The Big Picture
Global Asset Allocation 2022 Q2

Quarterly update
From Invesco's Global Market Strategy Office

20 March 2022
Data as of of 9 March 2022 unless stated otherwise

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Global Asset Allocation 2022 Q2

The year started with central banks turning hawkish, followed by Russia's invasion of Ukraine, both of which destabilised financial markets. Many cyclical assets are now cheaper than when we last wrote and we are adding to equities within our Model Asset Allocation (going Overweight). Given the uncertainties, we wish to maintain some balance and have also added to investment-grade (IG) taking it to the maximum allowed, while reducing real estate to Neutral and high-yield (HY) to Underweight. We maintain a regional preference for UK and emerging market (EM) assets.

Model asset allocation

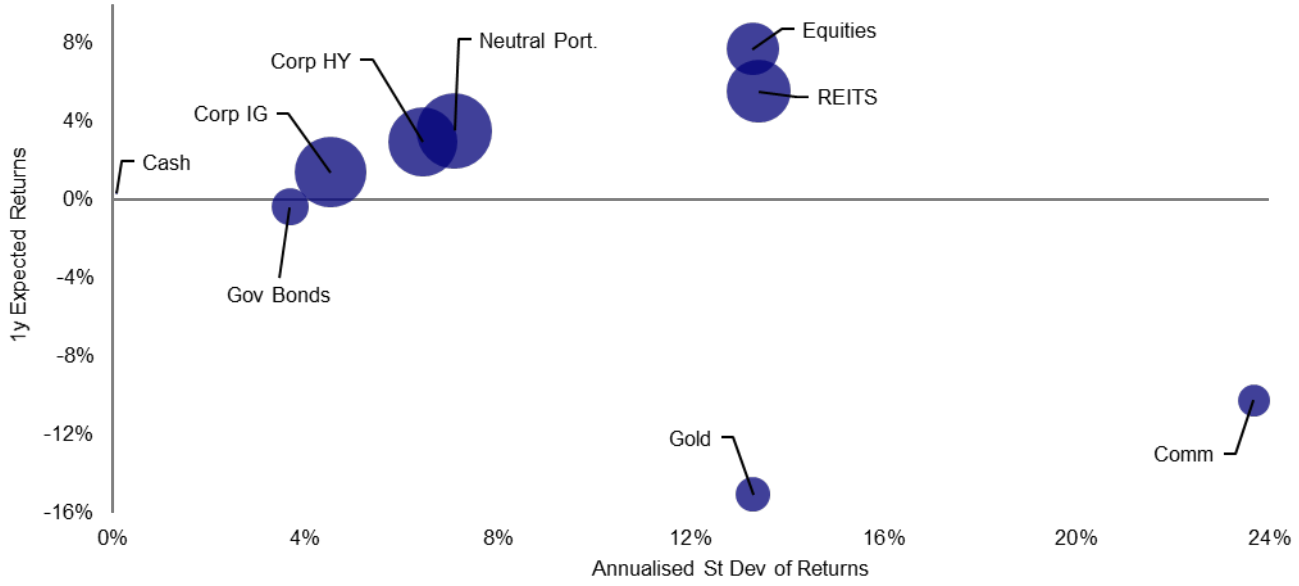
In our view:

- Equities offer the best returns after recent losses. We go Overweight.
- Corporate investment-grade (IG) now benefits from higher yields. We increase to Maximum.
- Real estate (REITS) offers good returns but is no longer on the efficient frontier. We reduce to Neutral.
- Corporate high-yield (HY) may suffer higher defaults. We reduce to Underweight.
- Government debt outlook is improved but still negative. We remain at the Minimum.
- Cash returns are low but stable and de-correlated (it is our diversifier of choice). We stay at Maximum.
- Commodities have risen sharply and may consolidate lower. We remain at zero.
- Gold contains a geopolitical risk-premium and is threatened by rising yields. We remain at zero.
- Regionally, we favour the UK and EM (and are Underweight US assets)

Our best-in-class assets (based on 12m projected returns)

- UK equities
- EM real estate
- EM IG
- USD cash

Figure 1 – Projected 1-year returns for global assets and neutral portfolio



Based on annualised local currency returns. Returns are projected but standard deviation of returns is based on 5-year historical data. Size of bubbles is in proportion to average pairwise correlation with other assets. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Neutral portfolio weights shown in Figure 3. As of 9 March 2022. **There is no guarantee that these views will come to pass**. See Appendices for definitions, methodology and disclaimers. Source: BAML, MSCI, GSCI, FTSE, Refinitiv Datastream and Invesco

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Summary and conclusions: War requires balance

We go Overweight equities but balance this by also adding to IG

The year started with central banks turning hawkish, followed by Russia's invasion of Ukraine, both of which destabilised financial markets. Many cyclical assets are now cheaper than when we last wrote and we are adding to equities within our Model Asset Allocation (going Overweight). Given the uncertainties, we wish to maintain some balance and have also added to investment-grade (IG) taking it to the maximum allowed, while reducing real estate to Neutral and high-yield (HY) to Underweight. We maintain a regional preference for UK and emerging market (EM) assets.

Most asset prices are down but yields are up

Much now depends on what we assume about the war in Ukraine (from both a humane and a market perspective we hope for quick peace)

As outlined in our 2022 Outlook, we were expecting this to be a more difficult year than 2021, with a convergence of asset returns. Unfortunately, that convergence has been downward, with all assets except commodities and gold providing negative returns since the end of October 2021. The good news is that yields have risen on all assets, which may suggest better returns to come. That depends on what we assume about the outcome of the war and broader economic and policy developments. We outline three possible scenarios for the conflict in Ukraine (quick resolution, prolonged war, prolonged war plus energy crisis), of which more later. Our base case (used for our projections) is most closely aligned to the prolonged war scenario.

Underlying assumptions

Underpinning our projections for the next 12 months are the following assumptions:

- Global GDP growth is closer to 3% than the previously expected 4%
- Global inflation will be 5%-6% rather than the 4% previously anticipated
- Major central banks raise rates but less rapidly than currently assumed by markets
- Government bond yields continue to rise and yield curves flatten
- IG spreads are broadly stable but HY spreads widen a little more and defaults rise
- USD weakens slightly as geopolitical risk premia decline; CNY weakens
- Equity dividend growth moderates but yields fall slightly (except in the US)
- Real estate (REIT) dividend growth moderates and yields rise (except in Japan/EM)
- Commodities consolidate recent gains (and gold falls due to rising yields/dollar)

We expect less rate hikes than both the Fed and the markets are suggesting

The full set of assumptions are shown in **Appendix 4**, while the resultant market targets are shown in **Figure 40** and projected returns for global assets are shown in **Figure 2**. Perhaps the most important forecast is that the US Federal Reserve (Fed) will be less aggressive than it recently suggested or than markets believe. We expect four more rate hikes during the rest of 2022 and a total of five in the next 12 months (Fed Fund futures are suggesting there will be more than six in the rest of 2022 and seven within 12 months). Put simply, we think the squeeze on real incomes will weaken the economy, making it hard for the Fed to raise rates at every single meeting over the next 12 months. We think the more dovish tone of the Bank of England (BOE) was more realistic.

We expect the highest return on equities and negative outcomes on government bonds (US 10yr to 2.50%)

The 12-month asset class projections shown in **Figures 1** and **2** suggest we believe the best returns will be achieved on equities. We are assuming a moderation of dividend growth as economies slow and costs rise but also a slight decline in yields (except in the US). Because we assume a rise in bond yields (10-year US treasury yield at 2.50% in 12 months), our projections suggest a small loss on government bonds, with EM being the obvious exception (where we expect a 12-month total return of 6.2% in USD).

The optimisation process favours equities, IG and cash…a nice balance

Not surprisingly, given the information in **Figure 1**, our optimisation process favours equities and cash but also suggests a maximum allocation to IG and zero allocations to gold, HY and commodities (see **Figure 42**). It also suggests an underweight stance in government bonds.

Real estate (REITS) reduced to Neutral and HY reduced to Underweight

In determining our Model Asset Allocation, we follow the optimisation results where they are clear cut, except that we have chosen to reduce **real estate** (REITS) to a neutral 8% (from the previous 16%) rather than go Underweight because we think it could offer some mitigation if inflation turns out much higher than expected (see **Figure 2**). We remain attracted to EM REITS due to the 6.2% yield. **HY** is also reduced to an Underweight 2% (from the previous 10%), rather than going all the way to zero, just in case there is a quicker resolution to the war than we expect (and HY yields have risen more than for any other asset – see **Figure 5**).

Equities increased to Overweight, with preference for UK and EM (China now Overweight)

Having taken the **equities** allocation down to Neutral in November, we are now raising it back to an Overweight 50% (Neutral is 45%). We think the rise in dividend yields (and decline in price-earnings ratios) may have been overdone in most regions and expect a slight decline (though not in the US). This, added to the expectation of modest dividend growth is enough to generate double-digit total returns everywhere but the US. We think the best returns will come in the UK and EM but we are already maximum allocated in those two areas (see **Figure 3**). However, within EM we are raising China to Overweight (equities have fallen dramatically of late, partly due to concerns about Covid-related lockdowns, but where the central bank is expected to ease and where it is possible the conflict in Ukraine could be to China's economic advantage, with more exports to Russia in exchange for cheap raw materials). We also add to the positions in Japan (Overweight) and the US (still big Underweight).

IG allocation boosted to maximum and we favour EM.

In the last edition, we increased **IG** to Neutral but are now taking it to the maximum 20%. This is our way of taking advantage of the higher fixed income yields that exist. We expect little change in IG spreads versus government yields, whereas we think HY spreads could widen further and we expect more defaults due to slowing economies. Hence, we believe the IG spread offers the possibility of higher returns than on government debt (see **Figures 1** and **2**). By definition, we are maximum allocated to all IG regions but expect the best returns in EM. We are sticking to the Minimum allocation to **government bonds**, within which EM is the only region that is Overweight (we have taken EM to the maximum allowed, while reducing Japan).

Government bonds remain at the minimum, again favouring EM

We missed the rise in commodities and remain zero-weighted

The war in Ukraine has contributed to the gains in commodity prices but in our base case we assume they consolidate at slightly lower levels. Having missed the recent gain in **commodities** we stick to the zero allocation, rather than chasing performance.

Cash is favoured among defensive assets

Cash remains our defensive asset of choice and we keep it at the maximum allocation (low returns, low volatility and low correlation place it on the efficient frontier). We have been surprised by how well **gold** has performed given the rise in treasury yields and the dollar. We assume it has benefitted from a geopolitical risk premium but still believe it will weaken as yields continue to rise. Hence, we maintain a zero allocation.

UK & EM favoured

From a regional perspective, we continue to prefer the assets of the UK and EM. We find the assets of both are relatively cheap, while benefitting from high commodity prices.

Three scenarios for the war in Ukraine with a few themes that could work across them all

We analyse four ways in which the Russia-Ukraine conflict may impact the global economy (trade channels, commodity prices/inflation, energy security/stagflation and policy reactions). We also consider three potential outcomes and delve into our asset preferences for each. No matter how we look at it, Europe is the most vulnerable region to a prolonged conflict and has the most to gain from a rapid resolution. Asset choices vary by scenario (see **Figure 44**) but if there are any themes that could work across all scenarios, we think they are likely to be higher defence spending and an accelerated drive to achieve net-zero carbon emissions (i.e. finding alternative energy sources).

Figure 2 – Expected total returns (annualised, local currency) and Model Asset Allocation*

	Expected 1-year Total Return	Neutral Portfolio	Policy Range	Model Asset Allocation	Position Vs Neutral
Cash & Gold	-7.4%	5%	0-10%	10%	Overweight
Cash	0.3%	2.5%	0-10%	10%	Overweight
Gold	-15.1%	2.5%	0-10%	0%	Underweight
Government Bonds	-0.4%	25%	10-40%	10%	Underweight
Corporate IG	1.4%	10%	0-20%	↑ 20%	Overweight
Corporate HY	3.0%	5%	0-10%	↓ 2%	Underweight
Equities	7.7%	45%	25-65%	↑ 50%	Overweight
Real Estate (REITS)	5.5%	8%	0-16%	↓ 8%	Neutral
Commodities	-10.3%	2%	0-4%	0%	Underweight

*This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows show direction of change in allocations. See appendices for definitions, methodology and disclaimers. **There is no guarantee that these views will come to pass**. Source: Invesco Global Market Strategy Office

Model asset allocation*

Figure 3 – Model asset allocation (20/03/2022)

	Neutral	Policy Range		Allocation	Position vs Neutral
Cash Equivalents	**5%**	**0-10%**		**10%**	
Cash	2.5%			10%	
Gold	2.5%			0%	
Bonds	**40%**	**10-70%**	↑	**32%**	
Government	25%	10-40%		**10%**	
US	8%			2%	
Europe ex-UK (Eurozone)	7%			2%	
UK	1%			0%	
Japan	7%		↓	2%	
Emerging Markets	2%		↑	4%	
China**	0.2%		↑	1%	
Corporate IG	10%	0-20%	↑	**20%**	
US Dollar	5%		↑	10%	
Euro	2%		↑	4%	
Sterling	1%		↑	2%	
Japanese Yen	1%		↑	2%	
Emerging Markets	1%			2%	
China**	0.1%		↑	1%	
Corporate HY	5%	0-10%	↓	**2%**	
US Dollar	4%		↓	2%	
Euro	1%		↓	0%	
Equities	**45%**	**25-65%**	↑	**50%**	
US	25%		↑	16%	
Europe ex-UK	7%			10%	
UK	4%			8%	
Japan	4%		↑	6%	
Emerging Markets	5%			10%	
China**	2%		↑	3%	
Real Estate	**8%**	**0-16%**	↓	**8%**	
US	2%		↓	0%	
Europe ex-UK	2%		↓	2%	
UK	1%		↓	0%	
Japan	2%		↓	2%	
Emerging Markets	1%			4%	
Commodities	**2%**	**0-4%**		**0%**	
Energy	1%			0%	
Industrial Metals	0.3%			0%	
Precious Metals	0.3%			0%	
Agriculture	0.3%			0%	
Total	**100%**			**100%**	

Currency Exposure (including effect of hedging)					
USD	48%		↑	35%	
EUR	20%		↓	20%	
GBP	7%		↓	11%	
JPY	15%		↓	13%	
EM	9%		↑	20%	
Total	**100%**			**100%**	

*This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. **China is included in Emerging Markets allocations. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Currency exposure calculations exclude cash. Arrows show direction of change in allocations. See appendices for definitions, methodology and disclaimers. Source: Invesco Global Market Strategy Office

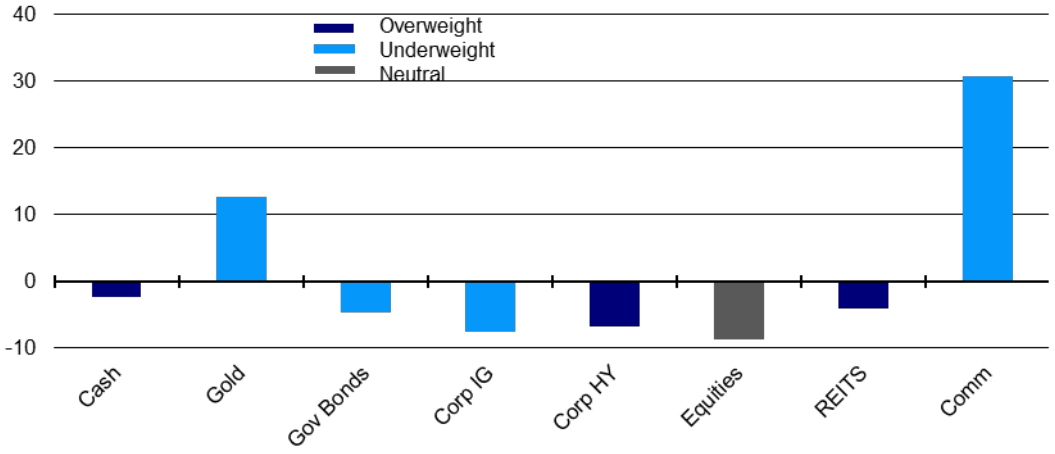
Since we last wrote

When we published our 2022 Outlook, we expected a convergence of asset returns (versus what we saw in 2021) and we reduced equities to Neutral, while still maintaining a bias towards cyclical assets (real estate and HY) within our Model Asset Allocation (see 2022 Outlook published on 21 November 2021). We also reduced the allocation to government debt, while adding to both HY and IG credit. From a regional perspective we favoured UK and EM assets. **Figure 4** shows how global assets have performed since then (as of 09 March 2022). Full regional detail is shown in **Appendix 2**.

Only commodities have delivered positive returns, with equities weakest of all

Most assets have delivered negative returns in USD, with the notable exception of commodities (including gold). That was unfortunate for us, given that we were zero-weighted in commodities (having been maximum allocated during earlier stages of the commodity rebound). Among other assets, we were maximum allocated to cash and REITS, both of which outperformed fixed income and equity categories (cash shows a negative return because we use a blend of USD, EUR, JGB and JPY cash and the dollar strengthened). From a regional perspective, our preference for EM assets worked against us (except in real estate), though our UK preference worked better.

Figure 4 – Global asset class total returns since 31/10/21 (USD, %) *

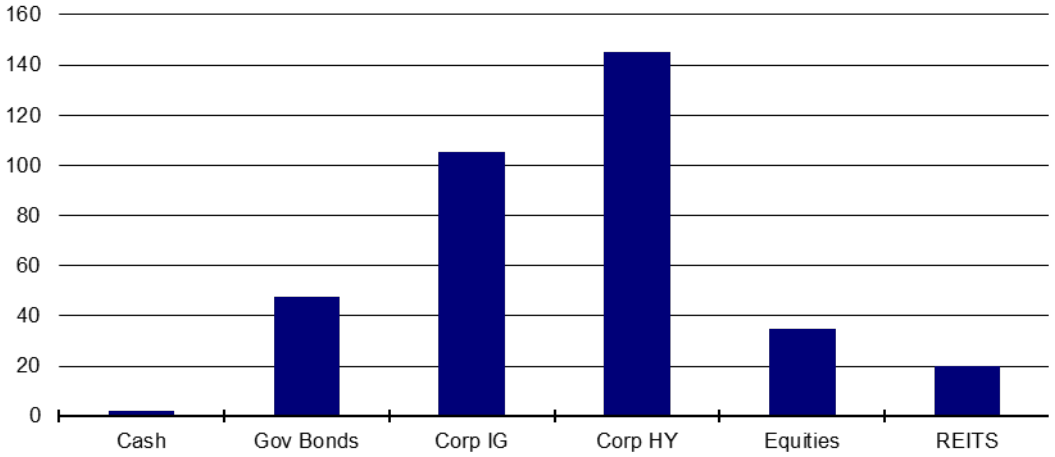


*31/10/21 to 09/03/22. Colours represent model allocations during this period. See appendices for definitions and disclaimers. **Past performance is no guarantee of future results**. Source: Refinitiv Datastream, Invesco

Yields up on all assets, especially HY

That negative performance by yield bearing assets has produced a sizeable increase in yields (see **Figure 5**). In particular, the rise in credit yields suggests a widening of spreads. The question now is whether yields and spreads will continue to widen or whether there will be some consolidation. We will try to answer that question later.

