ISSUE 43 – OCTOBER 2018

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MAGAZINE

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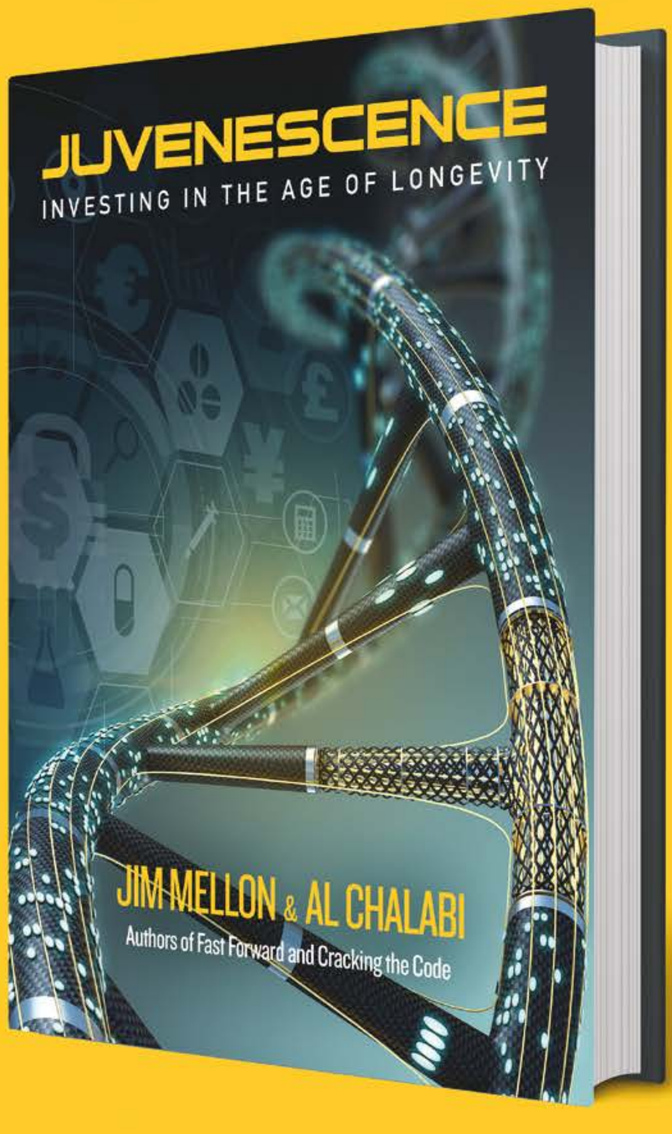

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WELCOME

Dear Reader,

Welcome to the October edition of Master Investor Magazine. The oil & gas sector is often seen as something of a casino by investors looking for a speculative punt. But truth be told, it actually follows some very well-established patterns.

The most recent boom-bust cycle featured the rise of fracking and the shale 'revolution', leading to a situation in which supply was running well ahead of demand. The resulting price correction – from highs of around $120 a barrel to lows of under $30 a barrel – seems savage, especially for a commodity that is so fundamental to our lives; but it is symptomatic of an industry where supply can be very slow to adjust.

As oil industry veteran Malcolm Graham-Wood explains in his article on page 16, the oil market is shaped by some very powerful geopolitical forces which are in a state of flux. OPEC is no longer top dog and is having to contend with the rise of competing producers such as the US. In response, it is seeking out news friends, such as Putin's Russia.

But now that, once again, prices seem to be on a well-established upward trajectory, the pain is easing for oil producers, and this is being reflected in stock prices. The majors in particular saw their share prices stage a sharp recovery, boosted by the fact that their operations are now much leaner and more efficient.

However, much of the smaller exploration companies have seen their share prices lag behind. Not for much longer, argues Angelos Damaskos of Junior Oils Trust (page 10), as years of underinvestment in exploration and development projects means we're now faced with tight supply conditions – and higher prices – for years to come.

In spite of all the talk of a green future and an electric vehicle revolution, global demand for oil continues to rise and experts predict we will remain reliant on fossil fuels for decades to come. In light of this, hydrocarbon investments remain a key component of many investors' portfolios. Get it right, and the returns can be huge; get it wrong, and you can lose everything.

The oil & gas sector remains one of the most volatile but also one of the most exciting sectors of the market. I hope that this month's issue of Master Investor Magazine will help readers navigate this fascinating industry.

Best regards,

James Faulkner
Editor

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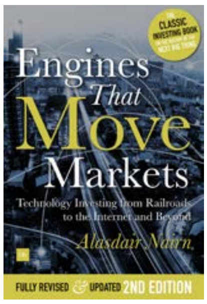

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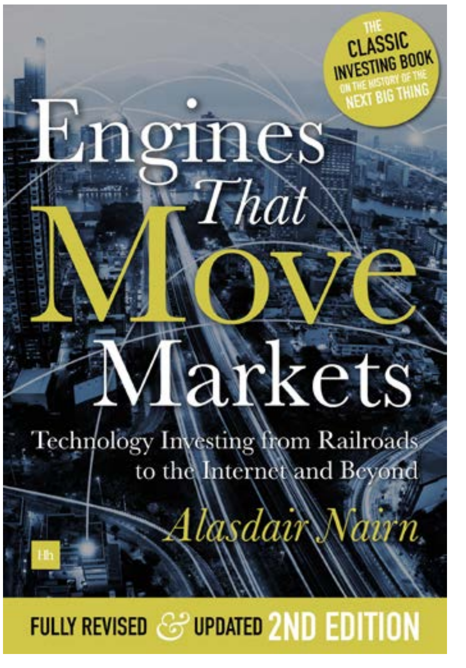

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BY JIM MELLON

MELLON ON THE MARKETS

"Any fool can make a fortune. It takes a man of genius to keep it after it's made."

- Cornelius Vanderbilt

I'm writing this on an old BA 747 (there aren't any new ones!) flying to San Diego to speak at the RAAD fest ageing conference. I think about 2,000 people are attending. I am honoured to be doing this, as the other keynote is Ray Kurzweil and I am super excited to meet him. He is a very singular man!

This is the second long trip in a week, as I recently returned from Singapore, where I was on a couple of panels at the Milken Asia Summit. This was very interesting in itself, but, as an added bonus, my colleague Anthony Chow and I got to spend a day at the National University of Singapore (NUS), which is a world class institution with some really interesting medical technology that we are looking at investing in.

We also met with some investors, Singapore now being a major hub for wealth management. In fact, anecdotally, I was told that the city state has more money under management than Switzerland!

Nothing is more demonstrative of the pivot to Asia in terms of relative wealth creation than that. Yes, there is still a strong economic and stock market linkage between the US and Asia, but this is slowly weakening. The rise of China, albeit with its somewhat imperfect economy *pro tem*, is one feature of this, but,

"INDIA IS THE NEXT GREAT FRONTIER AND NO DOUBT WILL BE SCALED UP OVER THE NEXT TWO DECADES TO SOMETHING QUITE UNRECOGNISABLE."

of course, there is so much more going on than that. Singapore, as an example, has a GDP per capita which is roughly twice that of the UK, with no resources other than position, harbour and, of course, a remarkably well-educated labour force. Everything about the place hums, with the metro running like clockwork and spotlessly clean and the airport a triumph of efficient design.

Contrast that to the shocking state of the Tube in London or the subway in New York. I did and was ashamed on behalf of me and my compatriots.

Asia's century

I lived in Hong-Kong (another remarkable success story!) for twelve years, so I guess I should be used to the dawning of the Asian century. In about thirty years, the whole place has been transformed, and whereas most Far-Eastern nations are now middle-to-high income (the outliers being the Philippines and Indonesia, both of which are catching up), India is the next great frontier and no doubt will be scaled up over the next two decades to something quite unrecognisable.

The reason I mention all of this is because Asian markets (with the exception of Japan) have been generally weak in the past year and now sell at much lower valuations than US markets – and indeed even some European markets.

The Chinese markets have been particularly pummelled, to the point where they look (stripping out the internet stocks) positively cheap, at about 7x prospective earnings. This is despite all we know about a looming trade war, a deteriorating current account position and excessive debt, particularly in local government and state-owned enterprises. I have been buying ETFs in Chinese financial institutions, and one investing in industrials as well, and because Indonesia also looks very cheap, I have been buying there also.

Japan has been very resilient, in my opinion. The multi-year high reached in January of this year will be easily breached in the next couple of months and there is almost no currency downside to the yen, which I think is very cheap. Equally, everything about Japan looks good now; corporate governance is much improved, earnings are up, inflation is percolating a little, dividend yields are quite good, and stocks are relatively cheap. I have been banging on about Japan for a while – my instinct is to hold, even if elsewhere clouds are darkening somewhat.

Pockets of opportunity

Broadly, as regular readers know, I am sceptical of much residual value in the US market. There are of course pockets of opportunity, but I can see that although new highs on some indices are being achieved, the breadth is limited, the pace of change looks exhausted, and the market-beating FAANGS are absolutely behind the pace at the moment.

There are also reasons to be concerned about the broad macro picture in the US. Yes, President Trump is on a roll, with the economy seemingly booming; but we now have quantitative tightening happening in the US, we have soaring public and private debt, rising interest rates, full employment leading to wage pressure – oh, and a trade war, which can be in no-one's best interest.

"THE RECENT POOR PERFORMANCE OF BANKING STOCKS PROBABLY SIGNALS SOMETHING BAD IS IN STORE FOR US."

I think it is important to recognise that we are in an exceptionally long-lived bull market and economic upturn and that the recent poor performance of banking stocks probably signals something bad is in store for us.

I am aware that a mantra of diversification – some dividend yielding stocks, some emerging markets and some currency plays – is boring after a while, but it's what we need to do.

Meanwhile, closer to home...

Closer to home, what about the UK? I believe a soft Brexit is about to be agreed, which suggests to me that sterling is a buy and investors should position accordingly. I think UK stocks, especially domestic ones, are a little undervalued and bonds are overvalued. There are few that cry out to be bought, but maybe the oil majors, including **BP (LON:BP.)** and **Shell (LON:RDSB)**, merit attention.

In Europe, I think that **Bayer (ETR:BAYN)**, recently fried by an ill-timed purchase of Monsanto, might be looking good, but it's worth averaging-in.

Commerzbank (ETR:CBK) is very likely to be bought by **Deutsche Bank (ETR:DBK)**, in a case of the blind leading the... This will be an initiative of the German government, which presides over a generally very poorly managed banking sector. Wait till Italy hits the proverbial and see what happens then! But for those of us who like short-term gains (and who doesn't?!), Commerzbank looks like an interesting situation. And I know nothing more than what I read in market commentary!

Unilever's **(LON:ULVR)** attempt to move to Holland is an absolute disgrace; it seems designed to help it fend off another attack a la Kraft, and I must say I do hope my ex-colleague Nick Train sees off the injudicious move. There's no real money in this trade though.

I will be backing two new exciting companies soon and in my next missive I will expound on them. I hope everyone has noticed the amazing articles that Master Investor is generating fervently. Aubrey de Grey is incredible and well worth reading.

Also, of course, we have the Longevity seminar for MI clients coming up soon and he will be there. I admire him as much as anyone and can't wait for the day.

Live long and prosper.

Happy Hunting!

Jim Mellon

Your chance to hear more from Jim Mellon

We are delighted to have Jim presenting at several Master Investor events in November. To find out more and sign up, simply follow the links below.

Investing in the age of longevity (1 November 2018, London)

One-day masterclass that will give you the guidance, support and contacts you need to tap into what Jim calls "the biggest money fountain ever".

https://masterinvestor.co.uk/events/investing-in-the-age-of-longevity

Master Investor Manchester (9 November 2018)

Exclusive keynote seminar packed with Jim's investment predictions and leftfield ideas. Find out where the Master Investor is putting his money in 2019!

https://masterinvestor.co.uk/events/master-investor-manchester

About Jim

Jim is an 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 is often described as the British Warren Buffett and 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 subsequently *Cracking the Code* (2012), *Fast Forward* (2014) and, most recently, *Juvenescence* (2017). His monthly "Mellon on the Markets" column in Master Investor Magazine has gained him cult status among investors. He holds a master's degree in Politics, Philosophy and Economics from Oxford University. He is on the Board of Trustees of the Buck Institute in California, a trustee of the Biogerontology Institute, and a Fellow of Oriel College, Oxford.

BY JAMES FAULKNER

SHARPE MINDS

RIDING THE OIL SUPER-CYCLE

AN INTERVIEW WITH ANGELOS DAMASKOS OF THE JUNIOR OILS TRUST

With the oil price having regained much of the lost ground since the savage bear market of 2014/15, oil stocks are beginning to regain some of their previous lustre, but the recovery at the smaller end of the market remains muted. James Faulkner chats to Junior Oils Trust manager Angelos Damaskos to find out whether it's time for them to catch up...

James Faulkner: **The oil price slump of 2014/15 is but the latest in a long string of shocks to the oil market. What were the particular dynamics at play this time round, and what do they mean for investors?**

Angelos Damaskos: *The price of oil has always been cyclical and volatile over its history. When we launched the Junior Oils Trust in 2004, we believed in an emerging price super-cycle that would last at least two decades. The main drivers were the industrialisation and urbanisation of China and other Asian countries, which boosted the demand for energy, as well as constrained supply, due to the lack of major new discoveries.*

The long-running joke in our company is "do not bet against the engineer; given time and money, the engineer will find a solution to the energy problem". The technique driving the shale revolution was essentially the largest oil discovery ever, as it accelerated North-American production so quickly that by 2014, the market became significantly over-supplied, causing the price crash that lasted three years. The result was a massive re-capitalisation of the exploration and production sector, severe cuts in new drilling activity and a cost-reduction drive. That made North American producers even more productive, but it also caused many higher-cost fields across the world to suffer dramatic declines in productivity. As demand from Asia continued to grow, we are now in a situation of short-supply for many years to come and that can only mean higher prices.

"WE ARE NOW IN A SITUATION OF SHORT-SUPPLY FOR MANY YEARS TO COME AND THAT CAN ONLY MEAN HIGHER PRICES."

JF: **The recovery in the oil price has also driven a recovery in the fortunes of the oil majors. However, the smaller explorers/producers seem to have been left behind. Presumably, at some point, new supply will have to be brought on-stream to meet growing global demand, at which point the smaller oil companies should come into their own?**

"I BELIEVE THAT A RE-RATING OF SMALL-CAPS HAS STARTED AND WILL LIKELY ACCELERATE AS OIL PRICES RISE FURTHER."

“WE CONCENTRATE ON COMPANIES OPERATING IN SAFE POLITICAL JURISDICTIONS, CONTROLLING LARGE PROVEN RESERVES.”

AD: *The oil price recovery from $27/barrel in February 2016 to nearly $80/bbl now has been a large benefit to the fortunes of the oil majors and middle-sized producers. These companies rationalised their balance sheets and cut operating costs during the crisis, so they are now enjoying rising profitability.*

The smaller exploration and early production growth companies were left behind for two reasons: (i) investors generally did not believe the oil price would recover to the current levels and chose to avoid higher-risk smaller companies; and (ii) the looming supply shortage is only now becoming clear to the market and smaller companies are the ones that generally benefit the most from sustained higher oil prices, as they are able to re-activate and grow quickly in a company-specific manner. Investors have started realising this and I believe that a re-rating of small-caps has started and will likely accelerate as oil prices rise further. Those companies controlling significant proven reserves that can be brought to production in the near-term will benefit first.

JF: Where have you been focusing your attention of late in terms of your buying and selling? Are there any stocks in particular or areas of the market that you like the look of right now?

AD: *As global exploration spending is typically slow to build-up following such a damaging and prolonged price collapse, those companies that hold previously discovered oil reserves will now be able to raise financing easily, to either complete necessary appraisal or work towards bringing production to market.*

Looking at the top five holdings in the Junior Oils Trust portfolio as at end of August, they all hold tremendous value under the circumstances. Our largest holding, ***Carnarvon Petroleum (ASX:CVN)****, has been fortunate to have discovered probably the largest oil field off-shore Western Australia in the last 30 years. This important discovery, being primarily oil, can be brought to production in a short time-frame, particularly with the backing of Santos, the Australian major, which will be its partner following recent corporate activity. Our second-largest,* **Faroe Petroleum (LON:FPM)***, one of the most successful operators in the North Sea, also controls substantial reserves and is growing production rapidly and has recently seen a Norwegian oil company buy a significant interest that could be the prelude to further corporate action. The next,* **FAR Limited (ASX:FAR)***, holds a 15% interest in one of the largest recent discoveries off-shore West Africa in Senegal that will move to commercialisation soon and is in an additional joint venture, carried for a highly prospective exploration programme, in The Gambia. Next up,* **Cooper Energy (ASX:COE)** *is accel-*

About Angelos Damaskos

Angelos Damaskos has managed the Junior Oils Trust since its inception in October 2004. The fund focuses its investments in junior oil and gas exploration and production companies. Since inception, twenty-two of the fund's core holdings have been the subject of corporate activity. Angelos is also the manager of Junior Gold. His past experience includes an investment banking career most recently with the European Bank for Reconstruction and Development where he directed some of the Bank's private equity investments in Russia and other CIS states.

"DECLINING PRODUCTION FROM MATURE FIELDS AROUND THE WORLD IS NOW FASTER THAN GROWTH FROM UNCONVENTIONAL SHALE, AND WE WILL LIKELY SEE $100/BARREL AGAIN NEXT YEAR."

erating its gas production in south-east Australia, where the region depends on imports of gas that trade at a premium to global market prices. Our fifth holding, **Tamarack Valley Energy (TSE:YVE)***, is a very successful shale oil operator in Canada that has managed not only to survive the downturn but also take advantage of the distressed asset market and accumulate additional acreage that is now the driver to meaningful production growth.*

You can see from these examples that we concentrate on companies operating in safe political jurisdictions, controlling large proven reserves that will not only result in significant production growth but will re-rate in value as oil prices continue to rise.

JF: Capex and exploration budgets have been slashed across the sector. However, presumably at some point, a lack of new supply coming on-stream should drive prices higher and re-ignite activity?

AD: *It is human nature to be cautious after such a dramatic set-back that caused so many companies to fail or incumbent equity holders to lose essentially all their capital. Management teams naturally only focus on near-term development of well-understood assets with only nascent interest in expensive, risky exploration of new prospects. As prices remain at current levels and potentially rise back through $90 or even $100/barrel, exploration spending will accelerate quickly. However, the time-lag between capital commitment and oil production can be several years and, in the meantime, demand is expected to continue to grow. With the exception of marginal swing producers such as Saudi Arabia and Russia that have some spare capacity, most other mature basins are declining and we need significant new finds to replace lost production. For these reasons, oil price cycles tend to be very long and that is not even considering geopolitical risks.*

JF: In terms of geography, which regions do you think oil investors should be looking at right now, both in terms of exploration and production potential?

AD: *We have always concentrated on safe political jurisdictions where the rule of law can protect shareholders. Canada and the US rank highest in this regard, but there is a plethora of companies and assets of varying quality, entailing company-specific risks, that have to be carefully assessed. The UK and Norwegian North Sea have long been company-makers for smaller players. South-East Asia and Australia are proven prolific oil regions where smaller companies have been very successful in discovering large oil or gas fields. Off-shore West Africa is also safer than on-shore and is a good hunting ground for smaller companies. Finally, with smaller exposures and selective investments, we like some Latin-American countries, such as Colombia, Peru, Brazil and, recently, Argentina, as oil is an exported commodity that is traded in US dollars, largely immune from domestic economic problems.*

JF: What's your view on shale and fracking? Many now believe that $100 oil is a thing of the past, as the shale complex effectively puts a cap on the oil price. Do you subscribe to that view?

AD: *The fracking technology was the reason for the recent crash and has given the US energy-independence. The oil price crunch has encouraged large efficiency gains in drilling and completions, and there is a vast inventory of drilled, uncompleted wells. However, some studies indicate that the efficiency gains are now flattening and only the Permian basin in the US has large growth potential. Infrastructure to bring all this oil to market seems to be the biggest obstacle to growth and, as this typically involves large capital investments with long lead-times for construction, North American production growth will be restricted. I believe that, cumulatively, declining production from mature fields around the world is now faster than growth from unconventional shale, and we will likely see $100/barrel again next year.*

JF: What characteristics do you look for in a potential investment? Small-cap oil companies can be an exciting area, but all too often private investors end up coming unstuck. How can investors avoid the pitfalls?

AD: *Five things: (i) operations in safe political jurisdictions; (ii) identified, preferably, proven reserves, that are undervalued in relation to market capitalisation; (iii) competent management teams with successful track record; (iv) strong balance sheet that does not rely excessively on the capital markets to fund corporate development; and (v) current or near-term production supporting growth.*

JF: Much is being made of a mooted shift to electric vehicles. How much of a threat do electrification and renewables really pose to the oil market?

AD: *Despite the expected growth in adoption of electric vehicles, they will still comprise a small percentage of global automotive sales, which will likely continue to drive demand for oil products. Energy from renewables is also expected to grow but will mostly offset coal-fired power. Demand for petro-chemicals is the fastest growth area and oil is the major input.*

JF: I was excited to learn that you set-up the company responsible for the management of Junior Oils Trust, Sector Investment Managers, with your late father-in-law Jim Slater, a legend among the private investor community. How does Jim's legacy influence you as an investor (obviously bearing in mind that Jim's usual hunting ground was a rather different affair)?

