

***** WARNING : THERE ARE MULTIPLE RECESSION WARNINGS**

SUPERINDEX OBSERVATIONS:

Despite a strong post-covid recovery in the SuperIndex components we have seen a significant softening of the data since the April 2021 peak, which was foretold by the WLEI (as expected) and the Global LEI (% of countries with rising LEI's) and all our long-leading indicators. The BOS, WLIg, CB-LEI & eLEI components of the SuperIndex are now in recession territory, with BOS having recently re-entered recession and GDP exiting recession. The SuperIndex probability of recession, derived from the leading SuperIndex levels, is over 90%, a level that the chart on top of page-6 shows, *has always led to recession in 1-2 months.*

SUPPLEMENTARY CHART OBSERVATIONS

WLEI : The WLA aggregate of SuperIndex, WLEI and ECRI WLI is now in 49th consecutive week in recession territory.

GOOGLE TRENDS RECESSION INDICATOR : Concerns about an oncoming recession were rising rapidly to levels seen before the last two major recessions. See chart below-right on this page where both the equi-weight and the search volume weighted averages have shot up, although abating recently.

YIELD CURVE COMPOSITE : The Treasury Spread Universe started wholesale inversions with just over 90% of 28 potential inversions having taken place very recently. Together with the labor market, the yield curve is AT ODDS with the general consensus among the short/medium-term leaders that recession is imminent.

FED LIQUIDITY MONITOR : The liquidity boost from the banking crises is now tapering off with almost 50% of it being unwound.

WHAT TO WATCH FOR : Since labor is the "last man standing", keep an eye on the U52 report which is showing underlying weakness in the state-level data. Labor is notorious for collapsing quickly right before or at the start of recession. The new cyclically sensitive US labor index is deep underwater.

RECESSION START-DATE ROUGH ESTIMATES BASED ON HISTORICAL AVERAGE LEADS

SUPERINDEX DIFFUSION =JULY-22 | **ANXIOUS INDEX** =AUG-22 | **WLEI** =OCT-22 | **SUPERINDEX** =OCT-22 | **RFD-15**=FEB-23
SUPERINDEX SYNDROME = NOV-22 | **SUPERINDEX RFE** -6 = DEC-22 | **HEADWINDS** = FEB-23 | **YIELD CURVE** = JUN-23
USLONG = SEPT-23 | **USSHORT** = DEC-22 | **USMLEI** = APR-23 | **USMLEI TOP2** = MAR-23 | **HOUSING** = SEPT-22 - MAR-23



For best reading, select **VIEW-->ZOOM-->FIT VISIBLE** (or hit Control-3 on keyboard)

THERE IS 0 NEW RESEARCH NOTES
 CLICK HERE TO GO DIRECTLY THERE (You must login to see protected content)

THERE WERE 0 POSTINGS MADE TO "MARKET COMMENTARY BLOG"
 CLICK HERE TO GO DIRECTLY TO THEM

We believe we need 4 main requirements for a sustained stock-market and/or economic rebound :

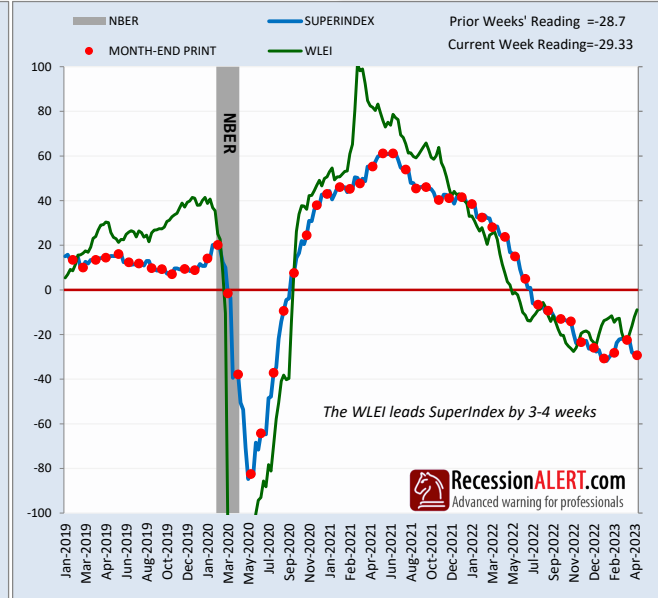
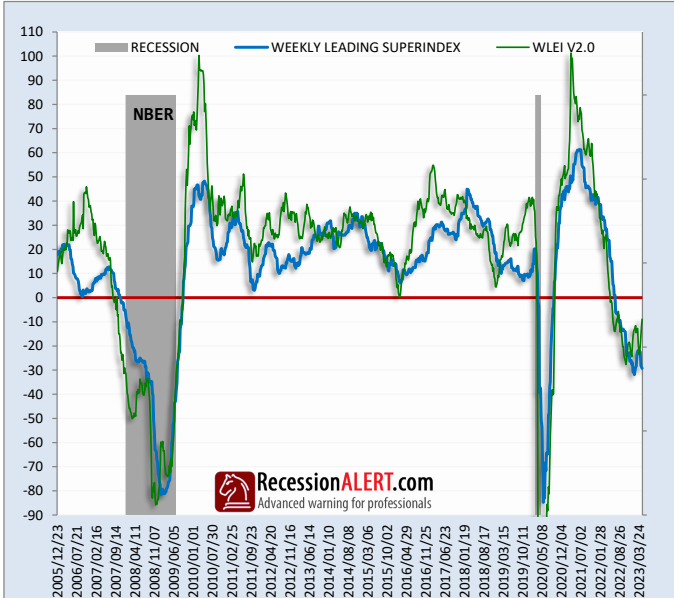
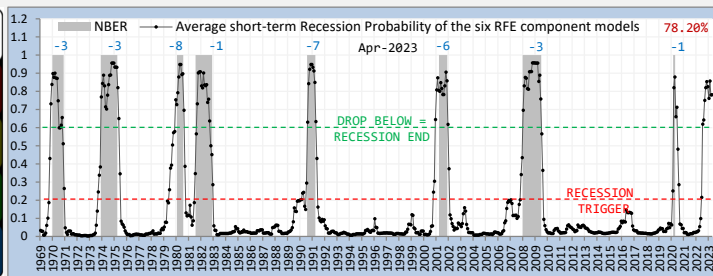
- (1) Fed support & liquidity - **No, liquidity is tapering off again as the banking crises injections are unwound.**
- (2) Valuations back to normal and RAVI forecasting gains for 1 & 2 years - **We are still about 15% overvalued now.**
- (3) Global LEI rising - **No, the % economies with rising LEI's has been < 50 for 7 months. At the time this metric dipped below 50 for 2 months we warned a significant softening of US leading data was probable, which we are now seeing.**
- (4) RFD-15 : **All 4 long-leading models in the Recession Forecast Diffusion (RFD-15) available from the DASHBOARD are now in recession, together with the WLEI, USMLEI, SuperIndex Leading, SuperIndex Diffusion, Syndrome & Anxious Index, Headwinds Index & SuperIndex Coincident, takes RFD-15 to 12, historically guarantees a recession within 3-4 months. Its just the NBER "Big-4", Labor Index and the GDP models not showing recession.**



NOTICE : THE WLEI AND SUPERINDEX HISTORY VINTAGES FILE ARE AVAILABLE IN THE PRO > [EXCEL DATA] FILES REPOSITORY

WE ARE ON DEFCON-1 FOR THE ENSEMBLE

"Maximum readiness. Immediate response."



Probability of U.S recession	27-Jan	03-Feb	17-Feb	24-Feb	03-Mar	10-Mar	17-Mar	24-Mar	31-Mar	07-Apr	14-Apr	28-Apr	Prob chart	INDEX DATA	17-Mar	24-Mar	31-Mar	07-Apr	14-Apr	28-Apr
Now	55.55%	58.82%	60.91%	52.69%	35.78%	29.66%	26.83%	25.64%	29.85%	26.68%	31.43%	44.37%		Leading SuperIndex	-21.91	-21.79	-22.48	-22.49	-28.08	-29.33
In 3-4 months time	99.43%	99.54%	99.14%	99.04%	97.53%	96.65%	96.44%	96.36%	96.83%	96.83%	99.00%	99.23%		Coincident SuperIndex	0.29	0.52	-0.26	0.32	-0.53	-2.58
In 6 months time (Headwinds)*	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		Headwinds Index	11	11	11	11	11	11
GDP Growth Forecast	0.93%	0.88%	0.86%	1.01%	1.28%	1.41%	1.47%	1.49%	1.41%	1.47%	1.33%	0.76%		Super Diffusion Index	4	4	4	4	3	4

The **SuperIndexes** are a set of 2 composite "psuedo real-time" U.S economic-growth indexes that provide on average 1 and 4 month advance warning on the start of National Bureau of Economic Research (NBER) dated recessions . As such they provide a "co-incident" and "short-leading" view on the strength and direction of U.S economic growth. The SuperIndexes are compiled from weighted averages of 9 underlying co-incident and leading composite indexes available in the public domain.

This report tracks the 9 underlying components as well as the 2 SuperIndexes, and their respective probabilities of recession. It also makes calls to the start /end of NBER recession dates, up to 8-12 months before NBER themselves proclaim these dates. The report serves as a comprehensive "real-time" view on the U.S Economy from varying aspects as it is updated 28 times per month as the various underlying data become available, and published every Monday for subscribers. The age of the "Great Moderation" is over and continued sub-par economic growth in the likely future means recessions are going to revert back to occurring once every 3-4 years. Thus economic and recession forecasting and dating is going to be an important tool for the market-timer and active investor.

We track the U.S economy for recession probability since recession in the US has always resulted in global recession. We track 9 popular indicators and surveys for the US economy and provide recession probability models for each. We then combine all the 9 indicators and surveys into our own US Composite Economic SuperIndexes that charts the status and health of the US economy from a 1 and 4 month lead respectively, and produce 9-factor Logit recession probability models for the SuperIndexes, which provide far superior recession dating than any of the individual components on their own. Components of the SuperIndexes and their respective 9-factor recession probability models are listed below:

1. **ADS** = Philadelphia Fed Aruoba-Diebold-Scotti Business Conditions Index (weekly)
2. **eLEI** = e-Forecasting Leading Economic Index
3. **GDP** = Monthly US GDP forecast
4. **EMP** = Leading Employment Index (monthly)
5. **ISM** = ISM Manufacturing Survey
6. **BOS** = Philadelphia Fed Business Outlook Survey
7. **CFNAI** = Chicago Fed National Activity Index
8. **WLEI** = Weekly Leading Economic Index
9. **USMLI** = U.S Monthly Leading Economic Index



MODEL RISK EXCLUSION: ALTHOUGH MANY OF OUR MODELS RELY HEAVILY ON BACK-TESTING, OPTIMISATION AND PROBABILITY METHODS, PLEASE NOTE THAT PAST PERFORMANCE IS NO GUARANTEE FOR FUTURE RETURNS. NO SYSTEM DEvised BY MAN CAN PERFECTLY PREDICT THE FUTURE ALL THE TIME, LET ALONE THE FUTURE OF THE MARKETS AND ECONOMIES. WHAT WE HAVE ARE SETS OF MATHEMATICAL MODELS THAT USE HISTORICAL DATA AND VARYING HYPOTHESES TO PINPOINT PLACES IN TIME WHEN THE STATISTICAL LIKELYHOOD OF CALLING THE START AND END TO RECESSIONS IS THE GREATEST. IN THE MIDST OF ALL THE BEST MATHEMATICAL MODELS, YOU CAN HAVE GEO-POLITICAL EVENTS, WARS, TERRORIST ATTACKS, NATURAL DISASTERS AND EVEN NUCLEAR ACCIDENTS THAT TIP EVERYTHING UPSIDE DOWN. THIS IS ALWAYS A RISK FACTOR YOU NEED TO FACTOR IN ON ANY RECESSION CALL NO MATTER HOW CONFIDENT YOU ARE IN A SIGNAL. THE SUPERINDEXES ARE CREATED THROUGH MATHEMATICAL AND STATISTICAL OPTIMISATION TECHNIQUES THAT BEST FIT THE HISTORICAL NBER DATA. THERE IS NO GUARANTEE THAT OUT-OF-SAMPLE PERFORMANCE WILL MATCH THAT OF PRIOR IN-SAMPLE PERFORMANCE.

EXTERNAL RISK EXCLUSION : RECESSIONARY RISK FROM POSSIBLE EXTERNAL SHOCKS HAVE NOT BEEN BUILT INTO THE PROBABILITY MODELS, NAMELY A STEEP AND PROTRACTED EURO-AREA RECESSION, AN EU MEMBER SOVEREIGN DEFAULT OR CREDIT EVENT, HARD LANDING IN CHINA, FAILURE BY CONGRESS TO REACH AGREEMENT ON DEFICIT REDUCTIONS, FURTHER POSSIBLE U.S CREDIT RATING DOWNGRADES, TENSIONS/CONFLICTS/WARS, OIL-PRICE SHOCKS, OR GLOBAL PANDEMICS. THE PROBABILITY MODELS JUST LOOK AT WHAT WE ARE SEEING IN THE US ECONOMY ITSELF AND DO NOT TAKE INTO ACCOUNT THESE EXTERNAL FACTORS (SINCE IN OUR VIEW, THIS WOULD BE SPECULATION AND WE JUST WANT TO DEAL WITH HARD REAL NUMBERS.) SHOULD THESE EXTERNAL SHOCKS COME TO LIGHT OR THEIR RISKS ELEVATE, THEY WILL CERTAINLY SHOW UP IN THE US ECONOMY AND/OR THE VARIOUS INDICATORS SOMEWHERE AND THEN BE DETECTED BY OUR MODELS, BUT UNTIL THEN WE DO NOT SPECULATE ON THE PROBABILITY OF THESE EXTERNAL RISKS.

This dashboard below shows each of the 9 sub-components and their respective individual probabilities of recession. These are derived from best-fit optimal probability models built for each component series going back to 1967. Each model shows the probability of recession as if you were only looking at that particular component (a single factor probability model.)

We also show the combined "OVERALL" probability of recession when all the 9 components are looked at together when working out the probability of recession. This is derived from a 9-factor multivariate Logit probability model. It is important to distinguish that a 9-factor probability model is not the same as combining the results of the individual 9 single-factor probability models - it is a grounds-up model that uses as inputs the component series themselves and does not consider the individual probabilities of recession. Yellow zones represent danger and red zones represent "near certainties" of recession.

