LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION

Cover photo https://unsplash.com/photos/ir5MHI6rPg0

ISSUE 5 • March 2019

LGPS Central Limited

FOR PROFESSIONAL CLIENTS ONLY

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

CIO SUMMARY

Introduction

Welcome to the 5th Edition of our renamed "Tactical Asset Allocation Report"

We have renamed this report the Tactical Asset Allocation Report to respond to feedback regarding the time scale we are working to with this report. We see this being used for short to medium term overlays over your strategic asset allocation to take advantage of current market conditions by refining your asset weights within your long-term allocation bands.

The 4th quarter of LGPS Central Limited ("LGPSC") going live has seen the successful transition of £2.1bn of assets into the Global Equity Active Multi Manager Fund using Macquarie and Inalytics. We also launched the first Private Equity fund 2018/19 vintage. This fund has seen its first investment into a PE Fund and is considering further fund and co-investments. The Global Emerging Markets ("GEMs") Equity Multi-manager fund has received approval from the FCA and is now considering options for transition. The application for FCA approval for the Corporate Bond ("CB") fund will be sent in the next week.

As we embark on our second year, we are seeking to make transitions into the GEMs and CB funds when Partner Funds are comfortable with the manager selections and set up arrangements. We are also working on the Infrastructure and two Factor based funds (one with climate change as a factor, the other without). In the next three months, we will look to start preparations for the UK Equities, Target Return, Multi Asset Credit, Emerging Market Debt and Property funds targeted to launch over the next 12 months. These will be pooled vehicles available to all Partner Funds.

We will also be working with individual Partner Funds on various segregated mandates including sustainable equities, G10 Bonds and other advisory services.

In this edition of the report we have added "Special Feature" papers on FX Hedging by Vania Clayton and Risk Adjusted Return After Costs (RARAC) by Jason Fletcher.

As always, we welcome any feedback on this report.

Summary of Strategy thoughts

As this current economic expansion extends and as more indicators point downwards (the inverted US yield curve being the most recent) LGPSC is growing more cautious on the outlook for returns in growth assets as the probability of a recession and market correction rise. Valuations are more reasonable now and growth assets still offer superior yields to bonds (UK equities dividend yield is currently 4.5% versus UK 10-year gilt yield of 1%). We are neutral on growth assets. However, the stabilising assets (Government Bonds and Index Linked securities) are priced as though the world was already in recession making LGPSC question the value in this area. Expected returns on gilts and bonds will not beat inflation let alone the liabilities of pension funds, leaving LGPSC very cautious in this area. LGPSC therefore continue to prefer income assets which offer better returns than government bonds and lower risk than growth assets. In the current market conditions LGPSC's view is that those assets are most likely to generate the returns required to meet future liabilities and will offer protection in a recession. However, allocation decisions should also consider the funding level of the Partner Fund. The biggest risks LGPSC sees on the horizon are a Hard Brexit fall out, global recession and trade wars. Favouring Income assets in this environment is supportive though LGPSC would caution Partner Funds about leaving overseas assets exposed to Sterling exchange rate fluctuations un-hedged, LGPSC still believes that Sterling may rise in the future in the balance of possible Brexit outcomes. Hedging foreign currency assets back to Sterling is something LGPSC is supportive of in the current market environment.

Jason Fletcher, Chief Investment Officer

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

LGPS CENTRAL LIMITED'S VIEW ON WEIGHTINGS

The following table gives a summary of our view on the 6-18 months tactical positioning against your customised benchmark.

Table1: Weightings   △ Upgraded, ▽ Downgraded compared to previous quarter

	Significant Underweight	Underweight	Neutral	Overweight	Significant Overweight
BROAD ASSET CLASS		Stabilising	Growth	Income	
GROWTH ASSET CLASS	Private Equity ▼	GEM Equities ▼	North America, Equities, △ Asia Pac Equities △	EU Equities, UK Equities, Commodities	Japan Equities △
INCOME ASSETS		Insurance-Linked ▼	Property △	Credit , Infrastructure , EM Debt	
STABILISING ASSETS	UK Bonds, ▼ JP Bonds	Index-Linked, EU Bonds ▲	IG Bonds	US Bonds	Gold △
INVESTMENT STYLES	Size ▼	Low Volatility	Growth ▽	Quality/ESG , ▲ Momentum	Value
CURRENCIES		US dollar	Euro, Yen	GBP	

LGPS Central Limited's view on "Weightings":

- LGPS Central Limited remains "Underweight" in Stabilising Assets and "Overweight" in Income Assets. Growth Assets remain "Neutral". Cheap valued Growth Assets with good economic outlook and valuation remain attractive.
- Equities are the most favoured of the Growth Assets but have seen some changes in terms of regional favourites. Our favoured equities remain UK, but now also include Europe as well as Japan, and GEMs change from strong "Overweight" to "Underweight", mainly due to sentiment change and worsening economic outlook.
- There are only small changes to observe within our preferences in Stabilising and Income Assets.

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

BROAD ASSET CLASSES

Table 2: Growth/Income/Stabilising Assets

	Model Score[1]	View	Investment Notes
GROWTH	0	Neutral	Neutral valuations last quarter, and some increased market risk, e.g. inflation and recession concerns
INCOME	1	Overweight	Safe Income in economic downturn , neutral valuation and downside protection
STABILISING	-1	Underweight	Low/Negative expected return, recession priced in and at risk if economic indicators turn up

Table 3: Historical Annualised Returns (* except for the 3 months, where total return is used)

	3 months*	One year	Three years	Five years	Ten years	Twenty years	Bloomberg Ticker
GLOBAL EQUITIES	13.91%	1.67%	11.68%	7.64%	12.99%	5.11%	FTAW01 Index
PRIVATE EQUITY	14.11%	9.14%	16.24%	11.17%	19.45%	n/a	IPRV LN Index
PROPERTY	17.90%	17.81%	7.62%	9.88%	19.30%	11.13%	REIT INDEX
INFRASTRUCTURE	14.17%	8.48%	9.05%	5.98%	10.96%	n/a	SPGTIND Index
HIGH YIELD	5.08%	2.49%	6.70%	5.73%	16.96%	9.78%	HL00 Index
UK GILTS	3.72%	2.87%	3.21%	5.42%	4.92%	5.25%	G0L0 Index
UK INDEX-LINKED	6.85%	4.96%	7.53%	8.88%	8.44%	6.63%	G0LI Index
GOLD	0.21%	1.68%	4.41%	6.90%	4.51%	9.12%	XAUGBP Index

Source: Bloomberg (NB: assumes dividends were reinvested), Note: listed proxies have been used for Infrastructure, Property and Private Equity.

Table 4: Correlation Matrix (5 year historical correlation)

	FTSE All World AW TR GBP	iShares Listed Private	DJ REIT	S&P Global Infra	Sterling High-Yield	UK Gilt	UK Inf-Link Gilt	XAUGBP Index
GLOBAL EQUITIES	1	0.652	0.554	0.774	0.487	-0.237	-0.149	-0.268
PRIVATE EQUITY		1	0.359	0.482	0.388	-0.171	-0.104	0.015
PROPERTY			1	0.666	0.224	0.251	0.200	0.049
INFRASTRUCTURE				1	0.418	0.037	0.074	-0.030
HIGH YIELD					1	-0.017	-0.012	-0.187
UK GILTS						1	0.827	0.422
UK INDEX-LINKED							1	0.375
GOLD								1

Source: Bloomberg Note: listed proxies have been used for Infrastructure, Property and Private Equity

LGPS Central Limited's view on "Broad Asset Classes":

- LGPS Central Limited currently favours Income over Stabilising Assets over the next 12 months due to their relative value, and stable cash flows with low correlation to Growth Assets.
- The sharp equity market fall in Q4 2018 has seen a full recovery in Q1 pushing valuations up again, together with the concerns on economic outlook. Most asset classes have seen good returns above inflation over the last three, five, ten and twenty years.
- Commodities and Gold provide good diversification against equity markets and could be added as a diversifier to the portfolio.
- Fixed Income can be allocated to the portfolio for the same reason, but we remain underweight, given its poor valuation, low expected returns and the unsupportive economic environment.