Figure 5 – 4m change in global yields (bps)



From 31/10/21 to 9/03/22. See appendices for definitions and disclaimers. **Past performance is no guarantee of future results**. Source: Refinitiv Datastream and Invesco

Invesco's 10-year CMAs have been published

Taking a step back: focusing on the next decade using Invesco's CMAs

Before considering projections for the next year, it may be instructive to use longer term return projections as a guide. Invesco Investment Solutions have just published their 10-year capital market assumptions. **Figure 6** shows their projected returns for global asset classes in a range of currency bases (their framework differs from ours, so we have had to adapt some of their categories – for instance, we use their US Treasury Short category to represent cash and precious metals for gold). A more detailed version showing regional projections is contained in **Appendix 3**.

Figure 6: Invesco 10-year capital market assumptions (global assets, % ann.)

	USD	EUR	GBP	CHF
Cash & Gold	1.6	-0.1	1.1	0.0
Cash - US Treasury Short	0.9	-0.8	0.3	-0.8
Gold	2.4	0.7	1.9	0.8
Government Bonds	2.0	0.3	1.4	0.3
Corporate IG	1.9	0.2	1.3	0.3
Corporate HY - US HY	3.1	1.4	2.5	1.5
Equities	5.9	4.2	5.4	4.3
Real Estate (REITS)	6.3	4.6	5.8	4.7
Commodities	5.0	3.3	4.5	3.4

Note: Estimates as of 31 December 2021 and based on the 10-year capital market assumptions published by Invesco Investment Solutions in Long-Term Capital Market Assumptions (March 2022). The USD version of the CMAs is reproduced in Appendix 3. The above table uses the geometric expected return version for global asset classes ("gold" is based on the projections for precious metals and the "Cash & Gold" category shows the average of those two assets). These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. **There is no guarantee that these views will come to pass.** Source: Invesco Investment Solutions

Real estate and the combination of cash & gold dominate 10-year CMA based optimal portfolios

Not surprisingly, the further we move along the risk spectrum, the higher the projected returns. Unfortunately, there are no hard-and-fast messages that come from the optimised solutions (see **Figure 7**). Though results vary by currency base and depend on what is maximised (Sharpe Ratio or returns), there are some broad themes: for example, real estate is maximised in all but one case, while IG and HY are mainly zero allocated. The combination of cash and gold is maximum allocated in most cases (they are rarely present together, with gold most frequently chosen). The messages are not clear for government bonds, equities or commodities. Let's see how shortening the time horizon and allowing for the cycle impacts the conclusions.

Figure 7: Optimised global allocations based on Invesco's 10-year CMA projected returns

	Neutral Portfolio	Policy Range	Maximise Sharpe Ratio				Maximise Return			
			USD	EUR	GBP	CHF	USD	EUR	GBP	CHF
Cash & Gold	5%	0-10%	10%	10%	10%	10%	3%	10%	0%	10%
Cash	2.5%	0-10%	10%	0%	10%	0%	0%	1%	0%	0%
Gold	2.5%	0-10%	0%	10%	0%	10%	3%	9%	0%	10%
Government Bonds	25%	10-40%	40%	10%	37%	10%	31%	34%	10%	29%
Corporate IG	10%	0-20%	1%	0%	0%	0%	0%	0%	0%	0%
Corporate HY	5%	0-10%	10%	0%	0%	0%	0%	0%	5%	0%
Equities	45%	25-65%	31%	64%	33%	64%	50%	38%	65%	42%
Real Estate (REITS)	8%	0-16%	7%	16%	16%	16%	16%	16%	16%	16%
Commodities	2%	0-4%	1%	0%	4%	0%	0%	2%	4%	2%

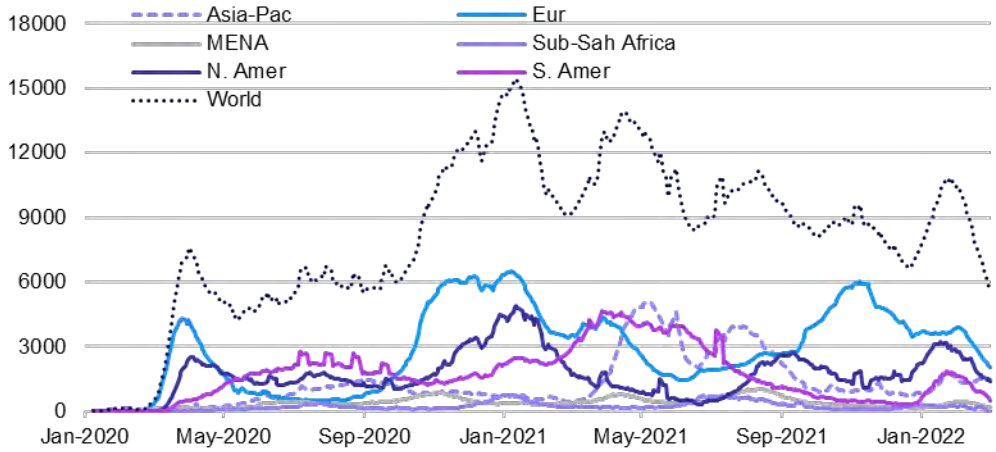
Note: optimisations are based on the 10-year projected returns published by Invesco Investment Solutions in Long-Term Capital Market Assumptions (March 2022), as shown in **Figure 6** above. Optimisations are performed by the Asset Allocation Research team using our historical 10-year covariance matrices (for each currency). "Gold" is based on the projections for precious metals and the "Cash & Gold" category shows the sum of allocations for those two assets). "Maximise Sharpe Ratio" optimisations are performed by maximising the Sharpe Ratio subject to not violating the constraints implied by the policy ranges shown in the table. "Maximise Return" optimisations are performed by maximising return subject to the policy range constraints but also subject to the standard deviation of returns not exceeding that of the Neutral Portfolio (as shown in **Figure 3**). Though based on the projected returns provided by Invesco Investment Solutions, these optimal allocations do not represent their views, nor those of any other investment team at Invesco. See appendices for definitions, methodology and disclaimers.
Source: Invesco Investment Solutions, Invesco

It started with hawkish central banks

The latest Covid resurgence is fading, except in Asia

We started the year expecting a more difficult time for equity markets and a convergence of returns across assets (see Outlook 2022). Just as the uncertainty caused by the Omicron variant was easing (see **Figure 8**), central banks became more hawkish and stocks suffered. Nevertheless, we think it is good news that the worst of the pandemic appears to be behind us (though Asia is now suffering). If it hadn't been for the invasion of Ukraine, we would have been looking forward to the great re-opening of the world economy and we hope that we can get back to that mindset sooner rather than later.

Figure 8 – Daily Covid-19 deaths (7-day moving average)



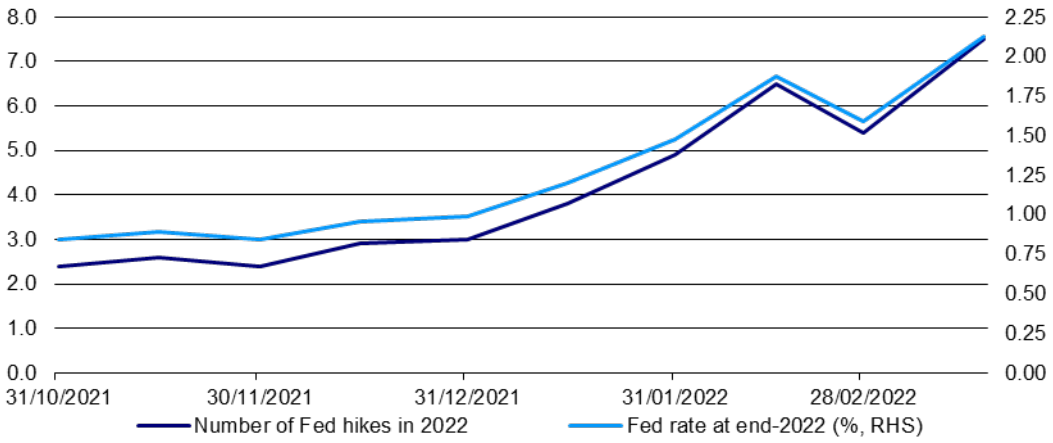
Based on daily data from 23 January 2020 to 17 March 2022
Source: Reuters and Invesco

Central banks became more hawkish since the start of the year…

Before turning to the implications of the situation in Ukraine, it is worth reflecting on how the outlook for central banks has changed since we last published in November 2021. At that time, our forecasts were predicated upon two Fed rate hikes during 2022. Fed Fund futures suggested that financial markets were pricing in a similar scenario, with the first rate hike expected in July 2022. Perceptions had started to change by the end of 2021 (nearly three rate hikes priced in) but as US CPI inflation approached 7%, the Fed started to sound more hawkish. Indeed, the January FOMC statement suggested that asset purchases would end in early March, to be followed rapidly by the first rate hike and not long thereafter by quantitative tightening (balance sheet shrinkage). By end of January, market pricing was suggesting a first rate hike in March, with five hikes during 2022. By mid-February the expectation was for six-to-seven hikes, with many talking of a 50bp first move in March. The invasion of Ukraine initially tempered those expectations but, with the first rate hike now behind us, markets appear to expect a further six to seven rate hikes by the end of 2022 (see **Figure 9**).

…and markets believe them

Figure 9 – Fed policy outlook as implied by Fed Funds Futures

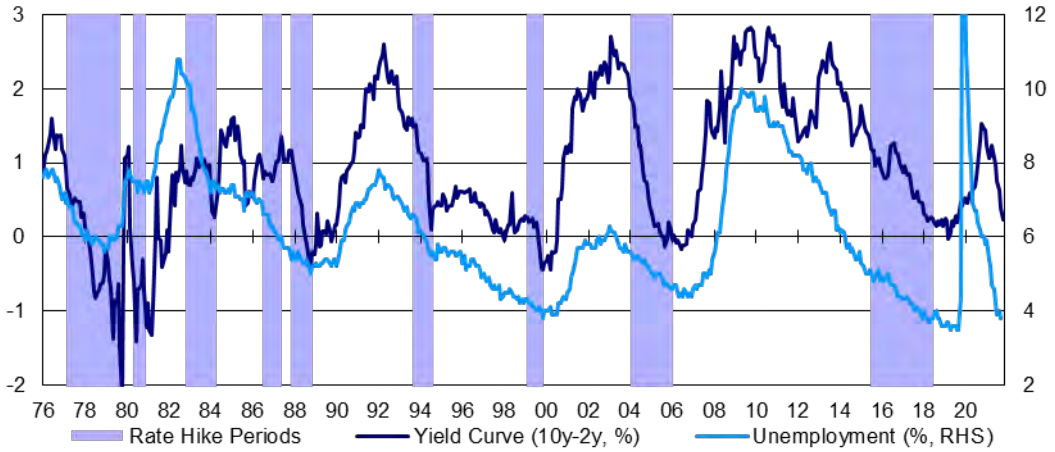


Note: based on fortnightly data from 31 October 2021 to 18 March 2022. "Fed rate" is the upper end of the Fed Funds policy range. Calculations provided by Bloomberg. Source: Bloomberg and Invesco

The Fed has already committed one policy error; will it commit another?

That the Fed feels the need to tighten rapidly is not surprising given the evidence in **Figure 10**. Unemployment is virtually as low as it has ever been over the last five decades and the Fed has barely started to withdraw what has been an unprecedented amount of policy support. Assuming that the Phillips Curve is not completely dead (and that wages accelerate as unemployment declines) then the Fed risks being seriously behind the curve. Indeed, the yield curve (10y-2y) has already flattened to a large extent and is not far from inverting, something that we would expect to see more at the end of a tightening cycle, rather than at the beginning. We believe this heightens the risk of the Fed stumbling from one policy error (too easy) to another (tightening too quickly).

Figure 10 – US unemployment, yield curve and Fed tightening periods

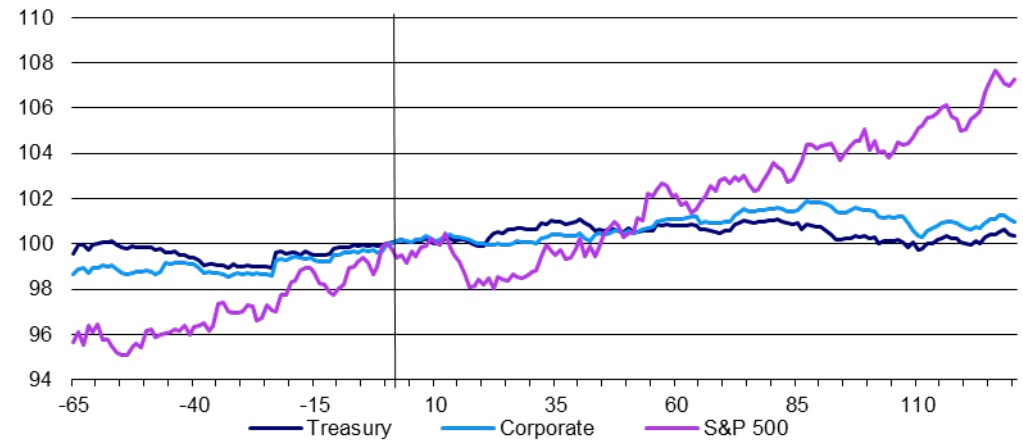


Notes: based on monthly data from June 1976 to March 2022 (as of 4 March 2022). The shaded areas show periods when the US Federal Reserve was raising interest rates (from first to last rate hike). **Past performance is no guarantee of future results.** Source: Refinitiv Datastream and Invesco

Though equities tend to outperform when the Fed tightens

However, **Figure 11** suggests that, after initial hesitation, US equities have tended to outperform fixed income assets once the Fed has started raising rates (the chart shows the performance in the three months before and six months after the first Fed rate hike). Indeed, the only cycle of the last six for which that was not the case was the last one (starting in 2015), though we note that equities provided an annualised total return of 9% throughout the entirety of that tightening cycle. Our research also suggests that shorter maturity treasuries have tended to outperform longer maturities in those first six months (see here). In short, if this were a "normal" cycle, we would favour equities.

Figure 11 – US asset total return indices around first Fed rate hikes since 1983



Notes: the chart shows the performance of US assets in the three months before and six months after the first Fed rate hike in the six tightening cycles that we identify since 1983 (those starting in March 1983, December 1986, February 1994, June 1999, June 2004 and December 2015). The horizontal axis shows the number of days before and after the day on which the first hike was made – Day 0). Indices are rebased to 100 on Day 0 and the charts shows the average across the six cycles. "Treasury" is the ICE BofA US Treasury Index and "Corporate" is the ICE BofA US Corporate Index. **Past performance is no guarantee of future results.** Source: ICE BofA, Refinitiv Datastream and Invesco

Russia's invasion of Ukraine – we see three broad scenarios

We are not military or geopolitical strategists but we can imagine three broad outcomes after Russia's invasion of Ukraine:

- Quick resolution and return to something approaching business-as-usual (BAU)
- Prolonged conflict in Ukraine (Attrition)
- Prolonged conflict and a cut in Russia's energy supplies to Europe (Energy crisis)

Our base case is roughly aligned with Scenario 2 (war of attrition)

Figure 12 shows the detail, including our assessment of potential economic implications (**Figure 44** is a more complete version that also considers policy impacts, along with our asset preferences for each scenario). It must be remembered that these are broad scenarios and cannot possibly capture all possibilities but they hopefully show the spectrum of possibilities. Scenario 2 is a rough approximation of our base case.

It is clearly not possible to explore all of the implications of the current situation. Rather than undertaking an in-depth analysis of geopolitical questions, such as how the world order may be changing, we have stuck to a summary analysis of the likely economic and market outcomes. After all, the last one hundred years has seen numerous changes in the world's geopolitical and financial orders but we think it would be hard to distinguish the financial market effects from those linked to economic factors.

We hope for a quick outcome but are not optimistic

It is hard to know which of the scenarios is the most likely. We hope there will be a quick resolution (Scenario 1) and there have been some positive signs of progress in negotiations over recent days. However, there has been a regular ebbing and flowing of hope about a solution and we are not optimistic about a quick resolution, given the entrenched views and interests of the opposing sides.

Scenario 3 (energy crisis) would have the most severe impact, including stagflation

We fear that scenarios 2 and 3 are more likely. Scenario 3 would have the most severe consequences, in our opinion, especially given that it would bring a heightened risk of stagflation in Europe. We note that a cut in energy supplies from Russia to Europe could occur either because Russia cuts the flow or because Europe (and elsewhere) impose sanctions on the Russian energy sector (as has started to happen).

We assume less growth and more inflation in all cases

Given the rise in commodity prices (energy, industrial metals and agricultural products), we assume a negative effect on the global economy, supposing that consumers of these products have higher marginal propensities to consume than producers (see sections that follow). The extent of the damage depends upon the scenario, with the least impact under the "Business as usual" outcome.

Central banks may face tough choices

Our greatest uncertainty concerns the implications for central bank policy. All scenarios imply less growth and more inflation than previously imagined. We suspect major central banks will continue to tighten so long as the war's impact on growth is limited. However, Scenario 3 would pose a dilemma, with greater risk of stagflation. We suspect the prospect of recession would eventually temper the hawkishness of central banks.

Figure 12 – Three possible war outcomes

	Scenario 1: Business as usual	Scenario 2: War of attrition	Scenario 3: Prolonged war and energy crisis
Description	Russia withdraws or overruns Ukraine by mid-2022	Ukrainian resistance prolongs the war into a multi-year affair	War is prolonged and Russia cuts energy supplies to Europe
Commodity prices	Down	Stable at elevated levels	Big increase
Global GDP impact (2022)	Slight negative	Moderately negative	Significantly negative
Recession risk	Low	Moderate	High
Inflation impact (2022/3)	Slight boost	Moderate boost	Strong boost and then decline
Stagflation risk	Low (high in Russia, Ukraine, Belarus)	Moderate (higher in countries close to the conflict)	Very high in Europe, moderate in US, low in China

Notes: There is no guarantee that these views will come to pass. Source: Invesco Global Market Strategy Office

Russia, Belarus and Ukraine will be severely impacted

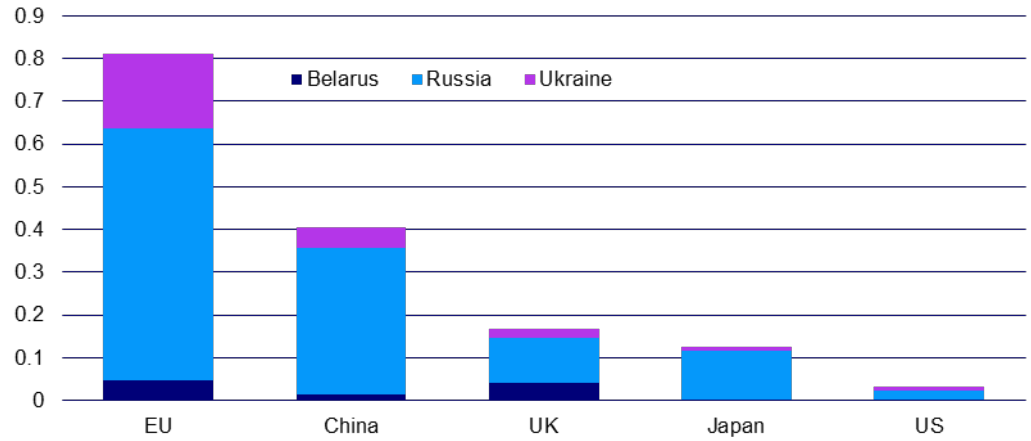
The economics of the conflict #1 – trade disruption

A combination of sanctions on Russia and Belarus and the destruction of Ukraine suggests that trade with those three countries could be severely disrupted. They accounted for 2.1% of global GDP in 2020 and **Figure 13** shows the importance of trade with this trio compared to the GDP of exporting countries/regions.

