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CAPITAL MARKET CRISIS & ECONOMIC TREND PREDICTABILITY

INTRODUCTION TO CAPITAL MARKET BEHAVIOR THEORY AND PRACTICE

CAPITAL MARKET CRISIS AND PREDICTABILITY

Can we predict the crash?

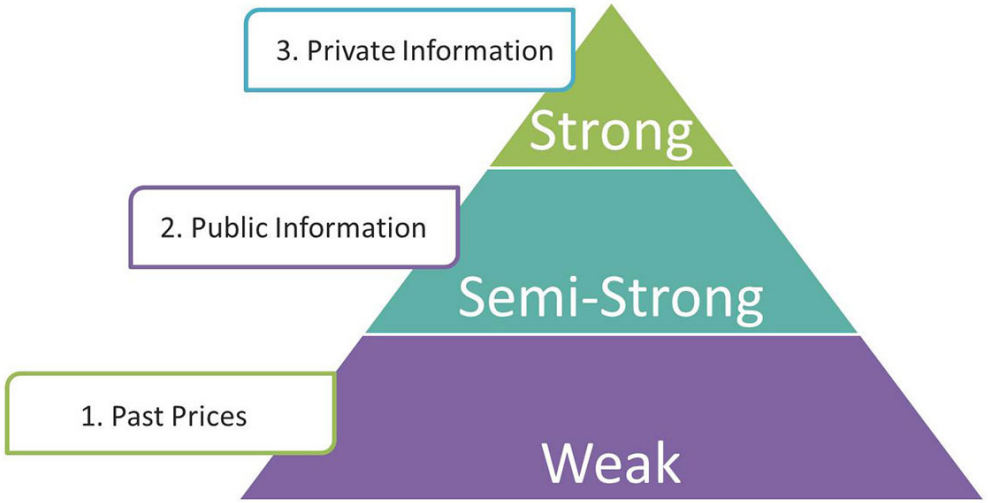
Bear Market - Extended >20% Stock Market Decline

- Collapse of Speculative Bubble (1929, 1987, 2000)
- Major Catastrophic Event (2001, 2020)
- Financial System Misfunctioning (1929, 2008)
- Computerized Trading (1987, 2020)

Stock market is a leading economic indicator

Government corrective (not preventive) actions - Liquidity, Stimulus, Interest Rate

EFFICIENT MARKET HYPOTHESIS

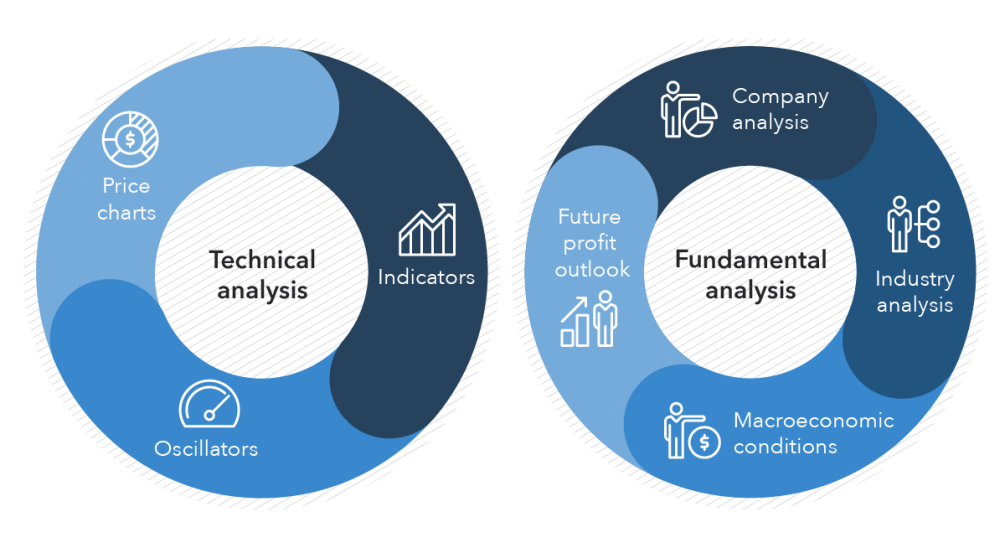


- By Bachelier in 1900 and Eugene Fama in 1970

EMH means that it is not only impossible to predict what the market will do next, but also means fundamental and technical analysis are useless to predict the market.

- Strong – all information is reflected on prices
- Semi-Strong – all public information is reflected on prices
- Weak – all historical information is reflected on prices.

WHY FUNDAMENTAL & TECHNICAL ANALYSIS FAIL



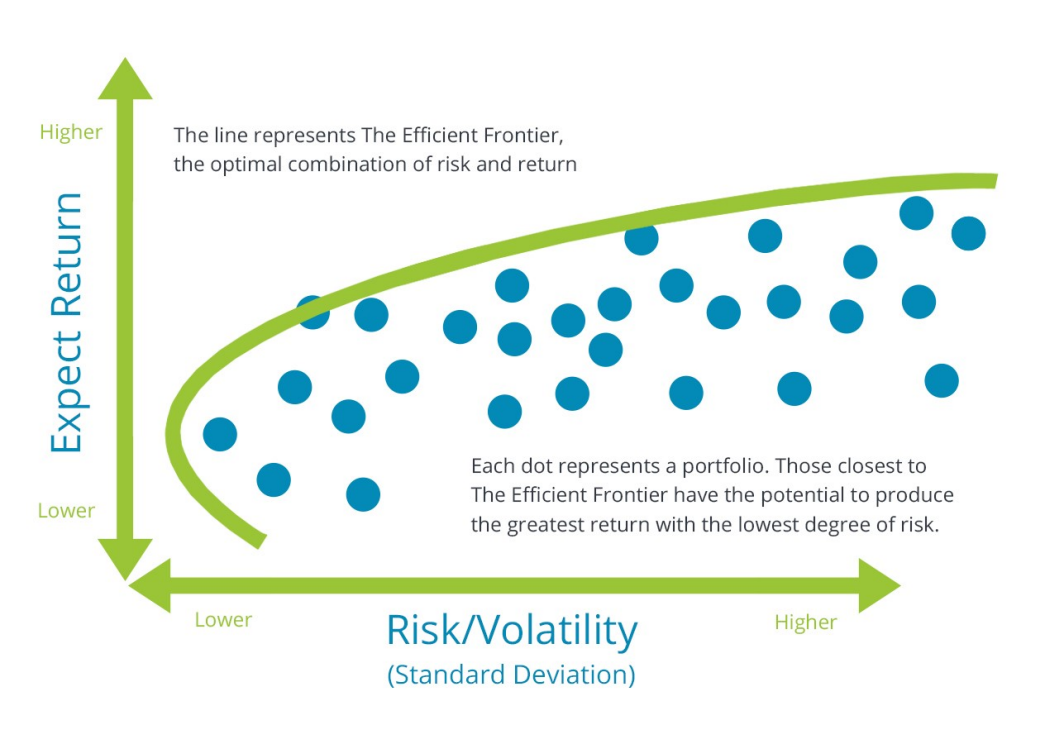
Fundamental Analysis – Financial Statements

- Market Always Over Reacting
- Backward Looking
- Subjective Forward Analysis
- Long Delay

Technical Analysis – Charts

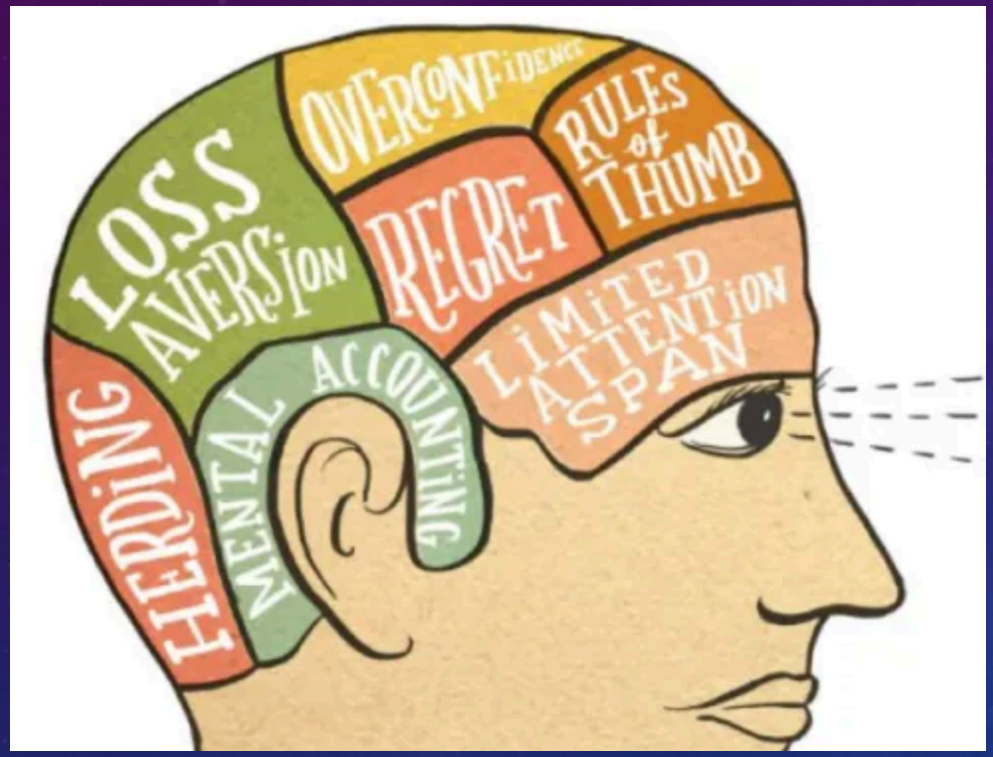
- Price Noise
- Data Mining
- Subjective Pattern Interpretation
- Some Delay

