29th March 2023

The Adaptive Asset Allocation Report

Issue No. 10

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.

Go for gold

Dear Readers,

The tightening of interest rates by the Fed has produced extreme difficulties in the banking sector. It has resulted in the collapse of the second and third largest bank failures in the history of the United States. The Fed has stepped in to save the banking system by guaranteeing these failed banks deposits and going so far as to lift the $250,000 per account deposit insurance for deposit holders. They have also created a new facility to provide liquidity to the banks that are at risk of bank runs. Cash strapped banks have borrowed close to $300bn in the past week alone.

The Fed's swift and decisive action has averted catastrophe. As nerves settle further, investors can refocus on the trends that were in place before the crisis. We are talking about the "pain trade" with the cheaper markets rising and the US markets and dollar getting deserted. This trend, which started back in November, can carry on until May. We have been, and still are happy to rent this rally, but we do not wish to fully buy in. It is a trade and not an investment.

All our indicators tell us that the bear market in equities is not over. The economy will suffer a credit crunch and slow down further into a recession which will probably not bottom out till the first half of next year. We can follow the pain trade for a while but then wish to get very defensive until the final low next year. There is only one new trend in the top part of our ranking table and this is to buy Gold. We want to back this now. We also are happy to sit on more cash than we normally would.

The final part of our message is to point out that when trends are strong the AAA model works very well. However, the momentum behind the trends now is not strong enough to follow in most cases. The best way out is to hold more cash and Gold. This worked out brilliantly in 2008 and will do so again later this year. Be cautious and be golden.

Good luck Friends.

Best Wishes,

R. J. Griffiths

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,

The Federal Reserve has acted rapidly to avert a catastrophe following the collapse of SVB and the closure of Signature Bank but a credit crunch and recession will still follow. A credit crisis is when banks won't lend to one another, whereas a credit crunch is when banks won't lend to you!

We are in an equity bear market and the second half of the act is still to come. Our work indicates that the worst period will be between May this year until late October. The final low will most likely be in early 2024. Between then and now, we do not wish to lose money. The top priority is to protect capital and diversify risks. We make this point as the AAA model still wishes to hold equity positions, as these are the strongest trending assets.

For long periods of time the model does not need to be adjusted as the strongest trending assets classes have enough momentum behind them. It is most unusual for a buy to be reversed the following month. However, in a major bear market volatility increases, which is confusing, and secondly there is a much greater probability of signals being reversed. Our model doesn't only look at absolute trends but also relative ones. So, in a bear our portfolio will go down slower than others. However, we would prefer not to go down at all. There are two ways out of this.

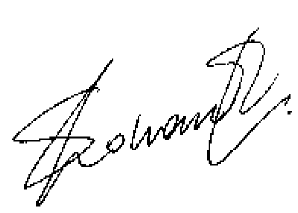
First if we buy the strongest ranked assets and our portfolio continues to fall, we concede we were wrong. So we must have a stoploss in place. On a drop of around 10% we liquidate our portfolio. Secondly, if the aggregate strength of the trends at the top of the ranking list are very weak we can afford to own more cash than before. We are still vulnerable to inflation, but this is the lesser evil of the contenders.

For now, we continue to rent the rally, and will do so until late May or the Model abruptly changes its holdings. From then on, we expect to be using tighter portfolio stop losses as the rest of the bear move continues. Invest cautiously.

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: **28th March 2023**

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

ADDENDUM

The model was first run on 24th March 2023 this month. At this time, the strongest ranked assets were Gold Bullion, Europe Equities, Japan Equities and World Quality Equities. The model was rerun on 28th March 2023 and the strongest assets are now the same however EU Equities has moved back up above Gold Bullion to be ranked as the strongest asset. Note: Buy or Hold these.

NB: The Sell, Buy and Hold assets below take into account the changes made in the [Flash Note] sent out on the 15th of March 2023.

▼ 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	• **World Quality Equities**
Hold	• **Gold Bullion** • **Japan Equities** • **Europe Equities**
Sell	• **Global High yield**

- **The US Fed has acted swiftly and decisively to save the US banking system.**
- **They have succeeded but they cannot prevent a credit crunch and a recession coming.**
- **The AAA Model continues to hold the cheaper equity markets of Europe and Japan. They are part of the pain trade but their momentum is weak.**
- **The only really strong momentum asset to own is Gold. A new all-time high breakout will bring in more players.**
- **The AAA model works best when the momentum of the top trends is significant, which is normally the case. However current momentum is low enough to warrant being more defensive and putting portfolio stops in place.**

"Monetary actions affect economic conditions only after a lag that is both long and variable."

– Milton Friedman (Economist)

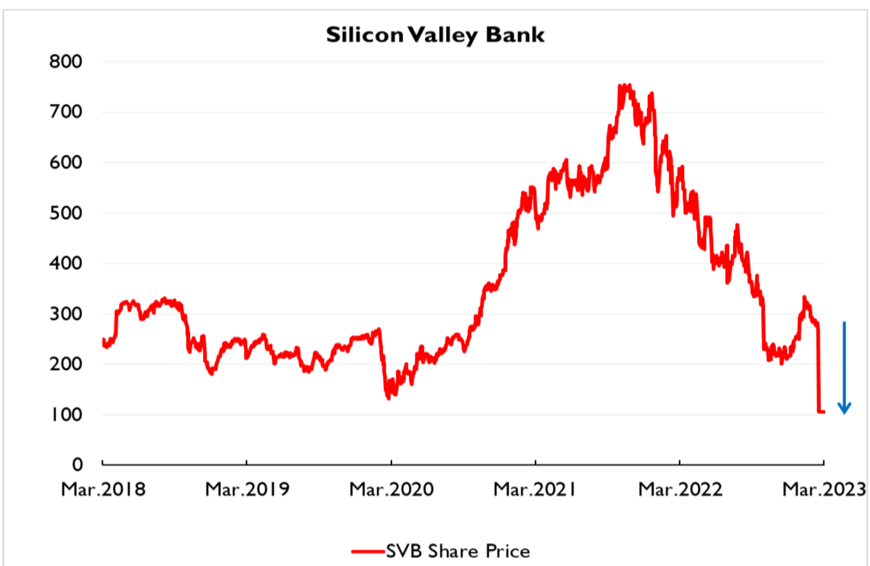
Following the Covid-19 economic crisis, inflation began to shoot up. For a long time, the US Federal Reserve insisted it was "transitory" and argued it would soon revert to a more normal course. When it finally dawned on them just how much they misread the situation, they began to raise interest rates very rapidly, shifting straight from first to fifth gear, in a bid to correct their egregious error and slay the inflation dragon**. The result was the most rapid tightening of monetary policy we've seen in decades** (recall that at one point, we saw interest rates rise by 75 basis points on four successive occasions!) Other global central banks, taking their cue from the Fed, acted in a pavlovian manner as inflation in many countries rose to the highest level in decades. **With global tightening of this magnitude, something was bound to break – and it has.**

The collapse of Silicon Valley Bank (SVB) last week (Figure 1a), and the closure of Signature Bank a few days later **marks the second and third largest bank failures in US history** (Figure 1b). At the micro level, the failures can be attributed to bad investment choices, poor risk management, a hysteria-induced bank run caused by Venture Capitalists and lack of regulatory oversight. However, **at the macro level, the failure of the banks can be traced back to one primary cause: the tough medicine that the Fed has been administering** to the US economy aimed at fixing the inflation problem; higher interest rates.

To prevent this event from morphing into a full-blown crisis, the US government stepped in by backstopping all deposits of the two banks, regardless of their size, and the Fed created a new facility to provide liquidity to other banks at risk of experiencing a similar fate. By doing so, their **primary goal was to reassure investors their deposits were safe and the banking system is sound**. Undoubtedly, their swift and bold actions have averted catastrophe and the mood is now calmer. However, despite assurances from the authorities, deposit outflows from US banks have not stopped (Figure 1c) and US and global bank stocks still remain weak (Figure 1d). **This story is far from over; much like an onion, it will unfold in layers.** Investors, fearing contagion, remain on high alert for signs of stress in the bank system. **The situation is opaque and it's difficult to tell what will come next.**

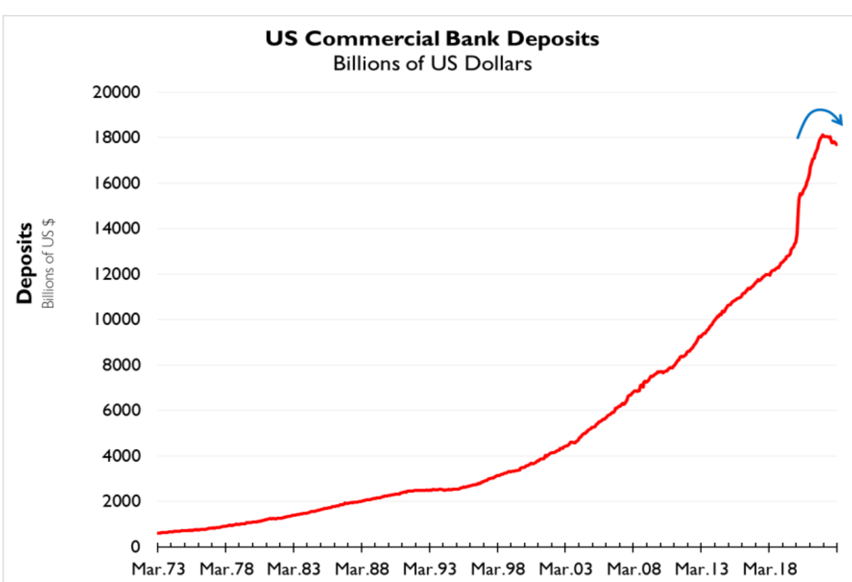
► Figure 1: The failure of SVB and Signature Bank were the 2nd and 3rd largest in US history. The authorities have stepped in to avert catastrophe and the mood is now calmer, but deposit outflows have not stopped since the event and banks still remain under pressure