Exports to those three accounted for 0.5% of rest-of-the-world GDP in 2020, with Europe most exposed

Our calculations suggest that exports to the three affected countries accounted for roughly 0.5% of the GDP of the rest of the world in 2020. Not surprisingly, European Union (EU) countries appear to have the most to lose, with exports to the affected area accounting for 0.8% of GDP in 2020. The US, on the other hand, has relatively little to lose (0.03% of GDP in 2020), while China is in the middle (0.4% of GDP).

Figure 13 – Exports to Belarus, Russia and Ukraine in 2020 (% of GDP)



Source: IMF Direction of Trade Statistics, World Bank and Invesco

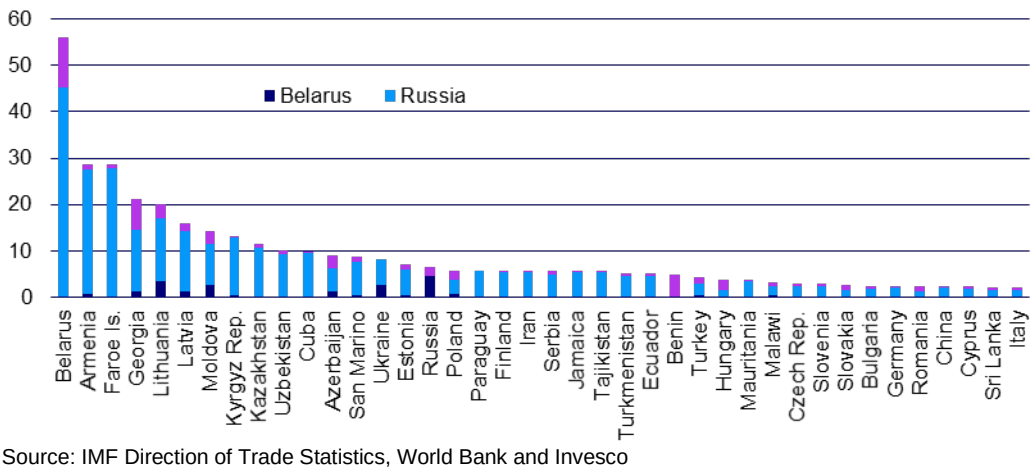
China may pick up some of the slack

Of course, it is not as simple as saying that a loss of those exports would dampen the rest of the world's GDP by 0.5%. On the negative side, multiplier effects would exacerbate the effect on the economies of exporting countries. However, there are likely to be some offsets: first, NATO/Western countries are sending military, medical and humanitarian aid to Ukraine, which could replace some of the exports previously sent and, second, countries such as China are likely to fill some of the gaps left by other countries that are no longer exporting to Russia and Belarus.

Neighbouring countries will suffer the worst damage

Nevertheless, the effect of war and sanctions will be felt upon the world economy, with the biggest impact likely to be in the neighbouring countries that naturally did a lot of trade with these three countries (see **Figure 14**). For example, among Baltic states, 15%-20% of the exports of Latvia and Lithuania went to that area in 2020. That is 7%-12% of GDP, respectively, so the loss of those exports will be keenly felt.

Figure 14 – Exports to Belarus, Russia and Ukraine in 2020 (% of total exports)



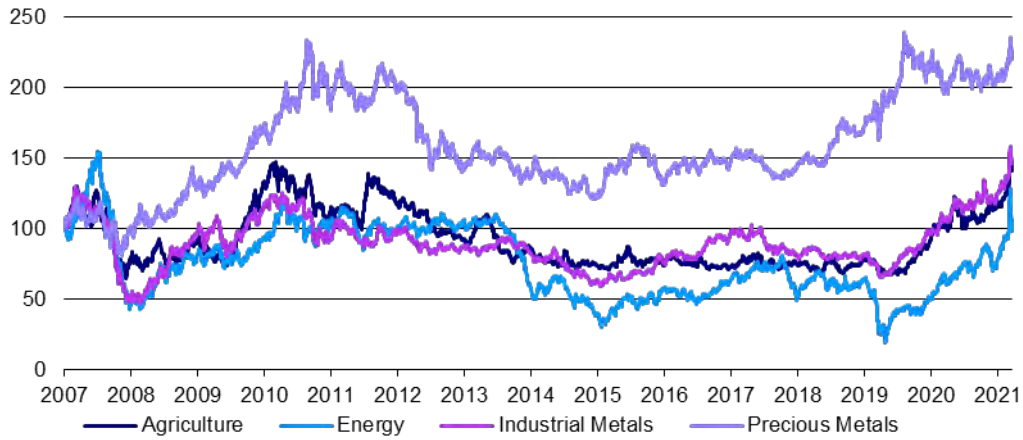
Source: IMF Direction of Trade Statistics, World Bank and Invesco

A broad range of commodity prices have risen due the conflict

The economics of the conflict #2 – rising energy and raw material costs

Having risen strongly since the pandemic recession, industrial commodity prices (energy and metals) have further accelerated as a result of Russia's invasion of Ukraine. Agricultural products can now be added to the list (see **Figure 15**). To give a few examples, Russia was the world's largest exporter of gas, wheat, palladium and nickel in 2020 and was the second largest net exporter of oil (crude plus products). It is also worth bearing in mind that Ukraine featured among the top five exporters of wheat, barley, corn and millet, for example.

Figure 15 – S&P GSCI commodity indices (spot price, rebased to 100 on 31/12/07)

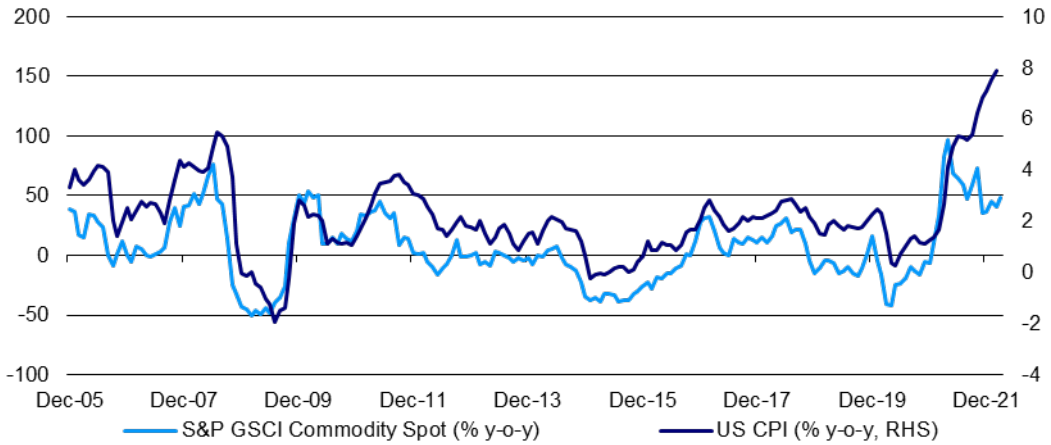


Notes: based on daily data from 31 December 2007 to 17 March 2022. All indices rebased to 100 on 31 December 2007. **Past performance is no guarantee of future results.**
Source: S&P GSCI, Refinitiv Datastream and Invesco

But the pass-through to inflation is less than it was a year ago, so other factors are also at work (supply chains, wages etc.)

Though energy has a weighting of only 7.3% in the US consumer price index, adding food brings that up to 20.7%. Of course, once we allow for the fact that energy is a component of most products and services, and that industrial metals are also a cost component, then the impact on consumer price inflation is even greater. **Figure 16** shows the close correlation between commodity prices in general and the US consumer price index. A number of features are worth noting: first, even with the recent spike in commodity prices, the year-on-year gain is lower than it was in mid-2021, so the pass through to general inflation may be less unless commodity prices rise much further; second, even with that easing in commodity price inflation, CPI inflation has continued higher suggesting other factors are at work, such as supply chain problems and wages. The recent surge in commodity prices may keep inflation higher for longer but may not be enough to push inflation rates noticeably higher if supply chain problems fade (which may not happen if Europe's energy supplies are cut or Asia's Covid problem persists).

Figure 16 – Commodity prices and US consumer price inflation

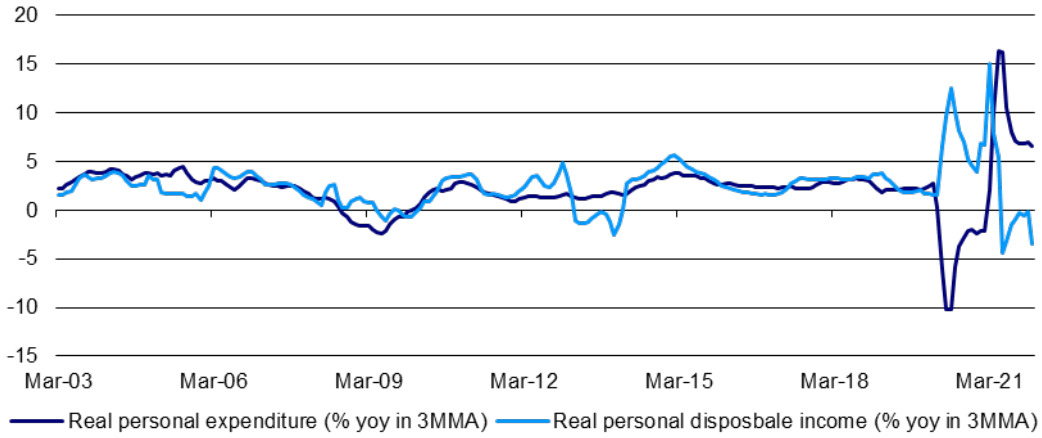


Notes: Monthly data from December 2005 to March 2022 (as of 17 March 2022). **Past performance is no guarantee of future results.** Source: S&P GSCI, Refinitiv Datastream and Invesco

Real incomes are being squeezed

Higher inflation implies a squeeze on the real spending power of both consumers and businesses (profits will be squeezed). For example, US real personal disposable income (RPDI) had already fallen in each of the six months to January 2022, suggesting that households were already under pressure (see **Figure 17**). That consumer spending has not also fallen is because the personal savings rate fell to 7.3% in January 2022 from 15.6% a year earlier. The current savings rate is now exactly in line with the pre-pandemic average (from December 2009 to December 2019), which suggests less scope for spending volumes to continue rising while real incomes are falling.

Figure 17 – US real income and spending



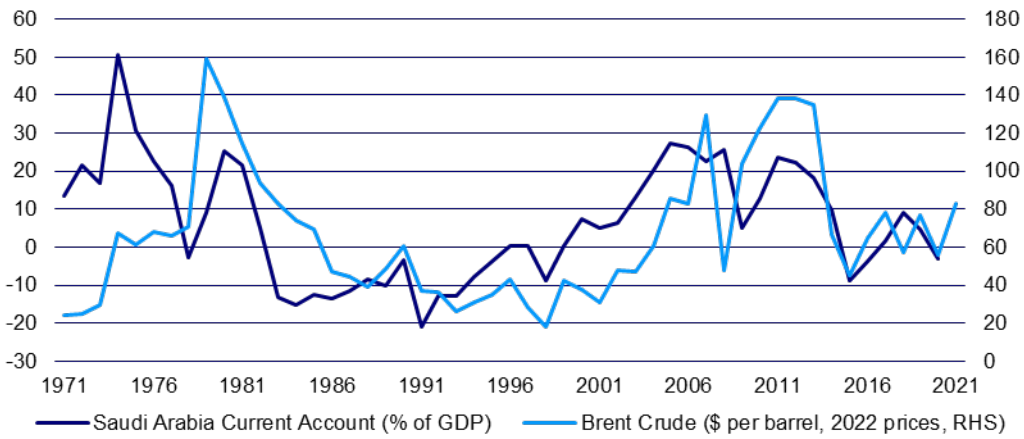
Notes: based on monthly data from March 2003 to January 2022.
Source: Refinitiv Datastream and Invesco

Each $10 rise in the price of oil adds $325bn to oil bills…

Of course, there is an offset in that higher commodity prices imply a transfer of spending power from the consumers to the producers of those commodities (see **Figure 18** for an example). We reckon that a $10 per barrel increase in the price of oil raises the world's oil bill by $325bn or around 0.4% of GDP (using 2020 data). We also believe that a 10% increase in the price of gas has a similar outcome. The net effect on the global economy depends on the respective marginal propensities to consume between energy producers and consumers. Given that consumers are a multitude of households and businesses, whereas the income accruing to producers may be concentrated in a limited number of hands, we suspect that the energy consuming group will have a higher marginal propensity to consume than the producer group. Hence, though the above calculations overstate the global effect, we believe that the net effect will still be negative, though there will also likely be a change in the of pattern of spending, with consumers of energy cutting back on other spending (low-end luxuries sacrificed), while producers will boost spending on high-end luxuries (yachts, football clubs, high-end real estate and cars…).

…but this is more a transfer than a net-loss of spending power

Figure 18 – CPI-adjusted Brent and Saudi Arabia current account balance

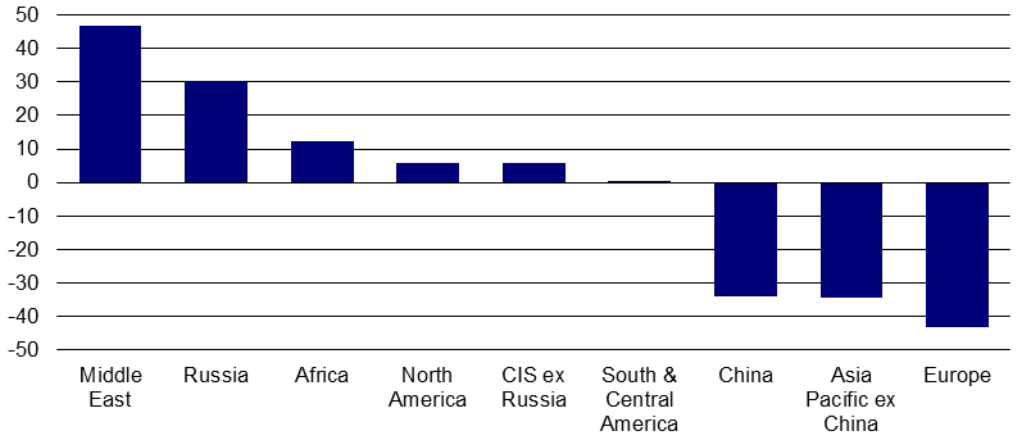


Notes: Annual data from 1971 to 2022 (as of 9 March 2022). The price of Brent crude is shown in 2022 prices by deflating using the US CPI index. Source: World Bank, Datastream and Invesco

The economics of the conflict #3 – energy security and the risk of stagflation

As major exporters of energy, Russia and the Middle East plug most of the energy gaps of Asia and Europe (see **Figure 19**).

Figure 19 – Excess primary energy production in 2020 (exajoules)

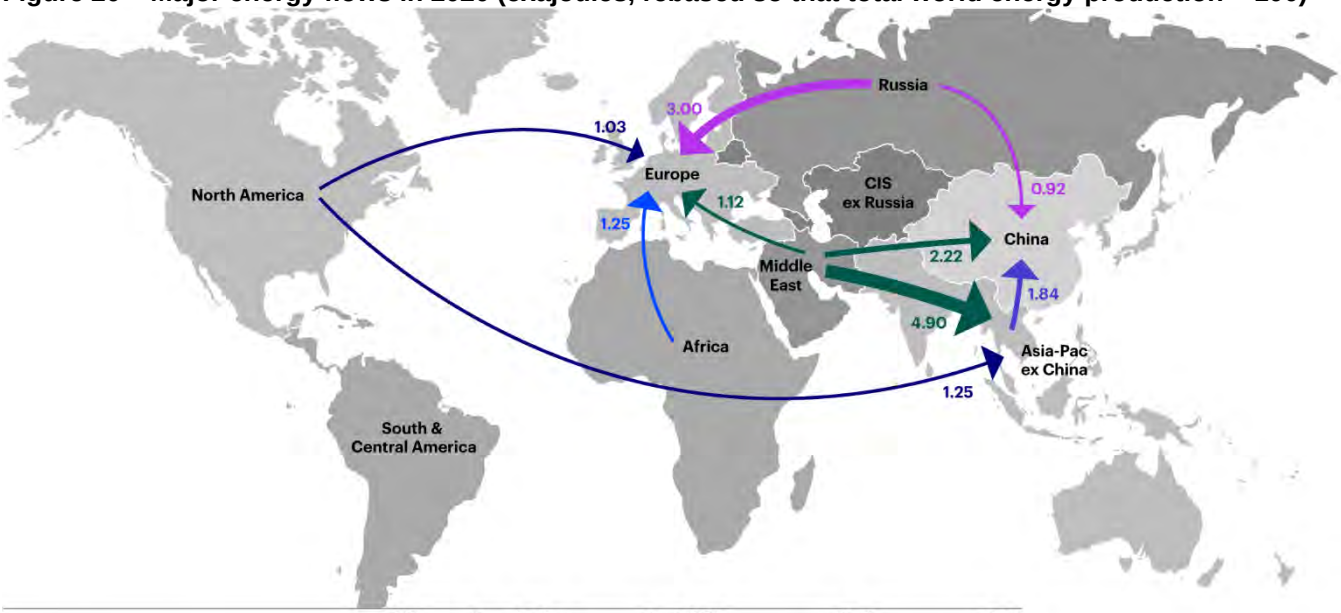


The chart shows production of energy minus consumption, using conversion factors provided by BP to put all fuel on an equal footing (and applying an efficiency factor of 40.5% to nuclear and hydro production to put them on an input equivalent basis with fossil fuels and thereby making it consistent with consumption data). Source: BP Statistical Review of World Energy July 2021 and Invesco

Europe and Russia are co-dependent when it comes to energy

22.5% of Europe's primary energy came from Russia in 2020 (our calculations using BP data) and **Figure 20** shows that Europe is Russia's major client for energy, while Russia is Europe's major supplier. Of the 17.4 exajoules of energy imported by Europe from Russia in 2020, 70% was in the form of crude oil and pipeline gas. Most of the crude is shipped and can be sourced elsewhere but replacing pipeline gas will be more difficult.

