Waverly Advisors

Markets at Extremes

Managing Risks and Capturing Opportunities

November 12, 2013

Outline

- What is a market in at an extreme?
  - Why does this happen?
- Some ways to identify markets at extremes.
  - Technical tools to identify overextension.
    - Problems and concerns
- Trading patterns and market structure in extremes.

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Liquidity

- A good working definition: “an asset’s or market’s ability to be bought or sold without causing significant price movement.”
- Liquid markets tend to have deep books (i.e., resting orders for significant size) that can absorb buying and selling pressure.
  - (What motivates traders to place resting orders?)
- Liquidity should be considered from two-sided perspective: markets have buyers and sellers who may have different degrees of interest.
- A trend is essentially a failure of one-sided liquidity.

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Normal Market Conditions

- Buyers and sellers essentially “take turns”.
- Buying reaches a natural extreme and then selling pressure overtakes.
  - This creates the appearance of cycles (which may or may not be persistent).
  - This also creates wave structures in markets, but detailed, specific methodologies are not needed.

- There is a balance in normal, healthy market conditions.

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Failures of Liquidity

- Typically thought of as large price spikes.
  - For instance, an order too large to be absorbed by existing liquidity hits a market and that market experiences a large price (and volatility) shock.
  - Often driven by outside information, but can be essentially random (e.g., the meaningless decision of a single trader.)
- A trend is also a failure of liquidity.
  - This is less known, but important.
  - Represents a persistent imbalance.
  - There is a balance even in this imbalance.

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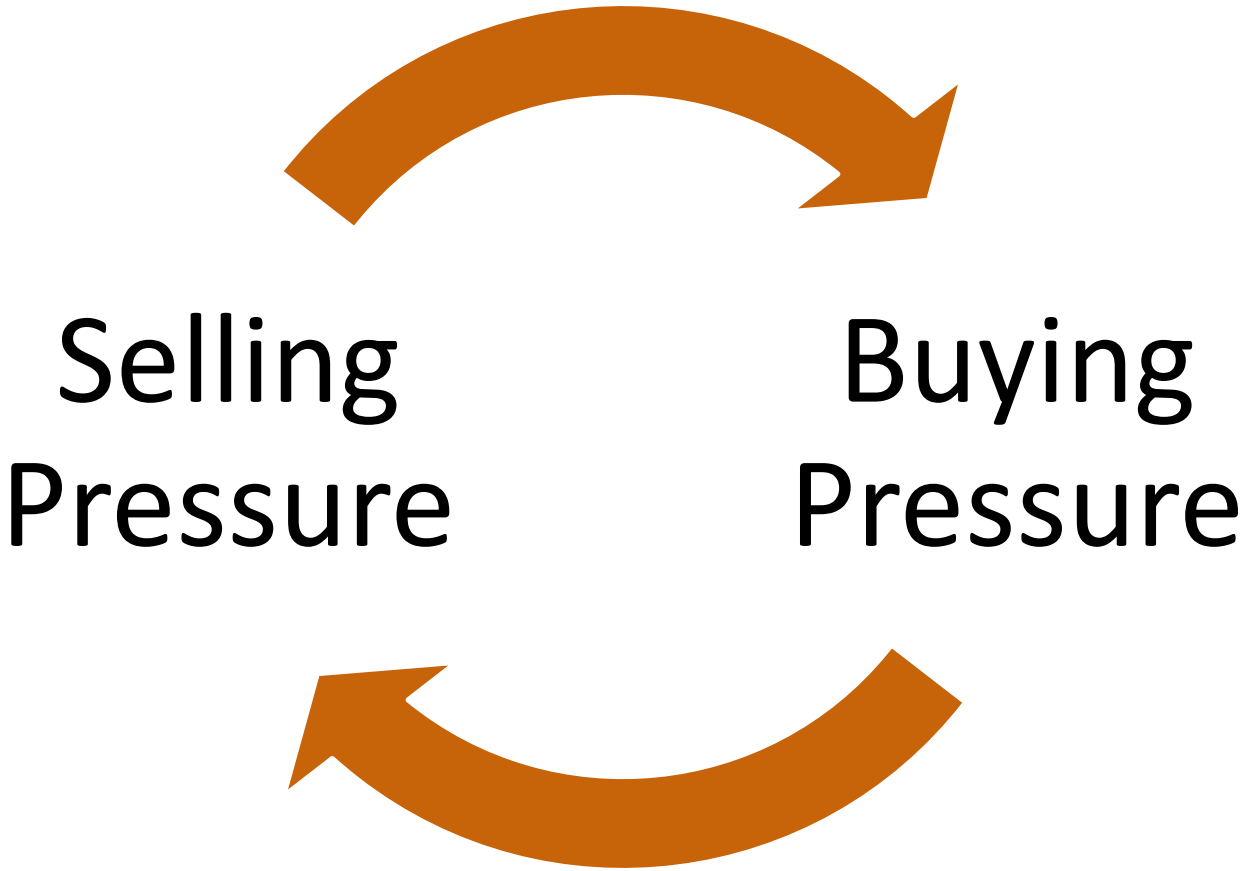
Normal Markets