The SuperIndexes are made up of components that have leading and co-incident characteristics. As such at certain times the "leading indexes" components may be showing higher probabilities of recession than the "co-incident" components. The OVERALL probability is taken from the short-leading SuperIndex that gives on average 4 months advance warning of recession (3 months to real-time observer.)



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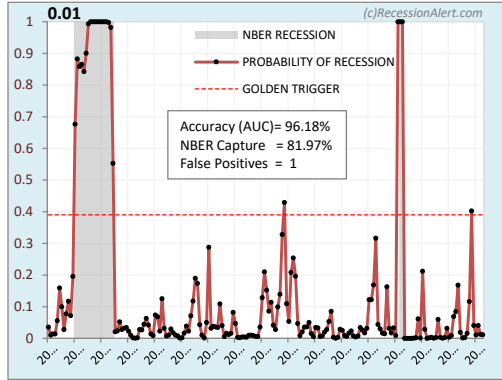
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PROBABILITY CHARTS : The charts below track each of the indexes/surveys' individual probabilities of recession according to single-factor statistical Logit models. The horizontal lines in the individual recession probability charts below are the "golden ratios" for which the particular model provides the best performance on calls to the start and end of recessions. It is the value for which the model captures the most recession months (NBER capture rate), for which it makes the least amount of false positives(false alarms) and the least amount of false negatives(failed to flag recession for a month when there was one) and maximises the Area-Under the Curve (AUC) values for the respective probability models (this is the % of the 550 months since 1968 that the model correctly categorised as a recessionary or non-recessionary month.)

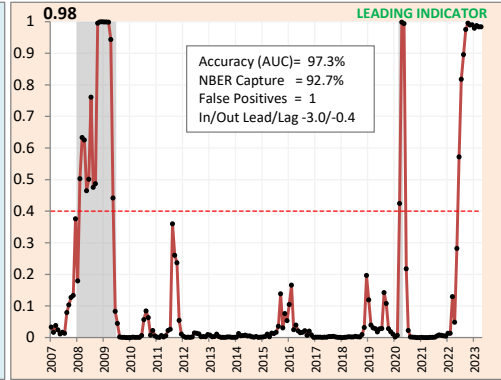
The 9-factor models capture 97-100% of all recession months, had zero false positives and have AUC figures above 97%. A hard model is shown for each of the 9 components that is a binary on/off switch and the soft model shows more fluctuations and in-between readings.

The DIFFUSION INDEX shows how many of the 9 models were above their respective golden ratios at the time(i.e. making recession calls). When the diffusion is 4 or more you are virtually guaranteed a recession is in play.

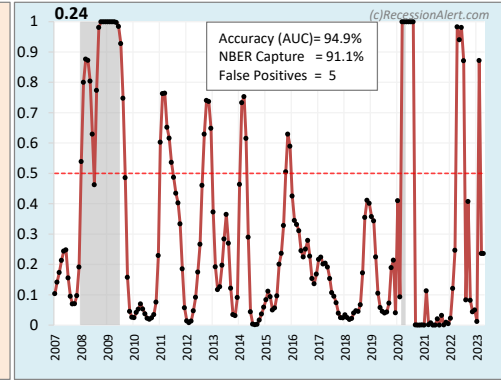
ADS RECEPTION PROBABILITY MODEL (1-WEEK LAG)



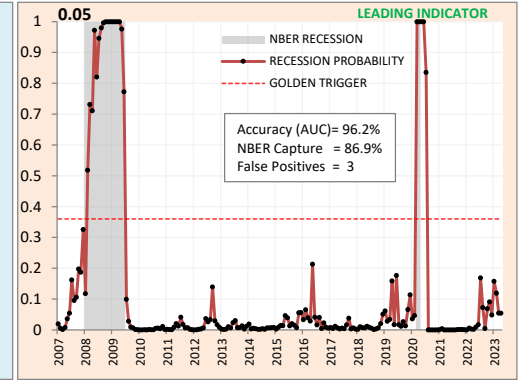
eLEI RECEPTION PROBABILITY MODEL (1 WEEK LAG)



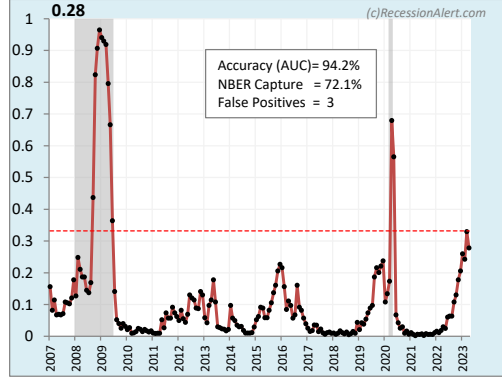
GDP RECEPTION PROBABILITY (2 WEEK LAG)



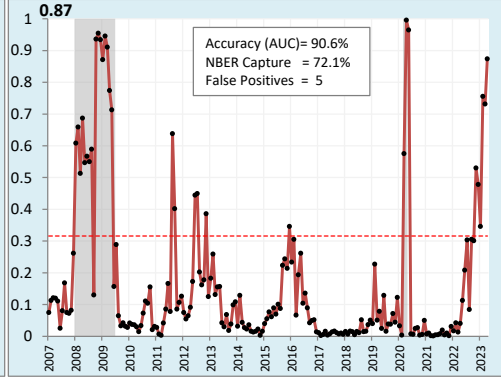
EMPLOYMENT RECEPTION PROBABILITY MODEL (1 MONTH LAG)



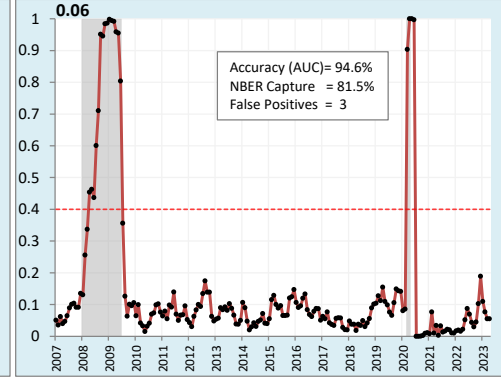
MANUFACTURING PMI RECEPTION PROBABILITY MODEL (1 MONTH LAG)



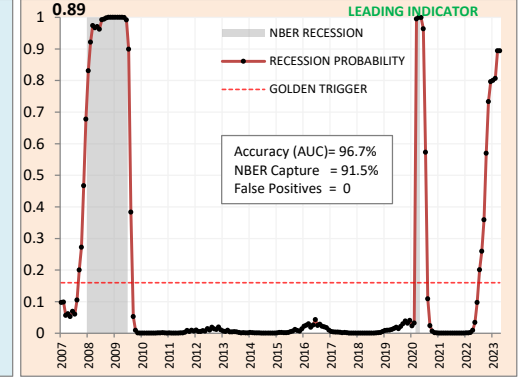
BOS RECEPTION PROBABILITY MODEL (1 MONTH LAG)



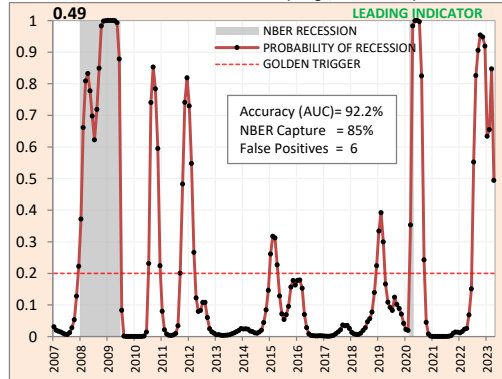
CFNAI RECEPTION PROBABILITY MODEL (2 MONTH LAG)



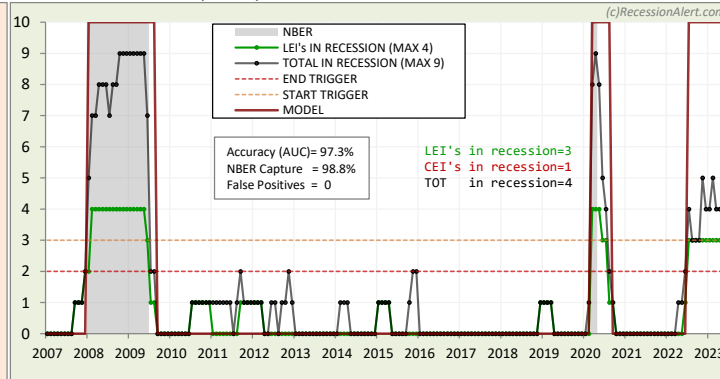
CONF. BOARD MONTHLY LEADING ECONOMIC INDEX (1 MO LAG)



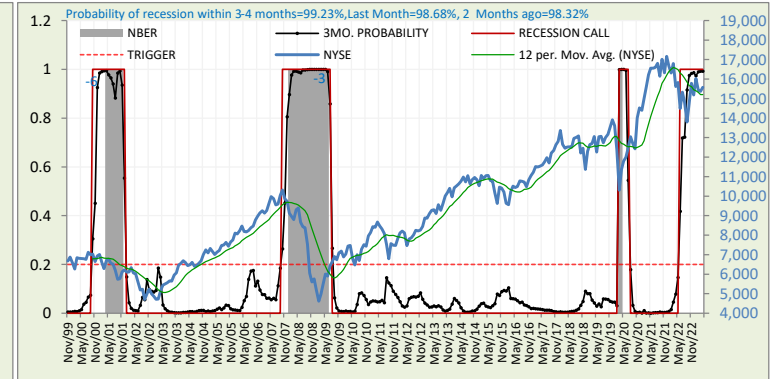
ECRI WEEKLY LEADING INDEX PROB MODEL (WLI+, 2 WEEK LAG)

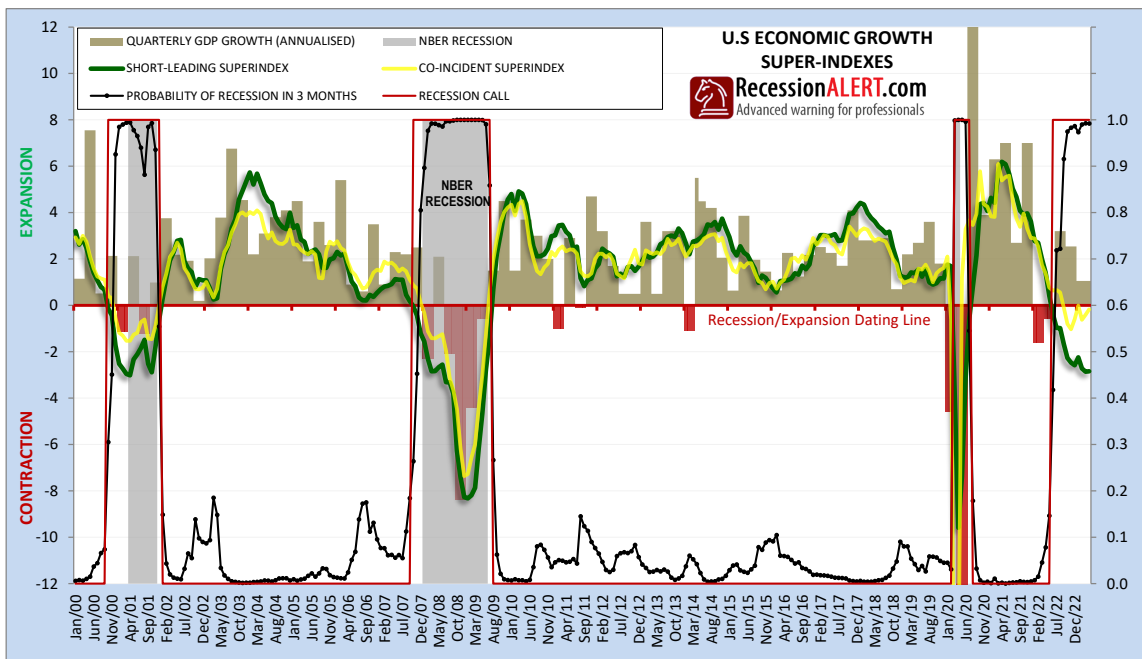


RECESSION DIFFUSION INDEX (WEEKLY)



SHORT-LEADING SUPERINDEX RECEPTION PROBABILITY MODEL





ABOUT THE U.S ECONOMIC GROWTH SUPERINDEXES

Our U.S Composite Economic Growth SuperIndexes are constructed from 9 other indicators and surveys according to various weightings that optimise the performance of the resulting multi-variate Logit recession probability dating models for 1 and 4 month lead times on NBER respectively. As all data is 1-month in arrears, this gives a lead of 0 (co-incident) and 3 months respectively to the outside real-time observer of these charts. Recession is flagged for the models when the respective SuperIndex falls below zero.

They represent *rate of change* of U.S economic growth, thus when it is above zero, the economy is expanding and when it is below zero it is contracting and in NBER recession. The 2 SuperIndexes we track are normalised and scaled in this chart to allow comparison to annual year-on-year percentage change of U.S monthly GDP estimates to show you the lead they provide on GDP direction.

The SuperIndexes are constructed from varying weightings of the underlying 9 components, and no individual factor is more than 40% of the weighting. The weightings we use to construct the various SuperIndexes are obviously proprietary to us.

The probability of recession numbers shown in the heading of this chart represents that of the 4 month leading index (i.e. probability of recession within 3 months for the real-time observer.)

When we have recession signals we generally want to be out the stock markets as there is no way of forecasting how long a recession will last and stock markets perform poorly in the 1st 50-70% of recessions. Note stock markets bottom before the end of recessions, and you can use the SuperIndex turning points in recession to time your re-entry into the stock markets.

The only useful SuperIndex from a stock market timing standpoint is the "short-leading" 3-month leading which presages, on average, a 28% drop in the US stock markets in 6 out of the last 7 occurrences. For the rest, the recession signals are useful for dating NBER recession start and end dates up to 8 months before NBER make their proclamations. The 2 indexes are also used to confirm each other when analysing probabilities of recession.

Please read our "Recession : Just how much warning do you need anyway?" paper on the best way to use these indicators from a market timing perspective.