AD: *I specialised in natural resources financing in my entire career, starting as an investment banker in 1989. Jim and I agreed on the energy and commodities super-cycle that started at the turn of this century and we thought that a good way to invest in it would be via smaller, nimbler companies, which was also Jim's specialisation. We conceived Sector Investment Managers Ltd in 2004. As a value investor, Jim influenced the investment philosophy and principles of our operations, with a risk-mitigation approach. We worked together on many levels of the first bull-market cycle from 2003 to 2011, enduring the financial crisis of 2008, adjusting our positioning where possible. I am grateful to Jim for his mentoring and constant guidance during some very volatile periods, and we continue to adhere to the same principles that were the bedrock of our company's establishment.*

JF: What do you think are the key themes that will shape the oil & gas sector going forward, and how can investors navigate these developments?

AD: *I think China, India and other emerging economies will continue to drive demand for oil as they improve their living standards. Assuming a stable global economy, these regions should be the growth engines. The big danger, in my mind, is the large global indebtedness and potential financial crises this could bring, potentially reversing economic growth over shorter periods. Geopolitical instability can cause short-term spikes in oil prices but in the medium-term we have to believe that rational governments will avoid destructive action. With this background in mind, I think that oil will continue to be an important input for global economic activity and controlling large reserves of it will be rewarding for investors. The main safety guards should focus on avoiding risks that are unpredictable and unquantifiable, also allowing for high volatility in the commodity price.*

About James

Our Editorial Director, James Faulkner, began investing in the stock market in his early teens. With over a decade of experience covering the stock market under his belt, he has also been a judge at the Small Cap Awards, and is an Associate of the Chartered Institute for Securities & Investment.

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BY MALCOLM GRAHAM-WOOD

BLACK GOLD SHINES AGAIN

THE UK-LISTED COMPANIES BENEFITING FROM OIL'S RECOVERY

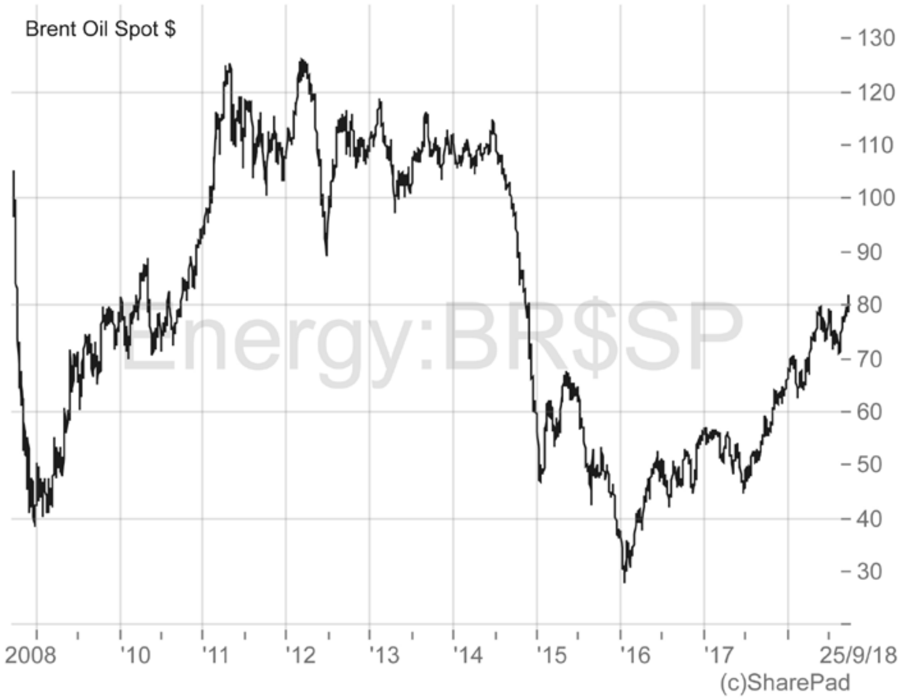
The oil industry is in a pretty sweet spot at the moment. From the highs of $125 in 2011 to the lows of $27 in February 2016, the price of Brent Crude has settled into a recent trading range of $70-80. The pattern was fairly simple; after the financial crash when crude oil fell along with everything else, it recovered rapidly and virtually tripled and stayed in the $110-125 area until mid-2014 when OPEC decided that it was fed-up with supply from elsewhere and went all out for market share. Firstly, it fell to the $50-60 range, where traders thought it would stay, but with the spigots open, there was more to go and it halved again.

Non-OPEC supply has been blamed for much of the fall in those years and, certainly, that was part of the problem, as in particular the US shale boom swung into action and has since then reached a rate of 10 million barrels per day. This is roughly the same as Saudi Arabia and Russia combined and is approximately 10% of all world demand, which is widely predicted to go through 100 million barrels per day later this year.

During the last few years, it became a regular occurrence for OPEC in general and Saudi Arabia in particular to act as de facto market controller, opening the taps when oil was short, such as during the Libyan Civil War and hostilities in the Middle East.

Trouble in the 'desert kingdoms'

Saudi Arabia was generally thought to be happy to be known as the supplier of the 'marginal barrel' because it did well when prices were artificially in-



"IN EARLY 2016, WHEN THE PAIN WAS MOST INTENSE, SENIOR MEMBERS OF OPEC STARTED TO REALISE THAT THE BATTLE FOR MARKET SHARE WAS LOST."

flated and, at the same time, was able to turn the taps off when prices went down, which they usually did. The role of 'swing producer' became an acceptable one for as long as the main world suppliers had the same thing in common – and that was not just greed. OPEC was realising that it was dealing with new paradigms and ones it was not used to.

The US, returning to the market place with its rapidly growing production, changed everything, and Aramco didn't like it one bit. With OPEC opening up the spigots to challenge for market share, the price of oil fell sharply, and whilst some US production was shut-in, due to its cost of production, other oilers wrote-off capex and pumped for cash flow only – infuriating the cartel. They had borrowed from the banks and had monthly interest charges to pay, and in a world where cash is king, the failure to pay-up meant the man from Wells Fargo was knocking on the door.

After a while, a number of things happened. In 2015, 'desert kingdoms' found their oil was not only flooding the market but at unprofitable prices, and local economy budgets were being killed. In early 2016, when the pain was most intense, senior members of OPEC started to realise that the battle for market share was lost as the US and Russia, with their combined 20 million barrels per day, were taking the pain and showed no sign of cutting back. The only solution was to try and find a way of getting prices up and in a meaningful way; the answer turned out to be what we now call OPEC+.

The advent of OPEC+

It was clear to those in Riyadh that something serious needed to be done. What is more, they needed partners, and not just those in OPEC, but another big producer. After realising that the US would be intransigent, their eyes turned to Moscow and a partnership with Putin. In its early format, it didn't look possible, with Russia usually producing flat out regardless of price, and it looked as though, despite his power, Putin would have to sell this well internally. A period of intense diplomatic manoeuvring commenced, with King Salman visiting Moscow and receiving Putin at his home. The king was an eager participant, egged on by Deputy Crown Prince Mohammed bin Salman, or MbS as he is now universally called, and without doubt the power behind the throne.

It soon became clear that if OPEC could add to the group a number of other producing states, both big and small, it might be able to cut production relatively modestly whilst getting the price back up again. And so the November '16 OPEC+ agreement was made and although it was inevitable that Aramco would have to cut the most, a 10% reduction in production would mean significantly higher monthly cheques all-round. The cartel had gone full circle, cutting production again to create a shortage and solve their budget crises; the only problem was that it was making US oil producers very rich as well.

The oil price had already started to rally in 2016, but the agreement, along with its published levels of 'adhesion', moved oil from $50 to $70 within two years. Such was the success that this summer, with the oil price knocking on the door of $80 and consumers beginning to worry about recession in the west, OPEC+ relented and opened the taps once again. But their success in cutting back production had meant that stocks worldwide had fallen, indeed they were back to below the five-year average, the cartel's target.

Oil would probably be at $60-70 now if it hadn't been for a small number of very specific factors which swing the price radically one way or another. We have seen how the Libyan Civil War in 2011 took 3 million barrels per day off the market and wars across the Middle East, such as in Iraq, resulted in crude shortages. To this day, Libya is not producing at anywhere near capacity. With differing factions controlling oilfields, refineries and ports, current production in Libya is around 700,000 barrels per day, which is way off historic peaks of 1.8 million barrels per day just before the civil war.

Helping hands

The biggest single help for OPEC and its friends lately has been Venezuela, of course. Only twenty years ago, the country was producing as much as 3.8 million barrels per day, which would now place it as the second biggest producer in OPEC. Now, however, production is below 1 million barrels per day,

"OIL WOULD PROBABLY BE AT $60-70 NOW IF IT HADN'T BEEN FOR A SMALL NUMBER OF VERY SPECIFIC FACTORS WHICH SWING THE PRICE RADICALLY ONE WAY OR ANOTHER."

"THERE ARE A NUMBER OF THEMES THAT EMERGE, BUT THE OVERRIDING ONE IS THAT OF INTERNATIONAL DIVERSIFICATION."

and its economy is in tatters. Few would argue that the election of Hugo Chavez, ironically in 1998, started the rot, and following his death in 2013, there was no sign of anything changing.

Finally, the most likely reason for the recent rise in the price of oil is the situation in Iran. Even before he was elected, Donald Trump had stood resolutely against the international agreement that was accepted by President Obama, the United Nations and the European Union. Trump did not believe that Iran was closing its nuclear capability and neither did he consider that it was acceptable to have one side of the nuclear argument and not the other in play. But US sanctions are tough, and they apply right across the board, from banks to boats and everything in-between, so although they only come in on 4th November, production is already slipping. From a recent high of around 4 million barrels per day, production is expected to fall rapidly to around 1 million barrels per day. (Production came close to reaching 7 million barrels per day at the time of the Shah.) So no wonder oil is again flirting with $80.

Next year things might be different. Things are typically tighter in the second half of the year, and if OPEC is going to hold the present oil price range, then it may have to revert to similar production levels to those in November '16.

Exploration & production sector

A rise in the price of oil does not mean the price of oil-related shares will also rise by a similar amount. Indeed, investors have noticed that there is often a significant time-lapse between the oil price going up and shares responding. This is accentuated when the rise is very swift or seemingly untrustworthy. For example, when the November '16 agreement was made, there was little trust that members would adhere to the production cuts. As it happened, however, OPEC cut back by more than they had to, and the price of oil gained accordingly.

Also not lost on investors when it comes to share valuations is how different almost every quoted company is, not least in the exploration & production sector. After all, not every company has a perfect mix of exploration and production. Indeed, it is very much a perception of risk profile that is being offered that can vary dramatically. I am not discussing the integrated majors here, as they are different beasts and valued accordingly, but some do have a bigger focus on upstream or downstream, giving them added exposure to a rising or falling commodity price.

Within the UK-quoted independent E&P companies, there are a number of themes that emerge, but the overriding one is that of international diversification. From those early days when exploration was limited to the North Sea, much has changed; now almost every continent is represented. With nearly 100 companies on the AIM market, investors have a choice of geographical, political and even hydrocarbon risk in oil and gas investments. Indeed, the market itself has had its share of critics in terms of visibility and efficiency.

Geographically I think that there has never been such choice for investors. From the early days of the *offshore* Northern and Southern North Sea in the UK, the West of Shetlands and of course in Norway, some of the biggest companies in the sector are still here. With the move away by the majors, mainly due to size of remaining structures, the gap has been filled by quoted companies as well as private equity. In the UK, there has been a presence on *onshore* for some time, from conventional production to hydrocarbons. There is as much risk as any investor could hope for from **IGas Energy (LON:IGAS), Egdon Resources (LON:EDR), Union Jack Oil (LON:UJO)** and **UK Oil & Gas (LON:UKOG).**

The Americas

With a number of companies in North and South America, the Bahamas and the Caribbean, investors can gain exposure in almost any basin and any risk profile. **Dragon Oil (LON:DGO)** gives exposure to a low risk, multi-well onshore the US. **Bahamas Petroleum**

"WITH NEARLY 100 COMPANIES ON THE AIM MARKET, INVESTORS HAVE A CHOICE OF GEOGRAPHICAL, POLITICAL AND EVEN HYDROCARBON RISK IN OIL AND GAS INVESTMENTS."

Company (LON:BPC) provides unique but high-risk exploration possibilities in the Bahamas, and **Eco Atlantic Oil & Gas (CVE:EOG)** and **Tullow Oil (LON:TLW)** both offer exposure to Guyana, a country on the northern mainland of South America. Onshore Trinidad, there are a number of UK companies that are producing oil and gas. And with renewed confidence, companies are even looking offshore, for bigger prizes.

In South America, investors can choose from North to South. In Colombia, **Amerisur Resources (LON:AMER)** has weathered the FARC storm and is being rewarded by increasingly profitable production and exploration upside, thus building a business of some size. In Argentina, the onshore prize is also substantial. **President Energy (LON:PPC)** has successfully added to its base with the canny purchase of assets from Chevron as the super-major moves towards the bigger play in the Vaca Muerta. With growing cash flow and exploration upside, President Energy should be in the process of a re-rating once the macro economic worries desist. Also in Argentina is **Echo Energy (LON:ECHO)**, which from a standing start has worked its acquired package of assets well this year and had success in Fracciόns C and D, and this is before starting to run seismic on Tapi Aike, the potential jewel in the crown. And down at the tip of the continent, we find Premier Oil and **Rockhopper Exploration (LON:RKH)** hard at work at Sea Lion, offshore the Falkland Islands, where after many years of patient commitment, the $75 oil price makes the project a serious runner.

Africa

In Africa, there have been a number of successful areas of activity in recent years. The east coast gas finds are mainly still undeveloped but earmarked for liquefied natural gas, whilst the west coast has been a hotspot for many years. Tullow has its flagship operations in Ghana. **Cairn Energy (LON:CNE)** and **FAR (ASX:FAR)** have found a world class oilfield offshore Senegal. There have also been sizeable discoveries to the north by the likes of Kosmos Energy. Nigeria has always had a huge oil and gas industry and now a number of UK companies, such as **Eland Oil and Gas (LON:ELA)** and Savannah Petroleum, are in-country. Savannah has started its work in neighbouring Niger with a perfect 4/4 in its exploration programme. In the south, there are developments in Tanzania and Mozambique, where companies such as **Aminex (LON:AEX), Solo Oil (LON:SOLO)** and **Wentworth Resources (LON:WRL)** are operating.

More recently, North Africa has seen a significant amount of investment by UK companies. Whilst offshore Morocco may have been disappointing, **Sound Energy (LON:SOU)** has discovered sizeable prizes of gas onshore at Tendrara. **SDX Energy (CVE:SDX)** has also made significant progress in Morocco with its gas discoveries in recent months and a network of very high margin customers waiting to pay top dollar for its gas. SDX has also succeeded in Egypt where combining its existing assets with those of acquired Circle Oil has meant the discoveries at South Disouq are coming on stream later this year.

Rest of the world

Along with **Premier Oil (LON:PMO)**, a number of companies have found success in South East Asia. Indeed, after a fairly quiet period of inward investment, the region is seeing much more excitement with the likes of **Coro Energy (LON:CORO), Empyrean Energy (LON:EME)** and **Range Resources (ASX:RRS)** in Indonesia, and **Soco International (LON:SIA)** in Vietnam. Furthermore, more recently, **Ophir Energy (LON:OPHR)** announced that its headquarters will move into the region.

UK quoted companies are also in the Middle East and the Balkans, with **Genel Energy (LON:GENL)** and **Gulf Keystone Petroleum (LON:GKP)**, in the Kurdistan region of Iraq, now pumping ever increasing barrels, mainly through Turkey. Further north in Eastern Europe, **Zenith Energy (LON:ZEN)** are opening up onshore Azerbaijan and **Frontera Resources (LON:FRR)** are working over wells in Georgia.

Falcon Oil and Gas (CVE:FO) takes investors to the Northern Territories in Australia and **Petro Matad (LON:MATD)** to Mongolia. Closer to home, investors can follow **Providence Resources (LON:PVR)** and **EOG Resources (NYSE:EOG)** to significant accumulations offshore Ireland.

So, investors in UK quoted oil and gas companies have a huge array of geographies and risk factors on offer. In both exploration and production, and large, medium and small companies, themes there are aplenty….

About Malcolm

Malcolm has over 35 years' experience in the Oil & Gas sector and is a widely used media source. He often appears in print and on screen, and also writes an acclaimed daily blog read by much of the resources industry as well as investors both institutional and retail.

Malcolm is a Founding Partner of HydroCarbon Capital, which provides independent advisory services to the Oil and Gas sector. He is a Director of the Maven Income and Growth VCT 4 PLC, a venture capital trust listed on the Premium segment of the main market of the London Stock Exchange.

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INVESTING IN THE AGE OF LONGEVITY

1 November 2018
Wellcome Collection, London

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BY NICK SUDBURY

FUNDS IN FOCUS

ENERGY FUNDS TO POWER YOUR PORTFOLIO

The recovery in the oil price has been hugely beneficial for the majority of companies operating in the energy industry, with oil & gas producers and the oil equipment, services and distribution sectors being two of the best performing areas of the UK stock market over the last year.

"NEW OIL DISCOVERIES ARE NOW AT THEIR LOWEST LEVEL SINCE THE 1940s."

> **"BUYING INDIVIDUAL STOCKS CAN BE CHALLENGING BECAUSE OF THE RISK OF OPERATIONAL FAILURES AND THE COMPLEX NATURE OF MANY OF THESE BUSINESSES."**

Between March 2011 and June 2014, WTI light crude traded consistently around $100 a barrel, but the high price attracted additional sources of supply, such as the North American shale projects. This made the market vulnerable, so when demand fell, the price plummeted to less than $30 by the start of 2016. The resulting pressure on cash flows forced many energy companies to reduce capital expenditure to the extent that new oil discoveries are now at their lowest level since the 1940s.

Years of under-investment, coupled with production cuts from OPEC to stabilise the market, has meant that supply is now failing to keep up with demand and that has helped to push the price of WTI light crude back towards $70, despite the headwind of a strong dollar.

Geopolitical tensions are also playing their part. The imposition of sanctions on Iran will remove up to one million barrels of oil per day from the supply chain, while the deterioration of supplies from Venezuela and Libya, due to the internal upheaval in these countries, will make it even harder to meet global demand.

Increases in the price of oil are obviously beneficial to energy companies. But buying individual stocks can be challenging because of the risk of operational failures and the complex nature of many of these businesses. A less volatile option would be to invest in a fund that provides a more diversified exposure to this part of the market.

Most UK equity income funds invest in the oil majors, like Shell and BP, to benefit from their attractive dividends, and even a FTSE 100 tracker or ETF will have a market neutral allocation to the sector of around 16%. If you want a larger exposure you would need to invest in one of the energy funds.

The black stuff

Most of the specialist vehicles available in this area are structured as open-ended funds and invest in stocks operating in the global energy sector. A good example is the £232 million **Guinness Global Energy** fund, which was launched in March 2008.

Historically, the stock market has valued energy companies according to their sustainable levels of profitability, which is generally calculated using a combination of return on capital employed (ROCE) and free cash flow (FCF). These tend to increase when the oil price goes up or a business is able to reduce its cost of production.

Tim Guinness, the fund manager, believes that the valuation of his various holdings implies that the ROCE will not improve from the current level and that the FCF will fall considerably, but he thinks that that is overly pessimistic. He says that if OPEC is able to deliver a reasonable oil price and the equity markets were to price in a long-term figure of $70, there would be in excess of 50% upside in the fund's portfolio.

At the end of July, the Guinness Global Energy fund had an equally weighted portfolio of 38 stocks, with the largest allocations being exploration & production, and integrated oil & gas. The biggest holdings included the likes of Valero Energy, Devon Energy, Enbridge, Total and Suncor Energy. During the last 12 months, the fund has generated a return of 25.9%, which is ahead of the 22% produced by its MSCI World Energy benchmark, although over the longer term it has lagged slightly behind.

Disappointing record

There are also a number of smaller funds, like the £48.9 million **Artemis Global Energy** fund, that have quite patchy performance records relative to their benchmarks. The managers favour the diversified international exploration and production stocks, as well as companies involved in liquefied natural gas, and plan to continue to invest in these areas. Over the last three years, the fund has generated a cumulative return of 52.3%, which is marginally ahead of the MSCI Energy benchmark, although it has dramatically underperformed since it was launched in April 2011.

The $41.6 million **Ashburton Global Energy** fund was created in June 2013 and invests in companies involved in oil, gas, coal, renewables and other energy sources. It typically holds between 30 and 70 stocks and is up by 20% in the last year, but those who invested at the outset would only have made a cumulative return of 2%.

The passive alternative

The mixed performance record achieved by the majority of the active funds suggests that it is worth considering some of the passive alternatives. These benefit from lower fees with a good example being the **iShares MSCI Global Energy Producers ETF**, which invests in companies primarily engaged in the business of energy exploration and production.

The iShares ETF was launched in January 2012 and has attracted net assets of $48 million. It provides exposure to 210 different holdings, but is heavily weighted in favour of the oil majors like Exxon Mobil, Chevron, Shell and BP. Over the last 12 months, the fund has generated an impressive return of 30%, although the long-term performance is much more modest. Its total expense ratio (TER) is just 0.39%.

SPDR MSCI World Energy UCITS ETF tracks the performance of companies in the energy sector and currently has 82 holdings with the largest positions being similar to the iShares ETF. It has net assets of $389 million and a TER of 0.3%. Over the last year, it has generated a return of 21.5%, although since inception in January 2009 it has made a much more modest gain of 5.7%.

> "THE SMALL-CAP EXPLORATION & PRODUCTION COMPANIES HAVE RECENTLY STARTED OUTPERFORMING THEIR LARGER PEERS, AS INVESTORS LOOK TO THEM TO PROVIDE INCREMENTAL OIL RESERVES IN THE NEXT FEW YEARS OF LOOMING SHORT SUPPLY."

