

US Business Cycle Risk Report

CapitalSpectator.com

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Business Cycle Risk Summary: The Economic Momentum and Trend Indexes (EMI and ETI, respectively) have fallen in recent months but near-term projections continue to signal growth through Jan. 2016 (p. 2). The Macro-Markets Risk Index (MMRI) is also pointing to growth, although here too the recent readings have weakened vs. values from the first half of 2015. Meanwhile, two business cycle indexes from Federal Reserve banks also point to growth. In addition, recession risk is low overall for the indexes listed below via probit modeling.

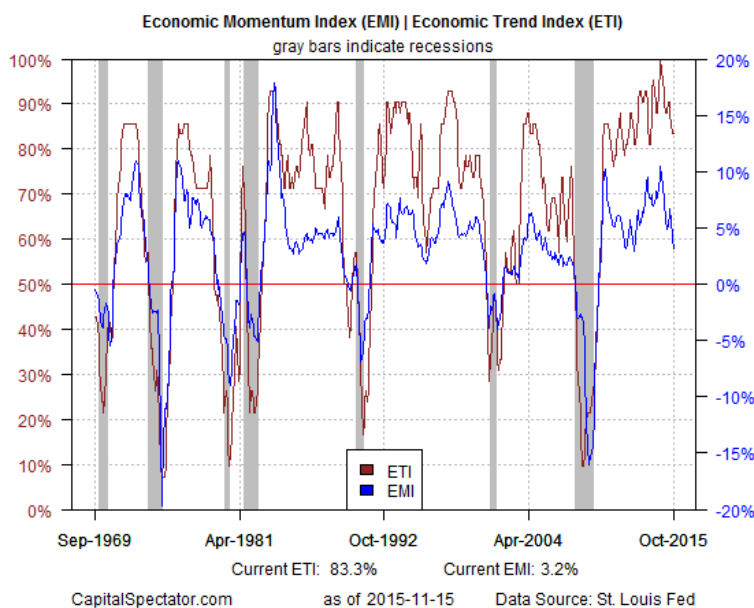
Business Cycle Index Values			Recession-Risk Probability Estimates *		
	Current	Signal		Current	Signal
ETI	83%	↑	ETI-Probit	0%	↑
EMI	3%	↑	MMRI-Probit	3%	↑
MMRI	0.68%	↑	CFNAI-MA3-Probit	5%	↑
CFNAI-MA3	-0.09	↑	ADS-Probit	0%	↑
ADS Index	0.0	↑			

* based on probit model estimates as of: 11/16/2015

↑	low risk	↓	medium-high risk
↑	medium-low risk	↓	high risk

see parameter-rule definitions on p. 7

ETI and EMI

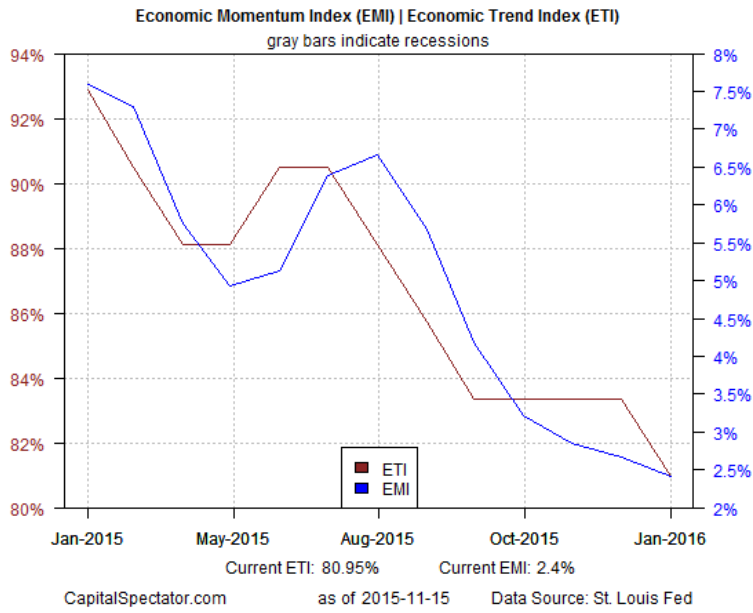


ETI is a diffusion index (i.e., an index that tracks the proportion of components with positive values) for the 14 leading/coincident indicators (see p. 7). ETI values reflect the 3-month average of the transformation rules defined on p. 7. EMI measures the same set of indicators/transformation rules based on the 3-month average of the median monthly percentage change for the 14 indicators.

