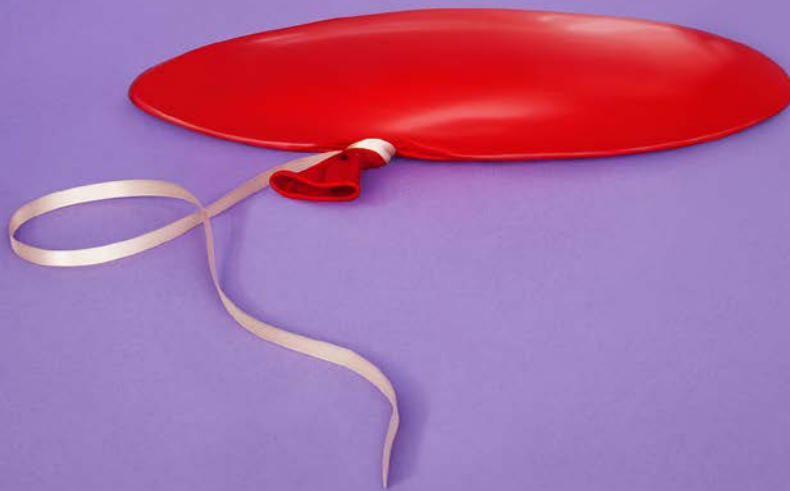




konzept



Is inflation really dead?

February 2016

Cover story

Is inflation really dead?

Slumping commodities, China devaluation scare, anaemic wage growth — deflationistas are spoilt for choice. But could it be possible that high, not low, inflation is the threat to watch out for?

Editorial

There are few certainties in the loopy world of economics and finance, which is why investing is a constant challenge. One exception, though, is that if everyone thinks the same thing

will happen it probably won't. More often than not you should expect the complete opposite to happen. Thus, as the spectre of deflation is foremost in everybody's minds right now, we have chosen to devote issue #7 of Konzept to that long-forgotten relic, inflation.

Our four features on inflation do not dismiss the idea that developed world prices are sinking into the goo – as we go to press it rather seems like they are (along with everything else!). Rather each article starts from the reality that our economic understanding of price movements is flaky at best and hence dismissing inflation out of hand is arrogant and risky. If even Janet Yellen expresses "some humility" about the Federal Reserve's inflation forecasting abilities, perhaps other economic commentators should also follow her lead.

So how might the growing band of deflationistas end up being wrong? What is the role of demographics in setting price levels? How does the future look for commodities? Is inflation positive for equities or not? All these questions and more are explored at length in this issue. If that sounds too much like hard work our popular infographic page analyses the trend in global prices from a slightly sportier angle.

This issue is also jam-packed with a sweet spread of shorter articles. Ever wondered what renewable energy and free-range eggs have in common? Martin Brough explains and along the way helps you understand how renewables are shaking up traditional energy. From renewables to rockets as Myles Walton shows why the horde of billionaires jostling to enter the space exploration business might end up with egg on their face.

Meanwhile, back on earth we examine China's 100m diabetes patients. Jack Hu predicts that more prevalent, locally made drugs could eventually drive prices down to a level that helps the four-fifths of sufferers who currently do not receive treatment. And still on emerging markets, our consumer staples team writes that the companies it follows are spotting one or

two green shoots at last. Since the sector was one of the first to warn of the emerging markets slowdown, this could be significant.

Finally, the regular columns at the back of the magazine contain the usual insights and nonsense. Our conference spy sneaked into Deutsche Bank's global autos jamboree in Detroit and reported back a surprisingly downbeat mood considering oil is at \$30 and Americans bought a record number of cars last year. From our Ideas lab series we summarise a lecture on team conflict by Professor Peterson. His research shows that only one-tenth of team bust-ups are due to differences of opinion – the main culprit, apparently, is tone of voice. And lastly, your humble editor embarrassed himself on the train reviewing the business book "Extreme Ownership" by two ex-navy SEALs. Hell yeah! Hope you enjoy and thanks for reading!

Stuart Kirk

Head of multi-asset research

➤ To send feedback, or to contact any of the authors, please get in touch via your usual Deutsche Bank representative, or write to the team at research.haus@db.com.

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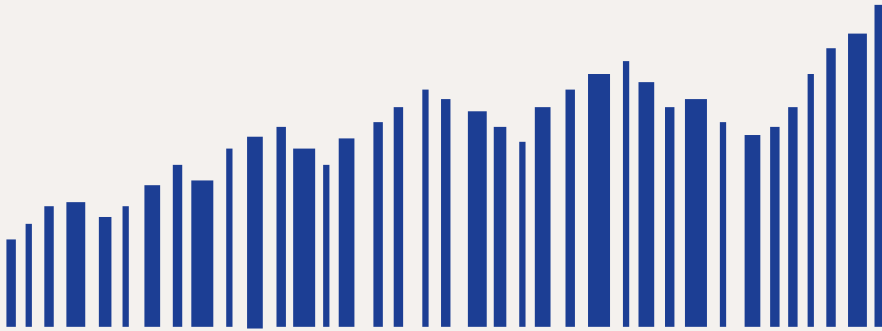
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Emerging markets— Black Label, green shoots



Cynicism over the quality of official economic data has spawned a host of alternative indicators to gauge the health of emerging market economies. These proxies range from the simple, freight traffic and electricity consumption for instance, to the outlandish such as satellite images measuring the brightness of factory lights. However, most of these indicators failed to warn investors of the severity of the current malaise afflicting emerging markets. One reason, perhaps, is they rely on outdated models of these economies and focus almost exclusively on the industrial sector while ignoring the increasingly important consumer spending component.

Harold Thompson,
Gerry Gallagher,
Tristan Van Strien

Investors looking for clues on the state of the developing world would have been better served by paying attention to the performance of global consumer staples companies that serve the 6.3bn emerging market consumers. Well in advance of the aggressive sell-off in emerging market assets that began in 2015, these companies were reporting a sharp slowdown in sales growth from the developing world. Unilever is a good example. The Anglo-Dutch group with a broad exposure to a long list of developing countries has grown its emerging market volumes by about five per cent annually over the last quarter century. However, in 2014 volume growth ground down to virtually zero.

If emerging market investors were too ebullient in the face of this impending slowdown back then, they might be guilty of the opposite today. Amid the doom and gloom surrounding the prognosis for the developing world, staples companies are reporting signs of improvement. We estimate that in our listed European consumer staple universe, emerging market growth improved by one-third in 2015 compared with the prior year. If previous episodes of emerging market strife are any guide, growth should continue to improve from here.

Global consumer staples companies, such as Unilever and Nestlé, offer a unique insight into the dynamics of the developing world. Some of their products have been present in these countries for decades and in some cases centuries. Many of the brands travelled with

European adventurers and soon became synonymous with heritage and quality. Among the many that have endured are Dettol, Heineken, Lux, Omo, Marlboro and Johnnie Walker. Such is the penetration of big brands into these markets that western travellers should not be surprised to encounter familiar names in ramshackle stores in the remote nooks of the Amazon or the farthest hinterland in the Indian subcontinent.

That legacy and unrivalled reach means consumer staples companies often have a very high exposure to emerging markets. In fact, many of the biggest companies derive almost half their revenues from these countries. To put that in context, the emerging market exposure of the big consumer staples groups is nearly two and a half times that of the average listed company in Europe. As a result, when emerging markets are booming, so too do sales figures for the global producers. But when these economies come under strain, as is the case now, the western consumer staples sector finds itself in the spotlight for the wrong reasons.

Apart from the sheer size of their exposure, another remarkable feature of consumer staples companies is their geographical spread across the emerging world. This matters because only about one-quarter of the total emerging markets population lives in the oft-discussed and relatively more developed economies of Brazil, China, and Russia. Of course, these three countries are important as they contribute over half of the economic output of all emerging countries. However, as a disproportionately large share of economic commentary focuses on these markets they tend to set the mood for the entire emerging market universe.

The financial performance of consumer staples companies, though, depends on far more than these three countries. Of their total emerging market sales, only one-third is generated in the three big markets. Twice as large as the 'big-three' is the exposure to the long tail of emerging economies. Nestlé, one of the world's largest consumer staples companies, has coined these countries "Zone CNN". That is, most people only hear about them when a CNN film crew arrives to report on the latest crisis; a natural disaster or other type of geopolitical event.

It is the presence in these tier two emerging markets that sets staples companies apart from other consumer industries like luxury goods whose fortunes are tied to one or two established developing world countries like China. On average, the per capita wealth of the 4.7bn consumers in these tier two markets is half that of Brazil, China, and Russia. For staples companies offering basic necessities at lower

price points, those markets are more accessible than for other consumer industries where the discretionary nature of the product, or its pricing, puts it out of reach. This means consumer staples stocks should be seen in a different light to other companies that operate in countries that are also covered under the 'emerging market' umbrella.

One obvious downside of having your fortunes tied up with emerging market consumers in a large number of countries is being subject to currency market fluctuations. Emerging market denominations have lost nearly one-third of their value since the beginning of 2013. Said differently, over the last three years, the value in dollar terms of what 6.3bn people produce has fallen by a third. In response to this devaluation, consumer staples companies raised prices. This was not just to prop up earnings in a company's reporting currency, but also to cover the increase in input costs which are frequently denominated in US dollars. This pricing bump became noticeable in 2013 and especially so in 2014. Of course, this was not lost on customers and their razor-thin budgets predictably dictated that volume growth had to suffer.

However, the financial pain of this devaluation period does appear to be behind us. At the very least, ongoing devaluations should become less impactful over time. That means as the cycle of currency devaluations and price increases slows, in turn, volumes should start to recover. Indeed, there is a growing list of European staples companies that acknowledge this directly. Like-for-like emerging market sales growth in the fourth quarter of 2015 looks set to hit six per cent, a percentage point improvement over the average of the last five quarters. This improvement is by no means uniform across every country or category, but if the current cycle pans out like the previous ones, emerging market volume growth should continue to improve.

Investors expecting the current bloodbath in emerging markets to persist and that pain to be shared by western consumer staples companies will be surprised by this upbeat message. The current tentative signs of improvement for staples companies in the developing world inspire confidence for both in 2016 and beyond. ●

Renewable energy—making sense of an industry that doesn't

What is competitive yet expensive, pushes prices down but bills up, changes the world while being insignificant? The answer is renewable energy and it is a melange of contradictions. No wonder many struggle to understand this seemingly flourishing sector. One consequence of the confusion is that traditional utility companies don't take clean energy seriously enough.

Another is that policymakers and investors underestimate the challenge of replacing fossil fuels in the push towards a carbon-neutral world.

These misunderstandings stem from the failure to appreciate the trend of de-commoditisation in the energy market. That is, contrary to popular perception, renewables compete with fossil fuels not just on price but on four quite distinct levels. Appreciating this framework makes the current energy debate much more comprehensible.

The ongoing energy revolution is bewildering indeed. Germany's *Energiewende*, for example, has been rapid and brutal – the country's wind and solar capacity now exceeds peak electricity demand and is still growing. Wind generation jumped by 50 per cent last year alone. Indeed, the German policy debate has shifted to phasing out coal completely and is moving towards a fully renewable power system.