Investec Global Energy has attracted £64.6 million of assets under management and holds a portfolio of 57 stocks that are involved in the exploration, production or distribution of oil, gas and other energy sources, including renewables. The largest positions include Total, BP and Royal Dutch Shell. It was launched in November 2004 and has had a decent 12 months, but has consistently lagged behind its benchmark.

Foot on the pedal

A higher-octane alternative is the **Junior Oils Trust**, which invests in a portfolio of small and mid-cap companies specialising in oil exploration and production. The Fund Advisor, Angelos Damaskos, looks for businesses with substantial reserves and high operational elasticity. These benefit from having a strong balance sheet and can scale back their capital expenditure in-line with their cash-flows, so as to respond quickly to changes in the oil market.

He has put together a concentrated portfolio, with the ten largest holdings accounting for 52.5% of the assets. These include names like FAR Ltd, Faroe Petroleum, Cooper Energy, Tamarack Valley Energy and Carnarvon Petroleum. The latter recently discovered what is thought to be the largest oil find in Western Australia in more than 30 years and its share price rose fourfold as a result.

Damaskos says that the small-cap exploration & production companies have recently started outperforming their larger peers, as investors look

FUND OF THE MONTH

Riverstone Energy (LON:RSE) has a unique mandate amongst the UK-listed investment trusts as it concentrates almost entirely on the exploration & production, and midstream sectors. The £1.4 billion fund invests in companies that have management teams with proven track records and has gradually built-up a portfolio of 14 holdings – only one of which is quoted − with the focus on productive basins with low costs of production, such as Permian and Eagle Ford in North America.

A high oil price above $60 enables the fund to realise significant value from its mature investments, and during the six months to the end of June it was able to take advantage of that by selling its holding in Three Rivers and part of its stake in Centennial Resource Development. After some modest new investments, it finished the period with a cash balance of $236 million and no debt.

The fund manager believes that the current cycle is generating attractive opportunities in the midstream, oilfield services and power sub-sectors. He also thinks that energy producers in low-cost basins, with strong operational capabilities and an oil-weighting will continue to outperform. It is possible that the cash balance will eventually be reinvested in these sorts of areas, although the board has said that it will consider returning it to shareholders.

Riverstone is a highly specialist vehicle with a concentrated portfolio that is highly sensitive to changes in the price of oil and the principals involved in running the fund all have a considerable personal investment at stake. The analysts at Numis rate the management team highly and have issued a 'buy' recommendation on the fund. Over the last three years, it has generated a NAV total return of 54%, yet it is estimated that the shares are trading on a 21% discount.

Fund Facts

Name:	Riverstone Energy (LON:RSE)
Type:	Investment Company
Sector:	Energy
Total Assets:	£1.4 billion
Launch Date:	October 2013
Current Yield:	0%
Gearing:	0%
Ongoing Charges:	2.1%
Website:	www.riverstonerel.com

"WITH THE US PULLING OUT OF THE IRAN NUCLEAR DEAL, THERE COULD BE GREATER THAN EXPECTED REDUCTIONS IN SUPPLY DURING THE REST OF THIS YEAR."

to them to provide incremental oil reserves in the next few years of looming short supply.

As you would expect, the Junior Oils Trust is an incredibly volatile fund and although it has had a good couple of years, with annual returns of around 18%, it is still down by 2% since it was launched in October 2004. It is very much a niche product with assets under management of just £12.2 million.

Investment trusts

The main investment trust operating in the sector is the £1.4 billion **Riverstone Energy (LON:RSE)**, which listed in 2013. It has an extremely concentrated portfolio and several industry heavyweights as directors. See fund of the month below.

If you are more interested in dividends you might prefer the £104m **BlackRock Commodities Income Investment Trust (LON:BRCI)**. This invests in the broader commodity sector, so it is not a pure energy play, but it does have a significant allocation to oil stocks, with Royal Dutch Shell, BP and Exxon Mobil all making it into its top 10 holdings. At the end of July, the integrated oil sector made up 26.8% of the portfolio, with exploration & production accounting for a further 16.3%.

BRCI's longer term performance has been pretty volatile, which is what you would expect, although the recent returns have been stronger with a three-year increase in the NAV of 61%. The fund is currently paying a quarterly dividend of 1 pence per share, which gives it an attractive prospective yield of 5.3%, with the shares available on a 6% discount.

Another income orientated option would be the £127 million **Middlefield Canadian Income Trust (LON:MCT)**, which invests in a portfolio of US and Canadian equities. The managers are optimistic and say that if oil stays in the current range of \$60 to \$70, it would generate healthy margins for Canadian energy producers. They also point out that with the US pulling out of the Iran nuclear deal, there could be greater than expected reductions in supply during the rest of this year.

At the end of July, they were overweight the energy sector with an allocation of 13.1% and had a further 15.6% invested in energy pipeline operators. Over the last three years, the fund has generated a cumulative share price return of 55% and it is yielding an attractive 4.9% with quarterly dividends. The shares are currently trading on a 10% discount to NAV.

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.

BY RICHARD GILL, CFA

FROM ACORNS TO OAK TREES

DIAMOND DRILLERS AND PLATFORM BUILDERS

OPPORTUNITIES IN SMALL-CAP OIL AND GAS SERVICES

In my book review this month, *Engines That Move Markets* (see page 70), the author describes "the search for oil" as one of the top ten technological developments the world has seen over the past two centuries. Building on Edwin Drake's discovery of the first commercial well in Pennsylvania in 1859, in 2017 the world achieved a new oil production record of 92.6 million barrels per day, according to BP's Statistical Review of World Energy. At current prices of around $81 a barrel (Brent Crude), that's a value of around $7.5 billion a day, or $2.74 trillion a year!

Just like in mining, where businesses make money from providing the "picks and shovels", there are a range of service providers within the oil and gas industry looking to take their slice of the pie. Their offerings range from seismic surveys, which try to locate potential areas of hydrocarbons, to the provision of equipment, consulting, specialist drilling, all the way up to oil rig construction and everything in between.

While there are a number of well-known blue-chip oil and gas services providers, such as **John Wood Group (LON:WG.), Petrofac (LON:PFC)** and **Hunting (LON:HTG)**, those in the small-cap world are less famous. In fact, there are only eight companies listed in London within the Oil Equipment & Services sector that are not in the FTSE 350. Most of these have been loss-making in recent times as a result of the oil price falling from highs of c. $115 a barrel in 2014 to a low of c.$28 in early 2016. However, following a recent rally to just over $80 a barrel, some of their investment cases are starting to look more interesting.

Here are three small-cap oil & gas services stocks which I believe provide some of the best opportunities.

"IN 2017 THE WORLD ACHIEVED A NEW OIL PRODUCTION RECORD OF 92.6 MILLION BARRELS PER DAY."

PLEXUS

We start with a business which posted revenues of just £40,000 for the first half of its financial year. Luckily, the company is facing a special situation, having embarked on a new strategy, with a large amount of cash potentially coming in over the next few years.

Plexus Holdings (LON:POS) has been around in the small cap markets for some time, having listed on AIM in 2005, raising £11 million to spend on growing its method of engineering for oil and gas field wellheads and connectors. Named POS-GRIP, the technology has been applied to a range of equipment and involves deforming one tubular member against another to effect gripping and sealing, offering users unique safety and operational advantages.

PLEXUS
safer performance | faster service | reduced costs

Until recently, the company's core business was the rental of this equipment to major oil and gas operators for use on jack-up exploration wells – a set-up which sees a barge fitted with long support legs that can be raised or lowered. The company chose this area to showcase and prove the technology and obtain industry acceptance, before going on to develop and commercialise a wider range of products based on POS-GRIP.

Progress was good over the early years of the current decade, when oil was trading at over $100 a barrel, with contracts consistently rolling in and the business seeing good revenue and profit growth. Over the years, Plexus wellheads have been used on hundreds of wells operated by a customer base including blue-chip customers such as BP, Centrica, Maersk, Royal Dutch Shell, Statoil, and Total.

However, like many others in the industry, Plexus had a torrid time in 2016 as a result of the falling oil price. Results for the year to June reported revenues down from the previous year's record of £28.5 million to just £11.2 million after global exploration drilling activity fell to 60-year lows, with the UK North Sea reporting the lowest levels recorded. The prior year's net profit of £5.4 million turned into a loss of £5.8 million and, as a result, the dividend was scrapped.

Hit the road Jack

A truly transformational deal was announced to the market in October last year, with Plexus agreeing to sell its wellhead exploration equipment and services business for jack-up applications to FMC Technologies, a subsidiary of New York and Paris listed oil & gas service and equipment company TechnipFMC (TFMC).

Under the deal, Plexus would receive an initial payment of £15 million, with an additional £27.5 million payable during the next three years dependent on performance of the sold business. Plexus and TFMC have also entered into a collaboration agreement to work together on the development of existing POS-GRIP IP for applications outside of jack-up exploration, as well as future new technologies. This transaction completely changes the make-up of the company, as the jack-up business contributed 99.7% of total revenues in the last financial year.

Following completion, Plexus is focusing on establishing its technology and equipment in other markets, such as surface production wellheads, subsea wellheads and de-commissioning, with a royalty stream also expected from TFMC. Boding well for this new approach, in September last year, a contract was signed with Centrica to supply a POS-GRIP "HG" 10,000psi adjustable production wellhead for a gas production well in the UK Southern North Sea. The size of the market for production wellheads is estimated to be many times that of jack-up exploration, as production wellheads are required for the entire field life. Also, in August this year, Plexus secured a further order to supply and rent its POS-GRIP enabled POS-SET Connector™ to Oceaneering A/S, Norway for well abandonment operations in the North Sea.

Valuation

Plexus's results for the six months to December 2017 showed revenues of just £40,000 from continuing operations, following the sale of the jack-up business. But after the period end, and receipt of the initial consideration from TFMC, total cash stood at £18.8 million. Assuming that the additional £27.5 million consideration is paid, and less borrowings of £0.5 million, this equates to £45.8 million, only slightly less than the current market cap of £47.4 million.

This means that the markets are either not expecting the full earn-out consideration to be paid or that they have low hopes for the remaining operations. Either way, there seems to be a good opportunity here on a risk/reward basis. In addition, Plexus has also said it may consider paying a special dividend given the size of its cash pile.

"THERE SEEMS TO BE A GOOD OPPORTUNITY HERE ON A RISK/REWARD BASIS."

ENTEQ UPSTREAM

Enteq Upstream (LON:NTQ) is a drilling technology company which supplies Measurement While Drillin (MWD) systems, parts and components to the oil and gas industry to enable directional drilling – the practice of drilling non-vertical wells to better reach and produce oil and gas reserves. Directional drilling is carried out by oilfield service companies which either purchase equipment from third parties such as Enteq or develop the equipment themselves, with Measurement While Drilling equipment used on every rig which drills directional wells.

Enteq supplies a range of products with an excellent record of reliability and also offers good financial terms on rental and purchase options. This is a decently profitable business, with gross margins in the mid 60% level. North America is the company's key market, with Enteq operating from South Houston, Texas, where engineering, electronic/sensor manufacture, and mechanical manufacturing takes place. In addition, most of the company's customer base is largely within the greater Houston area. Outside North America, Enteq has international growth ambitions, with clients in China, Russia, Saudi Arabia, Oman and Indonesia.

"THE RECENT RISE IN THE OIL PRICE HAS CREATED STABILITY WITHIN THE INDUSTRY."

Markets stabilise

Enteq has had a troubled existence as a public company. Listing in July 2011 at 100p per share as an investment vehicle, its current assets were acquired in April and July 2012, a time when the oil price was trading between c.$90 and $120 a barrel. But following the collapse of the oil price in late 2014, the company was forced to post a $47.2 million loss for its 2015 financial year, with most of the losses coming from impairments in the value of its acquisitions. This sharp reduction in the oil price gave rise to a difficult trading period which has only just begun to stabilise.

An April trading update was the catalyst for a recent recovery in the Enteq share price, with the headline statement being that revenues and underlying EBITDA for the year to March 2018 would be significantly ahead of expectations. This was on the back of market conditions stabilising during the year, with the number of drilling rigs operating in the key North American market (a key market indicator) rising from approximately 420 in April 2016, and 840 at the start of April 2017, to c.1,000 in April 2018.

The results themselves showed revenues up by 36% for the year at $6.5 million, with the company returning to profitability at the EBITDA level, with a $0.2 million profit being posted as opposed to a $0.5 million loss for 2017. Reflecting the recovery in North America, revenues rose from $3.4 million to $6 million, although uncertainty overseas saw sales fall from $1.4 million to $0.5 million.

While the number of drilling rigs in North America remains well below the 2,000+ seen in 2014, the recent rise in the oil price has created stability within the industry, allowing greater certainty for medium-term planning. Enteq sees further growth opportunities within its core market and, internationally, more initiatives to exploit shale-based oil and gas and conventional drilling and production.

Vibration monitor module

Source: Company

"THE SHARES WILL LOOK VERY CHEAP IF FORECASTS ARE HIT."

Valuation

Despite the oil price having risen by around 11% since Enteq's upbeat April trading statement, the shares have slipped back from their May peak of 40p to the current 26p. That currently values the business at £16.3 million.
The real kicker to the investment case here comes in the form of Enteq's large cash pile, which stood at $15.5 million (£11.8 million) at the end of March. This rose by $0.2 million over the year despite statutory losses of $0.6 million being posted. Management did well to preserve funds, with a $2.5 million working capital inflow being a highlight.

So if we strip the cash out of the valuation, the markets are currently valuing Enteq's operations at just £4.5 million. With brokers looking for c.$1 million of pre-tax profits for the year to March 2020, the shares will look very cheap if forecasts are hit. Share price catalysts along the way will be the upcoming interims in November and further positive trading updates.

LAMPRELL

Finally, another speculative stock and a recovery play situation comes in the form of FTSE Small Cap Index constituent **Lamprell (LON:LAM)**. The company has just posted a $21.9 million loss for the first half of 2018 following very low levels of activity in its operations. But with a big cash pile and a large potential pipeline of business, there could be good medium/long-term prospects for this currently unloved stock.

Founded in 1976 and based in the United Arab Emirates (UAE), Lamprell is a provider of fabrication, engineering and contracting services to the offshore and onshore oil & gas and renewable energy industries. The company has established leading market positions in the fabrication of shallow-water drilling jack-up rigs, liftboats, land rigs and rig refurbishment projects, and has an international reputation for building complex offshore and onshore process modules and fixed platforms.

Completed in 2014, one of the company's more notable recent projects was the delivery of a Production, Utilities and Quarters (PUQ) deck for the Golden Eagle Area Development (GEAD) in the North Sea to client Nexen Petroleum. For this project, Lamprell previously held a Guinness World Record for "heaviest load moved by self-propelled modular trailers". Measured at 13,191.98 tonnes, that's the same as about 2,000 elephants!

Lamprell employs more than 3,000 people, with its primary facilities located in Hamriyah, Sharjah and Jebel Ali in the UAE. In addition, key to its near-term growth strategy, the company has facilities in Saudi Arabia through a joint-venture agreement signed in May 2017 with Saudi Aramco Development Company (a subsidiary of national oil company Saudi Arabian Oil) and other parties. The 20%-owned venture is to operate a maritime yard in Saudi Arabia, with the primary focus being the construction and maintenance, repair and overhaul of offshore rigs, commercial vessels and offshore service vessels. The yard is expected to be partially operational in 2019 and fully operational by 2022.

Crude numbers

Lamprell's numbers haven't made for good reading for some time. Back in 2014, the company brought in over a billion dollars in revenue and net profits of over $93 million. But by 2017, turnover had plummeted to $370 million, with net losses at $98 million, including a disastrous total $80 million loss on its East Anglia One offshore windfarm project. This was blamed on insufficient rigour during the bidding phase and inexperienced project leadership in what was a new sector for the company.

Lamprell

While the figures for the six months to June 2018 continued to show losses, and sales were down a few percentage points at $155 million, there were a number of reasons to be positive about a recovery. Firstly, the ill-fated East Anglia contract has almost been completed, with lessons learned and new procedures implemented across the business to prevent a similar scenario in future.

Secondly, while guidance for full-year revenues is in the range of just $225-$250 million, with 100% coverage for

"THE BID PIPELINE STANDS AT AN IMPRESSIVE $4.1 BILLION."

the bottom end of the range, revenue growth is expected to return in 2019, with guidance being for $250-$400 million of sales. What's more, the bid pipeline stands at an impressive $4.1 billion, with increased activity in both end markets of renewables and oil & gas being seen and preferred bidder status on various opportunities amounting to c.$500 million.

Additional encouraging comments from management during the interims analyst call include, *"If we are successful in implementing all of our strategic initiatives, we expect the bid pipeline to grow to $10 billion plus overtime"* and *"We are confident that 2018 marks the trough in this cycle..."*.

Valuation

Shares in Lamprell were trading at highs of around 350p in 2011 but have never materially recovered from a string of profits warnings which came in 2012 on the back of delays and deferrals on a number of projects. At the current price of 66.1p, the business is capitalised at £226 million.

Net cash of $167.8 million (£126.5 million) as at 30th June 2018 covers around 56% of the current market cap, and, on an enterprise value basis, historically values the company at barely £100 million. However, guidance is for net cash to reduce through the second half of the year following scheduled investments in the Saudi JV of $39 million and $21.9 million inventory payments. Nevertheless, net assets of $439.3 million (£331 million) as at 30th June (with intangibles being just $31 million) mean that the company will continue to trade at a substantial discount to NAV despite the forecast cash outflows.

Where there is no dividend here, and no PE ratio valuation given the current losses being made, it wouldn't take too much of a pick-up in activity for Lamprell to start looking good value on an earnings basis. So, with trading seemingly moving in the right direction, as a speculative recovery play the shares look worthy of a punt.

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 DAVID JONES

CHART NAVIGATOR

HOW TO TRADE THE OIL AND GAS MARKETS

As this month's issue is focused on oil and gas, I thought it would be an opportune time to take a look at charting the commodity markets. Although much of the recent retail trading activity tends to be focussed on foreign exchange, applying technical analysis to commodity markets is as old as the practice of charting itself.

These are markets that are underpinned by a variety of fundamentals and are, arguably, driven by true supply and demand, much more so than other more speculative assets. That is not to say that commodities are not subject to their own speculative bubbles from time to time – but they are possibly a more orderly market most of the time.

What are the best techniques for charting oil and gas?

I think one of the great properties that commodities have is that they trend. Let's stick with oil for now and take a look at the last 12 years of the price of Light Crude Oil.

There have been some fairly sharp moves over the years. The massive

Oil price, 12 years


Oct
Dec
2016
Feb
Apr

slide after the financial crisis is an extreme one – where the price dropped from around $145 per barrel in July 2008 to as low as $35 by the end of that same year. But leaving some of the extremities aside, there are still clear trends month to month. The more recent one for oil has been the rally from $42 in June 2017 to $75 by July 2018.

I have mentioned more than a few times in the magazine that I am not really a fan of the more convoluted areas of charting and technical analysis. There is an awful lot that can be learnt from a market by just sticking to simple techniques and observing the price. The above chart is a great example. It's a daily chart of the oil price with a simple trend line underneath the lows that have been set since June last year.

It was clear in October last year that oil had started to trend upwards – but of course, with no real idea of how high it would go, and just when it would get there. But sticking with something as simple as this trendline would have kept the trader or investor on the right side of the market. Of course, there were corrections along the way where the price sold off, but the main direction of travel was up. Weakness was seen as a buying opportunity and this is an approach that would have delivered solid profits over the last 12 months.

Even now, where the price has not made a new high for this trend for a couple of months, that trend line is still doing a great job of stopping any weakness. The last slide in mid-August brought the price back towards the trend line – oil traded below $65, then reversed to move back above $70. At the time of writing, the trend is still intact, and it would take a slide below those July lows to change it, and possibly start a new downtrend.

Oil price, June 2017 to present

> **"A SIMPLE TREND-FOLLOWING APPROACH IS A PERFECTLY SENSIBLE WAY OF APPROACHING COMMODITY MARKETS SUCH AS OIL."**

Oil Price, 100 Day Moving Average

"I WOULD ALWAYS DEFAULT TO WHAT IS HAPPENING WITH THE TREND LINE WHEN TRYING TO SPOT MAJOR CHANGES IN TREND."

So, a simple trend-following approach is a perfectly sensible way of approaching commodity markets such as oil. You are not going to buy the absolute low and sell the absolute high – but who ever does that every time with consistency? It is far easier to try to be on the right side of the main market trend, and hopefully catch the meat of the move in the direction of the trend.

Another simple trend following approach is the moving average. The rule of thumb here is that when the market is above the moving average, it is an uptrend, and vice-versa when it falls below. I have used a 100-day moving average on the same market.

The moving average is shown in red on the chart. It does a good job of stopping that weakness at the beginning of 2018, supporting the price as it pushes out to fresh highs for the uptrend. As the oil price has gone somewhat sideways in the past couple of months, the signals from the moving average have become more mixed, which is why I would always default to what is happening with the trend line when trying to spot major changes in trend.

The trend for natural gas over the past couple of years is very different to oil.

As you can see, it is fairly directionless overall – if there is a trend, it is mainly sideways. If an investor had bought into natural gas two years ago, the return to date, assuming the investor still held, would be negligible. There have been the odd surges, but our investor would have had to be quite nimble to get out and take profits.

The red line on this chart is a moving average – and this really would not have helped the bottom line of an investor as the price and moving average chopped around generating various buy and sell signals that would have only served to line the pockets of your broker.

Natural gas, July 2016 to present

It's a good example of the benefits of trend-following, particularly on the higher timeframes where an investor is looking to hold a position for weeks, months or even longer. Rather than trying to second guess the start of a major move, wait for the market to show you. This way the frustration of having investment capital tied up in something that is going nowhere can be reduced. At the time of writing, there are still no real signs that this sideways trend for natural gas is going to change in the short-term.