(a)



(b)

(c)



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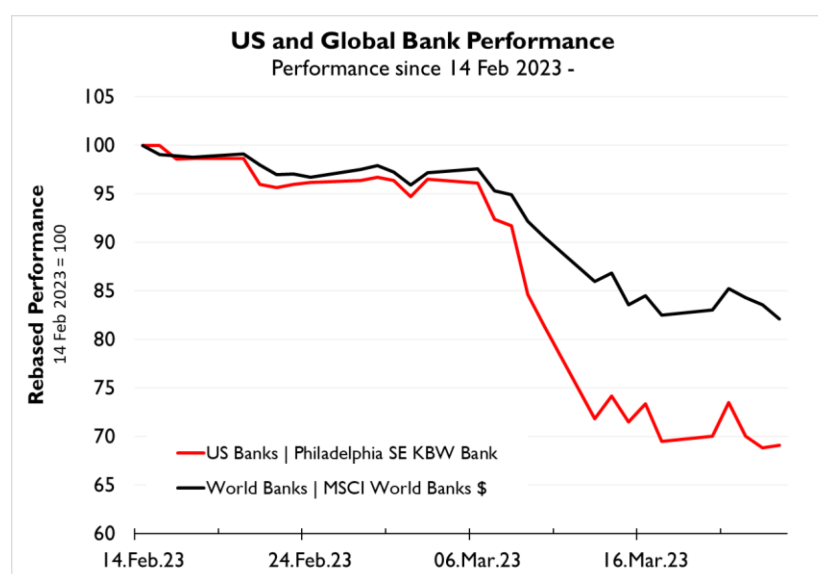


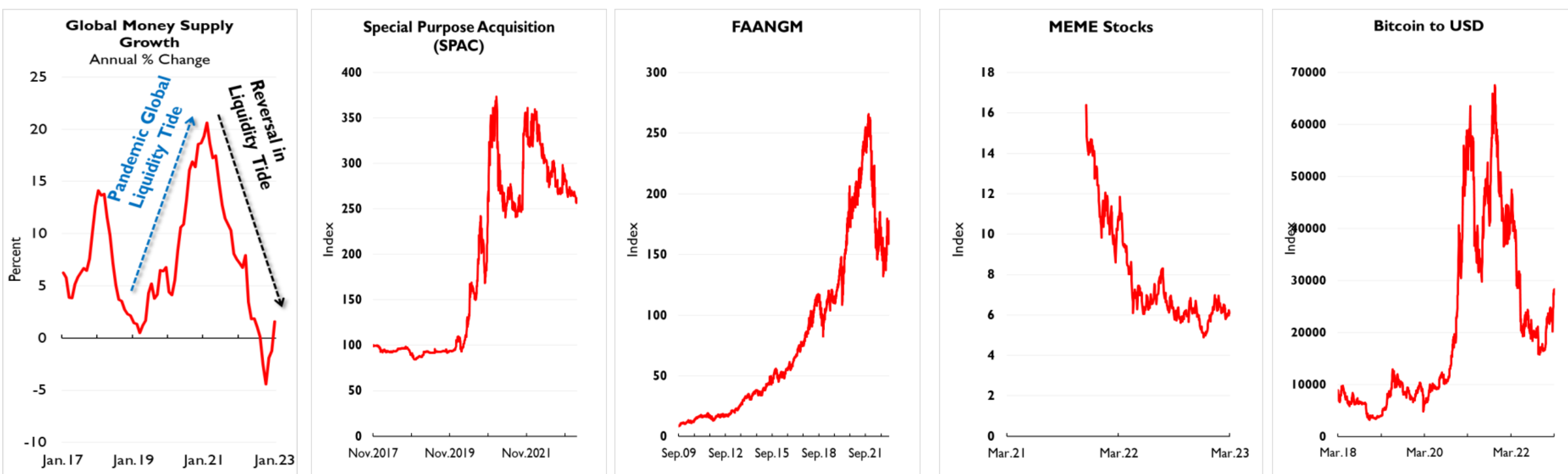
Source: ByteTree, Refinitiv Datastream

Recent events serve as a reminder that when the (monetary) tide goes out we get to see who has been swimming naked. The global liquidity tide created during the pandemic give birth to a swell of bubbles which rose to unprecedented heights. Special Purpose Acquisition Vehicles*, Tech Stocks (notably FAANGM), Meme stocks**, Cryptos all ended up in bubble territory, inflated beyond any reasonable sense of measure. As the Fed started to tighten monetary policy, the tide began to flow the other way (Figure 2) causing the bubbles to burst. SVB's collapse marks the next chapter in this tale of financial upheaval. **Expect more casualties in the wake of the deflating bubble.**

> * *Special Purpose Acquisition Vehicles* (SPACs) are companies formed with the purpose of raising capital through an initial public offering (IPO) in order to acquire an existing company. SPACs do not have any commercial operations, and their sole purpose is to acquire an existing company and take it public. SPACs are also known as "blank check companies" because investors contribute funds without knowing which company the SPAC will ultimately acquire. After the IPO, the SPAC has a limited period, typically two years, to identify and acquire a company or else return the invested capital to shareholders. SPACs have gained popularity in recent years as an alternative to the traditional IPO process. However, their lack of transparency, combined with the potential for high returns, makes them a speculative investment.
>
> ** *Meme stocks* describe stocks that have gained popularity through social media platforms like Reddit, Twitter, and TikTok. These stocks are typically heavily promoted and discussed on these platforms, often leading to a

> surge in demand and an increase in their share price. Meme stocks are considered speculative because their value is based on social media hype rather than on the company's fundamentals. As a result, their prices can be highly volatile and unpredictable, and investors may experience significant gains or losses.

► Figure 2: A number of bubbles formed in the wake of the pandemic have been bursting as the global monetary tide has ebbed

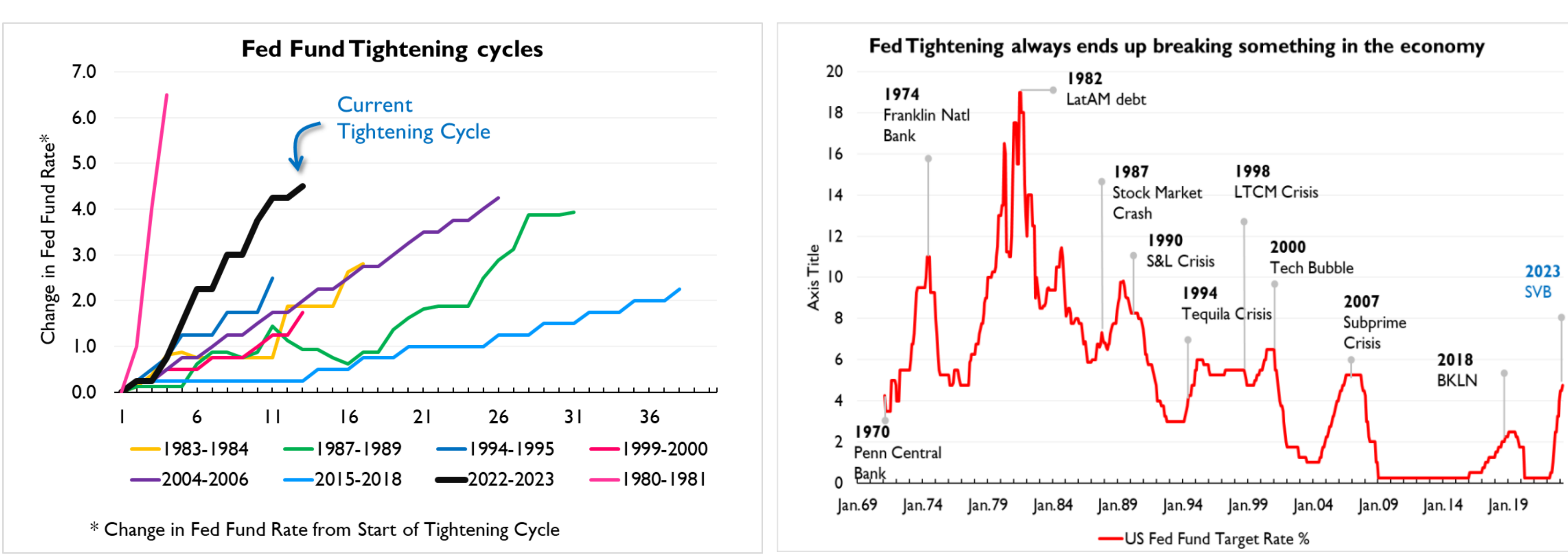


Source: ByteTree, Refinitiv Datastream

The old saying goes that "the Fed will continue to hike until it breaks something". This is because history is replete with examples of Fed tightening cycles that have frequently ended in something eventually breaking and [or] the economy in a crisis (Figure 3b). **This time has been no exception, looking at the failures of the US regional banks last week.** After the second most aggressive rate hiking cycle on record – in which period US interest rates have risen by close to 5% in a year (Figure 3a) – something was bound to give, and it certainly has. The reality is that when interest rates rise this rapidly, companies do not have enough time to adjust, especially when operating in a zero-interest rate environment . Jerome Powell was aware this might happen and had prepared markets for more pain to come in [August last year](). He certainly hasn't failed to deliver on that front.