Meanwhile, last year's Paris climate agreement aims for a carbon-neutral world in the second half of the century. India is targeting 100 gigawatts of solar capacity by 2022, more than twice Germany's output. Solar energy has achieved 'grid parity', that is costs are below residential power prices, in many countries. The Tesla PowerWall battery system quickly sold out of initial supply on launch last year, potentially extending the reach of solar and wind to more hours of the day. Even the slow moving transport sector is succumbing to clean tech as manufacturers rush to bring out plug-in vehicles.

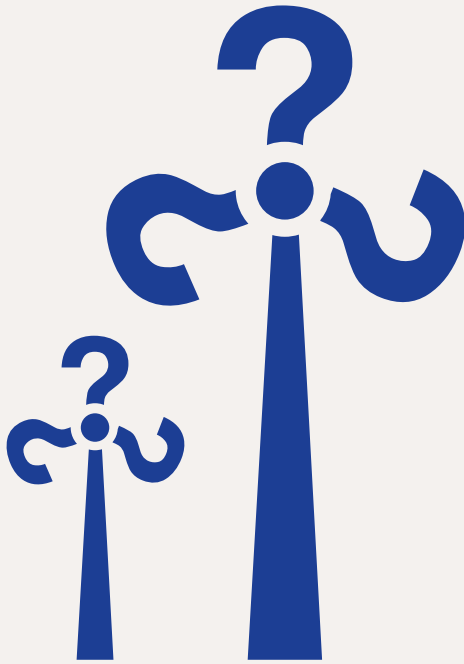
Yet a closer look reveals that a fossil fuel free world is not imminent. Despite the 'energy transformation' in Germany, solar only accounted for two per cent of energy consumption last year, with wind adding another three per cent. Renewable energy, excluding conventional hydro, accounts for less than three per cent of global energy consumption and is growing by only half a percentage point a year. Meanwhile, in America the number of plug in vehicles is less than half President Obama's target of one million for 2015. And the US is home to 250m vehicles.

Some argue now that clean energy has reached cost competitiveness it is set for explosive growth. Yet the latest auction price for German grid-connected solar generation was €85 per megawatt hour compared with a 2018 wholesale power price of €23/MWh (including the cost of buying carbon allowances). Likewise, UK auction prices for solar and wind last year were multiples of wholesale power price. And household battery costs in America are around 30 cents per kilowatt hour, even excluding the cost of charging the battery, twice the typical residential electricity price.

How do such apparently uncompetitive technologies survive? If energy were purely a commodity product, competitiveness would start with costs falling to displace the most expensive fossil fuels, such as deep sea oil, expensive domestic coal, remote liquefied natural gas. Complete displacement would require undercutting the cheapest fossil fuels such as Saudi oil or US shale gas.

However, before competing on marginal cost there are three stages of competitiveness up for grabs. Firstly, the policy-driven space where renewable power is already popular. On level two, clean technology is being sold successfully as a luxury good. Next, prices in many parts of the energy sector do not equal marginal costs, allowing renewable technology to be price competitive before it becomes cost competitive. These three non-commoditised levels of the energy system are growing rapidly, and renewables are dominant in all three. The question is: how far can this decommoditisation go?

Martin Brough



Start with policy competitiveness. Subsidies for solar and wind started in Germany at levels well above fossil generation costs or prices. With carbon reductions taken as a moral imperative, and the carbon allowance market undeveloped, there was a clear market failure in commoditised energy. While early movers like Germany and Spain incurred high costs, they helped develop the technology, bringing down the cost curve for everyone. Incremental government procurement of renewable energy through auctions, feed-in tariffs or other subsidies is now cheaper than ever. Top down targets for renewable energy globally imply ongoing growth, but that alone is not a reliable path to a carbon neutral world.

After all, the drive for policy competitiveness ultimately comes from the voters. Renewables found favour with swing voters due to low carbon emissions, perceived security relative to Russian gas or Middle East oil, local jobs and the promise of long term competitiveness. However the appetite to pay for further substitution of fossil fuel may be waning. For example, the UK government cut subsidies for additional renewables last year and has stopped subsidies for new onshore wind farms. Even in Germany the 40-45 per cent target for renewable generation in 2025 implies a significant slowdown in deployment. Politicians may be less keen on renewable growth when it involves cutting domestic fossil jobs, making domestic industry uncompetitive or pushing up energy bills for consumers.

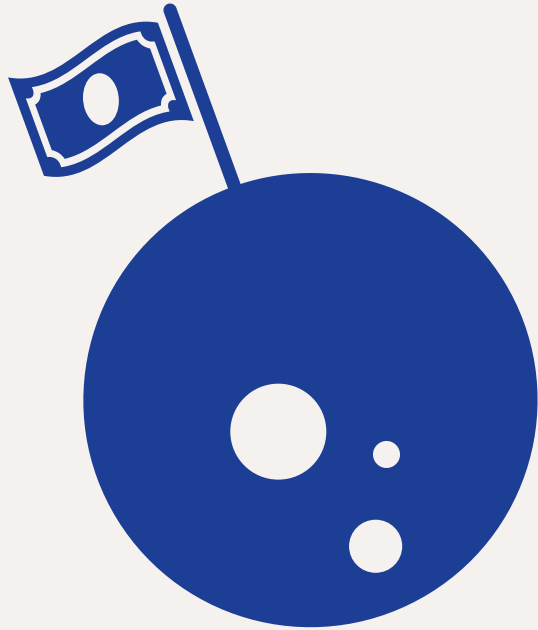
Fortunately, renewables have reached the next stage of competitiveness – as a luxury good. Teslas are cool. So are batteries and solar panels, Nest thermostats, and LED lighting. Electric vehicles and clean tech are being sold to consumers not as cheap commodity products but as high value-add, differentiated propositions. Perhaps like craft beer, the decommodification of energy has further to run. While the percentage of energy volumes sold as a premium product might not be huge, the percentage of value-added in the energy space coming from this segment may eventually be large.

The appeal of renewable energy also extends to mass market corporations looking to enhance their brand value. Apple, Google and Amazon are willing to pay premium prices for non-subsidised renewable energy to power their data centres. This is viable if consumers are happy to pay more for phones or internet services from companies with a green ethos. As renewable costs falls, the premium to fossil becomes smaller relative to the enhanced brand value.

Perversely, government subsidies and regulation could hurt demand for renewable energy as a premium product. Free range eggs command a premium only because other eggs are legally produced in unethical conditions. If legislation raises minimum standards to a 'satisfactory' level, the free range product may struggle. Similarly, if 40 per cent of electricity is already mandated or subsidised as renewable, additional renewable generation competes with retailers already selling green power.

Apart from policy and luxury, renewables are becoming competitive on price despite remaining uncompetitive on a marginal cost basis. In many countries residential solar panels can now deliver power at an average unit price below the electricity tariff. In this sense solar is now competitive without subsidy. But electricity tariffs also pay for network costs, which are not reduced by solar installations. Therefore, the power system loses more revenues than costs and must either put up average prices or split tariffs into fixed and variable components (forcing solar users to pay for grid costs regardless of own generation). Like telecoms and airlines, the energy sector is vulnerable to disruption wherever marginal prices exceed marginal costs. Cross-subsidies will ultimately be found out.

With policy, luxury and pricing competitiveness to work with, renewable growth has time to become cost competitive. But current momentum should not hide the reality that step changes in technology and costs are still needed to displace the final barrel of oil. ●



Space exploration— billionaires falling back to earth

The demand for trophy assets moves in cycles just like anything else. In the 1800s, the uber wealthy ditched their silver spoons to dine with aluminium cutlery as the difficult refining process made the latter metal more expensive and exclusive. The elite wanted private jets in the 1960s. A couple of decades later it was private islands. Today, anyone who is anyone owns a space rocket. Think Elon Musk of Tesla, Jeff Bezos of Amazon and Richard Branson of Virgin. And thanks to their cosmic aspirations space flight has become cool again. Nasa's public relations machine has also helped, particularly last year when it went into overdrive as the New Horizons probe flew past Pluto. And then there was the release of Star Wars.

But spaceflight has experienced more than just a rebirth of cool. It has become big business. The global space market has grown by nearly 30 per cent since 2010 and last year was worth \$330bn, about three-quarters the size of the global smartphone market. The majority of that money, though, is not spent by Nasa on journeys of exploration. In fact, the entire US government space budget comprises only one-tenth of the total. Rather, three-quarters of space spending is now outlaid by businesses on commercial products, services and infrastructure for the space industry.

So who is making money? And who will in the future? Currently the making and selling of satellites and launch vehicles in America is dominated by main-stay names such as

Lockheed Martin and Northrop Grumman. Both these companies generate about 15 per cent of their revenues from space-related activities. Many smaller companies are even more dependent. Aerojet and Orbital ATK, for example, rely on space revenues for more than half their turnover.

The question for these and other incumbents is whether the new billionaire-led upstarts, with their seemingly infinite balance sheets, are going to rocket away with their business. Take the Elon Musk led SpaceX. Last year, the company received sign-off from the US Air Force to send national security satellites into space, a market currently dominated by United Launch Alliance, a joint venture between Lockheed Martin and Boeing. Using its Falcon 9 rocket, SpaceX can send hardware into orbit at \$90m a pop, almost half the cost of the Atlas V rocket run by ULA. And the Falcon's cost could fall further if it perfects its reusability. SpaceX has raised \$1bn from Google and Fidelity and is now valued at about \$15bn.

As well as new competition there are two other reasons for US incumbents to worry. The first is the upcoming ban on Russian rocket engines used by American launch vehicles to send up military payloads. This restriction will hit ULA's Atlas V rocket, among others. The second is the cost and outsourcing of manned flight. Since the last space shuttle flight in 2011, the US has been forced to pay about \$80m per person to Russia to launch astronauts into space, something the Americans would prefer to do domestically. The upcoming ban and rising outsourcing costs have already spurred a new generation of domestic rocket scientists to work for small, more nimble firms.

Many analogies have been made with the disruption caused by startups to the terrestrial technology landscape. But it is unlikely a similarly dramatic disruption will occur in the market for space flight in the foreseeable future. That is because while launch costs are important, reliability takes precedent for most military customers. Payloads can be worth well over \$1bn and carry sensitive hardware and software. Over the past decade ULA has achieved 100 per cent success with its heavy Delta rockets and experienced only one partial failure with the smaller Atlas rockets. In comparison, many new entrants have experienced setbacks. Several of SpaceX's rockets have partially failed and one, last year, exploded before reaching orbit, just a month after the company received its Air Force approval. Furthermore, the development of SpaceX's Falcon Heavy rocket has been delayed three years and counting. Orbital, too, has had

its share of mishaps, most spectacularly about 18 months ago when its Antares rocket exploded just seconds after take-off.

The importance that vendors place on reliability is illustrated by the development of the Space Launch System. Funded at \$1.5bn per year, the Nasa-backed programme aims to develop a launch vehicle that will eventually be capable of lifting 130 tonnes into low earth orbit, about seven times the payload that can be lifted by the current Atlas V rocket. The plan is to create a craft that will be suitable for missions to Mars in the 2030s. With so much at stake, it is perhaps not surprising that the principle contractor is the experienced Boeing, while smaller providers, such as Orbital and Aerojet, have been retained as subcontractors.