Apr/May	INDEX	MODEL COMPONENT INDICATOR/SURVEY DESCRIPTION	CHANGE
Thu 30	ADS	Real GDP (fourth quarter 2022, third release)	WORSE
Thu 30	ADS	Initial Jobless Claims (for week ending 03/25/2023)	WORSE
Fri 31	ADS	Real Manufacturing and Trade Sales (for January 2023)	WORSE
Fri 31	ADS	Real Personal Income Less Transfer Payments (for Feb 2023)	WORSE
Fri 31	WLEI	Weekly Leading Index (for 24 Mar 2023)	BETTER
Mon 03	ISM-PMI	ISM Manufacturing Report on Business (March 2023)	WORSE
Mon 03	mGDP	IHS-Markit Monthly GDP (February 2023)	WORSE
Thu 06	ADS	Initial Jobless Claims (for week ending 4/1/2023)	BETTER
Fri 07	ADS	Payroll Employment (for March 2023)	WORSE
Fri 07	WLEI	Weekly Leading Index (for 31 Mar 2023)	BETTER
Mon 10	ETI	Leading Employment Index (Mar 2023)	WORSE
Thu 13	ADS	Initial Jobless Claims (for week ending 4/8/2023)	WORSE
Fri 14	ADS	Industrial Production (for March 2023)	BETTER
Fri 14	WLEI	Weekly Leading Index (for 07 Apr 2023)	BETTER
Thu 20	BOS	Manufacturing Business Outlook Survey (April 2023)	WORSE
Thu 20	CB-LEI	Conf. Board Monthly Leading Economic Index (Mar 2023)	WORSE
Thu 20	ADS	Initial Jobless Claims (for week ending 4/15/2023)	WORSE
Fri 21	WLEI	Weekly Leading Index (for 14 Apr 2023)	BETTER
Mon 24	CFNAI	Chicago Fed National Activity Index (Mar 2023)	BETTER
Thu 27	ADS	Real GDP (first quarter 2023, first release)	WORSE
Thu 27	ADS	Initial Jobless Claims (for week ending 4/22/2023)	BETTER
Fri 28	ADS	Real Manufacturing and Trade Sales (for February 2023)	WORSE
Fri 28	ADS	Real Personal Income Less Transfer Payments (for March 2023)	BETTER
Fri 28	WLEI	Weekly Leading Index (for 21 Apr 2023)	BETTER
Mon 01	eLEI	e-Forecasting Leading US Economic Index (Mar 2023)	WORSE
Mon 01	ISM-PMI	ISM Manufacturing Report on Business (March 2023)	BETTER
Mon 01	mGDP	IHS-Markit Monthly GDP (March 2023)	BETTER
Thu 04	ADS	Initial Jobless Claims (for week ending 4/29/2023)	WORSE
Fri 05	ADS	Payroll Employment (for April 2023)	BETTER
Fri 05	WLEI	Weekly Leading Index (for 28 Apr 2023)	BETTER

SCHEDULE OF COMPONENT UPDATES
A very unique aspect of the US Economic Growth SuperIndexes is that they are "real-time" and are updated up to 21 to 24 times per month according to a fixed schedule as shown on the left when the underlying data becomes available.
Data age ranges from a mere 2 weeks old (weekly claims component of ADS, WLEI) or 1-month old for most of the rest .
Since the SuperIndex consists of 2 x weekly, 7 x monthly and 1 x quarterly component, it is considered a "pseudo-weekly" index, unlike the WLEI which is a "pure" weekly index.
ADS uses quarterly GDP which is the "most stale" information used, but this is countered with the use of the monthly GDP estimates as a separate component.
The schedule to the left changes on a monthly basis depending on weekends, holidays etc.
The table gets updated every week. Lightly shaded components have been published and included into all the relevant models.
The important leading indicators are highlighted in orange.
The CHANGE column highlights the change the respective factor/indicator has imparted on the SuperIndexes compared to the prior reading.
WORSE means it has pulled the SuperIndexes down, raising the probability of recession.
BETTER means the component had a positive (or less worse) effect on the SuperIndexes, lowering the probabilities of recession.
UNCH means the sub-component made virtually no change.
NOTE : ECR1 no longer make a public weekly leading index available and from Jan 2023 we have replaced (<i>spliced</i>) it with our own WLEI (scaled to fit the old WLI+ ranges). At a later date (once NBER has declared recession dates) we will replace the splice with a complete WLEI history and re-benchmark the SuperIndex history, diffusions, probabilities, RFE & Syndromes.



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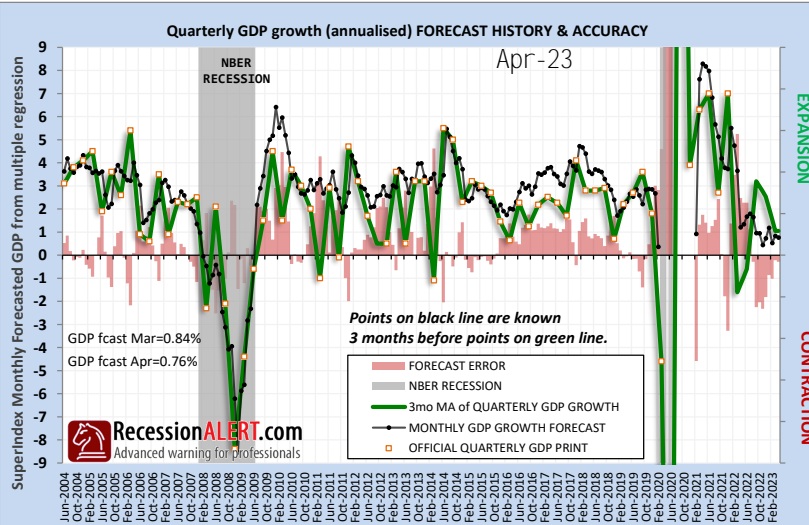
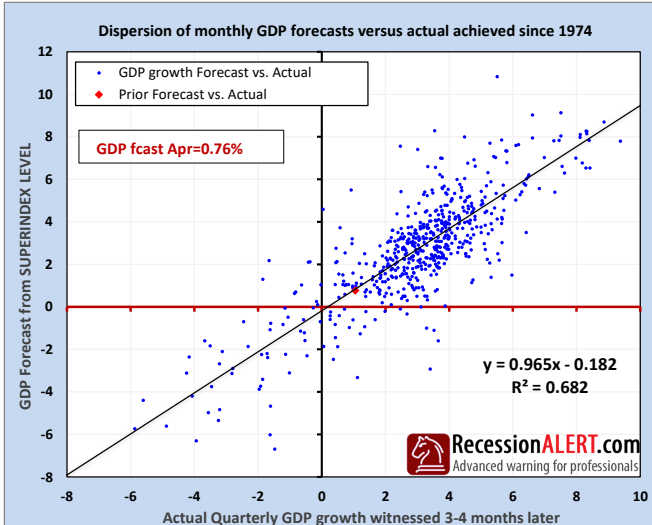
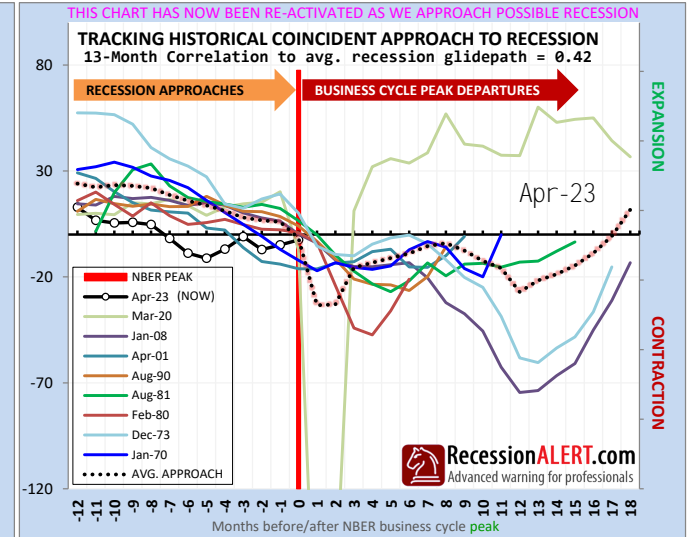
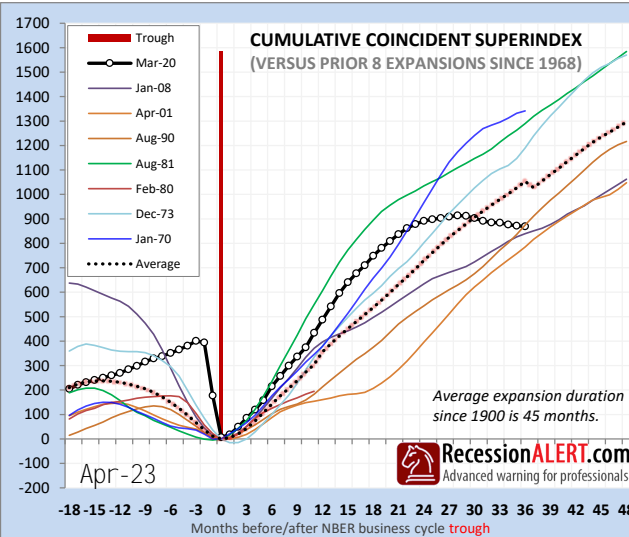
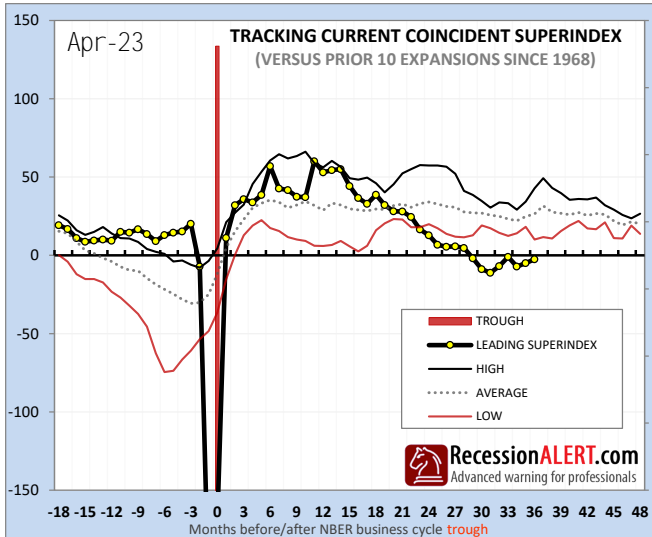
COMPARING THIS EXPANSION TO THE HISTORICAL RECORD (FIRST 2 CHARTS BELOW) AND ASSESSING THE RISK WE ARE APPROACHING A BUSINESS CYCLE PEAK (THIRD CHART BELOW TO THE RIGHT)

The chart to the extreme left depicts the current growth progress of the expansion in relation to x-months before or after the NBER cycle business trough. This allows us to compare the current expansion to the 7 prior expansions dating back to 1968. Plots to the left of the vertical red line are months before the business cycle trough (representing contraction) and those to the right represent expansion following the trough. We depict the all-time high, the all-time low and the average of prior expansions for each month before/after the business cycle trough so we can compare the current expansion in relation to past ones. Whilst the current expansion got off to an above-average start for the first 11 months of the recovery (it was above the green line for the 1st 11 months of the expansion), we can see that currently it is near the all-time low (bottom grey dotted line) of the last 7 recessions, meaning this expansion is currently near the lowest ever since 1968 after 29 months into the recovery.

The 1-month leading SuperIndex represents economic growth, and so the middle chart below depicts the SUMMATION Index which is the prior months' summation plus the leading index reading for the month. The summation is normalised so that the business cycle trough represents a reading of 100. This chart gives an idea of how cumulative economic growth has progressed in the expansion versus prior expansions. Dates shown in the legend on middle chart refer to start dates of prior NBER classified recessions.

The chart to the extreme right compares the last 12 months progress of the 1-month (coincident) SuperIndex to the historical 12-month approach paths to the 7 prior NBER business cycle peaks. This is an attempt to see if we are following the typical approach to a peak just before we tip-over into recession. The most important comparison is to the average of the last 7 approaches (dotted line). If the Superindex is way above the average and even better, tracking in the opposite direction, then there is a very low risk we are tipping into recession. The 6-month correlations of the last 7 approaches and the historical average approach have all been very high namely 0.99, 0.78, 0.99, 0.93, 0.95, 0.76 and 0.93 (for an average of 0.90). We therefore also measure this correlation for the last 6 months of the co-incident SuperIndex to obtain a quantifiable measurement of the risk we are tipping into recession. Anything below 0.5 is considered low risk and anything between 0.5 and 0.8 is considered medium-risk and above 0.8 is considered high risk.

IMPORTANT OBSERVATION : The first chart shows we are still in a *sub-par recovery* meaning we are at elevated risk from external shocks not built into the probability models, namely a steep & protracted Euro-area recession, an EU member sovereign default or credit event, hard landing in China, failure by congress to reach agreement on deficit reductions, further U.S credit rating downgrades, Iran tensions/conflicts & oil-price shocks. The models just look at what we are seeing in the US economy itself and do not take into account these external factors (since in our view, this would be speculation and we just want to deal with hard real numbers.) Should these external shocks come to light, they will certainly show up in the US economy somewhere and then be detected by our models, but until then we do not speculate on the probability of these external risks.



GDP FORECASTING WITH SUPERINDEX COMPONENTS
 A multifactor non-linear regression of all 9 SuperIndex components is highly correlated with actual quarter-on-quarter GDP growth since 1974.

With GDP growth only being released every quarter, we can use these high SuperIndex regression correlations to forecast monthly GDP "reasonably accurately" from the "real-time" weekly SuperIndex readings.

The "implied growth" figure in the first regression chart (indicated by the bright red dot) is forecasting quarterly annualised GDP growth for the current month, even though figures for GDP may not be released for another 1-3 months. The upward slanting horizontal line in the dispersion chart is a simple linear regression of forecast versus actual GDP prints.

The chart on the right shows the forecasting accuracy and forecasting track record for the last 10 years. Forecasting accuracy is around 72% (there is a 0.72 correlation between the forecasted GDP series and the actual series.) This may appear "modest" but actually far exceeds the 50% accuracy achieved by economist consensus forecasts!

The dates the real quarterly GDP growths are announced and become known are highlighted by bright squares on the thick green line. The green line represents the 3-month moving average of official quarterly GDP prints. The forecasts for subsequent months are shown by the dotted lines to the right of the bright squares representing official GDP prints. It is important to remember that the data in the black line is known 3 months before the data in the green line.

LONG-TERM HISTORICAL SIGNAL CHARTS : The charts below show 44 years of historical plots of the 2 SuperIndexes and their diffusion index together with NBER recession dating. The thin black lines are the "soft" 9-factor recession probability models of the respective SuperIndex and the solid dark-red lines are the "hard" or "binary" rule-based recession calls made by the respective models. Grey shaded areas are dates tagged by NBER as recessions (they proclaim these dates 12-18 months after the fact!) starting the month following the business cycle peak and ending in the month of the business cycle trough.