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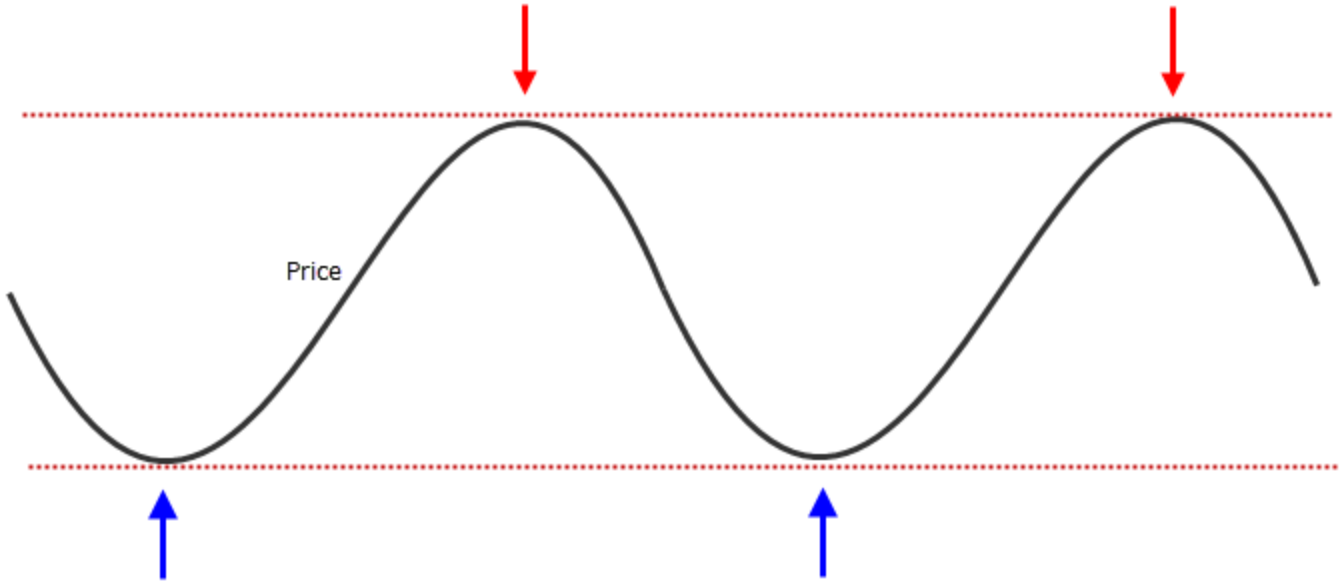
Cycles Emerge Naturally



