

IDENTIFYING TREND MODES and CYCLE MODES

**Left-Brained Concepts
for Traders in their Right Minds**

- 2008 Charles H. Dow award runner-up
- Author
 - MESA, and Trading Market Cycles
 - Rocket Science for Traders
 - Cybernetic Analysis for Stocks and Futures
- Website
 - www.mesasoftware.com

TRADING IS EASY

John Ehlers

- In the Trend Mode:
 - Buy and Hold when trend is up
 - Sell and Hold when trend is down

- In the Cycle Mode:
 - Buy at the cycle valley
 - Sell at the cycle peak

TRADITIONAL TECHNOLOGIES

John Ehlers

- **Trend Mode**
 - Data Smoothers (moving averages, etc.)
- **Cycle Mode**
 - Oscillators (RSI, Stochastic, etc.)
- **Compromise Solutions**
 - Adaptive moving averages, KAMA, VIDYA, etc.
 - I have found them not to be very effective.

THE REAL PROBLEM

John Ehlers

- Suppose an RSI signals a valley
 - The trading action is to buy
- However, the market keeps going down
 - In hindsight a trend mode has started
- Oscillators and Moving Averages often give opposite signals
 - There are a jillion “fixes” suggested

**THE REAL PROBLEM IS
HOW TO IDENTIFY THE CORRECT MARKET MODE**

MARKET MODE IDENTIFICATION

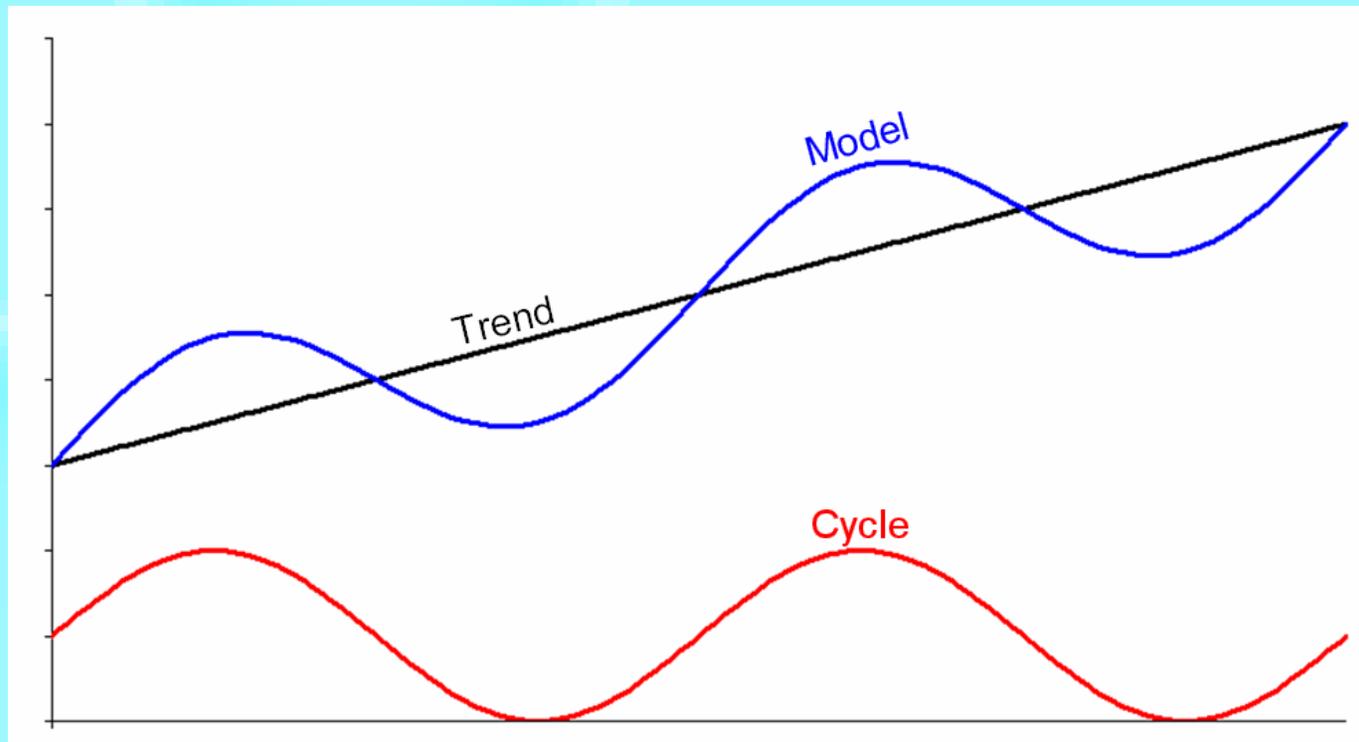
John Ehlers

- First, create a simplified model of the market
- The simple model has two components
 - A perfect trend
 - A perfect cycle
- Superimpose the two components for the composite model
 - Enables subsequent decomposition into the components

The Simple Model

John Ehlers

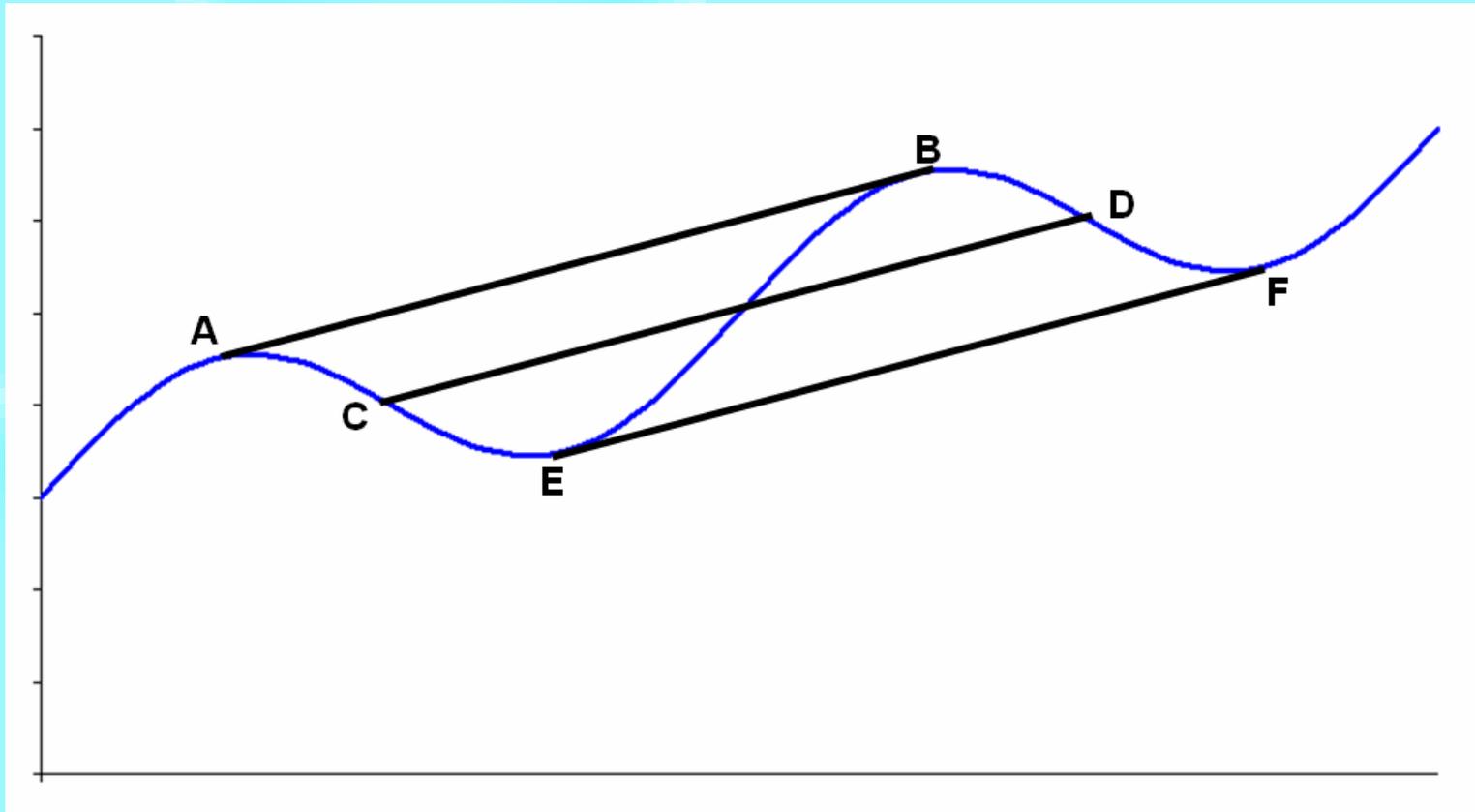
- Trend = Black
- Cycle = Red
- Composite = Blue