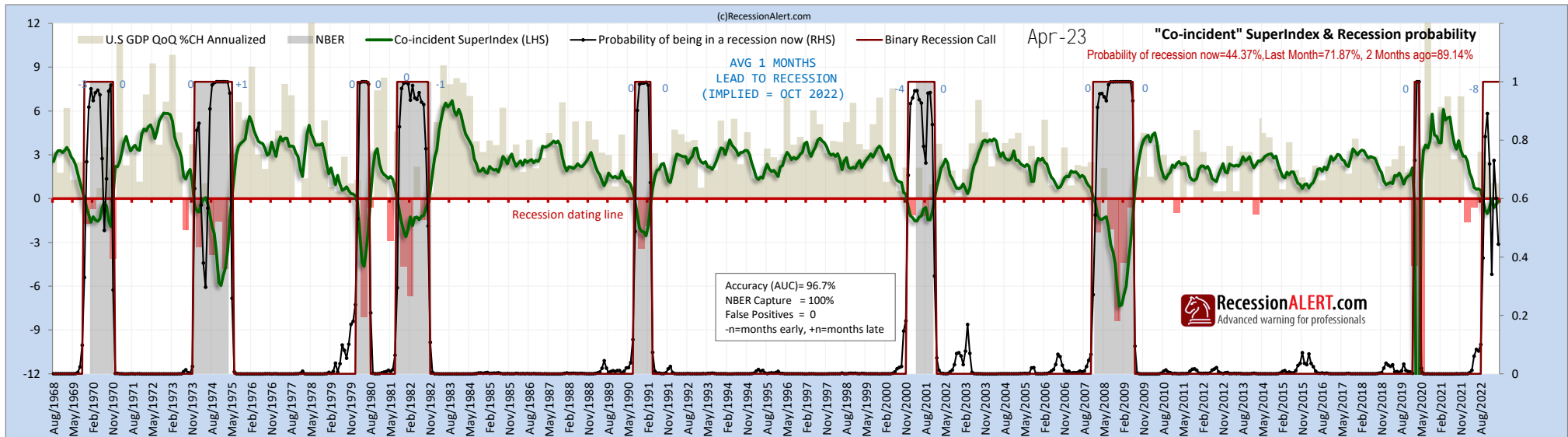
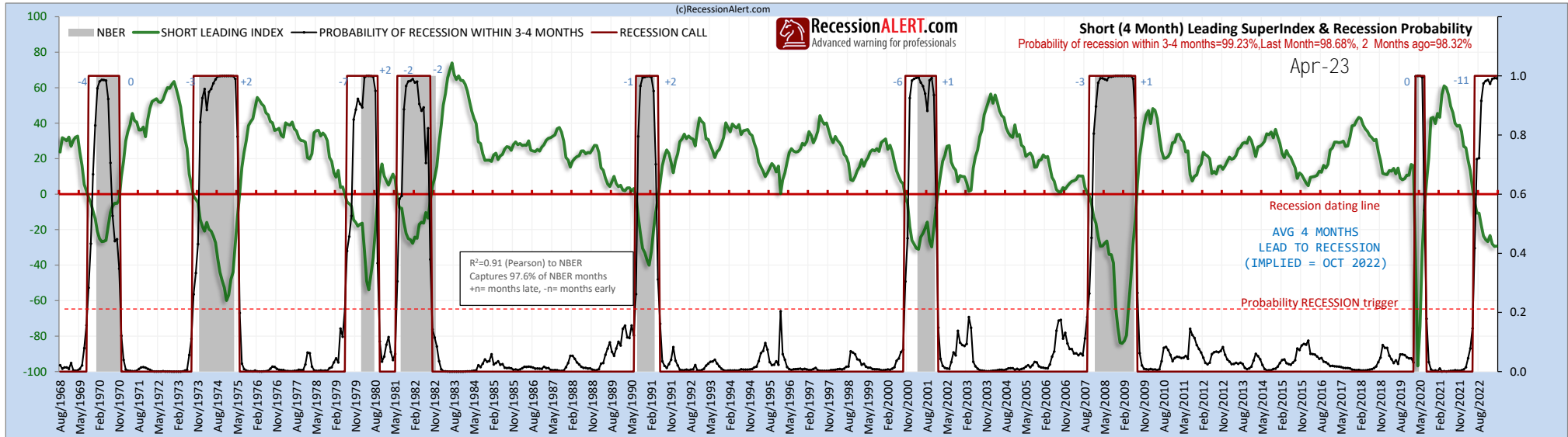
In most cases, the "soft" recession probability always starts rising to reflect economic stress before the onset of a recession. When this happens it is a warning to you that markets may begin selling-off for "fear of a recession". **When any SuperIndex falls below the recession dating line, we initiate a recession call and likewise when it rises above it, we flag the end of recession.**

You will see that the 1-month SuperIndex has the highest correlation to NBER proclaimed dates, since it is the most accurate timer of NBER start and end dates, being on average 0.85 months early in calling NBER start dates (0.15 months late for the real-time observer) and 0.28 months late in calling end of NBER recession (1.28 months late for the real-time observer.)

Although the 1-month "co-incident" SuperIndex it is the most accurate time-keeper of NBER recession dates, it does not give the outside observer much warning to the onset of recession and is therefore more of a confirmation signal of NBER recession having actually started than a market timing tool. As it is the most "co-incident to NBER" of all the SuperIndexes we also use it to track the expansion as shown in the charts right before this section.

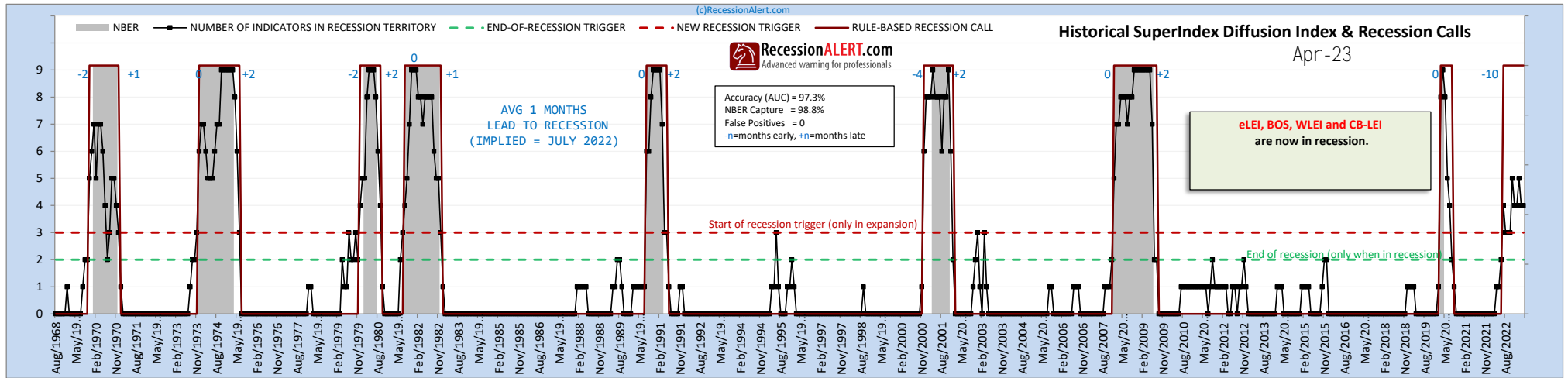
Stock market participants will more than likely prefer to use the "3-month leading" SuperIndex to time their exits from the stock markets, since this index gives on average 4 months warning (3 months for the real-time observer since the indexes are a month post-dated) for the onset of recession. This is actually a very nice warning period for stock market exits, as these signals have presaged on average a 28% drop in the stock markets (from signal date to the absolute stock market trough) in 6 out of 7 cases in the past.

Since the short-leading SuperIndex looks for probability of recession 4 months in advance, it typically shows much higher recession probabilities at any point in time than the co-incident SuperIndexes.



SUPERINDEX DIFFUSION INDEX (DI) : measures each month how many of the 9 SuperIndex components are in their respective recession territories. Each SuperIndex component needs to exceed its "golden threshold" to enter its respective recession territory. The "golden threshold" is that measure for which the respective component provides the best recession forecasting and dating capability. When 4 or more SuperIndex components are flagging recession, then the Diffusion Index makes a recession call. It then calls the end of the recession when the diffusion index falls below 2.

These rule-based recession dating calls provide on average 1 months lead going into recession and 1.7 months lag coming out of recession. It is thus more useful for dating starts than ends of recession. The Diffusion Index is used as a risk reduction from "model risk" and thus provides an alternative methodology to dating recessions than the probability model approach we use for the SuperIndexes. It is something additional we wish to consult when assessing calls being made by the probability models. Using multiple models (SuperIndex, Diffusion, Headwinds) diversifies us from the risk that any one model "loses its mojo" or is beset by major revisions that "throw us off course".



SUPERINDEX RECESSION SYNDROME DIFFUSION INDEX (RSDI) : The RSDI is the third diversified approach to using the 9 SuperIndex components to forecast recession. The first is the SuperIndex Leading and Co-incident indices that are weighted composites of the 9 index components (a methodology known as "linear pooling"). The second is the straight Diffusion Index (DI) in the previous chart that shows how many SuperIndex components have their individual recession probabilities above their "golden ratios" and are thus flagging recession.

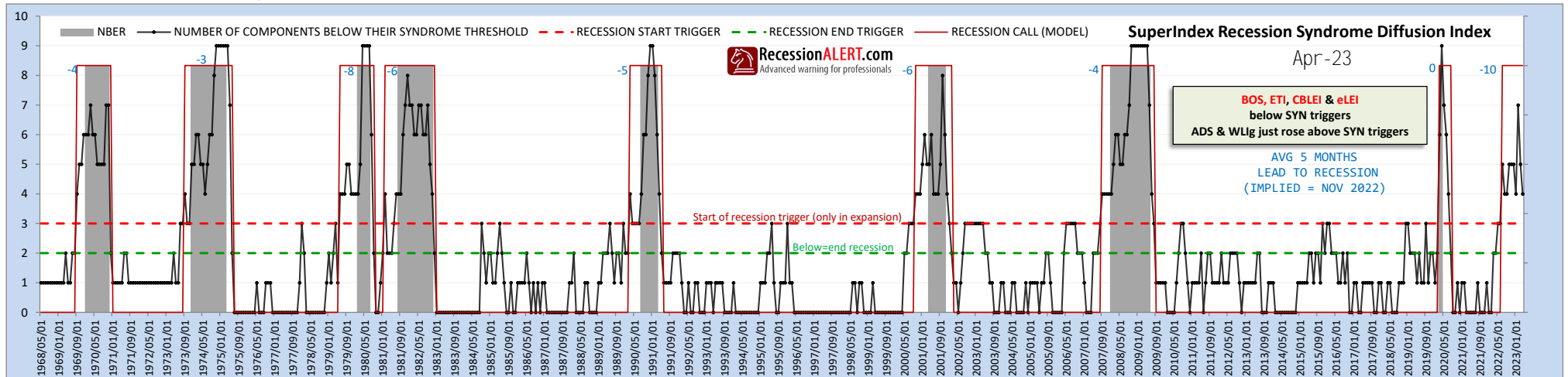
Similarly, the Employment Index must fall below -11 to trigger a traditional recession call (a value associated with its probability of recession exceeding its "golden ratio") and yet if it is below +5 it already starts contributing to the overall "recession syndrome". For Manufacturing to contribute to the syndrome it must virtually collapse to a reading of -28 before contributing to the SDI and yet it only has to fall below +4 before its individual recession model makes a recession call. The reason it has to fall so far before contributing to the recession syndrome probably has something to do with the fact that it has a high degree of false positives.

The "Syndrome" methodology takes an entirely different tack to the prior two approaches and finds optimal values (syndrome thresholds) for each of the 9 component indexes, below which the component must fall to contribute toward a "recession syndrome". The component falling below this threshold tells us nothing on its own, but when combined with other components falling below their syndrome thresholds it becomes an extremely powerful recession forecasting tool. Each SuperIndex component falling below its recession syndrome threshold contributes 1 point to the RSDI (i.e. a diffusion index).

The syndrome threshold is a value that only means something when combined with the syndrome thresholds of other components. When 4 or more SuperIndex components fall below their syndrome thresholds they create a "Recession Syndrome" that allows us to trigger a recession call with an average 5 months lead warning. Similarly, when we are in a recession call and the number of components below their syndrome thresholds falls to 1 or less, we call the end of recession.

The syndrome threshold is not to be confused with the indicators' actual recession threshold - they are two completely different things. The syndrome threshold can be much higher or lower than the actual recession threshold for a SuperIndex component. As an example, ADS must fall below -1 before we trigger a traditional ADS recession call but it must fall below -7 before it contributes to the recession syndrome.

A remarkable feature of this methodology is that it not only provides for an average 5 months lead to recession, but the leads are VERY CONSISTENT with a low standard deviation. Furthermore, there are zero false positives.

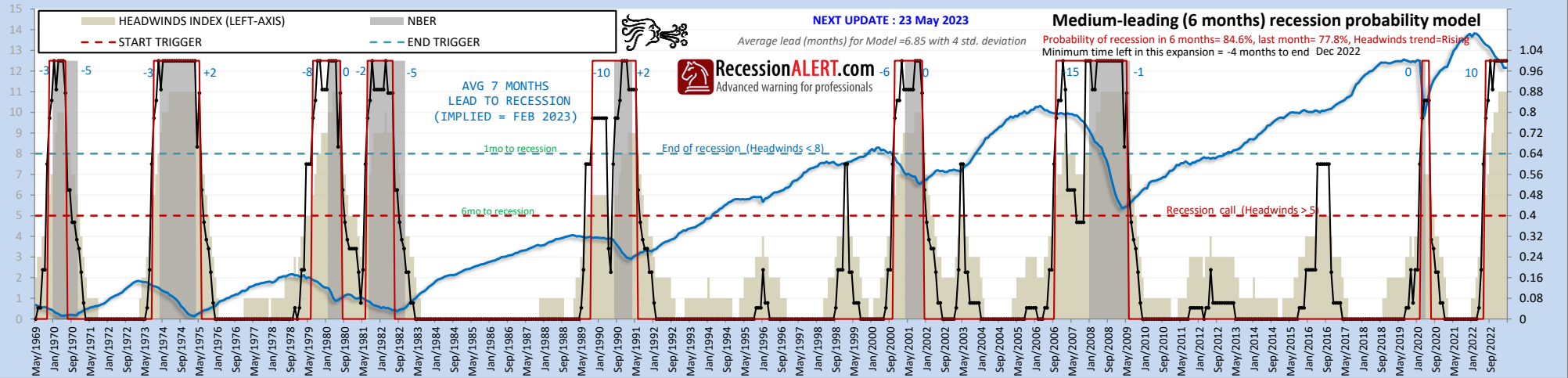


ECONOMIC HEADWINDS MEDIUM-LEADING RECESSION MODEL : This model uses the Monthly Leading Index directional behaviour (looking only at if it rose or fell) to derive how much "headwinds" the economy is accumulating and produces a "Headwinds index". It only considers directional movement of the index and does not look at levels or growth rates as is traditionally the norm. It then uses a regime-changing probability model to determine implied probabilities of recession in 6 months based on the level and trend (rising or falling regime) of the headwinds indicator. The model is startlingly accurate and produces a phenomenal lead to recession of 6.85 months on average, with a 4 months standard deviation.