MODERN PORTFOLIO THEORY



- MPT by Harry Markovitz in 1952
- Assets are much more highly correlated, reducing the benefits of diversification
- Oversimplified assumptions on independent events, expected return, and portfolio risk measure based on normal distribution

BEHAVIORAL FINANCE THEORY

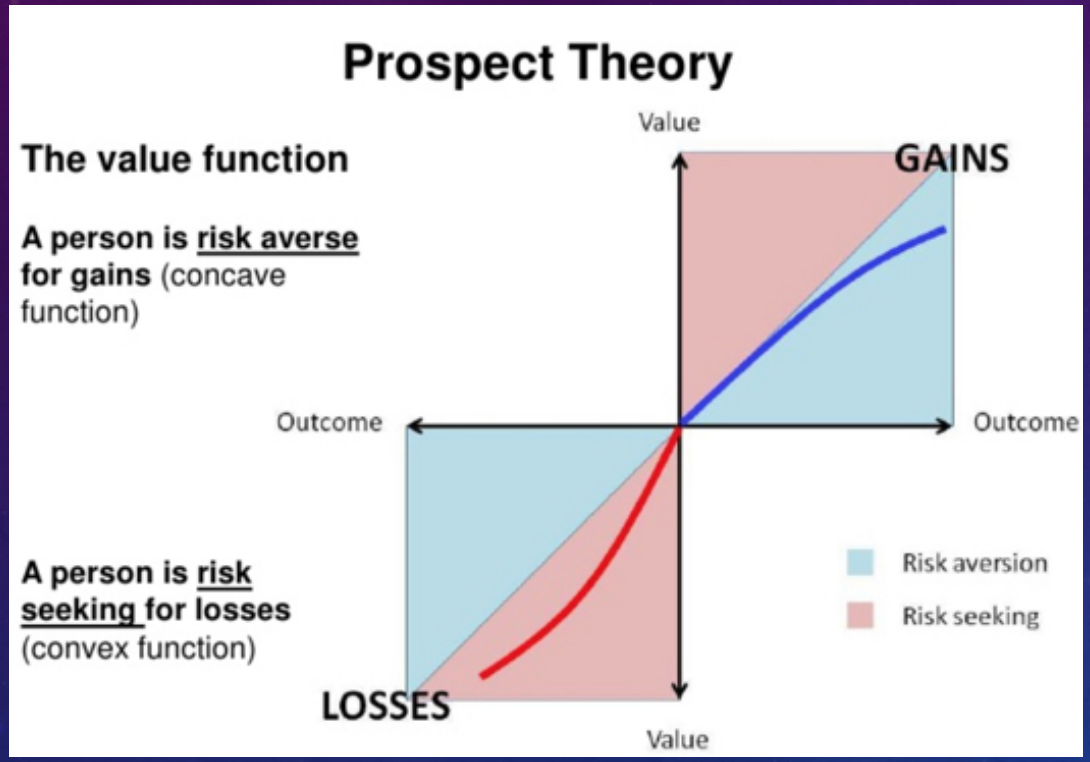


- By Shiller in 2002
- Irrational investor behavior explains excess volatility

Study investors, not market

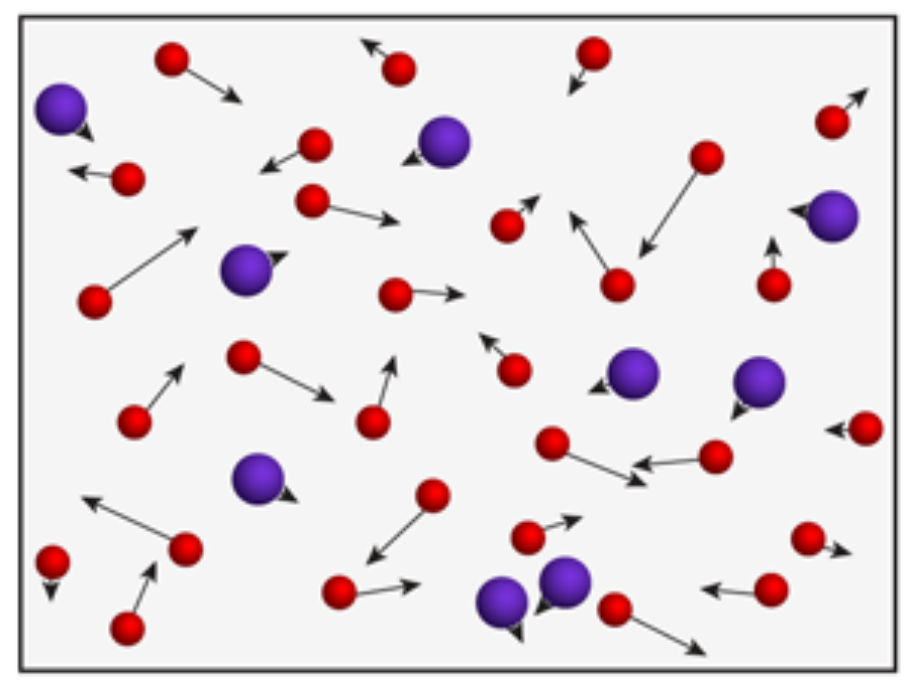
- Mental accounting - the propensity to allocate money for specific purposes
- Herd behavior - the habit of people to imitate the financial behavior of a majority
- Anchoring - the attachment of a spending level to an easy reference, like spending more money for a popular brand of anything.
- High self-rating - the tendency of individuals to rank themselves higher than an average individual.

EARLIER WORK - PROSPECT THEORY



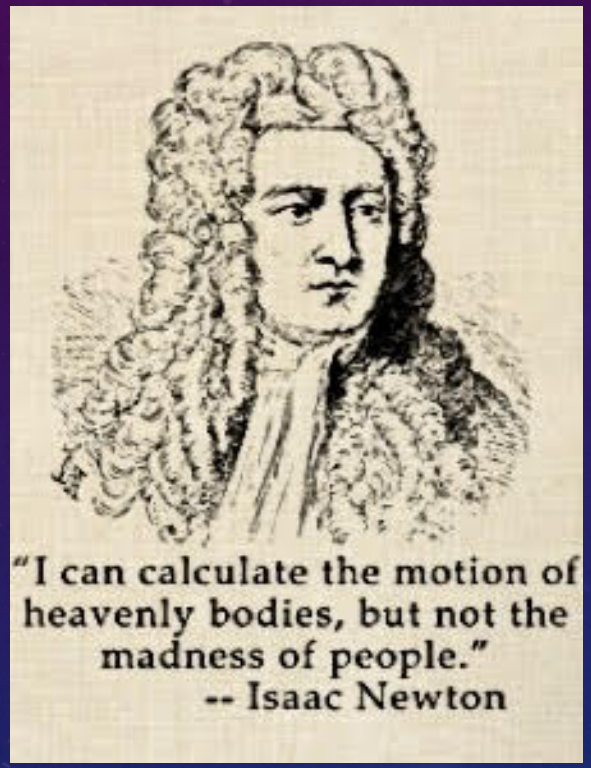
- By Kahneman and Tversky in 1979
- Investors risk tolerance is asymmetric
- Faced with a risky choice leading to gains, individuals are risk-averse, preferring solutions that lead to a lower expected utility but with a higher certainty
- Faced with a risky choice leading to losses, individuals are risk-seeking, preferring solutions that lead to a lower expected utility as long as it has the potential to avoid losses

BIRTH OF CAPITAL MARKET BEHAVIOR THEORY



- *The general understanding of the financial industry has been that return and risk are real and fundamental. Therefore we have been so used to and positive for any description of the capital market by Nobel Prize-winning economics works. That led us to believe that the modern portfolio theory and related academic research are true descriptions of the market.*
- *If we have observed the stock market movements more in-depth and long enough, many of us have seen evidence that return and risk (standard deviation) are not fundamental. They are derived or emergent concepts. We all know what temperature means. It measures something as hot or cold. Scientific discoveries taught us that temperature is just an emergent idea and the fundamental idea is the motions of atoms.*

CMBT – BASIC MARKET MOVEMENT LAWS



Newton's First Law:
An object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction unless acted upon by an unbalanced external force.

Stock Market First Law Explanation (*by Charlie Yang*): Inertia is a property of stock market movement trend that resists changes in direction. If there are no fundamental events that cause a material change of a company, the stock's price trend will stay that way (up, down, or sideways) until a new material changing event that creates an external force to make the trend change or reversal. The price changes in an up or downtrend will slow down due to friction caused by valuation concerns, and a new material event could accelerate the price changes and thus the slope of trend lines.

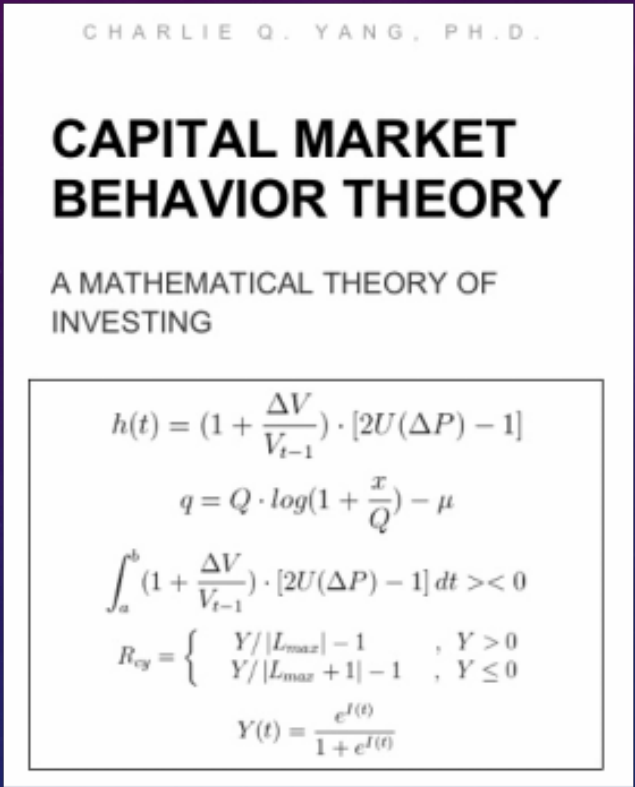
Newton's Second Law:
The acceleration (***a***) of an object as produced by a net force ***F*** is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass ***m*** of the object: ***F = ma***.