► Figure 3: Fed tightening cycles frequently end in financial and economic crisis and the collapse of SVB is testament to this

(a) (b)

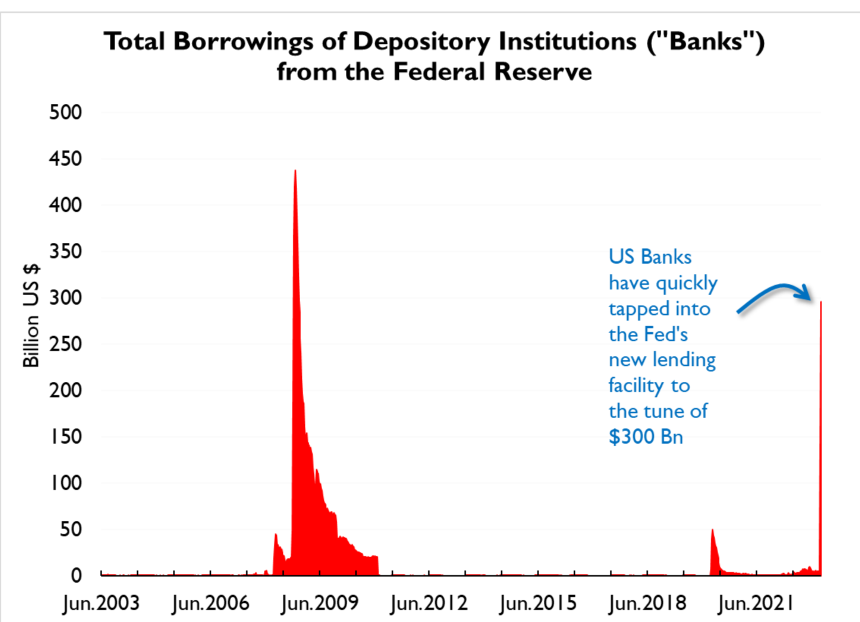


Source: ByteTree, Refinitiv Datastream, BofA Merrill Lynch

In trying to contain the fallout from the failure of SVB and the shutdown of Signature Bank, the **Federal Reserve announced the creation of a [new lending program](#) for banks.** This program aims to provide liquidity to those banks that are at risk of bank runs (massive customer withdrawals). Cash strapped **banks have already borrowed close to $300bn** in the past week alone (Figure 4a); the most significant borrowing in a week since the Great Financial Crisis (GFC). Banks use this liquidity to meet customer demands for withdrawals without having to sell their assets like SVB had to do. The net result of this calculated move is that **whilst global financial stresses have increased** (Figure 4b), **they are nowhere near the levels seen during the GFC** – the last time we saw an event of similar nature. In other words, **the Fed's rapid actions have stopped the failure of SVB from morphing into a full-blown financial crisis.**

► Figure 4: The Fed's new lending program for banks has provided liquidity to cash strapped banks, reduced the risk of further bank runs and contained global financial stresses

(a)



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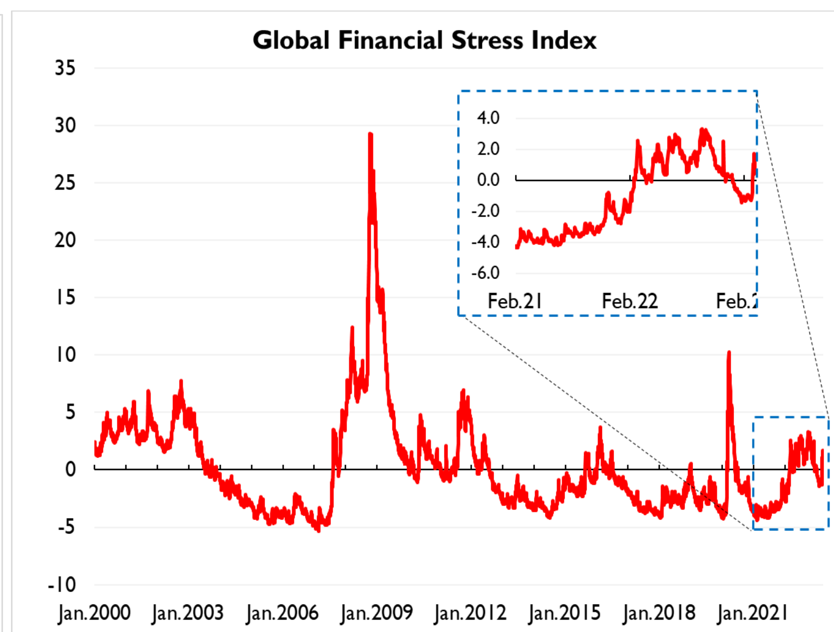


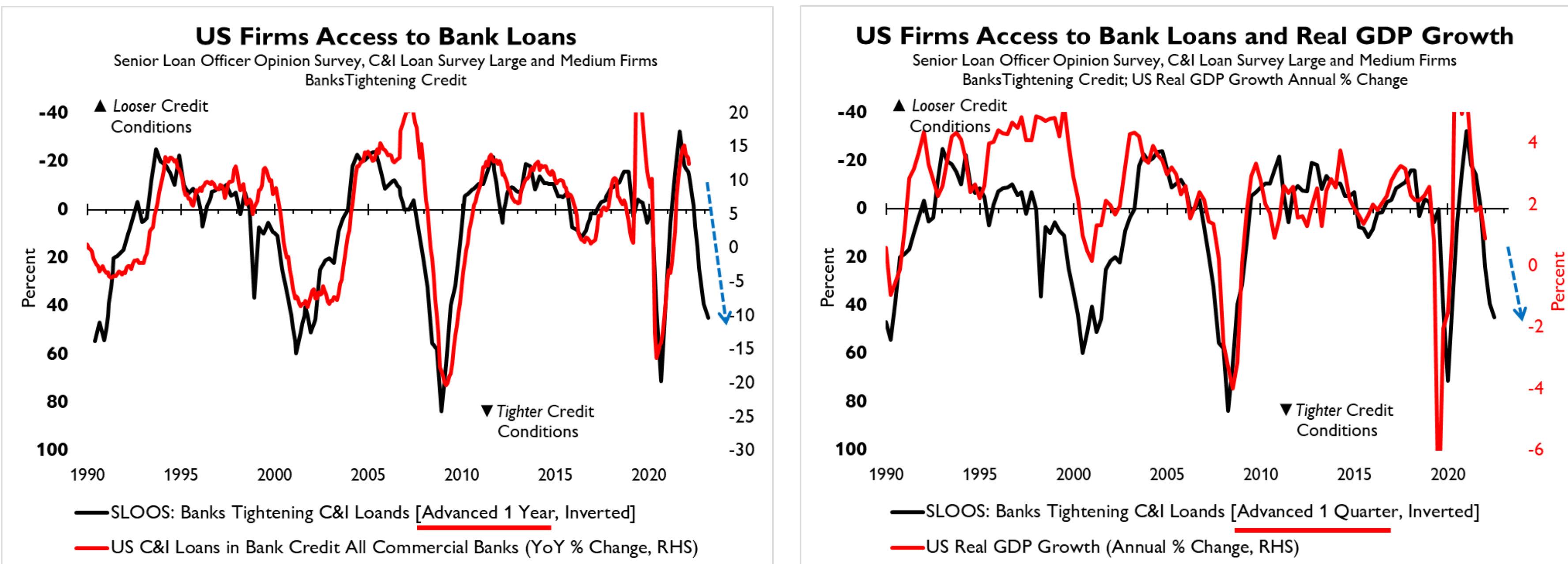
Source: ByteTree, Refinitiv Datastream

Although the Fed's backstop measures have been effective in preventing more bank runs and containing the crisis, what they can't do is loosen the tight lending standards already established in the banking industry. The Chairman of the Federal Reserve hinted at this when discussing the collapse of Silicon Valley Bank, stating that "[the bank's collapse and the banking system upheaval] are likely to result in tighter credit conditions for households and businesses, which would in turn affect economic outcomes".

Paradoxically, while the Fed typically lowers interest rates during recessionary periods, to support the economy, banks tend to tighten credit conditions, making credit less available. **The tightening of credit conditions by banks will lead to an impending credit crunch** (Figure 5a), **which will further weigh on US and global economic growth** (Figure 5b) at a time when the global economy is already hobbled. Credit, after all, is the lifeblood of the global economy and its scarcity will only make things worse.

► Figure 5: The Fed's backstop measures have contained the crisis and prevented further bank runs but they can't prevent a credit crunch which will weigh further on global economic growth

(a) (b)



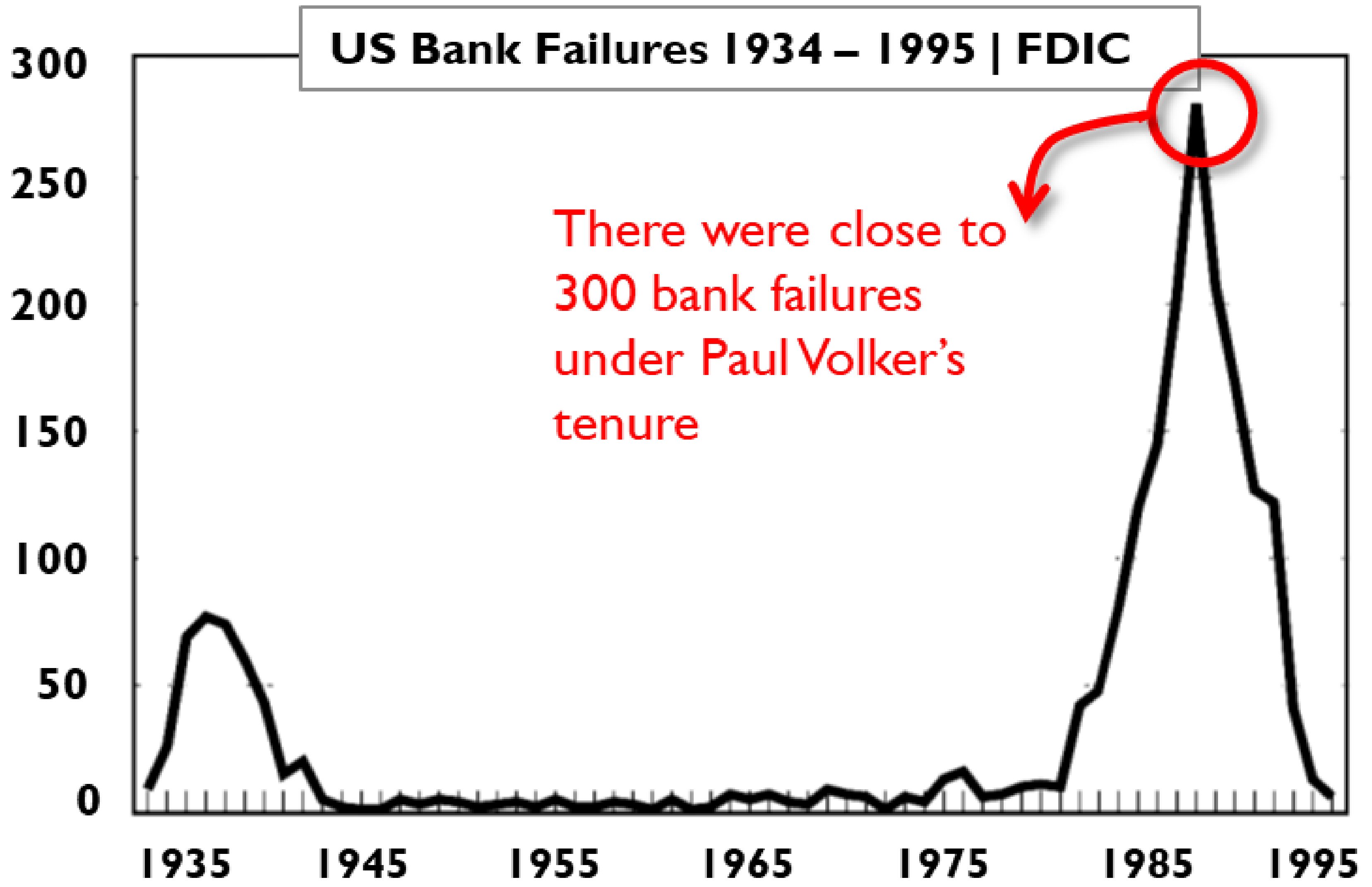
Source: ByteTree, Refinitiv Datastream, Morgan Stanley Research