ETI values above (below) 50% align with growth (recession). EMI values above (below) 0% align with growth (recession).

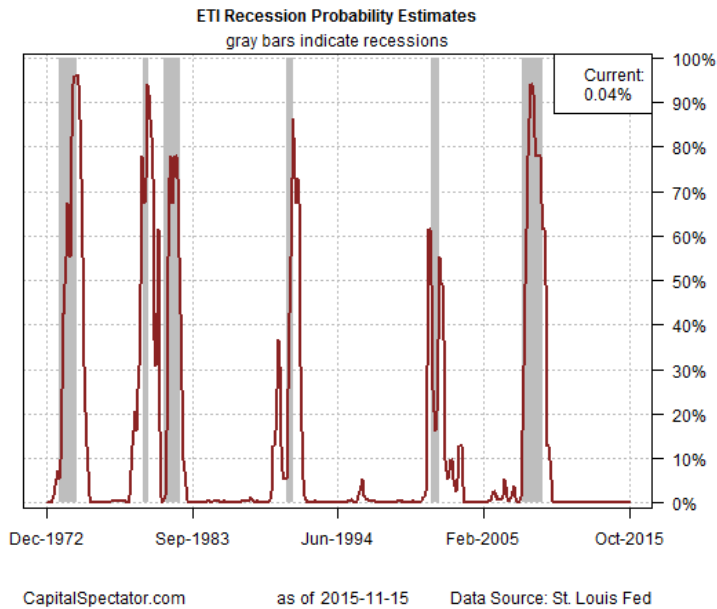
The methodology for calculating ETI and EMI is detailed in: *Nowcasting The Business Cycle: A Practical Guide For Spotting Business Cycle Peaks* (2014, Beta Publishing).

Near-term projections: ETI and EMI



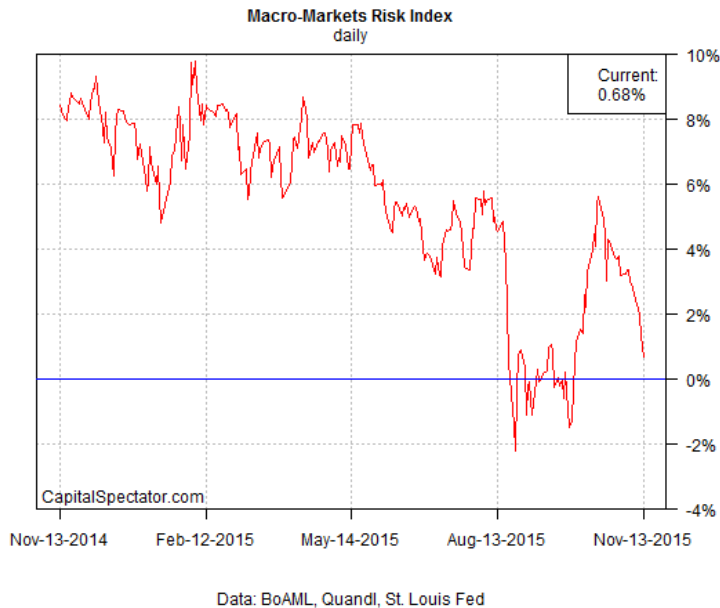
For near-term projections of ETI and EMI, the missing data points are estimated with an ARIMA model.

Recession risk probability: ETI



A probit model translates ETI's values into recession-risk probabilities on a monthly basis by comparing the index with the historical record of NBER's recession dates.

Macro-Markets Risk Index: Trailing 1-Year Period



The Macro-Markets Risk Index (MMRI) is designed as a real-time proxy for business-cycle risk based on four data sets:

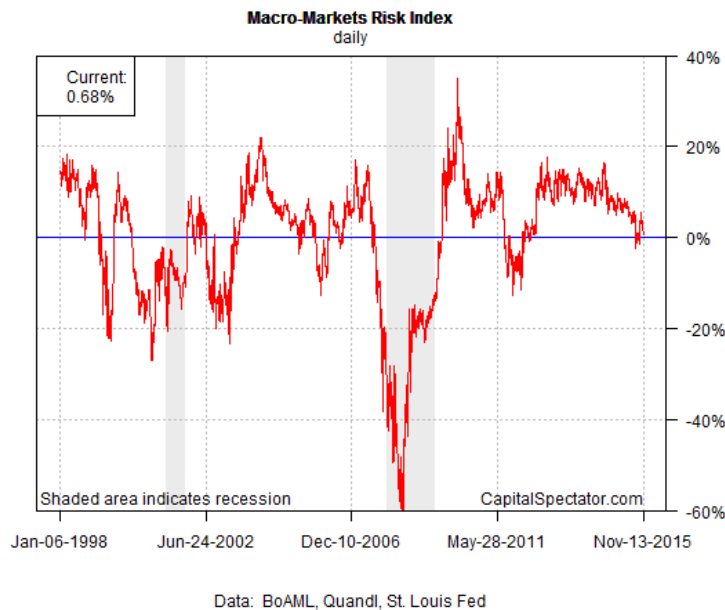
- **US stocks** (S&P 500), 252-trading day % change
- **High yield credit spread** (BoFA ML US High Yield Master II Option-Adjusted Spread) inverted 252-trading day % change
- **Treasury yield curve** (10-yr Treasury yield less 3-month T-bill yield)
- **Oil prices** (US benchmark: WTI) inverted 252-trading day % change

Analyzing the market-price components of ETI and EMI separately offers a real-time approximation of macro conditions, according to the "wisdom of the crowd."

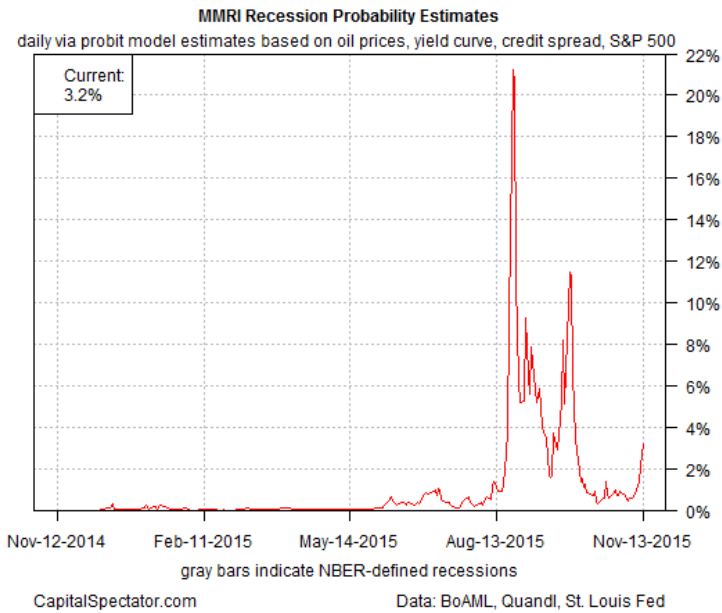
Why look to the financial and commodity markets for insight into the economic trend? Timely signals. Conventional economic reports are published with a time lag. This analysis is intended for use as a supplement for developing real-time perspective until a complete data set is published for updating the monthly economic profile.

A decline below 0% in MMRI (horizontal blue line in charts to the left) indicates that recession risk is elevated while readings above 0% imply that the economy will expand in the near-term future.

