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The Adaptive Asset Allocation Report

Issue No. 11

A Model driven Business Cycle Trend Following approach to investing

Robin Griffiths
Editor

► Robin Griffiths is Editor of The Adaptive Asset Allocation Report. Prior to this he was the Editor of the Dynamic Investment Trends Alert, a market newsletter for private investors published by Southbank Investment Research. Robin has served as Head of Multi-Asset Research & Advisory at the ECU Group. He was previously Chief Technical Strategist at HSBC Investment Bank for 20 years, before becoming Head of Global Asset Allocation at Rathbones, and then a director and technical strategist for Cazenove Capital Management. Robin was a Partner of WI Carr and Head of Technical Analysis at Grieveson Grant. Robin is a committee member and former chairman of the International Federation of Technical Analysts, and former chairman, now fellow, of the British Society of Technical Analysts. Robin has been a member of ECU's Global Macro Team for over 20 years. Robin has won several Technical Analyst awards for his research.

Follow the Powell Spread

Dear Readers,

The AAA model holdings have not changed much this month. The story is the same. Globally we are in a bear market. However, bear markets have rallies. Seasonally, the best period for one is from December to late May. Global equity markets have rallied but very few of them have made annual rolling highs which confirms that the rallies are still part of a bear phase.

During this period, interest rates have been rising making bonds a toxic asset class. Once it is clear that no more hikes will follow, then bonds will become attractive again and the rally in equities will peter out. We are nearly at this stage but not there yet. We want to stay with the pain trade of owning equities for a while longer. It feels wrong but it is working well. Bonds are better value than equities but the AAA Model tells us it's not the right time to buy them as other investors are. By the end of May, if rate hikes have ceased, we will be closer to that point.

Gold has good momentum and has given a strong signal. This is probably the start of a new bull trend. The economic data is clear that a recession is baked into the cake. This will lead to a period of falling rates again in future. However, the immediate trend still favours one more hike to control inflation. Timing this reversal is hard to do, but our current guess as to the timing is after the end of May. The performance of the AAA model is back in the black again. Follow the model and have a new holding in Gold if you don't already.

Best Wishes,

Robin Griffiths

Rashpal Sohan
Managing Editor

► Rashpal Sohan is Managing Editor of The Adaptive Asset Allocation Report. Prior to this he was the Managing Editor of the Dynamic Investment Trends Alert, a model driven investment publication for private investors published by Southbank Investment Research. Rashpal is a consultant data scientist who has developed the model for The AAA report. Rashpal holds a keen interest in data driven insights using Visualisation and Machine Learning and holds a Masters in Data Science from City, University of London, with distinction. His dissertation was on the topic of a Risk-Based Dynamic Asset Allocation Strategy using Ensemble Machine Learning and was awarded the City University Computer Science Outstanding Project Prize. The underlying trend algorithm from his dissertation forms the basis of the AAA Model. Rashpal has served as Senior Macro & Quantitative Strategist to the ECU Group, and built several fundamental and quantitative models for use in Dynamic Asset Allocation. Rashpal has over 15 years of experience in Asset Allocation, having previously served as Senior Asset Allocation Analyst for one of the UK's largest discretionary investment management firms, Rathbone Brothers. He holds a first class honors degree in Actuarial Science from the London School of Economics, is a qualified Financial Risk Management (FRM) professional and has passed all three levels of the Chartered Financial Analyst (CFA) Program. As a consultant Data Scientist, Rashpal has done projects for ByteTree, where he helped extract key insights from their Network Demand set of indicators using Machine Learning and Data Visualisation and has also done Data Science projects in Facial Recognition, Reinforcement Learning, Recommender Systems and the influence of regional personality differences on the UK's vote to leave the European Union amongst others. Rashpal has won several Technical Analyst awards for his research, together with his business partner.

Dear Readers,

Although markets are rallying, we are not in a new bull market. The number of markets making annual rolling highs is nowhere close to the levels we see in a healthy bull market.

Fundamentally, the US and global economy are headed for a recession. This has been confirmed by the Conference Board Leading Economic Indicator and even the Fed chair's preferred recession indicator. Despite this, the US labor market remains resilient, which might appear quizzical. Whilst some labour market indicators are steadier than others, the big picture shows that the US labor market is coming off the boil and momentum is turning negative. It is only time before it begins to fully reflect weakness in economic growth conditions.

We are currently in earning season. The US Equity market is headed for another negative quarter of earnings growth, which would mark the beginning of an earnings recession. Against this backdrop, investor pessimism remains high, and many investors are shifting their funds towards bonds out of equities.

Although global government bonds offer better long-term value than global equities, we believe it's too soon to buy bonds – but we may not be far off. The AAA Model continues to hold EU Equities and World Quality Equities and has recently added UK Equities as part of the pain trade. UK Equities are trading at a significant discount to the rest of the developed world and have replaced Japan Equities in the model.

We also hold Gold as it serves as a good risk diversifier for our equity-heavy portfolio. As the pain trade continues, this remains our preferred bear market investment.

We are not very comfortable owning equities when we can clearly see the edge of the cliff right ahead, but we continue to ride the strongest trends and monitor the markets closely to adjust our strategy accordingly.

As always, if you have any questions or concerns, please do not hesitate to reach out to us.If you have any questions or comments, please write in to aaa@bytetree.com. You can find our research online at https://bytetree.com/research/aaa. If you have friends or family who you believe can benefit from our service, please spread the word.

Thank you again for your support over the years and good luck with your investments.

Best Wishes,

Rashpal Sohan

AAA Model Ranking
GBP Portfolio

Model Ranking Date: **25th April 2023**

IMPORTANT: Please Read the Addendum below before buying or selling any Assets.

ADDENDUM

The model was first run on 21st April 2023 this month. At this time, the strongest ranked assets were Europe Equities, Gold Bullion, UK Equities and World Quality Equities. The model was rerun on 25th April 2023 and the strongest assets are the same. Buy or Hold these.

▼ For an explanation of what this portfolio is and how to use it, please see the "Model Guide" we've compiled at the end of this issue.

Buy	• **UK Equities**
Hold	• **Europe Equities** • **Gold Bullion** • **World Quality Equities**
Sell	• **Japan Equities**

- **Since December many equity markets have rallied, but few have reached annual rolling highs.**
- **The rises are in fact bear market rallies which can continue until the end of May, but a fall back to the end of the year is then probable.**
- **The Fed's preferred recession indicator is giving the clearest signal yet of a severe recession ahead.**
- **Investor sentiment remains very negative, and Investors are piling into high quality bonds. However, our Model is on the side of the pain trade owning equities.**
- **Gold remains a strong buy and appears to be in the early stages of a new bull trend. Owning it will help diversify the risks associated with the pain trade.**

"The Federal Reserve's preferred bond market signal of an upcoming recession has plunged to fresh lows, bolstering the case for those who believe the central bank will soon need to cut rates in order to revive economic activity"

– Reuters, 'Powell's curve' plunges to new lows flashing US recession warning | April 7th 2023

The vast majority of equity markets are up this year (Figure 1a), **making it appear as though we are back in a bull market**. Our AAA model has also been long equities, **but we are certain that we are not in a bull trend**. Our equity holdings are a pain trade in a bear market because bonds seem toxic as rates are still rising. Once it is clear that rate hikes have ceased and are likely to be cut again, then bonds will become desirable and equities will fall back. This is likely from the end of May. This year, the Global Equity market has risen around 9%; this is a strong performance especially when assessed in the context of prior years (Figure 1b).

► **Figure 1: The majority of equity markets are in the black this year and the performance of the World Equity market has been strong when compared to the same period in prior years**

(a)

Benchmark Name	Country | Region	% Change YTD ($)
ISEQ ALL SHARE INDEX	IRELAND	23.2
ATHEX COMPOSITE	GREECE	22.4
MEXICO IPC (BOLSA)	MEXICO	21.3
FTSE MIB INDEX	ITALY	19.9
FRANCE CAC 40	FRANCE	19.8
MADRID SE GENERAL (IGBM)	SPAIN	17.7
DAX PERFORMANCE	GERMANY	16.7
WARSAW GENERAL INDEX	POLAND	14.4
AEX INDEX (AEX)	NETHERLANDS	13.6
OMX COPENHAGEN (OMXC)	DENMARK	12.1
TAIWAN SE WEIGHED TAIEX	TAIWAN	11.6
OMX STOCKHOLM 30 (OMXS30)	SWEDEN	11.3
PORTUGAL PSI-20	PORTUGAL	10.7
SWISS MARKET (SMI)	SWITZERLAND	9.9
FTSE 100	UNITED KINGDOM	9.8
KOREA SE COMPOSITE (KOSPI)	SOUTH KOREA	9.6
FTSE WORLD $	INTERNATIONAL	8.7
S&P 500 COMPOSITE	UNITED STATES	7.6
NIKKEI 500	JAPAN	7.4
S&P/TSX COMPOSITE INDEX	CANADA	7.2
BEL 20	BELGIUM	6.3
RUSSIA RTS INDEX	RUSSIAN FEDERATION	5.0
SHANGHAI SE B SHARE	CHINA	4.8
S&P NEW ZEALAND BMI	NEW ZEALAND	4.7
IDX COMPOSITE	INDONESIA	4.4
ASX ALL ORDINARIES	AUSTRALIA	4.4
STRAITS TIMES INDEX L	SINGAPORE	2.7
HANG SENG	HONG KONG	2.5
FTSE/JSE ALL SHARE	SOUTH AFRICA	2.1
BRAZIL BOVESPA	BRAZIL	-0.5
PHILIPPINE SE I(PSEi)	PHILIPPINES	-1.2
S&P BSE (SENSEX) 30 SENSITIVE	INDIA	-1.3
BANGKOK S.E.T.	THAILAND	-5.5
FTSE BURSA MALAYSIA KLCI	MALAYSIA	-5.6
OSLO EXCHANGE ALL SHARE	NORWAY	-5.8
BIST NATIONAL 100	TURKEY	-12.2

(b)