Stock Market Second Law Explanation (*by Charlie Yang*): A material event impact force ***F*** acting on stock will accelerate its price movement in the direction of ***F*** (positive or negative), with acceleration ***a = F/m***. Acceleration is the change in trend line slope. The mass ***m*** here is the present intrinsic value of the company. If the intrinsic value has no quantifiable change by the force immediately, the price movement will change with a new accelerated up or downtrend.

Newton's Third Law:
For every action, there is an equal and opposite reaction.

Stock Market Third Law Explanation (*by Charlie Yang*): This law is familiar to many experienced investors or traders. A buy or sell trade order cannot be filled for any given stock unless there is the same quantity sell or buy order reacting to the initiating trade action. For example, a stock sold by a seller with an opinion to be bearish, there is always a buyer with the opposite opinion to be bullish.

CMBT – ADVANCED MARKET MOVEMENT LAWS



1. A trend is driven only by those taking trading actions - The primary price movement trend is mainly driven by the behavior of those investors who take trading actions; not by anyone else who takes no trading actions.

2. Market trend reversal can be detected from early bullish or bearish trading actions - "Smart money" trades from institutions and related parties offer early signals of a trend reversal. Those trading actions with up or downticks supported by volumes contribute to trends and trend reversals.

3. A trend can be timely identified if net sentiment can be measured - Long-term or short-term trend reversals can be identified most of the times in advance or with a little delay if we can measure the net effect of bull or bear market sentiment.

4. A trend is determined by volumes and changes in prices, not by absolute prices- Past prices have no direct impact in the future prices which are only affected by changes of prices and volumes by trading actions.

5. Trend reversal happens when the net effect of bulls and bears crosses zero - If any system can measure the total force of bullish buyers and the total force of bearish sellers, the trend reversal will then happen when the net effect of the combined force measure crosses zero. The trend reversal is subject to happen anytime.

6. The effect of all events will affect the market trend - Any events, including but not limited to earnings, investor expectations, research reports, and political policies will all create a certain impact to affect the market trend. If the effect is strong enough, the primary trend reversal can be triggered.

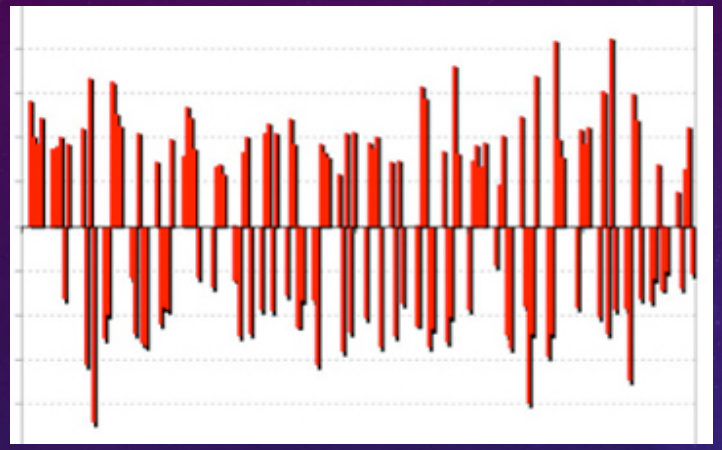
7. Fundamental value can be created or destroyed by trading actions - Through trading actions, the market prices can be inflated and deflated and thus the perceived value can change over time. It, in turn, can create or destroy the fundamental value of the underlying business due to the availability of capital market funding. The stock market is not a zero-sum game as some may falsely believe.

8. The market price is just the value perceived by all interested buyers and sellers - Market price is determined by the collective effect of all bullish and bearish investors' perception of the value at any given time. Fundamental value is a factor but it does not directly determine the market prices.

9. Risk control can only be done by design, not by short-term timing - Investment portfolio risk management can be optimized by asset allocation design, not by short-term timing of secondary or minor trends. If a primary long-term bull or bear trend can be detected, the weighting towards more aggressive or more conservative can enable a portfolio to out-perform the market. If the primary trend cannot be detected (side-way market), portfolio re-balancing will add value.

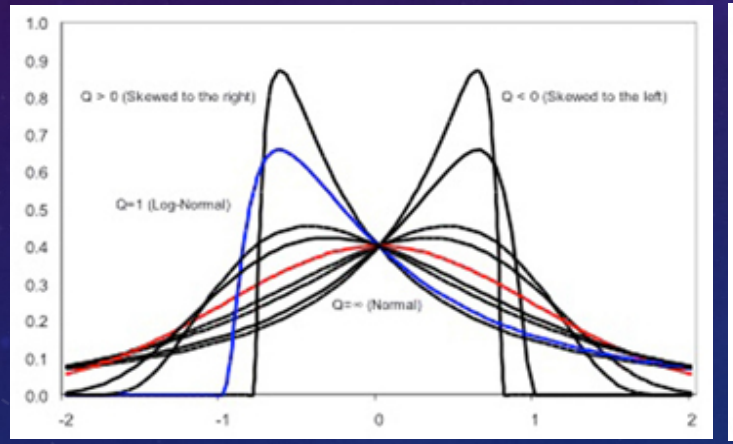
10. The stock market is a leading economic cycle indicator - The stock market overall driven by trading actions is a good long-term economic indicator.

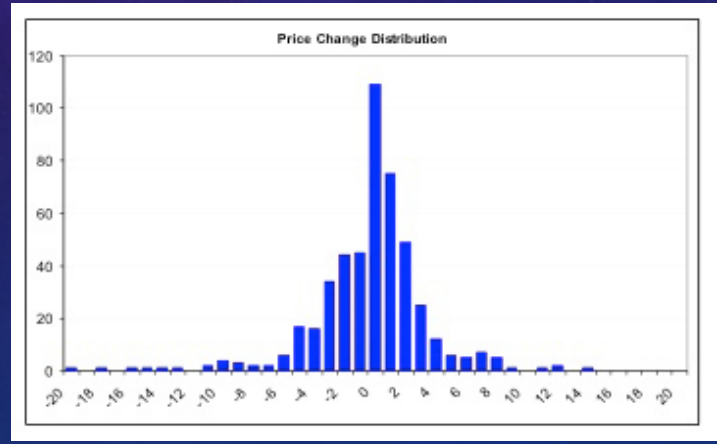
CMBT – MARKET MOVEMENT MEASURES

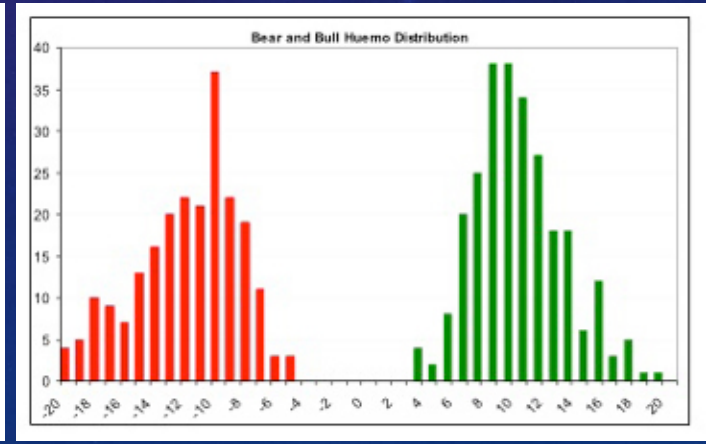


Market behavior statistical samples

- Every trading actions with up-tick or down-tick
- Intra-day trade actions including open, high, low, close, volume, and relative behavior strengh
- Risk averse adjustment, volume weighting, and uniformization