Figure 20 – Major energy flows in 2020 (exajoules, rebased so that total world energy production = 100)



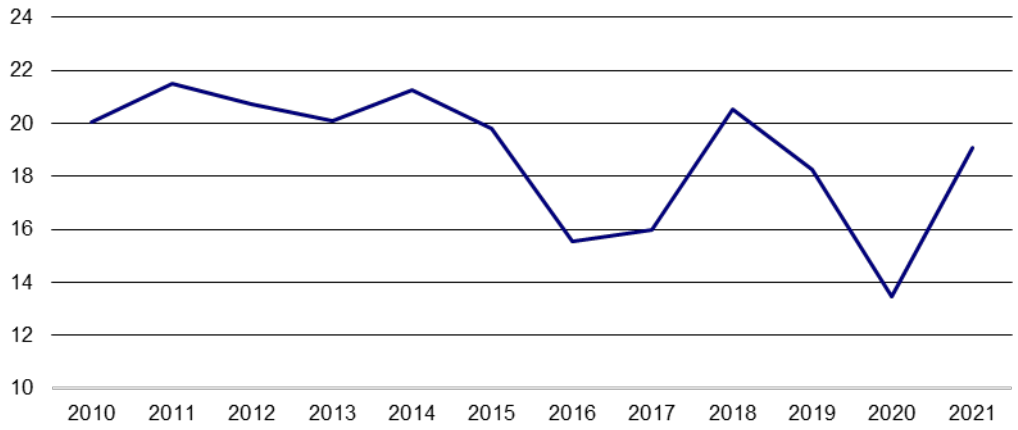
	Oil	Gas, pipeline	Gas, LNG	Coal	Total
Russia to Europe	1.53	1.05	0.11	0.34	3.00
Russia to China	0.67	0.02	0.04	0.17	0.92
North America to Europe	0.75	-	0.16	0.12	1.03
North America to Asia Pacific ex-China	0.91	-	0.14	0.21	1.25
Africa to Europe	0.88	0.16	0.20	0.02	1.25
Middle East to Europe	0.90	0.03	0.19	-	1.12
Middle east to China	2.14	-	0.08	-	2.22
Middle East to Asia Pacific ex-China	4.41	-	0.49	-	4.90
Asia Pacific ex-China to China	0.49	0.02	0.39	0.94	1.84

Note: only total energy flows greater than five exajoules are shown (but data is rebased as per title). Oil includes crude and products. Using conversion factors provided by BP to put all fuel on an equal footing. Source: BP Statistical Review of World Energy July 2021 and Invesco

Western economies are reducing demand for Russian energy

Western countries have already announced plans to reduce energy imports from Russia. The US has stopped importing oil (in 2020, imports from Russia accounted for only 7% of oil imports and 3.5% of consumption), whereas European nations need to be more careful. The UK is phasing out oil imports from Russia by the end of 2022 and the EU aims to reduce gas imports by two-thirds by the end of 2022 and to end them by 2030.

Figure 21 – Russia's energy exports as % of GDP



Notes: annual data from 2010 to 2021 (2021 GDP is the estimate provided by the IMF).
Source: IMF, National Sources, Refinitiv Datastream and Invesco

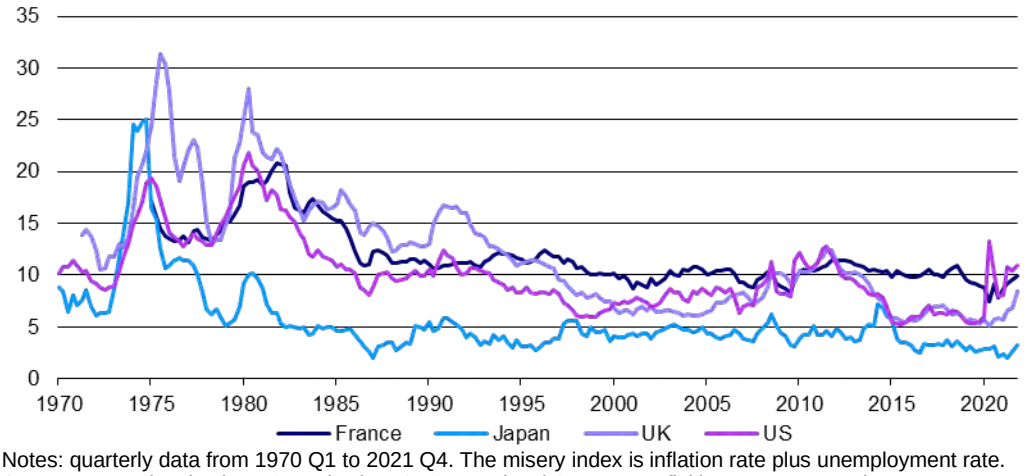
Which may cause a re-routing of global energy flows

At first sight that could be problematic for Russia. **Figure 21** shows that energy exports accounted for nearly 20% of Russia's GDP in 2021. Rising energy prices are a help to Russia so long as they have customers and, just as Europe and the US will try to turn elsewhere for the oil and gas they need, Russia can also sell some of its energy to other customers, especially China and other parts of Asia. To some extent there may be a rearrangement of energy routes but there are issues. For example, Russia's energy grid that pipes gas to Europe is not connected to the pipelines that feed China.

Stagflation is not yet here but could come to Europe if Russia cuts the energy flows

However, there is a further risk for Europe and the world, which is if Russia decides to cut energy supplies immediately. That may not be in the economic interests of Russia but logic does not always prevail. Were that to happen, the European economy would face a severe shock given it would suffer an energy shortfall. That could bring stagflation to Europe (sharp drop in output, supply chain issues, rising prices), though the outcome would be less clear in the US (it would have enough energy but at higher cost). China may be the best protected if it can negotiate advantageous energy contracts with Russia. For now, it seems likely that Russia, Belarus and Ukraine will suffer stagflation but major economies are not yet there (see **Figure 22**), though some parts of Europe are at risk.

Figure 22 – The misery index as an indicator of stagflation (%)



Notes: quarterly data from 1970 Q1 to 2021 Q4. The misery index is inflation rate plus unemployment rate.
Source: International Labour Organisation, OECD, National Sources, Refinitiv Datastream and Invesco

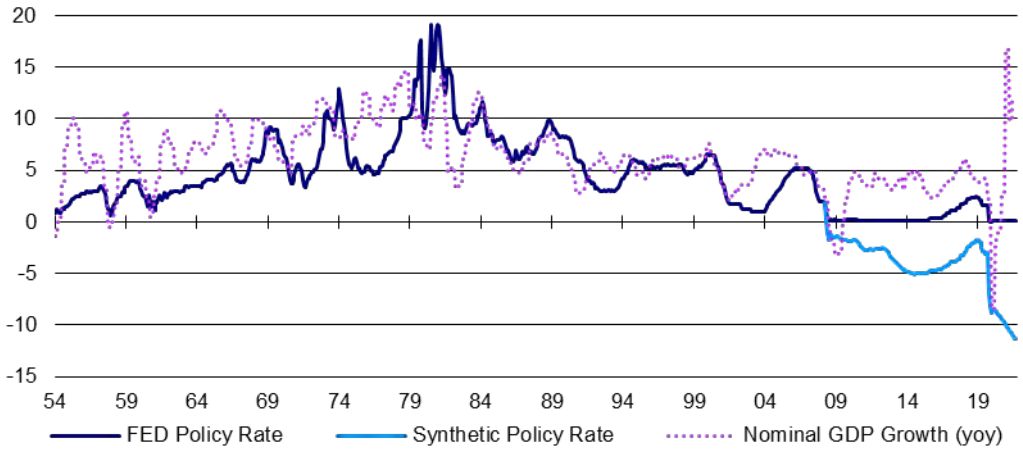
Central bankers in a bind

The economics of the conflict #4 – policy reaction

Russia's invasion of Ukraine presents major central bankers with a dilemma. Given that they were about to start withdrawing the unprecedented levels of accommodation provided during the pandemic (see **Figure 23**), should they now tighten even more aggressively because inflation will be higher for longer or should they be less aggressive because of the economic damage that may come from the squeeze on spending power?

Figure 23 – The Fed is running a very loose ship

The have been running a very loose ship



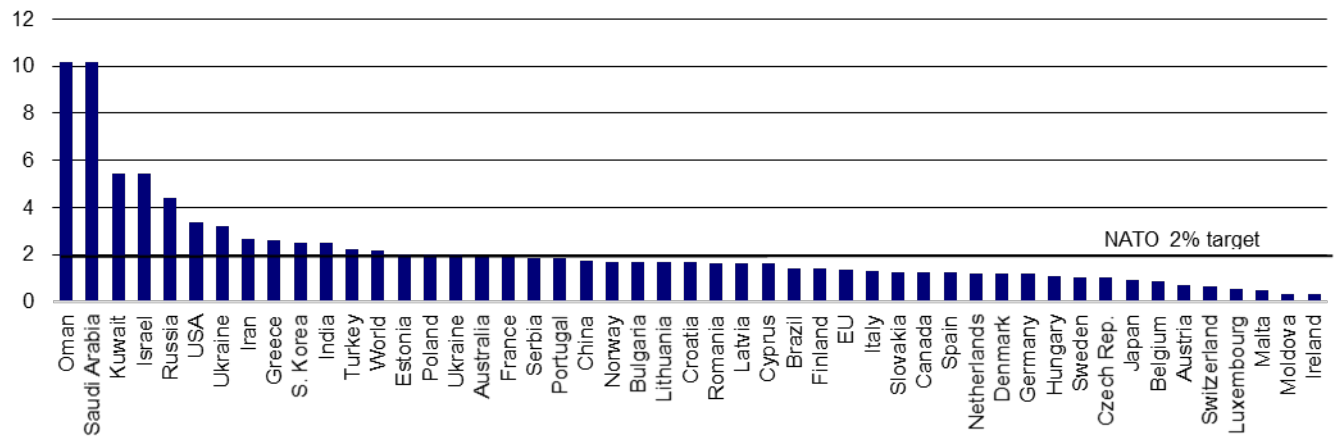
Notes: Monthly data from June 1954 to February 2022. "Fed Policy Rate" is the effective Fed Funds rate. "Synthetic Policy Rate" is the policy rate adjusted to take account of Fed asset purchases (using the rule of thumb that each $150bn-$200bn of asset purchases is equivalent to a 25bp cut in the policy rate, as explained by ex-Fed Chairman Bernanke to Congress in March 2011). Source: Refinitiv Datastream and Invesco

The Fed and the ECB have both sounded hawkish at recent meetings

We expected a more cautious approach, especially given ongoing financial market instability and the risk of unintended financial system consequences from sanctions. However, the ECB decided at its recent policy meeting to accelerate its asset purchase tapering, while the Fed sounded hawkish when it announced the rate lift-off at its 16 March meeting. Markets expect a further six Fed rate hikes this year (see **Figure 9**).

Of more consequence for economies, in our opinion, will be the reaction of governments. Many NATO/Western nations are already giving a lot of humanitarian, military and medical aid, which implies a boost to spending. Over the longer term there may be a further boost from increased military spending. **Figure 24** shows that a lot of European governments have historically failed to meet the NATO target of dedicating 2% of GDP to military spending. Germany has already indicated that it will now do so, which implies a significant uplift from the 2015-19 average of 1.2%. Assuming a widespread rise in military spending, the economic effect will depend on how it is financed.

Figure 24 – Military spending as percent of GDP (2015-19 average)



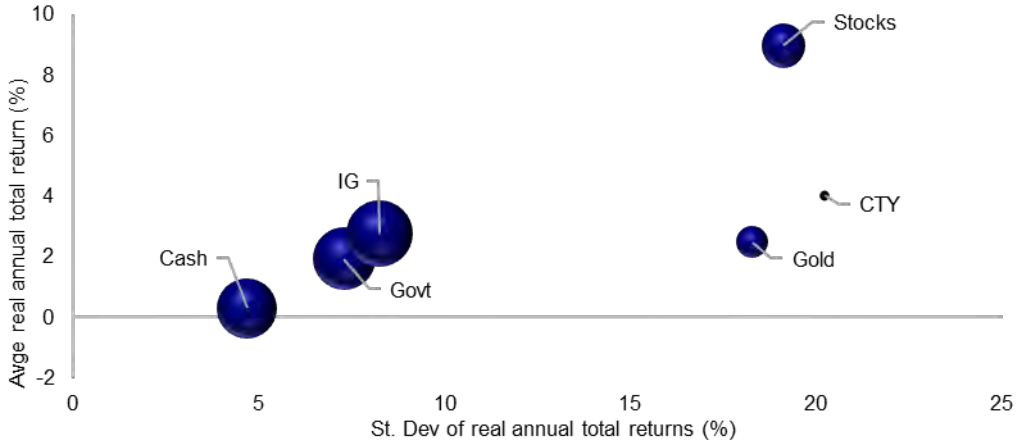
Note: at the 2006 Riga NATO Summit, it was agreed that member countries would dedicate 2% of their GDP to military spending (and that 20% of that spending would go towards the development and acquisition of equipment). Source: World Bank and Invesco

Stocks have historically provided a generous risk premium, despite all the upheavals

From economic to market cycles

Before getting into details of the current cycle and how it may be impacted by war, it is worth reminding ourselves of some long term trends. **Figure 25** shows that since 1915 investors in US stocks have earned a comfortable risk-premium versus both government bonds and riskier assets such as commodities. The intervening period has contained two world wars, numerous changes in the world's geo-political and financial orders, two global pandemics, the great depression, the global financial crisis and a period of stagflation. All of which goes to show that with a long enough time frame, equities have typically provided higher returns than fixed income assets, though with more volatility.

Figure 25 – Risk and reward on US assets 1915-2021 (CPI adjusted, %)

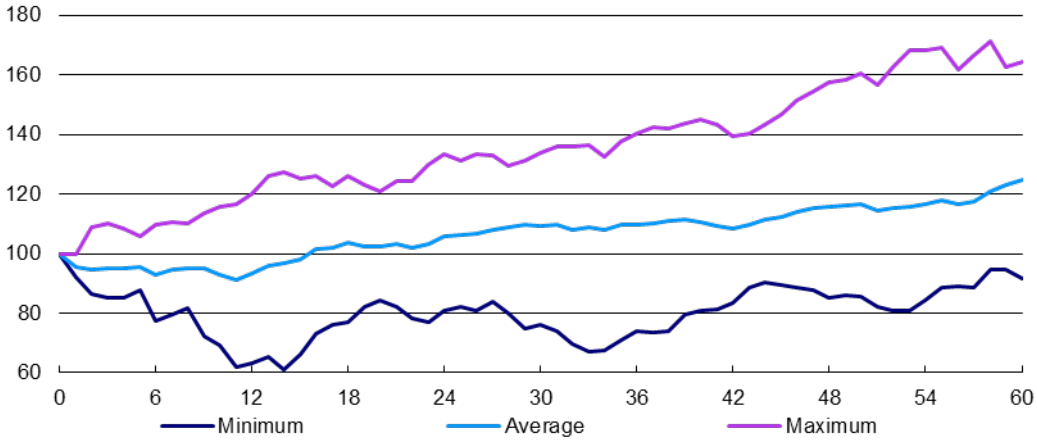


Note: Based on calendar year data from 1915 to 2021. See appendices for methodology, definitions and sources. Area of bubbles is in proportion to average correlation with other assets. Indices are deflated by US consumer prices. **Past performance is no guarantee of future results**. Source: Refinitiv Datastream, Global Financial Data, ICE BofA, Reuters CRB, S&P GSCI, Robert Shiller, Invesco

The stock market effect of wars has typically been short-lived, which is hard to imagine in the initial chaos

Wars bring fear and uncertainty for those involved and those who worry they may be. They also bring volatility to financial markets. However, **Figure 26** suggests that during six major conflicts since WW1, the average decline in US stocks has been only 9%, with the bottom occurring within the first 12 months. Of course, it is hard to see how that is possible in the midst of the current upheaval, especially now that stagflation seems more likely (the first part of the "Minimum" curve was in the aftermath of the Yom Kippur war in 1973 that brought the OPEC embargo and stagflation).

Figure 26 – The performance of US stocks around the outbreak of hostilities



Notes: based on the monthly performance of the S&P 500 (or US equity market equivalent prior to its existence as constructed by Robert Shiller – see appendices) in the five years from the onset of tension during WW1, WW2, the Cuban Missile Crisis (1962), the Yom Kippur War (1973), the Kuwait War (1990-91) and the Iraq War (2003-11). For each episode, the index is rebased to 100 at the outset (month zero) and is then calculated over the following 60 months. "Average" is the average path of the equity index across the six episodes. "Minimum" is the lowest index reading at that point across all six episodes. Likewise, for "Maximum". **Past performance is no guarantee of future results.** Source: Robert Shiller and Invesco

We now expect 3% global GDP growth in 2022 and 5%-6% inflation

We were already expecting less global growth in 2022 and a peaking of inflation around mid-year. Given the earlier sections about the economics of the war, we now expect even less growth, partly because of trade impacts and partly due to the squeeze on real incomes coming from higher commodity prices. On balance, we expect global GDP to be 0.5%-1.0% lower than it would otherwise have been, taking it closer to 3% growth (rather than the 4% we had been expecting), with the biggest impact being felt in Russia, Belarus, Ukraine and their neighbours, including Europe. At the same time, we expect inflation to be higher for longer than we had previously thought, with global inflation more likely to be in the 5%-6% range in 2022, rather than the previously expected 4%.

The slowdown phase of the economy typically brings a convergence of asset returns

The business cycle framework developed by Alessio de Longis (Invesco Investment Solutions) suggests the "slowdown" phase of the cycle usually witnesses a convergence of asset class returns (see **Figure 27**). Though equities have usually continued to provide decent excess returns versus cash in the slowdown phase, the best risk-adjusted returns have been found in government bonds. In essence, this phase provides a transition from the outperformance of equity-like assets during the recovery and expansion phases to the outperformance of defensive assets during recession.

