REPORT PREPARED FOR

Oxfordshire Pension Fund Committee

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Oxfordshire Pension Fund Quarter to end March 2022

Summary

The value of the Fund in the quarter fell to £3.26bn, a decrease of £117m compared to the end December value of £3.38bn. The Fund produced a return of -3.5% over the quarter, which was -2.3% behind the benchmark. Purely on a single quarter basis performance against benchmark has been pretty disastrous for the active equity portfolios, which have dragged down the 12 month positions with it. The saving grace has been private equity, so far. There are a few other glimmers of positive performance, but in general terms this was a difficult quarter. Over a 12-month period the Fund recorded a slightly negative relative return against the benchmark of -0.3% (10.4% v.10.7%). The Fund has performed ahead of benchmark over the three, five and ten year periods, details of which can be found in Brunel's report.

The highlights

1. It's a bit difficult to know where to start, given the turmoil we have seen during the first few months of this year. Clearly our thoughts are very much with the people of Ukraine, and the innocent citizens of Russia, but we still need to deal with the consequences of Putin's murderous folly. At Fund level, despite some immediate market weakness in the aftermath of the invasion, we actually finished the quarter in a reasonable position. That's important, as the financial year end values provide the basis for the Triennial Valuation process.
2. The main highlight, if that is an appropriate term, is the significant underperformance seen within the active equity portfolios and also within multi asset credit. This is probably best summed up as being in the wrong places at the wrong time from a sector allocation perspective and partly wrong countries in the Emerging Markets portfolio.
3. Realistically on a short term basis this underperformance is hardly surprising, given that despite the build up of Russian forces on the Ukrainian borders the actual invasion was still a shock. That left the Fund wrong footed in terms of being underweight in the sectors most immediately affected by the response to the invasion, namely energy and commodities.
4. The sad thing is that the consequences of recent events will be with us for some time to come as the countries aligned against Putin replace Russian sources of supply elsewhere. We should expect that some other countries will happily take up supplies from Russia, which in a sense will be part of the rebalancing process.
5. The good news; Private Equity had a really good quarter, but more importantly the one year and longer performance periods look excellent. For the in-house portfolio there is an outperformance of 23.8% to report over 12 months, with Brunel Cycle 1

showing 33.6% over the same period. As is to be expected the listed private equity portfolio had a difficult Q1, but longer-term performance is stellar.

6. During the quarter Brunel added Jupiter and Mirova to the managers of the Global Sustainable Equities Fund, making five in total, with £2.5bn under management. I consider five managers to be excessive diversification, with a danger of performance reverting to average, at best, over time.
7. Property continues to experience a patchy performance profile across the sub sectors. Most Covid related issues are now dealt with, so valuations now reflect economic conditions more accurately. Some recent conversations with property managers have been particularly positive in relation to well positioned portfolios, but sub standard assets are not in demand.

The lower points

1. We'll start off with Global Sustainable Equities, which with an underperformance of -7.2% (-9.8% v.-2.5%) is the worst performing portfolio. I have alluded to the background reasons for that above, but in more detail the high exposure to American growth stocks, which have been hit hard this year, will have had a large impact on performance. To compound that, the low exposure to "value" stocks, which includes energy and commodity stocks which have outperformed, will have added to the pain. Brunel claims that this poor performance is in line with the sustainable peer group. This is the short-term price for the long-term gains of investing sustainably, apparently.
2. Next up is Global High Alpha Equity, with an underperformance of -5.6% (-8.0% v. -2.3%). The background to this is similar to that above, but in stark terms energy was the largest underweight and the best performing sector. Consumer discretionary was the worst performing sector, with the largest overweight position. The two managers with a growth bias underperformed, the two with a value bias outperformed. Opposing high conviction strategies that have cancelled each other out, but the downside exacerbated by the ESG tilt.
3. The scale of the UK Active underperformance initially surprised me, being -4.8% (-3.6% v. 1.2%). The UK was the one developed market that had a positive return in Q1. Reading the explanation showed that Baillie Gifford underperformed by -10.8%, which is a reflection of their growth bias, combined with an overweight position in smaller companies. This clearly wasn't a good quarter for them, but their method is well known and has delivered over the longer-term.
4. We'll finish active equities with Emerging Markets, which was only behind relatively by -2.9% (-7.1% v. -4.3%). I say "only" because I have seen much worse performance elsewhere. Three managers here (why?), two well under target, one nicely ahead. We've got underweight exposures to commodities to contend with here, but also one laggard had an overweight exposure to Russia, the gainer had the lowest exposure to Russia. There was also an element of lack of exposure to Saudi Arabia and the UAE, which while damaging in itself is also rather understandable.