Out of the two markets, oil has historically been the more interesting for those of a charting and trend-following persuasion. Of course, markets can change, and in a year's time perhaps we will be looking back on a major trend in natural gas. Either way, spotting trends in these commodities does not have to be a complicated affair and just following the price action is an excellent place to start from.

Charts of the Month

Continuing with this month's theme I have picked a couple of companies from the FTSE 350 Oil & Gas sector as this month's featured charts.

BP (BP.)

I suppose it was inevitable that either BP or Shell would be covered!

I have mentioned BP in the past, as it is a share I hold in my own portfolio. There is a clear trend that has been in place for the past couple of years which has seen the price rise from 320p to the current value of 550p. Coupled with dividends, this has been a great return for anyone who has been in for this long – I bought in March 2017.

Clearly, the rise in the price of oil has not done any harm to the share price performance. But like oil in recent months, BP has not been going anywhere fast. It did not quite manage to break through the 600p mark in May, and ever since then, it has been a real barrier to any upward progress. I suppose if we saw oil start to move higher and make some progress through $75 a barrel, that would give a boost to the likes of BP.

At the moment, based on that trend, it would still be tempting to be a buyer on major weakness – but it looks like a bit more patience might pay off here. The trend line support comes in around 490p and there is stronger support beyond that from previous lows running from 440p through to 460p. So, perhaps the real opportunity for jumping on this BP trend will be if the price slips below 500p and shows signs of stabilising.

Cairn Energy (CNE)

Cairn Energy is possibly a little more interesting than BP. Like its blue-chip stablemate, it has had a clear trend for the past couple of years – although it does tend to be more volatile week to week. After hitting 270p in May this year, the price has retreated below 220p. This does tie in nicely with that longer-term uptrend line which is coming in just below 200p. On top of this, there is also the major low from February of this year in the 180p area. So, there is a zone running from 180p through to 200p that has proved to be a real turning point for the price in the past. If the share price is going to rally from anywhere and attempt another run back towards 270p, it is getting close, making this one to keep an eye on.

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 BBC Radio 5 Live's Wake up to Money programme and the Chartist for Shares magazine. He is an active trader and private investor.

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BY FILIPE R. COSTA

THE MACRO INVESTOR

HOW FAR CAN OIL GO?

After many years in a bear market, oil and other energy commodities are finally performing. How far can they go?

"For decades the American people have had an addiction to oil and gas."

- Lee H. Hamilton, former member of the United States House of Representatives.

We are living in a world of high growth and low unemployment! Following the darkness which overshadowed us in the aftermath of the infamous Lehman collapse back in 2008, the global economy has managed to reverse significant losses. The recovery has been much greater in the US than in Europe, with gross domestic product in the US growing at 4.2% in its most recent quarter on an annualised basis and unemployment currently at 3.9%. But, after so many years of significant growth, the US economy is moving into a new stage of the business cycle, the late-cycle phase, where growth tends to moderate. While the late-cycle is the stage before a recession, it usually comes with good asset returns for many months, if not years. And one of the expected outperformers at this stage is the energy sector.

Lately, energy companies have been performing well, benefiting from an improved oil market. After many years of supply and demand imbalance, the oil market has seen a decrease in stockpiles, an improve-

ment in co-operation between OPEC and non-OPEC members, sanctions re-imposed on Iran and an increase in petrol prices in the US as Hurricane Florence threatens to strike the East Coast. Under such a scenario, energy companies look too good an investment opportunity to be missed, particularly those that are more closely exposed to oil prices. With some commentators arguing that the upside potential of the wider market is limited, investing in energy companies may offer better returns.

Oil's rollercoaster ride

Oil prices have been highly volatile during the first 18 years of the new millennium. At the beginning of 2000, the price of Brent Crude oil was around $24 per barrel. Since then, oil experienced a significant upward trend that lasted eight years and culminated with it reaching a record high of $146 on 3rd July 2008. But, by then, the equity market was about to collapse, and with it, the global economy as well as the demand for oil products. In just five months, oil plunged to $34 a barrel. Concerns about a supply glut and lack of demand from emerging markets were weighing heavily on the oil price. But after such a major collapse – during which the S&P 500 lost around one third of its value and oil three-fourths – investors returned to buy stocks at decimated prices. With the help of the Federal Reserve, equities started to recover and oil resumed its long-term uptrend to hit a high of $126 on 1st March 2012. But the rollercoaster wasn't yet over. Suddenly, oil prices entered another bear market, reaching a low of $27 per barrel. It wasn't until January 2017, when OPEC and Russia began coordinating once again and agreed to cut production, that the price of oil was able to enter a sustained uptrend again. It currently hovers at around $80 per barrel.

The fundamentals behind oil

There are a few things to take into consideration when determining the likely future direction of the price of oil: Iran's oil exports, US shale production, the hurricane season and the expected demand for oil are some of the key drivers. The first three drivers have been positive while the last one is the main source of downside risk.

Iran's oil exports

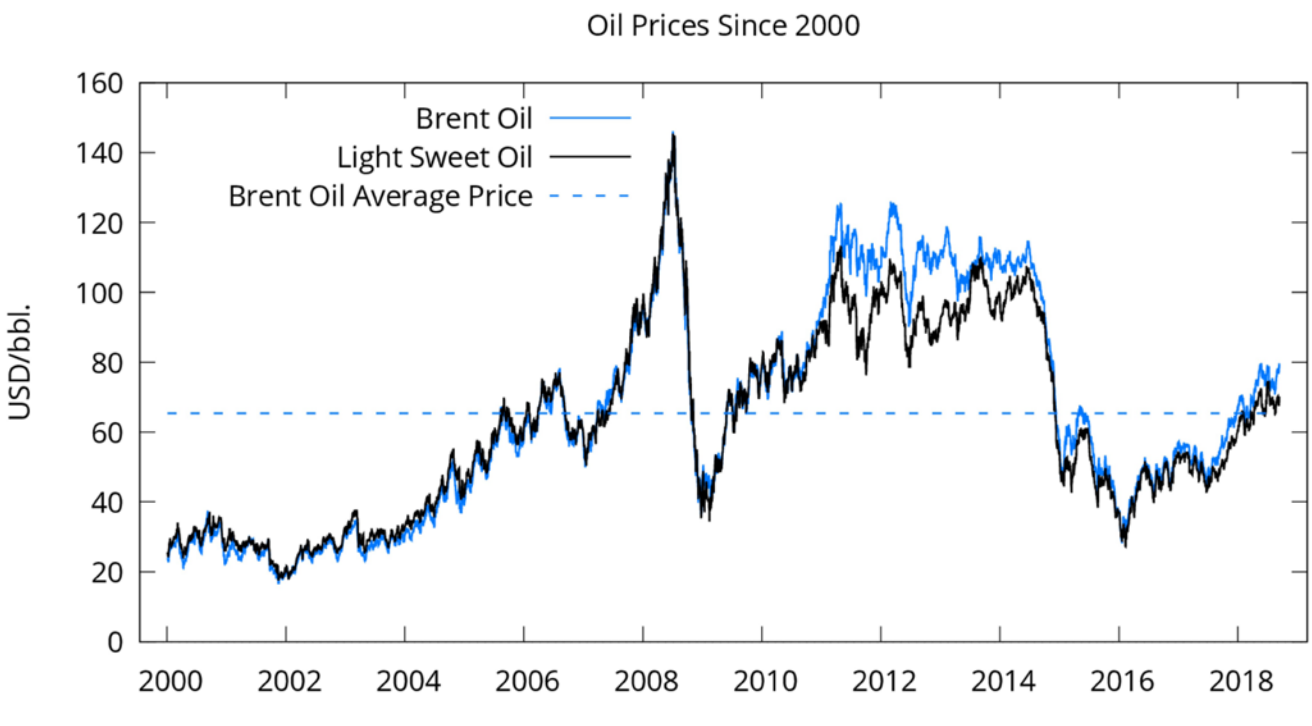
"What we are saying is, if you decide to do business with an enemy of the United States of America, you will not be doing business with the United States... You will not have access to the US financial system. You will not be able to use the US dollar," a US official spokesperson said a few days ago.

There are impending US-imposed sanctions on Iran's energy sector, which are already hitting the country's crude exports and are likely to have a significant impact on the broad oil market, pushing prices higher. The US is not only imposing sanctions on Iran's oil sector, but also threatening companies around the world with financial retaliation if they choose to buy oil from the *persona non grata.* Europe, on the other hand, is expected to adopt measures to counter the US-imposed sanctions, but the broad market sentiment is that the measures will be insufficient in preventing the oil price from increasing. We will have to wait until November to have a better grasp on the impact that the sanctions will have on Iran's oil production.

US shale production below expectations

US crude output growth is forecast to moderate at 840,000 barrels a day, according to the US energy department, down from a previous estimate of more than one million barrels a day. A slowdown in drilling in the Permian basin is among a number of factors believed to have contributed to the decline.

Additional data regarding stockpiles also supports the bullish case for oil. The American Petroleum Institute has reported a drop in stockpiles, a scenario that has been confirmed by the US energy department. US crude inventories are now at their lowest point in years.



Hurricanes

Another key driver for the increase in the oil price is Hurricane Florence, which is the biggest hurricane in the Carolinas in almost three decades. More than one million people were advised to leave their homes. In the end, the hurricane left a path of destruction behind it and is expected to push petrol and oil prices higher.

In 2017, the US suffered its most costly year in terms of hurricane damage. This year, however, forecasts by the National Oceanic and Atmospheric Administration are at the other end of the spectrum, predicting a below-average season of 9 to 13 named storms, 4 to 7 hurricanes and 0 to 2 major hurricanes.

But the problem with below-average estimates is that there is a higher chance of a negative surprise (more storms) than a positive surprise (less storms). If the *below-average* estimates have already been taken into account, then there is a greater likelihood of a positive shock to oil prices than a negative one.

Demand for oil

Emerging Markets are suffering from a strong dollar. The MSCI Emerging Market Index officially fell into bear territory a few days ago. With the dollar rising and major central banks tightening their policy, there is fear of contagion among developing economies, which may contribute to a decline in oil demand. After all, global oil demand growth is concentrated in rapidly-developing economies. A strong dollar may derail an oil rally. The next developments in the currency markets should be closely taken into consideration as a potential source of downside risk to the price of oil.

"A STRONG DOLLAR MAY DERAIL AN OIL RALLY."

How should investors allocate money?

In last month's edition of *The Macro Investor*, when discussing the appropriate investments for a late-cycle phase of the business cycle, I suggested the following:

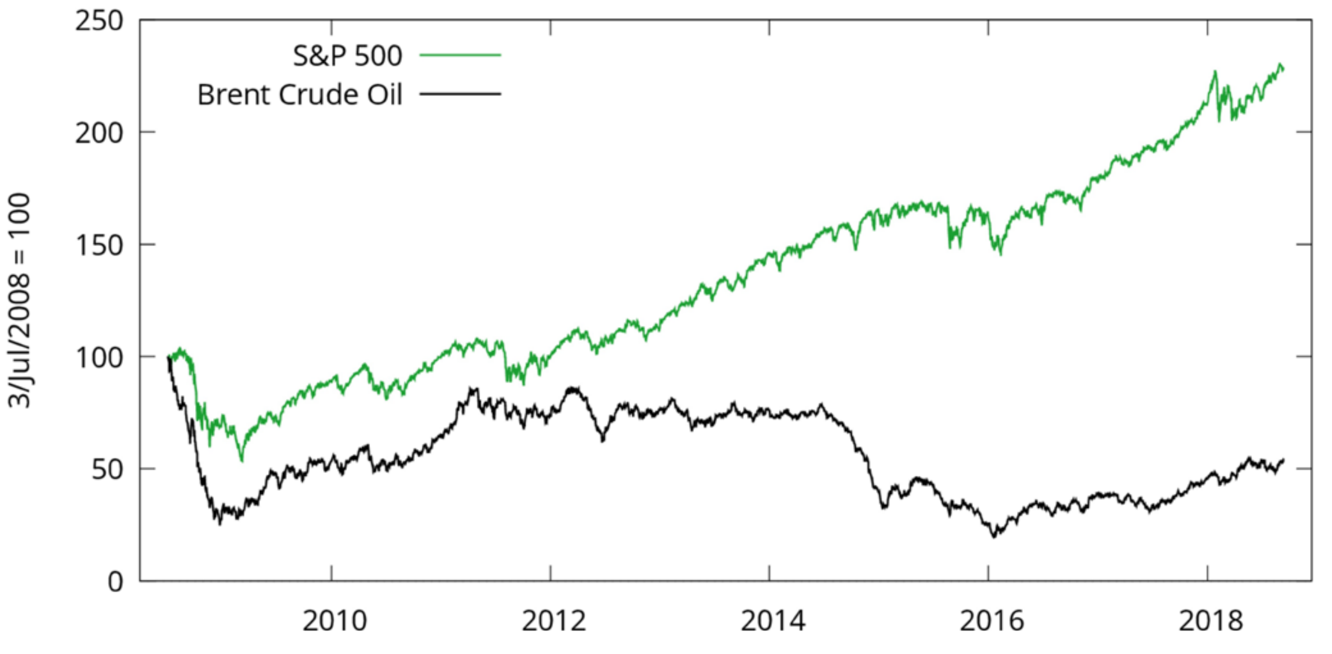
"At this point, and provided that inflation is rising, the energy and materials sectors should do well, because their profits are closely correlated with the price of raw materials, which should start rising. To avoid the difficulties of hand-picking stocks in each of these sectors, investors may opt for sector ETFs. The **Energy Select Sector SPDR (NYSEARCA:XLE)** is a pure play on energy stocks and the **Materials Select Sector SPDR (NYSEARCA:XLB)** is a similar option for materials. Both have underperformed the S&P 500 since March 2009 (as expected), but during the late-cycle, that performance is expected to revert."

The fundamentals behind oil and the current late-cycle phase of the economy act together in favour of energy stocks. As I suggested in the last issue, one possibility for those not willing to invest in specific equities is to buy a broad-based energy ETF. The Energy Select Sector SPDR Fund is probably the most obvious selection. But, for the sake of building a portfolio that is able to touch every corner of the energy sector, I'm suggesting a few more ETFs.

Energy Select Sector SPDR Fund (NYSEARCA:XLE)

The Energy Select Sector SPDR Fund offers exposure to the US energy industry, including the world's largest oil producers. With $17.5 billion in assets under management, the fund is the largest energy ETF on the market. The ETF currently has 32 holdings, with the top being **Exxon Mobil Corp (NYSE:XOM), Chevron Corp (NYSE:CVX), Schlumberger NV (NYSE:SLB), ConocoPhillips (NYSE:COP),** and **EOG Resources Inc (NYSE:EOG).** Like many other ETFs,

Oil and Equities Since the Peak Before the Financial Crisis



"WHILE THERE HAS BEEN HUGE DEVELOPMENTS IN THE SEARCH FOR NEW CLEAN ENERGIES TO REPLACE OIL, THE TRUTH IS THAT OIL IS STILL KING, AND THE WORLD IS HEAVILY DEPENDENT ON IT."

the fund is heavily concentrated, with the above five stocks representing 54.3% of its total exposure.

Vanguard Energy ETF (NYSEARCA:VDE)

The Vanguard Energy ETF shares similarities with the ETF depicted above. To some extent, investing in XLE and in VDE may result in a duplication. But, as I will explain below, we will overcome this issue using a statistical technique. I've added this fund because it is the second largest energy ETF and it offers a broader exposure to the sector than that offered by XLE, because it holds 139 stocks. Its top positions are pretty much the same as for XLE, but they represent 48.6% of the total. The figure is still too high, but the rest of the fund's investments are spread over a larger number of companies.

SPDR S&P Oil & Gas Exploration & Production ETF (NYSEARCA:XOP)

This ETF offers exposure to the exploration and production sub-sector of the US energy market. It has total assets under management of $3.3 billion and holds positions in 74 stocks. XOP attempts to replicate an equal-weighted benchmark.

iShares Global Energy ETF (NYSEARCA:IXC)

IXC holds some stocks that are also part of the above ETFs, but it also offers exposure to the energy sector globally. Assets under management amount to $1.6 billion, spread over 80 holdings. Alongside companies like **Exxon Mobil Corp (NYSE:XOM)** and **Chevron (NYSE:CVX)**, we also find here well-known international names, like **Total SA (EPA:FP), Royal Dutch Shell PLC (LON:RDSA)** and **BP PLC (LON:BPC).**

SPDR S&P Oil & Gas Equipment & Services ETF (NYSEARCA:XES)

XES offers exposure to the equipment and services sub-sector of the US energy industry through an equal-weighted portfolio with 42 holdings. Assets under management are way below the above funds, currently at $373 million. Still, this ETF offers another dimension to a portfolio.

VanEck Vectors Unconventional Oil & Gas ETF (NYSEARCA:FRAK)

This ETF offers a highly targeted exposure to the global energy industry. Instead of focusing on the biggest energy names engaged in traditional exploration, it holds shares from companies involved in less conventional energy exploration techniques, like coalbed methane, coal seam gas, shale oil and gas, tight oil, natural gas and sands. The unconventional part of the market has been growing of late and should, therefore, be covered in a well-diversified energy portfolio. The fund only has around $84 million in assets under management and invests across 48 companies. Top holdings are **EOG resources Inc (NYSE:EOG), Occidental Petroleum Corp (NYSE:OXY), Anadarko Petroleum Corp (NYSE:APC), Devon Energy Corp (NYSE:DVN)** and **Pioneer Natural Resources Co (NYSE:PXD).** The sum of these top holdings adds to 33.7%.

Building the final portfolio

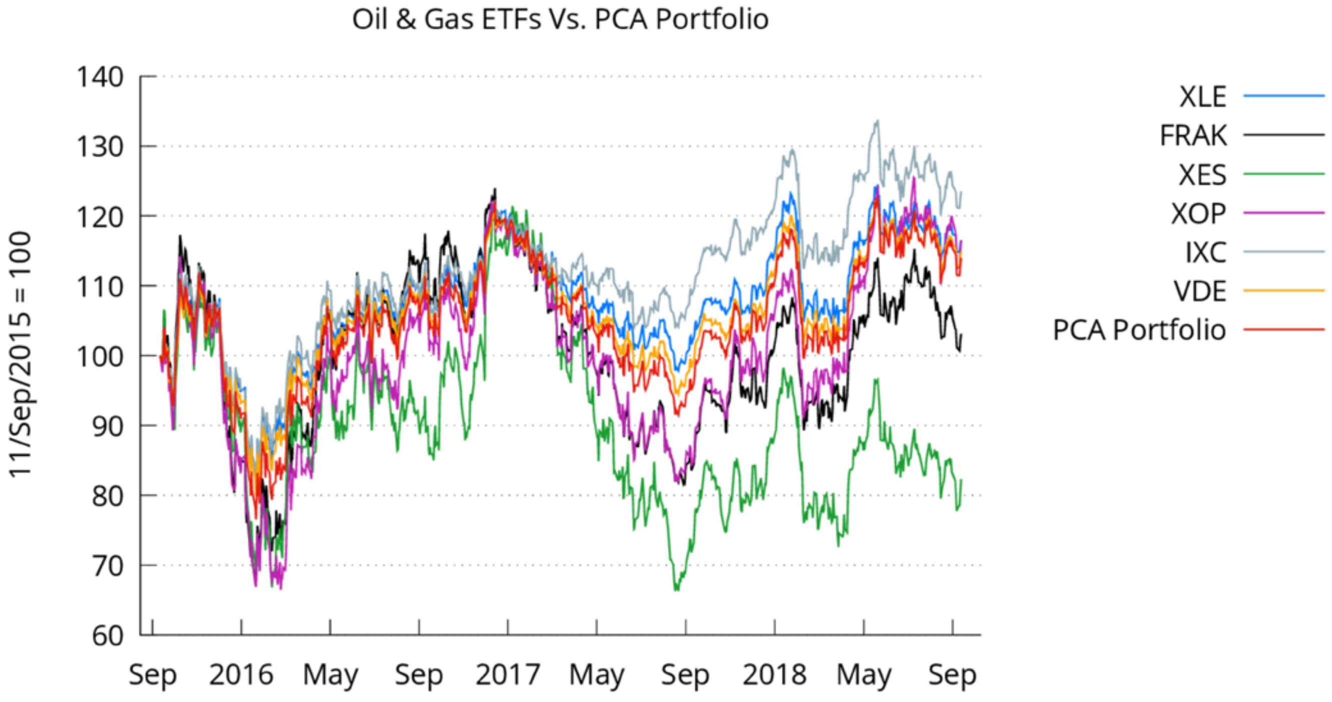
In terms of asset allocation, we have three main options:

1. As the above funds are all energy-related, they will be highly correlated amongst themselves. That means, to some extent, buying all six may lead to a leveraged position in one specific theme. Many would opt to purchase one of the above funds, possibly using an assets under management or expense-ratio criterion. But, such an option would be somewhat limited in exposure to the broad industry.

2. Just invest in all equally. That is the simplest of the options. But two problems arise. First of all, after just a few days you'd no longer have an equal-weighted portfolio, as some funds will rise while others decline, or at least, they won't rise or fall in the same proportion. Second, you will see positions in some companies like Chevron highly concentrated, as some companies are owned by almost all ETFs in the above list. But, as other companies are just owned by one ETF, you don't exactly know the exact mix you will end up with. With this in mind, it may be better to purchase just one broad-based equal-weighted ETF like XOP.