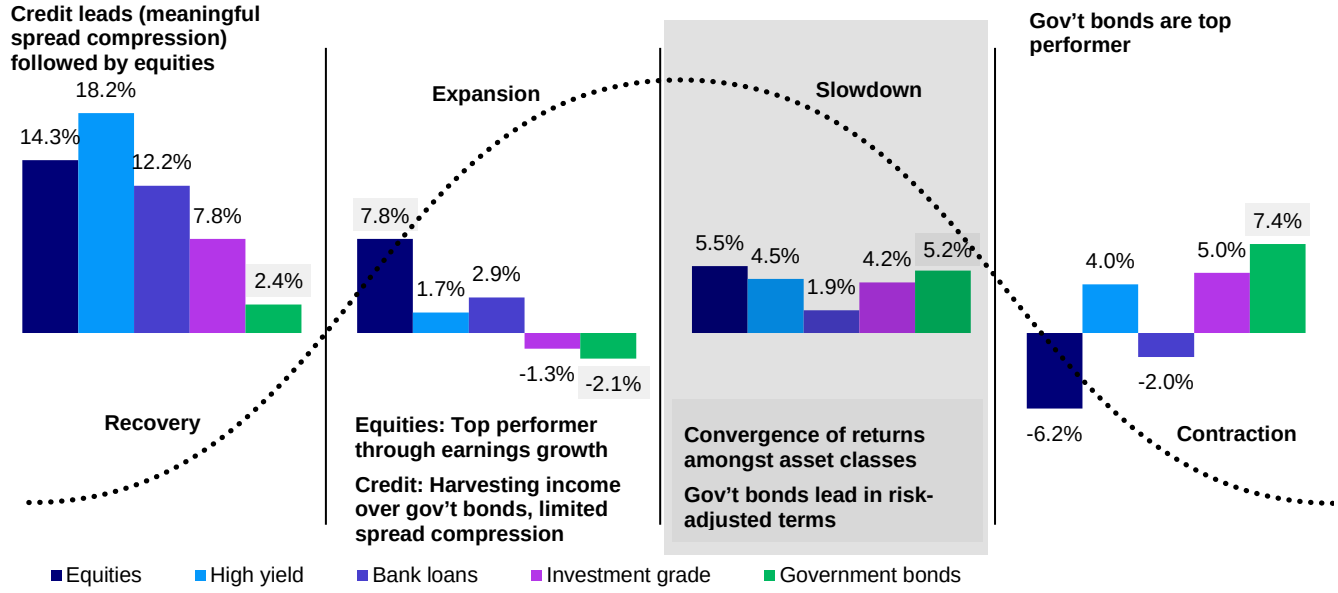
But government bond yields remain low…

Nevertheless, every cycle is different and we worry that the starting point in terms of interest rates and bond yields was abnormally low. This is, of course, linked to the fact that many developed world central banks are currently extremely accommodative. For example, **Figure 23** shows that Fed interest rates are very low in relation to nominal GDP growth, when compared to post-WW2 norms, even if we assume growth returns to the 5%-7% range. Even worse, when we allow for the effect of Fed asset purchases, by constructing a synthetic policy rate, the extreme laxity of the Fed becomes apparent. Hence, we saw the risk of a sizeable increase in yields, which has now started and has penalised fixed income assets. We think there is more to come.

…and some of the bad news is priced-in to cyclical assets

Of course, the conflict in Ukraine has introduced another difference to the typical cycle, with less economic growth and higher commodity prices likely to squeeze corporate profits, which could handicap equities and HY credit, in our opinion. The question is to what extent this is already reflected in prices, especially given the sharp rise in HY yields shown in **Figure 4**.

Figure 27 – Historical excess returns on US assets during the economic cycle



Notes: Index return information includes back-tested data. **Returns, whether actual or back tested, are no guarantee of future performance**. Annualised monthly returns from January 1973 – December 2020, or since asset class inception if a later date. Includes latest available data as of most recent analysis. Asset class excess returns defined as follows: Equities = MSCI ACWI - US T-bills 3-Month, High Yield = Bloomberg Barclays HY - US T-bills 3-Month, Bank loans = Credit Suisse Leveraged Loan Index – US T-bills 3-Month, Investment Grade = Bloomberg Barclays US Corporate - US T-bills 3-Month, Government bonds = FTSE GBI US Treasury 7-10y - US T-bills 3-Month. For illustrative purposes only. Please see appendices for further information.
Sources: *Invesco Investment Solutions*' proprietary global business cycle framework and Bloomberg L.P.

Figure 28 – Global risk appetite and the global business cycle

Note: monthly data from January 1992 to February 2022. Both Global LEI (Leading Economic Indicator) and GRACI (Global Risk Appetite Cycle Indicator) are provided by Invesco Investment Solutions (IIS). Global LEI is a weighted average of leading indicators for 23 countries (both developed and emerging). A reading above (below) 100 signals growth above (below) a long-term average. GRACI is a measure of relative risk-adjusted performance between riskier and safer asset classes (it measures how much investors have been rewarded, on average, for taking an incremental unit of risk in global financial markets on a trailing medium-term basis). A rising index signals improving market sentiment and vice-versa. **Past performance does not guarantee future results**. Source: Federal Reserve, Barclays, BEA, Bloomberg L.P., Citigroup, JP Morgan, Macrobond, Moody's and Invesco Investment Solutions

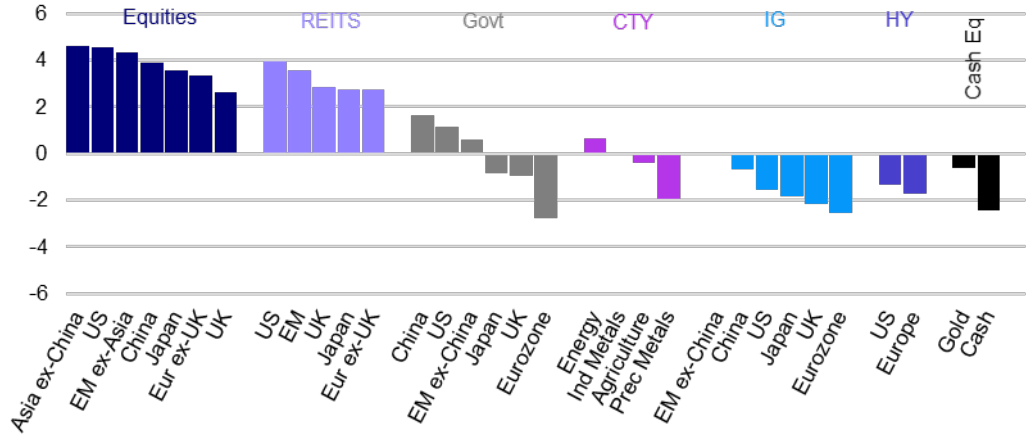
Risk appetite has waned

Figure 28 confirms that economic leading indicators have declined, along with financial market risk appetite (provided by Invesco Investment Solutions). That chart is as of 28 February 2022 and risk appetite may have declined even further since then. Having recently scaled post-GFC peaks, we were expecting some decline in risk-appetite as the global economy decelerated. Can it stabilise or will it continue lower?

The GMS team favours equities, though not in Europe

The views of Invesco's Global Market Strategy Office (GMS) suggest risk-appetite will improve from current levels. **Figure 29** shows the outcome of a regular survey in which GMS team members express their views about relative performance over the next 12 months. The preference for equities and real estate (REITS) suggests a degree of optimism but next in line are government bonds and HY has slipped down the rankings. There seems little confidence in Europe, with more optimism about US and EM assets.

Figure 29 – The wisdom of the GMS crowd (asset preferences for the next year)

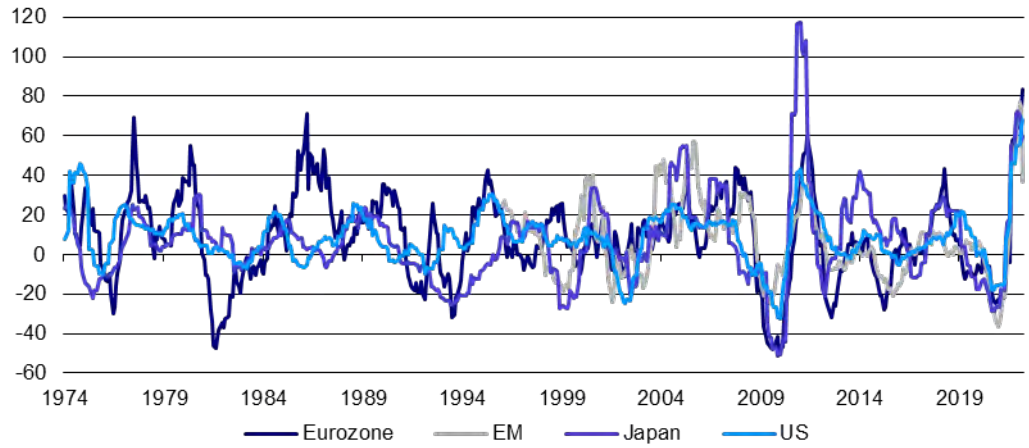


The chart shows the opinions of the Global Market Strategy Office (GMS -- see back cover page for membership) about asset returns over the next 12 months in USD. Each member of the team was asked to give a score from -10 to +10 for each asset (-10 being large underperformance and +10 being large outperformance versus the average of all assets). Those scores are then averaged across members of the team and organised by asset category according to the average score across regions and then ranked within each category. Abbreviations: Cash Eq. is cash equivalents; CTY is commodities; Asia ex-China includes only emerging markets; Ind. Metals is industrial metals; Prec. Metals is precious metals. There is no guarantee that these views will come to pass. Source: Invesco Global Market Strategy Office

Profit growth has supported equity markets since the pandemic recession

Since the bottom of the pandemic recession, global equity markets have been supported by rapid earnings per share (EPS) growth (see **Figure 30**). Though there has been some recent deceleration in EM EPS (perhaps linked to events in Russia and Ukraine), profit growth in other regions remains elevated.

Figure 30 – Earnings per share growth (% year-on-year)



Notes: monthly data from January 1974 to March 2022. Based on Datastream country/regional indices, with EPS calculated as the quotient of the price index and price-earnings ratios.
Source: Refinitiv Datastream and Invesco

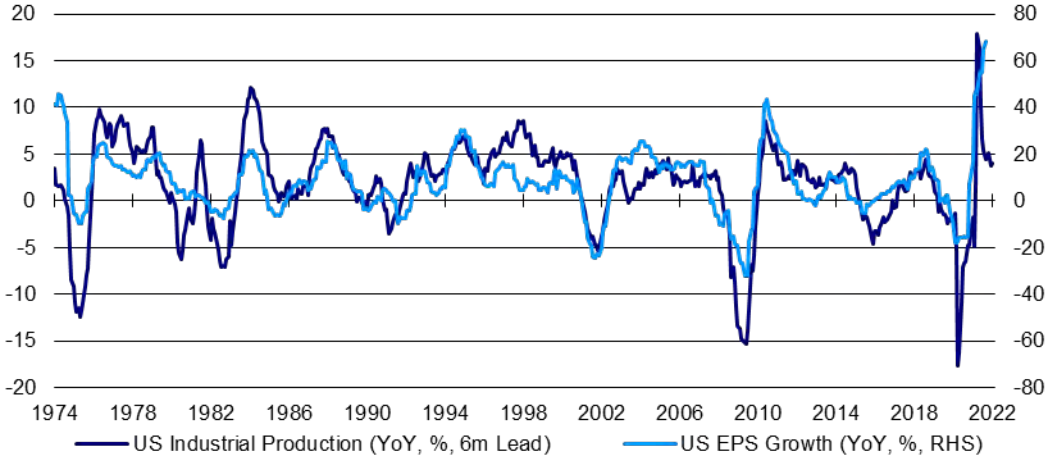
But we think profits will decelerate

However, that is backward looking and reflected the sharp economic rebound from recession. We were already expecting a deceleration in profits as a result of lower economic growth. **Figure 31** points to a good correlation between US industrial production and US earnings per share growth, with a lag of six months between the two (we find a similar geared relationship across the various regions that we cover). The deceleration in industrial production evident in that chart suggests the possibility of less profit growth. We also note that industrial growth in the Eurozone and Japan has recently been around zero, so profit growth there may be even weaker.

Especially given rising costs

Apart from the effect of a slowing economy, profits may also be squeezed by the rise in input costs. There has been some acceleration in wages (most notably in the US) but also a rapid rise in raw material costs (see earlier sections). Hence, the profit slowdown may be greater than the slowdown in production would suggest, especially in energy intensive and metal-bashing sectors. On the other hand, sectors with wide profit margins (typically growth sectors) are likely to suffer the least. In general, this feeds through into our process via our dividend growth assumptions which are now more conservative (see **Appendix 4**).

Figure 31 – US industrial production and profit growth (%)



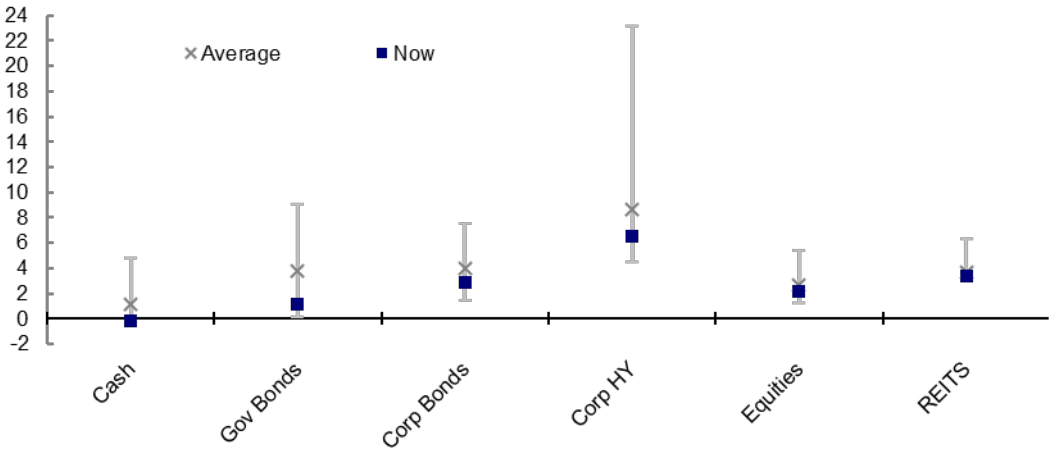
Notes: monthly data from January 1974 to March 2022. EPS is earnings per share and is calculated as the quotient of the Datastream US price index and the respective price-earnings ratio.
Source: Refinitiv Datastream and Invesco

Higher yields improve the scope for future returns, in our opinion

We think valuations are now more appealing

The rise in yields shown in **Figure 5** might suggest that assets are now more attractive and **Figure 32** puts those global yields into a historical perspective (with regional detail available in **Appendix 1**). Though conditions have changed (we think central banks are more aggressive and the economic outlook has dimmed as a result of the conflict in Ukraine), later sections will show that our projected returns are mostly better than when we last published, largely because yields are now higher.

Figure 32 – Global asset class yields within historical ranges (%)



Start dates are cash 1/1/01; govt bonds 31/12/85; corp bonds 31/12/96; corp HY 31/12/97; equities 1/1/73; REITs 18/2/05. See appendices for definitions, methodology and disclaimers. As of 9 March 2022.
Source: Refinitiv Datastream and Invesco

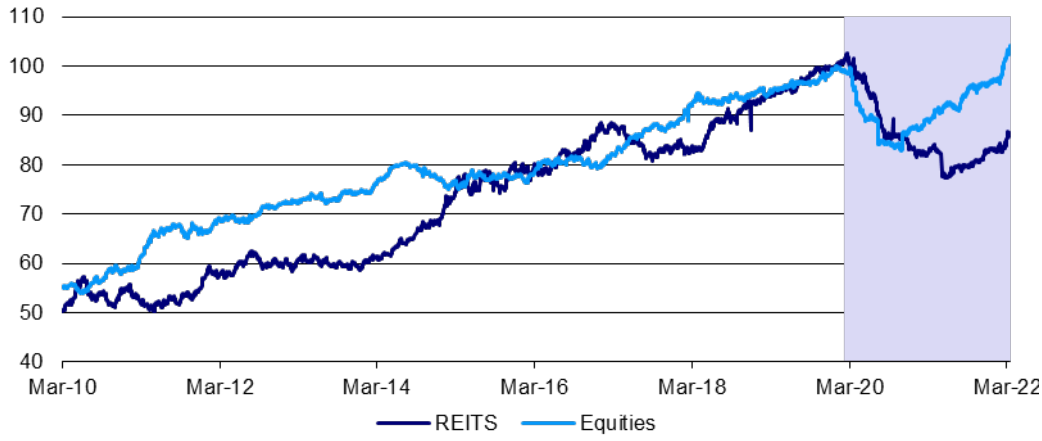
But the growth that supports economically sensitive assets may be waning

The returns on cyclical assets such as equities and real estate are not just about yield, but also about growth. We have already mentioned that we are now less hopeful about equity dividend growth, especially in Europe, and **Figure 33** suggests to us that dividends have recovered to the pre-pandemic trend (the best may be behind us).

REIT dividend growth may now be less than for equities

Real estate (REIT) dividends have not enjoyed the same recovery. First, the low point was at 77% of the end-2019 level (83% in the case of equities) and the limited rebound leaves them at 86% of that end-2019 level. This may suggest greater scope for REIT dividend growth but we think it also reflects collateral damage done to some categories of real estate by the pandemic (as reflected in the assumptions shown in **Appendix 4**). We are now broadly more optimistic about growth in equity (rather than REIT) dividends.

Figure 33 – Global real estate (REIT) and equity dividends (31/12/19 = 100)



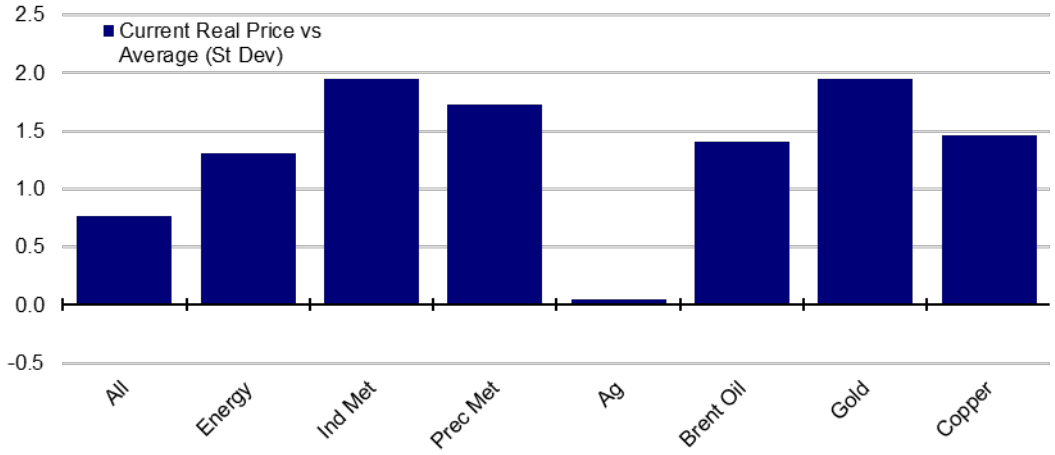
Note: daily data from 2 March 2010 to 16 March 2022. For both REITS and Equities, the level of dividends is calculated from the reported dividend yield and index levels (and indexed to 100 on 31 December 2019). REIT dividends are based on FTSE EPRA/NAREIT Global Index. Equity dividends are based on the Datastream World Index. Shaded area shows the Covid-19 pandemic period (from 1 February 2020 to today).
Source: FTSE EPRA/NAREIT, Refinitiv Datastream and Invesco

Real commodity prices are above historical norms

Commodities and currencies

We already thought that industrial commodities and gold were looking expensive but Russia's invasion of Ukraine has given them an added boost (see **Figure 15** and **Appendix 2**). All commodity groups now look more expensive than usual when measured in real terms (see **Figure 34**), though the agriculture sub-group is relatively close to its own historical norm. Potential supply problems may favour industrial commodities such as energy and industrial metals but a decelerating global economy and valuations could handicap them. Our 12-month projections show that we expect major commodity prices to weaken (see **Figures 40** and **41**).