5. I'm still bemused by the Multi Asset Credit Fund having effectively two benchmarks, and still early days for this sub fund. Against the primary benchmark the portfolio underperformed by -3.8% (-2.7% v. 1.1%). It was in line with the secondary benchmark, which probably does reflect the actual portfolio better. Clearly there was a lot of volatility in the component markets that make up the Multi aspect, three of the managers struggled with that, one faired much better due to their different "mix".
6. Infrastructure investments continue to be made, with the final commitment being made in the quarter to the main Cycle 2 portfolio with a drawdown of 37%, the renewables now also fully committed but only 16% drawn down. Both Cycles are still relatively immature, with an expectation that relative performance will improve over time.
7. While Private Equity continues to perform well, drawdown from Brunel continues to be slow. Cycle one is 46% drawn, while Cycle 2 is only 21% drawn down.

Points for consideration

1. The consequences of the war in Ukraine and the way in which Putin has made Russia a pariah state will sadly be with us for a long time to come, even if there is an immediate cessation of hostilities and a total withdrawal of Russian forces from all of Ukraine, including Crimea. There will be a realignment of which countries buy what from whom and during the transitionary phase energy and commodity prices will remain high as supply will be disrupted. We were already in an increasingly inflationary environment before the invasion, as we have seen recently higher energy and food prices are rapidly driving CPI even higher.
2. Higher CPI will feed through to higher pension payments next year, possibly c.10%? This will be based on the CPI level this September. This needs to be considered in cash flow management going forwards.
3. Given my concerns about Brunel's lack of transparency concerning the management of their sub-funds, particularly concerning the detailed performance attribution form the multiple managers involved, I am pleased to report that access will be provided to more information. Hopefully this will flow through to members having better detail about Brunel's performance for this Fund.
4. It is to be hoped that this will include clear information concerning performance against targets for the active managers, so that we can monitor payment of active management fees more effectively.
5. It is disappointing that Brunel will not be represented at this Committee meeting, particularly given their very poor recent performance. Brunel now manage 80% of Fund assets, so I recommend that Brunel be asked to have a senior representative available for future meetings, if only to be able to answer questions arising from their reports.

Overview and Outlook thoughts

Global overview

Investors faced a challenging Q1: rising inflation pressures were exacerbated by Russia's invasion of Ukraine, while central banks' increasingly tough rhetoric led to increased fears that the tighter monetary policy may lead to recession. In addition, China faced a new wave of COVID infections, and implemented severe lockdowns in major cities, impacting growth in March. As a result, global equities fell -5.0% over the quarter, with only UK equities bucking the trend (up +2.9%); European and Emerging markets equities suffered most (down -8.9% and -7.0% respectively). Value-oriented stocks experienced more muted declines than growth stocks (-1.2% for the MSCI World Value Index vs -9.8% for the MSCI World Growth Index). Corporate and government bond indices also declined (for the UK indices, by -6.5% and -7.2% respectively), while the hard currency emerging market bond index fell -10.0%, posing a significant challenge to "traditionally diversified" portfolios. Real assets (commodities, real estate) fared better, and the USD strengthened against most currencies.

GDP growth: While growth generally remained positive in Q1 for developed markets, the growth rates are already well below Q4 comparatives, and face further headwinds from Russia's invasion of Ukraine. The US posted a -0.4% quarterly decline[1], the Eurozone +0.3% and the UK saw growth of 0.8%. In China, the Chinese Communist Party is continuing to stick to a zero-Covid policy, which has led to widescale lockdowns, including in the financial hub of Shanghai; this has cast doubt on the viability of the +5.5% official target growth over 2022. The World Bank has revised its expected global GDP growth for 2022 from +4.1 to +3.2%. Over the last year, strong corporate earnings have provided significant momentum to global equity markets, however, there are now increased fears that Q1 earnings could disappoint investors as firms face challenges on two fronts with pricing pressures affecting both margins and curtailing consumer demand.

