attempted in America. Bravely he used every modern economic 'tool', every device of progressive and 'enlightened' economics, every facet of government planning, to combat the depression. For the first time, laissez-faire was boldly thrown overboard and every governmental weapon thrown into the breach. America had awakened, and was now ready to use the State to the hilt, unhampered by the supposed shibboleths of laissez-faire. President Hoover was a bold and audacious leader in this awakening. By every 'progressive' tenet of our day, he should have ended his term a conquering hero; instead he left America in utter and complete ruin – a ruin unprecedented in length and intensity."

Perhaps what I was taught at school was wrong.

Rothbard identifies a number of ways in which government exacerbates rather than solves recessions. Among them:

- Preventing or delaying liquidation by the ongoing lending of money to insolvent businesses;
- Stimulating inflation, which blocks the necessary market clearing process of lower prices;
- Maintaining prices and wages above the levels they would naturally reach in a free market;
- Stimulating consumption and discouraging saving.

Perhaps the United States' Great Depression would have been over sooner if government had simply stepped out of the way? Rothbard again:

> "Economic theory demonstrates that only governmental inflation can generate a boom-and-bust cycle, and that the depression will be prolonged and aggravated by inflationist and other interventionary measures. In contrast to the myth of laissez-faire, we have shown... how government intervention generated the unsound boom of the 1920s, and how Hoover's new departure aggravated the Great Depression by massive measures of interference. The guilt for the Great Depression must, at long last, be lifted from the shoulders of the free-market economy, and placed where it properly belongs: at the doors of politicians, bureaucrats, and the mass of 'enlightened' economists. ***And in any other depression, past or future, the story will be the same.*** [Emphasis mine.]"

So it is my contention that our governments and central banks could not have done a worse job of handling monetary and economic affairs after the 2008 shock. Rather than allow a free market to work its magic, they have followed Rothbard's interventionist playbook to the letter.

There is a terrible hubris at the heart of mankind. Like every other living thing on the planet we are products of nature, but we consider ourselves to be well above it. We are beset by regular reminders of our vulnerability, but quickly dismiss them off-handedly to a spiritual plane, calling them "acts of God" as if to show that we could never have prevented them. In a significant essay for Foreign Affairs, *The Black Swan of Cairo,* Nassim Taleb shows how the efforts of our authorities to suppress volatility actually end up making the world less predictable and more dangerous.

"Although the stated intention of political leaders and economic policymakers is to stabilize the system by inhibiting fluctuations, the result tends to be the opposite. These artificially constrained systems become prone to 'Black Swans' – that is, they become extremely vulnerable to large-scale events that lie far from the statistical norm and were largely unpredictable to a given set of observers."

There is an analogy from the natural world. In the 1960s and 1970s, mid-western American states fell victim to scores of wildfires. Constant interventions by the US Forest Service appeared to have little positive impact – if anything, the problems seemed to worsen. Over time, foresters came to appreciate that fires were a normal and healthy element of the forest ecosystem. By continually suppressing small fires, they were unwittingly creating the conditions for larger and less containable wildfires in the future. Naturally occurring fires are necessary to remove old forest cover, underbrush and debris. If they are suppressed, the inevitable fire to come has a far greater store of latent fuel at its disposal.

Not interfering with the market's adjustment process is simply allowing Schumpeterian "creative destruction" to operate, and cleanse the forest. But that process is anathema to well-compensated entrenched interests that suckle from the teat of the State. Banks, for example. So while "laissez faire" would accelerate any banking crisis and shorten the resultant economic contraction, it would reveal the identity of too many naked swimmers when the tide retreats. Instead, courtesy of highly paid lobbyists, we get a long drawn out depression. The example of Japan's zombie banks from the 1990s is still fresh, but ignored in the west.

To reiterate, Rothbard identified the numerous ways in which government can hobble the adjustment process:

1. Prevent or delay liquidation. Lend money to shaky businesses, call on banks to lend further.

2. Inflate further. Further inflation blocks the necessary fall in prices, thus delaying adjustment and prolonging depression. Further credit expansion creates more malinvestments which, in their turn, will have to be liquidated in some later depression. A government's "easy money" policy prevents the market's return to the necessary high interest rates.

3. Keep wage rates up.

4. Keep prices up.

5. Stimulate consumption and discourage saving; more saving and less consumption would speed recovery; more consumption and less saving aggravate the shortage of saved capital even further.