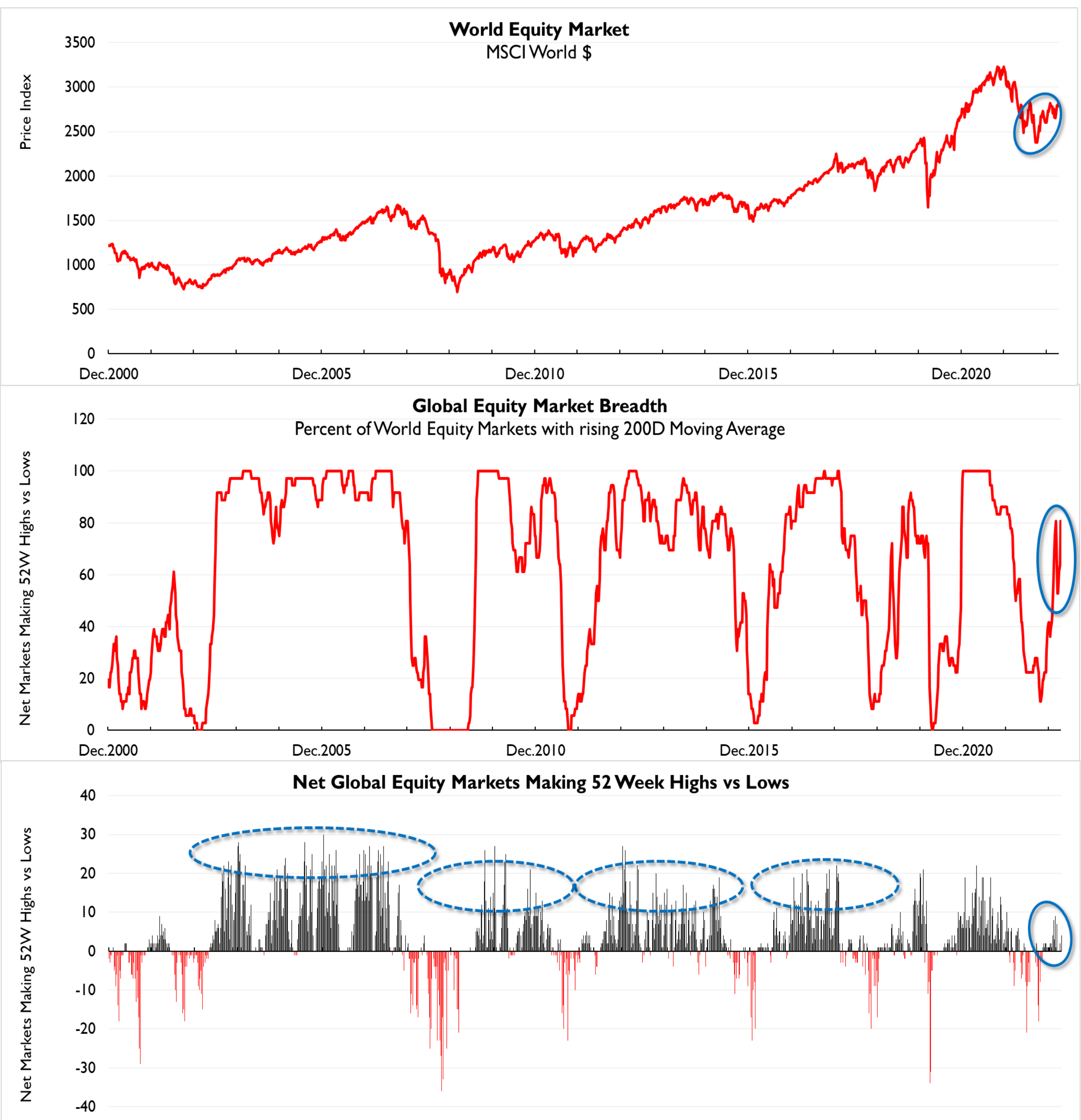
Year	% Change
31.12.1986 - 22.04.1987	29.8
31.12.1985 - 22.04.1986	25.4
31.12.1997 - 22.04.1998	16.8
31.12.2018 - 22.04.2019	14.7
31.12.1982 - 22.04.1983	12.5
31.12.1987 - 22.04.1988	11.3
31.12.1992 - 22.04.1993	10.8
31.12.1990 - 22.04.1991	9.7
31.12.1984 - 22.04.1985	9.0
31.12.2005 - 22.04.2006	8.9
31.12.2020 - 22.04.2021	8.7
31.12.2022 - 22.04.2023	8.5
31.12.2011 - 22.04.2012	8.4
31.12.1998 - 22.04.1999	7.5
31.12.1994 - 22.04.1995	7.2
31.12.2006 - 22.04.2007	6.7
31.12.2012 - 22.04.2013	6.6
31.12.2010 - 22.04.2011	6.3
31.12.1995 - 22.04.1996	5.2
31.12.2016 - 22.04.2017	5.2
31.12.2014 - 22.04.2015	4.5
31.12.2009 - 22.04.2010	4.3
31.12.1988 - 22.04.1989	3.7
31.12.2003 - 22.04.2004	2.4
31.12.1983 - 22.04.1984	1.8
31.12.1993 - 22.04.1994	1.7
31.12.2002 - 22.04.2003	1.5
31.12.2015 - 22.04.2016	1.4
31.12.2013 - 22.04.2014	1.3
31.12.1996 - 22.04.1997	0.6
31.12.1980 - 22.04.1981	0.0
31.12.2017 - 22.04.2018	-0.2
31.12.2001 - 22.04.2002	-1.6
31.12.2004 - 22.04.2005	-3.4
31.12.1999 - 22.04.2000	-4.1
31.12.2007 - 22.04.2008	-5.4
31.12.2008 - 22.04.2009	-6.8
31.12.2000 - 22.04.2001	-7.4
31.12.1981 - 22.04.1982	-7.9
31.12.1991 - 22.04.1992	-9.2
31.12.2021 - 22.04.2022	-10.8
31.12.1989 - 22.04.1990	-14.4
31.12.2019 - 22.04.2020	-16.5

Source: ByteTree, Refinitiv Datastream

The reason we can say this with confidence is because **we have examined the market closely and seen behaviour that is not typically seen in a bull market.** During global equity bull markets, it is normal to see a large percentage of Global Equity markets in uptrend – normally over 80 % (Figure 2; middle pane). Admittedly, we are close to that in the current rally. However, **during global equity bull markets we also find more markets making rolling 52-week highs than lows** (Figure 2; bottom panel; dotted ellipses).

This is not surprising. By its most basic definition, a bull market is a financial market characterized by rising prices. However, on close inspection, **we find that most global equity markets have not been confirming to this behaviour in the recent rally** (Figure 2; bottom panel; complete ellipse). Most equity markets have only partially recovered what was lost in the previous downturn. **The rises are quite clearly bear market rallies and not new bull surges.** They are taking place in the normal seasonal strength period, from December through to late May.

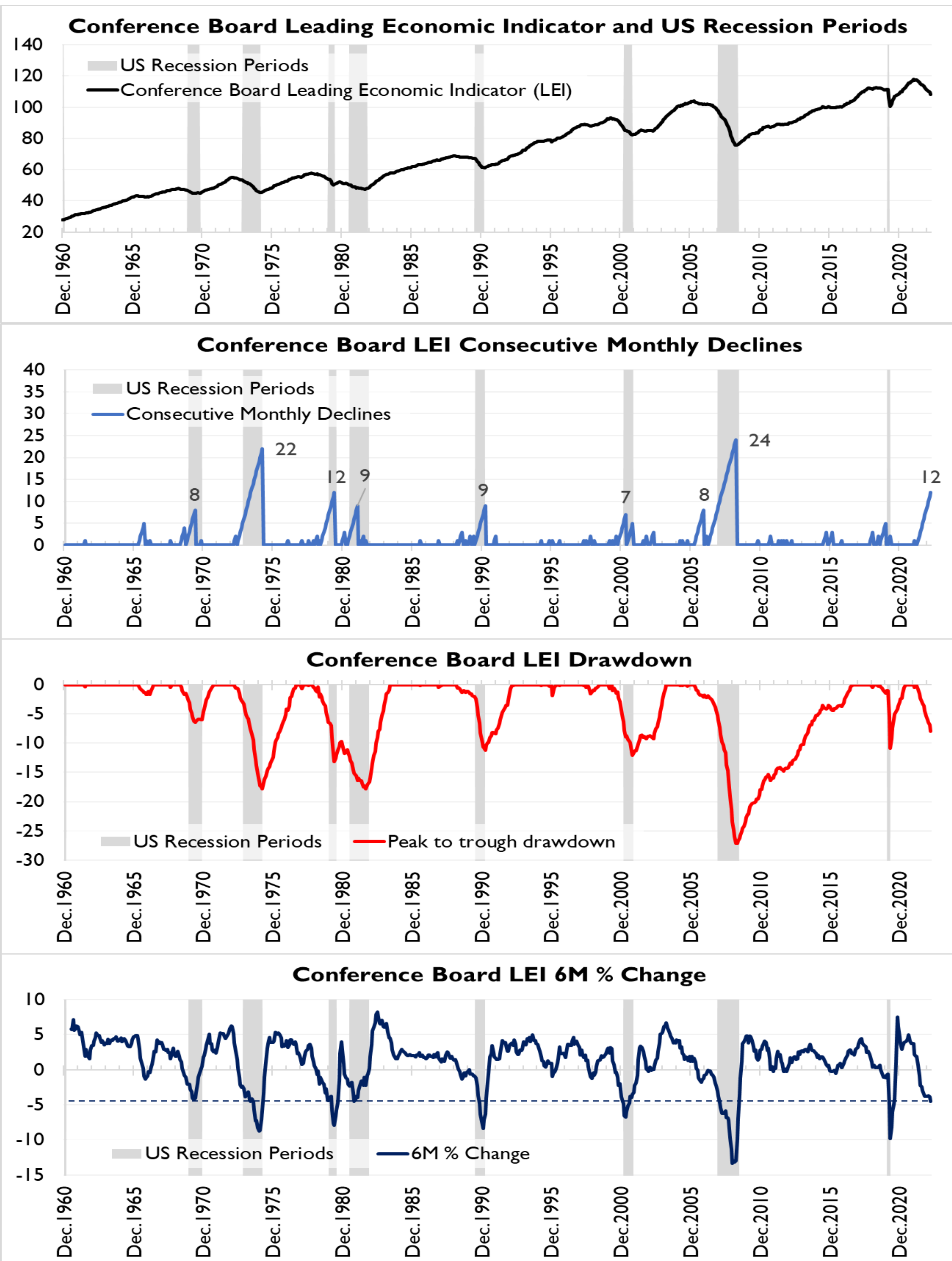
► Figure 2: **Most equity markets are in an uptrend trading above their respective 200 day moving averages but very few are making rolling annual highs as is the norm in bull markets**



Source: ByteTree, Refinitiv Datastream

For some time now we have been saying that the US economy is headed towards a recession. The latest reading of the [Conference Board Leading Economic index](#) (LEI) is clearly signaling that a US recession is baked into the cake. Historically, it's only taken seven consecutive monthly falls to signal a US recession. To date, the LEI is down 12 months in a row; such readings are unheard of outside of a recession (Figure 3; second panel). At the same time, the index has fallen 8% from the peak (Figure 3; third panel) making it the largest fall without a recession. Finally, the six-month percent decline is well below the level which it has always signaled a strong recession (Figure 3; fourth panel). Whichever way you slice it or dice it, **the odds of a recession are high and rising according to this indicator.**

► **Figure 3: The Conference Boarding Leading Economic Indicator continues to send a clear signal that a US recession lies ahead**