[1] Refers to LGPS Central Limited model as described on page 6

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

GROWTH ASSET VIEW

Table 5: Growth Assets

	Model Score[1]	View	Investment Notes
UK	2	Overweight	Positive sentiment and neutral valuation, but economic and political risks leave an environment of uncertainty
NORTH AMERICA	0	Neutral	Expensive valuations are back and economic risk is higher compared to other geographies. Neutral sentiment
EUROPE	2	Overweight	Good dividend yields, attractive valuations, and positive sentiment, but economic outlook remains unstable
JAPAN	4	Overweight	Attractive valuation and economics have turned positive, but trade war consequences remain
ASIA PAC	0	Neutral	Economic growth potential, valuations have become more expensive and fears of trade war may overshadow the potential
GEMs	-2	Underweight	Mixed picture, new negative sentiment and economic growth concerns, neutral valuation
PRIVATE EQUITY	-4	Underweight	High investment cost, sentiment negative, long-term economic outlook uncertain, we recommend selective positioning in quality and stable companies
COMMODITIES	2	Overweight	Positive given sentiment and exposure to weakening dollar but provides no yield

LGPS Central Limited's view on "Growth Assets":

- General recession concerns could have an impact on Growth Assets, with Private Equity suffering the most due to more expensive valuations.
- GEMs have changed from "Overweight" to "Underweight" due to valuations looking less attractive and change in sentiment to negative.
- Japan and Europe are the most attractive regions in terms of cheap valuations, but earnings have reached a high reducing the general potential for growth assets.
- UK remains "Overweight" and is supported by positive sentiment.

INCOME ASSET VIEW

Table 6: Income Assets

	Model Score[1]	View	Investment Notes
CREDIT	1	Overweight	Economic play, valuations slightly expensive, but supported by positive sentiment and spreads
EMERGING MARKET DEBT	1	Overweight	Economic play has strengthened and valuation remains good, but sentiment is negative
PROPERTY	0	Neutral	Relative value, inflation protection, sentiment remains negative and high investment costs
INFRASTRUCTURE	2	Overweight	Relative value, inflation protection, positive sentiment but high investment costs, renewables & sustainable exposure
INSURANCE-LINKED	-1	Underweight	Two bad years and positive sentiment but high investment costs and structural concerns

LGPS Central Limited's view on "Income Assets":

- LGPS Central Limited has a favourable view on Income Assets.
- Emerging market debt is gradually being downgraded, but our "Overweight" view remains mainly based on economic outlook.
- Property is downgraded by one notch based on recession outlook to "Neutral", and Infrastructure remains "Overweight".

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

STABILISING ASSET VIEW

Table 7: Stabilising Assets

	Model Score[1]	View	Investment Notes
UK BONDS	-4	Underweight	Negative expected return, inflation risk, economic growth faltering and political risk
INDEX-LINKED	-2	Underweight	Negative expected return and concern about long duration/interest rates
US BONDS	1	Overweight	Fair value but increasing deficit and quantitative tightening, inflation risk and economic growth potentially overheating
JP BONDS	-5	Underweight	Poor valuation and Central Bank policy supportive market, in addition to currency risk
EU BONDS	-2	Underweight	Negative expected return, economic growth vulnerable due to political uncertainty and EU bank debt issue
IG CORPORATE BONDS	0	Neutral	Corp spreads neutral and anchored to government bond yields, but general good credit outlook
GOLD	3	Overweight	Favoured Stabilising Asset, when we do not like other Stabilising Assets

LGPS Central Limited's view on "Stabilising Assets":

- LGPS Central Limited remains "Underweight" for most Stabilising Assets mainly based on the low/negative yields but recognises that they should represent a proportion of the portfolio given the downside protection they can offer.
- "Underweight" view has further worsened due to more expensive looking valuations, in particular for Japan and UK. Only US bonds have become "Overweight" due to improved valuations and the US economic outlook.
- Gold offers good diversification and a safe haven in turbulent markets and protects against political and economic risks.

INVESTMENT FACTORS (EQUITIES)

Factor based investing provides a way of potentially adding outperformance relative to a market cap-based approach at a much lower cost than active investing. It recognises that the market cap-based index does not provide the best risk adjusted return for a portfolio given its natural overweight in momentum, large cap and expensive stocks. In the following factor model, we have taken the seven factors of value, growth, income growth, size (small cap), ESG, low volatility and momentum and then applied the same criteria we use to consider other asset classes in our model assessing each factor for valuation, sentiment, economic suitability, risk suitability, investment cost and currency. Investment cost in factor-based investing is low relative to the other asset classes, though momentum factors (given their higher turnover) and ESG factors (given their higher index costs) are both scored neutral. Given all strategies are global the currency scores are all neutral. Note that ESG and quality share similar characteristics. Climate change as a factor is little correlated to specific economic cycles given its long-term investment impact horizon of 10-20 years. The graph below summarises the preferred overweight factor(s) depending on the various stages of the economic cycle.

Economic Cycle and Investment Factors:

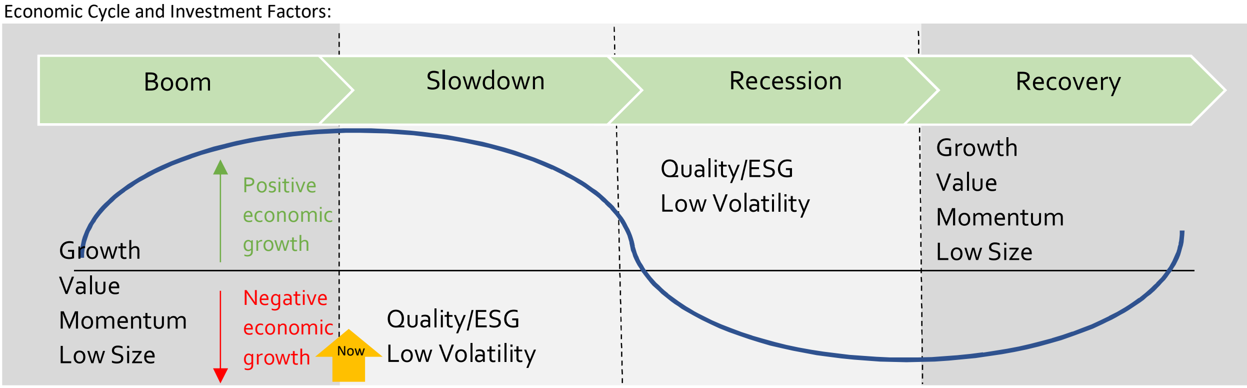


Table 8: Investment Factors

FACTOR ASSET VIEW

Table 7: Investment Factors

	Model Score[1]	View	Investment Notes
Value	3	Overweight	Very attractive valuations, strong sentiment and most favourite factor
Growth	0	Neutral	Poor sentiment and increased risks
Size	-3	Underweight	Concern with slowing economy, negative sentiment and market risk
Momentum	2	Overweight	Overweight based on current attractive valuation and sentiment
Low Volatility	-1	Underweight	Poor long-term performance but has become more attractive due to possible change in economic cycle
Quality/ESG	1	Overweight	Positioning in light of potential economic slowdown and protection against market declines

LGPS Central Limited's view on "Investment Factors":

- LGPS Central Limited's view on Investment Factors has slightly changed in light of increased recession concerns, meaning Growth and Value have suffered loss of model points.
- In light of the current economic cycle, market risk and sentiment, the favoured factors are a combination of "Value" and "Quality/ESG".
- "Momentum" scores well but LGPSC remain conservative due to lack of volatility.

LGPS CENTRAL LIMITED SCORING MODEL

LGPS Central Limited's model scores each asset class against its valuation, sentiment, economic outlook, market risk, currency and investment cost (scored between -2 and +2). Positive scores suggest (strong) overweight and negative scores, (strong) underweight positions. Where a zero is assigned our view is neutral. The scores for the different assessment areas, e.g. valuation, sentiment etc. are then added to derive the final score for that asset class. We are constantly developing this scoring to include other variables such as ESG measures and technical factors, as well as currencies.