6. Subsidise unemployment. Any subsidisation of unemployment (via unemployment "insurance", relief, etc.) will prolong unemployment indefinitely, and delay the shift of workers to the fields where jobs are available.

An iatrogenic illness is one caused by the doctor himself. The economies of the west now face policy measures of the sort highlighted by Rothbard that are stated to be in our interests, but which have already shown themselves more likely to do harm to the patient and prolong the recession.

The tragedy of our times is not that the history doesn't exist. Rather, the history is out there – but we all have to experience it for ourselves. Longevity is all very well, but not if you don't learn anything along the way.

About Tim

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MARKETS IN FOCUS

SEPTEMBER 2017

GLOBAL EQUITIES

Index	Last Month %	YTD %	Proximity to 52w High*
DAX Xetra	6.4	12.0	
CAC 40	4.8	9.6	
Euronext 100	4.5	11.0	
Bovespa	3.9	22.0	
Russian Trading System	3.7	-1.2	
Nikkei 225	3.6	6.5	
Dow Jones	2.1	13.0	
S&P 500	1.9	13.0	
IBEX 35	0.8	11.0	
NASDAQ 100	-0.2	23.0	
S&P/ASX 200	-0.6	0.3	
FTSE 100	-0.8	3.2	
Hang Seng	-1.5	25.0	

COMMODITIES

Commodity	Last Month %	YTD %	Proximity to 52w High*
Crude oil (Light Sweet)	9.3	-4.6	
Crude oil (Brent)	7.7	-0.2	
Cocoa	2.8	-8.5	
Soybean	1.6	-4.3	
Palladium	0.7	38.0	
Coffee	-0.7	-5.1	
Natural Gas	-1.0	-19.0	
Gold	-3.0	12.0	
Sugar (No. 11)	-3.1	-28.0	
Copper	-3.8	20.0	
Silver	-4.5	5.5	
Platinum	-8.1	1.6	
Iron Ore	-19.0	-19.0	

FOREX

Pair/Cross	Last Month %	YTD %	Proximity to 52w High*
GBP/AUD	4.9	-0.2	
GBP/USD	3.5	8.5	
USD/JPY	2.1	-3.9	
EUR/JPY	1.3	8.0	
USD/CHF	1.0	-4.8	
EUR/CHF	0.1	6.8	
USD/CAD	-0.1	-7.2	
EUR/USD	-0.8	12.0	
AUD/USD	-1.4	8.6	
EUR/GBP	-4.2	3.5	

CENTRAL BANKS - RATES & MEETINGS

Central Bank	Key Rate	Next	After
BOE	0.25%	Nov 02	Dec 14
ECB	0.00%	Oct 26	Dec 14
FED	1.25%	Nov 01	Dec 13
BOJ	-0.10%	Oct 31	Dec 21
SNB	-0.75%	Dec 14	---
BOC	1.00%	Oct 25	Dec 06
RBA	1.50%	Oct 03	Nov 07
RBNZ	1.75%	Nov 09	Feb 02
BOS	-0.50%	Oct 25	Dec 19
BON	0.50%	Oct 26	Dec 14

FTSE 350 TOP

Sector	Last Month %	YTD %	Proximity to 52w High*
Next PLC	27.0	5.6	
Aveva Group PLC	26.0	30.0	
Johnson Matthey PLC	24.0	7.5	
Dunelm Group PLC	21.0	-12.0	
Amec Foster W. PLC	21.0	8.4	

FTSE 350 BOTTOM

Sector	Last Month %	YTD %	Proximity to 52w High*
Spire Health Group PLC	-31.0	-33.0	
Greene King PLC	-21.0	-22.0	
Hochschild Mining PLC	-19.0	8.5	
Indivior PLC	-18.0	15.0	
Mediclinic Int. PLC	-15.0	-16.0	

FTSE 350 SECTORS TOP

Sector	Last Month %	YTD %	Proximity to 52w High*
Oil Equip., Serv. & Dist.	18.0	-23.0	
Chemicals	9.8	13.0	
Automobiles & Parts	8.5	4.3	
General Retailers	8.0	1.1	
Oil & Gas Producers	6.5	-3.2	

FTSE 350 SECTORS BOTTOM

Sector	Last Month %	YTD %	Proximity to 52w High*
Mining	-7.2	12.0	
Mobile Telecomm	-6.0	3.3	
Gas, Water & Mult.	-5.2	-6.7	
Health Equip & Serv	-5.2	9.3	
Forestry & Paper	-5.1	20.0