Figure 34 – Commodity prices deflated by US CPI versus historical norms

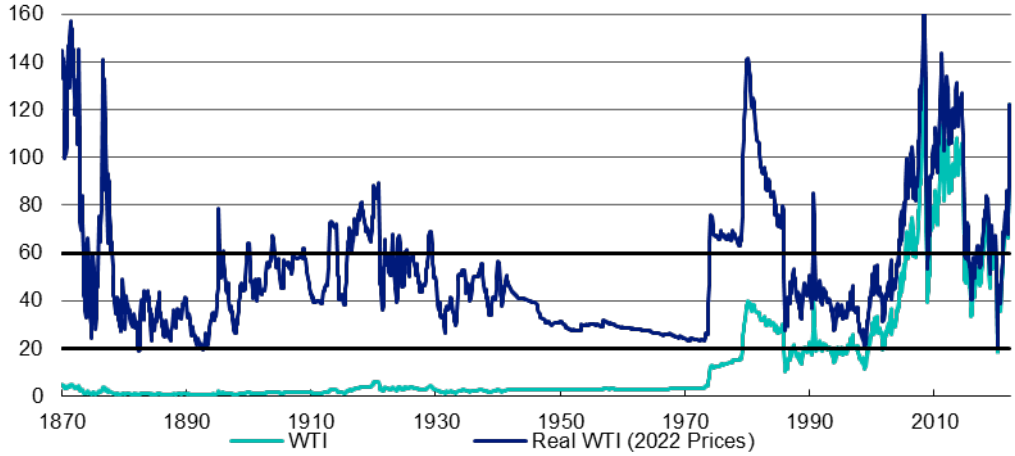


Abbreviations: "Ind Met" is industrial metals, "Prec Met" is precious metals and "Ag" is agriculture. Historical ranges start on: All and Ag 31/12/69; Energy 31/12/82; Ind Met 3/1/77; Prec Met 2/1/73; Brent 1/6/87; gold 1/1/74; copper 1/1/74. As of 09 March 2022. See appendices for definitions, methodology and disclaimers.
Source: GSCI, Refinitiv Datastream, Invesco

Oil has never stayed above $140 for very long (in today's prices)

Figure 35 shows how rarely oil had scaled recent peaks over the last 150 years (measured in today's prices). These are exceptional times but so were the previous episodes, with demand/supply shocks usually explaining those peaks (Oil Creek Association in the 1860s/1870s, OPEC embargos in the 1970s/80s and the China growth shock of the early 2000s). Those 150 years suggest the oil price struggles to stay above $140 (in today's prices), because both demand and supply adjust to those higher prices. We presume the same will prove the case today, though if that thesis is put to the test, the demand-side reaction may require global recession. We are assuming that will not be the case but our "energy crisis" scenario allows for it to happen, at least temporarily.

Figure 35 – US oil price in real terms since 1870 (US$ per barrel, CPI adjusted)

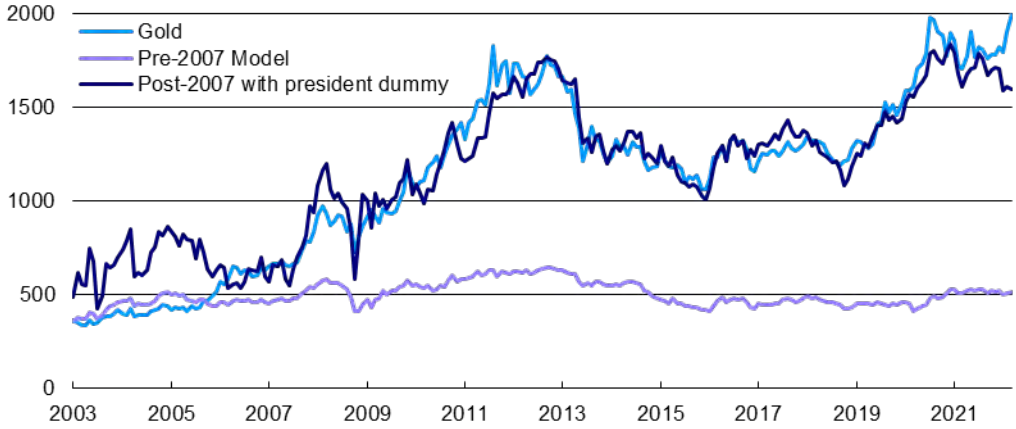


Note: monthly data from January 1870 to March 2022 (as of 7 March 2022). WTI is West Texas Intermediate. Real WTI is calculated by dividing the price of WTI by an index of US consumer prices. **Past performance is no guarantee of future results**. Source: Global Financial Data, Refinitiv Datastream and Invesco

Gold seems to contain a big geopolitical risk premium

We noted in early February that gold was disconnecting from our econometric model (see Why is gold misbehaving?). According to our model, gold tends to fall when bond yields and/or the dollar rise. Those conditions have been met this year but gold hasn't fallen as expected. We suspected that was partly due to a Russia/Ukraine risk premium and **Figure 36** shows that the invasion of the latter led to a further rise in the price of the yellow metal. Given that we expect bond yields to rise further (see **Figure 40**), we think the fair value of gold will be even lower in 12 months and we expect gold to weaken.

Figure 36 – Gold versus model fair value (US$ per ounce)

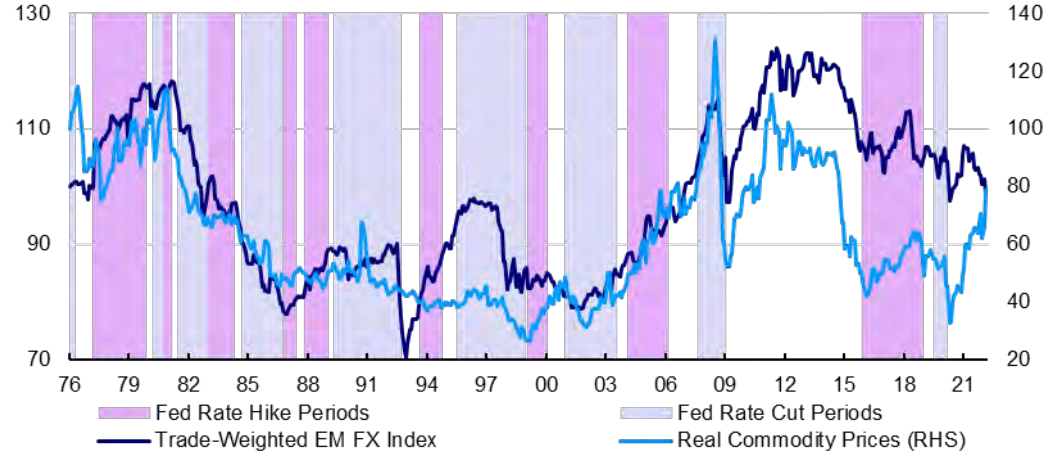


Notes: monthly data from January 2003 to March 2022 (as of 9 March 2022). Gold is modelled as a function of real 10-year US Treasury yield, 10-year US inflation breakeven and trade-weighted USD. "Pre-2007 Model" is based on data from 31 January 1997 to 31 December 2006. "Post-2007 Model" is based on data from 31 January 2007 to 30 April 2020. "President dummy" is a dummy variable that was set at zero prior to November 2016 (when President Trump was elected) and one thereafter. **There is no guarantee that these views will come to pass**. **Past performance is no guarantee of future results**.
Source: Refinitiv Datastream and Invesco

EM currencies haven't fully reflected the rise in commodity prices

Figure 37 suggests a good historical relationship between our EM FX index and commodity prices (though weakened in recent years, perhaps due to the growing importance of the Chinese yuan). We believe the path of commodity prices is more important than the Fed in determining what happens to EM currencies and we suspect those currencies are yet to fully reflect the benefit of higher raw material prices.

Figure 37 – Emerging market currencies, commodities and the Fed

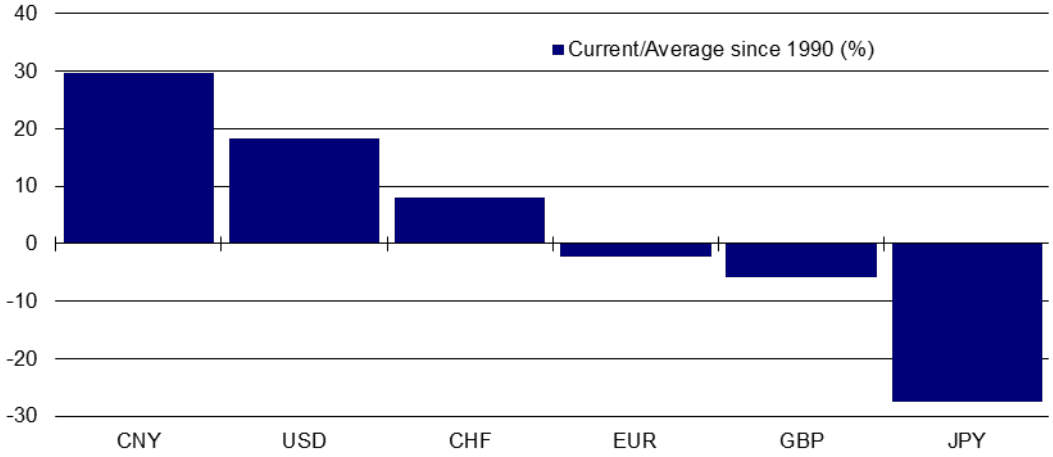


Note: monthly data from January 1976 to February 2022. Real trade-weighted EM FX index is a trade weighted average of national currencies versus US dollar (trade weights are based on total trade flows for each country). There are 18 currencies in the EM basket – those of China, Brazil, South Korea, Mexico, Singapore, India, Russia, Poland, Thailand, Turkey, Czech Republic, Malaysia, Indonesia, Hungary, Philippines, South Africa, Chile and Nigeria. Real adjustments use national CPI indices versus that of the US. Real commodity price index is based on the S&P GSCI Commodity Spot Price Index, adjusted by the US CPI index. All indices rebased to 100 as of January 1976. As of 28 February 2022. **Past performance is no guarantee of future returns.** Source: IMF, OECD, Oxford Economics, S&P GSCI, Bloomberg L.P., Refinitiv Datastream, Invesco.

CNY and USD are more expensive than usual in real trade-weighted terms

When it comes to major currencies, the big valuation contrast remains that between CNY and JPY (see **Figure 38**). The Japanese currency continues to look cheap in real terms (compared to historical norms) and we expect it to be among the better performing currencies if geopolitical tensions remain (we view it as a so-called defensive currency).

Figure 38 – Real effective exchange rates*



*Currency indices measured against a trade-weighted basket of currencies and adjusted for inflation differentials. As of 28 February 2022. Source: OECD, Datastream and Invesco

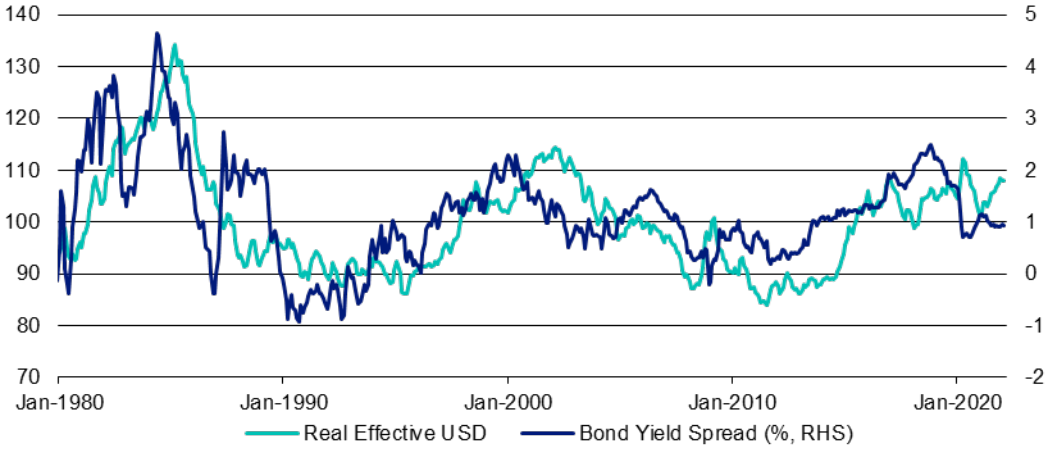
There are many reasons why the dollar could weaken over the long term…

As already mentioned when considering gold, the path of the US dollar has an impact on many other assets and it has been strengthening. It is not hard to find fundamental reasons why the dollar should in fact weaken: first, a chronic current account deficit has led to the US accumulating a large negative net international investment position (the US is increasingly indebted to the rest of the world); second, a more expansive fiscal response to the Covid crisis than in other countries worsened that current account deficit and, third, **Figure 38** suggests the dollar is above its normal value in real terms.

…and yield spreads have not been providing the anticipated support

Figure 39 suggests movements in the real trade-weighted value of the dollar is correlated to the spread between US bond yields and those of other countries. Surprisingly, and despite the recent hawkishness of the Fed, that bond yield spread has been fairly stable over the last year or so. Nevertheless, the dollar has been appreciating in both nominal and real terms, most recently we think because of its perceived so-called "safe-haven" status. We are sceptical that the dollar has much further upside and expect it to weaken slightly over the next 12 months (see **Figure 40**).

Figure 39 – Real effective US dollar and bond yield spread



Note: monthly data from January 1980 to February 2022. Real effective US dollar is an index calculated by the OECD as the trade weighted value of the US dollar versus a basket of currencies and adjusted for CPI inflation differentials. Bond yield spread is the US 10-year treasury yield minus the average of the 10-year government yields of: Australia, Canada, France, Germany, Italy, Japan, Sweden and the UK. As of 28 March 2022. **Past performance is no guarantee of future returns**. Source: OECD, Refinitiv Datastream and Invesco.

Projections for the next year

Russia's invasion of Ukraine brings more uncertainty

Our analysis is shrouded in more uncertainty than we have felt since the beginning of the pandemic. So much depends on the outcome of the Russia-Ukraine conflict, which effectively puts us in the hands of one person. For this reason we have outlined three broad scenarios but investors cannot implement a range of scenarios, so we are forced to choose the most likely outcome and then try to mitigate some of the risk around that. Though we hope there is a quick resolution to the conflict, we are more inclined to believe this will become a lengthy war of attrition (Scenario 2 within **Figures 12** and **44**).

We assume less growth and more inflation

Underpinning our projections for the next 12 months are the following assumptions:

- Global GDP growth is closer to 3% than the previously expected 4%
- Global inflation will be 5%-6% rather than the 4% previously anticipated
- Major central banks raise rates but less rapidly than currently assumed by markets
- Government bond yields continue to rise and yield curves flatten
- IG spreads are broadly stable but HY spreads widen a little more and defaults rise
- USD weakens slightly as geopolitical risk premia decline; CNY weakens
- Equity dividend growth moderates but yields fall slightly (except in the US)
- Real estate (REIT) dividend growth moderates and yields rise (except in Japan/EM)
- Commodities consolidate recent gains (and gold falls due to rising yields/dollar)

With less Fed tightening than currently priced-in by markets but we see 10yr US yields at 2.5%

The assumptions behind our projections are laid out in **Appendix 4**, while **Figure 40** shows how they translate into market targets. Perhaps the single most important forecast is that the Fed will raise rates five times over the next 12 months. This is less than the seven hikes currently priced into Fed Funds futures but still leads us to believe the 10-year treasury yield will rise to 2.50% (based largely on a higher real yield).

An EM REIT yield of 6.2% appears generous

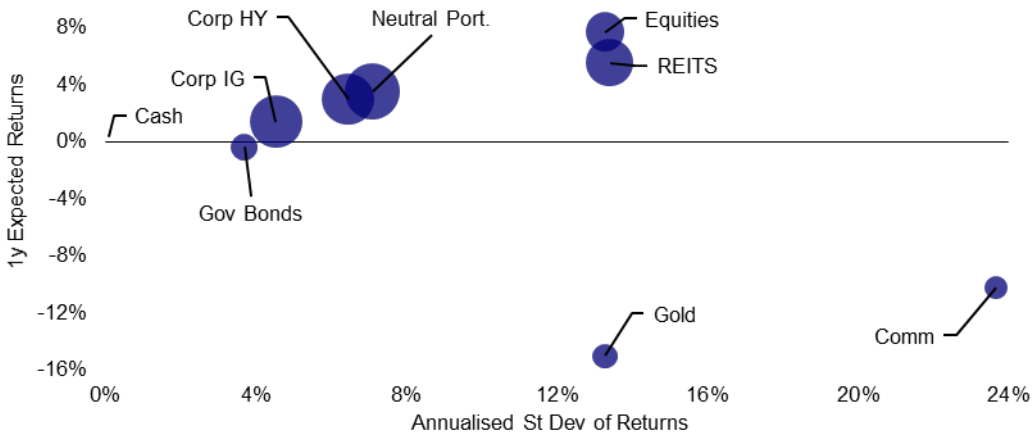
Rising bond yields are one reason why we expect REIT yields to nudge upwards in some regions, which dampens the projected returns on that asset class. One exception is in EM, where the yield is currently 6.2% which by itself suggests a good level of income but also holds out the possibility that a fall in yield will boost capital returns.

Figure 40 – Market forecasts

		Current (09/03/22*)	Forecast 12-month
Central Bank Rates	US	0.50	1.75
	Eurozone	-0.50	-0.25
	China	4.35	4.00
	Japan	-0.10	-0.10
	UK	0.75	2.00
10yr Bond Yields	US	1.95	2.50
	Eurozone	0.16	0.20
	China	2.86	3.00
	Japan	0.16	0.15
	UK	1.50	2.20
Exchange Rates/US$	EUR/USD	1.11	1.15
	USD/CNY	6.32	6.60
	USD/JPY	115.85	110.00
	GBP/USD	1.32	1.40
	USD/CHF	0.93	0.90
Equity Indices	S&P 500	4278	4500
	Euro Stoxx 50	3766	4250
	FTSE A50	13645	15000
	Nikkei 225	24718	28500
	FTSE 100	7191	8350
Commodities (US$)	Brent/barrel	117	90
	Gold/ounce	2002	1700
	Copper/tonne	9964	10000

Notes: * except for central bank rates which take account of subsequent changes. **There is no guarantee that these views will come to pass**. See Appendices for definitions, methodology and disclaimers. Source: Refinitiv Datastream and Invesco Global Market Strategy Office

Figure 41 – Projected 12m return versus risk for global assets



Based on local currency returns. Returns are projected but standard deviation of returns is based on 5-year historical data. Size of bubbles is in proportion to average pairwise correlation with other assets. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Neutral portfolio weights shown in **Figure 3**. As of 9 March 2022. **There is no guarantee that these views will come to pass**. See Appendices for definitions, methodology and disclaimers. Source: BAML, MSCI, GSCI, FTSE, Refinitiv Datastream and Invesco

We expect equities to be the most remunerative asset; we are wary of gold and commodities

The return projections shown in **Figure 41** suggest equities will be the best performing global asset class over the next 12 months, which agrees with the GMS team views shown in **Figure 29**. This reverses our previous expectation that real estate would provide the highest returns. Conversely, we expect rising yields to result in negative total returns on government debt, though less than in the past because yields (and therefore income) are now higher. IG projected returns are also now positive for the same reason, while the projected returns on HY are little changed from last time (higher yield is balanced by an expected widening of spreads and higher defaults).

Optimisation favours equities, IG and cash (our diversifier of choice)

Trying to construct a diversified multi-asset portfolio on the back of our projections requires more than simply choosing our favourite assets: after all, we may be wrong. We use an optimisation process to help do that and **Figure 42** shows the results. The outcome favours equities, IG and cash.