RECESSION WATCH

Key indicators for a recession have worsened over the last quarter with 1) a flat yield curve, 2) a stable employment and 3) the changing monetary environment. Corporate debt is a worry in certain markets alongside EU banks' non-performing loans. Chinese corporate leverage is of concern and some areas of high yield could pose problems especially if rates were to rise more sharply than expected. Auto finance is also showing some signs of stress. The US growth cycle has been rather long; this, combined with rising interest rates and increased asset volatility may indicate the first signs of a recession in the medium term.

***LPGS Central Limited View** –We see the likelihood of a recession as medium over the next 12 months. 2020 could mark the start of the next recession.*

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

LGPS CENTRAL LIMITED Q1 MARKET UPDATE[2]

The first quarter of 2019 showed a very positive picture across the globe in equities, balancing out the losses of the previous quarter. The strongest increase was observed from the S&P 500 with 13.07%, closely followed by a performance of 12.40% by the Hang Seng (all in local currencies). The FTSE 100 and Eurostoxx 50 also enjoyed good performance during the quarter (8.19% and 11.67% respectively). Asia Pacific performed in line with all other markets, rising by 10.93%.

*

The US Michigan Consumer Sentiment is nearly unchanged from its highs in April 2018 and is still well above its ten-year average indicating that positive momentum continues. After the negative equity performance in Q4 2018, the US Michigan Consumer Sentiment took a dive, but has since recovered. Jobless claims and a small business survey (the Small Business Optimism Index), remain positive suggesting a good economic mood, although overshadowed by an increased recession risk. The VIX has calmed down from its recent high levels in Q4 18, and is now back to more normal levels, indicating that the market is less uncertain and worried.

*

In Q1 2019, the UK was dominated by Brexit, with a series of indicative votes on alternative Brexit solutions after Theresa May's deal was rejected three times. None of those indicative votes brought any consensus in parliament, leaving the UK with limited options at the quarter end, bringing the possibility of a no-deal Brexit back on the table. However, no Brexit is now a possible outcome.

*

The Oil price rallied over the course of the first quarter by 27.12%, reversing the Q4 2018 losses. The Oil rally was fuelled by OPEC's optimism due to production declines. Gold prices closed flat over Q1 with 0.7%. Sterling has strengthened by 2.2% against the USD over Q1 but the direction of travel remains uncertain with Brexit.

*

The US Federal Reserve is expected to maintain the current interest rate level. However, with looming recession risks, some market participants do expect rate cuts going forward. Benchmark US yields therefore fell by 27bps amid concern over the economic outlook. In the UK 10-year yields have dropped from 1.277% to 1.0% driven by the ongoing Brexit uncertainty, recession risks and stronger equity markets.

*

In Q2 we expect news to be dominated by Brexit, slowing Chinese growth and more talks about recession risks. Trade war tensions seem to be easing, and inflation pressure is ceasing but uncertainty about the economic outlook is high.

*

LGPS CENTRAL LIMITED Q1 RESPONSIBLE INVESTMENT UPDATE

In January a tailings dam at an iron ore mine, owned by Brazil's Vale SA, collapsed causing at least 200 fatalities, and the release of over 10 million cubic metres of tailings waste into the environment downstream of the dam. Vale has had a significant amount of its mining activity halted by the Brazilian state on safety grounds. The decrease in global supply has led to a 6% increase in iron ore prices, and Citigroup has increased its 2019 price expectation for the commodity by 40%. Rival miners' valuations - including Rio Tinto, Anglo American and BHP Billiton - increased by more than 2% in response to the supply shock. Investors and the public have called for changes in the way tailings dams are classified, managed, and reported on to the public. This could lead to increased costs (which will fall disproportionately on different miners depending on the quality of their assets) not all of which can be passed onto customers. Over the long-term additional safety measures should reduce the likelihood of tail-risk events like Brumadinho.

*

The 'proxy season' – the time of year when the majority of listed companies put issues to shareholder vote at AGMs – is nearly upon us. Four topics appear to loom large. Executive pay will continue to attract attention, and this year executive pensions contributions – a top up to base and variable pay worth up to £500k – are set to draw the ire of shareholders. Of all the AGM items drawing 'significant dissent' last year, 50% were due to remuneration. In the US,

[2] Performance for the quarter measured over period of 30/09/18 to 31/12/18

proxy campaigners have long requested transparency over corporate donations to political parties and lobbying organisations, and 2019 appears to be a breakthrough year with companies including Ameriprise Financial Inc, Mondelez International Inc and MSCI Inc, signalling willingness to disclose their payments. Some investors have announced plans to expand rule-based voting on diversity matters (e.g. voting against a company's Nominations Committee chair where the proportion of female directors falls below a certain threshold) beyond the UK to include US, European and Australasian markets. Finally, investors in certain fossil fuels companies will need, similarly to the 2018 proxy season, to determine whether to back climate-related shareholder resolutions, some of which have been filed by institutional investors, and others by NGOs.

*

The EU appears determined to cement its leadership as a market for sustainable finance. The European Parliament and Council have agreed on a new regulation that will require investors and investment advisors to disclose information on how they integrate sustainability risks in decision-making processes, and on how they measure and mitigate the adverse impacts of their investments on sustainability factors. The European Parliament has also formally agreed on a framework for establishing a taxonomy describing which economic activities substantially contribute to environmental objectives such as climate change mitigation and adaptation. This could shape financial products describing themselves as 'sustainable' or 'impact'. Finally, the EU Joint Research Centre has released a draft technical report on the development of EU Ecolabel criteria for retail financial products, which again could come to shape certain types of financial products.

*

Google's parent company Alphabet Inc. has incurred another anti-trust fine from EU regulators. The latest fine of €1.5bn (Alphabet's annual net income is over $30bn) brings the total levied to date to €6.5bn. Anti-trust has long been listed as a risk for so-called FAANG stocks[3], whose size and growth has made them important parts of institutional portfolios. Were the risk to crystallise, the cash-generating business models of these technology majors could bring a downside event greater than the regulator's penalties. Amazon and Apple have also been investigated for anti-trust. Apple vs Pepper is a case in the US where a group of consumers allege Apple has behaved monopolistically by controlling which apps are distributed through Apple platforms.

*

A significant change is underway in emerging market (EM) index construction, and this could introduce new ESG risks and opportunities for investors. MSCI has announced that it will increase the proportion of China A shares – shares of Chinese companies listed and traded in China – within its flagship EM index at a faster than expected rate. Having been rejected repeatedly up to and including 2017, A shares will now represent c3.3% of the index by the end of 2019. Approximately $1.9tn tracks the index and, while estimates vary, up to $125bn could be added to China A shares as a result of the re-weighting, which could rise to 16% of the index over time. FTSERussell announced that inclusion of China A shares will be phased in from June 2019, reaching c5.5% at the end of 'phase 1'.

*

Previously China A shares have been rejected by the index constructors for reasons of inadequate corporate governance standards (including low levels of board independence), and poor shareholder protections (including regular stock suspensions). Some improvements have been made including an easing of foreign investment restrictions, a doubling of limits for investments in overseas funds, and a decline in the number of suspended stocks. Rather than a categorical governance risk, the introduction of A shares to institutional portfolios – passive equity investors will be forced buyers of A shares, in increasing volumes – could be a governance opportunity for investors with sophisticated stewardship programmes.