3. Use a statistical technique that is able to derive a linear combination of the above funds.

This time I will use the third option. In general, portfolio managers use the minimum variance technique prescribed by the Modern Portfolio Theory, first introduced by Harry Markowitz in 1952[i]. The key idea is to minimise variance for a level of return. I will use a technique named principal components analysis, introduced in 1933 by Harold Hotelling[ii], but only applied to



finance much more recently. This technique allows us to decompose returns into factors. Without willing to bore the reader with technical details, I can say that, in general, the first factor obtained by this analysis explains most of the variation. The next few factors explain declining proportions of the variation, with many of them being just noise. So, to some extent, by using the first factor, we are focusing on the main co-movement of energy stocks. For our goal of getting the most out of the six energy ETFs, this works like a charm.

In deriving the first principal component, we get a portfolio that captures all the possible variation from our universe of six ETFs. It solves the problem of deciding how to apply our money in a scientific way!

After applying the principal components technique to three years of daily returns, the resulting weights are[iii]:

- XLE: 23.5%
- FRAK: 6.8%
- XES: 5.7%
- XOP: 19.3%
- IXC: 11.8%
- VDE: 32.9%

Our PCA portfolio is expected to capture most of the variation in the oil & gas industry. It is the result of selecting a number of energy ETFs that are heavily exposed to the theme, and then applying a quantitative technique to derive weights.

Still, such a portfolio is not market-diversified, as it is tilted towards the energy sector. As such, investors who do not hold other equity sector positions would become too exposed to the ups and downs of the energy industry.

Still much to play for

Oil and gas are essential commodities that tend to see their prices rise whenever the global economy recovers. While there has been huge developments in the search for new clean energies to replace oil, the truth is that oil is still king, and the world is heavily dependent on it. The financial crisis of 2007-2009 quickly decimated oil prices. In the following years, oil would experience many ups and downs until reaching a 13-year low in January 2016. But, since that point, much of the supply glut has been removed and OPEC and non-OPEC countries have been able to coordinate action. As a consequence, the supply of oil has stabilised.

With the global economy still recovering and oil stockpiles at multi-year lows, oil prices are booming. Given that fundamentals look strong and that late-cycle economies are usually beneficial for the energy industry, there is still time to overweight equity portfolios with energy stocks.

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.

i Markowitz, Harry. "Portfolio selection." *The journal of finance 7.1 (1952): 77-91.
ii Hotelling, Harold. "Analysis of a complex of statistical variables into principal components." Journal of educational psychology 24.6 (1933): 417.
iii Detailed data on the exact operations computed is available upon request.

BY JAMES FAULKNER

AN INTERVIEW WITH YATISH CHOUHAN OF

PREM BIOMASS

PIONEERING SUSTAINABLE ENERGY FOR THE DEVELOPING WORLD

Prem Biomass was established to provide sustainable biofuel at low cost and generate bioelectricity while maintaining a role of social responsibility. Its founders, Bertil Petersson and Yatish Chouhan, have spent the past three years developing a network of contacts and associates with the aim to deliver a platform for a biomass business that can fill the growing demand in the global power industry. In this interview, James Faulkner talks with Yatish Chouhan about the opportunities on offer for investors.

James Faulkner: According to the International Renewable Energy Agency (IRENA), demand for biomass is set to increase by 60% by 2030. Clearly, you're operating in a growing sector with a very promising future. But what other features of the biomass-to-energy sector should investors be aware of and how does it compare to other areas within the renewables stable?

Yatish Chouhan: *Biomass-to-energy is a sustainable solution for reducing greenhouse-gas emissions. Agricultural and forest-based industries in developing and emerging economies generate a substantial amount of biomass residue and waste that can be used for energy production.*

The biomass industry has grown significantly over the past 10 years, according to a study by the United Nations. With biomass, there are divisions in the use of ethanol and other agricultural by-products. The ethanol market is mainly focused in the US, Europe and Brazil, while in Africa and Asia, agricultural by-products are used instead. Biomass is the leading source of feedstock for cooking stoves in the equatorial region of Africa and South-East Asia. A relatively untapped sector, Biomass energy is projected to demonstrate strong growth on a global scale.

prem biomass

Demand for biomass is high, and reliable supply is required especially in South East Asia. There has been exceptional growth in companies in terms of revenue as well as significant growth in the number of policies being put in place to promote the industry. Japan is a prime example of the increased demand in Biomass, having seen an increased shift towards the fuel following the nuclear disaster in 2011, and Enviva – a leading exporter of wood chips and pellets from the US to Japan – has grown by 500% in the last five years.

JF: Prem Biomass operates a vertically integrated business model with multiple revenue streams. Can you elaborate on this a little and explain what makes Prem Biomass different to other operators in the sector?

YC: *The Prem Biomass business model aims to provide small-scale, modular power plants, driven by self-generating biomass feedstock to areas in the developing world that have inadequate power supply. Feedstock is the primary cost in the operations of a power plant, and having control over access and supply cost is a major advantage. The mobility and modular design of the small plants provides great flexibility to service a market that is not presently accessible. The system size ranges between 500kW-2MW, and there*

"A RELATIVELY UNTAPPED SECTOR, BIOMASS ENERGY IS PROJECTED TO DEMONSTRATE STRONG GROWTH ON A GLOBAL SCALE."

"THE CAMBODIAN MARKET LOOKS VERY ATTRACTIVE DUE TO A SURGE IN FOREIGN INVESTMENT AND NEW LEGISLATION AROUND 100% FOREIGN OWNERSHIP."

is an emphasis on speed of construction and low capital expenditures.

The focus in phase one is on producing and supplying biomass material; whereas the focus in phase two is on the constructing of modular power plants and the supply of biomass material.

JF:You've chosen Napier Grass as your main crop. What are the particular characteristics of Napier Grass that make it so perfect for the biomass-to-energy sector?

YC: *Napier grass has a high net calorific value of 3,895 kcal/kg with low residues and low ash content, and could, in principle, be a substitute for fossil fuel. It is versatile and the harvest time is reasonably quick at around four months, giving three cycles per year. It is best grown in equatorial regions, is able to withstand drought-like conditions, and has high water use efficiency and a high yield per unit at 400 tons per hectare per year. It also has multiple uses, including for animal feed, fuel pellets and cellulosic liquids as a by-product.*

JF: Prem Biomass has secured land in Ghana and the immediate focus is to establish a wood-chip processing plant in Cambodia. These are jurisdictions that UK investors typically aren't very familiar with, yet they offer a relatively stable investment climate and favourable economic backdrop. What has your business experience been like to-date and how can you reassure investors that these are good places to have capital tied up?

YC: *The Cambodian market looks very attractive due to a surge in foreign investment and new legislation around 100% foreign ownership. There is a government-mandated programme to increase power production, and feed-in tariff rate legislation that supports a long-term operating basis for investment commitments. The availability and cost of land for biomass production also makes it an attractive location. We have a first-class international team, land supply and survey (by CBRE). In terms of expertise in the local law, accountancy and corporate finance, we have secured the leading firms in their respective fields. Cambodia and Ghana both have stable investment climates, with pro-government support for adopting renewable energy.*

JF: The team behind Prem Biomass carries a wealth of experience and expertise. Could you give our readers some background information on the key players?

YC: *Bertil Petersson, CEO, studied Sustainable Economic Development at Harvard and has worked with various government institutions in South-East Asia to develop new economic policies for the region. He is also fluent in Japanese. Hartley Booth was British Government Trade Envoy in Central Asia for 14 years, for which the Queen awarded him an OBE. Jean Smith is an expert in investment and international banking. Since 2013, she has been a director of Covanta Holding Corporation (NYSE: CVA), a global leader in the waste-to-energy sector. Technical director Arfizal Ariffin is a pioneer in the*

If you'd like to learn more about Prem Biomass, they'll be presenting at the event 'Master Investor in focus: Investing into alternative energy' on 11 October 2018.

There are only a few remaining tickets available.
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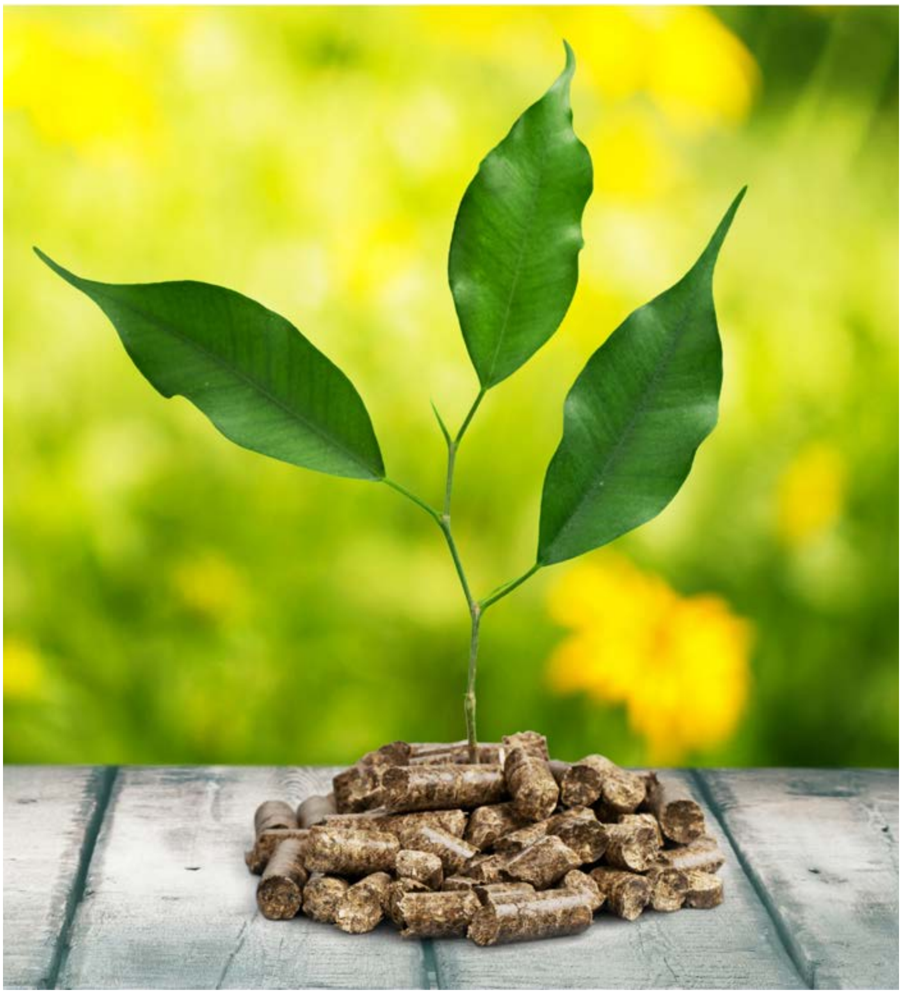

field of renewable and biomass energy technology, and developer of the first functioning biomass pellet system for the palm oil industry. Arfizal is a Malaysia Technical Committee Member of Solid Biofuel Standard. Kennedy has been active in the renewable energy, agricultural processing and biomass sectors since 2005 and has strong government relations in Ghana. Collectively, the team has in excess of 100 years of experience.

JF: It's good for investors to know that management have skin in the game, ensuring that their interests are aligned with those of other shareholders. How much money have the management team personally invested in Prem Biomass and how will they be participating in the fundraising?

YC: *In the three years of development, the co-founders have invested in the region of $500,000 at seed stage. The management team will collectively participate during the course of the upcoming fundraise, to the sum of $500,000 in debt or equity.*

JF: Phase one's focus is to produce and supply biomass material, whereas phase two is to focus on the construction of modular power plants and supply of biomass material. Presumably, the commercial agreements already in place de-risk this process, to some extent?

YC: *Yes, the commercial agreements do de-risk the process. We have a Japanese power company that expressed strong interest and offered to contract 5,000 metric tons of wood chips per month to start with, with increases as product is available. We are currently in pre-contract discussions with government departments for phase two. The plan is to secure offtakes to begin the planning process while delivering wood chips and/or pellets for a higher product value until agreements are in place. Power purchase agreements will not be issued until we can show proof presence on the ground, but there is no shortage of demand.*

JF: Any agricultural endeavour is at the mercy of the vagaries of the weather and climate. How do you plan to mitigate these risks? Will you use hedging, for example?

YC: *Both Ghana and Cambodia are in the equatorial region of the world, providing the most optimal climate for agriculture and higher yields. The wood-chip revenue will mitigate any potential weather risks and Napier grass is a very hardy plant. There are several other feedstocks to choose from if we decide, such as rice husks, bamboo, and palm oil waste.*

JF: What is the long-term vision for Prem Biomass? Where do you see yourselves and the industry heading in 5-10 years' time?

YC: *The long-term vision is to be among the global leaders in the delivery of biomass and power to regions that are 'off the grid'. Access to electricity is the biggest economic driver for developing countries.*

Prem Biomass is a unique value proposition for investors with projected revenue at five years of c.$120 million and gross profit margin of 35-40%. The journey has begun and now is the time to get involved in this excellent commercial opportunity with projected high returns.

For further information, please click on the following link:

https://www.uhy-uk.com/services/corporate-finance/corporate-finance-blog/uhy-supports-prem-biomass-with-investment-opportunity

BY JOHN KINGHAM

DIVIDEND HUNTER

IS HARGREAVES LANSDOWN SUITABLE FOR INCOME INVESTORS?

You're reading a magazine about investing, so I'm pretty sure you're a private investor. And if you are, then I'm also pretty sure you've heard of Hargreaves Lansdown. And if you haven't, then it's the 800-pound gorilla of the direct-to-consumer investment world whose 40% market share makes it about four-times as large as its closest competitor.

So it's big, but it's also growing fast. Like, really fast. For example, its dividend has increased by almost 17% per year for the last decade and its revenue and profit growth are almost as impressive. The downside is that its dividend yield is currently a measly 1.5%, because investors expect that rapid dividend growth to continue for a very long time. So, what I want to know is: can Hargreaves Lansdown deliver the dividend growth that investors expect?

Massive success through a relentless focus on content marketing

Hargreaves Lansdown began life in July 1981 when Peter Hargreaves and Stephen Lansdown decided to start their own business, selling unit trusts direct to retail investors through the post.

The idea was to place an advert with a response coupon in the national press, offering a free report about how to choose a unit trust. People would fill in the coupon with their details, cut it out and send it back to Hargreaves Lansdown. Peter or Stephen would then send out a response letter mentioning a selection of relevant unit trusts. Sometimes the potential client would choose to invest in unit trusts through Hargreaves Lansdown and sometimes they wouldn't.

Whether they chose to invest or not, they were now on the Hargreaves Lansdown mailing list and so they'd receive a free newsletter (the Investment Times) through the post each month, detailing unit trusts (primarily equity income unit trusts) that might be of interest. Over time, as each monthly newsletter went out, more and more of those potential clients would choose to invest through Hargreaves Lansdown.

Today this is called content marketing and it's a very simple business model. And having executed it to near perfection for almost four decades, it still forms the backbone of what the company does today. Of course, everything has now moved online, but Hargreaves Lansdown still offers a dizzying array of 'expert guides' that you can download for free, in exchange for your email address.

Consistent and rapid long-term growth

As I've already mentioned, dividend growth over the last decade has been close to 17% and the company's impressive growth stretches back much further than that. Its growth has also been extremely consistent, with revenues, earnings and dividends per share increasing 85% of the time over the last decade.

Some of this growth has come from an increase in the UK DIY investor market, with more people wanting to choose their own investments rather than handing that responsibility to

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an advisor or pension company. However, most of Hargreaves Lansdown's growth has come by taking market share from its competitors, and, today, the company's share of the investment platform market is an extremely dominant 40%.

Low capital intensity, high return on capital

Some businesses need to spend lots of money on capital assets before they can make a penny of profit. Some need to build or refurbish shops, factories or warehouses; some need to buy or build equipment which they can then lease or sell; others need to invest in expensive infrastructure such as oil rigs or telecoms networks.

Hargreaves Lansdown doesn't have to do any of that. When the business was getting started, all it needed was a few desks and phones for its employees and a word processor and printer to design and print newsletters and envelopes. This makes it a capital-light business, which has advantages and disadvantages.

One advantage is that capital-light businesses typically don't need to borrow to invest in future growth. With a capital-intensive business like BT, if it wants to offer '5G' services it will have to spend untold millions developing and rolling out the infrastructure. And most of the time capital-intensive businesses like BT will borrow that money on the assumption that the new infrastructure assets will produce enough of a return to pay back the debt and still keep shareholders happy.

With Hargreaves Lansdown, all it has to do if it wants to upgrade its website or sell a new unit trust is look at the regulatory implications, write some computer code, train some employees and do some content marketing and advertising (I'm sure there's more to it than that, but you get the general idea). This all costs money too, but relative to what BT spends to earn the same amount of profit, it's peanuts.

If a company can combine low capital asset intensity with some degree of pricing power (i.e. compete primarily on factors other than price, such as product or service quality), then the returns on those capital assets can be huge.

> **"IT DOESN'T TAKE A GENIUS TO REALISE THAT HARGREAVES LANSDOWN IS A VERY SPECIAL AND EXTRAORDINARILY PROFITABLE COMPANY."**

In Hargreaves Lansdown's case, its post-tax return on capital employed (ROCE) has averaged more than 70% over the past ten years. To give you some context, the average return on capital employed generated by consistent long-term dividend-paying UK companies is 10%, so it doesn't take a genius to realise that Hargreaves Lansdown is a very special and extraordinarily profitable company.

Being an extraordinarily profitable capital-light business may sound like a good thing (and it is), but it does have disadvantages.

One disadvantage is that it's relatively easy for start-ups to compete against the major players. For example, if you want to compete with BP then good luck with that. You'll need to hire or buy oil rigs, oil storage facilities, oil refineries, petrol stations and all manner of other very expensive assets. But if you want to sell investments to the public, all you'll need is a few desks (and in the world of virtual offices you may not even need that), some regulatory permissions, computers and so on. It might cost you a hundred thousand pounds or so to get set up, but it won't cost you a hundred million.

So, in theory (and I think in practice for the most part), the investment platform market should be highly competitive. But Hargreaves Lansdown's growth rate and 70% ROCE suggest it may not be competitive enough, and that's another risk. In this case, the FCA is currently conducting an investment platforms market study, looking at competition issues such as fee transparency and the ease (or lack of) with which clients can switch platforms.

But even with these disadvantages, I would still rather invest in an exceptionally profitable capital-light business than a weakly profitable capital-intensive business any day of the week.

A bullet-proof balance sheet with no debt or pension liabilities

Another attractive feature of Hargreaves Lansdown is that it has no debt or pension liabilities. On the debt side of things, this is a function of the company's capital-light nature. It doesn't need to invest in lots of expensive infrastructure to grow, which means it doesn't have to borrow money from banks to grow.

Having zero debt is good because it makes the company more robust. For example, a large chunk of the company's revenues come from fees which are charged as a percentage of the assets its clients have on its platform. These assets are often invested in the stock market which, as we know, can go down very quickly when it wants to, and that means those fee revenues could go down very quickly as well. If the stock market crashed and Hargreaves Lansdown had lots of debt or pension liabilities with fixed payment obligations, then its profits could quickly turn to losses. But it doesn't, so this isn't a major concern.

An exceptional company, but is the price right for income investors?

Hargreaves Lansdown is clearly an exceptional company. It has basically crushed its competition, repeatedly, for several decades. It also has a long and consistent record of dividend growth, good dividend cover and no debt, so the company is also an attractive candidate for dividend investors.

At the time of writing, Hargreaves Lansdown's shares are trading for 2,220p, giving the stock a 1.5% dividend yield. That obviously isn't going to be of interest to high yield purists, but, personally, I like to invest in a range of dividend-paying companies, from slower growth companies with higher yields to higher growth companies with lower yields. For me, it's the balance of yield and growth that matters, rather than just the yield.

"WITH A 40% SHARE OF ITS CORE MARKET, WHERE IS ALL THAT FUTURE GROWTH GOING TO COME FROM?"

As a ballpark target, I'm after a 10%+ annual return from my investments. So, with a dividend yield of 1.5%, I would need Hargreaves Lansdown to grow its dividend by at least 8.5% each year. For that dividend growth to translate into capital growth, I'd also need the dividend yield to stay the same (i.e. a 1.5% dividend income plus 8.5% capital growth equals a 10% total annual return).

Obviously, that's a hypothetical situation. The company's dividend won't grow at 8.5% per year and the dividend yield won't stay at exactly 1.5%. All I'm trying to do is highlight the underlying principle, which is that a lower yield must be offset by higher growth (through some combination of dividend and capital growth) if you're to achieve your desired returns.

So, how likely is it that Hargreaves Lansdown can increase its dividend by 8.5% a year over, say, the next ten years?

At first glance, 8.5% dividend growth seems entirely achievable. After all, the company grew its dividend by almost 17% per year over the last decade, so 8.5% should be child's play. Well, maybe; but perhaps not. The company only went public in 2007, and, in the first few years, the dividend was doubling every three years. More recently the doubling time has increased to every six years or so, giving a dividend growth rate of around 9%, which is not much more than 8.5%.

So yes, perhaps the dividend can grow by 8.5% over the next decade, but that's still a very lofty target, even for a company as successful as Hargreaves Lansdown.

And that success is perhaps another barrier to future growth. With a 40% share of its core market, where is all that future growth going to come from? I'm pretty sure that 100% market share is as high as it gets, so it isn't going to come from market share growth. Okay, so the market for DIY investors is likely to grow and the company can move into other related areas, but expansion into new areas is usually difficult because other companies have already been serving those markets for decades.

So, while it's possible that Hargreaves Lansdown can grow by 8% or more per year and double in size over the next eight or nine years, it won't be easy; perhaps it isn't even likely. But let's assume the company does pull it off and eight years from now it's twice as big, with double the dividend. That's great, but don't pull out the Champagne just yet. To get a 10% return over those eight years we need two things to happen: 1) the dividend grows by 8.5% per year; and 2) the dividend yield stays the same.