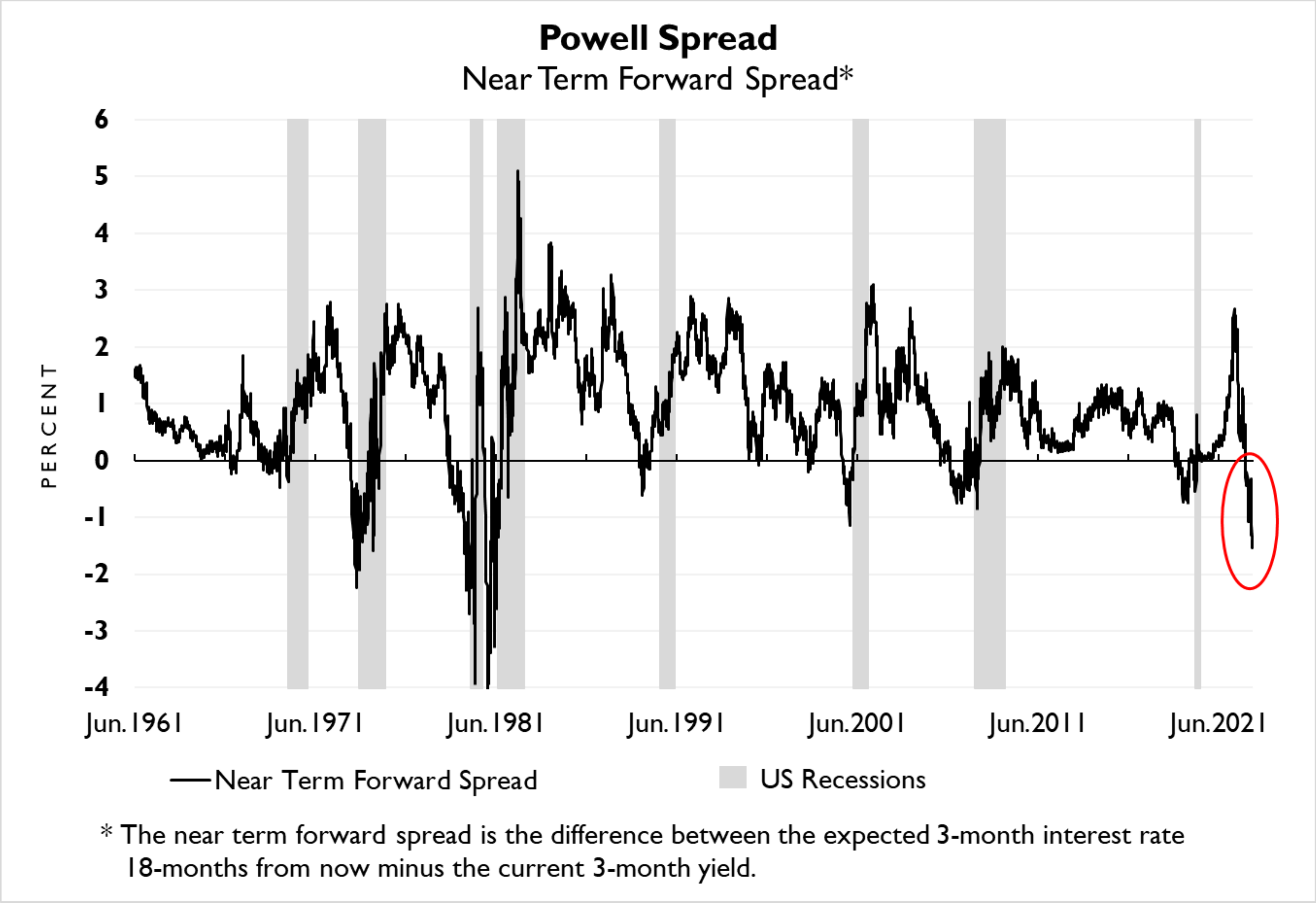


Source: ByteTree, Refinitiv Datastream

The Conference Board LEI has a great track record and is highly reliable. However, **Mr. Powell has encouraged us to look at his preferred recession indicator**, the Near Term Forward Spread, **which is sometimes called the 'Powell Spread' in his honor**. Five years ago, the Fed published a paper about this indicator and concluded it is a more robust predictor of a pending recession. This indicator is calculated as the difference in the yield on a three-month Treasury bill and its implied yield in 18 months' time. This might sound complicated, but **essentially it tells us the bond market's expectation of the Fed Fund rate in a year and a half. When this spread is negative, it signals the Fed will be cutting rates sometime in the next 18 months**, and a recession is coming.

The Powell Spread is very negative (Figure 4) **and is clearly predicting a tough recession is coming and rates will be cut soon.** Of course, "soon" does not mean immediately, but within the next 12 to 18 months. Notice that the level is below where it got to in 2008, and whenever this level was attained a recession followed. For the moment, the bond market can still look forward to one more rate hike. If it comes, it will be in the near future. For this reason, the pain trade still favours owning equities. Once it is clear that no more hikes will occur then bonds will become more attractive and equities will likely decline again.

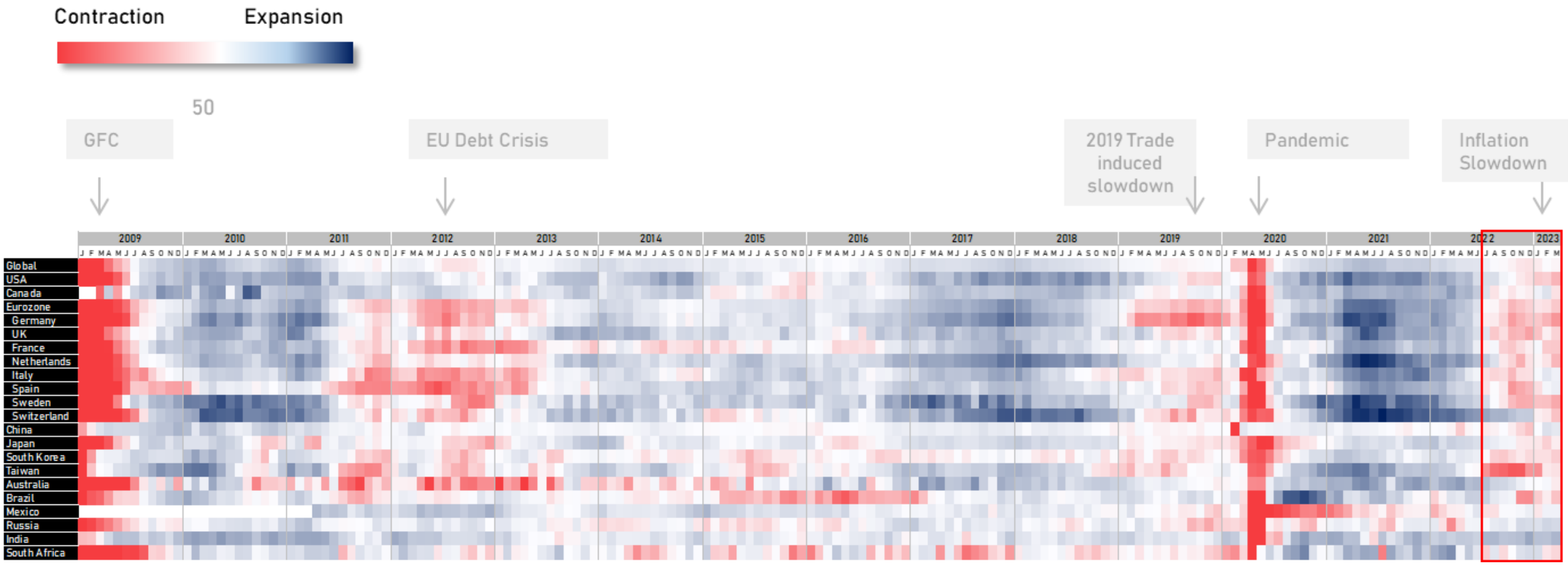
► **Figure 4: The Fed chair's preferred recession indicator is steeply inverted and giving the clearest signal yet of a recession**



Source: ByteTree, www.neartermforwardspread.com

The USA is not the only country in this situation. The entire Global economy is slowing down. When we chart the economic growth picture around the world, using Purchasing Managers Indices (Figure 5), we see a "sea of red" reminiscent of the economic slowdown during the EU Debt crisis in 2012 and the 2019 Trade-induced slowdown. Looking at this chart, admittedly current economic growth conditions are not as weak as during the Global Financial Crisis or the pandemic, however the outlook remains uncertain, and **the global economy faces significant risks heavily skewed towards the downside. In short, an economic hard landing is likely.** The International Monetary Fund's chief economist has hinted of this, warning that "turbulence is building below the surface, and the situation is quite fragile".

► Figure 5: A heatmap of global economic growth conditions based on Purchasing Manager Indices paints a picture of a global economy mired in a slowdown and at risk of a hard landing

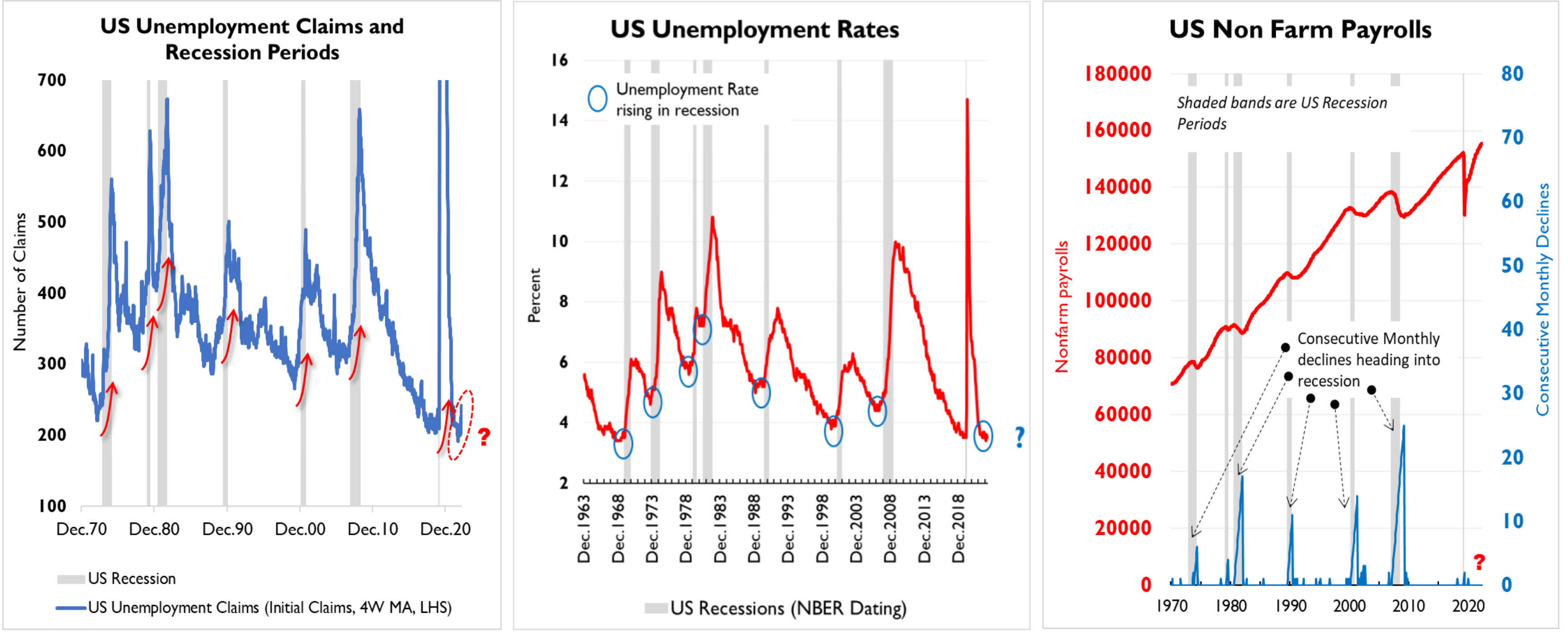


Source: ByteTree, Refinitiv Datastream

Playing devil's advocate, many economic commentators continue to highlight the resilience of the US Labour market as one of the primary reasons why the US economy is likely to avoid a recession – or failing that, incur a soft landing. Traditional US labour market indicators such as nonfarm payrolls (job growth), unemployment claims (government benefits for jobless workers) and the unemployment rate are not reflecting the same economic risks as the Conference Board LEI shown earlier (Figure 3).