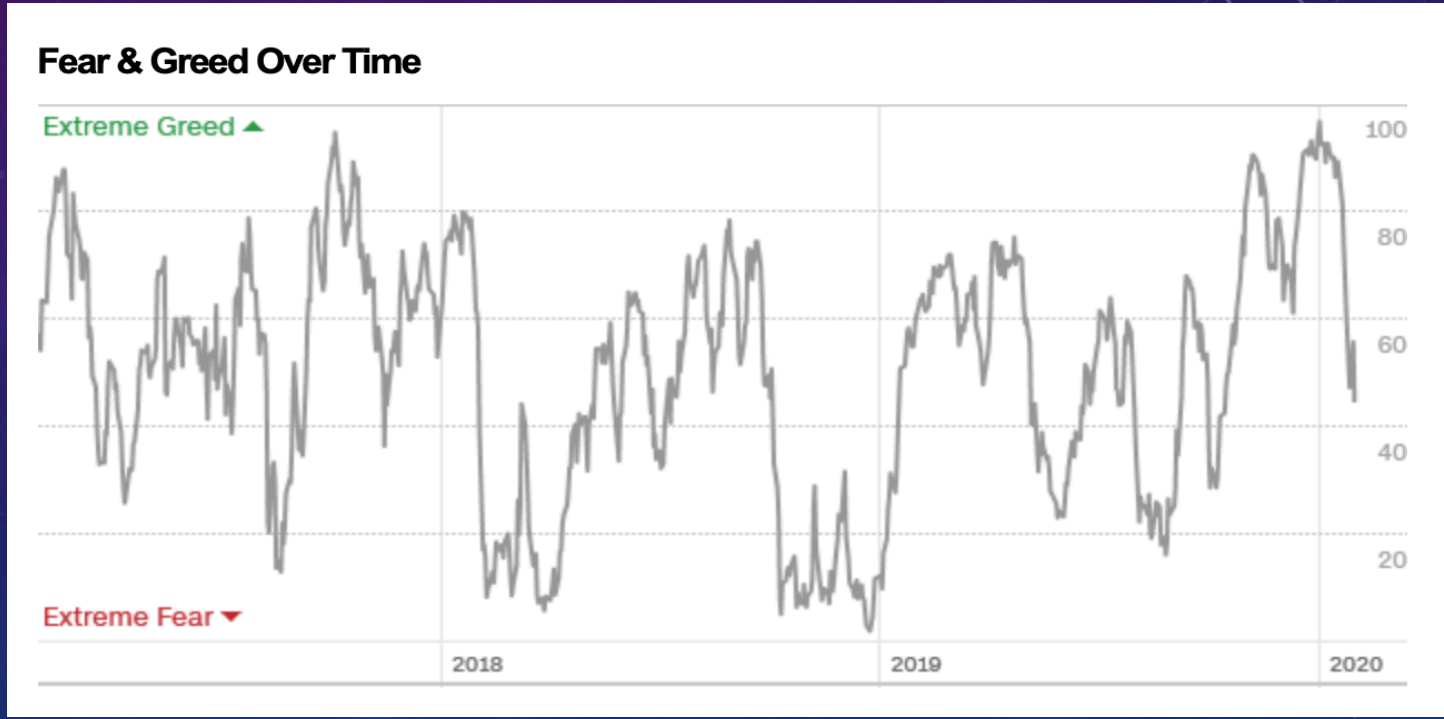




REVISIT – CNN FEAR & GREED INDEX

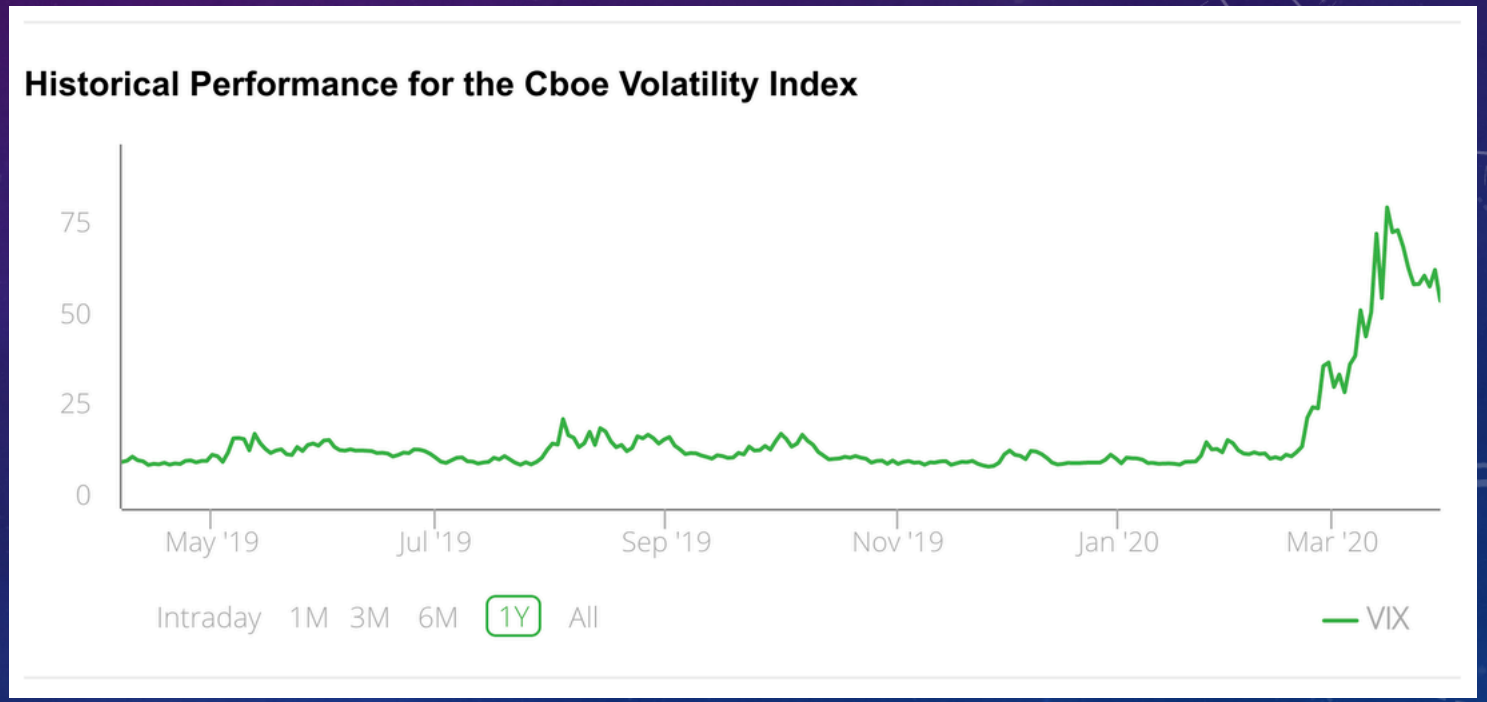
Calculated from seven indicators of investor sentiment

- Not real-time
- Overall market only
- No action signal



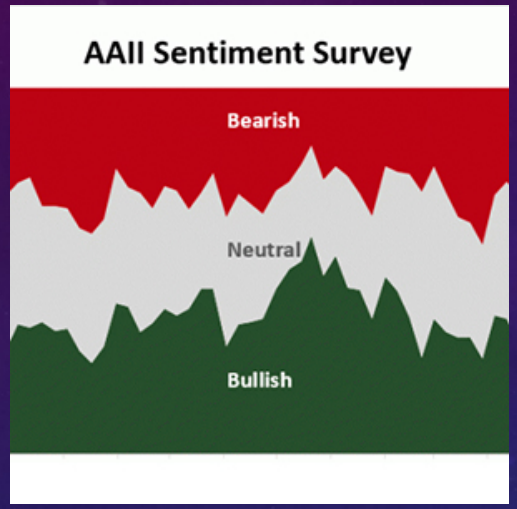
REVISIT – CBOE VIX INDEX

Implied volatility of options on the S&P 500 index



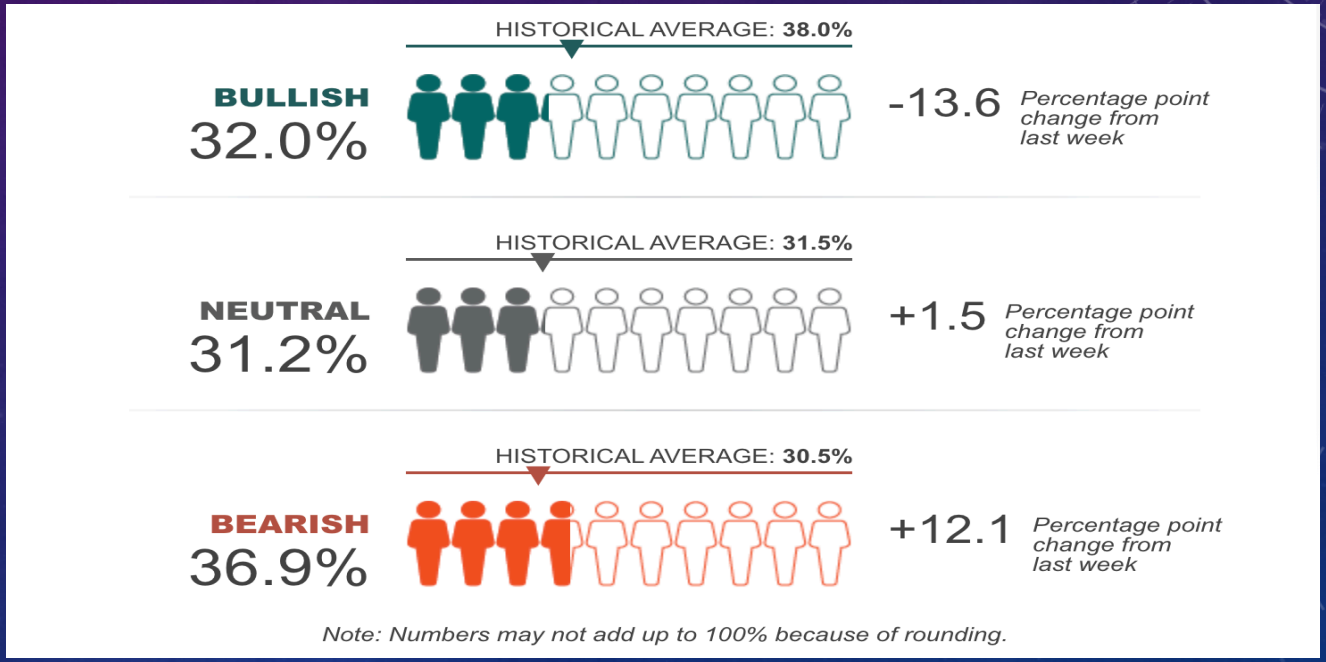
- Limited use for stocks/ETFs
- No action signal