That said, one area where upstart space companies are not seeing competition from the large commercial aerospace firms is tourism. This year, Virgin Galactic and XCOR are both expected to take paying customers to the edge of space. The two companies have a backlog of customers – Virgin charges \$200,000 a ticket and counts 700 'future astronauts' on its waiting list. At XCOR, 300 people have signed up for its 60 minute \$100,000 flight. And unlike commercial and military customers, hardware setbacks do not seem to worry tourists. In 2014, a Virgin craft crashed killing a crew member yet only 20 customers asked for a refund. It seems only a matter of time before costs fall and the market grows. Indeed, Jeff Bezos's Blue Origin successfully tested a rocket last year and has designed a capsule with "the largest windows in spaceflight history".

While tourism appears set to be just a small part of the overall space market for the foreseeable future, it is likely the expertise gained will create opportunities for growth into commercial orbital launch as well as human and cargo transportation. That augurs well for today's incumbent firms which have experience with customers and the means to acquire smaller competitors that develop complementary technologies. So while space has once again captured the public's imagination, and new companies are posturing for the financial, scientific, or social rewards, it may be the large mainstays of the industry in the more conventional areas of the space market that reap the greatest rewards – including a new generation of dreamers in the workforce inspired by today's billionaire moonshots. ●

China diabetes—the 100m patient crisis

Discussions of the most obese countries in the world usually start with a nod to the US. But while a third of its population has a body mass index over 30, America barely scrapes into the world's top-20. At the top are Pacific islands such as American Samoa and Nauru, where almost three-quarters of the 65,000 people are overweight. Thankfully the prevalence of obesity among the 1.4bn Chinese is far from those levels. However, the proportion of the population that is overweight has nearly doubled in the last quarter of a century to catch up with America. This rapid increase of obesity in China is worrying, not least because those growing waistlines have helped spur a corresponding surge in the incidence of diabetes.

Diabetes's spread is also being facilitated by other China-specific factors. The first concerns diet. On average, a Chinese person eats three to four servings of rice per day compared with one or two for Americans. This high intake of carbohydrates can increase the associated risk factors. Indeed, a Chinese study showed that women in the highest quintile of rice intake had a three-quarters higher risk of type-two diabetes (the dominant form of the disease) than women in the lowest quintile. Another factor causing a rise in diabetes is the rapid evolution of the Chinese workplace. The shift from working in agriculture to manufacturing to services has led to a decrease in people's physical activity. Since 1991, men have seen a 30 per cent drop in the number of minutes that they are active in a day. For women the decline is 40 per cent.

Partly as a result of these factors, the prevalence of diabetes in China has tripled since the start of the millennium to nine per cent. That compares with the global rate which doubled to eight per cent over the same time period. It is estimated that there are now about 100m diabetes patients in China, quadruple the number in the US and one-quarter of all patients globally. And this problem is likely to get worse due to the upcoming demographic hangover caused, in large part, by the now-defunct one-child policy. Today, about one-tenth of Chinese are 65 years or older. By 2050 it will be one-quarter and as people age diabetes becomes more prevalent.

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Sadly, almost two-thirds of China's diabetes patients are undiagnosed and less than a fifth receive treatment for their condition. Indeed, despite the number of patients, less than 10 per cent of global diabetes expenditure occurs in China. For those sufferers not receiving the attention they need there are some signs of hope, however. As China moves towards its objective of establishing a basic universal healthcare system by 2020, it will, this year, begin to revamp the 'Essential Drug List' and 'National Reimbursement Drug List'. This should mean more diabetes treatments.

What does this mean for pharmaceutical companies? For large American and European groups the combination of a growing market and government support creates an enormous opportunity. Spending on diabetes drugs hit 27bn renminbi in 2014 and has grown at an annual rate of 15 per cent since 2012 when the last iterations of the EDL and NRDL were released. That outpaced the growth in the broader Chinese drug market by over one-eighth. There is more potential yet. If the diagnosis rate climbs to 85 per cent and the treatment rate for those diagnosed to 80 per cent, then the market for associated drugs is potentially five times greater than it is today.

So far, pharmaceutical firms have been benefiting from these trends. The Chinese diabetes market has only four meaningful global competitors and three domestic ones. This has kept the price of insulin, a major treatment for diabetes, relatively stable while other therapeutic areas have seen price wars between a greater number of rivals.

The multinational drug companies, in particular, have enjoyed a good run. Already, Novo Nordisk, Sanofi and Eli Lilly have captured about 85 per cent of the insulin market for hospitals. Interviews with physicians have revealed that tier-one hospitals generally prefer insulin from multinational companies in the belief it is of better quality than the domestically-produced sort. There are few meaningful head-to-head

studies to back this up, however, one factor that may influence some physicians' decision to avoid domestic insulin is the fact that medical-grade cresol, a key ingredient in insulin, is not available in China. Domestic producers use industrial-grade cresol instead. In addition, Chinese manufacturers blame prolonged regulatory processes for discouraging them from improving production processes. Regulators in the US and Europe tend to be more efficient.

However, domestic firms are starting to catch up. In the three years to the first half of 2015, local manufacturers doubled their share of the broader insulin market to almost two-fifths, of which domestic bellwether Tonghua Dongbao had a 19 per cent share. That contrasts with the rest of the drug market where, over the same time period, local firms maintained a dominant three-quarters share. In addition, local firms have lodged 25 applications for fresh 'inhibitor' drugs. These relatively new drugs currently comprise about 20 per cent of the market in the US, but not being included on the 2012 NRDL means they share just one per cent of the market in China. Updated versions of these medications, however, are being considered this year and they stand a strong chance of inclusion. If they are, a new market would immediately open for these locally-produced drugs.

The next round of innovation from domestic companies is taking the form of 'insulin analogues', genetically modified forms of insulin that better mimic the natural pattern of insulin release than regular synthetic insulin. While American and European companies currently have the upper hand in this research, Chinese companies have increased research funding dramatically over the past decade and have lodged 26 applications for these types of drugs. The next step is to convince the top doctors and hospitals that their products are just as good as those from the major global drug companies. If they can do that, a price

war may ensue that would likely benefit the local producers. As with many other opportunities for foreign companies in China, the initial exuberance at the dazzling market size can give way to a cooler reality. ●

Is inflation really dead?

It may well be the global economy faces a threat from deflation. But even those who believe this wholeheartedly must acknowledge the forecast is speculative at best. Economic models have struggled with inflation in recent years. Even Janet Yellen recently expressed “some humility” about the Federal Reserve’s inflation forecasting abilities. The truth is we understand the movement of prices like we know the rumblings of a human mind. It is arrogant to assume deflation. Likewise, it is unwise to dismiss inflation out of hand. >

Given most investors are worried about deflation these days, the goal of this article, and indeed this issue of Konzept, is to warn against ignoring the opposite. Which is ironic considering that in the years following the financial crisis inflation consistently surprised to the upside. Indeed, its resilience in the face of high unemployment led the IMF to refer to deflation as the dog that did not bark.¹ If deflation did not even materialise in the face of double digit unemployment across most advanced economies, it is hard to make a convincing case that it will show up many years into the economic recovery.

Given this background the ever louder clarion calls for pre-emptive action against impending deflation are puzzling. Just as robust a case can be made that in coming years the world will be grappling with the opposite problem of inflation being too high rather than too low. We summarise the arguments why below.

The first crack in the deflation thesis is that oddly, it has gained momentum over the past 12 months just as actual inflation was rising again. At the end of 2015 annual consumer price inflation – excluding food and energy – across G7 countries was a bit over 1.5 per cent, the highest level in three years and up from 1.1 per cent a year ago. While these numbers remain low they are surely a long way from deflation. The current rate is also above the average for this millennium as well as the seven years preceding the financial crisis. Similarly, headline inflation in emerging markets was above five per cent last year, the highest rate in four years and once again higher than the average this millennium. Deflation, it seems, is everywhere except in the data.

Nor should rising core inflation in advanced countries come as a surprise. America's economy, where core CPI has nudged above two per cent for instance, reported its 63rd straight month of gains in payroll employment last December. With 13m jobs added this cycle the unemployment rate has fallen below five per cent. That is consistent with the Fed's estimate of full employment. Yet the central bank and the Congressional Budget Office reckon unemployment will drop further to 4.5-4.7 per cent. To put such numbers in context, back in 1999 when the unemployment rate fell to these levels, the Fed's view was that the pool of available workers had fallen to an "irreducible minimum".

Deflationistas, though, tend to ignore this full employment story and point instead to a lack of wage growth as a sign of residual slack and hence subdued inflation in future. But this argument is riddled with shortcomings. For starters, there is no academic evidence to suggest wages are a leading indicator of overall inflation or deflation.² The two at best move coincidentally and if anything, price moves are a better predictor of wages. Bottom line is inflation or deflation can appear, regardless of recent

wage trends. And even for those who believe in a link the reality is that current data show upward not downward wage pressure. In the US, for example, the number of small businesses planning to raise worker compensation, or the number of employees quitting their jobs, both suggest wages rising by three per cent later this year based on historic correlations.

It is also worth noting here that the relationship between labour market slack and wages is potentially subject to so-called non-linearities. In other words, wage inflation tends to remain comatose until unemployment hits a certain low level after which it rises sharply. That means if policy makers wait until that point before acting they risk being too late.

Another problem when linking wages to inflation is that it introduces the thorny and mysterious variable of productivity. If you take the official numbers in America at face value, for example, they do not suggest impending deflation. That is because output per hour for US workers over the past five years has grown at just 0.5 per cent annual rate compared with nearly five times that pre-crisis. Thus, despite slower wage growth, unit labour costs, which measure wages adjusted for productivity, are growing at nearly 2.5 per cent. That is bang in-line with the long-term average of the quarter of a century leading up to the 2008 crisis and roughly consistent with delivering the central bank's two per cent inflation target.

Deflationistas calling for yet more accommodative monetary policy dismiss this argument. They argue either that productivity growth is higher than reported in the numbers, or that productivity will eventually pick up given enough time – thus allowing for faster wage growth without inflationary pressures. Larry Summers, for example, reckons measurement errors downplay productivity growth as statisticians fail to keep pace with the benefits of new technologies. As these numbers are revised up eventually, actual unit labour costs will be shown to have grown at a more acceptable rate therefore allowing for faster wage growth. Those enamoured by the productivity-enhancing abilities of recent technological innovations should bear in mind Silicon Valley entrepreneur Peter Thiel's lament "we were promised flying cars but got 140 characters instead".