There was a book written in 1961 about an American bombardier stationed on a Mediterranean island during WWII and his desperate attempts to stay alive. The bomber pilot tries to avoid flying more missions by claiming he is insane. However, he is told that only a sane person would try to avoid flying dangerous missions, so he cannot be declared insane. As a result, he has no choice but to continue flying. You will immediately recognize the title of this book because its name lends itself to the situation in which the Fed currently finds itself: "Catch-22".

The Fed knows it is in a "no-win situation". Last week, following the failure of SVB and related events, **they stuck to their guns and hiked the federal funds rate by another 25 basis points. If they hadn't**, as they had hinted they would before the failure of the bank, **it would have sent the wrong signal to the markets**. It would have suggested their inflation fighting efforts were only up to a point and the current situation was so dire, it warranted a change in policy. Instead, they continued to administer their potent medicine despite the risk of further bank runs, tightening credit conditions and increasing financial stresses. **If the game was tough before, it just became even tougher.** The further interest rates are hiked, the more pain there will be to come.

In his effort to slay the inflation dragon, **it is clear that the current Fed chairman uses Mr. Volcker as his guide and mentor. But it is far from clear whether he will be allowed to go the whole way in his mentor's shoes.** Back then, Mr. Volcker's policies oversaw 300 bank failures (Figure 6), resulting in death threats, bricks and 2-by-4s sent to his office and even threats of impeachment. Mr. Volcker clearly lived a dangerous life, needing official protection from the Secret Service as his policies, whilst beneficial in the long run, were not universally lauded at the time.

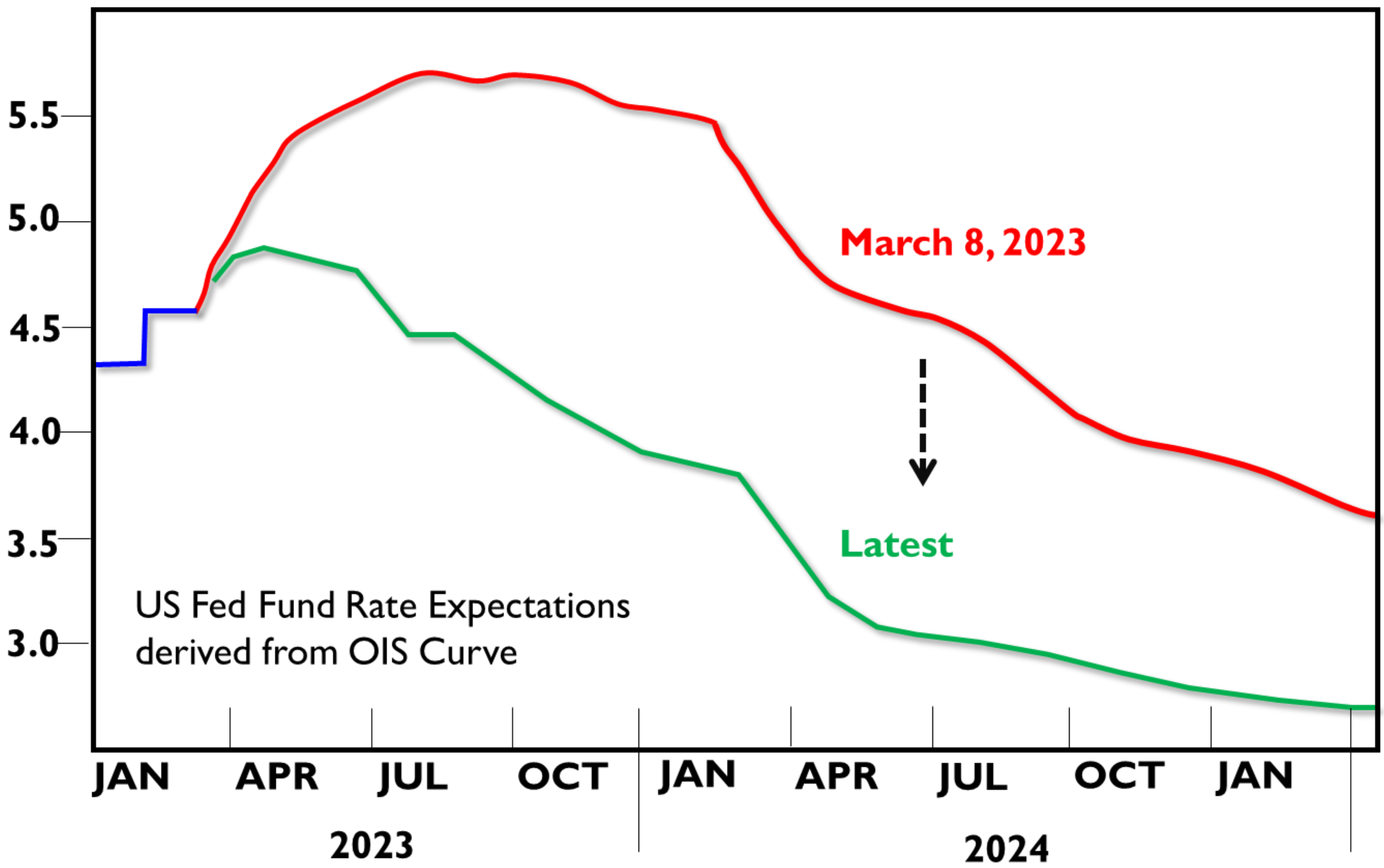
► Figure 6: **The last time the US was caught up in fighting double digit inflation under the leadership of Fed Chairman Paul Volcker, there were around 300 bank failures owing to the potent medicine of sky-high interest rates**



Source: ByteTree, Trahan Macro Research, FDIC

We doubt that the current political situation allows for Mr. Powell to follow down this path as the Fed now has to balance financial stability risks alongside its goal of reining in inflation. There are signs that a change in direction is coming soon. **While the Fed raised interest rates again, they were accompanied by a change in rhetoric for the future outlook.** It is entirely possible that another hike could come soon, but after that, **the market is pricing in a cut before the end of this year** (Figure 7). So, the US Fed Fund rate might get to 5.5%, but then it will drop back to below 4% in a year's time. This means that bonds will remain toxic on our ranking list for only a short period. Then, a period of stability will return. **Until this happens, some equities are better bets**. These positions are cheaper than USA equities and include Europe and Japan. **The rate of rise of these trends is modest, so a portfolio stop loss should be applied**.

► Figure 7: **Following a toning down of the Fed's hawkish language markets have moved to price in an interest rate cut before the end of the year**



Source: ByteTree, BCA Research

Unfortunately, even if the Fed decides to pause or cut interest rates now, a recession and bear market have already been baked into the cake. We can easily demonstrate this by first showing how correlated the US stock market is to US economic growth prospects (Figure 8a) and secondly, by showing how the latter will fall further owing to the lagged effects of monetary policy (Figure 8b).

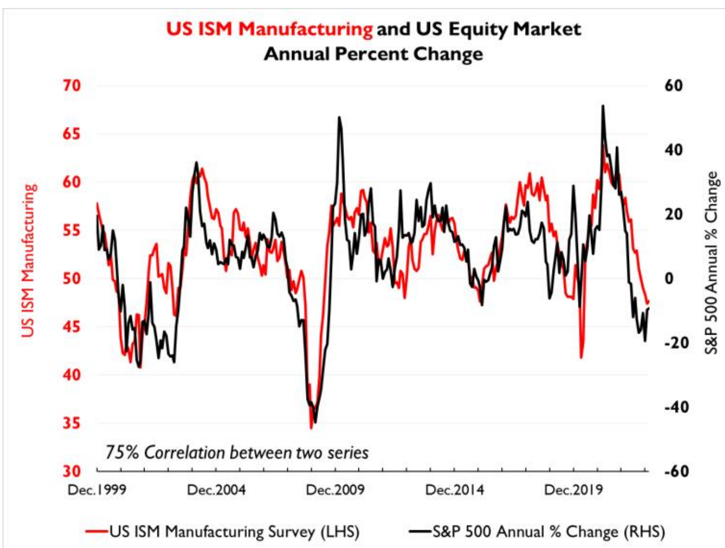
Milton Freidman highlighted that "Monetary actions affect economic conditions only after a lag that is both long and variable." In other words, when the Fed raises interest rates, the impact on the economy is not immediate. Similarly, when the Fed lowers interest rates, it takes time for the easing to feed through the economy. And even though there is a time lag, sometimes it is short and at other times it is much longer. **We have calculated the time lag over different periods** – measured in months – and found that **on average, the lag is around 15 months** (Figure 8b; heatmap).