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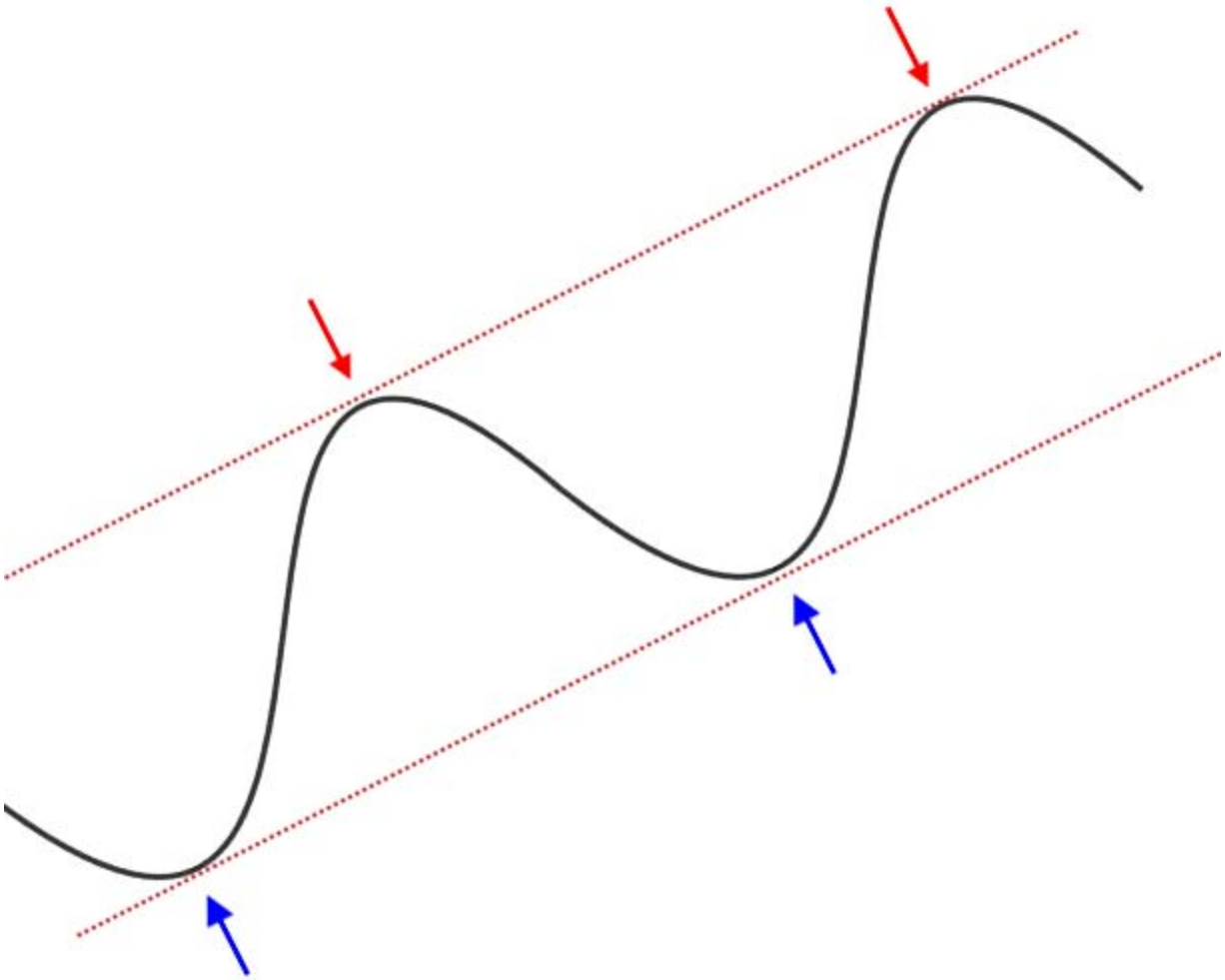
Cycles Can Exist Within Trends