GDP Growth Rate and Monthly CPI

%	GDP		CPI		
	Q1 2022	Q4 2021	Jan	Feb	March
UK	0.0*	1.3	5.5	6.2	7.0
US	0.3*	1.7	7.5	7.9	8.5
Eurozone	0.3*	0.3	5.1	5.9	7.5
Japan	n/a	1.1	0.5	0.9	1.1*

Source: Bloomberg; Trading Economics. *Forecasts based on leading indicators.
GDP Notes: UK Real GDP (Ticker: UKGRABIQ Index); US Real GDP (Ticker: EHGDUS Index); Eurozone Real GDP (Ticker: EUGNEMUQ Index); Japan Real GDP (Ticker: EHGDJP Index)

Outlook thoughts

It is worth highlighting the following themes, potentially impacting investment markets:

[1] Note: US GDP has been de-annualised to be consistent with the other regions.

Inflation: Inflationary expectations are now reasonably well discounted by markets (US inflation is expected to average some 4% in 2022, falling to between 2.5 and 3% in 2023), and it is possible that year-on-year inflation is close to reaching its peak, but there are clearly risks to this. The inflationary aspect of Russia's invasion of Ukraine has so far been most acutely felt through the pricing in energy markets, with consumers facing rising fuel and heating costs. This could be further exacerbated by calls for European nations to boycott Russian energy imports, which provide the Kremlin with approximately $400 million per day. Furthermore, the increasing focus on energy security is likely to cause sustained upward pressure on consumers' energy bills. Food costs, particularly wheat, have also increased due to the war given that Russia and Ukraine are among the world's largest exporters. Nonetheless, wage growth has so far lagged behind inflation, despite a tight labour market. If this were to change it is likely to keep inflation above the policy target rate for longer.

Monetary policy is tightening, and interest rates are increasing, but rates remain negative in real terms: The Federal Reserve increased interest rates by 25bps on 16th March, their first increase since 2018, with the expectation that US rates may peak around 3% in 2023. In addition, the Fed is expected to start briskly reducing its holdings of high-quality bonds ("quantitative tightening"), which could put more upward pressure on long term rates and tighten credit conditions. The Bank of England also increased the base rate by 25bps in both February and March (to 0.75%) while more hawkish members of the ECB have called for the next rate hike as early as the summer.

Increasing risk of recession: With many of the inflationary pressures being "supply-side", the ability of the central banks to rein in price rises without causing a recession is coming under increased scrutiny. The recent inversion of the US yield curve (with 10-year yields falling below 2-year yields, implying expectations of weakening growth) added to concerns. Market expectations still do not have a recession as the "base case" - employment remains high, consumers well financed and post-COVID recovery momentum continues – but it is no longer a "tail risk". Europe looks more exposed that the US, due to its greater exposure to Russian energy and emerging market exports.

Equities

Global equities had a challenging Q1. All tracked indexes, except for UK equities, suffered significant declines but followed differing paths. In March, most of the developed markets had regained some lost ground as the stalling Russian invasion eased fears of the conflict extending beyond Ukraine's borders. Unsurprisingly, the VIX increased by 19.4% in Q1, from 17.2 to 20.6.

US equities, measured by the S&P 500, , posted large losses over Q1 with the S&P 500 falling -5.2% and the tech-heavy NASDAQ falling by -8.9%. The communication services, technology, and consumer discretionary sectors all declined while energy and utility companies were positive, and defence stocks enjoyed double-digit growth over the quarter.

UK equities UK equities performed well over Q1, with both the FTSE 100 (+2.9%) and FTSE All-Share (+0.5%) indices delivering positive returns. Defence stocks along with the oil,

mining, healthcare, and banking sectors all provided tailwinds for UK large caps. The consumer-focused constituents of the small and mid-cap sectors contributed to their underperformance.

The Euro Stoxx 50 declined by -8.9% over Q1. Having started the quarter suffering more muted losses than other markets, the geopolitical impact of Russia's invasion caused significant pain across European markets. While sanctions have an obvious adverse effect on trade and capital flows, Russia's position as one of Europe's foremost energy suppliers reflects both further inflationary pressure and concerns around energy security. As such the energy sector was the only source of positive returns while consumer discretionary and information technology were hit hardest.