Yet others concede the current productivity slowdown is real but reckon that the slowdown is a temporary blip. Hence, they argue, that when productivity growth recovers inflation pressures will ease. The reality is economists are in sharp disagreement over explanations for the current productivity slowdown let alone any anticipated acceleration. That makes refuting the temporary blip argument difficult. However, the risks of believing it and being proven wrong should be clear to the Federal Reserve officials. James Bullard, now the St Louis Fed President and a FOMC voting member,

co-authored a paper a decade ago that pinned the blame for the great inflation of the 1970s on the Fed's misreading of a slowdown in trend productivity growth.³

In addition to these productivity-based arguments, policymakers are sometimes advised to allow faster wage growth so as to force up the labour share of economic output. In the first decade of this millennium the share of worker compensation of nominal output fell sharply from around 64 to 56 per cent. Attempts to reverse this with policy easing rely on the mathematical relationship that increases in unit labour costs must show up either as overall inflation or as an increase in the labour share of output.⁴ But once again there is no certainty that tolerating higher wage growth for an extended period will result in real gains in workers' pockets rather than being nullified by higher inflation. The fact is that the decline in labour share of output in recent decades has occurred across the developed world and most likely reflects long-term and relatively less-well understood structural factors. Loose monetary policy is hardly the right tool to address these.

Nor are those calling for expansionary policy in order to ward off impending deflation concentrating their sights solely on monetary levers. There are also growing calls for fiscal easing to share the burden of supporting the economic recovery. Indeed, fiscal policy in a number of advanced countries is turning expansionary. The US federal deficit, for instance, after shrinking for six years since 2009 and reaching 2.5 per cent of output last year is projected to grow larger almost every year over the next decade.

But again the deflationistas have to be wary of what they wish for here. Such a concoction of easy monetary and fiscal policy is a powerful potion. As Ben Bernanke explained in a recent interview "a combination of tax cuts and quantitative easing is very close to being the same thing as helicopter money".

Indeed, few understand the upside inflation risk from this policy combination more than Mr Bernanke. In 2003, he claimed "the primary cause of the Great Inflation, most economists would agree, was over-expansionary monetary and fiscal policies, beginning in the mid-1960s and continuing, in fits and starts, well into the 1970s." In retrospect, the oil shocks merely proved to be a timely and convenient distraction to blame for the policymaking frailties of the time.⁵ Inflation in America had already risen from three to eight per cent in the year before the first oil shock hit in 1974. The oil shock merely pushed it to 12 per cent.

While on the subject of blaming exogenous events, today's deflationary fears are also being fanned by deteriorating international conditions. Everything from China to the slump in commodity prices is being cited as a reason to dismiss any return of inflation. Before examining these it must be remembered at the

outset that historically the notion of global deflationary winds rendering domestic policy impotent has always been exaggerated. The correlation between core inflation in 50 countries over the past 15 years is less than ten per cent, the lowest in four decades.⁶ As Martin Feldstein noted, “domestic inflation reflects domestic monetary policy”.

So what about the fear preying much on investor minds of late that a depreciating renminbi will lead to imported deflation? Once again such concerns are overcooked. First, the renminbi’s 40 per cent appreciation against the dollar in the eight years from 2005 had little inflationary impact in the US. Add in the significant wage increases in China over the period and the real appreciation of the renminbi was even higher. Second, a renminbi devaluation is not a foregone conclusion. And even assuming a depreciation of the Chinese currency the impact of its stimulatory effect on the country’s slowing economy will counter some of the negatives that investors focus on.

As for the detrimental effect on US inflation, Fed models calculate that an isolated ten per cent move in the dollar-renminbi exchange rate pushes down US core inflation by just 0.1 percentage point after one year. Even if a Chinese devaluation was replicated across other emerging Asia countries, the impact on US inflation doubles to only 0.2 percentage points. Risks of a deflationary headwind from China do exist, but on the flip side there is the danger of policy error by overestimating their impact.

After China, deflationistas worry about the slump in commodity prices. Oil in particular is currently nursing a 50 per cent decline over the past year. But what matters is the prognosis for the next 12 month. Despite a slew of recent cuts, the median forecast of Wall Street analysts predicts oil to average \$47 over 2016 compared with mid-\$30s today. Both the World Bank and the IMF are also forecasting prices to finish the year higher than where they started. Others predicting a rebound in the second-half of 2016 include the boss of BP and the UAE oil minister. Whether these forecasts are reliable or reflect an inherent bias, oil returning to \$45-50 in a year’s time from now is hardly an outlandish scenario. After all it was there only a few months ago.

What is more, oil market fundamentals are moving in the right direction. US tight oil production is finally in decline and by year-end will be almost 25 per cent lower than the peak level of 5.5mn barrels a day in mid-2015. Declines in US supply could open the way for OPEC production cuts as well. Deutsche Bank analysts estimate an oil market surplus of 600,000 barrels per day this year, half the level of 2015, and falling to just 160,000 barrels per day next year. Akin to the risks emanating from China, even though further deflationary impulses from commodities are possible,

Even if the remedy for higher inflation is well understood, the pain of executing it may overwhelm policymakers. A combination of high public debt, bloated central bank balance sheets and a flatter Phillips curve will make the task particularly painful.

the potential upside risks to inflation seem to have been expunged from the collective conscience.

And don't forget that at \$47 a barrel, oil prices in a year's time will be 50 per cent higher than they were in January this year. If core inflation in the US continues its current trend of steady rises the combination of the two could result in headline inflation that surprises consumers and market participants alike. Such a shock could seriously damage the public's inflation expectations if, as Olivier Blanchard recently hypothesised, decreased inflation salience is behind the relative stability of inflation expectations. Once inflation attracts people's attention again, those expectations may prove to be less stable than commonly assumed.

Actually, it is worth reflecting on this in more detail. Policymakers lay great emphasis on the anchoring of long-term inflation expectations and quite often attribute this to the credibility of central banks' inflation targeting regimes. But this interpretation is too flattering. A paper by Carola Binder⁷ at Harvard highlights that barely a quarter of adults surveyed in America can even pick the name of the Federal Reserve chair from four possible choices, let alone provide a reliable estimate of future inflation. When asked to guess current inflation the average answer of the public was over seven per cent. Consumer surveys of future inflation also show very high levels of divergence among respondents, with one-third expecting inflation to be above five per cent in a year's time.

If main street suffers from too much variation in inflation expectations, professional forecasters suffer from too little. In the Blue Chip survey of economists about US inflation expectations between six and 11 years from now, the difference between the top ten and bottom ten responses averages well under one per cent since 2000⁸. The tendency to stick close to the consensus view also makes professional forecasters slow to adjust to inflection points for inflation. In Japan, for instance, when inflation was plunging in the 1990s the consensus forecast for inflation two years into the future overestimated the actual rate for nine straight years by an average of almost one percentage point.⁹ Fed economists at the June 2003 FOMC meeting put a 40 per cent probability of deflation in 2004 and 2005; the actual inflation turned out to be three per cent in both years.

Nor are market-based measures of inflation expectations any better. To the extent that the Fed now refers to them as measures of inflation compensation (also known as breakeven rates), they suffer from serious shortcomings. The market prices of the fixed income securities used to deduce these expectations are subject to short-term noise such as liquidity and risk aversion. And for reliable indicators of inflation expectations in the very long-term, say five to ten years hence, these measures are too

highly correlated to short-term movement in oil prices. For instance, one-third of the change in the five-year-five-year inflation breakeven over three months can be explained just by oil's move over the same period.

Thus it is perfectly possible that inflation expectations and indeed inflation suddenly break anchor. Some, however, argue this does not matter as thanks to the Volcker-era experience central bankers now know how to tame high inflation. Surely this is wishful thinking. Perhaps the most surprising aspect of inflation's behaviour since the start of the financial crisis can be characterised as inertia in the face of extreme moves in the unemployment rate. In so far as a Phillips curve still exists, a recent IMF paper by Messrs Blanchard, Cerutti and Summers estimates its slope to be a third flatter than during the 1970s.¹⁰

A flatter Phillips curve, characterised by quiescent inflation despite low and falling unemployment, creates an obvious temptation to continue with accommodative policies and push unemployment ever lower. This temptation should be resisted. The downside of a flatter Phillips curve is that after inflation has broken upwards, the costs of bringing it back down in terms of unemployment will also be much higher. It is also unlikely the febrile politics of current times would tolerate this.

Moreover, when Chairman Volcker took office in 1979, years of inflation had whittled down US government debt to 40 per cent of output, the lowest it has ever been post-world war II. In contrast, public debt today is close to 100 per cent of output. The consequences of a sharp increase in real interest rates to counter inflation may devastate public finances. Never mind that central banks themselves will still be weighed down by their own bloated balance sheets. Even if the remedy to higher inflation is understood, the pain of executing it may well overwhelm policymakers.

It is hard to emphasize enough, since few investors today remember rampant inflation, that controlling spiralling prices is never painless. Former British Prime Minister John Major put it best in a speech as chancellor of the exchequer in 1989, "If the policy isn't hurting, it isn't working". Throughout the 1970s, various tools were tried, starting with Fed Chairman Arthur Burns's income policies to President Ford's 1974 campaign titled 'Whip Inflation Now', later characterised by Alan Greenspan as "unbelievably stupid". The bitter medicine under Chairman Volcker became palatable only after everything else had been tried and failed.

The conclusion? While investors and policymakers are fixated on avoiding a potential deflationary scenario, it should not be dismissed that the impending problem over the next few years is one of inflation being too high rather than too low. With the significant improvement in labour markets, inflation across

advanced economies is slowly approaching normalised levels but the pressure on monetary and fiscal policy to remain loose continues unabated. An increase in inflation would catch everyone by surprise, cause immense damage and would not be easily tackled. ●

- 1 IMF World Economic Outlook April 2013
- 2 "Are wages useful in forecasting price inflation" San Francisco Federal Reserve economic letter, November 2015
- 3 "Did the great inflation occur despite policymaker commitment to a Taylor rule?", Bullard and Eusepi, St Louis Fed working paper, June 2003
- 4 "Wage growth, inflation, and the labor share", Barrow and Faberman, Chicago Fed letter 2015 number 349
- 5 The role of policy errors relative to oil shocks in fuelling the great inflation has been stressed by others, most notably by the late Ronald McKinnon
- 6 Bank of England Governor Mark Carney's speech at Jackson Hole, August 2015
- 7 "Fed Speak on Main Street", Carola Binder, 2015
- 8 "Fundamental disagreement", New York Fed staff report no. 655, December 2013
- 9 "My intellectual journey in central banking", Masaaki Shirakawa, September 2013
- 10 "Inflation and activity – two explorations and their monetary policy implications", Blanchard, Cerutti and Summers, November 2015

Down and not out in commodity-land



We are oil and metals experts, preferring to leave questions about inflation rates to the economists. What we can say with confidence, however, is those pinning their deflation forecasts on further substantial declines in commodity prices risk being sorely disappointed. Sure the current slump can worsen. But in this article we explain why the economics of oil and metal markets mean it is far more likely that prices rise from here. ➤

Let us begin with oil. In January prices touched a decade-low of \$26 a barrel and have averaged just over \$30 so far this year. That means a significant volume of future oil projects identified two years ago, when oil was above \$100, no longer make sense. In response, oil companies have shelved \$380bn of capex, equivalent to 1.5m barrels a day of production that was meant to arrive on the market in 2021. Offshore projects account for 80 per cent of this deferred production; deepwater represents 58 per cent. Furthermore, the breakeven oil price for these postponed projects remains an average Brent price of \$64 a barrel for deepwater projects, \$55 for shallow water projects and \$58 for onshore and oil sands projects. Way above today's prices, in other words.