Macro-Markets Risk Index: Long-Term History

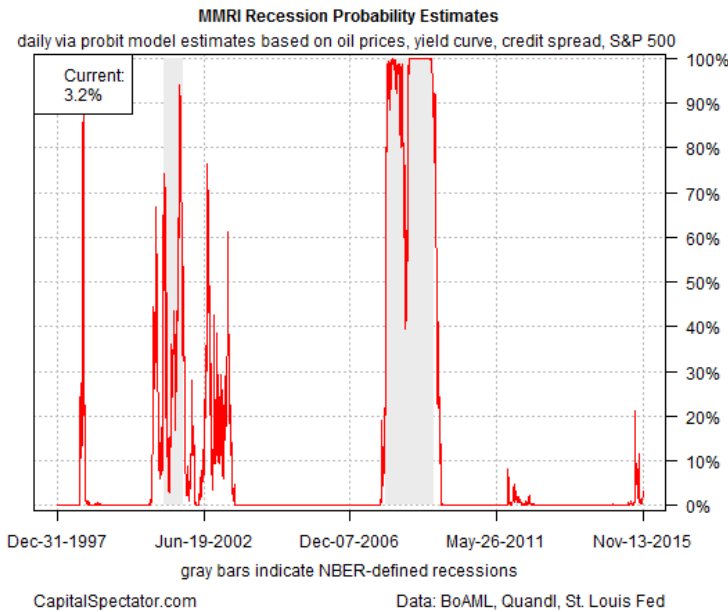


Recession risk probability: MMRI: Trailing 1-Year Period

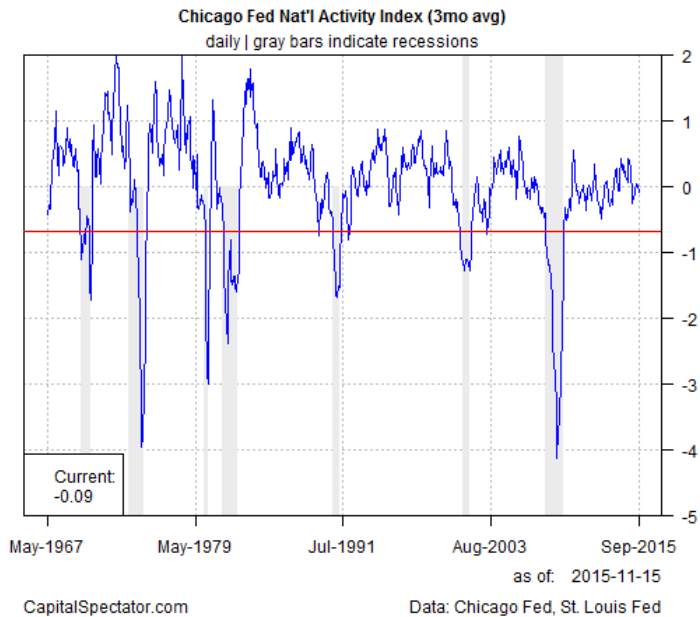


A probit model translates MMRI's values into recession-risk probabilities on a daily basis by comparing the index with the historical record of NBER's recession dates.

Recession risk probability: MMRI: Long-Term History



Chicago Fed Nat'l Activity Index: Long-Term History

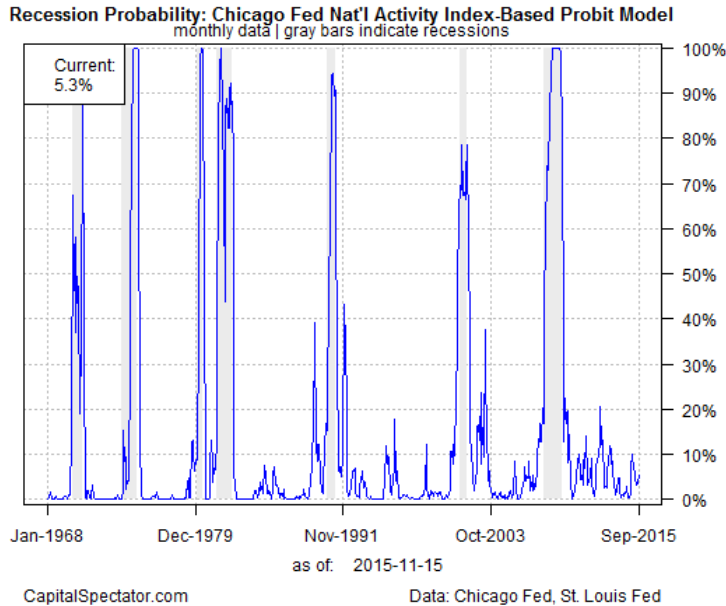


The Chicago Fed National Activity Index is a weighted average of 85 existing monthly indicators of national economic activity. It is constructed to have an average value of zero and a standard deviation of one. Since economic activity tends toward trend growth rate over time, a positive index reading corresponds to growth above trend and a negative index reading corresponds to growth below trend.

When the three-month moving average of the index (CFNAI-MA3) moves below -0.70 (horizontal red line in top chart at left) following a period of economic expansion, there is an increasing likelihood that a recession has begun. Conversely, when the CFNAI-MA3 value moves above -0.70 following a period of economic contraction, there is an increasing likelihood that a recession has ended.