REVISIT – AAII INVESTOR SENTIMENT SURVEY

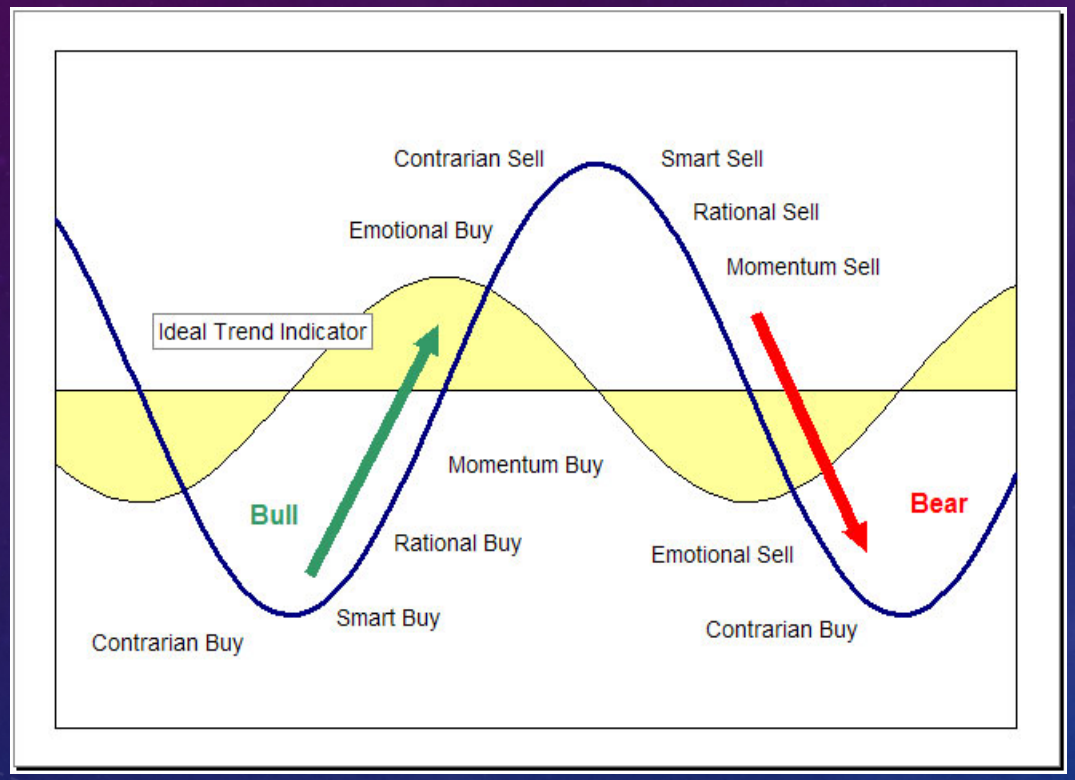


- Not real-time
- No reading for stocks/ETFs
- No action signal

Weekly member survey to measure the mood of individual investors



BB-SIGMA INDEX (YIN-YANG INDEX) DEFINED

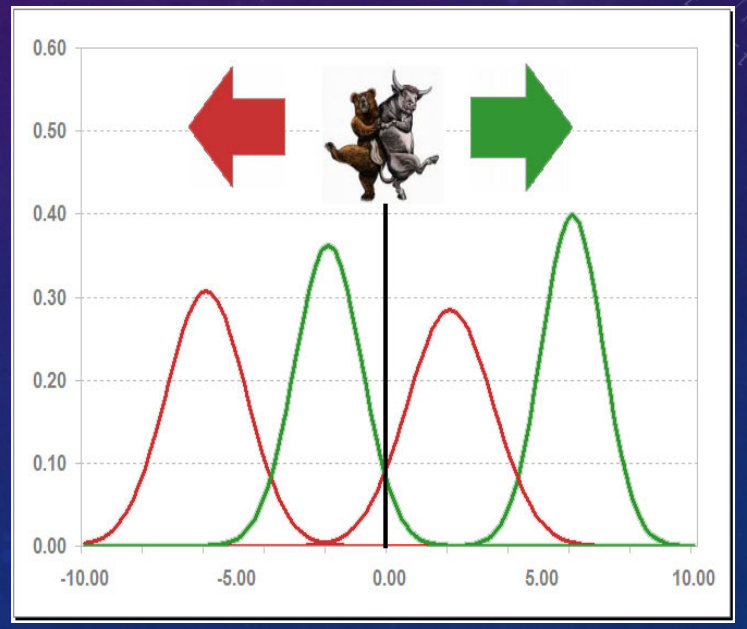


- *The BB-Sigma Index is a scientific indicator measuring the capital market sentiment, originally developed by Charlie Yang in 1997*
- *It is an indicator solely based on intra-day market trading actions to identify market trend changes*
- *It can be used as a market psychology measure or as a long-term market cycle indicator*

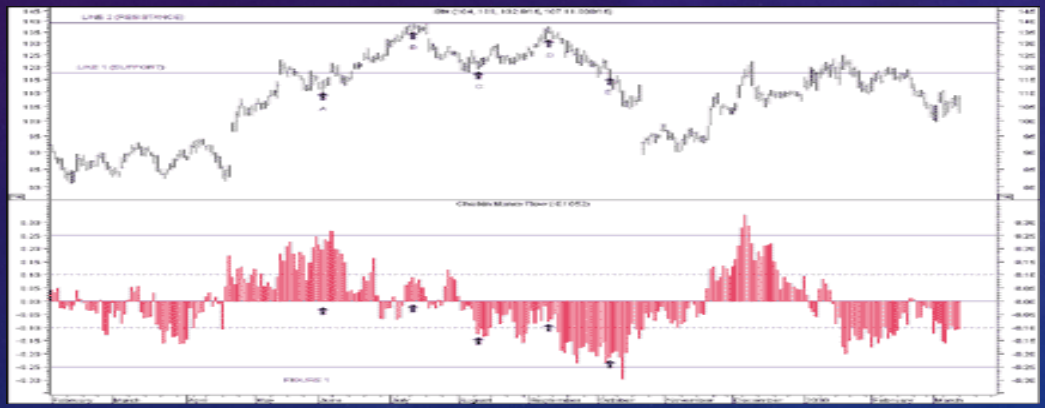
BB-SIGMA INDEX (YIN-YANG INDEX) CALCULATION

Step 1: Intra-Day Volume and Price Sampling

Step 2: Statistical Summation and Processing



REVISIT – OBV & MONEY FLOW INDEX



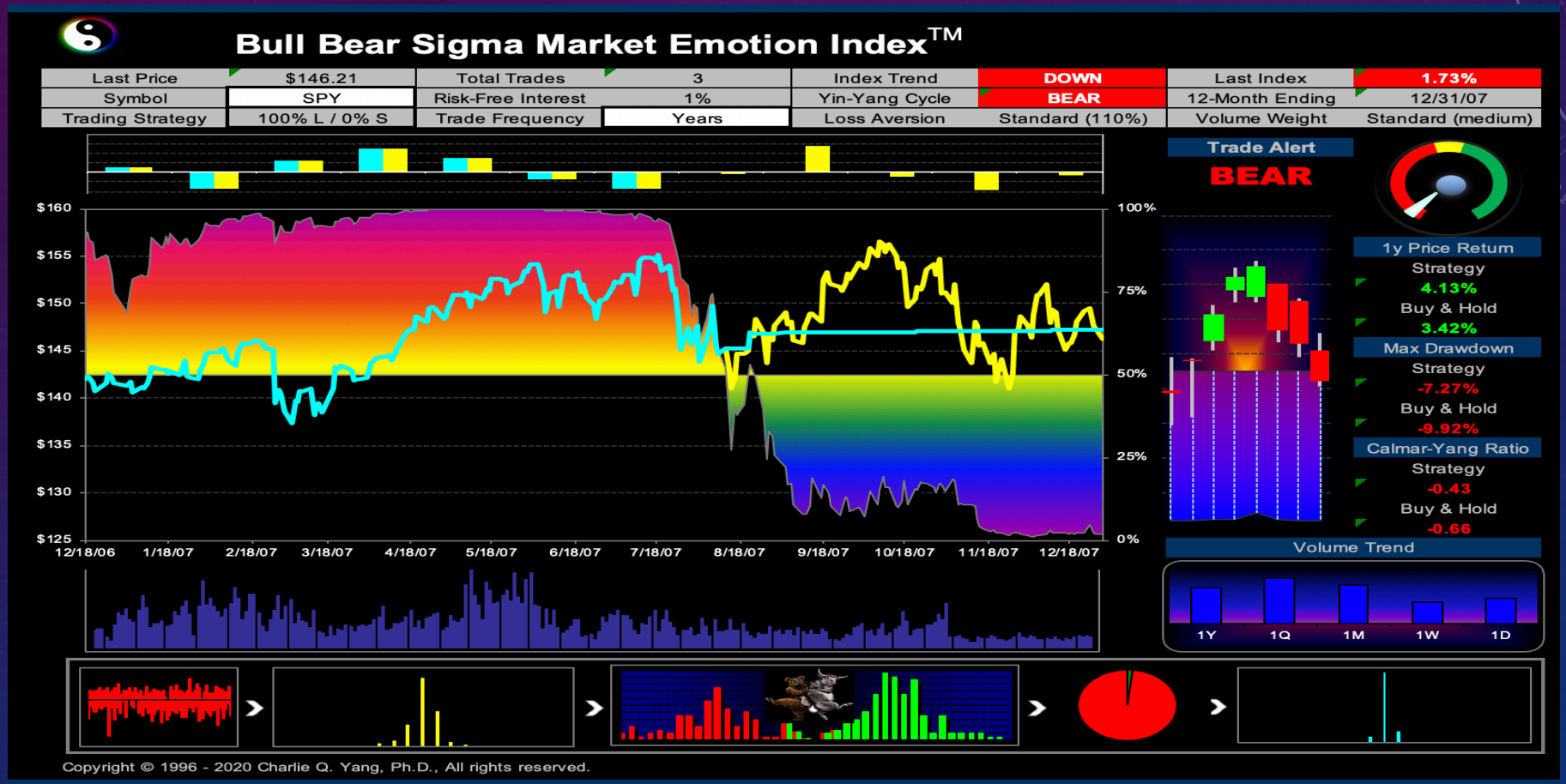
On Balance Volume

- Arbitrary value range
- Subjective interpretation
- Inter-day price is false behavior signal