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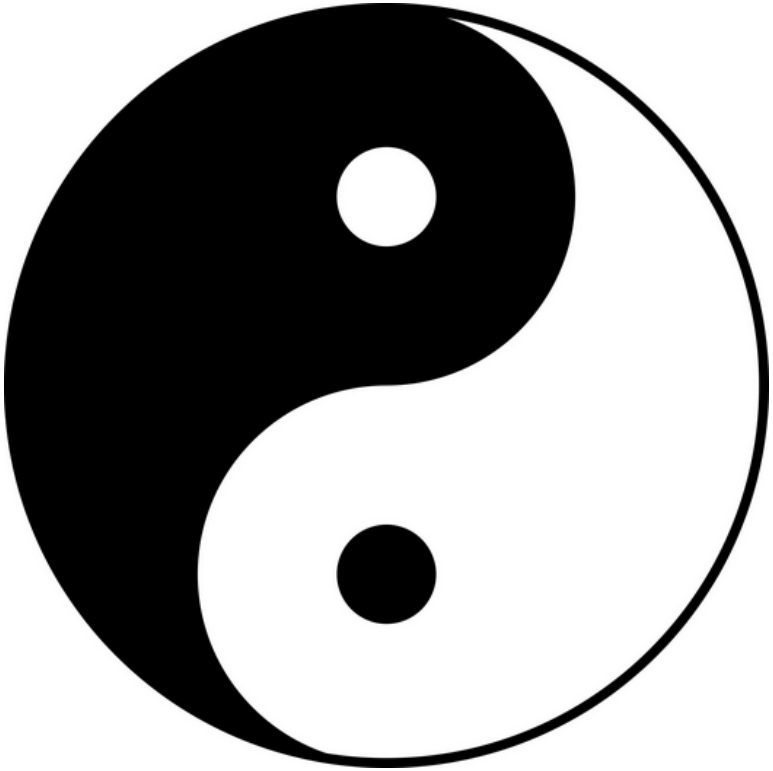
This Leads to Many Metaphors

"The seed of Yin lies within the fullness of Yang."



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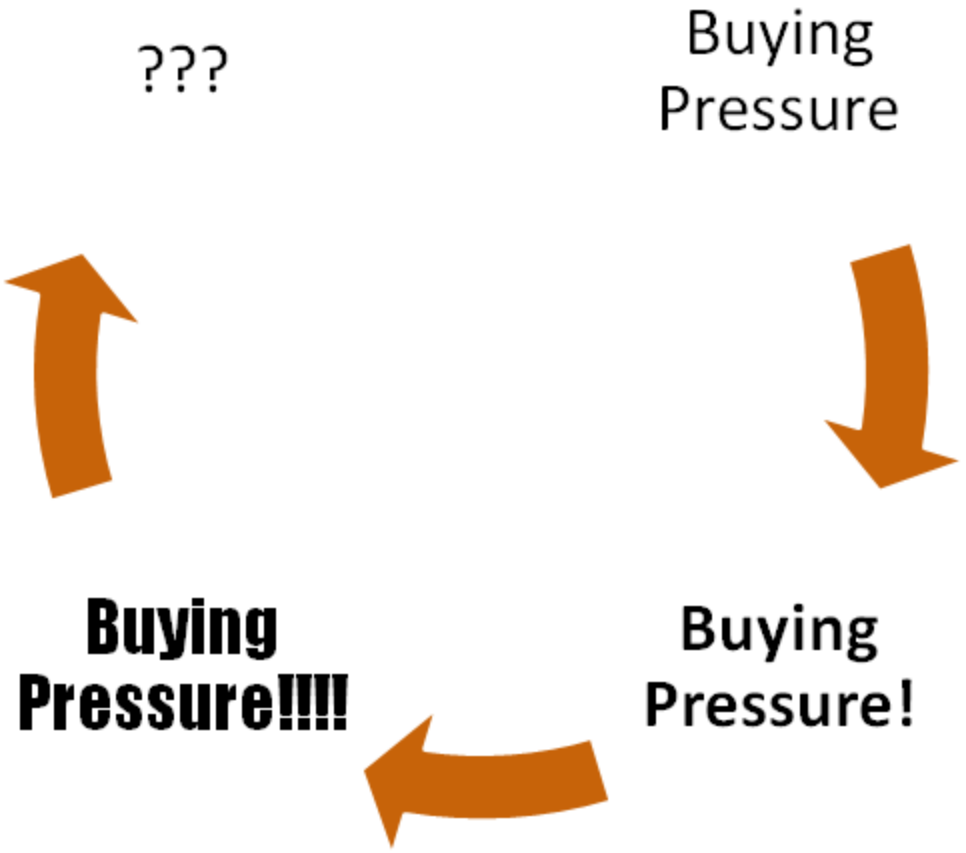
Sometimes, the Cycle Goes Awry