What this tells us is that **as a result of the substantial Fed tightening that happened last year, the full impact on economic growth will be felt from this year heading into next year** (Figure 8b). There is a significant probability of a recession and it will affect US and global equities taking into account the close relationship between the two series (Figure 8a). Any further Fed tightening will simply make the situation worse.

► Figure 8: As monetary policy works with a lag of over a year, the substantial Fed tightening that occurred last year will impact US economic growth this year and extend the US equity bear market in the process

NB: US Economic growth proxied using the widely followed ISM Manufacturing series

(a)



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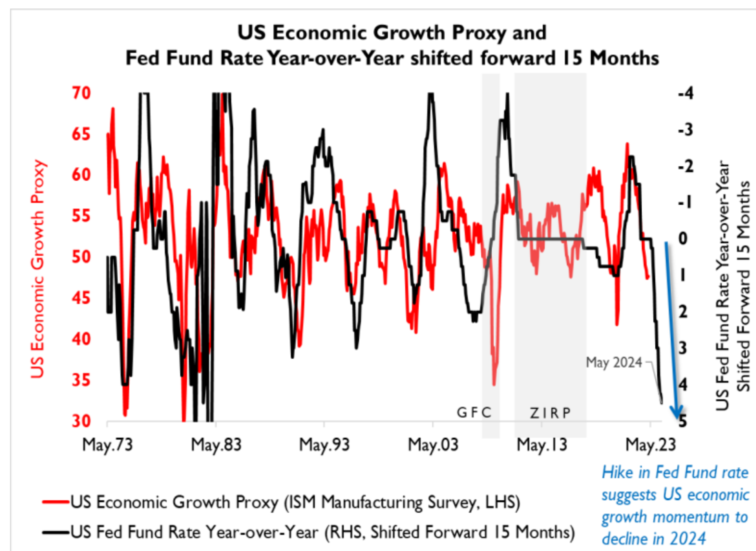


Lag	Correlation
6	-0.147
7	-0.201
8	-0.256
9	-0.303
10	-0.343
11	-0.375
12	-0.401
13	-0.428
14	-0.449
15	-0.451
16	-0.445
17	-0.440
18	-0.427
19	-0.404
20	-0.382
21	-0.365
22	-0.347
23	-0.318
24	-0.287

Source: ByteTree, Refinitiv Datastream

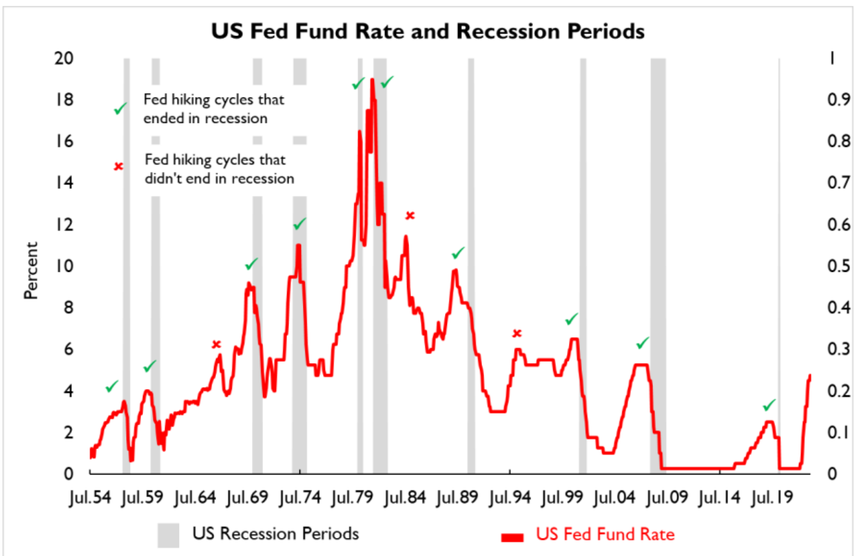
For a long time now, **the Fed has been peddling the "soft-landing" narrative all the while raising interest rates aggressively.** It is a common strategy employed by the central bank to maintain confidence in the market and prevent a more severe outcome, especially since they know their policy actions have contributed to a recession in 10 out of 13 occasions (Figure 9a). As the Fed has powered forward with their rate hiking policy, **we have been seeing classical signs of a recession** such as a downturn in the US housing market, credit conditions tightening, the most inverted yield curve in four decades (Figure 9b) and a collapse in business confidence.

In our opinion, **recent events have exacerbated financial stresses, tightened credit conditions further and increased the risk of an economic hard landing.** But you don't have to take our word for it – you only have to look at the New York Fed's own recession probability model which shows higher odds of a recession now than during the Global Financial Crisis or dot-com crash (Figure 9c).

No one knows precisely when the US recession will start, but according to a survey conducted by investment bank JP Morgan, **most investors think it will hit home in the second half of this year** (Figure 9d), with a sizeable majority convinced it will wait until the first half of next year. Whilst the timing of the recession remains uncertain, it is clear that the second half of the bear market is approaching.

► **Figure 9: Recession risks have become more elevated after the failure of SVB**

(a)



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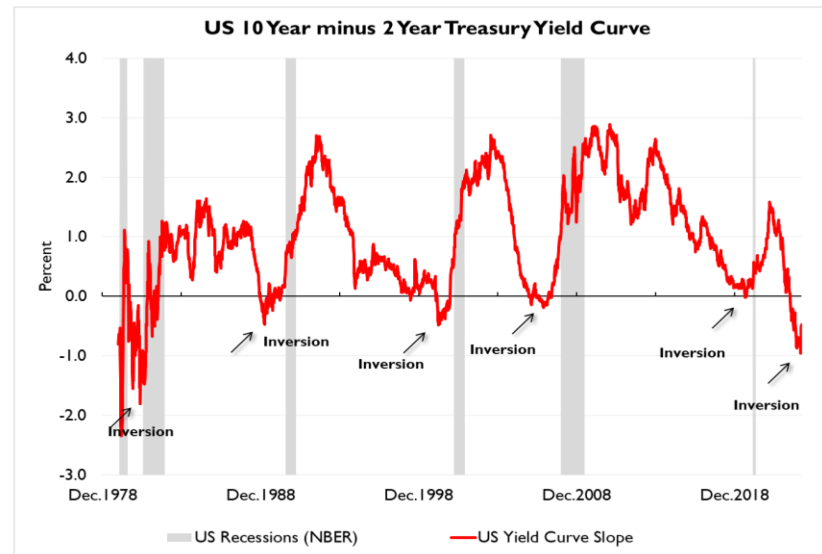

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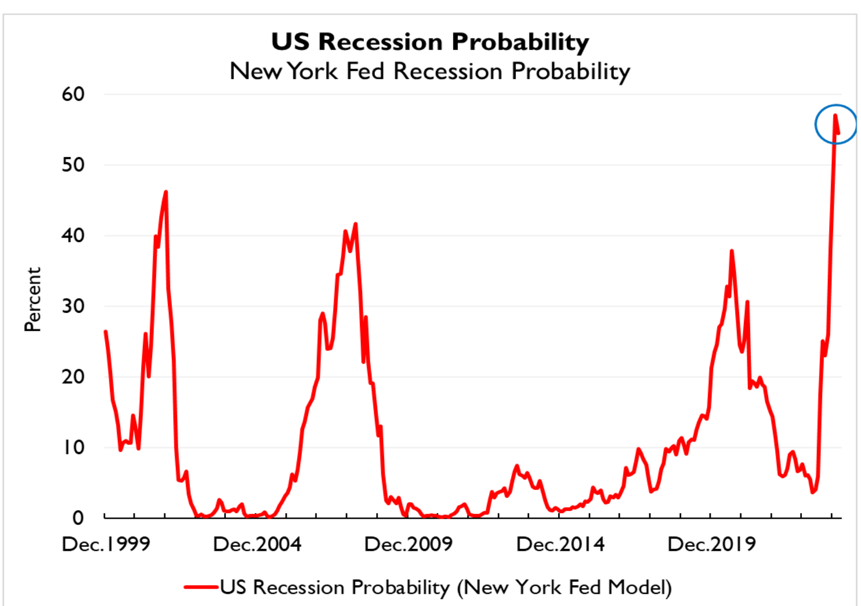

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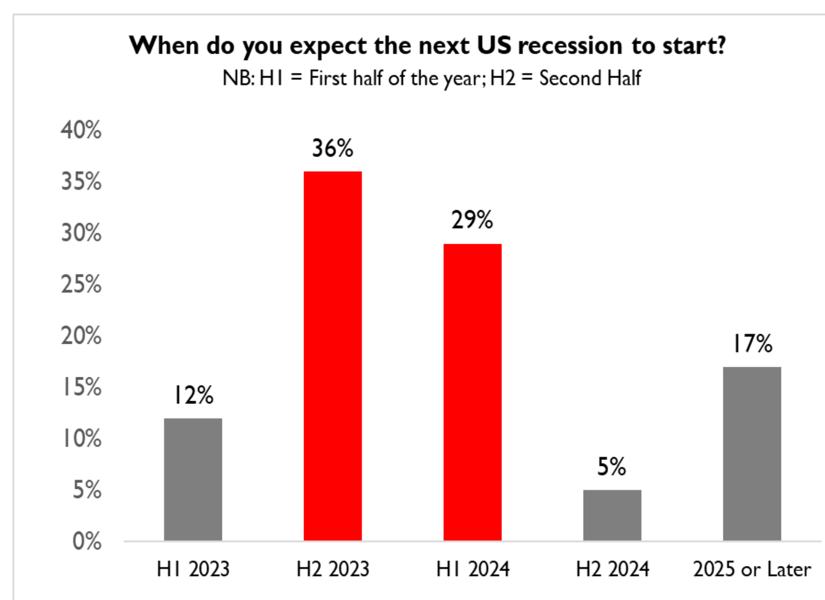