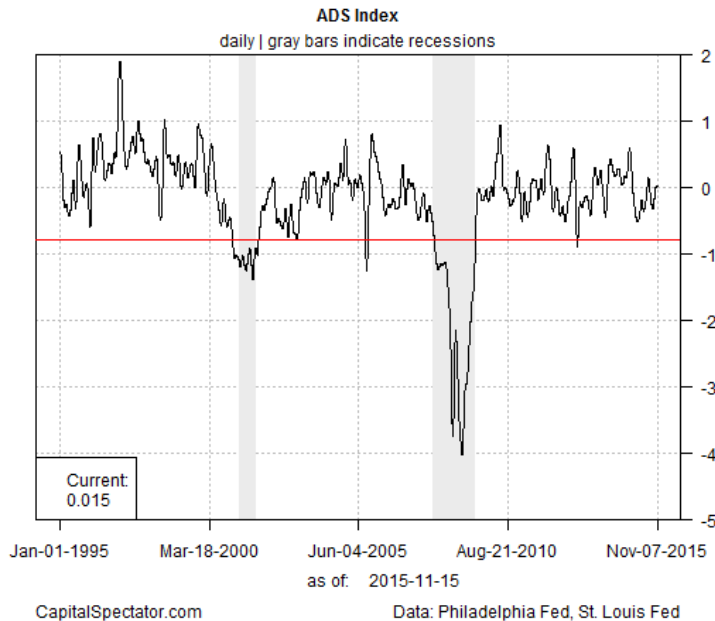
For additional information, see the Chicago Federal Reserve's web site: www.chicagofed.org

Recession risk probability: Chicago Fed Nat'l Activity Index: Long-Term History



A probit model translates CFNAI-MA3 values into recession-risk probabilities on a monthly basis by comparing the index with the historical record of NBER's recession dates.

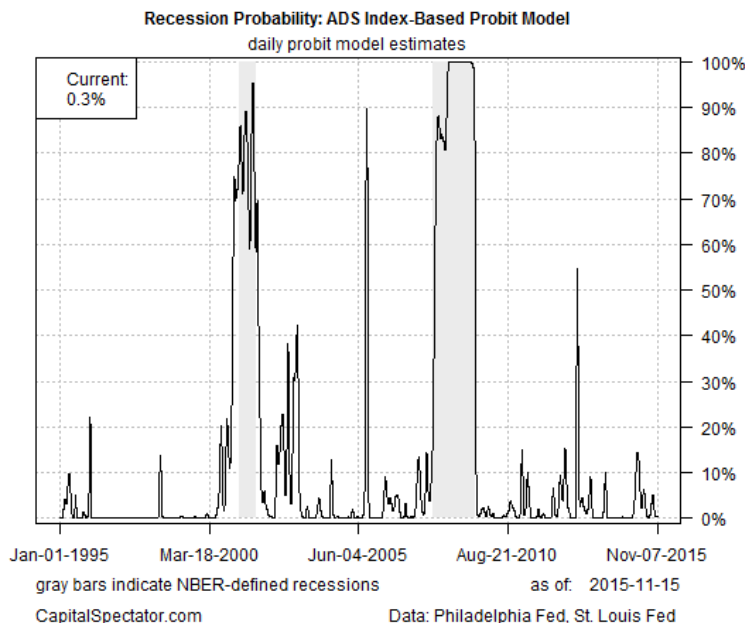
ADS Business Conditions Index: Long-Term History



The Aruoba-Diebold-Scotti (ADS) Business Conditions Index is designed to track real business conditions at high frequency. Its underlying (seasonally adjusted) economic indicators (weekly initial jobless claims; monthly payroll employment, industrial production, personal income less transfer payments, manufacturing and trade sales; and quarterly real GDP) blend high- and low-frequency information and stock and flow data. The ADS Index is updated as data on the underlying components are released.

The average value of the ADS index is zero. Progressively bigger positive values indicate progressively better-than-average conditions, whereas progressively more negative values indicate progressively worse-than-average conditions. A value of -3.0, for example, would indicate business conditions significantly worse than at any time in either the 1990-91 or the 2001 recession, during which the ADS index never dropped below -2.0.

Recession risk probability: ADS Business Conditions Index: Long-Term History



Analysis by the San Francisco Fed advises that the "optimal recession threshold" for the ADS Index is -0.80, indicated by the horizontal red line in the top chart at left. For details on this analysis, see: "Diagnosing Recessions" by Óscar Jordà in the Federal Reserve Bank of San Francisco Economic Letter (Feb. 10, 2010) at: www.frbsf.org

For additional information about the ADS Index, see the Philadelphia Federal Reserve's web site: www.philadelphiafed.org

A probit model translates ADS Index values into recession-risk probabilities on a daily basis by comparing the index with the historical record of NBER's recession dates.