As can be seen, historically, unemployment claims and the unemployment rate start to rise heading into a recession whereas jobs growth falls (Figure 6). However, we're not seeing these dynamics playing out yet (although unemployment claims have started to tick up!). Whilst these indicators may still be at levels which suggest there is little cause for concern, **we believe that the US Labour market is a slow puncture which will eventually burst as US economic growth continues to deteriorate further**.

► Figure 6: If the US economy is headed towards recession why is the labour market so resilient?



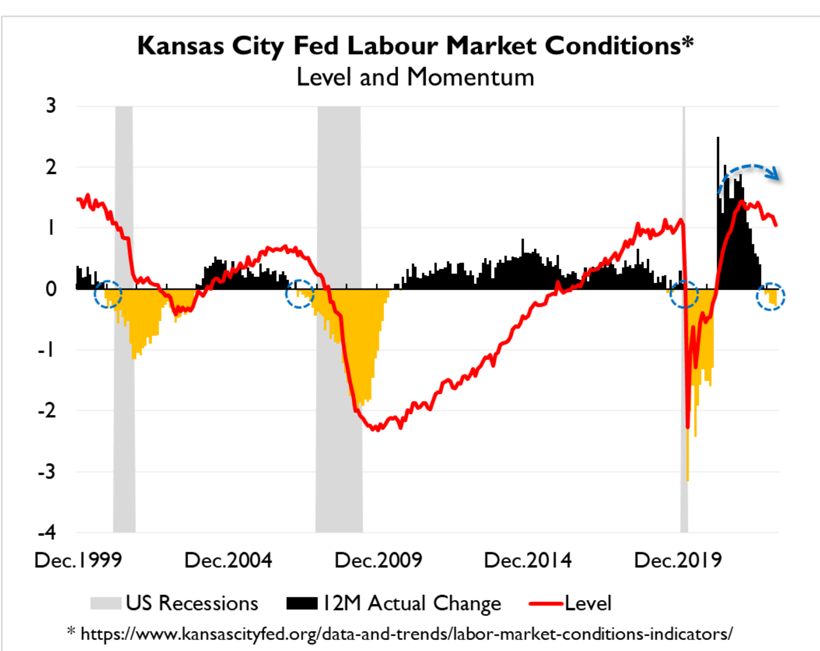
Source: ByteTree, Refinitiv Datastream

It is a known fact that **different labour market indicators are prone to giving conflicting signals about the state of the US labor market.** For example, job vacancies might be saying one thing about the US labour market whilst the unemployment rate might be saying something entirely different. To smooth out these conflicts, the **Federal Reserve Bank of Kansas City has computed a composite Labour Market Conditions Indicator**, which pools together [two dozen labour market indicators] **to give a more complete picture of the US labour market**. This indicator is shown in Figure 7a and is easy to follow; positive values indicate that labour market conditions are above their long-run average, while negative values imply the opposite.

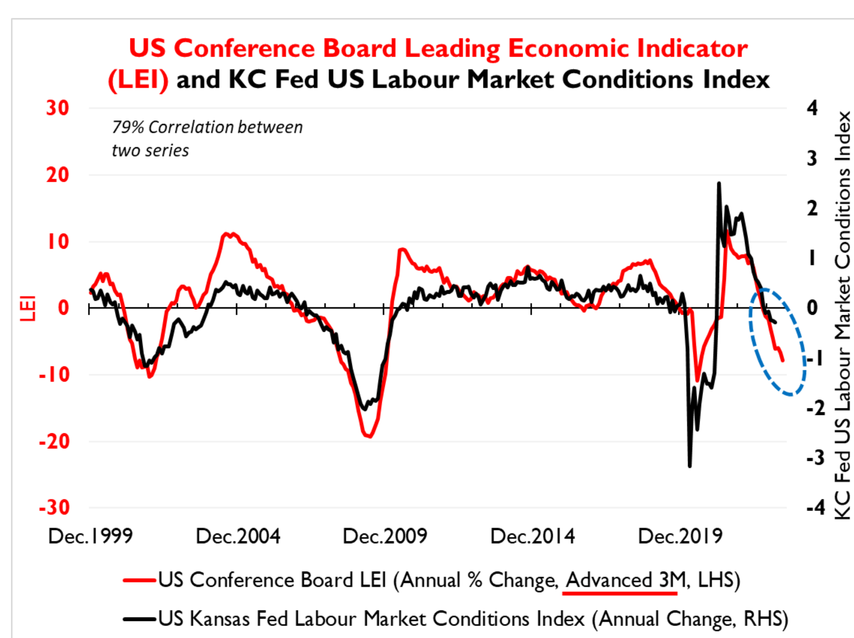
Currently, the picture we are seeing is one where labour market conditions are still running above their long-run average but coming off the boil. **US Labour market momentum**, measured as the 12-month rate of change of the same indicator **has turned negative as it did prior to the past three recessions**. At the same time, when we plot this indicator against the 12-month rate of change of the Conference Board Leading Economic Indicator, we find that the two follow each other closely with one catch – the latter leads the former by one quarter (Figure 7b). In other words, **the US labour market lags US economic growth conditions by around 3 months.** Given this relationship, we can safely say that **the US labour market is yet to reflect the weakness we have seen in US economic growth conditions.** It will do so later in the year.

► Figure 7: The US Labour market is coming off the boil with momentum turning negative and is yet to fully reflect weakness in economic growth conditions

(a)



(b)

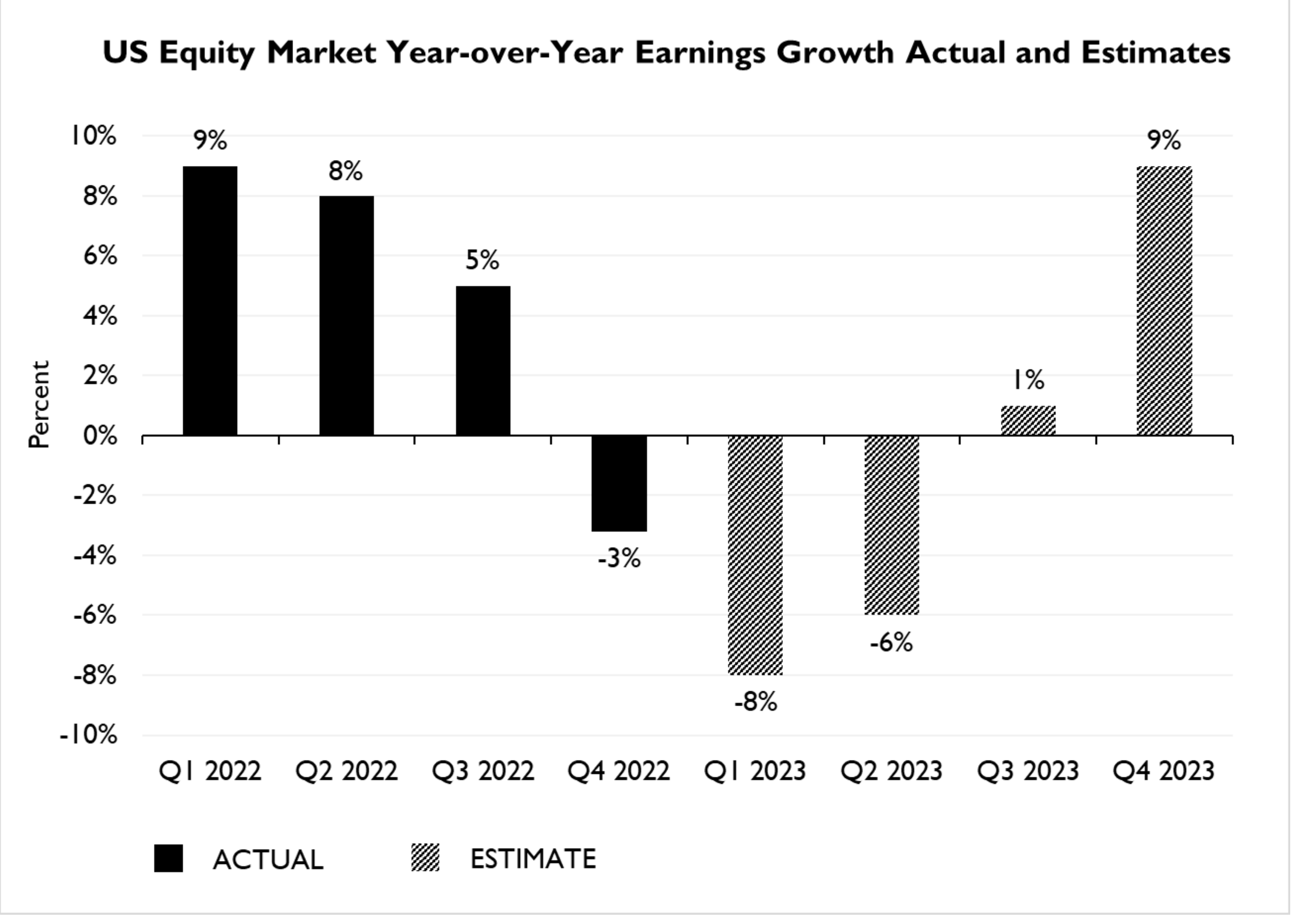


Source: ByteTree, Refinitiv Datastream

Even if we take a very sanguine view and argue that the US economy is not headed for recession – in other words, all the earlier mentioned indicators have got it entirely wrong – **there is no running away from the fact that the US Equity market is already in an earnings recession.** We are currently in the thick of earnings season, when publicly traded companies report their financial results for Q1 2023. During this period, companies will hold calls with analysts and investors to discuss their financial results and provide guidance for the future.