---

[3] FAANG stands for Facebook, Amazon, Apple, Netflix and Google

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

RISK ANALYSIS

Table 8: Risk in order of probability

RISK	LGPSCL Possibility	LGPSCL Impact	Change	Comment	LGPSC favoured assets to protect against the risk
EQUITY DOWNTURN	High	Moderate	↑	Exaggerated growth expectations, profit taking in the equity market, increased recession risk and limited monetary policy stimulus available could see equity markets fall.	Safe haven assets such as government bonds and gold, increased demand for equity downside protection makes volatility rise, buy volatility early, as short-term measure protect through selling futures
BREXIT	High	High	↑	Brexit could still hit the UK economy due to lost trade revenue from the EU and continue having a weakening impact on Sterling which could cause rising exports outside the EU in the medium term. Increasing uncertainty, the EU's unwillingness to re-negotiate a deal and the UK parliament not achieving decision-making progress still make a hard Brexit an option.	A hard Brexit would have a negative impact, but there is also the possibility of no Brexit too which is why LGPS has a balanced view on UK equities
GLOBAL RECESSION	Moderate	Moderate	NEW	Recession watch factors are pointing towards a possible global recession in 2020 fuelled by US growth stagnating, Chinese debt leverage and elevated interest rates in the US.	Factors such as Quality/ESG and low volatility perform relatively well in a recession. Stabilising and income assets will outperform if economy enters recession
MONETARY POLICY SURPRISES	Moderate	Moderate	NEW	The inflation outlook is mixed, with some forecasters believing that it will rise and require higher interest rates, and some believing that slowing economic growth will keep it contained. The possibility of a global recession adds further doubt into the mix. Low levels of interest rates in most countries mean that there is limited monetary policy action available in the event of low inflation levels. Markets could be surprised by monetary policy in either direction.	Underweight Fixed Income, Overweight Infrastructure, Overweight Growth Assets and high-quality credit
POLITICAL RISKS	Moderate	Moderate	NEW	Euro break up risks are reduced due to negative Brexit example (the UK). However, there is a considerable amount of other political risks arounds the globe, such as North Korea, tensions in India and domestic US political risks.	Overweight protective assets such as Gold, non-Euro assets, buy Sterling, buy US Dollar
FAANG RISK	Medium	Medium	NEW	Technology companies could be impacted by new taxes or other pressures as a result of increased regulatory focus. Recent fines issued over technology companies could hit further companies. In addition, technology companies are exposed to increased Cyber Risk as well as the technology market reaching a saturation point.	Underweight technology
ISOLATION & PROTECTION/CHINA	Medium	High	NEW	General trade war concerns from 2018 carry on their trend in 2019 with increased negative sentiment and worries about the consequences. Negative consequence for China could be expected from potential boondoggle projects designed to target employment levels alongside the general overleveraged China concerns.	Slowdown of economic growth and de-stabilising effect, overweight Gold and insurance linked, overweight US equities, underweight GEMs
CREDIT RISK/DEBT ISSUES	Medium	Moderate	→	UK political risks are increasing, EU banks have not taken enough non-performing loan action, China and Automotive debt are concerns at present.	Underweight EU and China, underweight selective credit, such as Automotive

LGPS CENTRAL LIMITED TACTICAL ASSET ALLOCATION: ISSUE 5

RISK	LGPSCL Possibility	LGPSCL Impact	Change	Comment	LGPSC favoured assets to protect against the risk
CLIMATE-RELATED TRANSITION RISK	Medium	Moderate	→	- Generic Carbon price at 10-year high - UNPRI is highlighting risk - Investment gap in transitioning the energy system equal to 2.4% of GDP	Underweight Energy & GEMs, overweight Renewables and sustainable investment themes such as Infrastructure
CLIMATE-RELATED PHYSICAL RISK	Medium	Moderate	→	- US Billon Dollar Disaster Event Frequency: Average based on last 5 years, modestly above average based on last 38 years. - Catastrophic Economic losses for EMEA for 2018 well under 10-year average. - Catastrophic Economic losses for US for 2018 at record low compared to 10-year average.	Hold a well-diversified portfolio

LGPS Central Limited's view on "Scenario Risks":

- LGPS Central Limited's view is that with a well-diversified portfolio, the majority of key risks from these scenarios should balance out any strong negative impacts. Alternatively, short term asset adjustments can be made to the portfolio to seek protection or a derivative overlay can hedge out undesired negative impacts and provide protection.
- It is our view that the next 12 months should produce a positive return for Income Assets and will probably see low to negative returns for Stabilising Assets. Our opinion is that fixed income does not offer good risk adjusted returns for pension fund money at this time and should remain underweight. Growth Assets may in the short-term see negative returns if a bear market manifests itself.
- Given that we have started a new year, LGPSC has undertaken a major refresh on its emerging risks through a brain storming session with the Investment Directors and CIO. The main new risk introduced is the FAANG risk.

SPECIAL FEATURE 1: CURRENCY RISK

Vania Clayton
Senior Portfolio Manager

Vania.clayton@lgpscentral.co.uk
Phone: 01902 916 206

To hedge or not to hedge ....?

Local Government Pension Funds ("The Fund") invest in a wide range of asset classes which are geographically diversified, meaning the Fund acquires exposure to non-Sterling currencies. However, the Fund's offsetting liability exposure is denominated in Sterling, thus the Fund exposes itself to currency risk, by investing in these non-Sterling currencies.

When invested in a non-Sterling asset not only is the asset performance relevant but also how the currency pair performs over time during the investment period. As a result, the currency pair exchange rate can either enhance the asset return or reduce the overall performance.

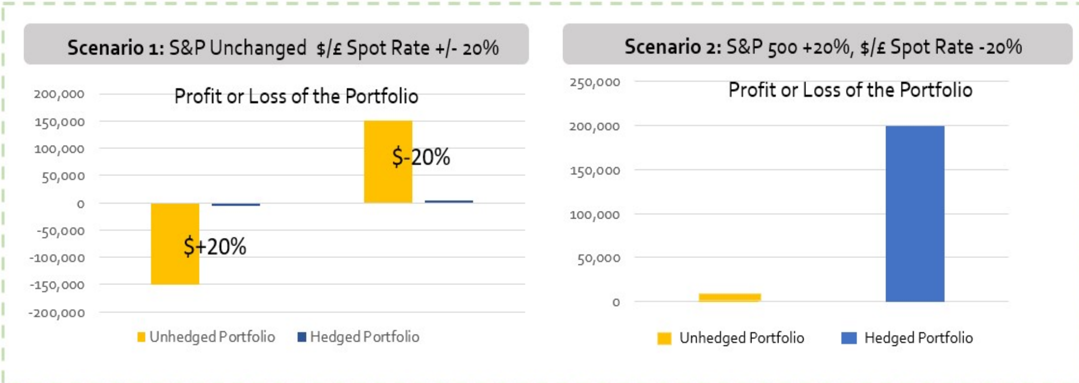
In general, it can be observed that currency risk is a major risk after equity risk for Pension Funds. If currency risk belongs to the universe of investable asset classes (e.g. are part of the strategic asset allocation) or their exposure in a portfolio is desirable for diversification purpose, then such non-Sterling currency exposure may be part of the wider asset allocation strategy with the decision to retain the risk, hedge it or somewhere in between. This investment decision should be reviewed on a regular basis as part of the asset allocation review taking the current market environment into consideration.

For example, on a quarterly basis we publish the LGPSC view on the main currencies in our Strategic Asset Allocation Report. Given the background of USD/GBP nearing its historical low, a volatile market environment and the ongoing Brexit uncertainty. LGPSC believes there is higher likelihood for GBP appreciating then depreciating against the USD.

	Significant Underweight	Underweight	Neutral	Overweight	Significant Overweight
BROAD ASSET CLASS		Stabilising	Growth	Income	
GROWTH ASSET CLASS		Private Equity, North America, Equities	Asia Pac Equites, Japan Equities	EU Equities, UK Equities, Commodities, GEM Equities	
INCOME ASSETS				Insurance-Linked, Infrastructure, Property, EM Debt, Credit	
STABILISING ASSETS	EU Bonds, JP Bonds	UK Bonds, Index-Linked	IG Bonds, US Bonds	Gold	
INVESTMENT STYLES		Low Volatility, Size	Quality/ESG	Momentum	Value, Growth
CURRENCIES		US dollar	Euro, Yen	GBP	

Source: Q4 18 Strategic Asset Allocation report

If the Fund does not wish to have exposure to non-Sterling currencies, then it has the option to hedge this currency risk. It is important to note that when the Fund invests in non-Sterling assets, that the Fund is only exposed to Sterling appreciation against the non-domestic currency. If Sterling depreciates, this will have a positive impact on the total asset's returns, when valuing in Sterling.