So even as breakeven prices for US tight oil have fallen by 30 per cent since 2014, global breakevens have shown some degree of stickiness. That means when the market returns to a deficit, prices should rise towards the higher breakeven level. Furthermore the contraction in US production and the pace at which global demand growth chips away at excess supply mean that the surpluses we are now experiencing, however severe, should fade over the next few years. US tight oil production, for instance, is already well below its mid-2015 peak of 5.5m barrels a day and will likely be down to 4.2m barrels by the end of this year. This bolsters our medium term expectations for oil prices to rise towards US breakevens of \$50-55 a barrel by next year.

None of this answers the most urgent question currently on everyone's mind: how low could oil prices go? Theory tells us the marginal cost of production should be the best guide to a price floor, as this defines the level at which production would cease. For reference sake, average marginal costs range from \$7-17 a barrel in US onshore tight oil, against a global weighted average of \$9. However, a certain proportion of these operating costs are likely to be on long contracts, which means that effective cash costs are even lower.

If we were to target \$9 a barrel as a trough, then a host of additional considerations must come in. Not least of these is the possibility that planned capex might be ratcheted so low as to engender a greater likelihood of a V-shaped recovery in prices over a three to five-year horizon. In addition, this level of pricing must surely raise the probability of OPEC action, even taking into account very steadfast rhetoric from Saudi Arabia that insists upon non-OPEC involvement in any coordinated supply reduction. Finally, a severe degree of distress suffered by upstream oil companies, particularly high-yield issuers in the US, may negatively affect the industry's ability to respond to above-breakeven prices, thus raising the possibility of overshooting the equilibrium to the upside over a five-year horizon. The lower prices go, the greater the likelihood of a sharp and persistent rebound.

This may help to explain why oil market analysts are loathe to lower their quarterly price forecasts to the current low spot price of oil, let alone match the level of marginal costs. At the end of January, for example, the median forecast of 34 analysts for the average oil price in 2016 was \$47 a barrel.

It is also worth responding to those who describe the market as besieged by a “flood of oil”. We believe that a forecast 2016 average surplus of 600,000 b/d should be put in perspective against the 1.2m b/d of surplus suffered in 2015. Moreover, worries over the extent of inventory builds this year should be tempered by the knowledge that US crude oil storage is currently two-thirds full and likely to rise to three-quarters full by April if imports remain at 7.7m b/d (itself a key uncertainty). Finally, a comparison with inventories in other markets would show that oil inventory, even at its current above-average levels, could still be regarded as reasonable. OECD commercial crude oil inventories of 1.2bn barrels together with global floating storage of 136m barrels represent 29 days of OECD demand. By comparison, current inventory in the US natural gas market represents 45 days of demand, while US coal-fired powerplants hold 80 to 87 days of supply.

Therefore we argue against an overly negative view on oil prices, even though our forecasts are some tens of dollars above industry-average marginal costs. While picking a low will remain a hazardous exercise for the next 12 months, we believe that the challenges of meeting trend demand growth over the next three years will gradually come into clearer focus. That should move prices higher.

The story for metals is analogous in parts, although despite the length of the slump we believe a recovery in prices is further out. Indeed, if prices continue in the same vein as they started 2016, this will be the sixth down year, with the Bloomberg spot base metal index down more than fifty percent since the recent peak in mid 2011. The slowdown in Chinese demand notwithstanding, the fall in metal prices is both symptomatic of the deflationary environment and a cause of deflation. It is no surprise that Chinese manufacturing purchasing prices have been in negative territory for nearly fifty months in succession. We forecast one last leg down in metals prices, but with an end to deflation finally in sight.

How do we arrive at this view? Metal markets have been either well supplied or over supplied for the past five years, a combination of slowing Chinese demand growth and a surge of mined output, as many of the long gestation projects finally started to deliver tonnes. In this environment prices should fall to the marginal cost (nominally the ninetieth percentile on the industry cost curve), forcing closures and ultimately balancing the market.

Supply has proven to be sticky, however, with miners balking at the costs and environmental liabilities of shutting an operation. Strong deflationary forces have given management teams the misconception they can beat the decline in metals prices by reducing costs, and in so doing maintain profitability. To a certain extent the miners have been victims of their own success; their ability to take out costs as a group has helped the fall in metals prices.

What have been the other deflationary forces in metals? One is the fall in energy prices, both oil and coal. In total, these inputs account for 30 – 40 per cent of direct and indirect costs. Another is the depreciation of currencies of commodity producing countries against the US dollar with most miners having at least half of their costs in local currencies. Then there is the deflationary feedback loop, where lower prices also translate into lower input costs and royalties. The last and least understood area of deflation is the change in operational mode. In good times, mine strategies and planning are focussed on revenue maximisation; in bad times, the approach changes to margin protection and cost cutting. Actually, miners have an additional lever to pull. They can mine higher grades, which equates to shifting less dirt for more metal. This is fine in the short-run, but compromises the architecture of a mine, making some reserves less economic to extract later.

Our call for a final leg down in metals is based on weaker than expected oil prices and the potential depreciation of the Chinese renminbi. Metals currently are factoring in oil at \$40 a barrel – not recent prices close to \$30. Furthermore, a weaker Chinese currency is likely to drag down commodity currencies even lower. But that is likely to be the end of this deflationary cycle. Management teams may be able to take out more costs, but we are at the point where these cuts would be unsustainable, ultimately leading to lower output in the future.

Current spot prices are 40 – 50 per cent below incentive prices, which are the prices required to earn a 12 – 15 per cent rate of return on a project. As a result, capital spending on new capacity has simply dried up, with industry capex down over 60 per cent versus the peak in 2012. Ore bodies are depleting assets and current capex levels are not sufficient to sustain current output for more than two to three years. In copper, for example, the world needs two new large-scale mines every year just to offset the reserve depletion.

As with oil, current spot prices for metals are well below the marginal cost of most producers. As an extreme example, nearly two thirds of the nickel industry is under water. That has placed mining company balance sheets under intense pressure. We estimate that the net debt of the largest companies will approach an uncomfortable 3.5 times ebitda by the end of the year. This

could force an industry tipping point and, indeed, supply curtailments have already started to gather momentum. In aggregate, around five per cent of the industry's capacity is in the process of closing. We need at least ten per cent of the capacity to be shuttered to reach critical mass. Given the stresses in the industry, we think this will occur during 2016 and will stabilise prices. It may take a little longer for capital constraints to become apparent, but as they do, metal price deflation will quickly turn to inflation.

The fortunes of the metal and oil markets are inexorably linked. Metal markets will respond positively to a rebound in the oil price, which in turn will put the squeeze on drilling costs. From there on, the inflationary cycle will begin once more. ●

Liar, liar, payrolls on fire



In the words of an immortal (if unknown) poet, “demographics is destiny”. Most economists would probably agree. Trouble is, demography is complex and messy and hence an inconvenience that economists would rather dispense with. The default assumption is often to treat demographics as a constant in many economic models – for example that the population grows at a constant rate. Then there is Wall Street which simply ignores demographics in most of its forecasts. Still, these approaches are not unreasonable given the short term horizons of many models and the glacial pace of demographic change. ➤

But 2016 could turn out to be one of those years where demographics, specifically, changes in the labour force, is the key to understanding the ongoing puzzle that is the US economy. This makes the nonfarm payrolls report even more important to watch than usual.

There are few more closely watched American economic data releases than the monthly employment report and update on nonfarm payrolls on the first Friday of the month at 8:30 am sharp. It is the first broad-based indicator of how the economy is faring, and often sets the tone for trading in coming weeks. It is also a key input into forecasting models for many other data series.

Over the past several years, the labour market has been a steady tailwind for the US economy and financial markets with nonfarm payrolls climbing more than 200,000 nearly every month even as overall growth remained sluggish and various regions and markets around the world weathered downturns and crises. The Fed, in setting its dots showing the expected path of rate increases over the next year and beyond, is clearly counting on that tailwind staying in place.

However, there is a significant risk that nonfarm payrolls growth will both soften and become rather more erratic in coming quarters simply due to underlying demographic trends. In turn, this could lead to slower trend growth and cause significant uncertainty and volatility for risk assets.

On the surface, the steady growth in employment in the current cycle has been broadly similar to many previous post-war cycles. But the underlying dynamics are quite different. In previous cycles nonfarm payrolls growth came initially from rehiring unemployed people and transfers from the farm sector. But within about a year, growth in the labour force became the predominant driver. During the cycles of the 1980s, 1990s, and 2000s, labour force growth accounted for more than 70 per cent of total nonfarm payrolls growth. Since the financial crisis, nonfarm payrolls have expanded largely from reemploying the unemployed. To put numbers on it, unemployed people and farm workers have contributed in the order of two million people annually to nonfarm payrolls growth whereas growth in the labour force has accounted for only about one-third of the total.

With the unemployment rate below five per cent, this once endless supply of unemployed labour is rapidly running out. Deutsche Bank forecasts the unemployment rate to fall to 4.6 per cent in 2016; this implies that unemployed people will contribute only about 600,000 to nonfarm payrolls while the farm sector could yield an additional 100,000 people. This is a massive shift and can be thought of as how the weather changes abruptly when transitioning from a high pressure to a low pressure zone in a short period of time, or when crossing a mountain range.

Hence future gains in nonfarm payrolls employment will have to come more from growth in the labour force. That in turn

will be a function of two contrary forces: baby boomers retiring and dropping out of the labour force, and their children – the so-called echo boomers – entering their peak participation decades. In recent years labour force growth has been erratic, ranging from 1.5m in 2012 to negative 0.4m in 2013. Part of this reflects uneven economic growth. But the real culprits are population bulges at both ends of the work force. In 2010, there were particularly large cohorts of 19 and 20 year-olds (born in the early 1990s), and 63 years olds (born in 1947).

To understand why these population bulges matter, look at labour force participation rates across age groups. The participation rate for 16-19 year-olds is about 35 per cent, rising to 70 per cent for 20-24 year-olds. As workers enter the peak years of 25-54, the participation rate rises to about 80 per cent. At the other end of the spectrum the participation rate drops sharply. Just 63 per cent of 55-64 year olds are part of the workforce, and that rate collapses to 18 per cent for those aged over 65. These bulges have meant the past few years have been a tumultuous period for the labour force.

Projecting current trends, and assuming migration remains around one million per year, about 4m new people will enter the labour force annually over the next couple of years while 3m will retire. Over time, the number of entrants will gradually decline while retirees will gradually rise. As a result, the labour force could grow by about 1m this year but this growth could fall to 795,000 by 2020. That implies total potential nonfarm payroll growth (including new entrants and unemployed people) of about 1.7m, or a monthly average of about 140,000 – well below that of recent years. Even if the economic recovery remains in place, the monthly run rate could fall to well below 100,000 by 2020.