So far this quarter, of the S&P 500 companies that have reported, we have seen a year-over-year decline in earnings of -6.5% after a decline of -3% in Q4 2022. This is the steepest Q1 drop since the start of the pandemic in 2020. However, take these numbers with a huge pinch of salt for now, as it is still very early days in the reporting season. Nonetheless, **if the final growth reading is negative, as analysts expect them to be** (Figure 8), **this would mark the beginning of an earnings recession. This is not what we normally see in a robust and thriving bull market.**

► **Figure 8: If the US Equity market records another negative quarter of earnings growth, it would mark the beginning of an earnings recession expected to last until Q2 2023**



Source: ByteTree, Cressetcapital, Bloomberg

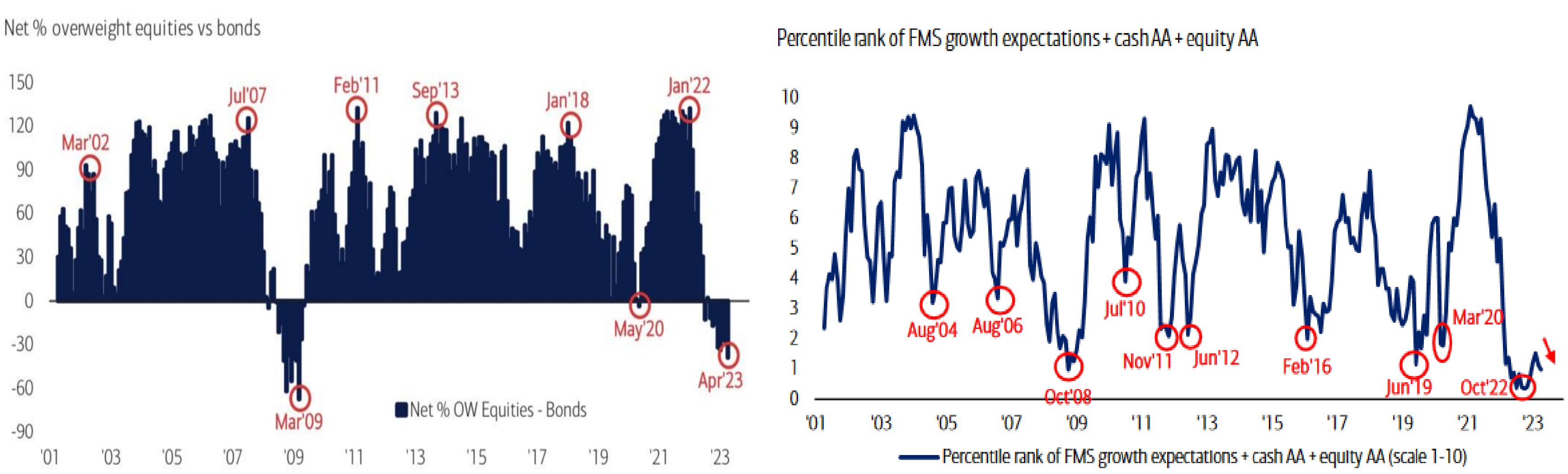
Investor sentiment has turned very negative in light of the current economic situation, as reflected by BofA's risk sentiment barometer. This barometer takes into account factors such as growth expectations, equity and cash allocations, and according to the latest reading, sentiment is at its most pessimistic this year. In fact, **it's now at levels not seen since the pandemic lows and Great Financial Crisis, as shown in Figure 9b.**

To avoid losses, **many investors are shifting their funds towards bonds instead of equities**, as seen in Figure 9a. While this could be a good long-term strategy, **it may be premature in the short term**, as there's still a risk of additional rate hikes that could negatively impact bonds and **equities could see further gains if the pain trade continues.**

Historically, extremely depressed sentiment like we are witnessing has often been a good contra-indicator and supported risk assets. Therefore, expecting the pain trade to continue for a while longer – at least until this extreme position is undone – is not far-fetched. After that, we can revert to a bearish view, which we predict will happen from late May onwards.

► **Figure 9: According to the latest BofA Global Fund Manager Survey, investors are the most pessimistic since 2009 and piling into bonds to limit their losses**

(a) (b)

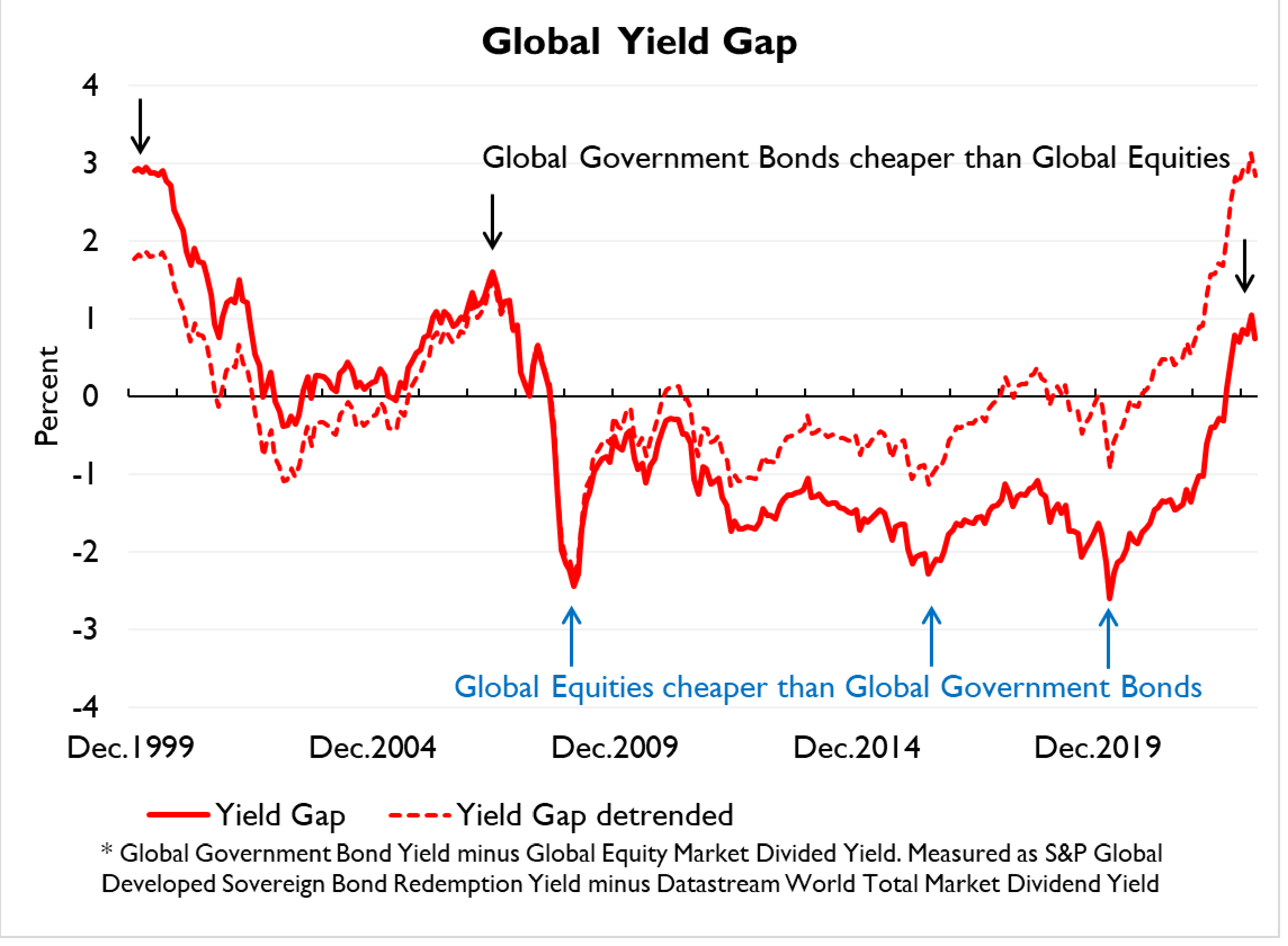


Source: ByteTree, BofA Global Fund Manager Survey

Longer term, global government bonds offer better value than global equities. We come to this conclusion by comparing the yield on global government bonds with the dividend yield on equities (Figure 10). The difference between the two is known as the "yield gap". **When the gap is strongly positive**, as it was prior to the dot-com burst and GFC (Figure 10 – black arrows), **it suggests that equities have run too far** and global government bonds are a better investment choice. This turned out to be correct in both instances. **We are seeing the same story now.**

Conversely, when the gap is strongly negative then it suggests that the selloff in equities has run its course and they are now a strongly coiled spring, ready to bounce at short notice and outperform global government bonds in the process. This was true in 2009 after the GFC, in 2015 after the China devaluation scare and again in 2020 after the coronavirus pandemic (Figure 10 – blue arrows). However, it is not true now. A recession, falling inflation and interest rate cuts have traditionally been a good time to own government bonds. We may not be far off.

► **Figure 10: Global government bonds offer value better than global equities at the current juncture**



Source: ByteTree, Refinitiv Datastream

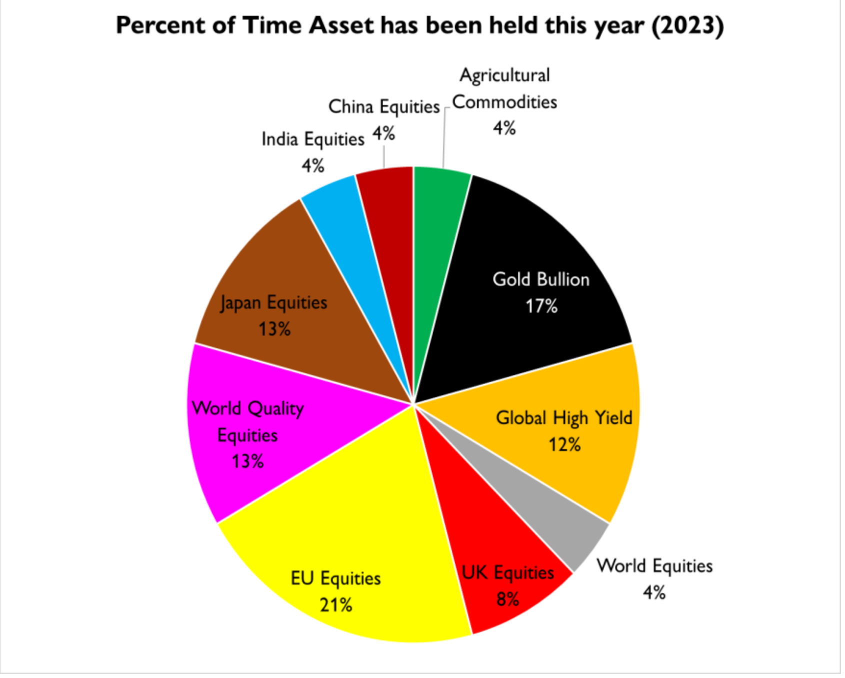
For most of this year the AAA Model has owned equities (Figure 11a). Occasionally, it has held other assets such as Agricultural Commodities and Global High yield bonds. **More recently, it has been holding Gold bullion. This trade has served us well and helped the performance of the AAA Model pull back into positive territory** (Figure 11b)**.** Aside from Gold, the other assets which have benefitted the performance of the Model are EU Equities, World Quality Equities and Japan Equities (Figure 11b). We continue to hold these assets, as part of the pain trade, and have replaced Japan Equities with UK Equities.