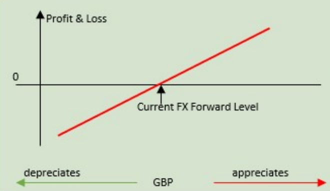
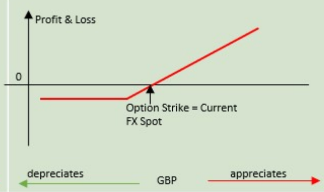
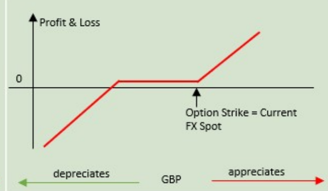


Source: LGPSC

When exploring hedging strategies to eliminate/reduce the risk of the asset returns to GBP appreciation, it is best to think about "insuring" this risk. A hedge is similar to an insurance which will provide a certain risk off-setting pay-off should a certain event occur. It will provide a stabilising impact on the asset return. Like car insurance, if an accident happens, this will trigger an off-setting payment towards repairing the car. Currency hedging works in a similar manner: If the "accident" happens (GBP appreciates) the value of the hedge instrument will increase, off-setting the currency loss on the underlying asset in a non-Sterling currency. In the same manner as car insurance it can be terminated if it is no longer needed or modified to adjust the cover, a hedge can be wound down at any time, for example should the outlook for the currency pair change or the hedge having already fulfilled its "insurance" purpose after a strong GBP appreciation.

But as with any insurance, a currency hedge is associated with certain costs as "insurance" against risks is not free, which means the return of the asset is reduced from the outset by those costs. When comparing the un-hedged Investment return and the Investment return with a currency hedge overlay, the Investor needs to make an Investment decision. Would the Investor prefer an un-stable asset return (which could either rise or fall), or would the Investor be prepared to reduce the asset return from the outset by a certain percentage but gaining certainty over the future currency related asset return. Once hedged, the asset returns will no longer be exposed to currency exchange rate fluctuations. The exact cost of hedging the currency risk will depend on market environment conditions (such as interest rate differentials) and the choice of hedging instrument.

Hedging Instruments: The choice of hedging instruments will be mainly determined by costs and whether the Fund would like to retain the upside benefit of Sterling depreciations, or if the Fund is prepared to give up currency risk and reward in both directions, e.g. Sterling appreciating and depreciating. When looking at the possible Sterling movements against other non-Sterling currencies it is relevant to form a view on the likelihood which direction the currency pair might move and with what magnitude. The two most popular FX hedging instruments are FX Forwards and FX Options, FX Futures in general do not have enough liquidity. FX Forwards hedge Sterling appreciation and depreciation, incur ongoing "maintenance" costs, and require eligible collateral to be available. FX Option (Calls) only hedge GBP appreciation and retain additional return potential if GBP depreciates, but require in slightly larger upfront (insurance) premium, but the positive being no collateral posting requirements. Which hedging instrument is more suitable needs to be assessed on a case by case basis considering the current market environment and outlook.

	FX Forwards	FX Call Option	FX Collar Option
Description	Current Solution: Agreement to exchange currency at fixed Level in the Future	Right but not obligation to buy a currency at the strike level at a future date	FX Call Option, which is financed partially by selling an FX Put Option at a lower strike
Protection Level	High	Highest	Medium
Hedge Payout			
Advantages/ Disadvantage	✓ Most liquid and cheapest* ✗ Gives up additional return if GBP further depreciates ✗ On going trading requirements as maturities need to be rolled	✓ Retains additional return of GBP depreciates ✓ Can be more customised ✓ Less frequent trading required ✗ More expensive*	✓ Same as FX Call Option ✗ Less expensive as Option premium is partially financed by given up additional return if GBP depreciates*
Collateral requirements	Medium	Low to Zero	Medium to high
Cash requirement	On-going when rolling and trading FX Forwards	Upfront Premium, settlement at maturity	Upfront Premium, settlement at maturity
Cost frequency	Monthly, Quarterly or Half-yearly	Every 2.5 to 5 years	Every 2.5 to 5 years
Costs	Bid-Ask Trading costs, Interest Differential, Manager Fees	Bid-Ask Trading Cost, Upfront Premium, Manager Fees	Bid-Ask Trading Cost, Upfront Premium, Manager Fees

*Note: Liquidity and cost statements may change as market environment changes

Source: LGPSC

It is important to define the currency hedging strategy individually for different asset classes, for example bonds tend to have a 100% correlation with currency and hence are often fully hedged. This is called the hedge ratio: It indicates how much percentage of the total market value in the non-domestic currency is hedged back to the base currency, in this case Sterling. Equities are not considered 100% correlated to currency moves, as equities often have exposure to overseas business and hence a lower hedge ratio is most commonly applied. For example, based on 5-year historical data GBPCHF (0.538) and GBPJPY (0.564) have a higher correlation (with their local equity index) compared to GBPUSD (0.128), which would indicate a higher hedge ratio requirement for CHF and JPY based on correlation, (see correlation matrix below):

<Filter> Correlation Matrix (9 Rows x 9 Columns)

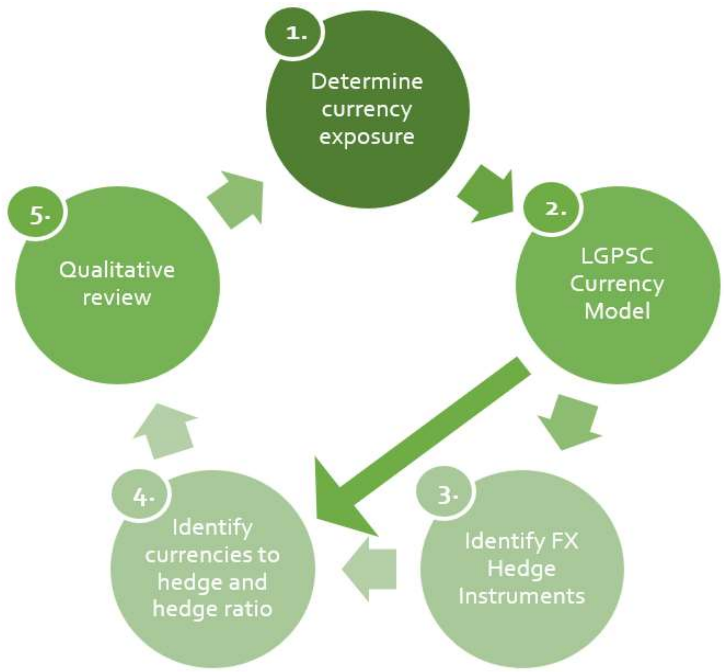
Security	SPX	MXEF	SX5E	SMI	GBPUSD	NKY	GBPJPY	GBPEUR	GBPCHF
11) SPX	1.000	0.626	0.684	0.686	0.128	0.600	0.386	0.258	0.236
12) MXEF	0.626	1.000	0.603	0.534	0.221	0.530	0.244	0.162	0.136
13) SX5E	0.684	0.603	1.000	0.700	0.014	0.666	0.393	0.396	0.229
14) SMI	0.686	0.534	0.700	1.000	-0.017	0.628	0.337	0.243	0.538
15) GBPUSD	0.128	0.221	0.014	-0.017	1.000	0.066	0.603	0.517	0.428
16) NKY	0.600	0.530	0.666	0.628	0.066	1.000	0.564	0.309	0.319
17) GBPJPY	0.386	0.244	0.393	0.337	0.603	0.564	1.000	0.614	0.559
18) GBPEUR	0.258	0.162	0.396	0.243	0.517	0.309	0.614	1.000	0.598
19) GBPCHF	0.236	0.136	0.229	0.538	0.428	0.319	0.559	0.598	1.000

Source: Bloomberg

But the hedge ratio will not only be defined by the correlation, other factors such as the interest rate outlook and monetary policy of the specific country are included in those considerations.

Lastly, we want to introduce the two common forms of currency hedging: Passive vs. Active. In general, Passive currency hedging refers to setting the hedge ratio for equities at 50% and for Bonds at 100%, based on statistical evidence that this minimises currency related portfolio volatility, which we call it a neutral hedge ratio.

In contrast active currency hedging activities review the hedge ratio on a regular basis incorporating a view on the currency outlook, amongst other factors, and then set the ratio closer to 0% or 100%. Over time as market environment changes, the ratio is reviewed and revised. A simplified example can be



the USDGBP, where Sterling currently is trading near historically low levels (in the last 20 years). This would give a strong argument to have a USDGBP ratio > 50%, as it appears more likely for Sterling to appreciate than depreciate against the USD.