It would appear that once headwinds reach a certain critical threshold (level -6) the economy can never get its head back above water to overcome the drag and initiates a decline into eventual recession. Very much like the critical fertility threshold for human populations, below which the population never manages to regain growth and enters perpetual decline (Europe and Japan). As it is a **completely different** approach to the SuperIndexes and most other recession forecasting methodologies, and is not dependant on levels or growth rates, it provides a good diversification for us from "model risk". The SuperIndexes only provide co-incident and short-leading (3-4mo) recession warning, but the HEADWINDS model forms the basis of our MEDIUM-TERM recession warning methodology.

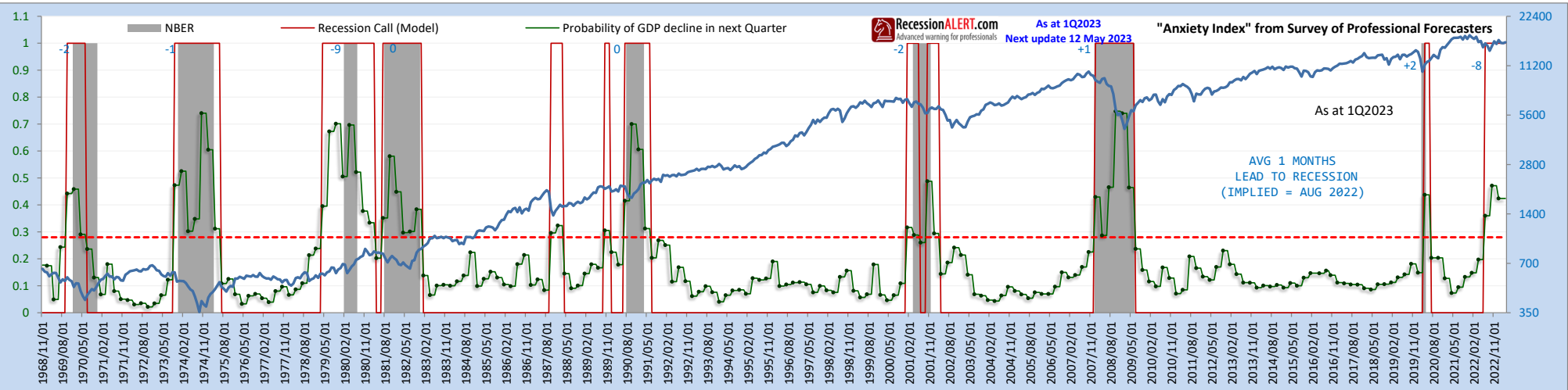
There is no leading index derived from the probability model. The model is focussed on the headwinds indicator, recession probability and making recession calls only. Between 5 and 8 the headwinds indicator in rising regimes provides average lead times to recession of 6.9, 4.6, 3.3 and 1mo respectively as shown on the chart below in green text. A unique feature of the model is its ability to forecast the minimum time left in the current expansion or recession based on stylized facts of the behaviour of the headwinds indicator during these two regimes.

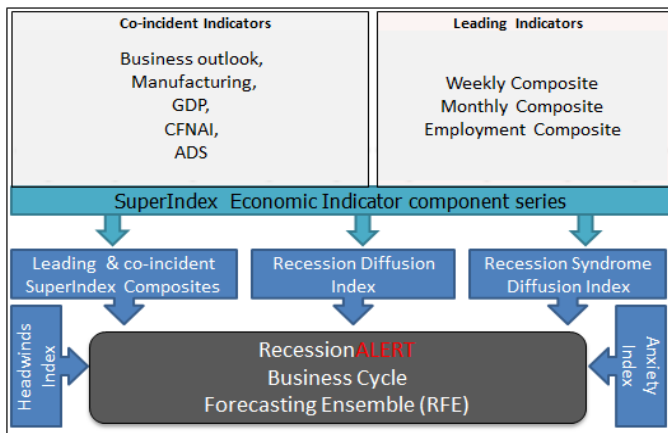
Due to the "step-laddered" shape of the recession probabilities (a by-product of the binary nature of the make-up of the Headwinds Index) the granularity of implied probabilities is not as fine as what you have become used to in the SuperIndexes, but it is no less effective. To this end the 3-month SuperIndex can report a probability of recession within 3 months of around 5.3% whilst the Headwinds index could report zero percent probability of recession in 6-10 months' time when Headwinds are at 2. However you can see from the chart below that economic headwinds in a rising trend and sitting at 2 has never before been witnessed in a NBER recession (hence the implied probability of zero) but it stands to reason that risk of recession when headwinds are 2 are more than when headwinds are at 1.



ANXIOUS INDEX : One of the best kept secrets in the recession forecasting business is taken from the *Survey of Professional Forecasters* that is managed by the Philadelphia Fed. A US recession forecasting model dubbed "The Anxious Index" has been created from this survey to be incorporated into our Recession Forecasting Ensemble (RFE.) The Survey of Professional Forecasters is the oldest quarterly survey of macroeconomic forecasts in the United States. The survey began in 1968 and was conducted by the American Statistical Association and the National Bureau of Economic Research. The Federal Reserve Bank of Philadelphia took over the survey in 1990. The survey asks panelists to estimate the probability that real GDP will decline in the quarter in which the survey is taken and in each of the following four quarters.

To create it, a variety of forecasters are surveyed, including Wall Street economists, corporate economists, independent economists and academics. Yet, what makes this survey most beneficial is that the forecasts are anonymous. The anxious index is a more accurate and reliable warning for recessions than individual economists' forecasts. But what we really like about this index is that like surveys, the data is NEVER REVISED and thus we can build a true "real-time" prediction model based on real-time outside observations. The downside is that the survey is only conducted quarterly and data published the month following the start of the new quarter. It typically forecasts recession 1 quarter ahead, but given the time and publishing lags, the real-time expectation is of the order of 6-weeks warning.





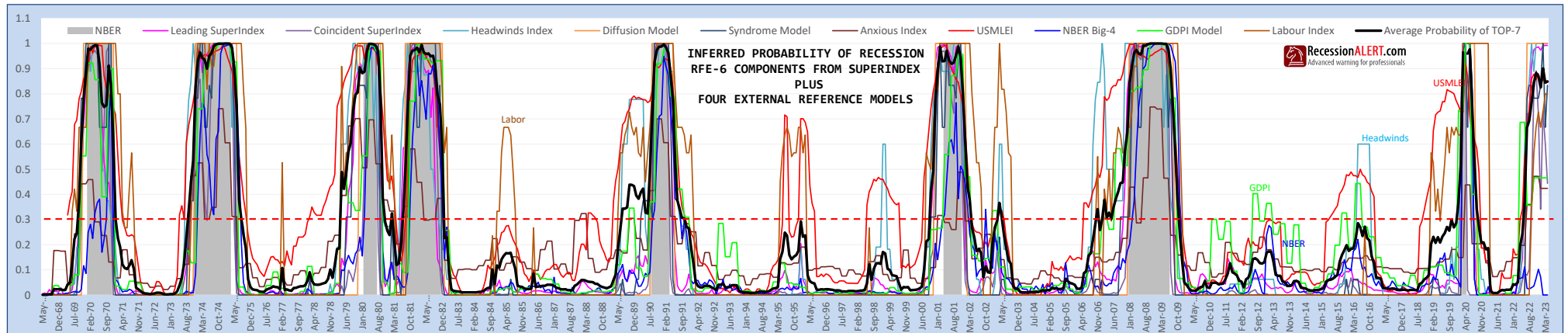
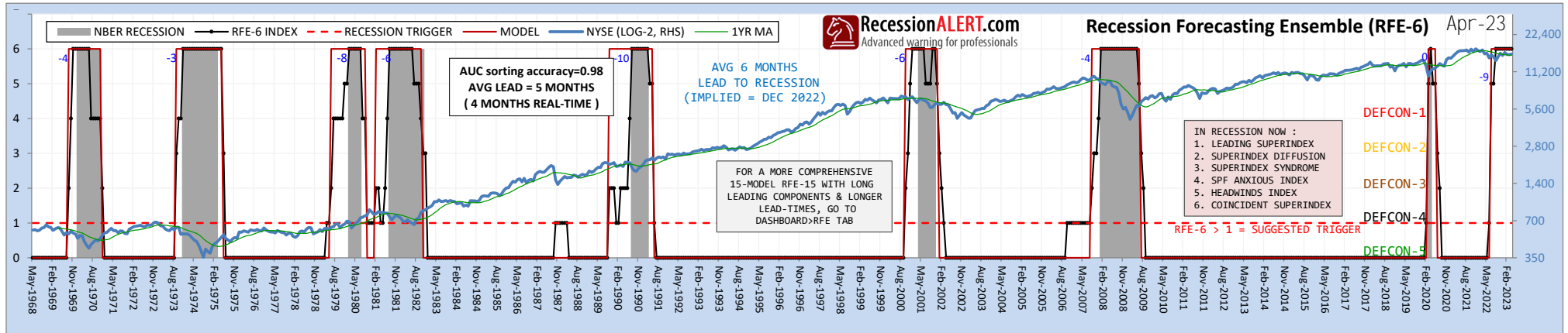
BUSINESS CYCLE FORECASTING ENSEMBLE: This is where it all comes together. The RFE shows how many of the diversified recession models we track are currently flagging recession. This weekly report you have been reading tracks six systems as shown on the schematic to the left. Clicking on the schematic takes you to a detailed description of the RFE mechanics and how it can be deployed for macro market timing for 3 times the performance of the SP-500 buy-and-hold strategy.

The RFE is a collection of diversified recession forecasting methodologies that differ in data, approach and theory to offer us an over-arching recession dating and forecasting approach that is resilient to "model risk". Recession forecasting is an art and not a science. There is no "one size fits all" model that performs well in the past and is guaranteed to perform well into the future. Every recession is different.

Since recession calls are "high stakes" events, with costly consequences for either calling a recession when there is none (as with the recent ECRI call that cost investors who heeded it 28% in stock market gains) or failing to call a recession and getting caught in the storm, we need to be very sure when we make a call. The only way to do that is by consulting multiple robust models that are not too correlated with each other in makeup or methodology.

The RFE Diffusion Index shown below charts the number of models (0 to 6) that are in recession territory. THE MORE SYSTEMS IN RECESSION TERRITORY AND HENCE THE HIGHER THE DIFFUSION INDEX, THE MORE CONFIDENCE YOU HAVE IN THE RECESSION CALL. The same applies to calling the end of recessions. The more the RFE falls (declines) the higher the probability that recession has ended.

The RFE allows you to manage a delicate balancing act between early warning and accuracy. It is an ideal mechanism to represent and manage recession risk. The optimal balance is to make a recession call when the RFE reaches 2 or more (2 historical false positives) or 3 or more (0 historical false positives). One may then elect to steadily phase into cash with each rise of the RFE up until the point it is reading 5 or more, when you should be 100% hedged or in cash.



	STATUS	PROB.*
1.CO-INCIDENT SUPERINDEX	RECESSION	44.37%
2.LEADING SUPERINDEX	RECESSION	99.23%
3.NBER CO-INCIDENT MODEL	EXPANSION	0.00%

*PROB=Probability of recession within avg lead of respective model

	STATUS	READING
4.SUPERINDEX DIFFUSION	RECESSION	4
5.SUPERINDEX RECESSION SYNDROME	RECESSION	4
6.USMLEI MONTHLY U.S INDEX	RECESSION	85.19%
7.GDP/GDI CO-INCIDENT MODEL	RECESSION	46.58%