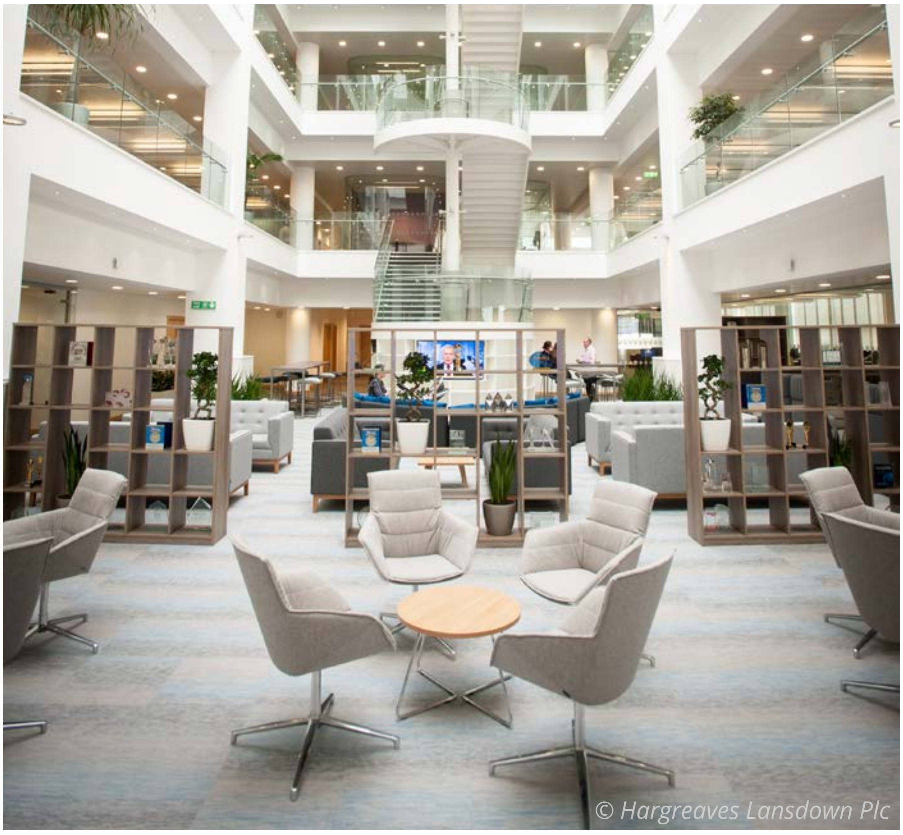
In this imaginary scenario, we've hit the first target, but what about the second? Why would the yield still be a lowly 1.5% eight years from now? The answer is that investors would have to be as optimistic about the company's future growth rate as they are today. In other words, in 2024 (eight years from now when the company is twice as big as it is today), investors would have to

"I WOULD VERY SERIOUSLY CONSIDER INVESTING IN HARGREAVES LANSDOWN IF ITS SHARE PRICE FELL BELOW 1,200P."

expect the company and its dividend to double in size again over the following eight years.

Okay, so now we can see just how optimistic we have to be to accept a 1.5% yield from this company. We have to believe it can grow its dividend at 8.5% (or more) not only for the next eight years, but for the eight years after that as well. We would have to believe that Hargreaves Lansdown can quadruple in size over the next 16 years, even though it already has a 40% share of its core market. That is serious optimism and I am just not that optimistic, at least when it comes to investing.

I think a more likely scenario is that the company continues to grow and perform well, but that its growth rate will gradually decline towards average as the company gets larger and larger. This is the eventual fate of all large companies, especially ones that already dominate their core markets. Given that I have these lower growth expectations, I need a lower price and a higher starting yield before I would consider investing.



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My target price for Hargreaves Lansdown

Target prices are not set in stone because the amount you should pay for one company will depend on what else you can put your money into at that moment in time. Having said that, as things stand today, I would very seriously consider investing in Hargreaves Lansdown if its share price fell below 1,200p.

At that price the company would have a dividend yield of 2.7%, which is much closer to the 3.4% yield you can get from a FTSE All-Share tracker. Even this is a somewhat optimistic entry price because it requires a long-term dividend growth rate of more than 7%, assuming you're aiming for a 10% annualised return, as I am. When you add it up over the years, though, 7% is a lot more achievable than 8.5%.

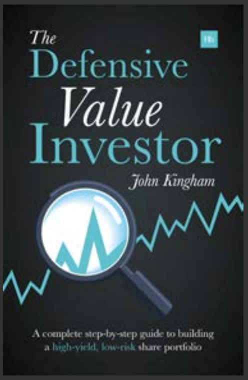
A 1,200p target price means I'm looking for a 45% decline in the company's share price and I'll readily admit that this seems unlikely anytime soon. But you never know. BT has fallen by 50% over the last three years, and Rolls-Royce fell by more than 50% between 2013 and 2015, so even the 'best' companies and the 'safest' shares can fall a very long way in a short time.

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.



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BY VICTOR HILL

OPPORTUNITIES IN FOCUS

THE MEDICAL TECHNOLOGY REVOLUTION

Last month, I wrote about Artificial Intelligence (AI) in this magazine. This month, I want to highlight how AI and recent medical advances will revolutionise medicine in the near future. There are many examples of how this will happen, of which here are just two. NHS surgeons will soon be wearing headsets that blend augmented reality with computer graphics in order to achieve more effective micro-surgical procedures. And Denmark's Novo Nordisk has just bought a start-up which has pioneered a technique to generate synthetic insulin which 'knows' exactly when to raise or lower glucose levels in a diabetic's bloodstream.

The slow move by Britain's National Health Service (NHS) and other healthcare providers towards digital technology means that, from this month, people who need repeat prescriptions can order them online and (at last) can make GP appointments online. The new UK Health Secretary has announced that he wants to make the NHS *the most advanced healthcare system in the world.*

Recent failures and scandals in the NHS (Gosport, Mid-Staffordshire etc.) suggest that the corporatist culture of the NHS needs to change – it needs to become more like a 21st century technology company, rather than a mid-20th century manufacturing company. The economics of ubiquitous wearable devices means that people will take greater ownership of their own healthcare. This is something that will a have direct impact on all of us.

Below I offer a *smörgåsbord* of new medical technologies in development. Some of these are likely to generate extraordinary returns for savvy early investors.

“THE NEW UK HEALTH SECRETARY HAS ANNOUNCED THAT HE WANTS TO MAKE THE NHS *THE MOST ADVANCED HEALTHCARE SYSTEM IN THE WORLD*.”

The case against the NHS

In an article for the Master Investor website, recently I explained why the NHS had been subject to a number of systemic failures over many years. If you live in the United Kingdom, then your first port of call when you get sick is likely to be the NHS. British people are rightly proud of their country's massive state-funded healthcare monopoly because, unlike in most countries, it is available *free at the point of demand.* It can be remarkably efficacious, and many people will tell you that the NHS has saved their lives. But it has inherent, systemic flaws which have resulted in people dying unnecessarily, again and again.

The good news is that there seems now to be a concerted effort under the new Health Secretary, Matt Hancock MP, to bring the NHS into the 21st century. He has even stated: *I want the NHS to become the most advanced healthcare system in the world.*

In an article for the Daily Telegraph on 06 September, Mr Hancock offered some detail on how he wants to use technology to raise the NHS's game. He wants to make fixing the NHS's stuttering IT systems his priority. He is appalled that hospital doctors cannot access patients' GP records – as I have been for some years. In some cases, different computers in the same hospital cannot even talk to one another. He cited the case of 13-year-old Tamara Mills, who had a fatal asthma attack in 2013. She was seen by medical professionals 47 times in different departments across the NHS – none of which communicate with one another.

But it is not just computers which should be enabled to talk to one another. Ultimately, scanners, X-ray machines and all instruments should be connected, so as to download a seamless stream of patient information. Add that to DNA sequencing and we shall have some very powerful diagnostic tools. The cost of sequencing an individual's genome has plummeted in recent years. This can give clinicians key insights into which diseases a patient may be pre-disposed.

A breakthrough in the fight against heart disease

Scientists have discovered a group of antibodies (known as *IgM* antibodies) which can dramatically reduce the risk of heart attacks and strokes. These two maladies are mostly triggered by a build-up of plaque in the arteries. 100,000 people a year in the UK die of either heart disease or stroke.

These antibodies are likely to be delivered soon by injection into patients who are most at risk. There could also be new tests within five years to determine which of us is most at risk of heart disease. IgM antibodies are naturally occurring, yet it seems that some of us have more of them than others. People with high levels of the antibodies are 70 percent less likely to die of heart disease than people with low levels. Those most at risk will be advised to make lifestyle changes to reduce the risks.

New drugs could boost the production of these life-saving antibodies. The British Heart Foundation, which has funded much of the new research, has allocated £1 million to a team based at Hammersmith Hospital led by Dr Ramzi Khamis of Imperial College, London.

Atherosclerosis is the build-up of fatty plaques in the walls of the arteries that lead to the brain or the heart. If an atherosclerotic plaque ruptures, blood clots can form which block the blood supply to the heart, causing a heart-attack – or to the brain, causing a stroke.

An estimated seven million Britons have heart disease. One celebrity vic-

"ULTIMATELY, SCANNERS, X-RAY MACHINES AND ALL INSTRUMENTS SHOULD BE CONNECTED, SO AS TO DOWNLOAD A SEAMLESS STREAM OF PATIENT INFORMATION."

tim was the pop superstar George Michael, who was reported to have been suffering from dilated cardiomyopathy (a form of heart failure) when he died on Christmas Day 2016. There is a heart attack somewhere in Britain every three minutes.

Virtual Reality inside the operating theatre

Digital Surgery is a London-based start-up that makes software which helps surgeons to undertake complex operations more safely and with better outcomes in the operating theatre. Recently it has launched a new system called *Go Surgery*. The company is in talks with Florida-based virtual reality (VR) developer Magic Leap, which is backed by both Google (**Alphabet (NASDAQ:GOOGL)**) and Saudi Arabia's sovereign wealth fund (the Public Investment Fund or PIF) to empower surgeons to use futuristic headsets which blend images of the operation as it happens with computer graphics. The headsets use augmented reality to superimpose computer-generated images and graphics on what the surgeon actually sees.

"THIS KIND OF TECHNOLOGY OPENS UP THE POSSIBILITY THAT SURGEONS DO NOT HAVE TO BE PHYSICALLY PRESENT IN THE OPERATING THEATRE BUT COULD CONDUCT A COMPLEX PROCEDURE REMOTELY VIA ROBOT SURGEONS."

The company has been working closely with Imperial College and University College London. Another player in this space is Microsoft Hololens, the tech giant's augmented reality headset division.

Magic Leap, which was formerly regarded by analysts as a video gaming specialist, is building a healthcare division at its Plantation, Florida HQ. This kind of technology opens up the possibility that surgeons do not have to be physically present in the operating theatre but could conduct a complex procedure remotely via robot surgeons.

Consultations via Skype or Messenger

Similarly, the Trustedoctor platform aims to break down geographical barriers between patients and medics by allowing patients and local healthcare providers to upload their medical records, MRI scans and other metrics to a website. Thereafter, they can discuss their specific condition via video messaging with a specialist at their mutual convenience. Trustedoctor was conceived by Greg Jarzabek, a Polish-born former trader with Mitsubishi Securities who has put down roots in London. He developed the platform after struggling to find the right specialist for his mother when she was diagnosed with pancreatic cancer in 2011.

This service is being offered initially to patients with brain tumours before being extended to patients with other conditions. This model raises the possibility that even within the NHS, patients may not necessarily need to go to a hospital to have a consultation with a medical expert. Or, indeed, the NHS could buy in the services of top consultants who are located overseas.

New hope for leukaemia sufferers

In the first week of September, Simon Stevens, Chief Executive of the NHS, announced that NHS England would very soon be offering a revolutionary new drug which programmes the body to attack rogue cells. He said leukaemia would be the first target of this game-changing class of drugs.

England will be the first country in Europe to offer this class of drug, provisionally called *CAR-T therapy*, to children suffering from leukaemia who might otherwise have no hope. A form of the drug called *Kymriah* has been licensed in the first instance to treat an aggressive type of leukaemia called B-cell acute lymphoblastic leukaemia, in which the bone marrow generates immature white blood cells. The treatment works by extracting the patient's own leucocytes (white blood cells), re-engineering them in accordance with their individual characteristics (which takes 17 days), and then re-injecting them back into the patient's blood stream, where they multiply.

A deal between **Novartis AG (ETR:NOT)** and the NHS came just ten days after the treatment was licensed by the European Medicines Agency (EMA). It is estimated that the treatment would cost a patient about £280,000 if administered privately, but it will be funded routinely by the NHS in England. Clinical trials of the treatment have been extremely encouraging.

What's more, the Cell and Gene Therapy Catapult – a new lab for manufacturing gene therapy treatments based in Guy's Hospital, London and in Stevenage – has won approval from the UK Medicines and Healthcare Products Regulatory Agency (MHRA) to begin producing two potentially life-saving drugs. The Catapult is a government-funded initiative to help scientists and businesses to translate early-stage research into commercially viable medicines. The £60 million Stevenage manufacturing plant opened in the spring of this year.

What's more, leukaemia patients could benefit from a radical type of bone marrow transplant which prevents the cancer from returning. The method ensures that only healthy immune cells from a donor are used, while diseased cells are eliminated.

The Dutch pharmaceutical firm **Kiadis Pharma (EPA:KDS)** has developed a technique called ATIR. By means of this treatment, the attacking T-cells are eliminated in a lab by a drug called

Know thy microbes! These start-ups can help...

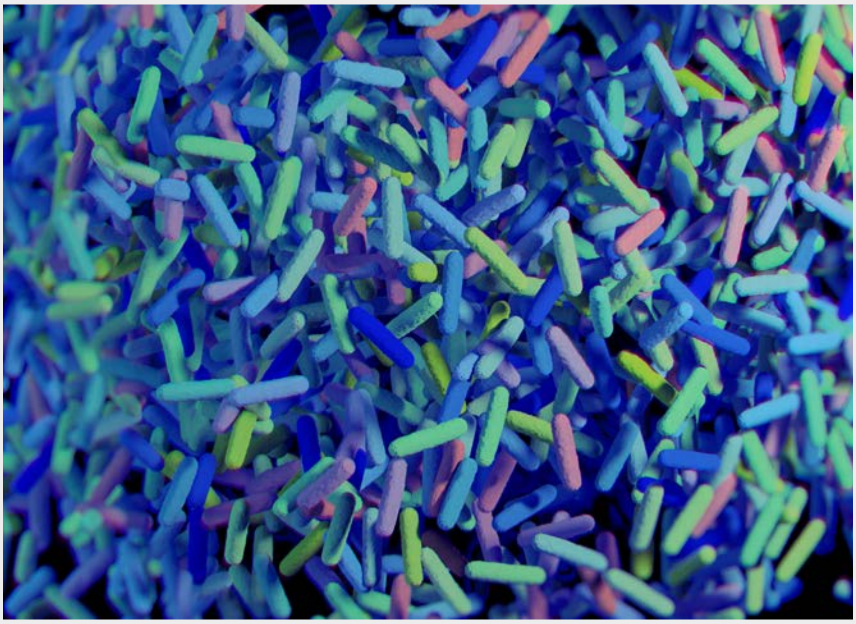
Everyone has heard of personal DNA testing – but that is now so last decade! Numerous start-ups in the UK, the USA, Australia and Israel are now offering a service to sequence the DNA of the microbes that inhabit your body, particularly in your digestive tract. Apparently, each of us carries about 40 trillion bacteria in our bodies – accounting for about two kilograms of our bodyweight! Some firms are even offering targeted dietary solutions in order to optimise the mix of 'good' and 'bad' microbes in your gut. And not just bacteria; they can identify other classes of gut inhabitants including fungi, archaea and viruses.

American niche player uBiome was founded in 2012. Thryve, also in the US, and Atlas Biomed in the UK then started to analyse gut bacteria by examining people's poo – for a fee, of course. The Israeli company DayTwo, the slogan of which is *Blood sugar control made easy*, launched a testing kit in 2016 based on research by the Weizmann Institute of Science. Australia's Microba, founded by scions of the University of Queensland, began offering a similar product in July.

The key concept is that – as we hear more and more these days – similar people react differently to the same foods, apparently due to their gut *microbiome*. Microba even offers nutritional advice about how to boost 17 types of 'benign' bacteria found in the gut which collectively reduce the risk of developing certain diseases.

Synthetic Biologics in the USA is developing a microbe-modifying drug to help people with irritable bowel syndrome (IBS). Enterome of France is developing a drug to treat Crohn's disease. The drug stops E.coli bacteria from attaching themselves to the gut, which can trigger inflammation. A drug being tested by **Ritter Pharmaceuticals (NASDAQ:RTTR)**, provisionally called RP-G28, is likely to be the first FDA-approved drug to treat lactose intolerance.

I should point out to readers who are interested in these things that there has been a lot of scepticism voiced recently in the scientific community as to whether 'probiotic' yogurts are a health benefit – or a total con. It is highly unlikely that a concentration of one type of bacteria prevents a particular disease. Most of the companies mentioned above charge around $300 to dissect your stool. Atlas Biomed charges £288 for its tests. *Caveat emptor!* That said – this is clearly a growing sector. People will soon be asking one another at drinks parties, *"Have you had your microbiome sequenced yet?"*



TH9402. When a green light is shone on the blood, this element becomes toxic, killing the rogue T-cells. The treated blood is then transfused back into the patient. Clinical trials so far have proved extremely promising.

The NHS accused of "scaremongering" and bad science

In late August, Public Health England (PHE) launched a campaign urging people over 30 to take an online Heart Age Test, warning that four out of five people have a heart age higher than their actual age. Almost immediately leading experts described this caper as "ridiculous" and "evidence-free nonsense".

This test calculates an individual's heart age using inputs: age, height, weight, health conditions and the family history of cardiovascular disease. It then intuits cholesterol and blood pressure using national averages. It does not enquire about exercise levels. Dr Ben Goldacre, the author of *Bad Science*, tweeted: "This is ridiculous". Later he wrote that this test could result in tens of thousands of perfectly healthy people in their 30s booking unnecessary GP consultations at considerable expense to the NHS.

Another highly questionable metric used across the UK is the Body Mass Index (BMI). This is calculated as the ratio of your height and weight. If you have a BMI of over 30 you are clinically obese. But the metric does not take into account your level of body-fat relative to lean muscle tissue, let alone your fitness. So athletes and bodybuilders who may have comparatively low levels of body-fat and lots of muscle are all "obese" and need to diet. Quite frankly, this kind of thing is an insult to our intelligence.

What would be far more useful and effective would be to use machines that measure and record our body composition – that is, how much body-fat we carry as against how much muscle. Fortunately, there are a number of companies which produce fitness 'watches' which can track, amongst other things (such as our pulse and blood pressure), our body composition. One manufacturer is the quoted Dutch electronics company **Tomtom (EPA:TOM2)**. It does this by sending an electronic pulse through the skin and measuring its resonance (fat and muscle tissue have different resonances).

Medium-term it is quite probable that a digital-savvy NHS will give all citizens smart fitness 'watches' on their 18th birthday – and will then scan all their medical parameters remotely going forward. People with unfavourable metrics will get an email inviting them for a consultation. This would be a big step in the direction of preventative medicine of which I am sure Mr Hancock would approve.

And whoever wins that contract will get a very nice share price boost!

Low-tech solutions work too: ending "PJ Paralysis"

Let's not forget the role of zero-tech solutions – otherwise known as good old common sense.

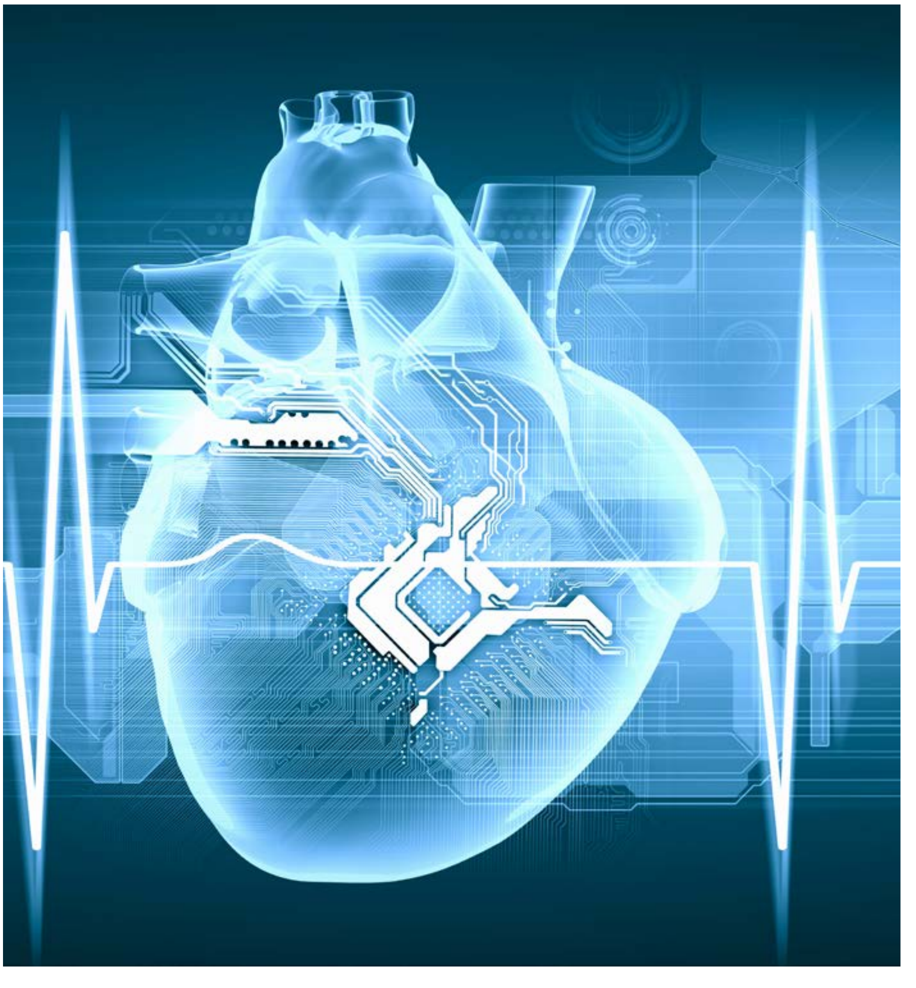
Britain's Chief Nursing Officer Professor Jane Cumming announced a plan last month to boost the health of elderly patients and discharge them from hospital more rapidly[i]. The plan makes no use of technology or pharmacology at all. Simply put: patients should get up, and get washed and dressed without lying in bed all day!