Equity and IG allocations boosted at the expense of real estate and HY

We largely follow the suggestions of the optimiser when they are clear: we have boosted IG to the maximum allowed 20% within our Model Asset Allocation and remain maximum allocated to cash and zero allocated to gold and commodities. We have reduced HY to an Underweight 2% (and not to the zero suggested by the optimiser), while bringing real estate down to a Neutral 8%, rather than Underweight. Elsewhere, we have boosted equities (to Overweight), while maintaining the minimum allocation to government bonds.

Figure 42 – Optimised allocations for global assets (using local currency returns)

	Neutral Portfolio	Policy Range	Projected Returns	Optimisations Sharpe Ratio	Optimisations Max Return	Model Asset Allocation*	
Cash & Gold	5%	0-10%	-7.4%	10%	10%	10%	
Cash	2.5%	0-10%	0.3%	10%	10%	10%	
Gold	2.5%	0-10%	-15.1%	0%	0%	0%	
Govt Bonds	25%	10-40%	-0.4%	19%	17%	10%	
Corporate IG	10%	0-20%	1.4%	20%	20%	20%	↑
Corporate HY	5%	0-10%	3.0%	0%	0%	2%	↓
Equities	45%	25-65%	7.7%	49%	50%	50%	↑
Real Estate	8%	0-16%	5.5%	2%	3%	8%	↓
Commodities	2%	0-4%	-10.3%	0%	0%	0%	

Notes: Based on local currency returns (for both the one-year projected returns and five-year historical covariance matrix). Cash is an equally weighted mix of USD, EUR, GBP and JPY. "Sharpe Ratio" shows the results of maximising the Sharpe Ratio. "Max Return" maximises returns while not exceeding the volatility of the Neutral Portfolio. *This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. See appendices for definitions, methodology and disclaimers. Source: Invesco Global Market Strategy Office

We add to equities and IG and remain Overweight EM and UK

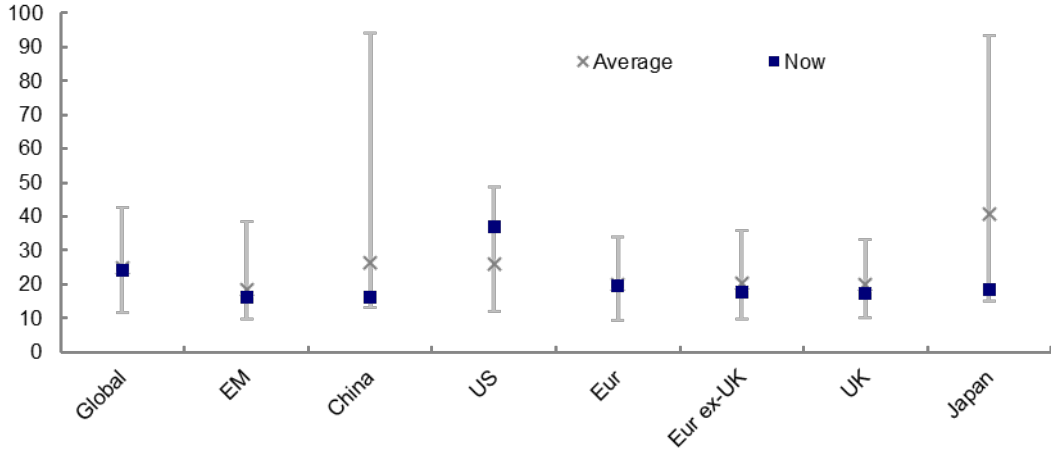
Model Asset Allocation: war requires balance

After a difficult period for stocks, we are boosting the equity allocation from Neutral to Overweight within our Model Asset Allocation (see **Figure 42**). This is balanced by also adding to the more defensive to IG (from Neutral to Maximum). Room is made for those changes by reducing real estate (to Neutral) and HY (Underweight). Despite the addition to equities, the overall balance across asset groups is now more conservative, given the uncertainties we face. From a regional perspective we have added to EM and US allocations, and remain Overweight in EM and the UK (see **Figure 3** for regional detail).

Within equities, we stick with EM after recent weakness (and boost China) and add to Japan and US

Equity prices have fallen and dividend yields are up but the economic and profit outlook is less certain. Hence, the **equity** allocation is raised to only slightly Overweight (50% from the Neutral 45%). We were already at the maximum allocation to EM equities, which is unfortunate given recent performance. However, we find EM equities to be good value (see **Figure 43**) and we suspect the strength of commodity prices will boost EM profits (or at least the part that is related to raw materials). Within the EM allocation, we are taking advantage of recent price weakness to go Overweight China. We have also added marginally to Japanese equities (to go further Overweight) and have added to US equities (though rich valuations mean that we remain well Underweight).

Figure 43 – Historical ranges for CAPEs



Note: CAPE = Cyclically Adjusted Price/Earnings and uses a 10-year moving average of earnings. Based on daily data from 3 January 1983 (except for China from 1 April 2004 and EM from 3 January 2005), using Datastream indices. As of 9 March 2022. Source: Refinitiv Datastream and Invesco

Real estate is reduced to Neutral but we like EM

Among other cyclical assets, we reduce **real estate** (from the maximum 16% to a Neutral 8%). The optimisation process pushed us to go Underweight but we feel that real estate could offer some mitigation if inflation goes much higher. The one region where we remain enthusiastic is EM (REIT yield of 6.2%).

All IG regions are Overweight but find EM the most attractive

As well as increasing the equity allocation, we also raise **IG** (to the maximum 20%, from 9%). All IG regions are now held at the maximum possible allocation but we think EM offers by far the best potential (6.2% total return over 12 months in USD). On the other hand, and despite the big rise in yields, we reduce **HY** to an Underweight 2% (from the maximum 10%). We project only a small positive return and our optimisation process finds that insufficient to justify an allocation (**Figures 41** and **42**). We remain at the minimum 10% allocation to **government bonds**, with EM the only region that is Overweighted (on the back of a 6.2% projected 12m total return in USD).

Cash is our diversifier of choice

Cash remains our diversifier of choice due to its low volatility and low correlation to other assets (we maintain the maximum 10% allocation). After missing the recent rise in **commodity** prices, we do not wish to chase that performance and remain zero allocated (the same applies to **Gold** which we think will suffer as bond yields rise).

UK and EM favoured

Regionally, we favour EM and the UK, both of which have assets that are attractively valued (in our opinion) and stand to benefit from the recent strength of commodity prices.

Three scenarios are considered

What are the risks brought by the war in Ukraine?

We started by outlining three broad scenarios for the war in Ukraine but our process requires us to make spot forecasts that can then be run through an optimisation process. That doesn't allow us to hedge our views but we now want to come back and consider what could be the economic and market implications of the three scenarios.

With asset preferences now introduced

Figure 44 reprises the information already shown in **Figure 12** but also adds our views about likely policy and market outcomes, along with our asset preferences under each scenario. We believe that financial markets were quick to price-in something similar to our Scenario 2 (a lengthy war of attrition), with elevated commodity prices, broad sanctions on Russia, lower global GDP (with Europe most at risk) and higher inflation.

Our base case most resembles Scenario 2 (prolonged war of attrition)

If we are correct in believing that markets have already integrated that sort of outcome, then Scenario 2 can be considered as our base case and thus broadly aligns with the projections and Model Asset Allocation decisions outlined above. We think Scenario 1 (rapid resolution) would be a more bullish outcome, with commodity prices falling and other cyclical assets rallying, including those of Europe. On the other hand, Scenario 3 (prolonged war plus energy crisis) would represent a more bearish scenario than we are allowing for, with commodity prices rising to new highs (in our opinion) and defensive assets outperforming cyclicals (and European assets suffering the most).

Stagflation is possible but by no means guaranteed

There is much talk of stagflation and we certainly expect a move in that direction (less growth and more inflation). However, we need to be careful about emotive terminology. Stagflation is associated with the difficult market environment of the 1970s (bonds and equities producing negative returns) but as outlined in the earlier section about energy security and the risk of stagflation, we think we are far from those conditions. We believe Russia, Belarus and Ukraine are now suffering stagflation and that perhaps some neighbouring countries could be pushed towards it (Lithuania and Latvia, for example). However, it is our view that major economies are far from it. Only under the energy crisis of Scenario 3 do we expect Europe to suffer stagflation. Even then, we think the US and China could avoid that outcome.

Each central bank could react differently

We have many doubts about how major central banks will react to the new economic conditions. We think they will continue to tighten but believe that lower growth will temper their hawkishness. The Fed showed no sign of this tempering at its 16 March meeting but the Bank of England sounded a more dovish on the following day. Under Scenario 2, we think the Fed will enact another four rate hikes during 2022 (see **Figure 44**), which is consistent with the five hikes that we suggest over the next 12 months in **Figure 40**. We would expect more tightening under Scenario 1 (business as usual) – though there would be less inflation this year, growth would be stronger and financial markets would be more stable. On the other hand, we are assuming that under Scenario 3 (energy crisis), global recession would persuade central banks to be less aggressive in their tightening and perhaps to even ease, despite higher inflation. Admittedly, this could go either way, depending on the central bank. For example, the ECB, with inflation being its only mandate, could tighten more under higher inflation scenarios, while the Fed, which is also concerned about growth, could loosen.

But we think most governments will loosen their budgets

Importantly, we think governments will loosen fiscal policy, if only because of higher defence spending (especially in Europe). The magnitude of the economic effect will depend upon how it is financed, but we expect some positive benefit which may partially offset the depressing effect of higher inflation. Under Scenario 3, we would expect governments to also offer a lot of support to shrinking economies, both in the form of automatic stabilisers and more overt actions. If nothing else, higher inflation will bring one positive side-effect: a boost to nominal GDP and a reduction in debt-to-GDP ratios.

Prolonged war could favour commodity producers and so-called "safe-havens"…

As for asset preferences, we have already given our reasons for favouring equities, IG and cash under something approximating Scenario 2. In terms of currency preferences, we have chosen a mix of so-called "safe havens" such as JPY and CHF (and also include USD in that category), on the assumption that there will be periods of volatility, along with currencies that could benefit from the continued elevation of commodity prices

…and perhaps China

(even at slightly lower levels). Among the latter we are focusing more on AUD, CAD and BRL (Brazilian real) than on the Norwegian krone (due its proximity to the problems) and Middle East currencies (because many are pegged to USD). We have added the UK to the list of preferred regions because we think its equity market is cheap and it gives decent exposure to commodity cycles. Though the Chinese yuan (CNY) may weaken as the People's Bank of China loosens policy (as we expect), it could benefit from shipping more goods to Russia and perhaps from buying Russia's energy on attractive terms.

Europe could gain from a rapid resolution to the conflict

Under the more optimistic Scenario 1 we would expect non-commodity cyclical assets to outperform, including equities (value and cyclical sectors), real estate and HY. We would also favour European assets and currencies; on the assumption it has the most to gain from such an outcome (because it has the most to lose from the alternatives).

An energy crisis would push us towards energy assets

Scenario 3 would swing our preferences in the direction of energy related assets, markets and currencies, along with gold (due to elevated inflation risks). We would add the US and China to the list of preferences because of their distance from the risk of stagflation. We have removed CHF and JPY from the list of preferred currencies because of the greater risks to their economies (Switzerland as part of Europe and Japan as an industrial nation). On the other hand, we have added the Mexican peso.

Finally, from a thematic perspective, we believe that defence spending will now be durably higher and that efforts to move to net-zero will accelerate.

Figure 44 – Three possible war outcomes and implications for our asset preferences

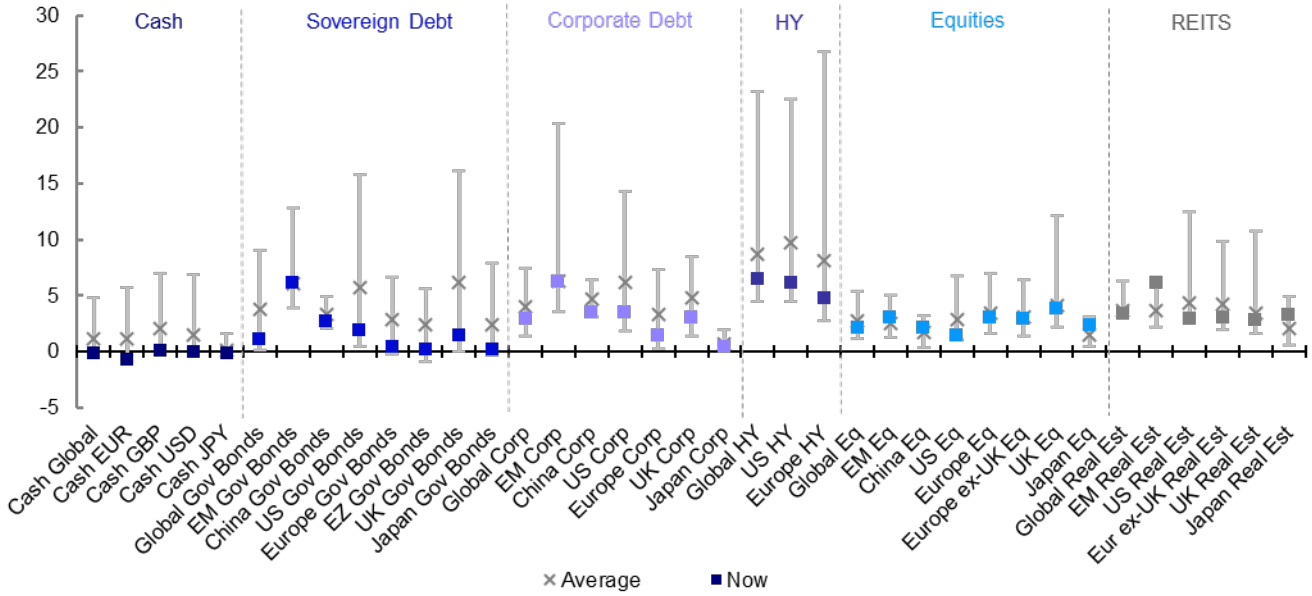
	Scenario 1: Business as usual	Scenario 2: War of attrition	Scenario 3: Prolonged war plus energy crisis
Description	Russia withdraws or overruns Ukraine by mid-2022	Ukrainian resistance prolongs the war into a multi-year affair	War is prolonged and Russia cuts energy supplies to Europe
Commodity prices	Down	Stable at elevated levels	Big increase
Global GDP impact (2022)	Slight negative	Moderately negative	Significantly negative
Recession risk	Low	Moderate	High
Inflation impact (2022/3)	Slight boost	Moderate boost	Strong boost and then decline
Stagflation risk	Low (high in Russia, Ukraine, Belarus)	Moderate (higher in countries close to the conflict)	Very high in Europe, moderate in US, low in China
Central bank impact	Slightly less tightening than previously expected	Less tightening than previously expected	Tightening stalls, perhaps with easing
Further Fed rate hikes in 2022	6	4	2
Military spending	Slight increase	Significant increase (especially in Europe)	Significant increase (especially in Europe)
Fiscal policy impact	Slight easing (military spending)	Moderate easing (military spending)	Significant easing (military and economic support)
Risk environment (2022)	Risk-on	Risk-off turning to risk-on	Risk-off
Favoured asset regions	Europe (DM & EM)	US, UK, Asia (incl. China), Middle East (and other energy producers)	Middle East (and other energy producers), US, China
Favoured currencies	EUR, GBP	CNY, JPY, CHF, USD, CAD, AUD, BRL	CAD, AUD, BRL, MXN, CNY, USD
Favoured assets	Equities (value, cyclical sectors), real estate, high-yield	Equities (quality, energy sector), investment-grade, cash	Energy (& stocks), gold (& miners), inflation-indexed bonds
Favoured themes	Energy (efficiency, nuclear, renewables), military spending	Energy (efficiency, nuclear, renewables), military spending	Energy (efficiency, nuclear, renewables), military spending

Currency abbreviations: EUR = euro, GBP = British pound, CNY = Chinese yuan, JPY = Japanese yen, CHF = Swiss franc, USD = US dollar, CAD = Canadian dollar, AUD = Australian dollar, BRL = Brazilian real, MXN = Mexican peso. **There is no guarantee that these views will come to pass.** Source: Invesco Global Market Strategy Office

Appendices

Appendix 1: Global valuations vs history

Regional yields within historical ranges (%)



Notes: As of 09 March 2022. **Past performance is no guarantee of future results.** See appendices for definitions, methodology and disclaimers. Source: Bloomberg Barclays, BofAML, FTSE, Refinitiv Datastream and Invesco