Japanese equities continued to decline over Q1 registering a decline of -4.3%. Losses were most severe in January while the market enjoyed a modest recovery in March. Banking and insurance stocks were some of the top performers.

Emerging market equities fell over the quarter (-7.0%). The Moscow based MOEX Index declined around -30%, suffering widespread disruption and suspension of normal trading. This was followed by the removal of Russia from the MSCI Emerging Markets Index on 9th March. Chinese stocks also declined as China's zero-Covid policy faltered with surging cases and tens of millions of citizens placed under lockdown. The continued disruption was caused by the de-listing of some Chinese stocks from foreign exchanges. Brazilian markets continued to perform strongly with other net commodity exporters in the Gulf states and South Africa enjoying quarterly gains.

Global Equity Markets Performance

Source: Bloomberg. All in local currency.
FTSE All-Share Index (Ticker: ASX Index) S&P 500 Index (Ticker: SPX Index) STOXX Europe 600 (Ticker: SXXP Index)
Nikkei 225 Index (Ticker: NKY Index) MSCI World Index (Ticker: MXWO Index) MSCI Emerging Markets (Ticker: MXEF Index)

Fixed Income

Global bonds were unusually volatile given the geopolitical situation and the macro-economic backdrop of accelerating inflation and interest rate hikes which underpinned the rise in bond yields. Investors rotated toward safe-haven assets as the war began in February but soon appeared to change stance. Government bond yields rose sharply (prices fell) in Europe, the UK, and the US due to monetary normalisation. Corporate bonds also saw significant negative returns and performed broadly in line with government bonds over the quarter.

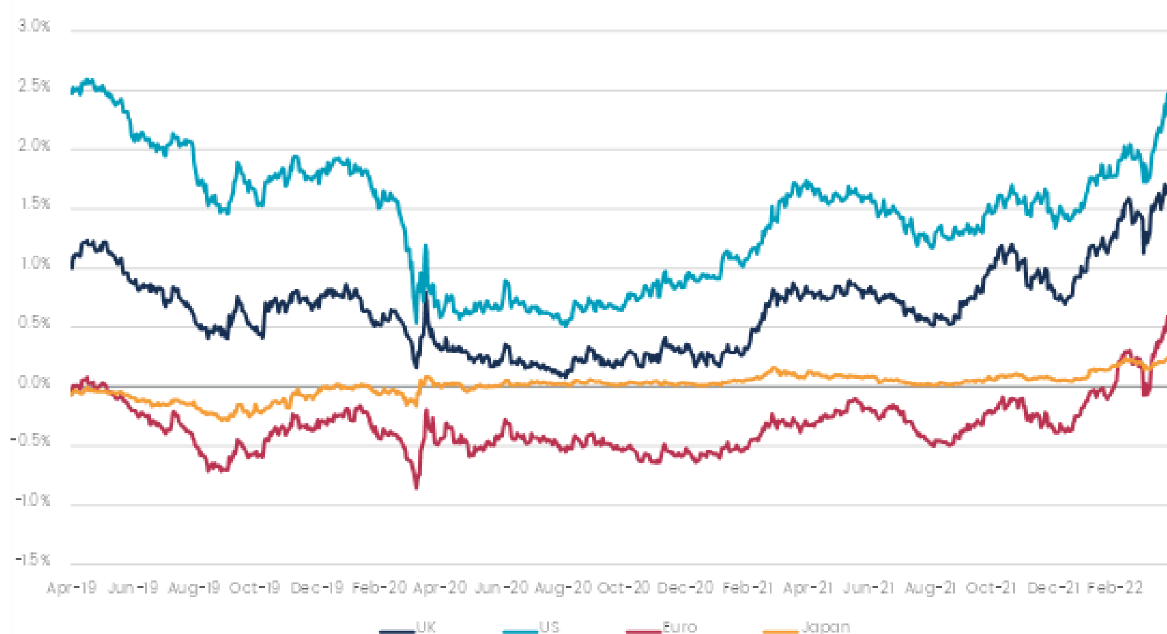
The 10-year US Treasury Bond yield ended the quarter 83 basis points higher at 2.34%, with Treasuries as a whole providing a total return of -5.6%, with the 2-year yield rising from 0.73% to 2.34%. The 2-year and 10-year portion of the US Treasury yield curve flattened, briefly inverting in March for the first time since 2019 which sent a potential warning sign of a coming recession within a one-to-two-year window. To combat the 40-year high US inflation, which reached 8.5% in March, the US Federal Reserve raised interest rates to a target range of 0.25% to 0.5%, which was the first increase since 2018. The unemployment rate edged down to 3.6% and stood at its lowest level since before the pandemic, bolstering the case for the Fed to speed up the tightening of monetary policy in the fight against inflation.