These demographic trends are broadly understood. The tricky part, however, is that the drop-in rate of echo boomers and drop-out rate of baby boomers is unlikely to progress in a straight line. One can envision scenarios where nonfarm payrolls growth jumps over 300,000 in one month but then collapses to zero or even shrinks in the next. The young are relatively easy to predict. They drop into the labour force fairly steadily due to economic necessity as they finish school or are no longer supported by their parents. In contrast, the drop-out rate for baby boomers, whose finances have been ravaged by the financial crisis, are a wild card – we just do not know how they would react, say, to higher wages.

Unfortunately, there is no straightforward analytic model to quantify what these ongoing changes in the labour force are or how they will affect the economy and vice-versa. One possible way to approach the problem, though, is a scenario analysis which entails laying out more qualitative scenarios of possible implications.

During the cycles of the 1980s, 1990s, and 2000s, labour force growth accounted for more than 70 per cent of total nonfarm payrolls growth. Since the financial crisis this has dropped to 30 per cent.

With the unemployment rate already below five per cent and the labour force projected to grow by one million this year, the average monthly addition to payrolls could drop to about 140,000.

Scenario 1: underlying economic growth remains in the 1.5 to two per cent range, in line with recent years. The risk in this scenario is that nonfarm payrolls are more erratic than in recent years, leading to confusion about whether the economy is getting stronger or weaker. If monthly nonfarm payrolls fluctuate in a wide range, it may lead to uncertainty about the economy, higher volatility and pressure on risk assets. Volatility could also obscure the slowing of payrolls growth and the concomitant slowing of the broader economy, and lead to mixed communications from the Fed. Likewise, strong numbers could lead to expectations of stronger growth, causing investors to pile into risk assets, and the Fed to consider accelerating the pace of rate hikes to a level the economy cannot support. Conversely, weaker nonfarm payrolls could lead to more risk aversion and the Fed remaining on hold. Either could prove to be a policy mistake.

Scenario 2: the economic recovery strengthens. In this scenario, employers would probably face labour shortages. A likely strategy would be to convince baby boomers to delay retirement, resulting in a surge in nonfarm payrolls as there are fewer retirements to offset young entrants. There could also be a rise in wage inflation although the benefits could be skewed more toward older workers rather than being spread across the labour force. The Fed could take these developments as indications that the economy is finally moving beyond the financial crisis and move to normalise (or raise) rates more rapidly. The problem is baby boomers will delay retirement for only so long. But until then the stronger nonfarm payrolls and wages could make the recovery appear stronger than it really is, leading to a sharp slowdown either when retirements resume and nonfarm payrolls return to earth or due to tighter Fed policy.

Scenario 3: underlying economic growth slows further. In this scenario, demand for labour would likely fall and employers could encourage baby boomers to retire sooner. In the short run this could maintain equilibrium in the labour force, with minor adverse impacts for young and prime age workers. The problem would come as the economy eventually recovers and retired baby boomers do not return to the labour force resulting in labour shortages and slower trend growth.

Scenario 4: immigration falls. The scenarios so far assume immigration to the US remains near one million people annually. There is a risk that inflows could be disrupted in the near future. First, the Supreme Court is planning to rule by mid 2016 on the executive order allowing some four million illegal immigrants that have American-born children to avoid deportation. If the Court rules against the order it is unclear whether or how many people would be deported or how quickly, but the sheer volume

of potential deportees presents downside risk to labour force growth potential. In addition, immigration is a hot-button issue in the upcoming presidential election. Current policy could change significantly with a new administration, more likely in the direction of limiting legal immigration.

Scenario 5: Whatever happens in the economy, Adam Smith's invisible hand could come into play, guiding the labour market to a seamless transition to more or fewer workers whether through adjusting wages or via the revolving door that separates the employed and unemployed. That, obviously, is Wall Street's base case.

As investors digest all this, they may or may not decide to worry. If the fifth scenario prevails (the invisible hand), they can carry on as normal. If one of the other four scenarios plays out, things could go from messy to more so. That is because, overall, the message of these scenarios is negative for the economy. They imply slower growth in the labour force and nonfarm payrolls that almost certainly means transitioning to slower economic growth. Further complicating the picture, the adjustment process is likely to be volatile and erratic and that's just within the labour market. This tendency will be magnified if (as is likely) most economists and investors continue to act as though the world is still in scenario five where the labour market is supposed to react to the economy. This could lead to markets and policymakers overreacting to the monthly nonfarm payrolls report by being either too bullish or bearish, or missing a gradual slowing trend if it proves to be relatively stable in the short term.

There is no easy answer to this conundrum and neither theory or experience provide a meaningful guide either for understanding the transitions taking place in the labour market or how they will affect the broader economy. Savvy investors will view incoming employment reports with a careful eye as to whether they are saying more about ongoing labour market or economic dynamics, and should be prepared for the trading opportunities that arise if the herd runs the other way. ●

Demographics and inflation

Over the past 20 years, Japan's chronic economic malaise and deflation has run in tandem with its rapidly ageing society. This has created the presumption that there must be a link between the two.

Reinforcement for this view comes from the US where in the mid-20th century, the population expanded rapidly after the post-war baby boom and inflation climbed steadily through into the 1970s. Additional evidence can be gleaned from many emerging markets which have a tendency to exhibit growing populations and high inflation. Then there is the inability of major developed countries to reignite inflation in recent years which has led many to question whether ageing societies are at fault.

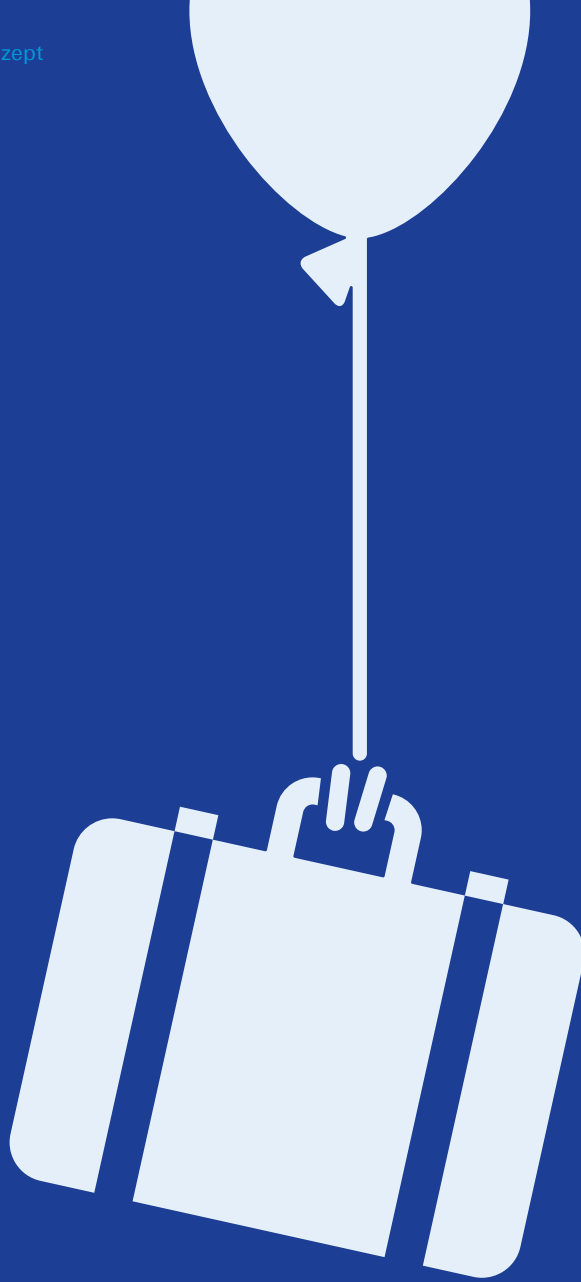
The intriguing part is that economists do not have a neat theoretical model to explain how demographics and inflation should interact. To investigate, two major recent studies attempted to carry out a comprehensive empirical analysis of inflation and demographics across OECD countries over the past 60 years in the hope that their findings might serve to help develop both theory and practical policy. They used similar datasets based on IMF, World Bank, and United Nations data.

One study by the IMF strongly suggests that an ageing society and slower population growth was associated with lower inflation.¹ A second study, conducted by the Bank for International Settlements, came to a diametrically opposite conclusion – that societies with a higher ratio of dependent people (young and old combined and separately) were associated with higher inflation while those with larger prime working age populations experienced lower inflation.² Their tentative explanation was that societies with more dependents tend to have excess demand relative to supply, while those with a lot of working age people produce more than they consume.

A third, more theoretical, study was conducted by the Federal Reserve Bank of St. Louis and concluded that societies with a higher elderly population would demand policies through the political process aimed at lower inflation to protect fixed income streams. In contrast, those with a younger demographic would favour policies that encouraged higher inflation because they rely more on wages and debt.³ However, to focus exclusively on the interaction between demographics and inflation, their model assumes no intergenerational transfers such as social security and medical care. Given these kinds of transfers are part and parcel of most OECD societies, they could well affect inflation preferences and it is questionable as to how useful these insights are for investors and policymakers.

With many countries either close to, or in the midst of, profound demographic shifts it is disconcerting that there is so little common ground between the work of demographers and economists. That is particularly so given that ongoing and future shifts in populations are well known. The problem is that these issues fail to fit neatly into the toolkits of mainstream economists and policymakers. Until they can figure that out, there seems to be little to do but muddle through and try to learn from experience. And hopefully avoid any major policy missteps. ●

- 1 "Impact of demographic change on inflation and the macroeconomy", Jong-Won Yoon, Jinill Kim, and Jungjin Lee, IMF Working Paper WP/14/210, November 2014
- 2 "Can demography affect inflation and monetary policy?", Mikael Juselius and Elöd Takáts, BIS Working Paper 485, February 2015
- 3 "Demographics, redistribution, and optimal inflation", James Bullard, Carlos Garriga, Christopher J. Walker, Federal Reserve Bank of St. Louis, May, 2012



Inflation and company valuations

No one is expecting inflation to return any time soon. Indeed, it has been so long since the last era of significant inflation in developed countries that most investors have no experience of trying to make a return against a backdrop of rapidly rising prices. You should never say never, though, as the previous articles in this magazine explained. But what is the best strategy? Either for curiosity's sake, or for those who worry the death of inflation has been exaggerated, it is worth thinking about the answer. This article explores the theory as well as the real-life investments that have worked well in past. ➤

The garden variety answer to the question of what to do during periods of inflation is buy real or hard assets instead of financial assets. In this argument hard assets such as real estate, commodities and, inevitably, gold, are physical assets that have intrinsic value. Therefore, their value should rise in nominal terms with inflation. A financial asset, on the other hand, merely represents a contractual claim on an underlying asset.

Yet this framework is not especially useful. For one thing, some financial assets are undoubtedly claims on real assets. Equities, for instance, confer ownership rights over the net assets of a corporation, some of which are certainly real assets. Similarly, the performance of silver bullion and silver futures should be quite similar during a period of inflation. Moreover, a debt can be a claim on real assets in the case of bankruptcy. And finally, some inflation-protected financial assets could prove good hedges with no real asset backing – treasury inflation protected securities come to mind.