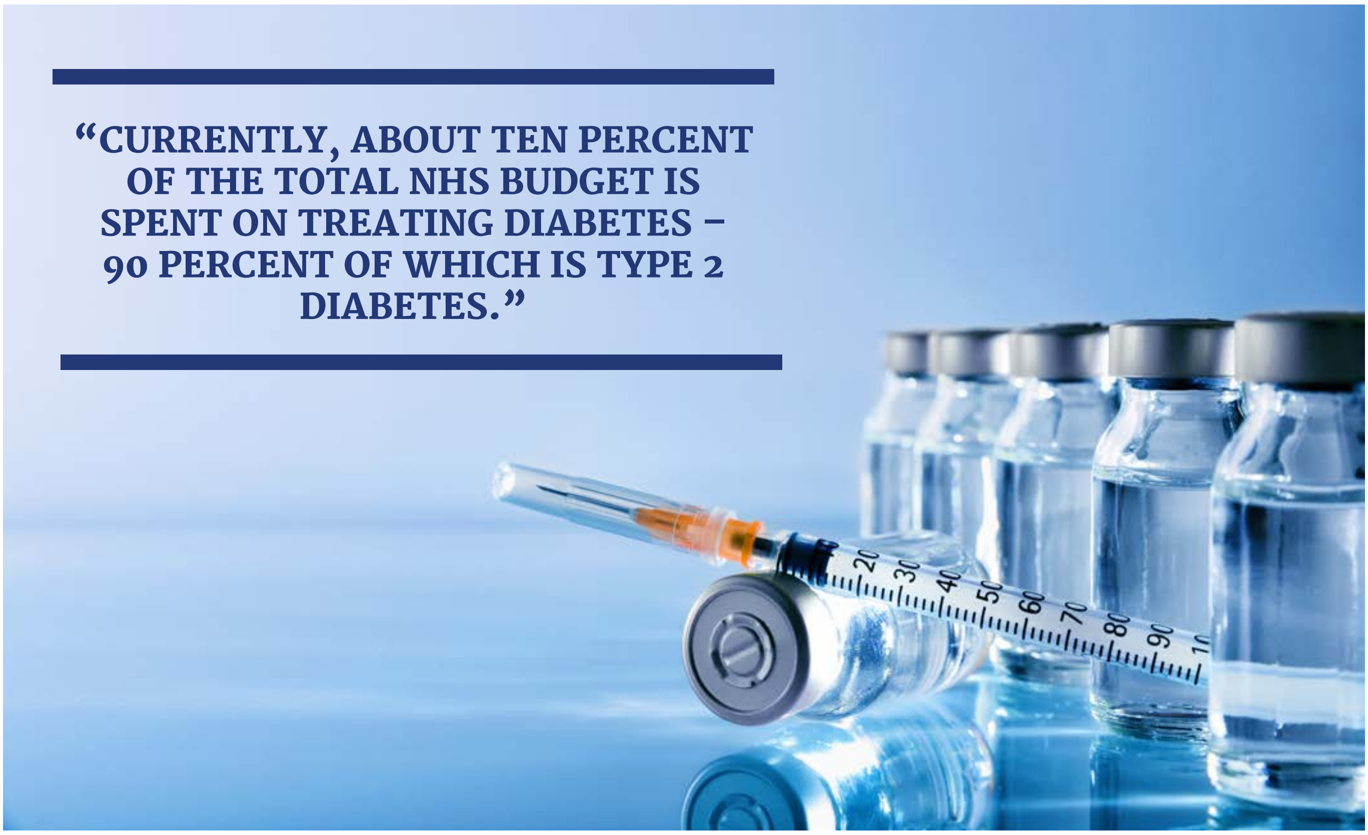
It turns out that an elderly person can lose as much as ten percent of their muscle mass as a result of a ten-day stay in hospital, if bedbound. That is equivalent to ageing by ten years. For many people, wearing pyjamas or nightclothes reinforces feeling unwell and hinders recovery.

Some of the first hospitals to put this approach into practice are Salford, Oldham, Bury and Rochdale. These hospitals have also pioneered group meals, visits by therapy dogs and light physical exercise. Pharmacology is not necessarily the solution!

Please welcome "Smart Insulin"

Glucose-responsive insulin is a very encouraging development for people with diabetes. It promises to maintain blood glucose (sugar) constant throughout the day, so that sufferers don't have to worry about having too little or too much blood sugar.





"CURRENTLY, ABOUT TEN PERCENT OF THE TOTAL NHS BUDGET IS SPENT ON TREATING DIABETES – 90 PERCENT OF WHICH IS TYPE 2 DIABETES."

Ziylo, founded by Dr Harry Destecroix, Professor Anthony Davis of Bristol University and businessman Tom Smart, has developed synthetic molecules which bind to glucose, working in much the same way as natural glucose receptors. The new type of insulin senses the level of sugar in the blood to prevent hypoglycaemia (dangerously low blood sugar). Last month, the three founders sold Ziylo's proprietary technology to Danish pharmaceutical giant **Novo Nordisk (CPH-Novo-B)**, which makes about half of all insulin produced globally for a reported price of £625 million.

There are an estimated four million people in the UK who suffer from diabetes, 90 percent of whom have Type 2 diabetes, wherein the body becomes resistant to insulin. Type 1 diabetes is an irreversible auto-immune disease which usually strikes in childhood and prevents the body from producing insulin. Type 1 diabetics and some people with Type 2 need to take insulin, conventionally by injection, to control their blood glucose levels. Too much insulin, however, can bring on hypoglycaemia, which can be fatal.

It is reported that Dr Destecroix plans to invest some of the proceeds of the sale in new pharmaceutical start-ups around the Bristol campus, enhancing Bristol's status as a biotechnology hub.

Currently, about ten percent of the total NHS budget is spent on treating diabetes – 90 percent of which is Type 2 diabetes. Type 2 diabetes is largely (though not always) preventable as it is correlated to obesity – a major issue in Britain as well as the USA.

Public Health England (PHE) reckons that up to 20,000 people are dying from heart problems every year as a result of obesity, excess alcohol, 'couch potato' lifestyles and poor diet. Professor Jamie Waterall, national lead for cardiovascular disease at PHE says: "By making important lifestyle changes you can reduce your risk of cardiovascular disease before it is too late".

Deputy Leader of the Labour Party, Tom Watson MP, was doing the rounds of the TV studios in mid-September, reporting how he beat Type 2 diabetes by losing six stones (38 kilos) in weight. Diet alone, it seems, can beat this scourge.

A recent scientific paper published in the *American Journal of Clinical Nutrition* – further to research conducted at the University of Leiden in the Netherlands – suggested that the best way to manage Type 2 diabetes and, thus, to increase life expectancy is to eat a diet low in carbohydrates (that is where carbs account for less than 40 percent of total calories consumed). This is apparently more effective than a low-fat diet (where fats account for less than 30 percent of calories consumed).

Antiobiotic resistance may be containable

A study conducted by the University of California[iii] has shown that cocktails of readily available antibiotics could be the key to tackling antibiotic resistance. Until recently, it was thought that by combining antibiotics, patients could experience adverse reactions. But the University of California study suggests that there are around 8,000 combinations of four or five leading antibiotics which are effective.

The promise of AI

A team led by the Institute of Cancer Research in London and the University of Edinburgh has developed a new technique known as *Revolver* (Repeated Evolution of Cancer). This can pick out patterns in DNA mutation within cancers and uses that information to predict future genetic mutations. Tumours can grow in unpredictable ways and are often drug-resistant. If doctors can predict how a tumour will evolve they

"MEDICINE WILL PROBABLY BECOME A GENIUS-LEVEL COLLABORATION BETWEEN HUGELY EXPERIENCED CLINICIANS AT THE TOP OF THEIR GAME AND AI-ENABLED DIAGNOSTIC."

Disease patterns are in constant flux

As longevity increases and lifestyles change, so the pattern of the prevalence of different diseases changes too. Happily, overall heart disease is in decline as fewer people die of heart disease. But recently, a report authored by Dame Sally Davies, Chief Medical Officer, warned that sexually transmitted infections (chlamydia, gonorrhoea, syphilis and HIV) had risen in people aged between 50 and 70 by more than one third since 2005. Is this the outcome of the surge in internet dating?

could intervene earlier to stop the cancer before it has been able to develop drug-resistance[ii].

The Russian chess grand-master, Gary Kasparov, has argued that the future of chess will involve great human chess players working in tandem with AI-enabled computers. The computers will be able to crunch the iterations of every move much more thoroughly than any human could. But the human player will plot out the strategy of the game and will provide the inspiration.

Similarly, medicine will probably become a genius-level collaboration between hugely experienced clinicians at the top of their game and AI-enabled diagnostic computers which will have the power to analyse scans and so forth in a way that no human ever could.

Franchising the NHS

Moorfield's Eye Hospital has set up branches in Dubai and Abu Dhabi. Similarly, South London and Maudsley NHS Foundation Trust has also set up a clinic in Abu Dhabi. Northumbria Healthcare NHS Foundation Trust is helping to develop healthcare in China.

Collectively, NHS Trusts have won over £100 million of business overseas in the last two years, encouraged by the Department of Health. Apparently, ministers want the Care Quality Commission (CQC) and the National Institute for Clinical Excellence (NICE) to sell their expertise abroad to countries which aspire to tighten healthcare regulation and to assess the efficacy of new medicines. Any profits that arise therefrom could be re-invested back into primary healthcare in the UK.

This scheme also offers work experience opportunities abroad for NHS employees – something of which I am much in favour. Seeing how other people do things, especially those who have less resources, informs practice at home. What about the shortage of nurses, though? Maybe nurses who have completed a certain period of employment could be offered work experience abroad on their existing salary.

The Chinese are coming

When we talk about *big pharma* we tend not to think about the Chinese. That may be about to change. Early in September, a cancer drug called *fruquintinib* became the first Chinese-made oncology medicine to be approved by the National Medical Products Administration – the Chinese regulator analogous to the FDA and the EMA. Apart from *artemisinin*,

Blood science

A new blood test which is available for just £15 has been shown to be 98 percent accurate in analysing heart disease. The test works by searching for a protein that helps regulate blood pressure and fluid around the heart. When heart muscles become over-strained they release a protein called BNP which can be detected. At present, heart failure is generally diagnosed when sufferers experience breathlessness, fatigue or swollen legs or ankles. Typically, GPs refer patients to consultants – and it may take weeks to get a full diagnosis.

The new blood test can be performed by a GP, with results within three days. Despite the fact that this test was approved by NICE in 2010, just one in five GPs are currently offering it to patients. It is not clear why.

an anti-malarial treatment, China has never before commercialised its own pharmaceuticals.

Fruquintinib is produced by **Hutchinson China Meditech Limited (LON:HCM)** (with ADRs listed as **NASDAQ:HCM)**. The drug was approved after demonstrating that it was effective in cutting off the blood supply to rectal tumours. Hutchinson is now applying for approval from the FDA in the United States.

Hitherto, most of the Chinese pharmaceutical sector has been made up of state-owned companies which manufacture generic drugs. Now there are a number of world-class labs staffed by PhD students, educated both in the West and in China, which are working on innovative treatments. The Chinese government has been encouraging this move with grants and tax breaks.

Other Chinese pharmaceutical pioneers include **Beigene (HKG:6160)** and **Jiangsu Hengrui Medicine Co. (SHA: 600276)**. China, with more than 1.2 billion inhabitants, is already the second largest pharmaceuticals market in the world. Its citizens are getting richer – and older. There is a government-sponsored healthcare system in China which shows willingness to pay for more expensive treatments. Some analysts think that China will be the number one market for pharmaceutical products by 2030 – and that many of the suppliers to that market will be Chinese.

Action

Medical technology, devices and pharmacology involve a diverse range of expertise. As a result, investors should consider a fund approach.

Fidelity is just one fund management stable which offers a fund dedicated to medical technology. The **Fidelity Select Medical Technology and Devices Portfolio (FSMEX)** is 70 percent allocated to medical equipment manufacturers, 11 percent to life sciences and six percent to managed health care. The remainder of the fund is allocated to biotechnology and pharmaceuticals.

Its top five holdings are: **Becton Dickinson (NYSE:BDX), Boston Scientific Corp. (NYSE:BSX), Stryker Corp. (NYSE:SYK & FRA:SYK), Intuitive Surgical Inc. (NASDAQ:ISRG)** and **Baxter International Inc. (NYSE:BAX, FRA:BTL & VIE:BAX)**. The fund has generated a return year-to-date (to 19 September) of an incredible 32.3 percent. Over a ten-year period, it has produced annualised returns of over 15 percent. The fund gets a five-star rating from Morningstar, which classifies it as medium-to-higher risk.

Several positive factors have supported medical technology and devices stocks this year. These include solid fundamentals, continued innovation, and rising demand for healthcare products and services in both the USA and globally. Star performers have included dental device firm **Align Technology (NASDAQ:ALGN & FRA:AFW)**, up 66 percent this year. The overweight allocation in Intuitive Surgical has also boosted the fund price, this stock having risen from $375 on 02 January to $565 in late September – a gain of more than 50 percent.

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 **Get hospital patients up to end pyjama paralysis, by Laura Donnelly**

ii **See: https://www.icr.ac.uk/news-archive/artificial-intelligence-can-predict-how-cancers-will-evolve-and-spread**

iii **Published in the journal *Systems Biology and Applications.***

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BY DAVID JONES

FORENSIC FOREX

A CRUEL SUMMER FOR THE POUND

If ever we wanted an example on how sentiment can turn quickly in financial markets, this year's trading in the pound would be a great case study. It was only April this year when the pound/US dollar exchange rate (GBP/USD) hit 1.43, its best level since the vote to leave the EU in June 2016. However, sentiment shifted – mainly due to the lack of progress in Brexit negotiations and the ongoing political squabbling in the UK within Theresa May's government. By the middle of August, it had slipped below 1.27, a 10% slide in four months.

A 10% move in a currency pair in such a relatively short amount of time is quite extreme. What we saw was that old cliché playing out: 'markets hate uncertainty'. After building a solid recovery through much of 2017 and into this year, the pound was once again on the backfoot, driven by the UK's decision to leave the EU.

Markets do have a tendency to overreact – in both directions. Bull markets get carried out to extremes and sometimes create bubbles based on a wave of unrealistic optimism (Bitcoin, anyone?). And on the flipside, sell-offs can fuel even more selling as relentless falls convince other investors and traders that they really should throw in the towel on their positive views and join the doom-mongers.

It does feel as if the pessimism got overdone for the pound during the summer, pushing GBP/USD down to a 10-month low. Since then, there has been a recovery – but what are the potential hurdles to watch out for along the way?

Brexit negotiations

Of course, this is the big one. Progress in the Brexit discussions, or the lack thereof, is likely to be the one determining factor for the pound in the months to come. There have been some more positive noises surrounding UK-EU discussions in recent weeks and this has helped GBP/USD recover some of that lost ground. Although

GBPUSD – April 2016 to August 2018

her Chequers proposal seems to have split politicians at home, Prime Minister Theresa May has urged Europe to get a deal done in the next couple of months. Considering the UK is leaving at the end of March, actually having some sort of an agreement in place would clearly take away a lot of the uncertainty for markets.

Economic performance

As a general rule of thumb, if poor economic news comes out but a market still goes up, this is usually a sign of strength in the market. In mid-September, the International Monetary Fund (IMF) warned that a no-deal Brexit would have a substantial impact on the UK economy. Now, this is hardly rocket science and the IMF does not have the greatest of track records when it comes to gazing in its crystal ball. But the GBP/USD exchange rate was broadly untroubled by this view and had pushed higher a few days later. Shrugging off this downbeat view could be taken as another sign that the weakness during August had perhaps gone too far.

But clearly the economic performance of the UK is going to have some impact on the currency between now and March. The latest figures for UK GDP, released during September, showed strength that surprised some. The economy increased by 0.6% over three months, according to the Office for National Statistics. That was up from 0.4% for the previous quarter. This release is still closely watched – and for now at least it is helping to underpin the recovery in the pound that we have seen since those August lows.

The Bank of England

Interest rates went up in August – admittedly only by 0.25%. But this was symbolic, hitting the highest level for almost ten years. The expectations are, not surprisingly, for the next move to be upwards again – but the Bank has suggested that this will be after the UK leaves the EU. It does seem unlikely this will change – but one factor to watch here is inflation. The latest reading came in at 2.7%, which was slightly higher than expected. The classic way to combat inflation is for a central bank to raise rates. It is hard to imagine a scenario where inflation moves enough in the next six months that the Bank of England's hand is forced. But, if inflation does nudge upwards, the Bank may change its dialogue about how many rate increases we can expect in the future – and this sort of narrative of the promise of further rate rises could be enough to give the pound an extra boost.

To strip the fundamentals out of the equation and just look at the chart, the recovery in GBP/USD has broken out of the downtrend that had been in place since those April highs. This strength has turned out to be the most sustainable rally in the pound for some time (there was the odd run of strength on the way down, but ultimately this petered out and the exchange rate tuned lower).

If this recovery is going to continue, any weakness should not take out the lower trend line in the 1.29 area. It does seem as if there has been a shift in sentiment towards the pound in recent weeks, so further gains can be expected. Perhaps the next interim target is for a run back to the July highs in the 1.34 area.

"IT DOES SEEM AS IF THERE HAS BEEN A SHIFT IN SENTIMENT TOWARDS THE POUND IN RECENT WEEKS SO FURTHER GAINS CAN BE EXPECTED."

Because of the ongoing Brexit discussions, the pound remains one of the more interesting forex markets to watch. As the countdown to the March exit marches on, it is likely to stay volatile and subject to the risk of price shocks (in both directions). But, after a summer of what felt like never-ending weakness, it does look as if there could be at least some more potential upside to come.

GBP/USD Chart, April to present day

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 BBC Radio 5 Live's Wake up to Money programme and the Chartist for Shares magazine. He is an active trader and private investor.

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BY RICHARD GILL, CFA

BOOK REVIEW

ENGINES THAT MOVE MARKETS

TECHNOLOGY INVESTING FROM RAILROADS TO THE INTERNET AND BEYOND

BY ALASDAIR NAIRN

Imagine that around 20 years ago, in the years leading up to the dotcom boom, you had the foresight to put your money into the best performing internet economy stocks. A $100 investment in Amazon's 1997 IPO for example, at a price of just $18 a share, would now be worth over $120,000 after the company recently became only the second to reach a market cap of $1 trillion. Elsewhere, an investment in online auction giant eBay at IPO in 1998 would now be worth around 18 times your initial outlay.

But alongside the massive internet winners of the past two decades, there have been many more losers. Who could forget the disaster that was Pets.com, which after raising $82 million at IPO in the US went bust just nine months later after spending most of its cash on an ill-fated advertising campaign (starring an entertaining sock puppet). Here in the UK, online sports retailer Boo.com was famous for spending a reported $135 million of venture capital investment in less than 18 months before going bust.

Along those lines, in *Engines That Move Markets*, author Alasdair Nairn examines and tries to make sense of how emerging technology works, how it impacts society and how investors react to new, potentially ground breaking, money making opportunities. The main text of the book covers ten different historical episodes, each chapter taking a detailed look at a particular technological innovation, all of which have changed the world over the past 200 years or so. He examines them from the perspective of when they were new, analysing how events unfolded as the technologies developed and how people reacted to them at the time.

> **"THE BEST TECHNOLOGY OR FIRST MOVER DOES NOT ALWAYS WIN."**

Nairn has a background in money management and equity research, having been Chief Investment Officer of Scottish Widows Investment Partnership and Executive Vice President and Director of global equity research at Templeton Investment Management. He also has a PhD in economics from the University of Strathclyde/Scottish Business School. This is the second edition of a book which was first published at the end of 2001 in the aftermath of the dotcom crash. Almost twenty years on, it has been updated by the author with further analysis of the tech bubble and how the internet has evolved since then.

Gains from trains and automobiles

The first chapter kicks off by looking at the Industrial Revolution and how new technologies helped to drive the great period of economic advancement and create a range of new industries which needed capital. In the UK for example, the late 18th century began to see cost efficient canals being built, enabled by advancements in engineering and construction technology, to link major manufacturing centres and speed up the transportation of goods. By 1824 canal companies had raised around $12 billion in today's money.

> **"IT CAN OFTEN BE EASIER TO SEE WHO IS GOING TO BE A LOSER."**

However, railways, which could transport goods even more cheaply than canals, quickly came along and became the new hot sector for investors. As canals became less economic, shares in canal companies began to fall in the 1830s, with train companies now seeing significant inflows of new capital and rising stock prices. This highlights one of the underlying themes of the book, that while it can be difficult to identify the specific winners from any new technology, it can often be easier to see who is going to be a loser – HMV vs digital music comes to mind as a more recent example.