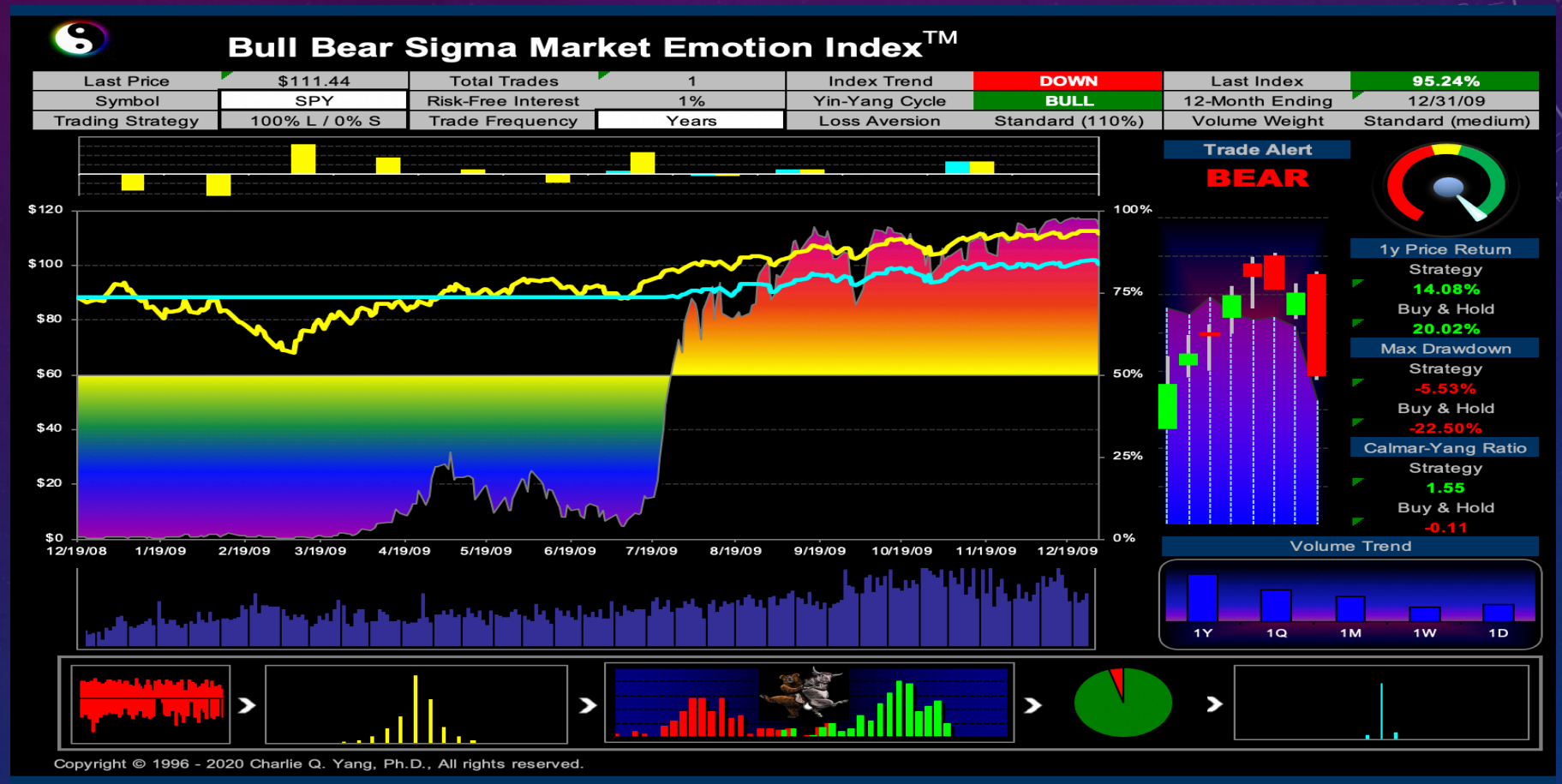
Chaikin Money Flow Index

- Noisy indication
- Short-term signals
- Failed long-term application

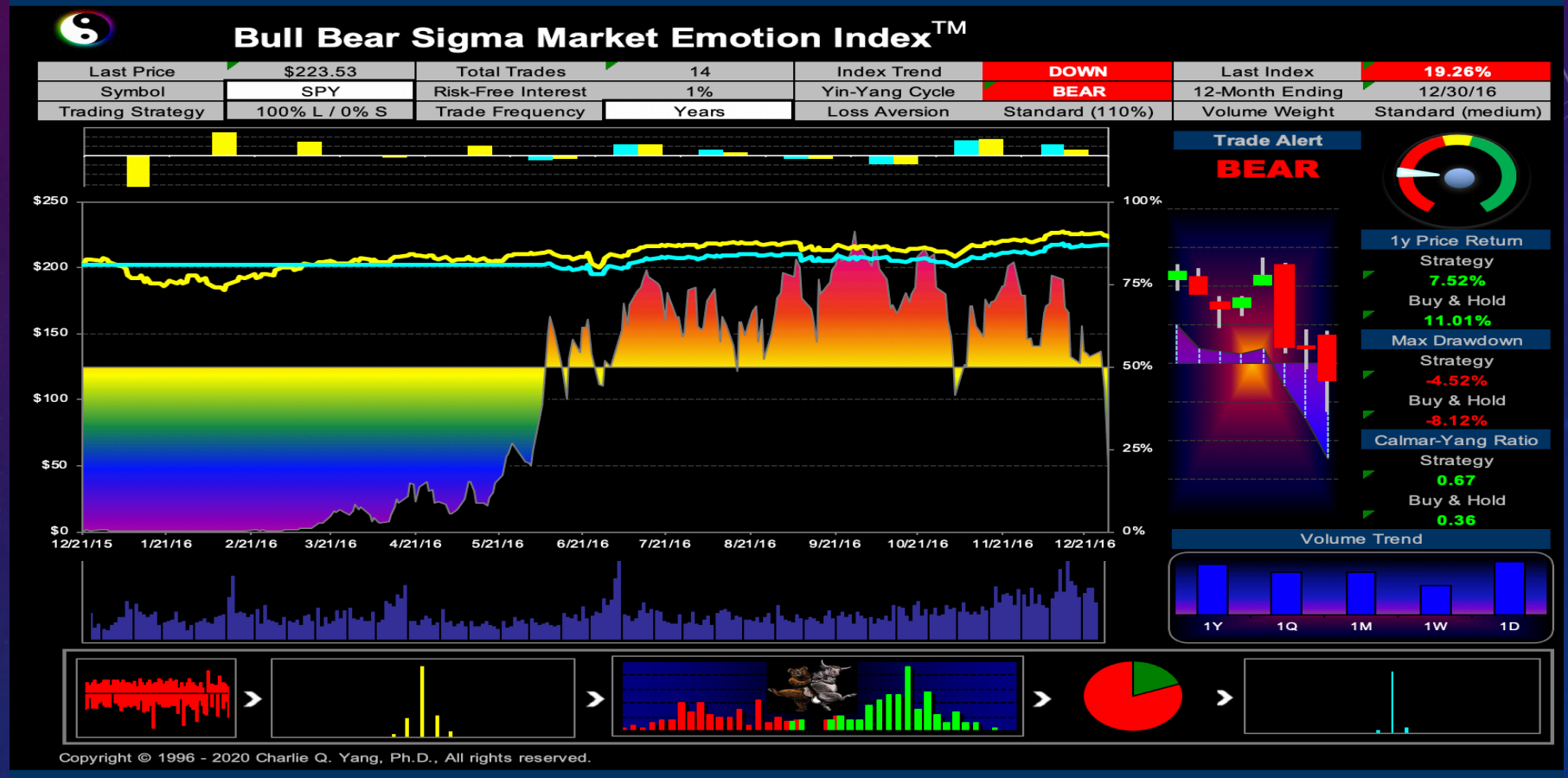
BB-SIGMA INDEX (SPY BEFORE 2008 CRISIS)