ETI and EMI Component Indicators

US Economic Profile					
November 16, 2015					
	Indicator	Transformation	Aug-15	Sep-15	Oct-15
1	Labor Market Index ¹	1 yr % change	8.7%	7.8%	6.8%
1a	Private non-farm payrolls	1 yr % change	2.3%	2.3%	2.3%
1b	Initial Jobless Claims ²	1 yr % chg (inverted)	9.3%	8.7%	7.6%
1c	Employ.-to-Unemploy. Ratio	1 yr % change	21.3%	18.4%	15.0%
1d	Index of Agg. Weekly Hours ³	1 yr % change	2.0%	1.7%	2.1%
2	US Stock Market (S&P 500) ²	1 yr % change	4.0%	-2.4%	4.5%
3	Real personal income ex current transfer receipts	1 yr % change	3.8%	3.8%	NA
4	ISM Manufacturing Index	% +/- neutral: 50 ⁵	2.2%	0.4%	0.2%
5	Spot Oil (W. Tex. Intermed.) ²	1 yr % chg (inverted)	55.6%	51.2%	45.2%
6	Consumer Spending Index ⁶	1 yr % change	2.4%	2.7%	NA
6a	Real Pers. Cons. Expend.	1 yr % change	3.1%	3.2%	NA
6b	Real Retail Sales	1 yr % change	1.8%	2.2%	NA
7	Treasury Yield Curve (10 yr Note less 3 mo T-bill) ²	current monthly spread ⁷	21.0%	21.5%	20.5%
8	Corporate Bond Spread (Moody's BAA less AAA) ²	1 yr % chg (inverted)	-88.5%	-84.1%	-80.5%
9	Real Monetary Base (M0)	1 yr % change	-2.5%	-0.5%	NA
10	University of Michigan Consumer Sentiment Index	1 yr % change	11.4%	3.1%	3.6%
11	Industrial Production	1 yr % change	1.1%	0.4%	NA
12	New Residential Bldg. Permits	1 yr % change	11.6%	4.9%	NA
13	Real Mfg. & Trade Sales ⁸	1 yr % change	1.8%	NA	NA
14	ISM Non-Mfg. Index ⁴	% +/- neutral: 50 ⁵	18.0%	13.8%	18.2%

1. Average 1-year % changes of payrolls, jobless claims, employed-to-unemployed ratio, and weekly hours index.
 2. Based on average monthly data.
 3. Production and Nonsupervisory Employees: Total Private Industries.
 4. Data series begins Jan. 2008.
 5. A neutral reading is assumed to be 50. The transformation is calculated as the % deviation for each monthly reading relative to 50.
 6. Average of 1-year % changes for real personal consumption expenditures & real retail sales.
 7. Monthly difference: 10yr less 3mo % rates, multiplied by 10.
 8. Manufacturing & w wholesales sales via BEA. Note: retail sales excluded.

Note: The Labor Market Index is considered as 1 indicator, comprised of the four indicators in green cells. The same applies to the Consumer Spending Index, which is comprised of 2 indicators. If one or more of the indicators in blue cells is published, the respective parent index is considered as actual data for the month.

NA = data not yet available from source

Source: CapitalSpectator.com

The Economic Trend & Momentum indexes are aggregates of 14 economic and financial indicators, as shown in the table at right. A complete data set for each month tends to lag by one to three months, depending on the indicator. Manufacturing and trade sales suffer the longest lag. By contrast, the market figures are available in real time.

To calculate ETI and EMI in the graphs and analysis above, missing data points must be estimated. To fill in the missing data points, an ARIMA model is used.

Parameter Rules for Summary Table on Page 1:						
Business Cycle Index Values						
		ETI	EMI	MMRI	CFNAI	ADS
↑	low risk	80%:100%	> 5%	> 5%	> 0.2	> 0.2
↑	medium-low risk	55%:80%	1%:5%	0%:5%	-0.2:+0.2	-0.2:+0.2
↓	medium-high risk	45%:55%	-1%:+1%	-5%:0%	-0.7:-0.2	-0.8:-0.2
↓	high risk	0%:45%	< -1%	< -5%	< -0.7	< -0.8
Recession Risk Probability Estimates						
		ETI	EMI	MMRI	CFNAI	ADS
↑	low risk	0%:10%	0%:10%	0%:10%	0%:10%	0%:10%
↑	medium-low risk	10%:30%	10%:30%	10%:30%	10%:30%	10%:30%
↓	medium-high risk	30%:50%	30%:50%	30%:50%	30%:50%	30%:50%
↓	high risk	> 50%	> 50%	> 50%	> 50%	> 50%

Numerical range for signal summaries on p. 1