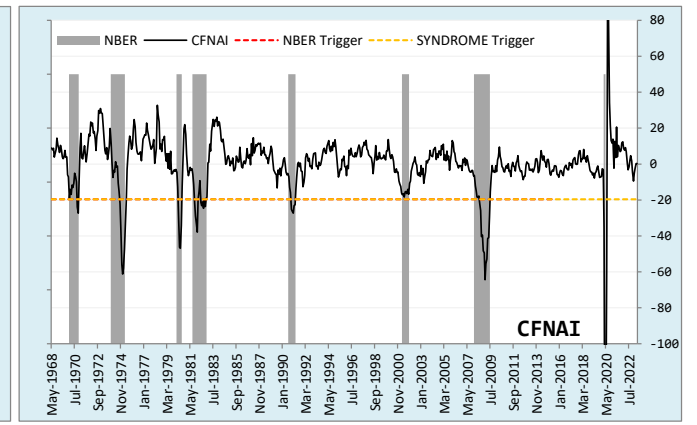
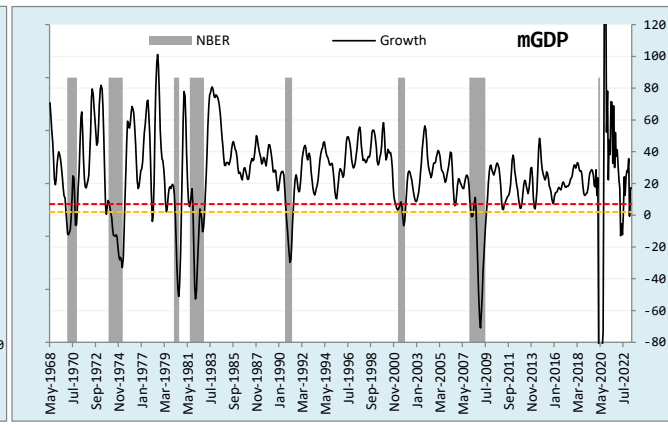
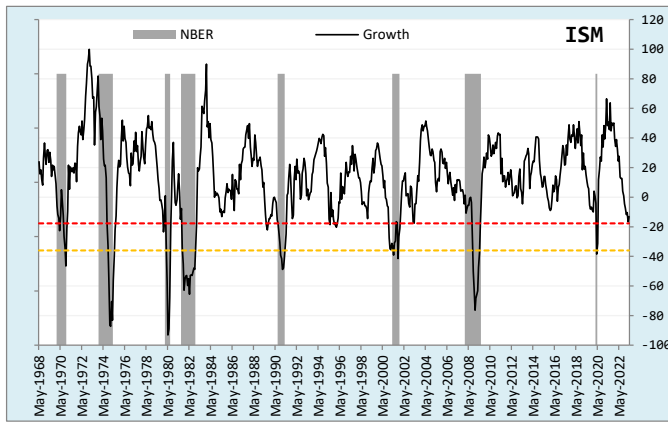
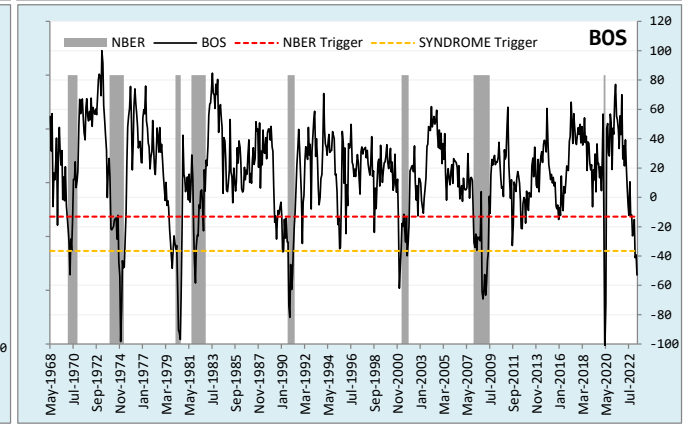
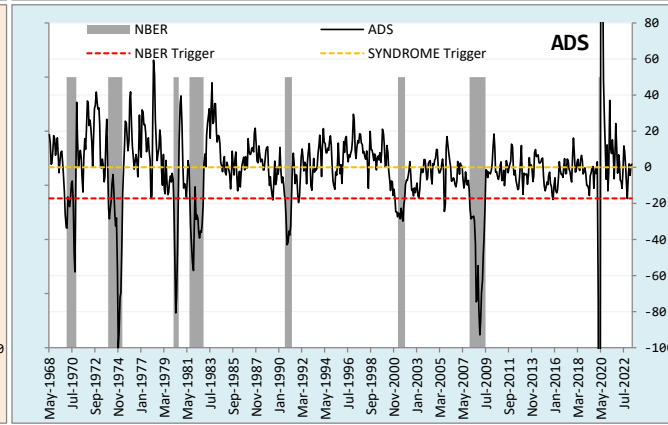
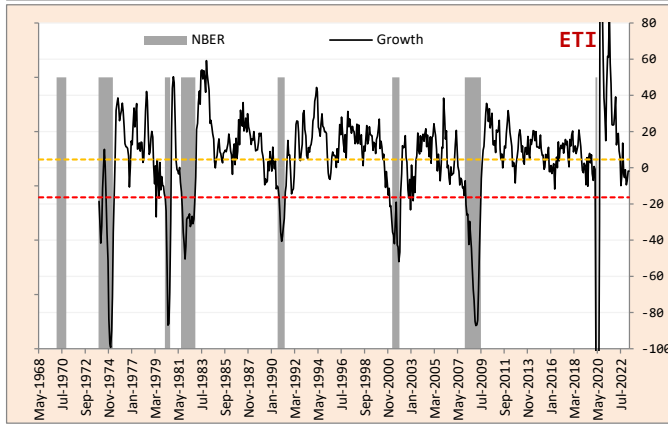
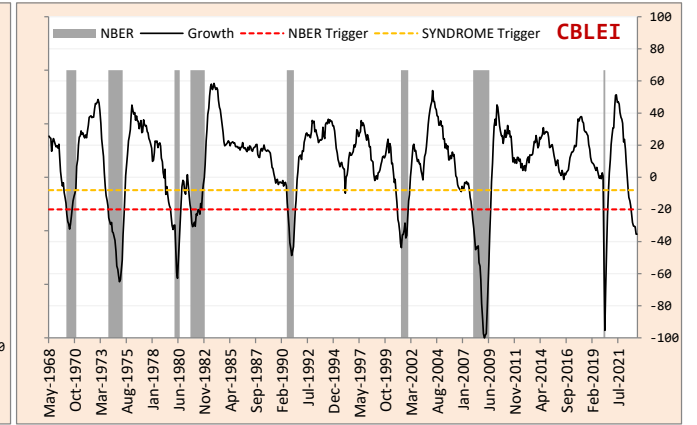
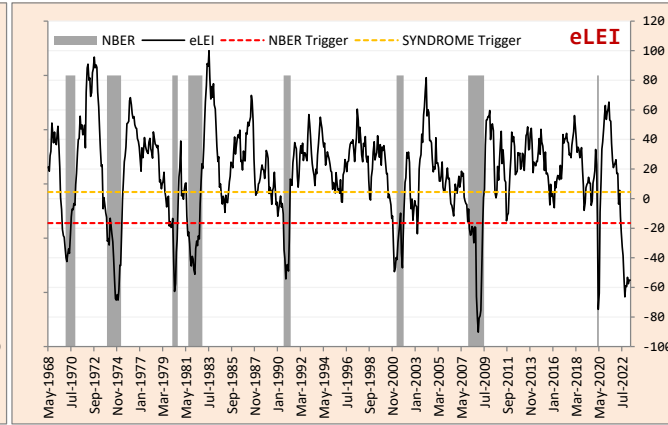
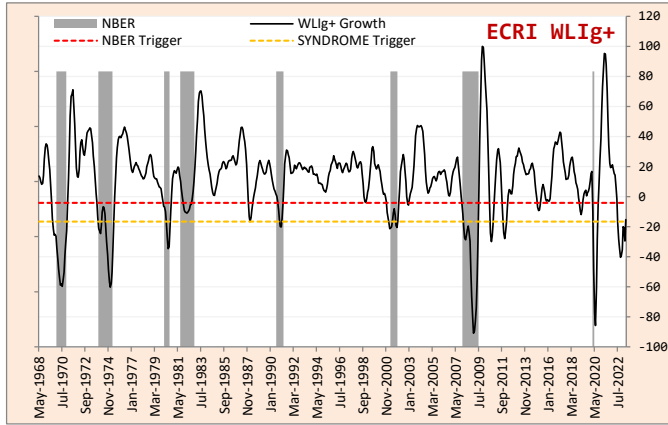
*PROB=Probability of recession within avg lead of respective model

	STATUS	PROB.*
8.ECONOMIC HEADWINDS INDEX	RECESSION	100.00%
9.ANXIETY INDEX	RECESSION	42.40%
10.LEADING LABOUR-MARKET INDEX	RECESSION	80.00%
AVG. OF TOP-7 PROBABILITIES	RECESSION	84.90%

*PROB=Probability of recession within avg lead of respective model

SUPERINDEX COMPONENT INDICES. This section displays the indices of the 9 underlying SuperIndex components which have been standardized to range between -100 and +100 minima and maxima for comparative purposes. The 4 leading components are colored in pink and the co-incident indicators are coloured light blue. We display TWO triggers, namely the trigger below which the indicator must fall to initiate a recession call (NBER trigger) and the trigger to initiate a vote toward the recession SYNDROME. The NBER trigger corresponds to the "Golden Ratio" used for the recession probabilities of the indicator. It is that value for which a recession dating mechanism displays the highest accuracy for sorting between expansion and recessionary months (otherwise known as the AUC or "area under the curve" of the model.) There may be the odd false positive but in general this is the best recession trigger to use for the indicator.

When an indicator falls below the NBER trigger it will be associated with a rapid climb in recession probabilities for the indicator. The SYNDROME trigger is that value below which the indicator starts contributing toward a syndrome of recessionary conditions. On its own, this event *means absolutely nothing* but when 4 or more indicators come together in a "syndrome" it means we are likely in recession within the next 4-5 months. Note that the SYNDROME triggers can appear above or below the NBER trigger depending on which indicator we are looking at. Only the CFNAI has both triggers set to the same value. The indicators that contribute heavily to recessionary syndromes have their syndrome triggers much higher than their respective recession triggers. Less accurate indicators prone to false positives (such as the BOS) will tend to have their syndrome triggers much lower than their recession triggers.

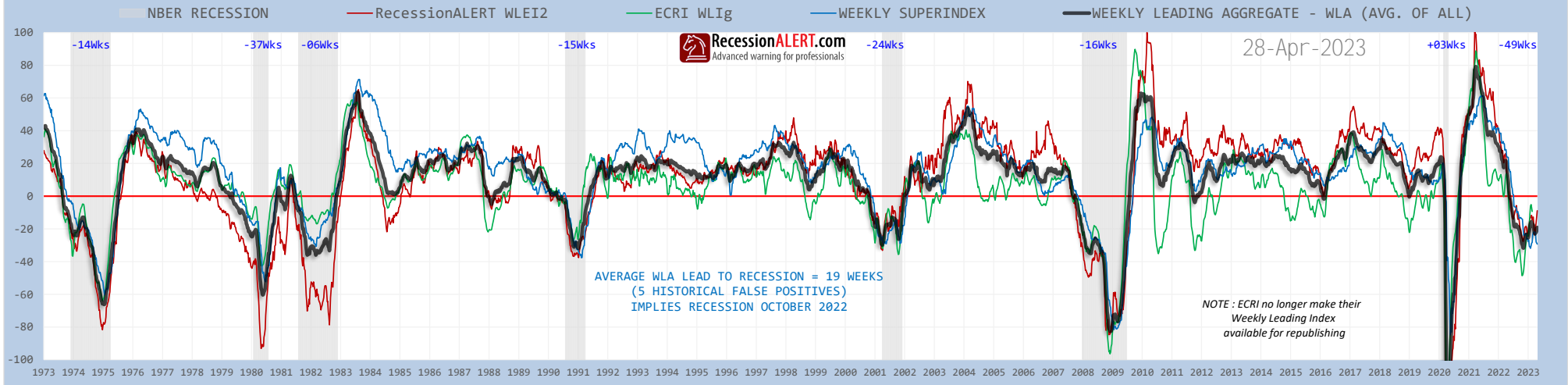


ANALYSIS OF ALL WEEKLY INDICES

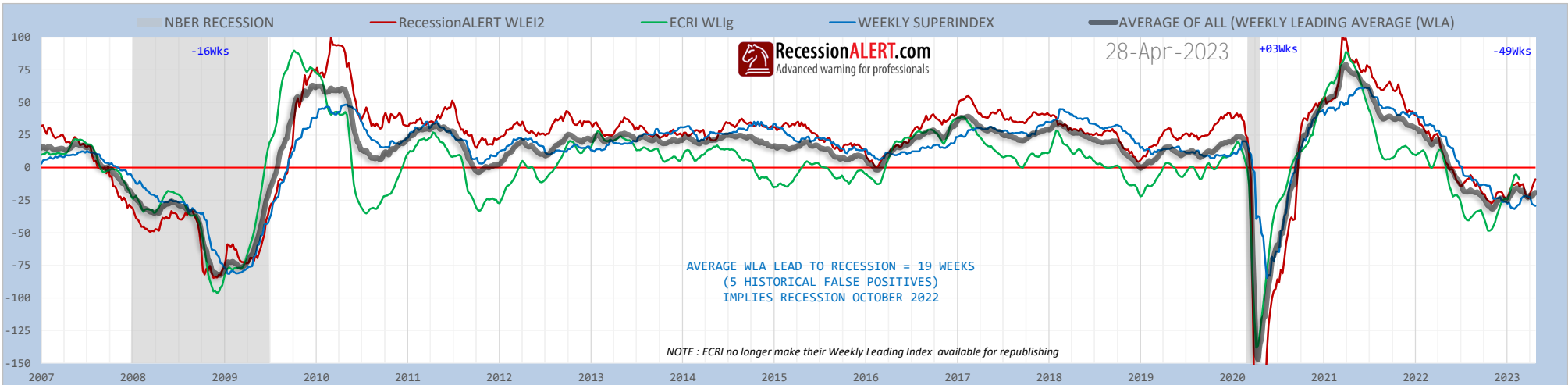
In this section we compare all the available weekly leading indices together, with weekly prints, as well as produce an average off all of them as an alternative Weekly Leading Aggregate (WLA).

We take our highly popular Weekly Leading SuperIndex, which is *psuedo-weekly* as it consists of monthly, one quarterly and weekly components and is updated weekly. This is our oldest running and most popular index. We then examine our Weekly Leading Economic Index (WLEI) which is a "pure" weekly leading index as it only consists of employment and financial data that is updated every week. Another "pure-form" weekly leading index we examine is the ECRI WLIg growth metric which is scaled to allow for comparison.

The ECRI WLIg leads the WLEI (at the expense of over 1-dozen false alarms though) which in turn leads the SuperIndex (at expense of only two false positives in 1984 & 1988).