This suggests a discussion about inflation protection should not revolve around real assets but ‘real income’. Yet even this risks becoming tautological: a real income asset is one that can produce an inflation-protected cash stream that is a real income asset. That is just silly. Perhaps a better question, therefore, is what does not constitute a real income-generating asset?

Consider how inflation affected the profitability of US companies in the inflationary environment of the 1970s. As inflation rose to double-digits during that decade, the return on equity for S&P 500 companies also rose steadily to 15 per cent from 11 per cent. Hence, equity strategists often contend there is a positive relation between inflation and return on equity by pointing to the 70 per cent correlation between the annual time series of the two during the 1970s.

But this relationship does not hold over longer periods. The average annual return on equity during the 1970s was 12 per cent. In the 1980s, following Federal Reserve Chairman Volcker’s success in taming price pressures, inflation fell to five per cent by the end of the decade. Yet the average and median return on equity for the 1980s was also around 13 per cent. Inflation fell further during the 1990s, to three per cent by 2000, while the return on equity for S&P 500 companies still hovered around 14 per cent. In the 2000s, inflation fell again. Return on equity? 12 per cent. Taking these three and a half decades into account, the 70 per cent correlation mentioned above falls to an insignificant two per cent. Returns on equity do not really seem to move all that much with inflation. As Warren Buffett pointed out as early as 1977, it makes sense to think of equities as providing an “equity coupon” – even if investors rarely buy stocks at a book value of one.¹

Yet Mr Buffett made his billions principally through investments in equities and survived inflationary periods well. So another way to approach this issue is to concede that corporate returns in aggregate do not vary significantly with inflation, and instead focus on identifying companies that outperform. In focusing on the S&P 500's performance during the inflationary period of the 1970s, an extended DuPont analysis can help. In this framework return on equity can only increase in five ways: higher asset turnover, higher financial leverage, lower interest costs, lower corporate taxes, and wider operating margins.

Take the first factor. During the 1970s, the asset turnover ratio of the largest US companies increased from 93 per cent in 1970 to over 100 per cent in 1975 before subsequently declining to 80 per cent in 1980. That hump in the middle of the decade occurred because sales immediately reflect the new price level while fixed assets change only when they are replaced. Once a new machine has to be purchased, the inflation of preceding years will also be reflected in its higher cost, bringing down the asset turnover ratio to what it originally was, all things being equal. That realisation hints at something else, which is that companies with high depreciation costs may benefit initially from an increase in inflation, but subsequently their assets must be replaced at a higher value, whereas asset-light firms may benefit more sustainably over the long run.

As for financial leverage, it increased steadily from two to 3.3 times in the 1970s as corporations used more debt to shore up equity returns. Capital hungry businesses were especially vulnerable as cutting dividends or equity issuance was less attractive than adding debt. Adding debt is tricky in an inflationary period as the cost of leverage is likely to rise, not only because of the general macro picture but also because credit ratings fall as debt ratios rise. This leads onto the third factor. The interest burden ratio (earnings before taxes/earnings before interest and taxes; the ratio will be one for a firm with no debt or leverage) declined to 81 per cent in 1980 from 83 per cent in 1970, implying marginally higher interest costs.

Corporate taxes, the fourth influence on profitability, were a slight head wind for corporate America in the 1970s with the tax burden ratio rising to 65 per cent from 63 per cent. Finally, attempts to raise margins were futile. In fact, pre-tax, pre-interest operating margins declined slightly to 10.4 per cent from 11 per cent during the decade. This is not material relative to the volatility during the period, but it does suggest that the attempts to pass on the increasing costs of labour and raw materials to consumers were not wildly successful.

A review of these five factors shows why returns on equity did not budge despite substantial changes in the US economy. Another lesson, perhaps, is that improving returns on equity during a period of high inflation is possible but difficult. Despite the increase in financial leverage, returns on equity for the S&P 500 stayed roughly at 12 per cent in the 1970s. Meanwhile, free cash flow over sales declined steadily to 1.8 per cent from 2.9 per cent over the same period, suggesting diminished profitability even though return on equity ratios were steady. In effect, all the excitement in the American stock market of that period – the unwinding of the conglomerate mania, the bull market in Nifty Fifty stocks – masked the fact that companies were running hard just to stand still.

Recounting the experience of individual firms during the period helps drive home the broad inferences. Thankfully, accounting standards required companies in the 1970s to disclose some financial information adjusted for inflation in an unaudited supplementary filing. Take, for example, the Washington Post Company in 1979, a year in which general prices rose by 11 per cent. In nominal terms, the company reported a net income of \$43m. However, adjusting for inflation drags the net income 12 per cent lower to \$38m. The statements tell us why. While the depreciation of tangible assets was reported at \$8m in nominal terms, adjusting for the higher replacement costs makes it 40 per cent higher. Finally, accounting for inflation, pushes up the replacement value of net assets by 36 per cent. As a result, while the nominal return on equity was 26 per cent, the real return on real equity was a more modest 17 per cent.

The Washington held net cash, so it did not benefit from the declining real value of debt. In fact, its monetary holdings lost value by \$1.6m. The tax impact is also interesting. The \$42m paid in taxes was 49 per cent of nominal pre-tax income but 52 per cent of the real equivalent. Inflation raised the company's effective tax rate by three percentage points, even though Congress did not lift a finger.

Critics of the view that industries with low capital intensity outperform during period of inflation point to the returns in the 1970s. Including dividend reinvestments, \$100 invested in the S&P 500 in 1970 would have become \$234 in nominal terms by the end of the decade. Puzzlingly, the top three sectors were energy (\$540 in nominal terms), industrials (\$498) and materials (\$245). All three are highly capital intensive sectors. This seems to contradict the logic of investing in a businesses with low depreciation costs stemming from low fixed asset requirements.

One way of explaining this apparent paradox is that the 1970s were a decade of turmoil in commodities with gold

prices increasing 17-fold and oil going up by more than ten times. Yet that cannot be the full story. For one thing, the general commodities index only increased by 2.5 times, in line with US stocks. Moreover, focusing on commodities would not explain the inclusion of industrials among the top performers. Mr Buffett, in his 1977 piece, also referred to the outsized gains of cable firms in the 1970s. While cable cannot be disentangled from the general telecommunications category in our sector level data (the GICS classification has only existed since the early 1990s) it suggests more than just a commodity-firm specific impact.

More likely the outperformance of capital intensive sectors was due to the long replacement cycle in those industries. For instance, the accounting life of the tangible assets of an oil or chemicals company are around 20-30 years; for a telecommunications company it can be 12-15 years whereas for a fast-changing software company it will be fewer than ten years. Only when the impact of inflation is assessed over a longer period of time, indeed more than the entire capital spending cycle, can the underperformance of capital intensive companies become starkly noticeable. As assets were replaced over subsequent decades (1980s and 1990s), energy, materials and industrials all underperformed the S&P 500.

So where does this leave the contemporary investor? In a rising inflation scenario, it is useful to screen for firms with low capital intensity, as defined by maintenance capital expenditures – however estimated – over sales, and high profitability, as measured by free cash flow over sales. When Deutsche Bank's CROCI team ran this analysis through its database in 2011, they found that emerging market firms generally had high capital intensities and low profitability while developed market technology, health care, consumer and some specialised chemicals companies made it through.² Energy, utilities, telecom and many materials companies struggle. Some software manufacturers in particular should end up proving reasonably inflation resistant given low maintenance capital expenditures, high switching costs, and often a subscription business model that yields stable returns. There were not many of these sorts of firms in the 1970s but today they might be the place to look to thrive in a surprise bout of inflation. ●

1 Buffett, W., "How Inflation Swindles the Equity Investor," Fortune Magazine, May 1977

2 "The danger to equities from inflation," Deutsche Bank research report published by the CROCI team, 1 April 2011

A model for inflation's impact on valuation

Consider a hypothetical non-financial company operating over eight years when inflation rises steadily from one per cent in the first year, peaking at 50 per cent in year eight. Inflation is deliberately exaggerated to make the effects on the company's performance more

pronounced. Assume the company's revenues and non-depreciation operating costs rise with inflation keeping ebitda margins constant at 80 per cent. The company invests in just one tangible asset worth 20 per cent of annual sales, which depreciates over four years before being replaced.

In this configuration, despite stable profit margins, the nominal return on equity rises along with inflation from 14 per cent in year one to 26 per cent in year eight. As the 1970s experience suggests, corporate profitability, at least superficially, benefits significantly from inflation.

Yet a fuller analysis demands two adjustments. First, real depreciation costs. Reported profits during inflationary years are overstated because accounting depreciation costs do not account for the higher replacement cost of assets. Hence, real profits in the intervening years between asset purchases are overstated. Yet the cash impact is only seen in the future when an asset is replaced.

Correspondingly, this adjustment also increases the value of net tangible assets on the balance sheet. Once both adjustments are factored in, the real return on the real value of the equity drops from 12 per cent in year one to 8 per cent in year eight (peak inflation).

Adjusting financial accounts for inflation regularly is complicated, not least because of persistent revisions to inflation data. Therefore, free cash flow may be a better, if more volatile, proxy of underlying returns. In the example above, the four-year moving average of free cash flow as a percentage of sales declines from 14 per cent in year four to 10 per cent as inflation peaks, mirroring the decline in the return on equity.

The conclusion is that the more capital intensive a company, the worse it performs in inflationary periods. Take a firm with capital expenditure to sales of 40 per cent instead of 20 per cent in the above example (imagine an old railroad in need of substantial investment). The four-year moving average of free cash flow to sales now declines from nine per cent in year four to two per cent as inflation peaks. Likewise, the real return on equity declines from seven per cent to four per cent. To offset this increase in capital intensity, net profit margins have to rise by ten percentage points – a tall order for any company. ●

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Book review— performing SEALs

A review of *Extreme Ownership*
by Jocko Willink and Leif Babin

Stuart Kirk

Just as 80 per cent of men reckon they are above average drivers, most business people consider themselves leaders. And for those not born to rule (not you obviously, dear C-suite reader) thousands of books are published each year to help them learn. Amazon currently has 30,000 books to choose from on business leadership. Everyone from Donald Trump to former world tennis number, er, four Brad Gilbert can make executives better bosses. The best-selling business book last quarter was yet another, this time from “two combat proven US Navy SEAL officers, who led the most highly decorated special operation unit of the Iraq war.”

“*Extreme Ownership*” is about how powerful SEAL leadership principals apply to business. Normally one would not even finish reading that sentence on a dust jacket before putting the book down and heading off to catch one’s plane. For most modern executives, however, that would be a mistake. Not only would they miss out on racy first-hand accounts of missions to secure the militant-infested town of Ramadi, where Messrs Willink and Babin served alongside Chris “American Sniper” Kyle. Unwittingly or not, the book also contains useful lessons for managers. If only half followed, companies would be better off.

For starters, when do you ever hear a new chief executive stand up and say, “To be honest I’ve no idea about new products, strategies or acquisitions, I’m just going to introduce some common sense and best practice”? That a five year old might come up with similar advice does not make the book less relevant. It is amazing how firms obsess about difficult things such as innovation imperatives or entrepreneurial cultures while doing the basics poorly.