Appendix 2: Asset class total returns

Data as at 09/03/2022		Current	Total Return (USD, %)				Total Return (Local Currency, %)			
	Index	Level/RY	4m	YTD	12m	5y*	4m	YTD	12m	5y*
Equities										
World	MSCI	664	-10.7	-10.7	3.4	11.2	-9.6	-10.0	5.2	11.1
Emerging Markets	MSCI	1086	-13.8	-11.3	-15.2	6.2	-11.7	-9.8	-13.2	7.5
China	MSCI	68	-21.6	-16.1	-35.4	3.8	-21.5	-16.0	-35.4	3.7
US	MSCI	4017	-9.6	-10.6	10.2	14.7	-9.6	-10.6	10.2	14.7
Europe	MSCI	1799	-12.8	-12.4	-0.4	7.1	-9.0	-9.8	5.8	6.0
Europe ex-UK	MSCI	2200	-16.0	-15.0	-2.6	7.8	-12.0	-12.4	3.6	6.8
UK	MSCI	1115	-1.4	-3.5	7.1	5.1	1.5	-0.6	13.1	3.5
Japan	MSCI	3390	-15.2	-12.9	-11.7	5.2	-13.0	-12.4	-6.0	5.4
Government Bonds										
World	BofA-ML	1.21	-5.8	-4.1	-6.2	1.9	-3.8	-3.0	-2.6	1.6
Emerging Markets (USD)	BBloom	6.15	-16.1	-14.9	-10.6	1.6	-16.1	-14.9	-10.6	1.6
China	BofA-ML	2.68	2.6	1.3	9.1	6.0	1.4	0.3	5.8	4.1
US (10y)	Datastream	2.01	-4.1	-4.0	-1.3	3.6	-4.1	-4.0	-1.3	3.6
Europe	Bofa-ML	0.59	-9.0	-5.8	-10.9	2.6	-4.6	-3.0	-4.2	1.7
Europe ex-UK (EMU, 10y)	Datastream	0.23	-8.7	-5.9	-10.8	2.2	-4.3	-3.1	-4.1	1.3
UK (10y)	Datastream	1.48	-8.7	-7.5	-10.7	2.5	-5.9	-4.7	-5.7	0.9
Japan (10y)	Datastream	0.18	-3.2	-1.2	-5.8	0.1	-0.8	-0.7	0.3	0.3
IG Corporate Bonds										
Global	BofA-ML	3.00	-8.5	-7.1	-6.2	3.2	-7.2	-6.3	-4.2	2.9
Emerging Markets (USD)	BBloom	6.35	-15.8	-16.0	-17.9	3.2	-15.8	-16.0	-17.9	3.2
China	BofA-ML	3.53	2.7	1.4	8.2	5.7	1.4	0.5	4.9	3.9
US	BofA-ML	3.55	-8.3	-7.2	-4.0	3.7	-8.3	-7.2	-4.0	3.7
Europe	BofA-ML	1.53	-9.9	-7.3	-11.5	1.8	-5.5	-4.5	-4.8	0.9
UK	BofA-ML	3.09	-11.4	-9.8	-11.5	3.6	-8.7	-7.1	-6.6	1.9
Japan	BofA-ML	0.47	-2.9	-1.0	-5.7	0.3	-0.4	-0.4	0.4	0.5
HY Corporate Bonds										
Global	BofA-ML	6.62	-7.1	-6.9	-5.3	3.9	-6.1	-6.2	-3.7	3.8
US	BofA-ML	6.27	-4.7	-4.7	0.0	4.7	-4.7	-4.7	0.0	4.7
Europe	BofA-ML	4.74	-10.6	-8.7	-10.6	3.3	-6.2	-6.0	-3.9	2.4
Cash (Overnight LIBOR)										
US		0.08	0.0	0.0	0.1	1.1	0.0	0.0	0.1	1.1
Euro Area		-0.65	-4.9	-4.2	-9.5	-0.1	-0.2	-0.1	-0.6	-0.5
UK		0.18	-2.5	-3.6	-6.8	1.7	0.0	0.0	0.1	0.3
Japan		-0.09	-2.8	-1.9	-7.6	-0.5	0.0	0.0	-0.1	-0.1
Real Estate (REITs)										
Global	FTSE	1943	-5.3	-7.6	9.7	6.6	-0.7	-4.9	18.0	5.7
Emerging Markets	FTSE	1562	-3.3	-2.2	-16.3	1.5	1.4	0.6	-10.0	0.7
US	FTSE	3543	-2.4	-8.1	22.9	8.7	-2.4	-8.1	22.9	8.7
Europe ex-UK	FTSE	3371	-15.3	-11.0	-0.2	7.0	-11.2	-8.3	7.3	6.1
UK	FTSE	1168	-6.6	-11.4	10.0	6.2	-3.8	-8.7	16.2	4.5
Japan	FTSE	2406	-12.2	-8.0	-9.5	2.2	-10.0	-7.4	-3.6	2.3
Commodities										
All	GSCI	3780	30.8	36.2	62.2	10.8	-	-	-	-
Energy	GSCI	644	36.9	50.1	85.3	10.9	-	-	-	-
Industrial Metals	GSCI	2170	26.1	19.6	43.2	12.8	-	-	-	-
Precious Metals	GSCI	2270	8.1	8.8	13.0	9.0	-	-	-	-
Agricultural Goods	GSCI	628	29.4	26.0	45.6	7.5	-	-	-	-
Currencies (vs USD)**										
EUR		1.11	-4.5	-2.6	-6.9	0.9	-	-	-	-
JPY		115.85	-2.6	-0.7	-6.4	-0.2	-	-	-	-
GBP		1.32	-2.9	-2.9	-5.3	1.6	-	-	-	-
CHF		1.08	-1.6	-1.5	0.1	1.8	-	-	-	-
CNY		6.32	1.2	0.6	3.0	1.8	-	-	-	-

Notes: *Five-year returns are annualised. **The currency section is organised so that in all cases the numbers show the movement in the mentioned currency versus USD (+ve indicates appreciation, -ve indicates depreciation). **Past performance is no guarantee of future results**. Please see appendix for definitions, methodology and disclaimers. Source: Refinitiv Datastream and Invesco.

Appendix 3: Invesco 10-year Capital Market Assumptions (USD version)

	Asset Class	Index	Expected geometric return %	Expected arithmetic return %	Expected Risk %	Arithmetic return to risk ratio
Fixed income	US Treasury Short	BBG BARC US Treasury Short	0.9	0.9	1.5	0.57
	US Treasury Intermediate	BBG BARC US Treasury Intermediate	1.5	1.6	4.5	0.34
	US Treasury Long	BBG BARC US Treasury Long	1.4	2.0	11.7	0.17
	US TIPS	BBG BARC US TIPS	0.7	0.9	5.5	0.16
	US Bank Loans	CSFB Leverage Loan Index	4.1	4.4	8.5	0.52
	US Aggregate	BBG BARC US Aggregate	1.8	2.0	5.9	0.34
	US Inv Grd Corps	BBG BARC US Investment Grade	1.8	2.0	7.6	0.27
	US MBS	BBG BARC US MBS	2.4	2.6	6.5	0.39
	US Preferred Stocks	BOA ML Fixed Rate Pref Securities	2.9	3.6	12.4	0.29
	US High-Yield Corps	BBG BARC US High Yield	3.1	3.6	10.1	0.35
	US Muni	BOA ML US Muni	1.5	1.7	7.2	0.24
	US Muni (Taxable)	ICE BOA US Taxable Muni Securities Plus	1.8	2.1	7.8	0.27
	Global Aggregate	BBG BARC Global Aggregate	2.0	2.2	6.7	0.32
	Global Aggregate-Ex US	BBG BARC Global Aggregate- Ex US	2.2	2.7	10.1	0.27
	Global Treasury	BBG BARC Global Treasuries	2.0	2.3	8.4	0.28
	Global Sovereign	BBG BARC Global Sovereign	1.6	1.8	6.9	0.27
	Global Corporate	BBG BARC Global Corporate	2.1	2.3	7.6	0.31
	Global Inv Grd	BBG BARC Global Corporate Inv Grd	1.9	2.2	7.8	0.28
	Eurozone Corporate	BBG BARC Euro Aggregate Credit - Corporate	2.1	3.0	13.4	0.22
	Eurozone Treasury	BBG BARC Euro Aggregate Government - Treasury	2.1	2.8	12.4	0.23
	Asian Dollar Inv Grd	BOA Merrill Lynch ACIG	2.5	2.8	8.3	0.34
	Asian Dollar High Yield	BOA Merrill Lynch ACHY	9.5	11.1	18.9	0.59
	EM Aggregate	BBG BARC EM Aggregate	3.3	4.1	13.1	0.31
	EM Agg IG	BBG BARC EM USD Agg IG	2.0	2.3	8.2	0.28
	China Policy Bk & Tsy	BBG BARC China PB Tsy TR	2.1	2.3	5.2	0.43
	China RMB Credit	BBG BARC China Corporate	2.5	2.6	4.5	0.58
Equities	World Equity	MSCI ACWI	5.9	7.2	17.0	0.43
	World Ex-US Equity	MSCI ACWI Ex-US	6.7	8.3	18.9	0.44
	US Broad	Russell 3000	5.7	7.1	17.5	0.40
	US Large Cap	S&P 500	5.4	6.7	16.7	0.40
	US Mid Cap	Russell Midcap	6.3	8.1	19.6	0.41
	US Small Cap	Russell 2000	7.8	10.1	23.0	0.44
	MSCI EAFE	MSCI EAFE	6.2	7.7	18.6	0.42
	MSCI Europe	MSCI Europe	6.6	8.2	18.7	0.44
	Eurozone	MSCI Euro X UK	6.3	8.1	19.7	0.41
	UK Large Cap	FTSE 100	7.6	9.4	20.1	0.47
	UK Small Cap	FTSE Small Cap UK	8.4	11.3	25.7	0.44
	Canada	S&P TSX	5.3	7.1	20.4	0.35
	Japan	MSCI JP	4.6	6.9	22.5	0.31
	Emerging Market	MSCI EM	8.2	10.9	25.1	0.43
	Asia Pacific Ex JP	MSCI APXJ	7.7	10.5	25.3	0.41
	China Large Cap	CSI 300	8.5	13.5	34.9	0.39
Alternatives	US REITs	FTSE NAREIT Equity	6.6	8.2	18.8	0.44
	Global REITs	FTSE EPRA/NAREIT Developed Index	6.3	7.9	18.5	0.43
	Hedge Funds	HFRI HF Index	6.4	6.8	8.8	0.77
	Commodities	S&P GSCI	5.0	7.5	23.7	0.32
	Agriculture	S&P GSCI Agriculture	0.5	2.6	21.4	0.12
	Energy	S&P GSCI Energy	7.5	13.1	37.0	0.35
	Industrial Metals	S&P GSCI Industrial Metals	4.7	7.3	23.8	0.30
	Precious Metals	S&P GSCI Precious Metals	2.4	4.0	18.5	0.22

Notes: Estimates as of 31 December 2021, as published in Long-Term Capital Market Assumptions (March 2022). These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. **There is no guarantee that these views will come to pass.** TIPS = treasury inflation protected securities, MBS = mortgage-backed securities.
Source: Invesco Investment Solutions

Appendix 4: Key assumptions

Key assumptions for 1-year projected returns

	US	Eurozone/ Europe ex-UK	UK	Japan	EM	China
Central bank rates (%)	1.75	-0.25	2.00	-0.10	-	4.00
Sovereign spreads vs rates (bps)	80	90	50	30	-	-
Corporate IG spreads vs sovereign (bps)	150	100	140	20	-	-
Corporate HY spreads vs sovereign (bps)	450	450	-	-	-	-
Corporate HY default rates (%)	2.0	2.5	-	-	-	-
Corporate HY recovery rates (%)	43	50	-	-	-	-
Equities dividend growth (%)*	6.5	5.0	10.0	5.0	10.0	5.0
Equities dividend yield (%)*	1.5	2.8	3.6	2.2	2.8	2.0
Real estate (REITS) dividend growth (%)*	4.0	10.0	7.0	0.0	5.0	-
Real estate (REITS) dividend yield (%)*	3.1	3.2	3.0	3.0	5.5	-

Notes: *assumptions for Europe ex-UK. One-year assumptions are based on our analysis of how current values compare to historical norms (assuming some degree of reversion to the mean, except where our analysis suggests historical norms are unlikely to be a guide to the future), adjusted for our view about the development of the economic and financial market cycles over the next year in each region. **There is no guarantee that these views will come to pass.**
Source: Invesco Global Market Strategy Office

Appendix 5: Methodology for asset allocation, expected returns and optimal portfolios

Portfolio construction process

The optimal portfolios are theoretical and not real. We use optimisation processes to guide our allocations around “neutral” and within prescribed policy ranges based on our estimations of expected returns and using historical covariance information. This guides the allocation to global asset groups (equities, government bonds etc.), which is the most important level of decision. For the purposes of this document the optimal portfolios are constructed with a one-year horizon.

Which asset classes?

We look for investibility, size and liquidity. We have chosen to include equities, bonds (government, corporate investment grade and corporate high-yield), REITs to represent real estate, commodities and cash (all across a range of geographies). We use cross-asset correlations to determine which decisions are the most important.

Neutral allocations and policy ranges

We use market capitalisation in USD for major benchmark indices to calculate neutral allocations. For commodities, we use industry estimates for total ETP market cap + assets under management in hedge funds + direct investments. We use an arbitrary 5% for the combination of cash and gold. We impose diversification by using policy ranges for each asset category (the range is usually symmetric around neutral).

Expected/projected returns

The process for estimating expected returns is based upon yield (except commodities, of course). After analysing how yields vary with the economic cycle, and where they are situated within historical ranges, we forecast the direction and amplitude of moves over the next year. Cash returns are calculated assuming a straight-line move in short term rates towards our targets (with, of course, no capital gain or loss). Bond returns assume a straight-line progression in yields, with capital gains/losses predicated upon constant maturity (effectively supposing constant turnover to achieve that). Forecasts of corporate investment-grade and high-yield spreads are based upon our view of the economic cycle (as are forecasts of credit losses). Coupon payments are added to give total returns. Equity and REIT returns are based on dividend growth assumptions. We calculate total returns by applying those growth assumptions and adding the forecast dividend yield. No such metrics exist for commodities; therefore, we base our projections on US CPI-adjusted real prices relative to their long-term averages and views on the economic cycle. All expected returns are first calculated in local currency and then, where necessary, converted into other currency bases using our exchange rate forecasts.

Optimising the portfolio

Using a covariance matrix based on monthly local currency total returns for the last 5 years and we run an optimisation process that maximises the Sharpe Ratio. Another version maximises Return subject to volatility not exceeding that of our Neutral Portfolio. The optimiser is based on the Markowitz model.

Currency hedging

We adopt a cautious approach when it comes to currency hedging as currency movements are notoriously difficult to accurately predict and sometimes hedging can be costly. Also, some of our asset allocation choices are based on currency forecasts. We use an amalgam of central bank rate forecasts, policy expectations and real exchange rates relative to their historical averages to predict the direction and amplitude of currency moves.

Appendix 6: Definitions of data and benchmarks

Sources: we source data from Refinitiv Datastream unless otherwise indicated.

Cash: returns are based on a proprietary index calculated using the Intercontinental Exchange Benchmark Administration overnight LIBOR (London Interbank Offer Rate). The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1 January 2001 with a value of 100.

Gold: London bullion market spot price in USD/troy ounce.

Government bonds: Current values in the market forecast table (**Figure 40**) use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK and the Thomson Reuters China benchmark 10-year yield for China. Historical and projected yields and returns (**Figures 1, 2, 4, 5, 41, 42**) are based on Bank of America Merrill Lynch government bond indices with historical ranges starting on 31 December 1985 for the Global, Europe ex-UK, UK and Japanese indices, 30 January 1978 for the US and 31 December 2004 for China. The emerging markets yields and returns are based on the Barclays Bloomberg emerging markets sovereign US dollar bond index with the historical range starting on 28 February 2003. The same indices are used to construct Appendix 1.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond indices with historical ranges starting on 31 December 1996 for the Global, 31 January 1973 for the US dollar, 1 January 1996 for the euro, 31 December 1996 for the British pound, 6 September 2001 for the Japanese yen and 31 December 2004 for the China indices. The emerging markets yields and returns are based on the Barclays Bloomberg emerging markets corporate US dollar bond index with the historical range starting on 28 February 2003.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield indices with historical ranges starting on 29 August 1986 for the US dollar, and 31 December 1997 for the Global and euro indices.

Equities: We use MSCI benchmark indices to calculate projected returns and calculate long-term total returns with historical ranges starting on 31 December 1969 for the Global, US, Europe ex-UK, UK and Japanese indices, 31 December 1987 for the emerging markets index and 31 December 1992 for the China index (**Figures 1, 2, 41 & 42**). Equity index valuations (**Figures 4, 5, 32, 43 and Appendix 1**) are based on dividend yields and price-earnings ratios using Datastream benchmark indices with historical ranges starting on 1 January 1973 for the Global, US, Europe ex-UK and Japanese indices, 31 December 1969 for the UK index, 2 January 1995 for the Emerging Markets index and 26 August 1991 for the China A-Shares index.

Real estate: We use FTSE EPRA/NAREIT indices with historical ranges starting on 29 December 1989 for the US, Europe ex-UK, UK and Japanese indices, 18 February 2005 for the Global index, and 31 October 2008 for the Emerging Markets index.

Commodities: Goldman Sachs Commodity Index with historical ranges starting on 31 December 1969 for the All Commodities and Agriculture indices, 31 December 1982 for the Energy index, 3 January 1977 for the Industrial Metals index, and 2 January 1973 for the Precious Metals index. “Industrial commodities” is oil & gas and industrial metals.

Definitions of data and benchmarks for Appendix 2

Sources: we source data from Datastream unless otherwise indicated.

Cash: returns are based on a proprietary index calculated using the Intercontinental Exchange Benchmark Administration overnight LIBOR (London Interbank Offer Rate). The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1 January 2001 with a value of 100.

Gold: London bullion market spot price in USD/troy ounce.

Government bonds: Current levels, yields and total returns use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK, and the Bank of America Merrill Lynch government bond total return index for China, the World and Europe. The emerging markets yields and returns are based on the Barclays Bloomberg emerging markets sovereign US dollar bond index.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond total return indices and the Barclays Bloomberg emerging markets corporate US dollar bond total return index for emerging markets.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield total return indices

Equities: We use MSCI benchmark gross total return indices for all regions.

Commodities: Goldman Sachs Commodity total return indices

Real estate: FTSE EPRA/NAREIT total return indices

Currencies: Global Trade Information Services spot rates

Definitions of long-term data and benchmarks for Figures 25 and 26
Calculated using: spot price of gold, Global Financial Data (GFD) US Treasury Bill total return index until December 2018 and then ICE BofA 0-3M treasury total return index for cash, our own calculation of government bond total returns (Govt) using 10-year treasury yield until January 1978 and the ICE BofA US treasury total return index thereafter, GFD US AAA Corporate Bond total return index until February 1976 and the ICE BofA US Corporate total return index thereafter (IG), Reuters CRB total return index until November 1969 and then the S&P GSCI total return index for commodities (CTY) and Robert Shiller's US equity index and dividend data for stocks. Indices are deflated by US consumer prices.

We have calculated a total return index for US treasuries, which from January 1978 is based upon the Bank of America Merrill Lynch US Treasury Index. Prior to that it is based upon an index calculated by using movements in 10-year treasury yields to estimate movements in price, which are then combined with yield to give total return. The historical yields are sourced from Robert Shiller and Refinitiv Datastream.

We have calculated a total return index for broad US stocks based on index and dividend data from US academic Robert Shiller and Datastream. The index prior to 1926 is Robert Shiller's recalculation of data from Common Stock Indexes by Cowles & Associates (see here). From 1926 to 1957, the Shiller data is based on the S&P Composite Index and thereafter is based on the S&P 500 as we know it today.

Appendix 7: IIS Capital Market Assumptions methodology (Figure 6 & Appendix 3)

We show a summary of the Capital Market Assumptions produced by Invesco's Investment Solutions team (IIS) and this is a summary of their methodology.

Invesco Investment Solutions (IIS) employ a fundamentally based "building block" approach to estimating asset class returns. Estimates for income and capital gain components of returns for each asset class are informed by fundamental and historical data. Components are then combined to establish estimated returns. This is a summary of key elements of the methodology used to produce long-term (10-year) and medium term (5-year) estimates.

Fixed income returns are composed of: the average of the starting (initial) yield and expected yield for bonds, estimated changes in valuation given changes in the Treasury yield curve, roll return which reflects the impact on the price of bonds that are held over time, and a credit adjustment which estimates the potential impact on returns from credit rating downgrades and defaults.

Equity returns are composed of: a dividend yield, calculated using dividend per share divided by price per share, buyback yield, calculated as the percentage change in shares outstanding resulting from companies buying back or issuing shares, valuation change, the expected change in value given the current Price/Earnings (P/E) ratio and the assumption of reversion to the long-term average P/E ratio, and the estimated growth of earnings based on the long-term average real GDP per capita and inflation.

Alternative returns are composed of a variety of public versus private assets with heterogenous drivers of return given their distinct nature. They range from a beta driven proxy to public markets or a bottom up, building block methodology like that of fixed income or equities, depending on whether they are more bond like or stock like.

Volatility estimates for the different asset classes are derived using rolling historical quarterly returns of various market benchmarks. Given that benchmarks have differing histories within and across asset classes, volatility estimates of shorter-lived benchmarks are normalised to ensure that all are measured over similar time periods.

For the full Capital Market Assumptions methodology, please contact the IIS team.

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