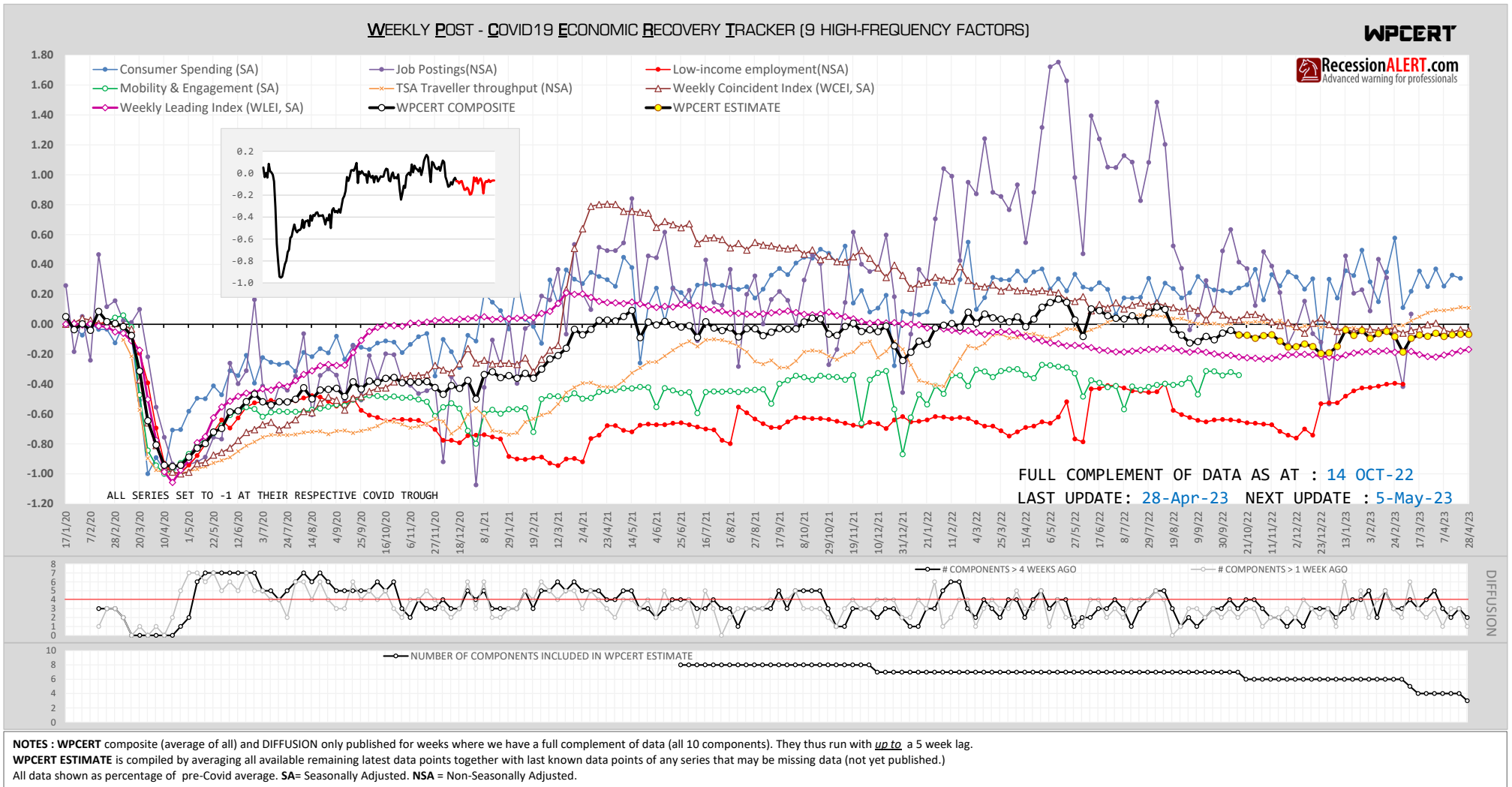
ZOOMED-IN VIEW SINCE LEAD UP TO 2008 GLOBAL FINANCIAL CRISES



	25-Nov-22	2-Dec-22	9-Dec-22	16-Dec-22	23-Dec-22	30-Dec-22	6-Jan-23	13-Jan-23	20-Jan-23	27-Jan-23	3-Feb-23	10-Feb-23	17-Feb-23	24-Feb-23	3-Mar-23	10-Mar-23	17-Mar-23	24-Mar-23	31-Mar-23	7-Apr-23	14-Apr-23	21-Apr-23	28-Apr-23	
NBER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
WLEI2	-19.50	-18.77	-18.43	-19.24	-22.39	-23.59	-24.48	-19.89	-16.03	-13.77	-13.20	-12.50	-11.64	-14.54	-13.03	-12.73	-19.07	-22.75	-23.63	-19.84	-16.12	-12.04	-8.92	
ECRI WLIg	-36.95	-33.23	-29.14	-25.58	-24.57	-23.59	-24.41	-21.51	-16.64	-11.53	-6.11	-5.17	-6.79	-9.37										
SUPERINDEX	-23.43	-23.46	-22.78	-26.35	-26.35	-25.93	-27.70	-26.89	-30.72	-30.80	-31.85	-30.33	-28.80	-28.27	-23.70	-22.20	-21.91	-21.79	-22.48	-22.49	-28.08	-28.70	-29.33	
AGGREGATE	-26.62	-25.15	-23.45	-23.73	-24.44	-24.37	-25.53	-22.76	-21.13	-18.70	-17.06	-16.00	-15.74	-17.39	-18.36	-17.47	-20.49	-22.27	-23.06	-21.16	-22.10	-20.37	-19.12	

Since the onset of Covid-19, there has been a lot of research and release of alternative (non traditional) high-frequency data to measure the extent of the economic collapse brought on by lockdowns, as well as to measure the post-lockdown economic recovery. Think of TSA traveller data, OpenTable dining seats booked, Google and Apple geolocation tracking data and so forth. Since a lot of this data was only measured at the onset of the Coronavirus pandemic we do not have long term historical record of them and thus we can only create indices of them from around mid-January 2020. We have created our own version of this called the Weekly Post Covid Economic Recovery Tracker (WPCERT) which includes the following seven components:

1. **Consumer Spending** = Change in average consumer credit & debit card spending, seasonally adjusted, indexed to Jan 4-31. *Source = Affinity Solutions.*
2. **Job Postings** = Change in unique weekly job postings, indexed to Jan 4-31. *Source = Burning Glass Technologies.*
3. **Low-income employment** = Change in employment rates, indexed to Jan 4-31. *Source = timecard data from Kronos, payroll data from Paychex, Earnin and Intuit.*
4. **Mobility & Engagement (multi-factor composite)** = Dallas Fed Mobility and Engagement Index (MEI). *Source = Federal Reserve Bank of Dallas and geolocation data from SafeGraph*
5. **WLEI (multi-factor composite, traditional indicator with long-term history)** = Weekly *Leading* Economic Index . Over 20 financial, credit and labor market leading variables. *Source = RecessionALERT.com. .*
6. **WCEI = (multi-factor composite, traditional indicator with long-term history)** Weekly *Coincident* Economic Index. 10 indicators of real economic activity, covering consumer behavior, labor market & production. *Source = New York Fed.*
7. **Traveller Throughput** = TSA checkpoint Total Traveler Throughput numbers. *Source = TSA*

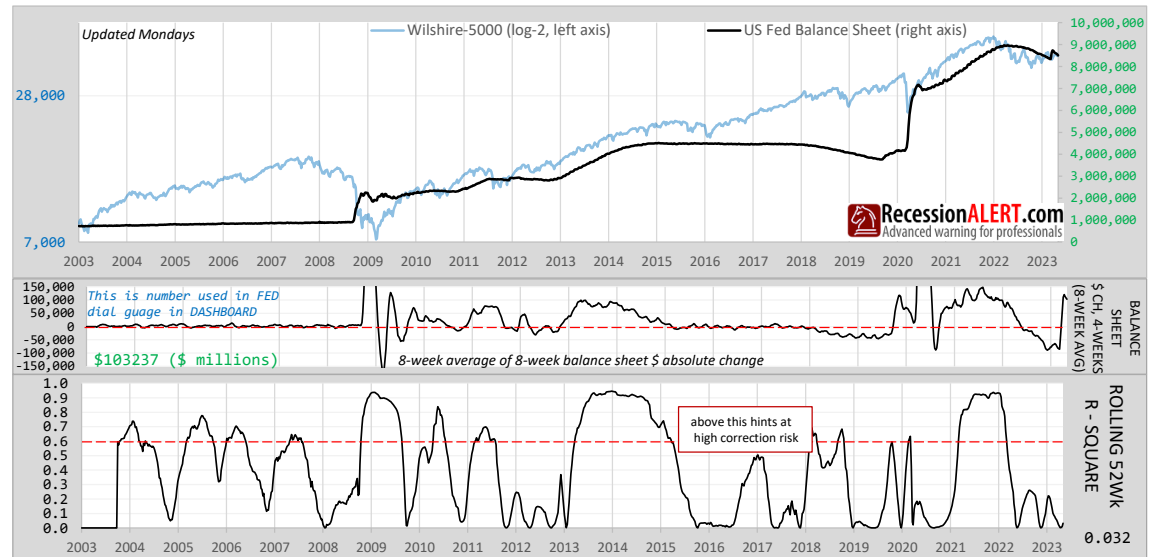
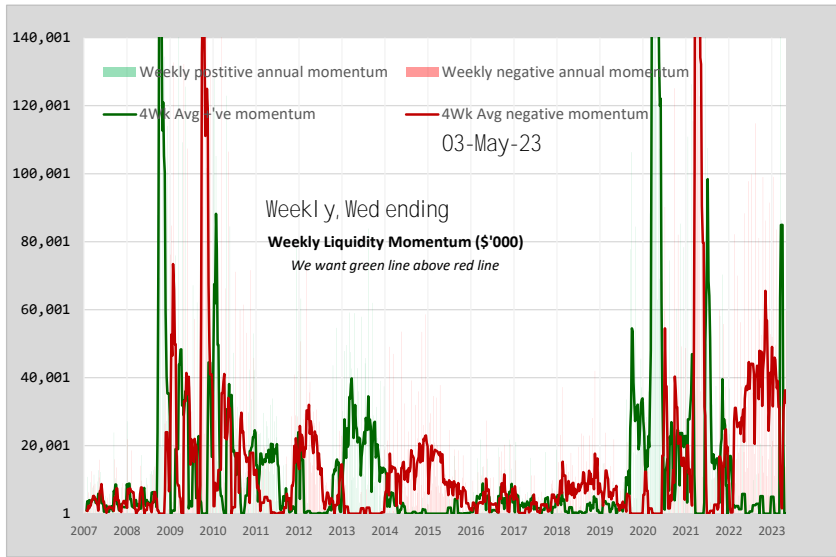
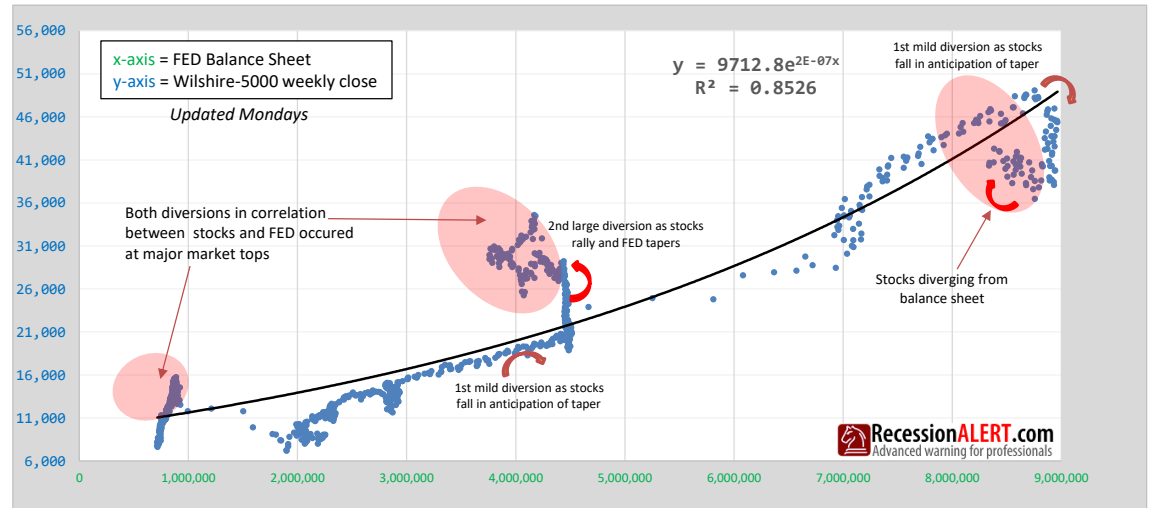
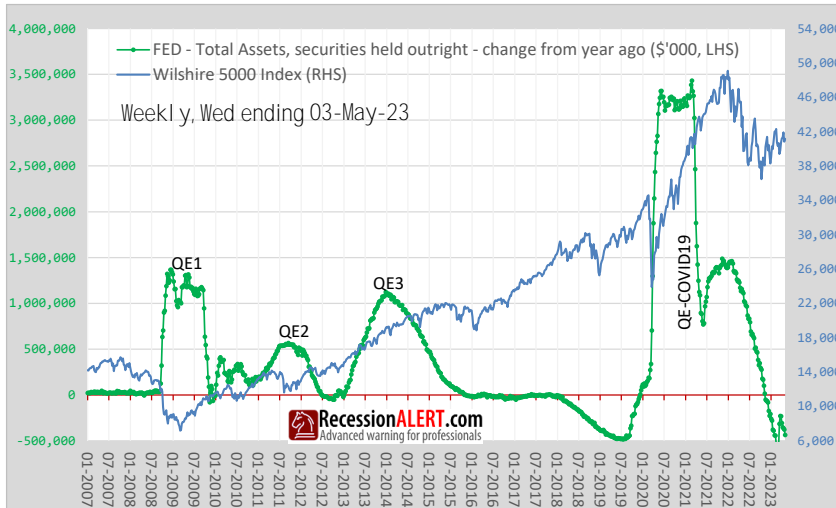


UNITED STATES FEDERAL RESERVE LIQUIDITY MONITORING

In this section we examine a very important determination of stock market future returns and volatility, namely liquidity provided by the US Federal Reserve.

The charts on the right side of this page shows the size of securities held outright by the US Federal Reserve versus Wilshire Total market index as stock market proxy. We see the various quantitative easing programs that propelled the stock market higher including the massive Covid19 liquidity injection that set stocks on a never-before-seen trajectory. On the surface it appears that when the size of the FED balance sheet is flat or shrinking (tapering) stock returns are either muted/volatile or negative. Similarly when the balance sheet is expanding, stocks inflate in tandem. Few appreciate the conventional "Don't fight the FED" anecdote and the correlation between the size of the FED balance sheet and levels of the stock market. Putting the above two data sets into a regression analysis (top chart, right side) makes things a little clearer. What is interesting to note however, is that on both occasions when stocks diverged significantly from values implied by size of the FED balance sheet, stocks went into major bear markets shortly thereafter. Stocks are still tightly correlated with the size of the FED balance sheet (right hand data points on the regression chart). It is suspected that as the FED begins to taper and stocks continue to climb, we will see another big regression divergence warning of another major market top.

The charts on the left show another favorite measurement of ours, namely percentage annual change in FED balance sheet - a momentum indicator. Generally, when the 4-week average of negative momentum readings (average of declining weekly momentum readings in last 4 weeks) exceeds the 4-week average of positive momentum readings (average of increasing weekly momentum readings in last 4 weeks) then we deem FED liquidity momentum to be waning and vice versa. Waning liquidity generally imply stock market headwinds whilst increasing liquidity momentum implies stock market tailwinds.



THESE CHARTS ARE ALSO AVAILABLE WITH WEEKLY UPDATES AT <https://recessionalert.com/weekly-charts/> IN THE "FED STIMULUS" TAB.