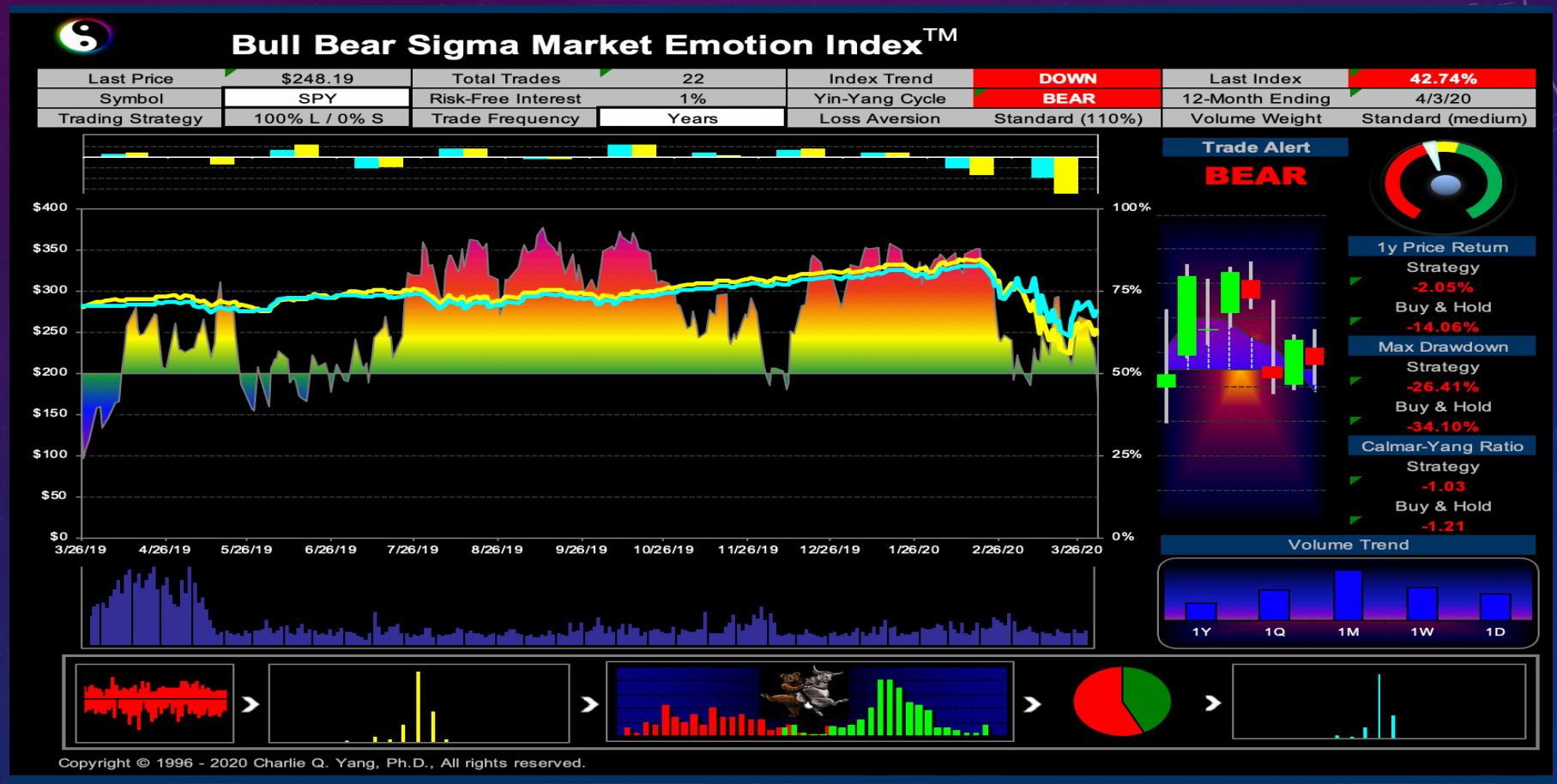
BB-SIGMA INDEX (SPY AFTER 2008 CRISIS)



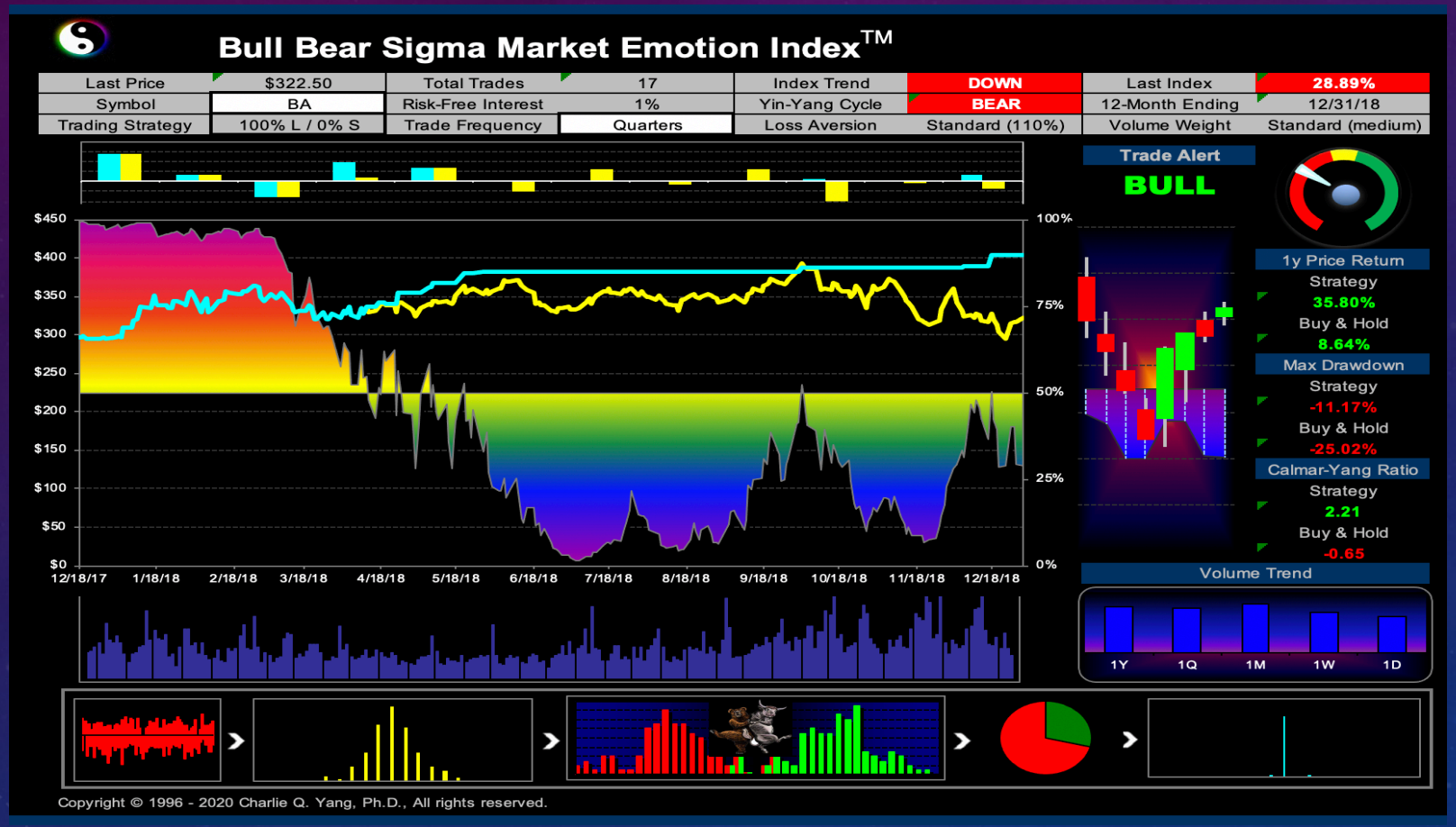
BB-SIGMA INDEX (SPY 2016 ELECTION)



BB-SIGMA INDEX (SPY BEFORE 2020 COVID-19)

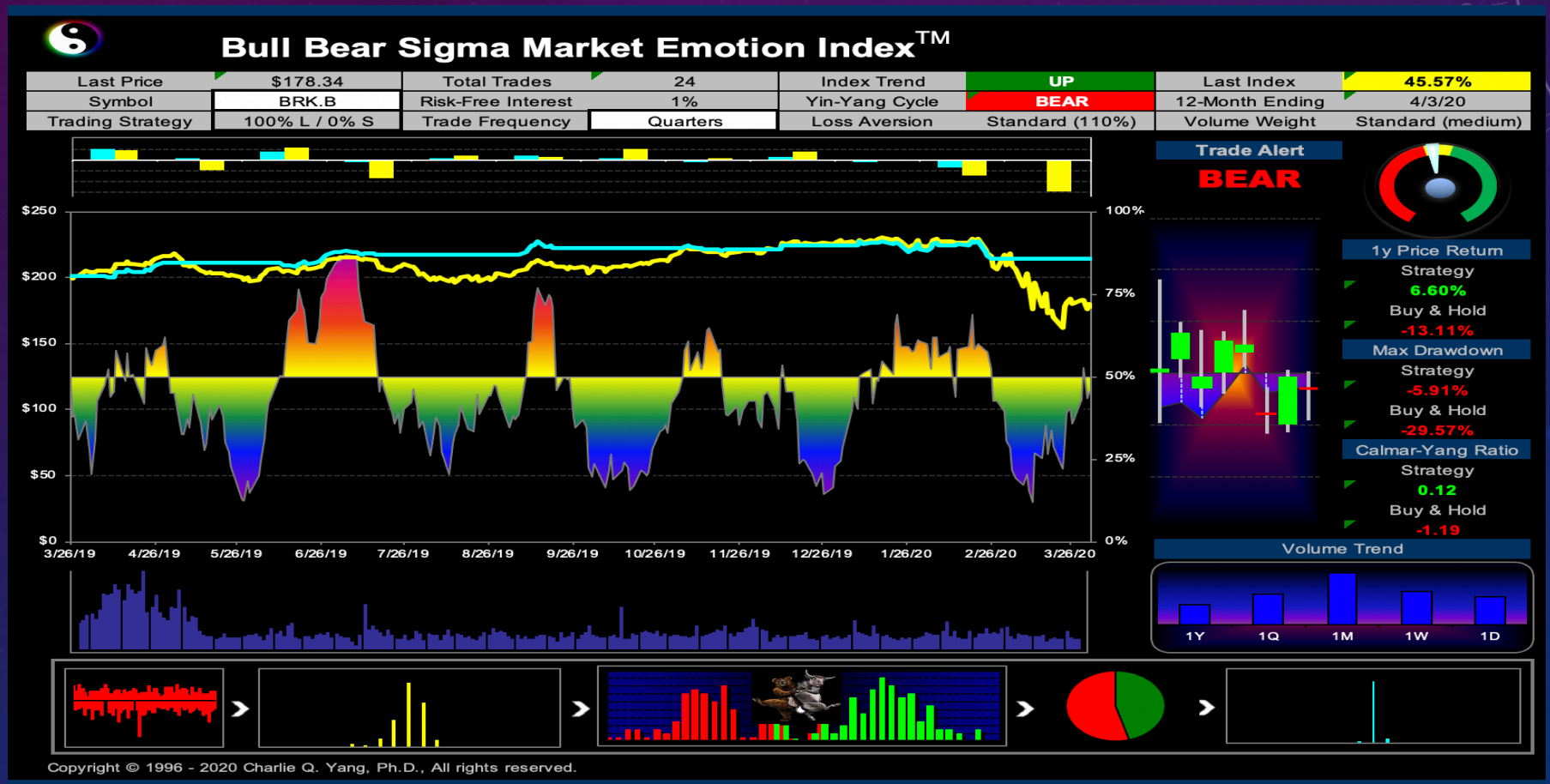


BB-SIGMA INDEX (BOEING)