TREND SLOPE RECOVERY

John Ehlers

- Knowing the cycle period, the Trend Slope is **ALWAYS** the momentum across the full cycle period.



CYCLE RECOVERY

John Ehlers

- Oscillators often lose the cycle amplitude
- I prefer a BandPass Filter
 - Rejects low frequency (trend) components
 - Rejects high frequency (noise) components
 - Retains cycle amplitude (phase to some degree)
- EasyLanguage Code:

```
Inputs:   Period(20),  
         Delta(.1);
```

```
Vars:    gamma(0),  
         alpha(0),  
         beta(0),  
         BP(0);
```

```
beta = Cosine(360 / Period);
```

```
gamma = 1 / Cosine(720*delta / Period);
```

```
alpha = gamma - SquareRoot(gamma*gamma - 1);
```

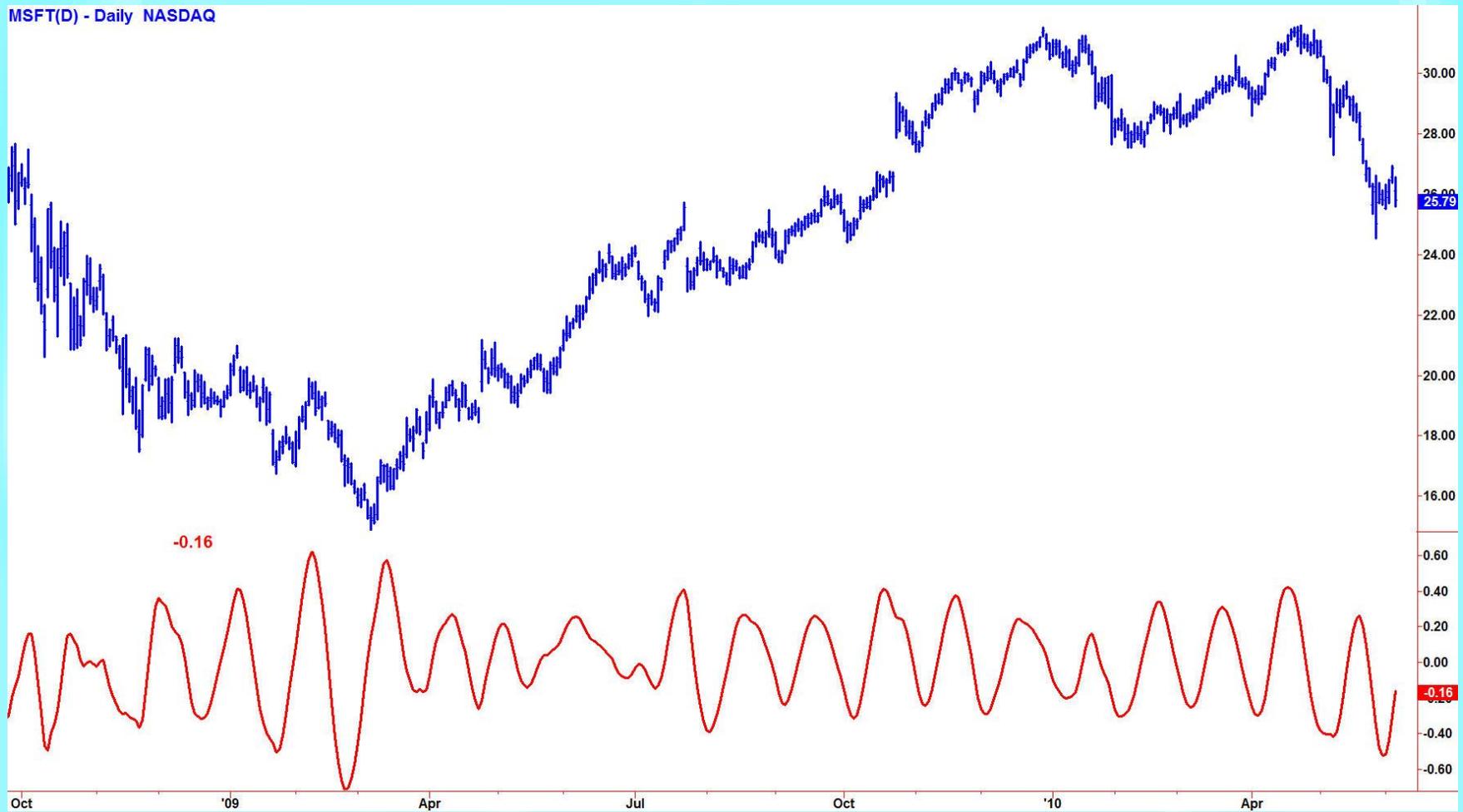
```
BP = .5*(1 - alpha)*(Close - Close[2]) + beta*(1 + alpha)*BP[1] - alpha*BP[2];
```

```
Plot1(BP, "BP", Red, 2);
```