The 10-year Gilt yield increased from 0.97% to 1.61%, with Gilts delivering a total return of -7.2%. Given the UK CPI jumped to a 30-year high of 7.0% in March 2022, the Bank of England raised rates twice in Q1, reaching 0.75% from 0.25% in December 2021. This was done despite concerns around the UK economic outlook and particularly the cost-of-living pressures on households, causing a significant purchasing power squeeze due to higher energy bills. Index-linked Gilts had returned -5.5% as the positive effect of higher inflation expectations were more than offset by the impact of increased interest rates.

European government bonds provided a total return of -5.3%. The ECB pivoted towards a more hawkish stance in February and outlined the plan to end bond purchases. The ECB further indicated that a first interest rate rise could potentially come in 2022. The annual Eurozone inflation rate surged to a record high of 7.5% in March, the highest since the introduction of the euro in 1992. The euro area unemployment rate dropped to 6.8% in February, the lowest level on record.

US high-yield bonds aligned with the global bonds market, returning -4.8%, with -4.1% performance for European high-yield bonds. Investment-grade bonds returned -6.5% in the UK, -5.3% in Europe and -7.7% in the US.

Government Bond Yields



Source Bloomberg. US Generic Govt 10 Year Yield (Ticker: USGG10YR Index); UK Govt Bonds 10 Year Note Generic Bid Yield (Ticker: GUKG10 Index); Euro Generic Govt Bond 10 Year (Ticker: GECU10YR Index).

Currencies

In the first quarter of 2022, Sterling weakened against the Dollar (-0.3%) and the Euro (-2.9%), with rising living costs, weakening consumer sentiment, and greater uncertainty over inflation all undermining confidence in the UK's economic outlook. The Dollar had a strong quarter (Dollar Index +2.8%). The Euro weakened notably against the Dollar (-2.5%) as investors favoured the US over Europe amid heightened uncertainty. The Russian rouble experienced a sharp devaluation, with the decision to invade Ukraine being met by powerful economic retaliation from the West, severely threatening financial stability in Russia.

Commodities

Energy prices soared in the first quarter of 2022 with the Russian-Ukraine conflict putting further pressure on already rising prices. The situation exacerbated the effect of rising energy demand and ongoing supply constraints, which had already put upward pressure on energy prices in January. Precious metals also surged, with investors moving into traditional safe-haven assets following the Russian invasion.

Natural gas prices spiked to $5.64/MMBtu (+51.3%) in the US and to $39.22/MMBtu (+70.0%) in Europe. Russian gas is still flowing through to Europe in large quantities, but investors fear that these supplies could be disrupted by Western sanctions, or even cut off completely as fighting in Ukraine intensifies. Europe currently receives around 40% of its gas supplies from Russia, so is more reluctant to impose sanctions than the US, which has already banned Russian gas imports, and the UK, which will phase out imports by the end of

the year. Nonetheless, Germany suspended certification of the Russian Nord Stream 2 pipeline.

Brent crude oil also experienced soaring prices in Q1 (+38.7%) and reached an intra quarter high of $128 a barrel, reflecting uncertainties about disruptions to supply and further sanctions related to Russia's invasion. The US was able to ban imports of oil from Russia due to its relatively low dependence on Russian supply.

Wheat recorded sharp price gains (CBOT Wheat +30.5%) on supply fears, with Russia and Ukraine together accounting for around 30% of global wheat exports. Wheat is a staple food upon which the most vulnerable depend on, so this disruption could have far-reaching consequences for global food security, with Egypt imposing price caps on bread.

Gold and Silver prices rose +6.6% and +7.6% respectively in Q1 as investors sought haven assets.

Nickel prices rose 54.7% over the month to $32,107/t. Trading of the metal on the London Metal Exchange was suspended in mid-March following a short squeeze, with prices doubling to a new record high during a single morning. The LME scrapped $3.9bn of trades prior to closing the market, stating that prices no longer reflected the underlying physical market.