Source: ByteTree, Refinitiv Datastream, JP Morgan, Incrementum AG

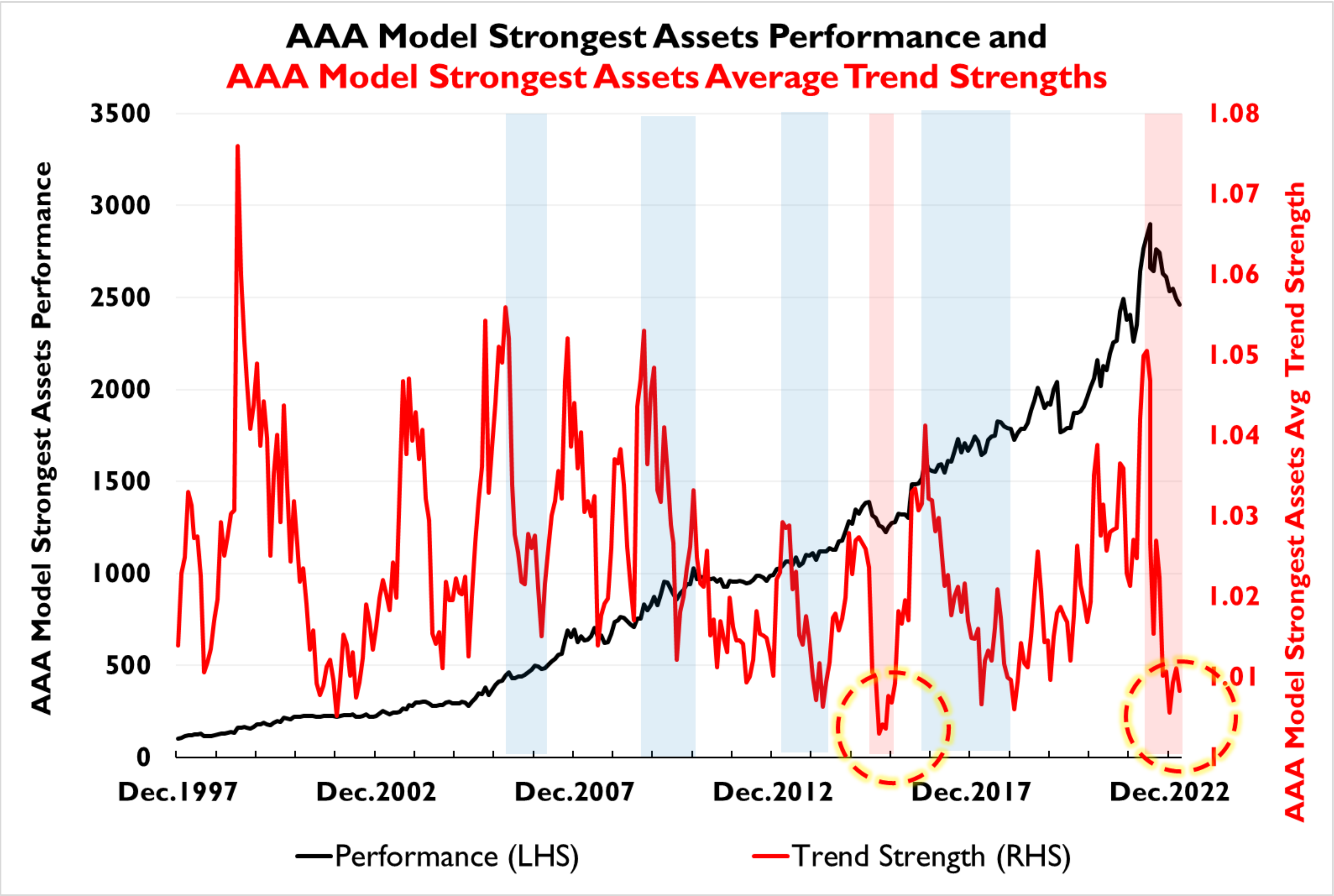
The AAA Model has been correcting since June last year and is down 2% this year (Figure 10; black line). The model is not failing but simply reflecting current market conditions – where trends remains weak. We can illustrate this by plotting the average trend strength of the four strongest assets in the AAA Model over time (Figure 10; red line). This trend strength is based on our proprietary calculation.

As can be seen, trend strength waxes and wanes over the business cycle (as an aside, notice how much weaker the strength of trends has been since the GFC). Whilst weak or declining trend strength does not guarantee poor performance (Figure 10; blue shaded bands), **very weak trend strength has normally coincided with noticeably poorer performance** (Figure 10; circles).This suggests to us that **the opportunity cost of being fully invested in the strongest trending assets is lower than normal.**

We can afford to hold more cash as we are not being paid to take a lot of risk at the moment. **One way we can do this is to hold five assets – the top 4 strongest assets and cash – in equal weight.** This would give us a 20% holding in cash. Incidentally, UK cash is in the second group and is ranked above UK and US equities. The markets that are stronger than this are part of the seasonal pain trade.

As the risk of a recession and bear market is also high, **we also want to implement a portfolio stoploss**. We need to ensure it's not too tight to be stopped out by normal volatility but also not so loose that we lose a sizeable chunk of our portfolio before we liquidate our positions. **Ten percent seems like a reasonable number to us, but readers need to decide what suits them.**

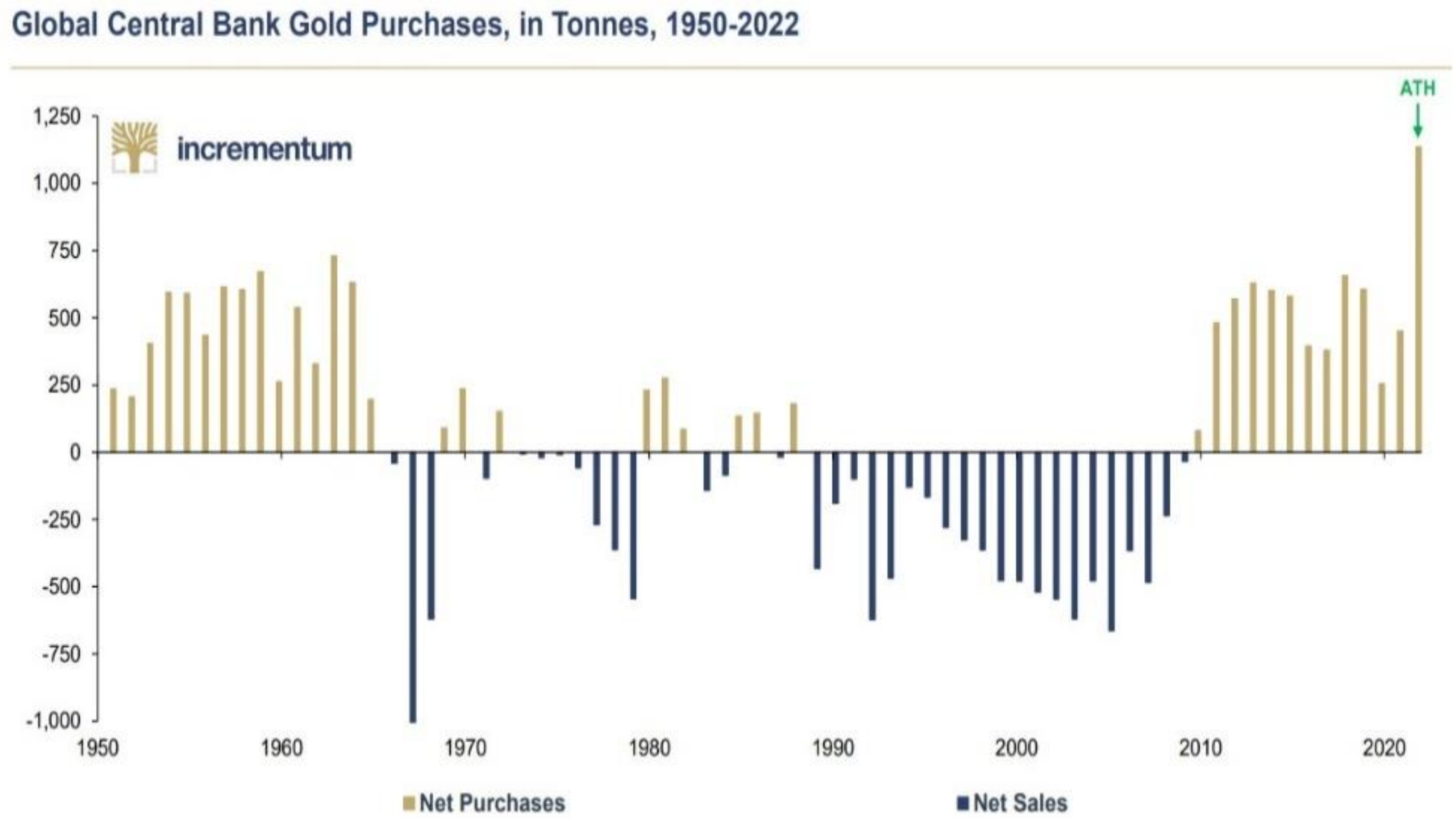
► **Figure 10: AAA Model Performance overlaid with average trend strength of the Strongest Assets**



Source: ByteTree, Refinitiv Datastream

The other way to do this is to buy gold bullion. We have charted when central banks are buying gold and when they are selling it (Figure 11). At present they are buying gold more aggressively than at any time in the last seven decades. As famed investor Mr. Ray Dalio points out, "if you don't own gold, you know neither history nor economics". **It is a great risk diversifier and just what is needed now.** If we hold it together with cash, along with the other three strongest ranked AAA Assets, this would mean that 40% of our portfolio is hedged. More **risk averse investors always have the option to hold more cash**, especially since it is now yielding a non-trivial return.