While active (dynamic) currency hedging normally refers to managing a non-fixed hedge ratio, LGPSC believes that not only should the hedge ratio be managed dynamically but also the instruments used.

We believe that furthermore the choice of currencies to hedge and instruments should also be dynamically managed and reviewed regularly, as for example hedging costs of different instruments can change over time. This is why we have developed a dynamic phased FX hedging model. To determine if a currency should be hedged or not, the notional exposure is required, but together with additional information such as hedging costs and the output of the LGPSC Currency Model. The dynamic model itself can be customized in any manner to the Portfolios needs by the Fund, (for example) the decision on how frequently model inputs are reviewed. Depending on the market environment, ad hoc reviews of hedge ratios, suitable currencies and hedge instruments maybe required.

SPECIAL FEATURE 2: RISK ADJUSTED RETURN AFTER COSTS (RARAC)

Jason Fletcher
CIO

Jason.Fletcher@lgpscentral.co.uk
Phone: 01902 916 170

LGPSC LIMITED has been asked to explain what is meant by RARAC. This document aims to explain starting with some definitions, breaking the RARAC concept into parts (Risk Return and Cost) and then to provide some examples of how it can be helpful. We hope this makes things clearer and demonstrates the importance of RARAC to the investment process.

Defining the Parts

Investment Costs: This is simply the difference between the gross return and the net return the Pension Fund gets as an investor.

Full transparency is critical, to ensure that investors have a full understanding of the net returns they are receiving and how much is being paid in fees, commissions and any other additional charges managers may include. Once the true investment costs are established, it can then be managed. All other things being equal a reduction in cost equals an improved net investment return.

Gross Return: This is the return the Pension Fund would receive if the investment managers and third parties hadn't extracted their fees, dealing commissions and other costs and the Government had not extracted taxes. Historically this number has not always been available but full cost transparency (using the CTI Templates) is seeking to reveal this in full.

Net Investment Return: This is the return the Pension Fund receives after all the costs have been removed. This historically was what investment managers reported back to Investors. The investment return is then compared with the benchmark or outperformance target.

Gross Return = Net Return + Investment Costs

Risk: Financial risk has many definitions that get increasingly complex and conceptual. The most common financial measures of risk are Volatility, Active Share, Tracking Error, Beta and Value at Risk (VaR). Risk is measured at two different levels:

1. Risk versus the benchmark described as relative risk and

2. Absolute risk (portfolio versus a zero benchmark).

This document will focus on Volatility/standard deviation of returns as it best explains the "risk adjusted" concept in absolute risk measurements and then use Tracking error and Active Share to explain the relative risk concept.

Absolute Risk

Volatility: In finance volatility is the degree of variation of a trading price series over time as measured by the standard deviation of returns. Historic volatility is derived from time series of past market prices. It shows the range of likely outcomes. Historic volatility measures the volatility of prices in the past, whereas "implied" volatility measures the volatility that is built into the expected price of the asset. Low historical or implied volatility provides more stable returns which is a desired outcome for most pension funds. Volatility is an Absolute risk measure. Volatility of above 20% would be considered high risk and below 10% would be considered low risk.

Relative Risk

Tracking Error: The tracking error of a portfolio measures the standard deviation of portfolio returns relative to the benchmark. A tracking error of below 1% is considered low risk and above 4% as high risk.

Active Share: The active share of a portfolio measures the % of the portfolio that is outside of the benchmark. Essentially it tells the Pension Fund how much of its portfolio is not replicating the index. On a scale of 0-100, zero active share is a portfolio that exactly replicates an Index and 100 represents a portfolio that doesn't hold anything in the index.

Use of risk in Investment management

Risk-adjusted return describes an investment's return by measuring how much risk is involved in producing that return, which is generally expressed as a number or rating. Risk-adjusted returns can be applied to individual securities, investment funds and portfolios. Typically, this means taking the return and dividing it by the measure of volatility. One of the more widely quoted measures is the Sharpe ratio which takes the absolute return and divides it by the implied or historical Volatility (standard deviation of returns.)

In a relative world Risk adjusted return is measured as Excess return divided by the relative risk measure. Examples of this are the Treynor ratio and the Information ratio.

Treynor Ratio = excess return/beta

Information Ratio = excess return/tracking error

LGPS Central Limited prefers to think about risk in terms of trying to maximise returns with a set target for risk (Risk Budget). This can be helpful in manager selection in terms of telling the Pension Fund how much risk a manager is taking on the Pension Fund's behalf. It would appear that the FCA has used risk measures as a way of spotting "active managers" that are really just index managers trying to earn outsized fees. It is important that we recognise that risk needs to be taken to get excess returns. If a Pension Fund is paying for risks taking the manager should be taking risks and earning the excess return! Below are some examples of how this can be used in practice

Case study 1: RARAC in Asset Allocation

Consultants will often produce tables showing the volatility of returns alongside an expected return. They then conduct very complex calculations (using the Capital Asset Pricing Model efficient frontiers) to provide an asset mix that maximises returns and minimises risk. Remember that these calculations rely on estimates for returns and historic data for measuring risk, and hence have limited viability to predict future returns and volatility

Illustrative Risk return matrix:

	Expected return (1)	Annual Volatility (1)
Global Equities	5%	15%
Global equities with RI&E	5%	14%
UK Equities	4%	12%
GEM Equities	6%	18%
UK Gilts	2%	10%

Warning asset return profile for illustrative purposes only (Numbers are not representative) Source: LGPS Central

The challenge for pension funds/investors is to combine multiple assets in a way that simultaneously maximise, returns with an acceptable level of volatility/risk. This is known as portfolio optimisation. A combination of asset classes (such as Equities and Gilts in the above table) may improve their risk adjusted return. Clearly, Pension Funds may consider an asset mix that improves returns and reduce volatility. We at LGPS Central limited are attracted to the idea that in the long run (more than a year) volatility is lower, so it matters less. Therefore, using the above table may encourage investors to be too cautious on risk and giving up potentially higher returns. This consideration is reflected in LGPSC Limited's quarterly strategy reports.

Case Study 2: Using RARAC to decide on ESG factors

Many investors are concerned that they might be investing in ESG/ RI&E factors to the detriment of investment returns. It is one of LGPS Central Limited's stated beliefs that returns can be enhanced by engaging with companies over ESG issues, though many investors still question this. We do not believe this conflicts with fiduciary responsibility. However, LGPSC Limited is far more certain that integrating RI&E improves the risk profile of portfolios. Investing in firms with good or improving governance for example will reduce the Risk (volatility of returns).

LGPSC Limited believes that if the fiduciary responsibility is to improve risk adjusted returns, that it is much easier to make the case for incorporating Responsible investment and engagement into investment portfolios.

Case Study 3: RARAC in Manager selection

In the selection of investment managers these risks adjusted return ratios such as (Sharpe and Traynor ratios and others) can be used to compare managers so money should be placed with the manager with the highest ratios. However, these ratios like historic performance are rather blunt instruments and investors should be wary as past performance or indeed volatility are moving feasts and are not necessarily a predictor of future performance.

Adding risk metrics and Investment process analysis to the decision-making process, allows investment manager selection to differentiate between luck and the skill of an investment manager. It also allows the manager selector to gauge the consistency of the fund manager. Measuring risk, gives LGPSC Limited a much more complete picture of what an investment manager does and what their investment process is, which LGPSC Limited believes can be very helpful in selecting managers.

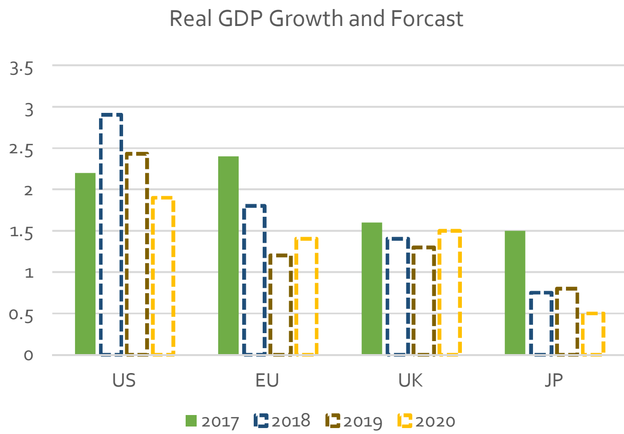
To conclude LGPS Central Limited is wary of falling into the classic trap that investment managers fall into when speaking with clients regarding risk i.e. the excuse that-

"We've got some good news and bad news. Bad news is we have underperformed your benchmark, but I'm delighted to say we've managed it with a very low level of risk!".