Property

Global listed property had a weak quarter, with the FTSE EPRA Nareit Global Index declining -0.6% in Q1.

Green Street Advisor's US Commercial Property Price Index remained broadly flat (+0.2%) over the quarter. Nevertheless, this follows a year of strong performance, with an increase of 21.5% over the past 12 months and a 14.6% increase from pre-Covid levels.

The Nationwide UK house price index rose once again across Q1 (+4.1%). Annual house price growth increased to +14.3% in March, up from +10.4% in December.

Key Indicators at a Glance

Market Indicators

	Index (Local Currency)	Q1 2022	Quarter-on-Quarter	2021
Equities		**Index Value**	**Total Return**	
UK Large-Cap Equities	FTSE 100	7,516	2.9%	18.4%
UK All-Cap Equities	FTSE All-Share	4,188	0.5%	18.3%
US Equities	S&P 500	4,530	-4.6%	28.7%
European Equities	EURO STOXX 50 Price EUR	3,903	-8.9%	24.1%
Japanese Equities	Nikkei 225	27,821	-4.3%	7.4%
EM Equities	MSCI Emerging Markets	1,142	-7.0%	-2.3%
Global Equities	MSCI World	3,053	-5.0%	22.4%
Government Bonds				
UK Gilts	FTSE Actuaries UK Gilts TR All Socks	3,678	-7.2%	-5.2%
UK Govt Bonds Over 15 Years	FTSE Actuaries UK Gilts Over 15 Yr	5,402	-12.3%	-7.3%
UK Index-Linked Gilts	FTSE Actuaries UK Index-Linked Gilts TR All Stocks	5,693	-5.5%	4.2%
UK Index-Linked Gilts Over 15 Years	FTSE Actuaries UK Index-Linked Gilts TR Over 15 Yr	7,859	-8.6%	4.0%
Euro Gov Bonds	Bloomberg EU Govt All Bonds TR	242	-5.3%	-3.5%
US Gov Bonds	Bloomberg US Treasuries TR Unhedged	2,361	-5.6%	-2.3%
EM Gov Bonds (Local)	J.P. Morgan Government Bond Index EM Core Index	131	-5.1%	-9.2%
EM Gov Bonds (Hard/USD)	J.P. Morgan EM Global Diversified Index	879	-10.0%	-1.8%
Bond Indices				
UK Corporate Investment Grade	S&P UK Investment Grade Corporate Bond Index TR	378	-6.5%	-2.9%
European Corporate Investment Grade	Bloomberg Pan-European Aggregate Corporate TR Unhedge	238	-5.3%	-0.2%
European Corporate High Yield	Bloomberg Pan-European HY TR Unhedged	420	-4.1%	4.2%
US Corporate Investment Grade	Bloomberg US Corporate Investment Grade TR Unhedged	201	-7.7%	-1.0%
US Corporate High Yield	Bloomberg US Corporate HY TR Unhedged	2,342	-4.8%	5.3%
Commodities				
Brent Crude Oil	Generic 1st Crude Oil, Brent, USD/bbl	108	38.7%	50.2%
Natural Gas (US)	Generic 1st Natural Gas, USD/MMBtu	5.64	51.3%	46.9%
Gold	Generic 1st Gold, USD/toz	1,949	6.6%	-3.5%
Copper	Generic 1st Copper, USD/lb	475	6.4%	26.8%
Currencies				
GBP/EUR	GBPEUR Exchange Rate	1.19	-0.3%	6.5%
GBP/USD	GBPUSD Exchange Rate	1.31	-2.9%	-0.9%
EUR/USD	EURUSD Exchange Rate	1.11	-2.5%	-7.0%
USD/JPY	USDJPY Exchange Rate	121.56	5.6%	11.4%
Dollar Index	Dollar Index Spot	98.31	2.8%	6.4%
USD/CNY	USDCNY Exchange Rate	6.34	-0.3%	-2.6%
Alternatives				
Infrastructure	S&P Global Infrastructure Index	2,944	7.5%	11.8%
Private Equity	S&P Listed Private Equity Index	208	-9.5%	43.2%
Hedge Funds	Hedge Fund Research HFRI Fund-Weighted Composite Index	18,083	-0.8%	10.2%
Global Real Estate	FTSE EPRA Nareit Global Index TR GBP	4,148	-0.6%	24.2%
Volatility				
VIX	Chicago Board Options Exchange SPX Volatility Index	21	19.4%	-24.3%

* All return figures quoted are total return, calculated with gross dividends/income reinvested.
Source: Bloomberg

Market thoughts

Commodities

In the light of the then recent invasion of Ukraine an interesting question was raised at the last Committee meeting about the Fund being able to increase exposure to commodites, given the uncertainties surrounding equity markets at the time. Now there is a certain element about the horse having already bolted at that stage, but I do vaguely remember agreeing to giving the question some further thought.