The UK equity market is trading at a significant discount[1] to the rest of the developed world, with the gap having widened since Brexit. The UK market remains cheap due to its historically wide valuation discount compared to global peers, a historical bias for value or dividend-paying businesses, a perception of being a place of "old-economy" businesses, and a dearth of companies in the booming tech sector.

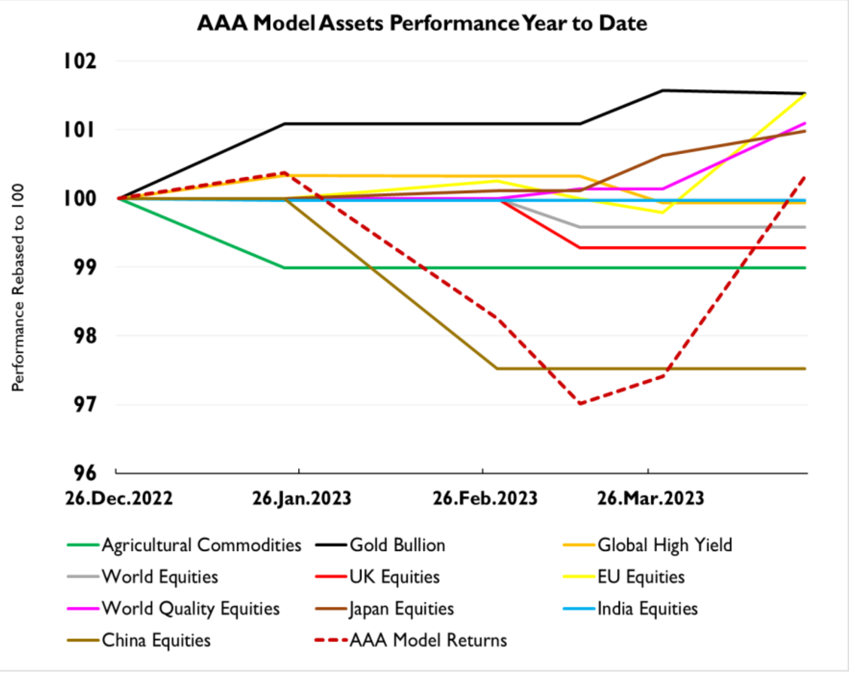
1. 30% discount in price-earnings ratio terms

► **Figure 11: The pain trade and Gold bullion has benefitted the performance of the AAA Model this year**

(a)



(b)

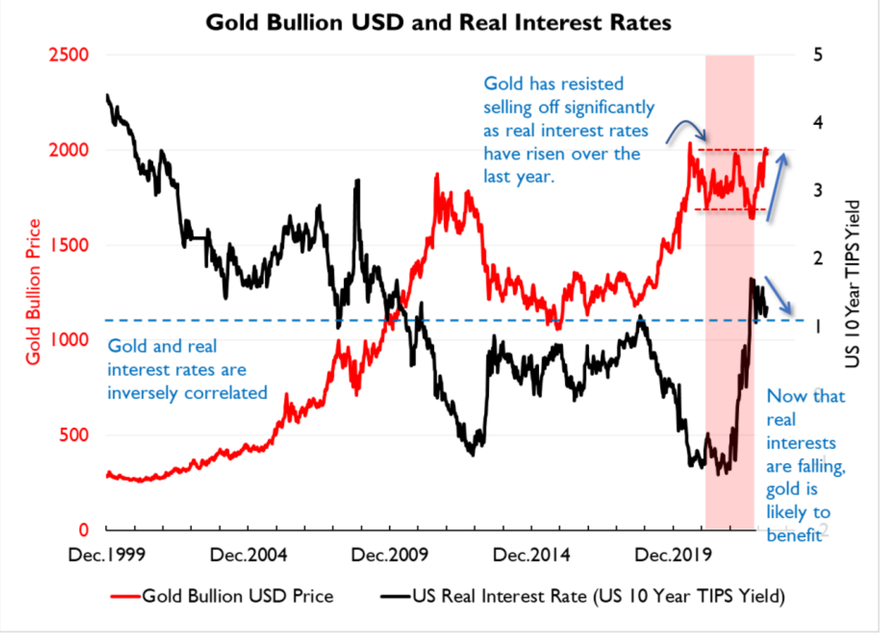


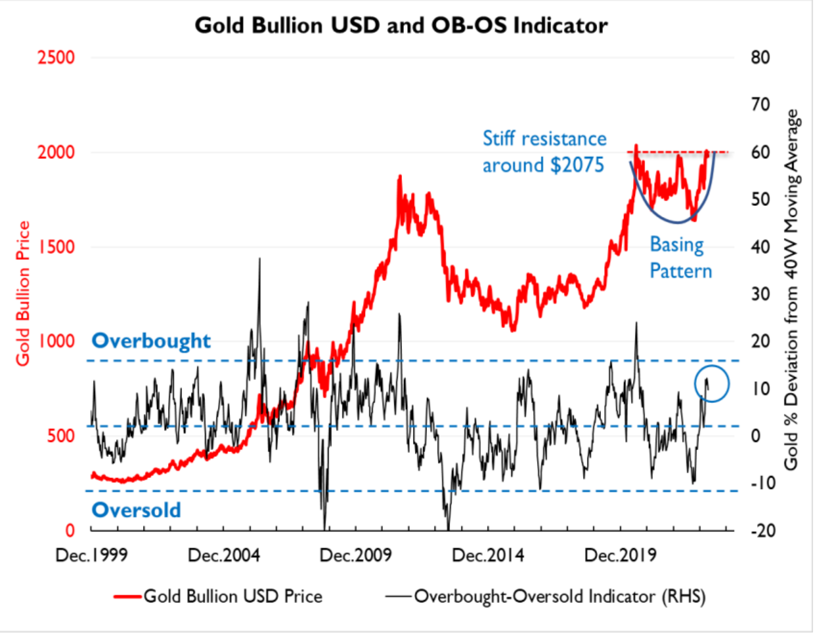
Source: ByteTree, Refinitiv Datastream

Gold remains our preferred investment in the current environment, as it serves as a good diversifier to our equity-heavy portfolio. Over the past two decades, there has been a strong inverse correlation between the price of gold and real interest rates (Figure 12a). As real interest rates rise, the price of gold tends to fall, and vice versa. This relationship makes sense, as higher real interest rates make holding cash more attractive than holding a zero-yielding asset like gold bullion.

Despite the recent rise in real interest rates (Figure 12a), gold has held up surprisingly well over the past year. This suggests that there are strong tailwinds behind the precious metal. With the Federal Reserve nearly finished tightening and inflation falling, **real interest rates are likely to keep grinding lower, which should cause the price of gold to surge once again**. We believe that gold is at the beginning of a new bullish trend, and a break above the all-time high of $2,075 (Figure 12b) would confirm this view. Any temporary dips in the price of gold should be seen as a buying opportunity.

► **Figure 12: The price of gold is likely to surge as real interest rates grind lower. A break above $2075 would confirm the beginning of a new bullish trend**





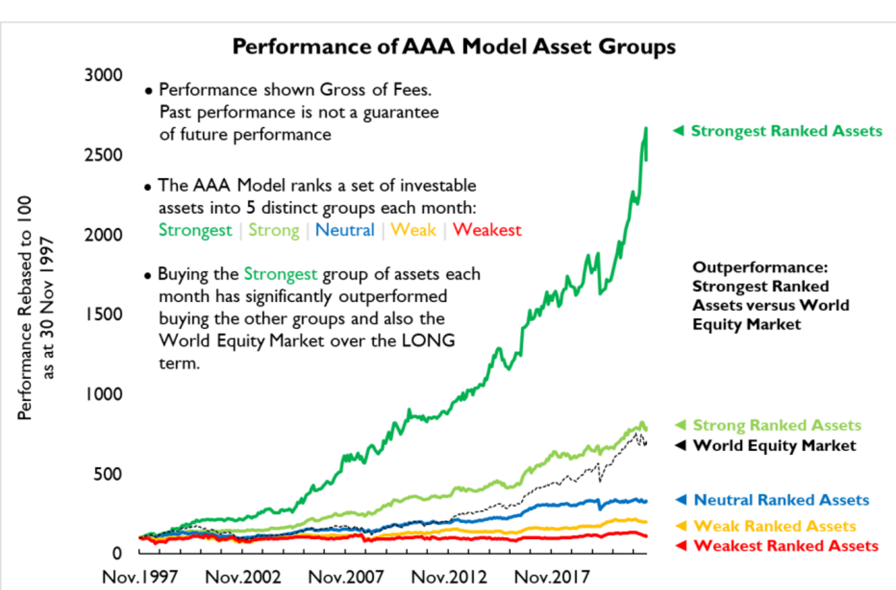
Source: ByteTree, Refinitiv Datastream

► Model Guide: What is the AAA model and how to use it?

- The AAA model is a technical model which ranks a list of important assets using our proprietary *Business Cycle Adaptive Trend* ranking algorithm.
- As different assets outperform at different stages of the business cycle*, the AAA model aims to identify which are the strongest and weakest trending assets at each phase of the business cycle.
- The model is run monthly and outputs the complete list of ranked assets divided into 5 distinct groups based on their trend-strength: Strongest, Strong, Neutral, Weak and Weakest.
- Whilst we will show the complete list of ranked assets as a table in the Appendix (Figure B), the assets to buy each month are the ones labelled as "STRONGEST".
- The chart below (Figure A) shows the difference in performance between buying the assets labelled as Strongest each month compared to buying the others [Strong, Neutral, Weak and Weakest]. The main point to take away from this chart is that the Strongest trending assets significantly outperform the other groups over the long term hence are the ones to buy. Of course, investors also need to bear in mind that **past performance is never a guarantee of future results.**
- The rankings are done in GBP, updated monthly and any changes to the rankings need to be mirrored in your portfolio [buy any assets that are promoted to the Strongest asset group each month and sell any that have left the group]. These trends do not change as rapidly as those for individual shares and typically means holding four assets each month.
- The strongest assets can be purchased using Exchange Traded Funds (ETFs) or Managed Funds. A representative sample of the former is shown in the Appendix for illustration purposes however this list should not be considered recommendations.
- However, not all investors have the ability and / or willingness to invest in the riskiest assets in the AAA Model [see Appendix 3 for asset risk comparison]. In this case, investors have the option to exclude these assets and buy the next strongest ranked asset(s) in the AAA Model that is (are) not part of the Riskiest Assets group [the Riskiest Assets are highlighted in Appendix 3]. Investors should never take more risk than they are able or willing to.

* Greed assets [risk assets] generally do better in times of economic expansion and investor risk-adoration. Conversely, Fear assets [defensive assets] generally do better in times of economic contraction and investor risk-aversion.