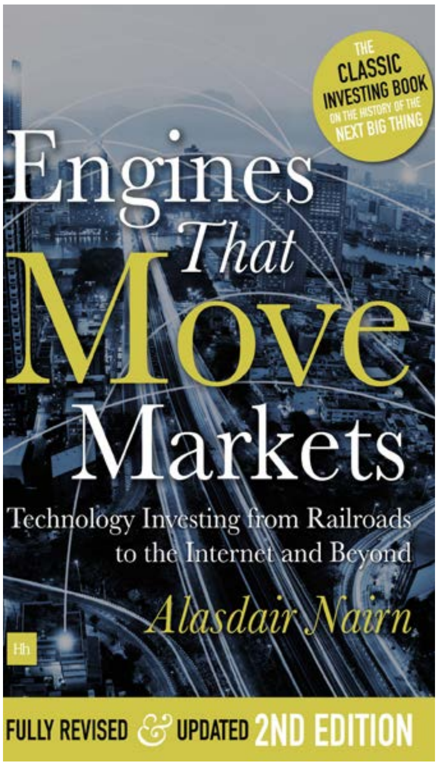
After covering the US railroads, telephone, electric lamp and oil, Nairn takes us to the late 19th century and the development of the horseless carriage, or automobile. Reflecting the initial doubt over the usefulness of the technology, Henry Ford's lawyer was advised regarding a potential investment, *"the horse is here to stay but the automobile is only a novelty – a fad"*. Ford however went on to become a market leader in the industry with his low cost, high quality Model T, although his company did go bust twice along the way.

Moving on through wireless technology, adding machines and personal computing, the most extensive chapter, coming in at almost 100 pages, examines the internet, from its foundation in academia, through to its early commercialisation in the '90s and subsequent bubble. The final and 11th chapter of the book takes a look at the nature of technological change in general, how it impacts the financial markets and influences speculative manias.

This time... it's not different

There are many lessons to take away from *Engines That Move Markets*, not least that the best technology or first mover does not always win – who remembers Betamax? Also, new technologies will eventually become old technologies, sometimes quickly and even before investors have made their money back. What becomes apparent by the end of the book is that, while all the technologies discussed have a different story, how they develop over time can be strikingly similar.

Typically, initial scepticism of a new technology is replaced by enthusiasm, leading to a range of new businesses being formed and a huge injection of capital. Share prices then soar on a wave of enthusiasm, often before any profits are being made, soon followed by a crash as companies run out of money and are forced to wind up. Eventually, the market begins to stabilise as successors emerge and go on to become winners.



Overall, this is a great book for any investor who is interested in history, technology and making money. Fans of *Popular Delusions and the Madness of Crowds,* first written in 1841 and covering the South Sea Bubble and Tulipmania, will notice many common themes between the two titles. Some might even consider Nairn's book as the modern-day equivalent of the all-time classic. After all, both teach that by studying the past, readers will be able to spot familiar patterns which unfold time and time again in the markets. When these patterns rise, investors can then go on to make investments in new technologies more wisely – something a number of crypto-currency investors should have done around this time last year.

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.

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THE FINAL WORD

TEN QUESTIONS ABOUT THE MARKETS

"Finding the right answers is easy. It's asking the right questions that's difficult."

- Anonymous.

My asset management business is taking on its first intern this summer. In addition to landing him with some menial tasks and, I hope, some more instructive reading material, we've also given him some general questions about the nature of markets, asset management and the economy. Perhaps you might be interested in having a go at answering them yourself. As we make clear to him, many of these questions don't have black or white answers, and the answers to many will be entirely subjective in any case. For what it's worth, I provide my own responses below. Feel free to disagree with any or all of what follows – it's having the conversation and asking the questions that matters.

1. What is the purpose of investing? Why do people invest?

A: The purpose of investing is to maximise the utility of deferred spending, i.e. savings. The problem is that as central banks have indulged in policy creep and driven down interest rates to their lowest levels in the history of mankind, they have hopelessly distorted the integrity of capital markets. Thankfully interest rates are finally starting to rise, but it's going to be a long and painful haul before they ever return to something approaching normality.

2. What is money and how is it created?

A: Classical economists give money three attributes: it acts as a unit of account (we can price things in it); it acts as a medium of exchange (we can pay for things with it without resorting to barter); and it acts as a store of value. Unfortunately, for the entirety of my life, money has lost the ability to retain its value thanks to the monetary machinations of governments and central bankers. We live, in other words, in inflationary times.

Money is lent into being by banks. Most money is therefore credit. Although central banks can create 'base money' via the dubious magic of quantitative easing, most of the money in circulation was created by the commercial banking sector. Because commercial banks operate on a fractional reserve basis (i.e. they lend out far more than they ever retain on deposit), our banking system is predestined to suffer from sporadic runs – i.e. crises of confidence.

3. What is the purpose of economics?

A: To best decide in a big world how to allocate finite resources. If you prefer, as Joan Robinson put it:

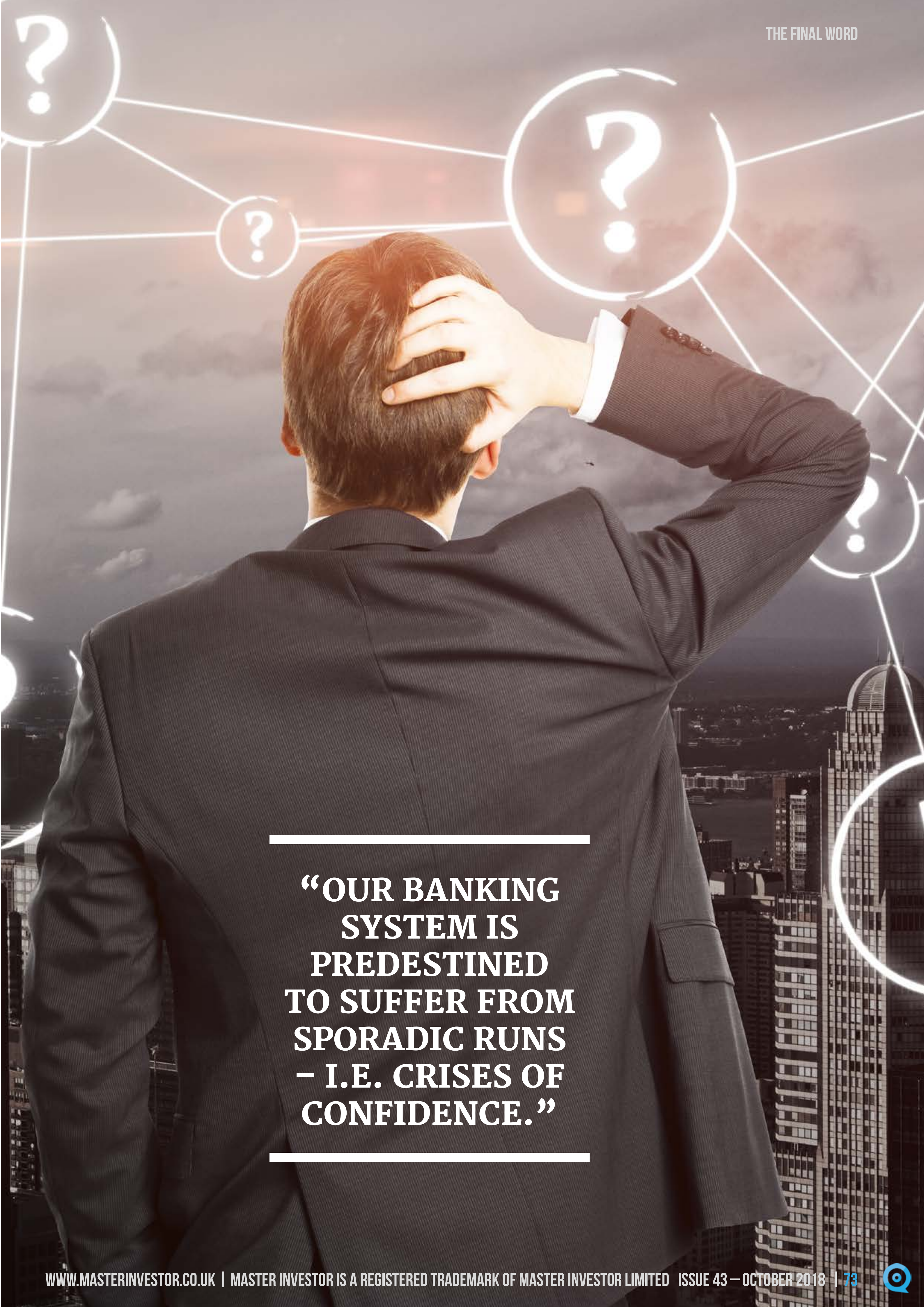
> *The purpose of studying economics is not to acquire a set of ready-made answers to economic questions, but to learn how to avoid being deceived by economists.*

4. Which are the major asset classes?

A: Cash, property, equity, debt and commodities. Some would include currencies. But currencies in isolation can't be assets – they can only be converted into assets by being transformed into interest-bearing deposits.

5. What different types or styles of investing are there?

A: Broadly speaking there is 'growth', 'quality', 'momentum' and 'value'. Growth investing offers the potential



"OUR BANKING SYSTEM IS PREDESTINED TO SUFFER FROM SPORADIC RUNS – I.E. CRISES OF CONFIDENCE."

for high returns, but with high risk. 'Quality' investing is almost entirely subjective and has very little fundamental underpinning, in my opinion. 'Momentum' investing is essentially going with the herd for as long as the trend lasts – and then hopping off as soon as the trend reverses. 'Value' investing is my personal favourite. Benjamin Graham is credited as being one of the godfathers of value investing. He made the following distinction in 'Security Analysis' (1934):

> *An investment operation is one which, upon thorough analysis, promises safety of principal and a satisfactory return. Operations not meeting these requirements are speculative.*

Value investing comes closest to promising safety of principal and satisfactory returns, over the long term. All forms of trading are necessarily speculative.

To go further, the Austrian economic school strongly suggests that all value in investing is inherently subjective. So choose wisely.

6. What is a 'passive' fund? Do you prefer the idea of 'active' or 'passive' investing, and why? What are the merits and demerits of 'passive' and 'active' funds?

A: A 'passive' fund is a low-cost index or sector tracker. An 'active' fund is a fund that by definition incorporates some form of tracking error, or deviation from the composition of the index. Whether it makes sense to own one versus the other is largely a question of whether you believe the underlying manager can add value versus the market. My concern with the rise of so-called 'passive' funds is that an entire generation of investors has obtained low cost index exposure without using any discernment in the process, with stock markets at all-time highs to boot. I suspect those investors will come to regret that lack of discernment.

Not all active managers attempt to beat the market either. My own objective is to try to deliver an asymmetric return for my investors; to attempt to capture as much of the upside available in markets as possible, whilst absolutely endeavouring to limit the downside. In this respect you could describe such an approach as 'absolute return' investing, as opposed to 'relative return' investing. No private investor should be seriously trying to generate market relative returns – because you cannot take negative returns to the bank. Only positive, absolute returns count.

“THE FUND INDUSTRY TENDS TO DEFINE RISK AS ANNUALISED VOLATILITY BY WAY OF STANDARD DEVIATION OF RETURN. THIS IS NONSENSE, ENDORSED BY THE REGULATOR.”

7. How would you define risk? What sort of risks does an investor face?

A: The fund industry tends to define risk as annualised volatility by way of standard deviation of return. This is nonsense, endorsed by the regulator. Volatility is part and parcel of the risk-taking process otherwise known as investing. I prefer to define risk as the likelihood of incurring a permanent loss of capital. Stock prices go up and they go down, and they are entirely unpredictable over the short term, and arguably over the longer term as well. But if you work for Lehman Brothers, and have your life savings invested in Lehman Brothers stock, when Lehman Brothers goes bankrupt, you have lost not just your job but your pension fund into the bargain. Now ***that*** is risk.

Depending on whether one is investing in equities or bonds or something else, investors face a combination of interest rate risk, inflation risk, currency risk, counterparty risk and price risk.

"THE TRICK IS TO DISCRIMINATE BETWEEN A TRUE ASSET MANAGER WHO IS DOING THE BEST JOB POSSIBLE FOR HIS INVESTORS, AS OPPOSED TO AN ASSET GATHERER WHO IS JUST INTERESTED IN MAXIMISING THE SIZE OF HIS FEES."

The trick is to minimise these risks in a balanced portfolio by offsetting them through sensible and uncorrelated diversification amongst different asset classes.

8. What different types of funds are there?

A: Most funds tend to be regulated mutual funds of some type or another. This phrase is itself misleading, as most so-called mutual funds are actually run as for-profit businesses for the primary benefit of the fund manager. The trick is to discriminate between a true asset manager who is doing the best job possible for his investors, as opposed to an asset gatherer who is just interested in maximising the size of his fees. As a general rule of thumb, the larger the fund, the more likely it is to be a vehicle for asset gatherers.

There are also hedge funds, which are established offshore and which offer a lighter degree of regulation but also less by way of consumer protection. Not all hedge funds are bad, but most have high investment thresholds.

I particularly rate a type of momentum hedge fund known as a systematic trend-following fund. See Michael Covel's excellent website TrendFollowing and also Niels Kaastrup-Larsen's website Top Traders Unplugged for more. My friend Paul Rodriguez and I recently interviewed Niels and you can listen to our conversation here.

9. What is the purpose of the stock market? How can we assess the merits and demerits of particular companies?

A: The purpose of the stock market is to provide equity funding for entrepreneurial businesses. That, at least, is how it started out. Over time, for many it has morphed into something closer to being a casino for the amusement of robots and high frequency traders.

There are a number of metrics that can be used to assess the profitability and capital strength of listed businesses. All things equal, as a value investor I particularly like metrics like price-to-book (the lower the better) and price-to-earnings (ditto), but my single favourite metric is Enterprise Value to Cash Flow From Operations (EV/CFO; again, the lower the better). Enterprise Value is essentially the value of a company's equity capitalisation plus its net debts; cash from operations, unlike profits, is one corporate revenue metric that can't be manipulated easily.

10. What is, or should be, the role of government in the economy?

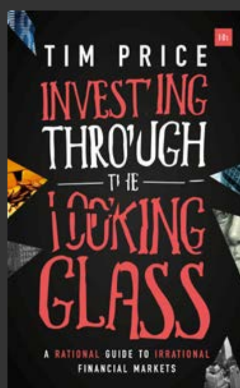
A: To be as small as humanly possible. I've just got back from a few days at the Edinburgh Fringe where, amongst other things, a group of us at Panmure House discussed the impact of the economist Adam Smith, who lived and died there. Dominic Frisby, a comedian, writer and co-panellist, offers the following Adam Smith quote:

> Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism but peace, easy taxes, and a tolerable administration of justice: all the rest being brought about by the natural course of things.

Small government = low taxes = happiness. Authoritarian and illiberal government = high taxes = misery. A knowledgeable man, that Adam Smith.

About Tim

Tim Price is manager of the VT Price Value Portfolio (www.pricevaluepartners.com) and author of 'Investing Through the Looking Glass: a rational guide to irrational financial markets'.



OCTOBER 2018

INVESTOR EVENTS DIARY

EVERY WEDNESDAY

Event:	SR Live
Organiser:	SyndicateRoom
Time:	12:30
Place:	Webinar
Link for tickets:	https://www.syndicateroom.com/events/sr-live

THURSDAY, 11 OCTOBER

Event:	Master Investor in focus: Investing into alternative energy
Organiser:	Master Investor
Time:	18:15-21:00
Place:	NEX Exchange, 2 Broadgate, London EC2M 7UR
Link for tickets:	https://www.eventbrite.co.uk/e/master-investor-in-focus-investing-into-alternative-energy-tickets-49648013545

TUESDAY, 16 OCTOBER

Event:	London South East Oil & Gas Investor Evening
Organiser:	London South East
Time:	18:00
Place:	Brewers Hall, Aldermanbury Square (Off London Wall), London EC2V 7HR
Link for tickets:	https://www.eventbrite.co.uk/e/london-south-east-oil-gas-investor-evening-with-malcy-graham-wood-and-three-ceos-from-echo-energy-tickets-49904628086

TUESDAY, 30 OCTOBER

Event:	Netwealth investing seminar: control the controllable in Investing
Organiser:	City A.M. / Netwealth
Time:	18:30
Place:	The Clubhouse, St James Square, London SW1Y 4JU
Link for tickets:	http://www.cityam.com/event/netwealth

THURSDAY, 1 NOVEMBER

Event:	Master Investor: Investing in the age of longevity
Organiser:	Master Investor
Time:	09:30-17:00
Place:	Wellcome Collection, 183 Euston Road, London NW1 2BE
Link for tickets:	https://www.eventbrite.co.uk/e/investing-in-the-age-of-longevity-tickets-47844757959

FRIDAY, 9 NOVEMBER

Event:	Master Investor Manchester
Organiser:	Master Investor
Time:	17:15-20:30
Place:	Mercure Manchester Piccadilly, Portland Street, Manchester M1 4PH
Link for tickets:	https://www.eventbrite.co.uk/e/master-investor-manchester-keynote-seminar-with-jim-mellon-tickets-47986867011

FRIDAY, 9 NOVEMBER

Event:	Manchester Investor Show
Organiser:	Investor Conferences (UK)
Time:	09:30-17:00
Place:	Mercure Manchester Piccadilly, Portland Street, Manchester M1 4PH
Link for tickets:	https://www.eventbrite.co.uk/e/manchester-investor-show-2018-tickets-44687126398

FRIDAY, 30 NOVEMBER

Event:	VCT & EIS Investor Forum
Organiser:	Investor Conferences (UK)
Time:	08:00-17:00
Place:	Grange Tower Bridge Hotel, 45 Prescot Street, London E1 8GP
Link for tickets:	https://www.thevctandeisinvestor-forum.com

MARKETS IN FOCUS

SEPTEMBER 2018

GLOBAL EQUITIES

Index	Last Month %	YTD%	Proximity to 52w High*
Russian TSI	8.5	3.9	
Nikkei 225	5.5	6.5	
Bovespa	4.3	4.7	
Dow Jones	1.9	7.0	
CAC 40	1.6	3.6	
FTSE 100	1.1	-2.3	
S&P 500	0.4	9.0	
Euronext 100	0.2	3.0	
IBEX 35	-0.1	-6.5	
NASDAQ 100	-0.4	19.2	
Hang Seng	-0.4	-7.1	
DAX Xetra	-1.0	-4.6	
S&P/ASX 200	-1.8	2.4	

COMMODITIES

Commodity	Last Month %	YTD%	Proximity to 52w High*
Palladium	11.0	1.3	
Crude oil (Brent)	6.5	23.7	
Platinum	4.8	-11.4	
Crude oil (Light Sweet)	4.7	21.1	
Sugar (No. 11)	3.2	-20.1	
Iron Ore	2.8	-0.2	
Copper	2.8	-15.9	
Natural Gas	2.6	1.5	
Silver	0.8	-14.3	
Gold	-1.0	-8.7	
Coffee	-3.3	-17.5	
Cotton	-5.7	3.2	
Cocoa	-7.1	16.9	

FOREX

Pair/Cross	Last Month %	YTD%	Proximity to 52w High*
EUR/JPY	2.5	-2.1	
USD/JPY	2.4	1.2	
EUR/CHF	1.4	-2.3	
USD/CHF	1.3	0.9	
GBP/USD	0.6	-3.4	
AUD/USD	0.4	-7.6	
GBP/AUD	0.1	4.5	
EUR/USD	0.0	-3.2	
EUR/GBP	-0.5	0.2	
USD/CAD	-1.0	1.8	

CENTRAL BANKS - RATES & MEETINGS

Central Bank	Key Rate	Next	After
BOE	0.75%	Nov 01	Dec 20
ECB	0.00%	Oct 25	Dec 13
FED	2.25%	Nov 08	Dec 19
BOJ	-0.10%	Oct 31	Dec 20
SNB	-0.75%	Dec 13	Mar 21
BOC	1.50%	Oct 24	Dec 05
RBA	1.50%	Nov 06	Dec 04
RBNZ	1.75%	Nov 08	Feb 13
BOS	-0.50%	Oct 23	Dec 19
BON	0.75%	Oct 25	Dec 13

FTSE 350 TOP

Company	Last Month %	YTD%	Proximity to 52w High*
Jardine Lloyd Thomp PLC	31.3	35.6	
Ferrexpo PLC	29.1	-30.4	
McCarthy & Stone PLC	20.5	-13.6	
Equiniti Group PLC	20.1	-8.1	
KAZ Minerals PLC	17.9	-37.8	

FTSE 350 BOTTOM

Company	Last Month %	YTD%	Proximity to 52w High*
Indivior PLC	-31.9	-53.7	
Thomas Cook Group PLC	-30.7	-51.4	
Dechra Pharma PLC	-30.2	4.7	
IG Group Holdings PLC	-29.9	-11.8	
Sirius Minerals PLC	-22.4	19.4	

FTSE 350 SECTORS TOP

Sector	Last Month %	YTD%	Proximity to 52w High*
Industrial Metals	16.2	34.2	
Oil & Gas Producers	6.3	9.6	
Leisure Goods	6.3	70.5	
Mining	5.4	-5.1	
Home Goods & Const	4.5	-6.2	

FTSE 350 SECTORS BOTTOM

Sector	Last Month %	YTD%	Proximity to 52w High*
Automobiles & Parts	-13.9	34.7	
Electricity	-7.4	-9.3	
Personal Goods	-4.8	2.5	
Construction & Materials	-4.6	-7.5	
General Retailers	-4.1	-8.7	

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