UNITED STATES TREASURY SPREADS RECESSION PROBABILITY MODEL

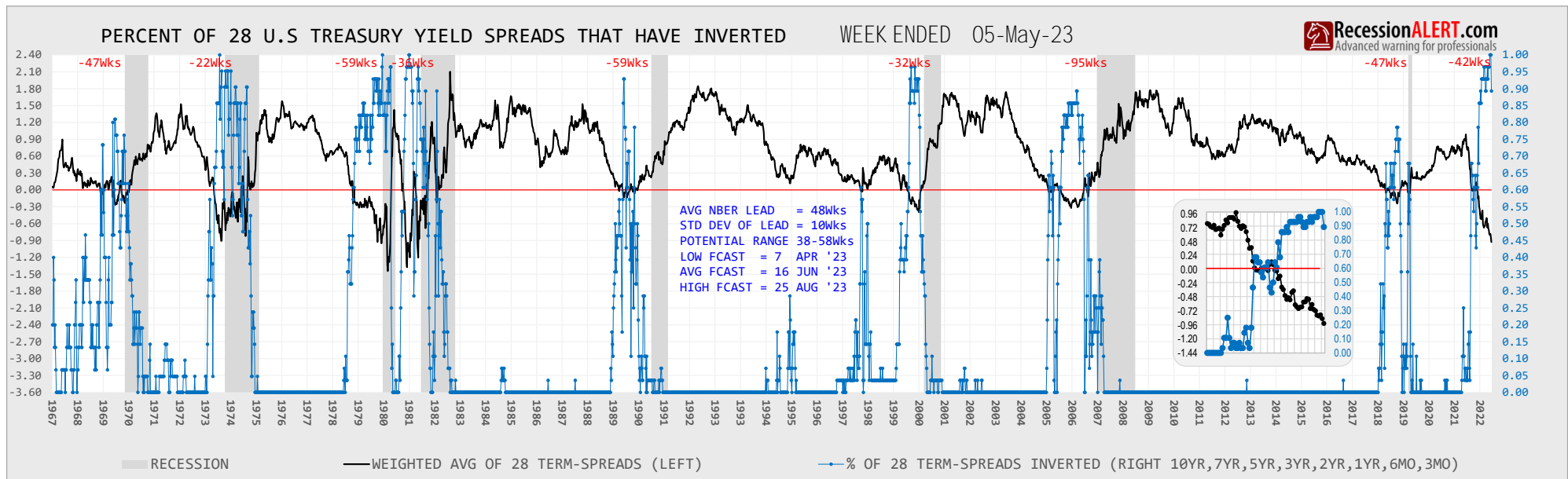
There is a lot of commentary around suggesting the yield-curve is no longer an effective recession warning indicator due to the artificial low-interest rate environment created by the FED. There is also the timeless stock market quip that when you start hearing that "this time is different" that things will turn out anything but different. There are a lot of theories as to why an inverted yield-curve for even short periods will guarantee a recession, but the one that made the most sense is as follows:

"Banks make longer-duration loans to clients who pay the longer term rates. These loans are the assets of the bank. Depositors lend money to the bank at the short-term interest rate. These are the bank's liabilities. When the bank pays a higher rate on its liabilities than what it earns on its assets, it loses the incentive to forward more loans to businesses and stops lending. This causes a "credit crunch" or the falling availability of credit. Businesses struggle to roll over their current account credit and they are forced to downsize and lay off workers, and we enter a recession. The moment the Fed engineers short-term interest rates to go below long-term interest rates, the banks can generate a profit again, credit expansion will resume and the stock market and economy can recover."

If one assumes the above narrative to be true, then it doesn't matter how low the interest rate environment currently engineered by the FED is – when short-term rates are higher than long-term rates a credit crunch, stock market peak, and recession is inevitable.

To avoid having to worry about which yield curves to watch and eliminate risk of false positives/negatives, we have adopted the approach of WATCHING THEM ALL since each of them have different recession forecasting performance, lead times and so forth. For best performance, our research shows you should watch the inversions of the 28 possible treasury spreads derived from the 10-year, 7-year, 5-year, 3-year, 2-year, 1-year, 6-month and 3-month treasury rates. The 30-year, 20-year and 1-month treasury rates are excluded as they either do not have enough history, have periods when the federal reserve ceased publishing them or are producing too many false negatives of late. When 22 (61%) of them have inverted, you can confidently make a recession call with average lead time of 8-16 months (32-62 weeks). You can also deem the current percentage of 28 treasury spreads that have inverted as a proxy for probability of recession within 12-months.

This chart is also available on CHARTS>WEEKLY CHARTS in the YIELD CURVE TAB and is updated weekly, as at the prior Fridays' closing yields (date included on chart.)



WEEK	10-3M	10-6M	10-1Y	10-2Y	10-3Y	10-5Y	10-7Y	7-3M	7-6M	7-1Y	7-2Y	7-3Y	7-5Y	5-3M	5-6M	5-1Y	5-2Y	5-3Y	3-3M	3-6M	3-1Y	3-2Y	2-3M	2-6M	2-1Y	1-3M	1-6M	6M-3	%INV	AVG.	
17 Feb 2023	-1.02	-1.17	-1.18	-0.78	-0.51	-0.21	-0.13	-0.89	-1.04	-1.05	-0.65	-0.38	-0.08	-0.81	-0.96	-0.97	-0.57	-0.30	-0.51	-0.66	-0.67	-0.27	-0.24	-0.39	-0.40	0.16	0.01	0.15	89.3%	-0.55	
24 Feb 2023	-0.91	-1.11	-1.10	-0.83	-0.57	-0.24	-0.15	-0.76	-0.96	-0.95	-0.68	-0.42	-0.09	-0.67	-0.87	-0.86	-0.59	-0.33	-0.34	-0.54	-0.53	-0.26	-0.08	-0.28	-0.27	0.19	-0.01	0.20	92.9%	-0.50	
03 Mar 2023	-0.94	-1.21	-1.06	-0.89	-0.63	-0.29	-0.18	-0.76	-1.03	-0.88	-0.71	-0.45	-0.11	-0.65	-0.92	-0.77	-0.60	-0.34	-0.31	-0.58	-0.43	-0.26	-0.05	-0.32	-0.17	0.12	-0.15	0.27	92.9%	-0.51	
10 Mar 2023	-1.31	-1.47	-1.20	-0.90	-0.61	-0.26	-0.16	-1.15	-1.31	-1.04	-0.74	-0.45	-0.10	-1.05	-1.21	-0.94	-0.64	-0.35	-0.70	-0.86	-0.59	-0.29	-0.41	-0.57	-0.30	-0.11	-0.27	0.16	96.4%	-0.67	
17 Mar 2023	-1.13	-1.32	-0.87	-0.42	-0.29	-0.05	-0.06	-1.07	-1.26	-0.81	-0.36	-0.23	0.01	-1.08	-1.27	-0.82	-0.37	-0.24	-0.84	-1.03	-0.58	-0.13	-0.71	-0.90	-0.45	-0.26	-0.45	0.19	92.9%	-0.60	
24 Mar 2023	-1.36	-1.38	-0.94	-0.38	-0.20	-0.03	-0.02	-1.34	-1.36	-0.92	-0.36	-0.18	-0.01	-1.33	-1.35	-0.91	-0.35	-0.17	-1.16	-1.18	-0.74	-0.18	-0.98	-1.00	-0.56	-0.42	-0.44	0.02	96.4%	-0.69	
31 Mar 2023	-1.37	-1.46	-1.16	-0.58	-0.33	-0.12	-0.07	-1.30	-1.39	-1.09	-0.51	-0.26	-0.05	-1.25	-1.34	-1.04	-0.46	-0.21	-1.04	-1.13	-0.83	-0.25	-0.79	-0.88	-0.58	-0.21	-0.30	0.09	96.4%	-0.71	
07 Apr 2023	-1.56	-1.56	-1.22	-0.58	-0.33	-0.10	-0.06	-1.50	-1.50	-1.16	-0.52	-0.27	-0.04	-1.46	-1.46	-1.12	-0.48	-0.23	-1.23	-1.23	-0.89	-0.25	-0.98	-0.98	-0.64	-0.34	-0.34	0.00	96.4%	-0.79	
14 Apr 2023	-1.62	-1.51	-1.25	-0.56	-0.31	-0.08	-0.04	-1.58	-1.47	-1.21	-0.52	-0.27	-0.04	-1.54	-1.43	-1.17	-0.48	-0.23	-1.31	-1.20	-0.94	-0.25	-1.06	-0.95	-0.69	-0.37	-0.26	-0.11	100.0%	-0.80	
21 Apr 2023	-1.57	-1.50	-1.21	-0.60	-0.32	-0.09	-0.05	-1.52	-1.45	-1.16	-0.55	-0.27	-0.04	-1.48	-1.41	-1.12	-0.51	-0.23	-1.25	-1.18	-0.89	-0.28	-0.97	-0.90	-0.61	-0.36	-0.29	-0.07	100.0%	-0.78	
28 Apr 2023	-1.66	-1.62	-1.36	-0.60	-0.31	-0.07	-0.05	-1.61	-1.57	-1.31	-0.55	-0.26	-0.02	-1.59	-1.55	-1.29	-0.53	-0.24	-1.35	-1.31	-1.05	-0.29	-1.06	-1.02	-0.76	-0.30	-0.26	-0.04	100.0%	-0.84	
05 May 2023	-1.89	-1.67	-1.22	-0.60	-0.10	0.08	0.05	-1.94	-1.72	-1.27	-0.43	-0.03	0.03	-1.97	-1.75	-1.30	-0.46	-0.18	-1.79	-1.57	-1.12	-0.28	-1.51	-1.29	-0.84	-0.67	-0.45	-0.22	89.3%	-0.93	
08 May																															

*Weekly numbers, ending Fridays. RED numbers are negative (inversions), orange are close to inversion. Recession call is when at least 17 (60%) of spreads have inverted. %INV = % of term spreads inverted. AVG. = Average of all 28 term spreads.

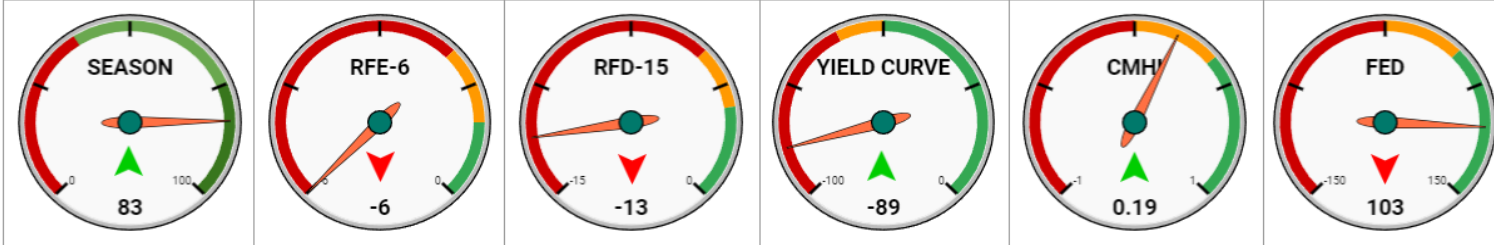
LOCAL & GLOBAL ECONOMIC DASHBOARD

This is a collection of the most important macroeconomic information represented as gauges. All the gauges are displayed as in an airplane cockpit, with danger/bad/low/bearish/recession readings going clockwise to safe/good/high/bullish/growth readings. To maintain this uniform directionality on the gauges, RFE's and Diffusions are displayed with minus signs. The arrows on the gauges reflect the direction of movement since the last print of the metric in question, whilst the values in the gauges represent the actual values of the metric themselves and NOT the extent of the change. The minimum and maximum readings on the gauges represented the minimum/maximum historical range of the respective metrics.

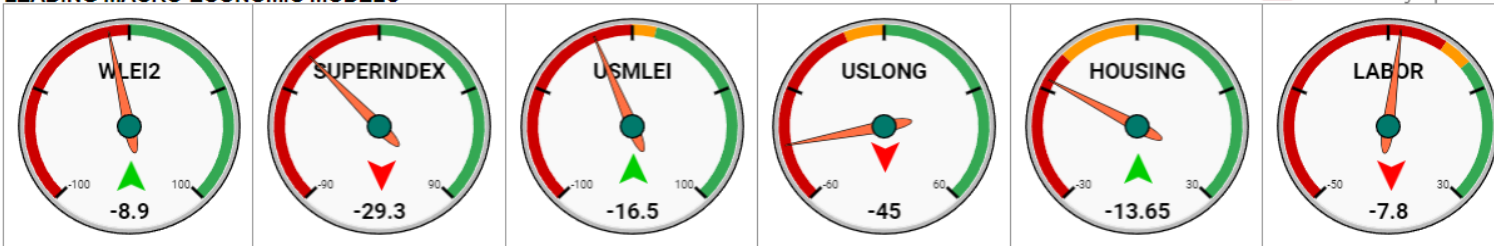
Color codings on the gauges are red = down = bad, green = up = good. Red zones associated with U.S recessions or bearish, orange are danger zones, green zones equate to economic expansion or bullish.

These gauges are updated *as soon as any of the metrics being tracked are updated* and can therefore have many updates during the course of a week. Therefore, to see the latest version, it is advised to always consult the GUAGES tab in the DASHBOARD on the website at <https://recessionalert.com/dashboard/>

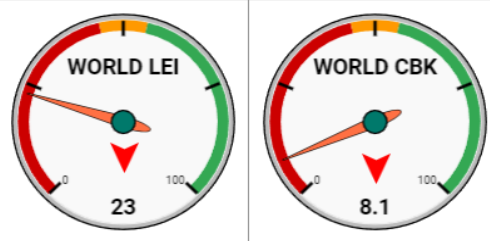
SEASONALITY, MACRO-ECONOMIC ENSEMBLES & DIFFUSIONS (ENSEMBLE/DIFFUSIONS INVERTED TO MAINTAIN GAUGE COLOR DIRECTIONALITY)



LEADING MACRO-ECONOMIC MODELS



SEASON = STM Monthly Seasonality Model
 RFE-6 = SuperIndex Recession Forecast Ensemble(-)
 RFD-15 = Recession Forecasting Diffusion(-)
 YIELD CURVE = % of inverted US Treasury Spreads(-)
 CMHI = Composite Market Health Index
 FED = Avg 4-Week Balance Sheet change (\$ billions)
 WLEI = US Weekly Leading Economic Index
 SUPERINDEX = Weekly US SuperIndex
 USMLEI = US Monthly Leading Economic Index
 USLONG = US Long-leading Index
 HOUSING = US Housing Composite
 LABOUR = *NEW US Labor Market Index (LMI)
 WORLD LEI = % of 42 OECD countries with rising LEI
 WORLD CBK = % of 37 central banks easing rates



Updated : 07/05/23

As with aircraft, all gauges run clockwise bearish to bullish for consistency, which may require some indices to be inverted to maintain said consistency. Numerical readings are latest published index, composite or diffusion reading. Arrows give the trend direction of current reading over prior reading, red down = bad, green up = good. Red zones associated with U.S recessions, orange are danger zones, green zones equate to economic expansion.

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