► Figure A: Buying the Strongest ranked assets has significantly outperformed the other groups over the long term



► Figure B: The AAA Model ranks a list of key assets each month but only the Strongest assets should be bought

	April 2023	Representative ETF Name Distributing ETF Name; Accumulating ETF Name	Representative ETF Ticker Distributing*	Representative ETF Ticker Accumulating*
Strongest	EU Equities	iShares MSCI Europe ex UK UCITS ETF EUR (DIST) ; iShares MSCI EMU UCITS ETF ACC	IEUX	CEU1
	Gold Bullion	No Distributing ETF ; ETFS Physical Gold	-	PHGP
	UK Equities	iShares Core FTSE 100 UCITS ETF DIST ; SPDR FTSE UK All Share UCITS ETF	ISF	FTAL
	World Quality Equities	No Distributing ETF ; iShares Edge MSCI World Quality Factor UCITS ETF	-	IWFQ
Strong	World Equities	iShares MSCI World UCITS ETF USD DIST ; iShares Core MSCI World UCITS ETF USD ACC	IWRD	SWDA
	Japan Equities	iShares MSCI Japan UCITS ETF DIST ; iShares Core MSCI Japan IMI UCITS ETF ACC	IJPN	SJPA
	Agricultural Commodities	No Distributing ETF ; ETFS Commodity Securities Agriculture Dow Jones UBS CI	-	AGAP
	World Low Volatility Equities	No Distributing ETF ; iShares Edge MSCI World Minimum Volatility UCITS ETF	-	MVOL
	US Equities	iShares S&P 500 UCITS ETF USD DIST ; ISHRS Core S&P 500 UCITS USD (ACC) ETF	IUSA	CSP1
Neutral	Global High yield	iShares Global High Yield Corp. Bond UCITS ETF DIST ; iShares Global High Yield Corp. Bond UCITS ETF ACC	IGHY	HYLA
	UK Cash	No Distributing ETF ; No Accumulating ETF	-	-
	Industrial Metals	No Distributing ETF ; ETFS Industrial Metals ETC	-	AIGI
	Global Corporate Bonds	iShares Global Corp Bond UCITS (USD) DIST ; iShares Global Corp Bond UCITS (USD) ACC	CRPS	CRPA
	UK Corporate Bonds	iShares Core £ Corp Bond GBP UCITS ETF ; No Accumulating ETF	SLXX	-
Weak	India Equities	No Distributing ETF ; DB X-TRACKERS MSCI India Index UCITS ETF ACC	-	XCX5
	EM Govt. Bonds ($)	iShares J.P. Morgan USD EM Bond UCITS ETF DIST ; iShares J.P. Morgan USD EM Bond UCITS ETF ACC	SEMB	JPEA
	EM Equities	Vanguard FTSE Emerging Markets UCITS ETF USD ; No Accumulating ETF	VFEM	-
	Global Govt Bond	iShares Global Govt. Bond (USD) DIST UCITS ETF ; iShares Global Govt Bond UCITS (ACC) ETF	SGLO	IGLA
	China Equities	HSBC MSCI CHINA ETF ; No Accumulating ETF	HMCH	-
Weakest	UK Gilts	iShares Core UK Gilts UCITS ETF GBP ; No Accumulating ETF	IGLT	-
	UK Index Linked Gilts	iShares Index Linked Gilts UCITS ETF ; No Accumulating ETF	INXG	-
	Inverse UK Equities	No Distributing ETF ; DB X-TRACKERS FTSE 100 SHORT DAILY ETF	-	XUKS
	Energy Commodities	No Distributing ETF ; ETFS Commodity Securities Energy DJ-UBSCI	-	AIGE

* *Distributing* units pay out dividends and income whilst *Accumulating* units reinvest it. Please select the ones that suit you. In some cases only one option is available.

Appendix [1]

AAA Model Rankings GBP Portfolio with representative ETF Tickers

	April 2023	Representative ETF Name Distributing ETF Name; Accumulating ETF Name	Representative ETF Ticker	
			Distributing*	Accumulating*
Strongest	EU Equities	iShares MSCI Europe ex UK UCITS ETF EUR (DIST) ; iShares MSCI EMU UCITS ETF ACC	IEUX	CEU1
	Gold Bullion	No Distributing ETF ; ETFS Physical Gold	-	PHGP
	UK Equities	iShares Core FTSE 100 UCITS ETF DIST ; SPDR FTSE UK All Share UCITS ETF	ISF	FTAL
	World Quality Equities	No Distributing ETF ; iShares Edge MSCI World Quality Factor UCITS ETF	-	IWFQ
Strong	World Equities	iShares MSCI World UCITS ETF USD DIST ; iShares Core MSCI World UCITS ETF USD ACC	IWRD	SWDA
	Japan Equities	iShares MSCI Japan UCITS ETF DIST ; iShares Core MSCI Japan IMI UCITS ETF ACC	IJPN	SJPA
	Agricultural Commodities	No Distributing ETF ; ETFS Commodity Securities Agriculture Dow Jones UBS CI	-	AGAP
	World Low Volatility Equities	No Distributing ETF ; iShares Edge MSCI World Minimum Volatility UCITS ETF	-	MVOL
	US Equities	iShares S&P 500 UCITS ETF USD DIST ; ISHRS Core S&P 500 UCITS USD (ACC) ETF	IUSA	CSP1
Neutral	Global High yield	iShares Global High Yield Corp. Bond UCITS ETF DIST ; iShares Global High Yield Corp. Bond UCITS ETF ACC	IGHY	HYLA
	UK Cash	No Distributing ETF ; No Accumulating ETF	-	-
	Industrial Metals	No Distributing ETF ; ETFS Industrial Metals ETC	-	AIGI
	Global Corporate Bonds	iShares Global Corp Bond UCITS (USD) DIST ; iShares Global Corp Bond UCITS (USD) ACC	CRPS	CRPA
	UK Corporate Bonds	iShares Core £ Corp Bond GBP UCITS ETF ; No Accumulating ETF	SLXX	-
Weak	India Equities	No Distributing ETF ; DB X-TRACKERS MSCI India Index UCITS ETF ACC	-	XCX5
	EM Govt. Bonds ($)	iShares J.P. Morgan USD EM Bond UCITS ETF DIST ; iShares J.P. Morgan USD EM Bond UCITS ETF ACC	SEMB	JPEA
	EM Equities	Vanguard FTSE Emerging Markets UCITS ETF USD ; No Accumulating ETF	VFEM	-
	Global Govt Bond	iShares Global Govt. Bond (USD) DIST UCITS ETF ; iShares Global Govt Bond UCITS (ACC) ETF	SGLO	IGLA
	China Equities	HSBC MSCI CHINA ETF ; No Accumulating ETF	HMCH	-
Weakest	UK Gilts	iShares Core UK Gilts UCITS ETF GBP ; No Accumulating ETF	IGLT	-
	UK Index Linked Gilts	iShares Index Linked Gilts UCITS ETF ; No Accumulating ETF	INXG	-
	Inverse UK Equities	No Distributing ETF ; DB X-TRACKERS FTSE 100 SHORT DAILY ETF	-	XUKS
	Energy Commodities	No Distributing ETF ; ETFS Commodity Securities Energy DJ-UBSCI	-	AIGE

* *Distributing* units pay out dividends and income whilst *Accumulating* units reinvest it. Please select the ones that suit you. In some cases only one option is available.

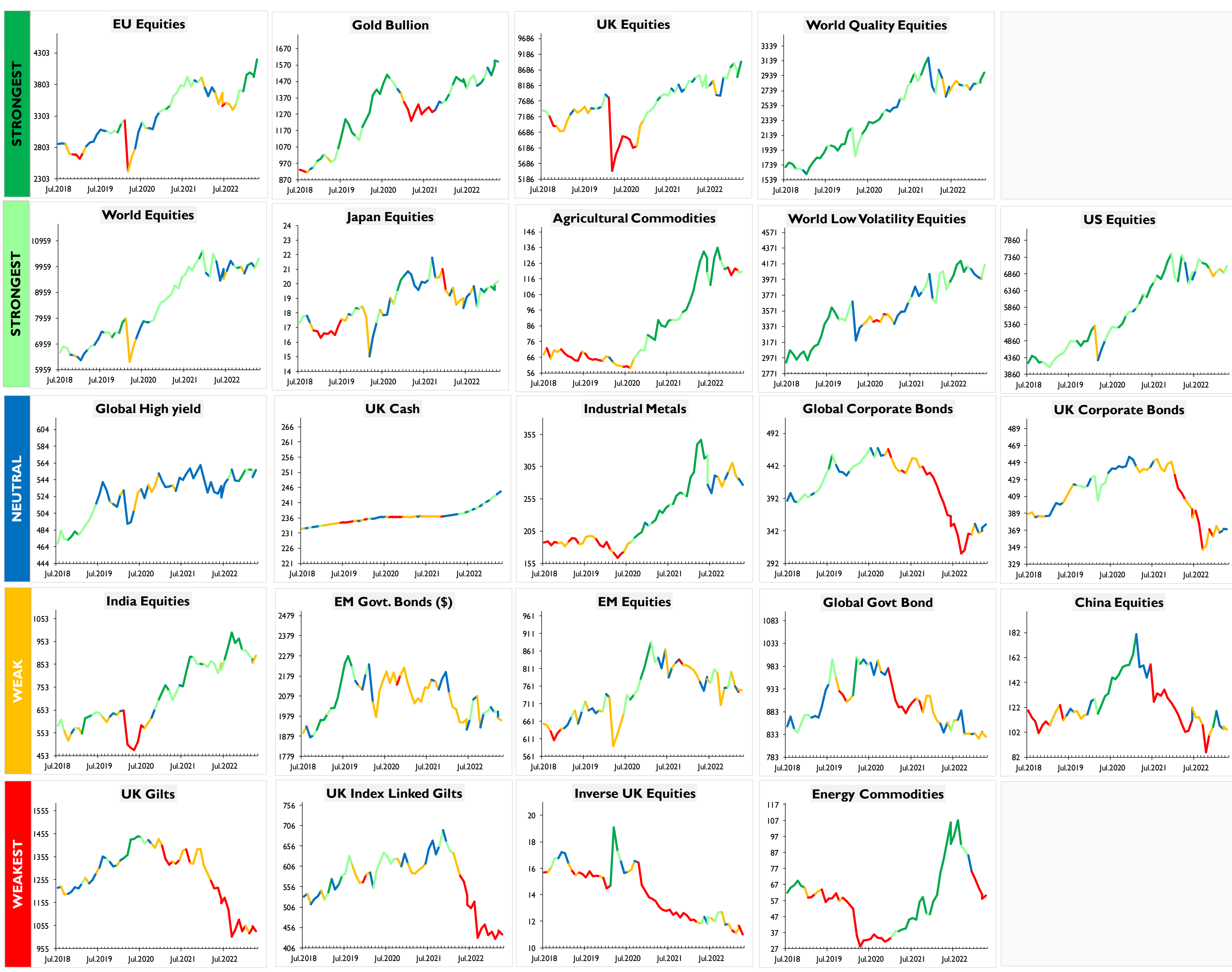
Source: ByteTree, Refinitiv Datastream

Appendix [2]

AAA Assets with Historical Model Rankings

The Charts below illustrate the Total Return performance in GBP of each of the AAA Model Assets arranged in order of the Latest Asset Rankings [see Appendix 1] from Strongest to Weakest, overlaid with historical Asset Rankings over the last 3 years, colour-coded as follows:

■ Strongest | ■ Strong | ■ Neutral | ■ Weak | ■ Weakest



Source: ByteTree, Refinitiv Datastream

Appendix [3]

AAA Assets Ranked by Risk

AAA Assets Ranked from Highest to Lowest Risk [Table 3.3] using historical monthly returns based on four risk metrics (standard deviation, maximum drawdown, average drawdown and Beta vs World Equity Market).