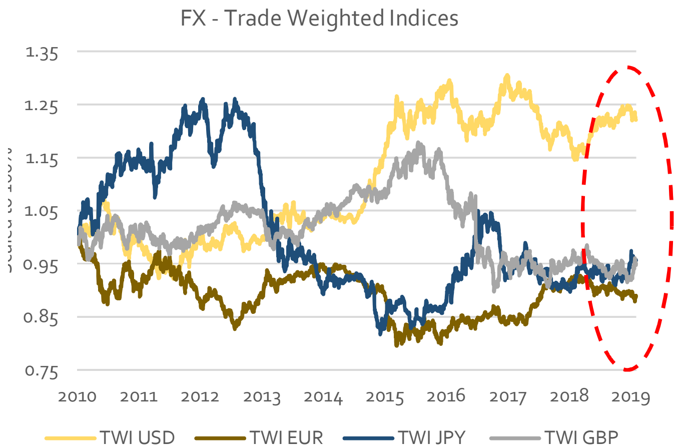
Clearly long-term investment returns through the cycle and different risk environments are what matters most. Risk should be treated cautiously and really ought to be a case of measuring and managing risk rather than focusing a few ratios.

LGPSC Limited hopes that this helps the Pension Funds to better understand the idea of RARAC and its importance in selecting managers and managing pension assets.

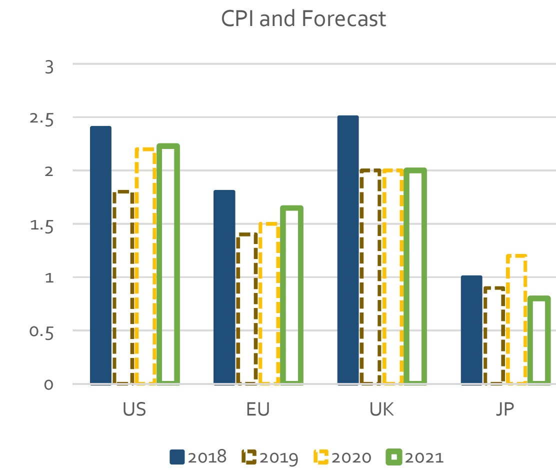
APPENDIX 1: ECONOMIC OUTLOOK



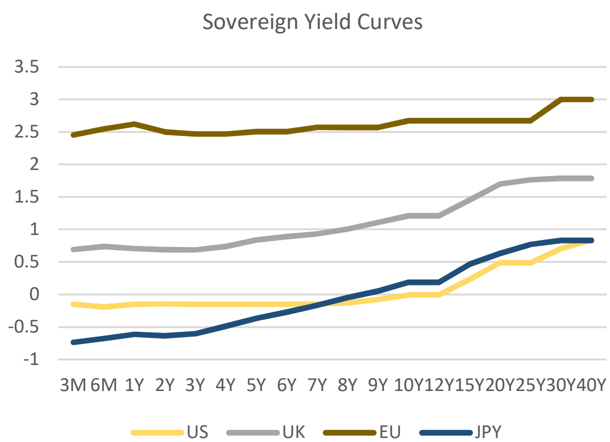
Since last quarter the World Economy forecasts have remained relatively stable, after a downward trend between Q3 and Q4 2018.



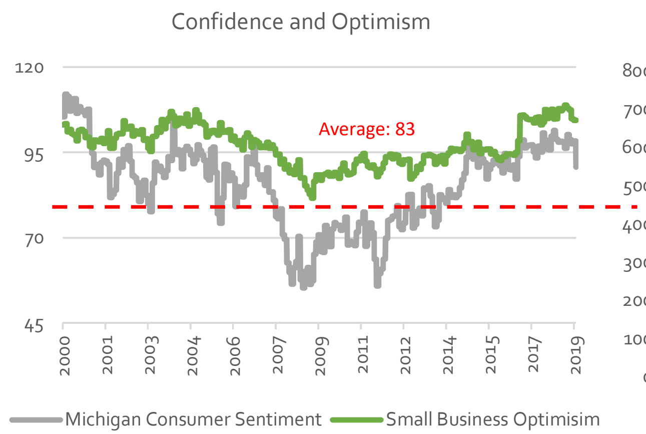
The trade-weighted strength of the Dollar has stabilised its gap compared to other currencies over the last quarter.



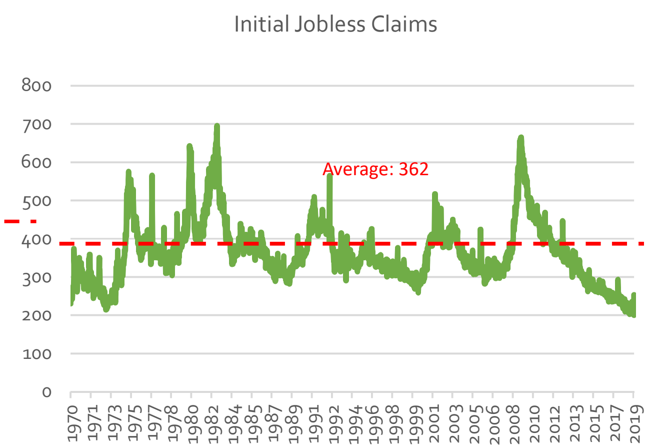
Inflation forecasts have further flattened since last quarter and suggest not too much of a surprise for 2019



Significant changes have been observed since the last quarter, with the EU and UK yield curve higher and Japan lower. Only the US yield curve is barely changed compared to the last quarter.



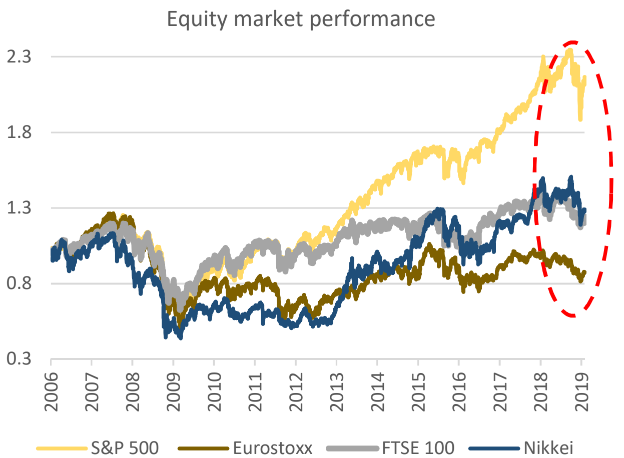
Consumer confidence remains well above average, showing a positive outlook …



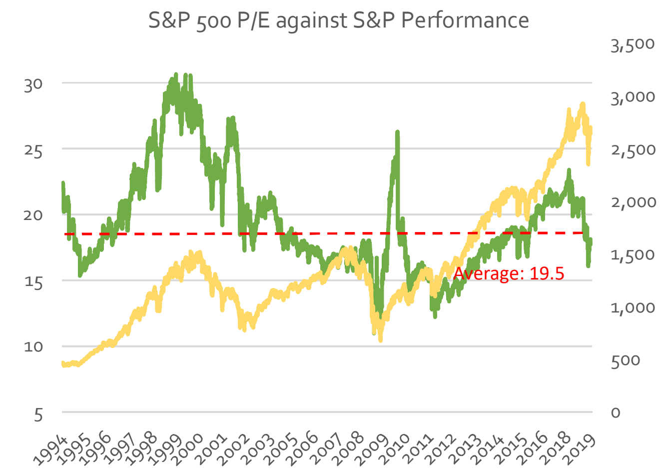
… with initial jobless claims providing a similar positive picture below long-term average.