Let me start off by saying that I am by no means an expert on commodities. It is a very diverse asset class, ranging from high value materials (gold) right the way through to basics (potatoes). I also learnt quite early in my career that commodities are in one important aspect very similar to currencies, namely whatever I think I am likely to get it wrong and that frankly my guess is as good (or bad) as yours. So against the background that whatever I write here is likely to be garbage, here goes….

The Fund already has some exposure to commodities. About 8% of the investment in Insight's Diversified Growth Fund is in commodities. There will be some exposure within Brunel's equity portfolios, but that is likely to have reduced somewhat with the recent switch to the Passive Developed Equities Paris Aligned Fund, as that will have a low exposure to certain types of commodity. Which leads us to quite an important question, where do you draw the line as to which commodities you would be prepared to invest in, or put another way, which do you exclude? Given the Fund's stance on environmental issues, it would be fair to assume that carbon related commodities would be excluded. But what about the broader issue of mining? That tends to be disruptive and generally environmentally unfriendly. Include lithium as well, needed for batteries in electric vehicles and power generation transition. Not exactly as friendly as it appears at first sight. Agricultural commodities bring their own challenges beyond simple supply and demand, as supply is often subject to the vagaries of the weather and other factors. Sadly other factors within the specifics of the war in Ukraine include the fact that Ukraine and Russia have a big agricultural presence, particularly for wheat and sunflower production.

The question was sparked by Putin ordering Russian forces to attach Ukraine. He turned himself into a pariah right there and then, and quite rightly a large part of the world doesn't

want to do business with Russia anymore. The headline grabbing stuff has been gas and oil, but there is a lot more than that with other commodities. So let's try to put that into perspective. For that I was drawn to a useful article published by Vontobel, that with their permission I reproduce here.

With Vladimir Putin's designs on Ukraine now becoming apparent, western importers of Russian energy, grains, and metals are wondering what's in store for them. To nobody's surprise, commodity prices have risen to new record highs, contrasting the downturn on equity markets. Europe must prepare for another inflationary shock – and more human suffering.

Already in the run-up to the crisis, commodities were pricing in elevated geopolitical risks, and that has increased with Russia's invasion as well as every daily escalation. The broad-based Bloomberg Commodity Index is up 26.5% year-to-date, while crude oil is up 50%, aluminium 30%, and wheat almost 45%.1 All commodity sectors are facing severe potential supply disruptions and are likely to create inflationary shocks in Europe the longer the war drags on. This isn't the type of price increase people are prepared for. The combination of supply disruptions, rising prices, and low commodity inventories will ultimately have to lower demand. Central banks can't do much because raising key rates would endanger the economic recovery, which makes inflation less transitory than thought at the start of the year.

Nord Stream 2, the much-criticized gas pipeline between Germany and Russia allowing Europe's largest supplier to increase its already commanding market share, is now off the table. Germany, finally responding to calls from western allies, has stopped the approval process. This isn't a problem in the short term as Europe has enough natural gas for the remaining weeks of winter weather. However, it's now becoming clear there won't be enough capacity to fill up Europe's gas tanks later in the year. These are already 15% below their five-year average levels and may run almost dry before the next winter starts. Thus, natural gas prices are likely to remain high and volatile for the foreseeable future, causing electricity prices to stay elevated in Europe. The gravity of the problem was driven home by news that the German government may keep the remaining three nuclear power plants running, and even discuss extending the life of domestic coal mines. Similar policy changes are discussed in Eastern Europe and Italy but let's not forget that some of these economies depend on Russian coal.