So what are these key lessons? Needless to say the biggie is leaders should take full or “extreme” responsibility. There are no excuses when things go wrong...ever. Do not go blaming the competition, your underperforming team or the wettest summer on record. A great chief

executive owns every aspect of a company’s success and failure. How long would a unit of SEALs believe in their commander if he blamed everything and everybody upon returning to base after a failed mission?

Determinists would scoff at such a big man theory of the world. Success is more down to luck or, in a Tolstoyan sense, millions of events and decisions sweeping through life with a force that no individual can control. But that should not stop bosses from trying. What the authors are saying is that if the leader is not responsible, who is? More encouragingly, soldiers and employees know whether a leader is being unfairly blamed and will respect those who take the heat.

The book marches through a series of battlefield accounts followed by lessons learned and how they apply to business. Other lessons include keeping things simple, explaining the mission, checking one’s ego, decentralising command, decisiveness and discipline. All sensible enough. But a major problem the book fails to address is that most people in companies have everything to fear from simplicity, clarity and responsibility – particularly leaders. And particularly average leaders earning a lot of money.

Which returns us to those male drivers. In the same way they overestimate their own abilities, our SEAL commanders assume the majority of executives can be great leaders. Maybe five per cent can. The rest will resist extreme ownership like the plague, using barriers such as complexity and centralisation to avoid being found out. Such behaviour led to casualties on the streets of Ramadi. In the first world the stakes are much lower which makes lessons from the battlefield almost impossible to instil.

Ideas lab— team conflict

Charlotte Leysen

It is said that nothing worthwhile gets done without conflict. But some types of conflict are better than others. That was the message from Professor Peterson of London Business School who spoke on how to deal with conflict in teams and extract the best out of them.

His first surprising find was that only one-tenth of team conflicts are due to a genuine difference of opinions. The rest are caused by the wrong tone of voice. Importantly, Professor Peterson found that conflicts arise in three distinct types and it is critical for a leader to understand them.

The worst type is relationship conflict resulting from fundamental interpersonal issues surrounding differences in personality, values, and norms among team members. The result is low trust and an inability to draw out information beneficial for the team. It is difficult to resolve a situation where two people dislike each other but research argues the best way to deal with it is to agree to never speak on the topic and learn to avoid it.

The second type of conflict is task related where the disagreement is about the content of decisions. A team should have some level of this type of conflict and after some internal discussion, this will likely moderate. Most teams find this relatively easy.

The third type is process conflict that refers to how a group makes decisions. Should one leader decide, or majority rule apply? Or perhaps try for an overall consensus? Achieving total consensus, even if desirable, is often unrealistic and time consuming. Research shows the best process is a qualified consensus, where everyone can “live with” the decision and no one thinks it’s a terrible idea. The next best option is that a leader decides after hearing all the arguments. The worst decision-making process for a small group is majority rule as this creates a subgroup of people whose interests are not aligned with the rest. Such a sub group becomes disengaged, even hoping the eventual decision fails.

Professor Peterson also discussed diversity in groups. On the one hand, diversity provides a team with informational benefits and access to varied viewpoints. This can drive better overall performance. On the other hand, diversity can lead to social categorisation and ineffective group cohesion, resulting in very negative outcomes. Professor Peterson found that diverse groups produce more diverse outcomes; the best teams are indeed diverse but so are the worst. Low diversity produces consistently average results. Thus, creating a diverse team is a high-risk, high-reward strategy.

Unsurprisingly, diverse teams tend to experience coordination difficulties. For example, in the first eight months of building the international space station, the Russians worked in metric units while the Americans used feet and inches. It is crucial, therefore, for a leader to help team members understand that coordination difficulties are normal and can be resolved. If they do not, members often turn on each other and apply blame, frequently singling out someone who is demographically different.

Unfortunately the correlation between the level of team trust perceived by a manager and the actual trust experienced by team members is zero. Most often, a manager has no idea whether team members trust each other or not. Therefore, to avoid conflicts of the damaging sort, leaders need to understand the various conflict types and how they should be managed. This will help them build a framework in which a team can manage its constructive conflicts and, hopefully, avoid the destructive sort all together.

Conference spy— cars in their eyes

Notes from the Deutsche Bank
global auto industry conference

Rod Lache

Conference spy reports from a chilly Motown where 30 automakers and suppliers gathered for Deutsche Bank's global auto industry conference in January. Despite a record-breaking year for US auto sales in 2015, a few furrowed brows were spotted as industry bigwigs talked of transitioning into a period of macro deceleration in the near-term and potential disruption further out.

The US cyclical recovery, many pointed, is entering its seventh year. The consensus was that sales should plateau as costly regulations push up new car prices. In addition, credit conditions should become less accommodative while rising used car supply drives trade-in values down. Indeed, chief executives from large auto dealership groups including AutoNation and Asbury Automotive warned that automakers need to slow production to avert highly damaging deflation in the used car market. In fact, they suggested current deflation is worse than is broadly appreciated as some of it has been absorbed into declining dealer margins.

Looking further into the future, nearly every 5-10 year forecast included the word "disruptive". Electrification, vehicle connectivity, and especially automation, could profoundly change the industry's structure including long-held norms of vehicle ownership and transportation. Driverless cars, in particular, got a lot of attention. Major automakers are expected to launch vehicles capable of completely autonomous driving, with no human intervention, by the end of this decade even though views differ on the extent of this deployment. Ford suggested driverless cars will initially appear in geofenced areas (small cities) where highly detailed 3D maps can be continuously updated. Meanwhile, General Motors, Volkswagen and Mobileye announced a novel mix of artificial intelligence and mapping that could lead to autonomous driving almost everywhere.

The surprising message on the topic came from a key regulatory authority, Dr Mark Rosekind, Administrator of the National Highway

Transportation Safety Administration. He emphasised that the US administration aims to promote and accelerate advanced levels of automated driving technology. Regulators anticipate that autonomous driving technologies will lead to a dramatic reduction in the 34,000 annual fatalities that occur from US driving accidents – globally motor vehicle accidents result in 1.2 million annual fatalities. Policymakers also hope for other benefits including improved mobility for the elderly and disabled, gains in productivity, reduced congestion and greenhouse gas generation, and improved land use.

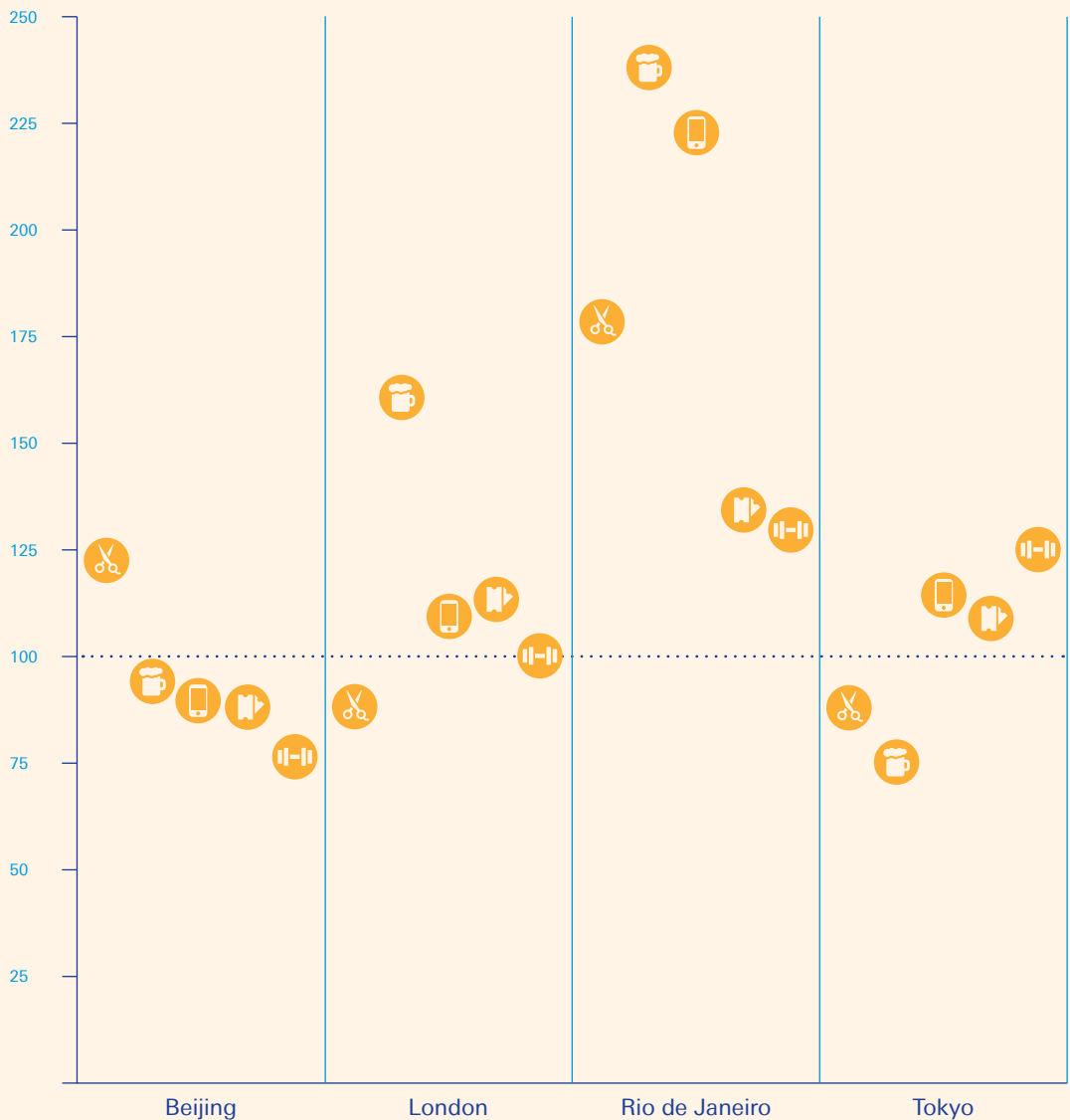
The consequences for the auto industry, however, may not be entirely benign. Removing the human driver makes the economics of owning a vehicle versus the use of mobility services increasingly apparent. Personally-owned vehicles involve clear diseconomies given they sit idle in garages and parking lots 95 per cent of the time. Companies such as Uber, Lyft, Google, and others plan to provide mobility services at very competitive prices. Their involvement, however, portends new risks for established carmakers including the potential for the disintermediation of vehicle brands.

Auto industry players sense significant disruption and changes in the years ahead. General Motors proclaimed the industry will change more in the next five years than it has in the past 50. And they are preparing for these changes. In the past three months alone GM announced a strategic investment in Lyft, the acquisition of intellectual property from Sidecar, the formation of a ride sharing business called Maven, and a major autonomous driving innovation with Mobileye. Ford even suggested that they now view themselves as a "mobility company".

Conference spy looks forward to reporting from the "mobility conference" next year.

Infographic— prices in Olympic cities

Change in the price of a male hair cut, beer in a bar, iPhone, movie ticket and gym membership since the London Olympics in 2012



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