Table 3.1

Shows the absolute values of each risk metric and asset over the analysis period. The results are colour-coded so that Red means riskier and Green means less risky.

Table 3.2

Expresses the results, for each risk metric, in Table 3.1 as a % of the same value for the World Equity Market to make it easier to compare how much riskier (or less risky) each asset is relative to the World Equity Market. The last column [Average Risk Metric] is the simple average of the first columns in Table 3.2. An 'Average Risk Metric' value of over 100% means the asset is riskier than the World Equity Market, whilst a value less than 100% means the converse. The magnitude of the values serve to indicate how just much riskier (or less risky) each asset is compared to the World Equity Market, a widely used investment risk benchmark.

Table 3.3

Sorts the results in Table 3.2 based on the 'Average Risk Metric'. This makes it easier to see which are the Riskiest and Lowest Risk Assets. The "Highest Risk Assets" are marked below, using a cut-off threshold of 120%.

Analysis Period 31.12.1996 to 17.02.2023 based on Total Return Monthly data

	Risk Metrics				As % of World Equity Market				
	Standard Deviation	Max Drawdown	Average Drawdown	Beta (vs World Equity Market)	Standard Deviation	Max Drawdown	Average Drawdown	Beta (vs World Equity Market)	Average Risk Metric
China Equities	30.9	83.7	34.9	0.97	208.6	171.8	368.2	97.0	211.4
Energy Commodities	30.3	94.5	56.1	0.33	204.5	193.8	590.8	33.3	255.6
India Equities	26.0	53.7	14.6	0.97	175.6	110.1	153.3	96.9	134.0
EM Equities	21.8	59.6	13.1	1.13	146.9	122.3	137.7	113.2	130.0
Industrial Metals	19.9	55.0	19.5	0.58	134.1	112.8	205.3	57.9	127.5
Agricultural Commodities	19.1	53.7	31.6	0.33	128.9	110.1	332.5	33.5	151.3
EU Equities	18.1	50.7	9.9	1.10	122.0	104.1	104.4	109.7	110.1
Japan Equities	16.9	59.2	20.8	0.73	113.9	121.4	219.4	73.0	131.9
Gold Bullion	16.0	37.5	10.9	0.09	108.1	76.9	114.7	9.4	77.3
US Equities	15.6	48.9	12.3	1.01	105.1	100.3	130.1	101.4	109.2
Commodity Basket	14.9	55.0	22.5	0.34	100.9	112.8	236.7	34.4	121.2
World Equities	14.8	48.7	9.5	1.00	100.0	100.0	100.0	100.0	100.0
UK Equities	14.5	42.9	8.4	0.84	97.8	88.1	88.5	84.4	89.7
Inverse UK Equities	14.5	89.0	60.7	-0.84	97.8	182.7	639.7	-84.4	208.9
World Quality Equities	14.4	43.8	9.2	0.92	97.0	89.9	97.2	92.4	94.1
EM Govt. Bonds ($)	13.3	34.0	4.2	0.53	89.6	69.8	44.6	53.1	64.3
World Low Volatility Equities	11.7	30.2	4.4	0.68	78.9	62.0	46.7	68.4	64.0
Global High yield	9.7	19.5	2.5	0.45	65.7	40.0	26.7	44.9	44.3
UK Index Linked Gilts	9.5	38.0	3.0	0.14	63.9	77.9	31.9	14.0	46.9
Global Govt Bond	8.8	16.9	4.2	0.06	59.2	34.7	44.0	6.1	36.0
Global Corporate Bonds	8.1	34.5	3.3	0.19	54.5	70.8	34.5	19.5	44.8
UK Gilts	6.6	30.4	2.7	0.01	44.8	62.3	28.8	1.4	34.3
UK Corporate Bonds	5.8	24.0	1.8	0.11	39.0	49.2	19.5	10.9	29.6
UK Cash	0.7	0.0	0.0	0.00	4.9	0.0	0.0	-0.3	1.2

	Assets Ranked by Average Risk Metric. *Risk shown as % relative to World Equity Market. A value larger than 100% means the Asset is riskier than the World Equity Market and vice versa*	Average All Metrics
Highest Risk Assets	**Energy Commodities**	**255.6**
	China Equities	**211.4**
	Inverse UK Equities	**208.9**
	Agricultural Commodities	**151.3**
	India Equities	**134.0**
	Japan Equities	**131.9**
	EM Equities	**130.0**
	Industrial Metals	**127.5**
	Commodity Basket	**121.2**
	EU Equities	**110.1**
	US Equities	**109.2**
	World Equities	**100.0**
	World Quality Equities	**94.1**
	UK Equities	**89.7**
	Gold Bullion	**77.3**
	EM Govt. Bonds ($)	**64.3**
	World Low Volatility Equities	**64.0**
	UK Index Linked Gilts	**46.9**
	Global Corporate Bonds	**44.8**
	Global High yield	**44.3**
	Global Govt Bond	**36.0**
	UK Gilts	**34.3**
	UK Corporate Bonds	**29.6**
	UK Cash	**1.2**

Source: ByteTree, Refinitiv Datastream

Appendix [4]

AAA Model Performance: Strongest Assets and Strongest Assets excluding Riskiest Assets

The performance table below shows the historical performance of the AAA Model Strongest Asset portfolio ["AAA Model"] and the AAA Model Strongest Asset portfolio excluding the Riskiest Assets ["AAA Model excluding Riskiest Assets"] along with key comparison benchmarks.

The AAA Model performance excluding Riskiest Assets has been computed to allow readers to monitor the performance of the AAA Model if they chose to buy the Strongest Ranked AAA Model assets excluding the highest risk assets identified in Appendix [3] above, especially taking into consideration how much more volatile these assets are compared to World Equities (see Appendix 3 for comparison).

Not all investors have the ability and willingness to own the highest risk assets in the AAA Model, hence investors should take into account their capacity and tolerance for risk before investing in any of these assets.

	Performance Measured to 24.Apr.2023		Return	Risk		Risk-Adjusted Return	
5	Model | Benchmark	Representative Benchmark	CAGR	Std. Dev.	Max DD.	Sharpe Ratio	Calmar Ratio
Year to Date	AAA Model		0.1%	6.5%	-3.3%	-0.52	0.0
	AAA Model excluding Riskiest Assets		3.5%	6.7%	-2.0%	-0.01	1.7
	Trend Funds	Barclay BTOP 50 Index GBP	-1.5%	9.8%	-3.0%	-0.52	-0.5
	UK Equities	FTSE 100 Total Return GBP	7.3%	13.0%	-4.4%	0.29	1.6
	World Equities	MSCI World Total Return GBP	5.8%	7.8%	-1.9%	0.29	3.0
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	1.9%	2.8%	-0.5%	-0.58	4.2
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	3.3%	5.1%	-1.2%	-0.03	2.9
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	4.6%	8.0%	-2.0%	0.14	2.3
	UK Cash	3M Libor GBP	1.4%	0.4%	0.0%		
12							
12 Months	AAA Model		-12.4%	11.2%	-15.1%	-1.42	-0.8
	AAA Model excluding Riskiest Assets		0.9%	6.3%	-4.0%	-0.42	0.2
	Trend Funds	Barclay BTOP 50 Index GBP	1.8%	13.5%	-12.3%	-0.13	0.1
	UK Equities	FTSE 100 Total Return GBP	7.3%	13.8%	-6.6%	0.28	1.1
	World Equities	MSCI World Total Return GBP	3.9%	9.2%	-4.7%	0.05	0.8
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	0.0%	4.9%	-3.3%	-0.72	0.0
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	1.8%	6.4%	-3.5%	-0.27	0.5
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	2.5%	9.1%	-4.9%	-0.11	0.5
	UK Cash	3M Libor GBP	2.9%	0.3%	0.0%		
36							
3 Years	AAA Model		12.4%	14.1%	-15.1%	0.63	0.8
	AAA Model excluding Riskiest Assets		3.9%	9.1%	-14.0%	0.04	0.3
	Trend Funds	Barclay BTOP 50 Index GBP	11.4%	12.3%	-12.3%	0.64	0.9
	UK Equities	FTSE 100 Total Return GBP	11.9%	11.7%	-6.6%	0.72	1.8
	World Equities	MSCI World Total Return GBP	10.7%	11.9%	-10.8%	0.61	1.0
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	1.1%	4.5%	-8.3%	-0.53	0.1
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	5.2%	6.6%	-7.1%	0.25	0.7
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	9.3%	10.9%	-10.4%	0.53	0.9
	UK Cash	3M Libor GBP	1.1%	0.4%	0.0%		
60							
5 Years	AAA Model		7.8%	13.5%	-15.1%	0.32	0.5
	AAA Model excluding Riskiest Assets		4.2%	10.8%	-14.0%	0.07	0.3
	Trend Funds	Barclay BTOP 50 Index GBP	8.6%	11.6%	-12.5%	0.44	0.7
	UK Equities	FTSE 100 Total Return GBP	4.5%	17.2%	-29.7%	0.06	0.2
	World Equities	MSCI World Total Return GBP	9.4%	15.1%	-21.2%	0.39	0.4
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	2.5%	5.6%	-8.3%	-0.18	0.3
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	4.8%	9.5%	-14.6%	0.14	0.3
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	8.0%	14.4%	-20.8%	0.31	0.4
	UK Cash	3M Libor GBP	1.0%	0.3%	0.0%		
307							
30 Nov 1997 - 24 Apr 2023	AAA Model		13.5%	14.0%	-15.1%	0.71	0.9
	AAA Model excluding Riskiest Assets		9.9%	10.0%	-14.0%	0.64	0.7
	Trend Funds	Barclay BTOP 50 Index GBP	5.8%	11.7%	-20.0%	0.20	0.3
	UK Equities	FTSE 100 Total Return GBP	5.5%	14.4%	-44.4%	0.14	0.1
	World Equities	MSCI World Total Return GBP	8.1%	14.6%	-48.7%	0.31	0.2
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP					-
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	6.1%	9.7%	-32.8%	0.27	0.2
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP					-
	UK Cash	3M Libor GBP	2.8%	0.7%	0.0%		

Source: ByteTree, Refinitiv Datastream

Disclaimer