Russian oil deliveries are also in focus. The country, second only to Saudi Arabia in terms of global market share, sends two thirds of its oil exports westward, about 3.5 million barrels per day. So far, it has never cut Europe off, except one time during World War II, and wants to be seen as a reliable energy supplier even during crises. It's also worth noting that the European Union's sanctions so far don't extend to energy flows. But trouble is brewing for Russia as a producer (and Europe as a consumer) in a different area. A growing number of European, US, and even Chinese lenders are restricting financing for purchases of Russian

commodities to reduce legal and reputational risk, and to mitigate the consequences of a Russian counterparty default. And of course, excluding Russian banks from the international payment system SWIFT makes money transfers cumbersome, stalling trade in physical commodities. Despite the current 20 USD discount Russia is offering on the barrel, no western consumer is willing, or indeed able, to trade. This means that inventories in Europe are in a rapid decline, falling daily by 2 to 3 million barrels.

Russia is loosely tied to the Organization of Petroleum Exporting Countries (OPEC), which rarely lets geopolitical considerations guide its steps. As expected, the organization said in early March it would aim to raise production by 400,000 barrels a day in April, sticking to a pre-agreed path of modest monthly production increases. At the same time, western powers are trying to reach a deal with Iran to bring that country's nuclear energy program under control. If these negotiations succeed, Iran would be allowed to sell its oil globally again, and markets are increasingly expecting such an agreement. But even a come-back of Iran as an exporter would only result in a daily addition of 1 million barrels per day at the most within three to six months, too little to make up for a possible loss of Russian oil deliveries. To put this into perspective: the announcement of the US government to release another 60 million barrels of strategic oil reserves failed to calm energy markets. With oil inventories in a continued decline, so-called roll returns have spiked to record highs for crude oil, meaning that buyers are paying a significant premium to secure instant delivery of the commodity. Rolling futures contracts – selling contracts that are about to expire, buying longer-running ones instead – is a commodity futures trader's daily bread, and the gain on such transactions is called the risk premium. Given that oil inventories can only go down, futures contracts with short maturities could easily spike to USD 150 per barrel, we reckon, increasing the risk premium further.

Less conspicuous, but of eminent importance nevertheless, is the effect of the war on metals. Russia, a metals heavyweight globally accounting for 40% of palladium, 6% of aluminium, 7% of nickel, and 10% of platinum production, supplies much of Germany's auto industry. Carmakers would love to finally ramp up production after pandemic-linked disruptions, but metal deliveries from Russia seem highly uncertain now amid logistical and financing problems. Even shipping companies have started to refuse to transport metals coming from Russia. At the same time, European producers are hit by spiking natural gas prices and electricity costs because the smelting process is highly energy-intensive. Many European aluminium and zinc smelters have recently stopped working because they struggled to cover their costs. Given the currently high and volatile European natural gas prices (Dutch TTF natural gas +160% since the start of the year), the situation may not improve. All of this comes on top of already almost depleted metal inventories in Europe.

Ukraine and parts of Russia are blessed with black earth, which makes them the world's breadbasket. Between them, they account for almost a third of all global wheat exports. Ukraine alone contributes 15% to all global corn and rapeseed shipments. Global agricultural

inventories are already very low due to previous crop issues in drought-hit Latin America. In Ukraine, the corn and wheat planting season will start in four to six weeks, an unlikely prospect given rising diesel prices and the damage done to roads, ports, and bridges. While European countries will be able to deal with accelerated food inflation, wheat-importing economies like Egypt or many African countries are in a much weaker position. Let's also not forget that grain production may fall in other parts of the world as well because fertilizer prices tripled last year. And here, we have another problem: Ukraine and Russia are among the biggest fertilizer exporters.

From a strictly rational perspective aimed at mitigating inflationary and geopolitical risks in a portfolio, it seems reasonable to hold a position in commodities, an asset class that has rallied by 26.5% so far this year. Putting away our investing hat, we stand aghast at the human tragedy unfolding on our doorstep.

I certainly agree with the sentiment expressed in the last sentence. Ultimately it is a human tragedy for not only Ukrainians, but also for the people of Russia. They will suffer as a result of Putin's murderous and misguided folly.

Investing in commodities tends to be high on the risk spectrum. Big gains can clearly be made, but generally the successful investor needs to be nimble and ahead of the crowd. Historically I have gained exposure to commodities via equities, rather than via commodity funds, which tend to charge high fees and in general terms have erratic performance over the longer term. There would be no harm in asking Brunel for their views!