Cycle Component for MSFT

John Ehlers

- Assumed 20 Bar Period (monthly cycle)



CYCLE AMPLITUDE RECOVERY

John Ehlers

- Remember this from trigonometry?
 - $1 = \sin^2(x) + \cos^2(x)$
- The cycle component is a sine wave
 - A Cosine is a Sine delayed by one fourth of a cycle period
- We use the trig identity to find the power in the cycle component
 - Average across the cycle period for smoothing
 - Take the square root to get the RMS wave amplitude
 - Multiply by 1.414 to get the peak wave amplitude
 - Double to get the peak-to-peak wave amplitude

EasyLanguage Code – Cycle Amplitude

John Ehlers

Inputs: Period(20),
 Delta(.1);

Vars: gamma(0),
 alpha(0),
 beta(0),
 BP(0),
 Power(0),
 count(0),
 RMS(0),
 PtoP(0);

beta = Cosine(360 / Period);

gamma = 1 / Cosine(720*delta / Period);

alpha = gamma - SquareRoot(gamma*gamma - 1);

BP = .5*(1 - alpha)*(Close - Close[2]) + beta*(1 + alpha)*BP[1] - alpha*BP[2];

Power = 0;

For count = 0 to Period - 1 Begin

 Power = Power + BP[count]*BP[count] + BP[count + Period / 4]*BP[count + Period / 4];

End;

RMS = SquareRoot(Power / Period);

PtoP = 2*1.414*RMS;

Plot1(PtoP, "PP", Yellow, 2);

TREND VIGOR

John Ehlers

- Trend Vigor is the ratio of the (smoothed) trend slope across one full cycle period to the cycle peak-to-peak amplitude.
- If the ratio is greater than one the trend component swamps the cycle
 - Don't stand in front of the train
 - You can still use the cycle to enter the trade at the best time in the direction of the trend
- If the ratio is less than one the trend has a minimum effect on the cycle
 - Use your favorite oscillator (mine is the Bandpass filter)

TREND VIGOR FOR MSFT

John Ehlers



CYCLE PERIOD IDENTIFICATION

John Ehlers

- Assume a period based on “fundamentals”
- Simply count the number of bars between successive major peaks or major valleys
- Contiguous bank of Bandpass filters
 - Corona charts (free)
 - www.mesasoftware.com
- Fourier Transform
 - Fourier Transform for Traders (free)
 - www.mesasoftware.com
- MESA

QUESTIONS?

THANK YOU FOR ATTENDING THIS WEBINAR

GOOD TRADING