► Figure 11: **Global Central banks have been buying more gold over the last year than they have in the last seven decades preceding | NB: ATH = All time high**

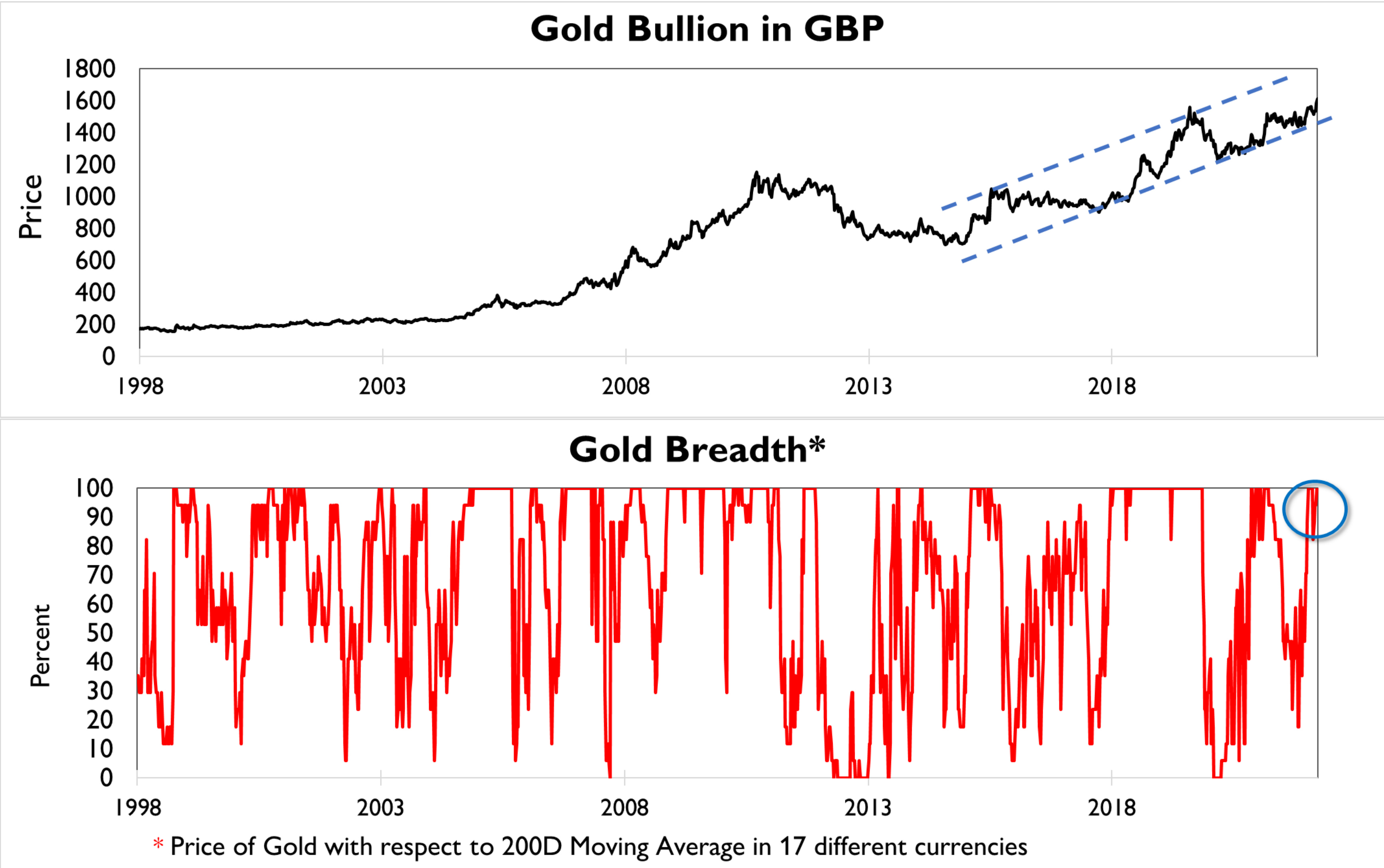


Source: ByteTree, Incrementum AG

When we look at the way different trends take place within the model **we can see that gold has only just sprung to life and now has a good rate of rise.** On the charts, the price of gold in GBP has trended between two parallel lines and is at the lower end of the range (Figure 12; upper pane). In other words, it is not overbought. It is, however, close to the old all-time high. Any move up will break this resistance level. Then everyone and their dog will want to buy it.

This is the best there is available. Mr. Warren Buffett says we should not follow every trend available. We should wait for one with a high probability of not going wrong and then hit it with everything we have got. At this time, many trends are far too weak, the only one strong enough worth backing is gold. It is trending strong across the vast majority of fiat currencies (Figure 12; lower pane). **Have a quarter to a fifth of your portfolio in Gold and do so now.**

► Figure 12: Gold priced in sterling is trending strongly confined to a channel but it is also trending strong across the vast majority of fiat currencies



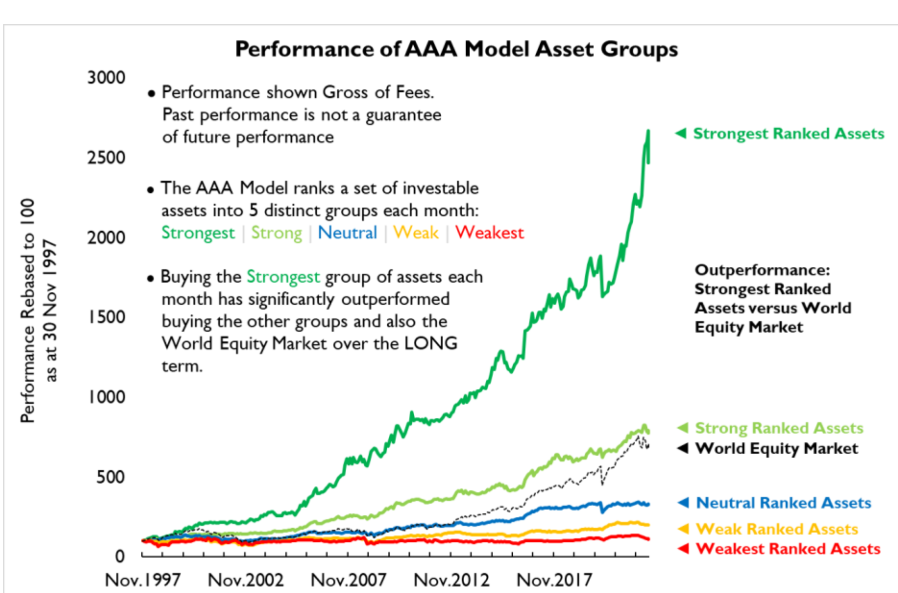
Source: ByteTree, Refinitiv Datastream

► 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

	March 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
	Japan Equities	iShares MSCI Japan UCITS ETF DIST ; iShares Core MSCI Japan IMI UCITS ETF ACC	IJPN	SJPA
	World Quality Equities	No Distributing ETF ; iShares Edge MSCI World Quality Factor UCITS ETF	-	IWFQ
Strong	Global High yield	iShares Global High Yield Corp. Bond UCITS ETF DIST ; iShares Global High Yield Corp. Bond UCITS ETF ACC	IGHY	HYLA
	UK Equities	iShares Core FTSE 100 UCITS ETF DIST ; SPDR FTSE UK All Share UCITS ETF	ISF	FTAL
	World Equities	iShares MSCI World UCITS ETF USD DIST ; iShares Core MSCI World UCITS ETF USD ACC	IWRD	SWDA
	Industrial Metals	No Distributing ETF ; ETFS Industrial Metals ETC	-	AIGI
	UK Cash	No Distributing ETF ; No Accumulating ETF	-	-
Neutral	Global Corporate Bonds	iShares Global Corp Bond UCITS (USD) DIST ; iShares Global Corp Bond UCITS (USD) ACC	CRPS	CRPA
	US Equities	iShares S&P 500 UCITS ETF USD DIST ; ISHRS Core S&P 500 UCITS USD (ACC) ETF	IUSA	CSP1
	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
	Global Govt Bond	iShares Global Govt. Bond (USD) DIST UCITS ETF ; iShares Global Govt Bond UCITS (ACC) ETF	SGLO	IGLA
Weak	UK Corporate Bonds	iShares Core £ Corp Bond GBP UCITS ETF ; No Accumulating ETF	SLXX	-
	China Equities	HSBC MSCI CHINA ETF ; No Accumulating ETF	HMCH	-
	World Low Volatility Equities	No Distributing ETF ; iShares Edge MSCI World Minimum Volatility UCITS ETF	-	MVOL
	Agricultural Commodities	No Distributing ETF ; ETFS Commodity Securities Agriculture Dow Jones UBS CI	-	AGAP
	Inverse UK Equities	No Distributing ETF ; DB X-TRACKERS FTSE 100 SHORT DAILY ETF	-	XUKS
Weakest	EM Equities	Vanguard FTSE Emerging Markets UCITS ETF USD ; No Accumulating ETF	VFEM	-
	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	-
	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