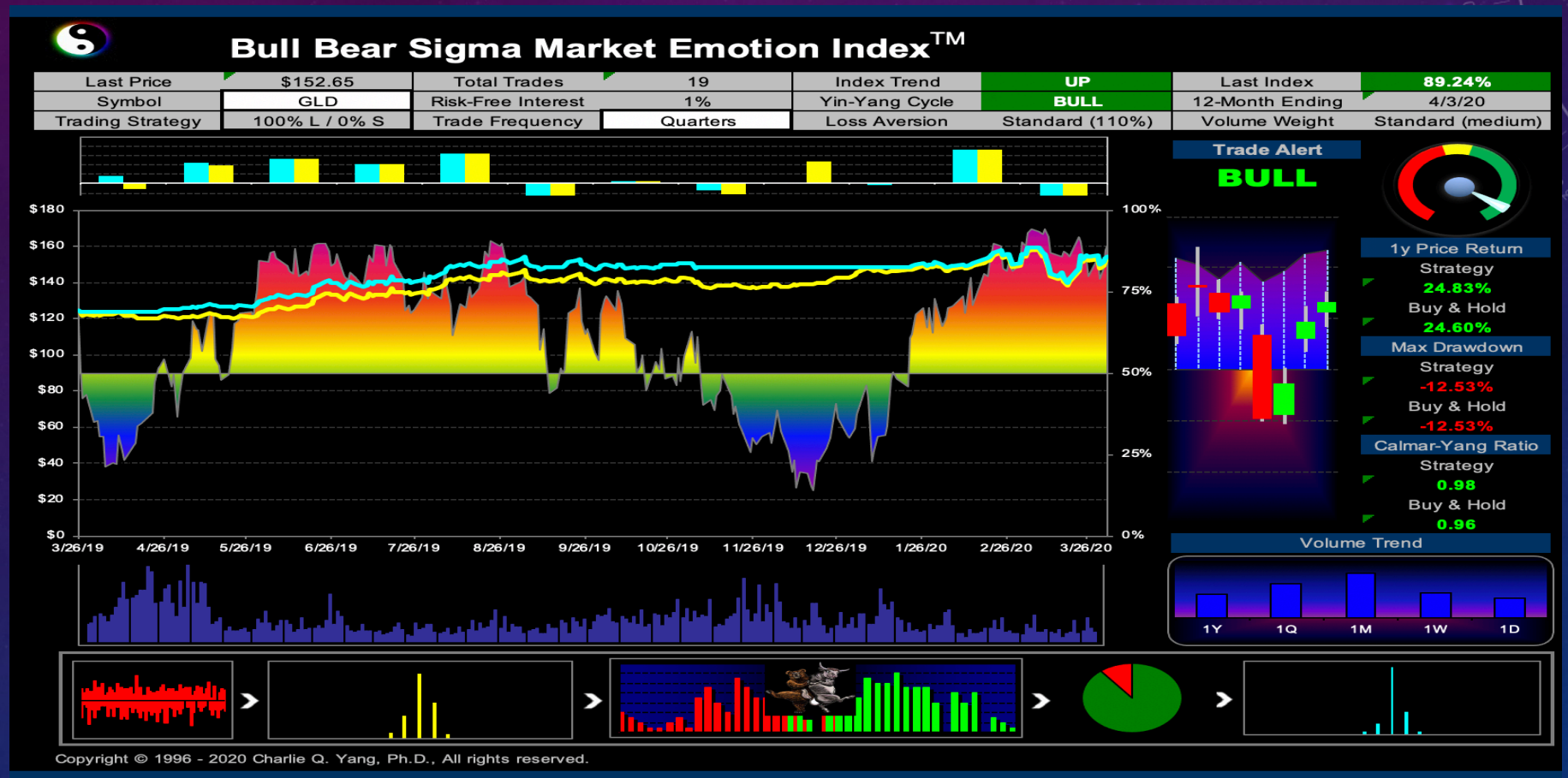


Lion Air Flight 610 cashed on October 29, 2018

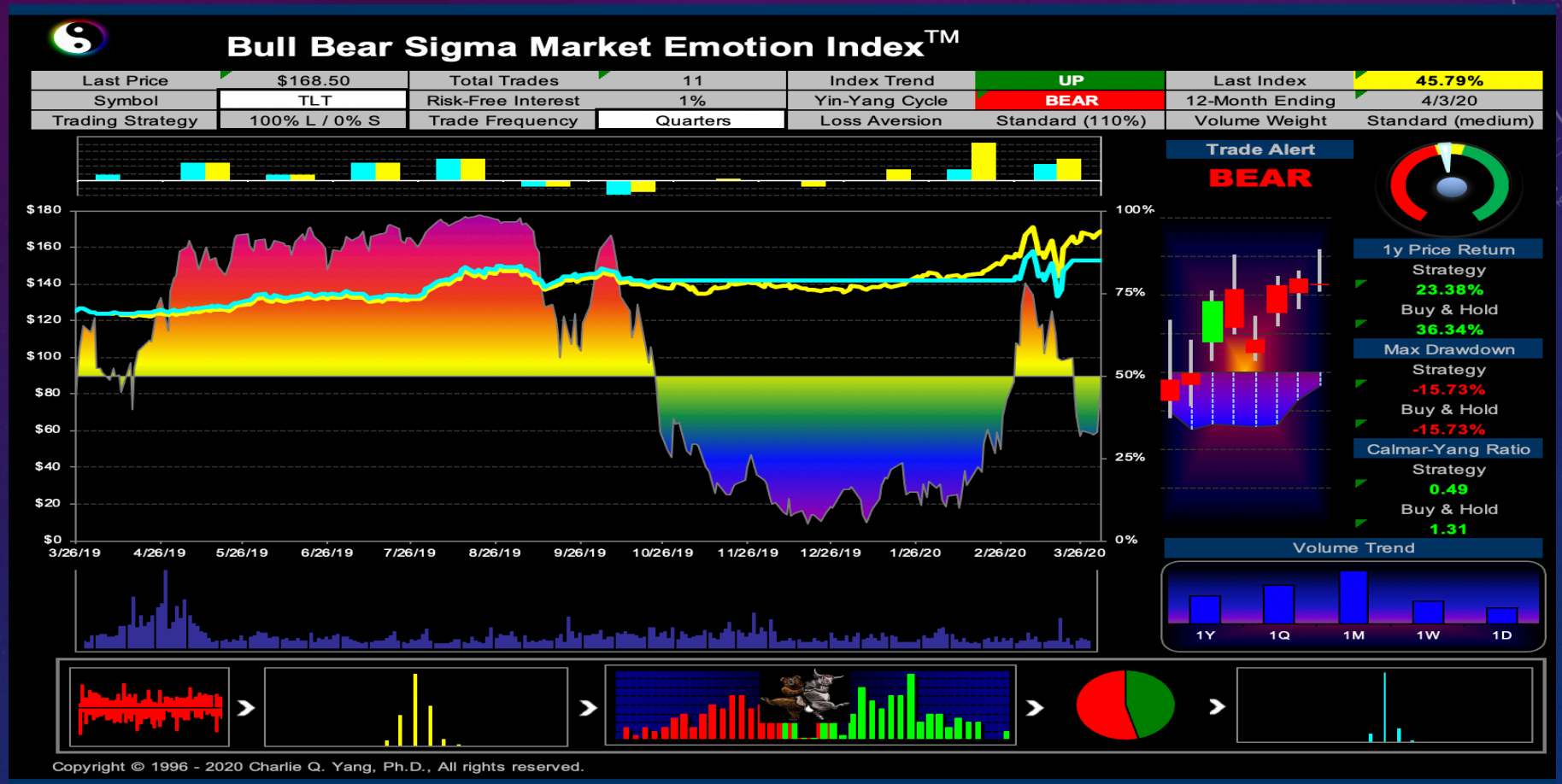
BB-SIGMA INDEX (BERKSHIRE BEFORE COVID-19)



BB-SIGMA INDEX (GLD BEFORE COVID-19)



BB-SIGMA INDEX (TLT BEFORE COVID-19)



REFERENCE & CONTACT

Online resources:

- IBMetrics.com
- BBsigma.com
- InvestmentTheory.org
- StockMarketTheory.com
- ISIR.org
- AFIEA.com

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