Source: Bloomberg, OECD, data as of 19/03/2019

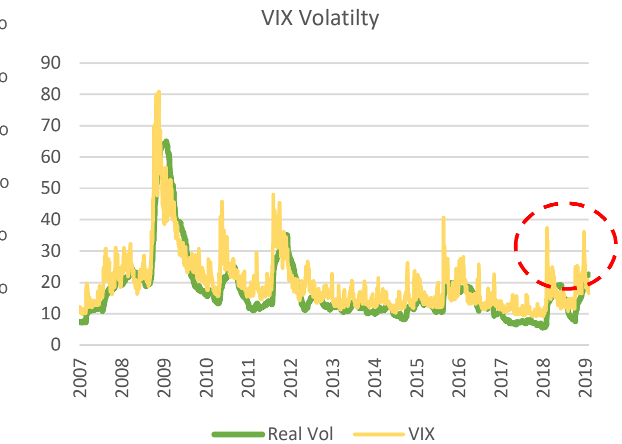
APPENDIX 2: MARKET OUTLOOK



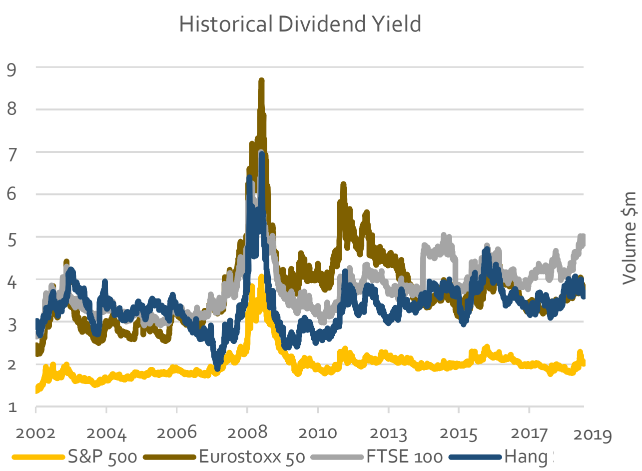
The US has significantly outperformed the rest of the world since 2009, however Q4 2018 saw a sharp market decline caused by the Technology sector, which has started to recover in Q1 2019.



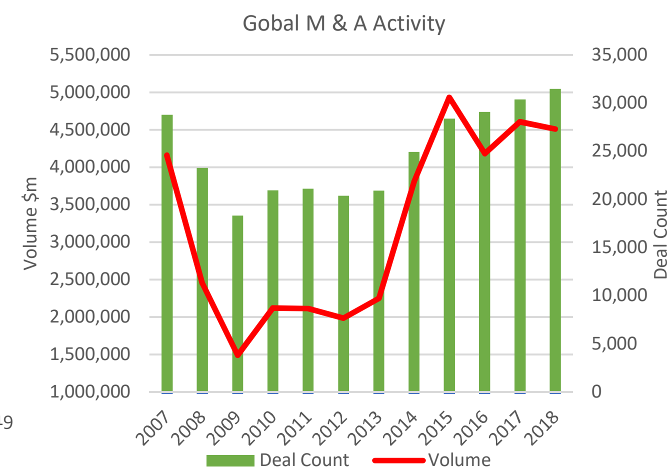
US equities start to look stable in relation to the EU and UK. The current S&P P/E is 18.13, increased from 17.11 in Q4 2018 and now below its long-term average.



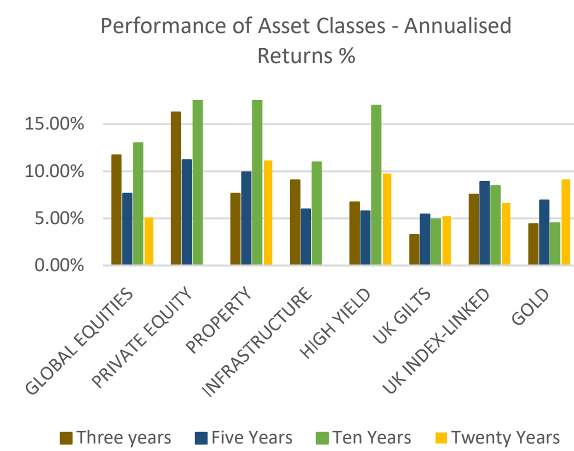
This is accompanied by a spike in implied volatility, indicating a general increased nervousness in the market. Historically this has tended to be a good buy signal.



Dividend yields show a slight upwards trend.



M&A activity paints a similar picture to IPO deals and has seen an increase in deal activity compared to Q4 2018, in particular in the UK.



Recent negative equity market performance corrected back to positive territory, but over the long-term good returns can be observed across asset classes.

Source: Bloomberg, OECD, data as of 19/03/2019

APPENDIX 3: INVESTMENT IDEAS – MEET THE TEAM

Jason Fletcher
CIO
Jason.Fletcher@lgpscentral.co.uk
Phone: 01902 916 170

Callum Campbell
Head of Client Services & Stakeholder Relations
Callum.Campbell@lgpscentral.co.uk
Phone: 01902 916 204

David Searle
Communications Officer
david.searle@lgpscentral.co.uk
Phone: 01902 916 201

Mike Hardwick
ID Property & Infrastructure
Mike.Hardwick@lgpscentral.co.uk
Phone: 01902 552 089

Michael Marshall
Director of Responsible Investing & Engagement
Michael.Marshall@lgpscentral.co.uk
Phone: 01902 916 193

Gordon Ross
Deputy CIO,
ID Fixed Income
Gordon.Ross@lgpscentral.co.uk
Phone: 01902 916 167

Colin Pratt
ID Manager of Managers
Colin.Pratt@lgpscentral.co.uk
Phone: 01902 916 209

David Evans
ID Passive Equities
David.Evans@lgpscentral.co.uk
Phone: 01902 916 199

Omar Ghafur
ID Private Equity
Omar.Ghafur@lgpscentral.co.uk
Phone: 01902 916 177

Vania Clayton
Senior Portfolio Manager
(Equity, Fixed Income, Derivatives)
Vania.clayton@lgpscentral.co.uk
Phone: 01902 916 206

Please contact Callum Campbell, Head of Client Services and Stakeholder Relations, if you would like to discuss the views outlined in this report with LGPS Central's Investment Directors

1 Selective Overweight Private Equity (O. Ghafur)

- Fund raising environment remains robust, with substantial "dry powder" for investments;
- Possibility of PE Managers overpaying for assets due to increased competition;
- Favour PE downside protection (e.g. private debt) and high quality/low risk
- Direct investment in defensive companies/sectors and/or upper quartile managers
- Sell unattractive and legacy assets

2 Underweight Fixed Income (G. Ross)

- 1.5% nominal yield on UK 10yr Gilt is not a sufficient return to meet future liabilities which are inflation-linked
- Rising inflation is bad for Gilt returns
- Yields to turn upwards as multi-year lows are reversed

3 Neutral property – Negative Outlook (M. Hardwick)

- Heightened sensitivity to Brexit deterring some investors and slowing investment activity
- Continued pressure on Retail valuations likely to accelerate as valuation departments assert their independence
- Retail will present value at some point, just not yet
- Occupational demand a mixed bag but slowing even in strongest sectors
- Yield still attractive versus other asset classes

4 Overweight infrastructure (M. Hardwick)

- Expensive historically but good value versus bonds
- Opportunities may arise from some global investors paring back interest in UK
- Maturing pension schemes and better funding levels should support demand
- Fears of nationalisation of infrastructure assets under a future Labour government could impact investment returns especially in light of political instability emanating from Brexit deal rejection

GLOSSARY:

GEMs	**Global Emerging Markets**
ESG	**Environmental, social and governance**
LTM	**Last twelve months**
IG	**Investment Grade**
VIX	**S&P Implied Volatility Index**
IPO	**Initial Public Offering**
OPEC	**Organisation of Petroleum Exporting Countries**
FAANG	**Facebook, Apple, Amazon, Netflix & Google**
UNPRI	**Principles for Responsible Investment**
YTD	**Year to date**
PE	**Private Equity**

All information is prepared as of 03.04.2019, if not stated otherwise.

This document is intended for PROFESSIONAL CLIENTS only.

LGPS Central Limited is authorised and regulated by the Financial Conduct Authority.
Registered in England Registered No: 10425159.
Registered Office: Mander House, Mander Centre, Wolverhampton, WV1 3NB

This page is intentionally left blank