	March 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
	Japan Equities	iShares MSCI Japan UCITS ETF DIST ; iShares Core MSCI Japan IMI UCITS ETF ACC	IJPN	SJPA
	World Quality Equities	No Distributing ETF ; iShares Edge MSCI World Quality Factor UCITS ETF	-	IWFQ
Strong	Global High yield	iShares Global High Yield Corp. Bond UCITS ETF DIST ; iShares Global High Yield Corp. Bond UCITS ETF ACC	IGHY	HYLA
	UK Equities	iShares Core FTSE 100 UCITS ETF DIST ; SPDR FTSE UK All Share UCITS ETF	ISF	FTAL
	World Equities	iShares MSCI World UCITS ETF USD DIST ; iShares Core MSCI World UCITS ETF USD ACC	IWRD	SWDA
	Industrial Metals	No Distributing ETF ; ETFS Industrial Metals ETC	-	AIGI
	UK Cash	No Distributing ETF ; No Accumulating ETF	-	-
Neutral	Global Corporate Bonds	iShares Global Corp Bond UCITS (USD) DIST ; iShares Global Corp Bond UCITS (USD) ACC	CRPS	CRPA
	US Equities	iShares S&P 500 UCITS ETF USD DIST ; ISHRS Core S&P 500 UCITS USD (ACC) ETF	IUSA	CSP1
	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
	Global Govt Bond	iShares Global Govt. Bond (USD) DIST UCITS ETF ; iShares Global Govt Bond UCITS (ACC) ETF	SGLO	IGLA
Weak	UK Corporate Bonds	iShares Core £ Corp Bond GBP UCITS ETF ; No Accumulating ETF	SLXX	-
	China Equities	HSBC MSCI CHINA ETF ; No Accumulating ETF	HMCH	-
	World Low Volatility Equities	No Distributing ETF ; iShares Edge MSCI World Minimum Volatility UCITS ETF	-	MVOL
	Agricultural Commodities	No Distributing ETF ; ETFS Commodity Securities Agriculture Dow Jones UBS CI	-	AGAP
	Inverse UK Equities	No Distributing ETF ; DB X-TRACKERS FTSE 100 SHORT DAILY ETF	-	XUKS
Weakest	EM Equities	Vanguard FTSE Emerging Markets UCITS ETF USD ; No Accumulating ETF	VFEM	-
	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	-
	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.

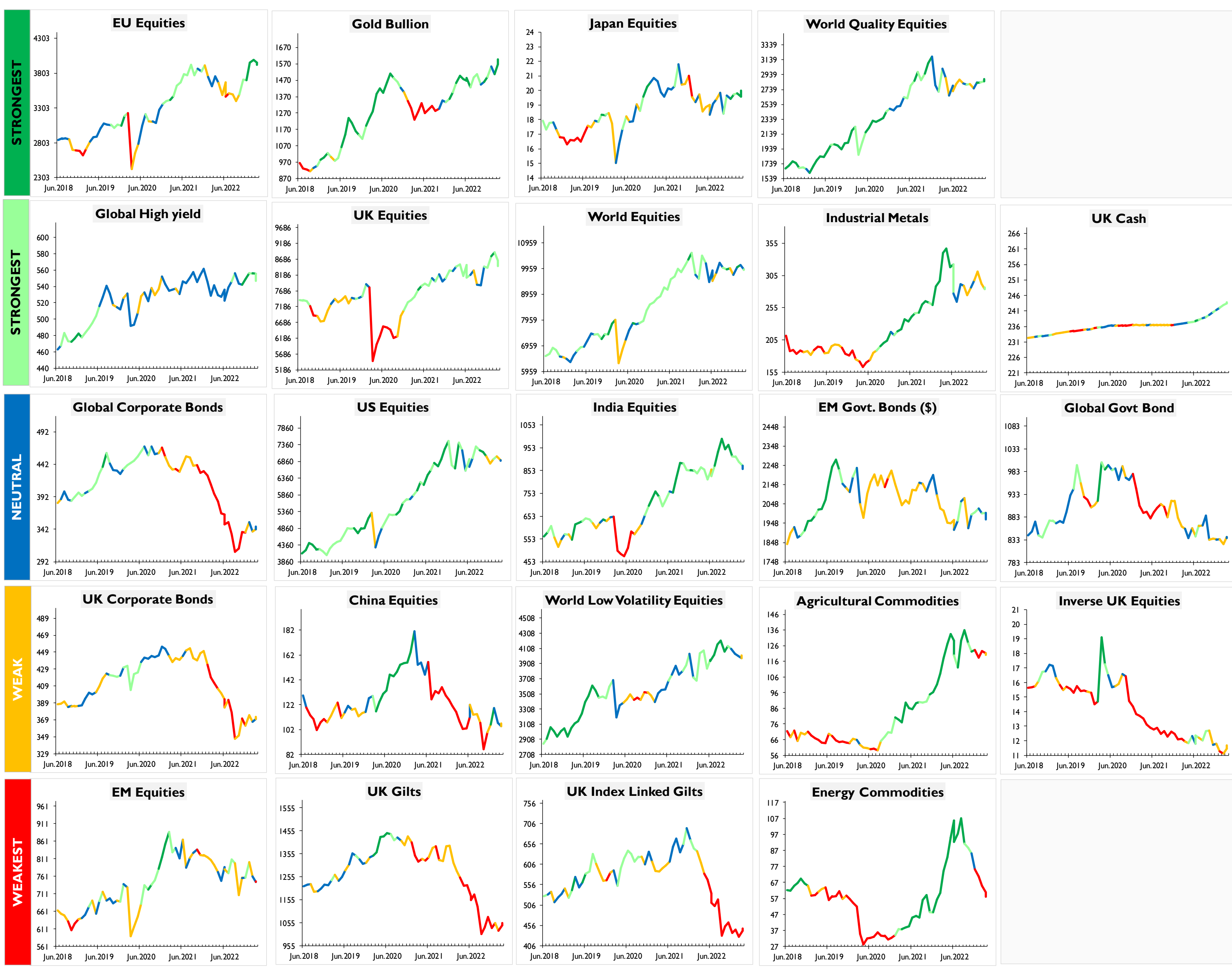
Source: ByteTree, Refinitiv Datastream

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 28.Mar.2023		Return	Risk		Risk-Adjusted Return	
4	Model | Benchmark	Representative Benchmark	CAGR	Std. Dev.	Max DD.	Sharpe Ratio	Calmar Ratio
Year to Date	**AAA Model**		-2.6%	4.3%	-3.3%	-1.41	-0.8
	AAA Model excluding Riskiest Assets		0.5%	5.9%	-2.0%	-0.51	0.2
	Trend Funds	Barclay BTOP 50 Index GBP	-2.8%	7.8%	-3.2%	-0.81	-0.9
	UK Equities	FTSE 100 Total Return GBP	1.2%	11.0%	-4.4%	-0.21	0.3
	World Equities	MSCI World Total Return GBP	2.1%	7.1%	-1.9%	-0.20	1.1
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	1.4%	3.0%	-0.5%	-0.70	3.1
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	1.5%	5.0%	-1.0%	-0.40	1.6
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	1.9%	8.0%	-2.0%	-0.20	1.0
	UK Cash	3M Libor GBP	1.0%	0.4%	0.0%		
12							
12 Months	**AAA Model**		-12.9%	11.0%	-15.1%	-1.49	-0.9
	AAA Model excluding Riskiest Assets		-0.4%	5.8%	-4.0%	-0.67	-0.1
	Trend Funds	Barclay BTOP 50 Index GBP	0.4%	12.8%	-12.3%	-0.24	0.0
	UK Equities	FTSE 100 Total Return GBP	5.6%	13.2%	-6.6%	0.16	0.8
	World Equities	MSCI World Total Return GBP	5.1%	9.7%	-4.7%	0.16	1.1
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	0.3%	4.9%	-3.3%	-0.66	0.1
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	2.4%	6.5%	-3.5%	-0.16	0.7
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	4.5%	9.9%	-4.9%	0.10	0.9
	UK Cash	3M Libor GBP	2.7%	0.4%	0.0%		
36							
3 Years	**AAA Model**		11.3%	14.1%	-15.1%	0.55	0.7
	AAA Model excluding Riskiest Assets		3.0%	9.0%	-14.0%	-0.06	0.2
	Trend Funds	Barclay BTOP 50 Index GBP	10.0%	12.2%	-12.3%	0.53	0.8
	UK Equities	FTSE 100 Total Return GBP	11.3%	11.4%	-6.6%	0.68	1.7
	World Equities	MSCI World Total Return GBP	11.3%	12.0%	-10.8%	0.65	1.0
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	1.7%	4.6%	-8.3%	-0.40	0.2
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	5.8%	6.8%	-7.1%	0.34	0.8
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	10.2%	11.1%	-10.4%	0.60	1.0
	UK Cash	3M Libor GBP	1.0%	0.4%	0.0%		
60							
5 Years	**AAA Model**		7.4%	13.5%	-15.1%	0.29	0.5
	AAA Model excluding Riskiest Assets		4.2%	10.8%	-14.0%	0.07	0.3
	Trend Funds	Barclay BTOP 50 Index GBP	8.4%	11.4%	-12.5%	0.43	0.7
	UK Equities	FTSE 100 Total Return GBP	3.1%	17.0%	-29.7%	-0.02	0.1
	World Equities	MSCI World Total Return GBP	9.2%	15.0%	-21.2%	0.38	0.4
	Conservative Multi-Asset Portfolio	FTSE UK Private Investor Conservative Total Return GBP	2.5%	5.6%	-8.3%	-0.17	0.3
	Balanced Multi-Asset Portfolio	FTSE UK Private Investor Balance Total Return GBP	4.6%	9.5%	-14.6%	0.12	0.3
	Global Growth Multi-Asset Portfolio	FTSE UK Private Investor Global Growth Total Return GBP	7.8%	14.4%	-20.8%	0.30	0.4
	UK Cash	3M Libor GBP	0.9%	0.3%	0.0%		
306							
30 Nov 1997 - 28 Mar 2023	**AAA Model**		13.4%	14.0%	-15.1%	0.71	0.9
	AAA Model excluding Riskiest Assets		9.8%	10.1%	-14.0%	0.63	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	5.3%	14.4%	-44.4%	0.12	0.1
	World Equities	MSCI World Total Return GBP	8.0%	14.7%	-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%	0.26	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

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