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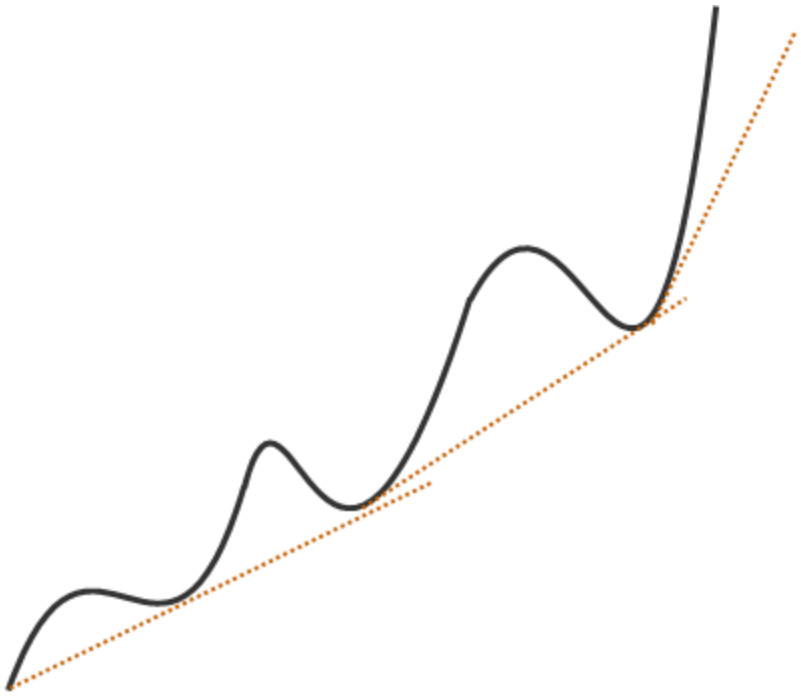
What Next?



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Consider Psychology

- The cycle is normally self-regulating and self-limiting.
- Individual traders (or firms) generally have limited power to move markets.
- The interaction between these natural constraints and the emotions of Fear and Greed (Hope and Regret) forge this natural cycle.
- In extreme conditions a feedback loop develops, in which one extreme of emotion overcomes constraints.
- This creates a “bubble”.

- (*Forecasting Financial Markets*, Tony Plummer, 1991)

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Bubbles in Financial Markets

- Every time, the media says things like "unprecedented", "never before in history", and investors start thinking "maybe this time is different."
- But this has happened many times in history
  - Silver and Gold in the 1980s
  - Dot.com stocks
  - Real Estate
  - Crude Oil
  - Tulips in Holland in the 1600s
  - South Sea Bubble ca. 1720

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Booms and Busts

- Booms and busts are normal, natural features of markets.
- They exist through the full recorded history of financial markets.
- They represent extremes of emotion and often set price extremes that persist for a very long time.
- When a market reaches an extreme and the “last buyer” has bought, that market is vulnerable to collapsing into the vacuum.
  - This creates repeatable patterns in prices!
- Markets are fractal.
  - “Mini booms and busts” are not uncommon.

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Bitcoin

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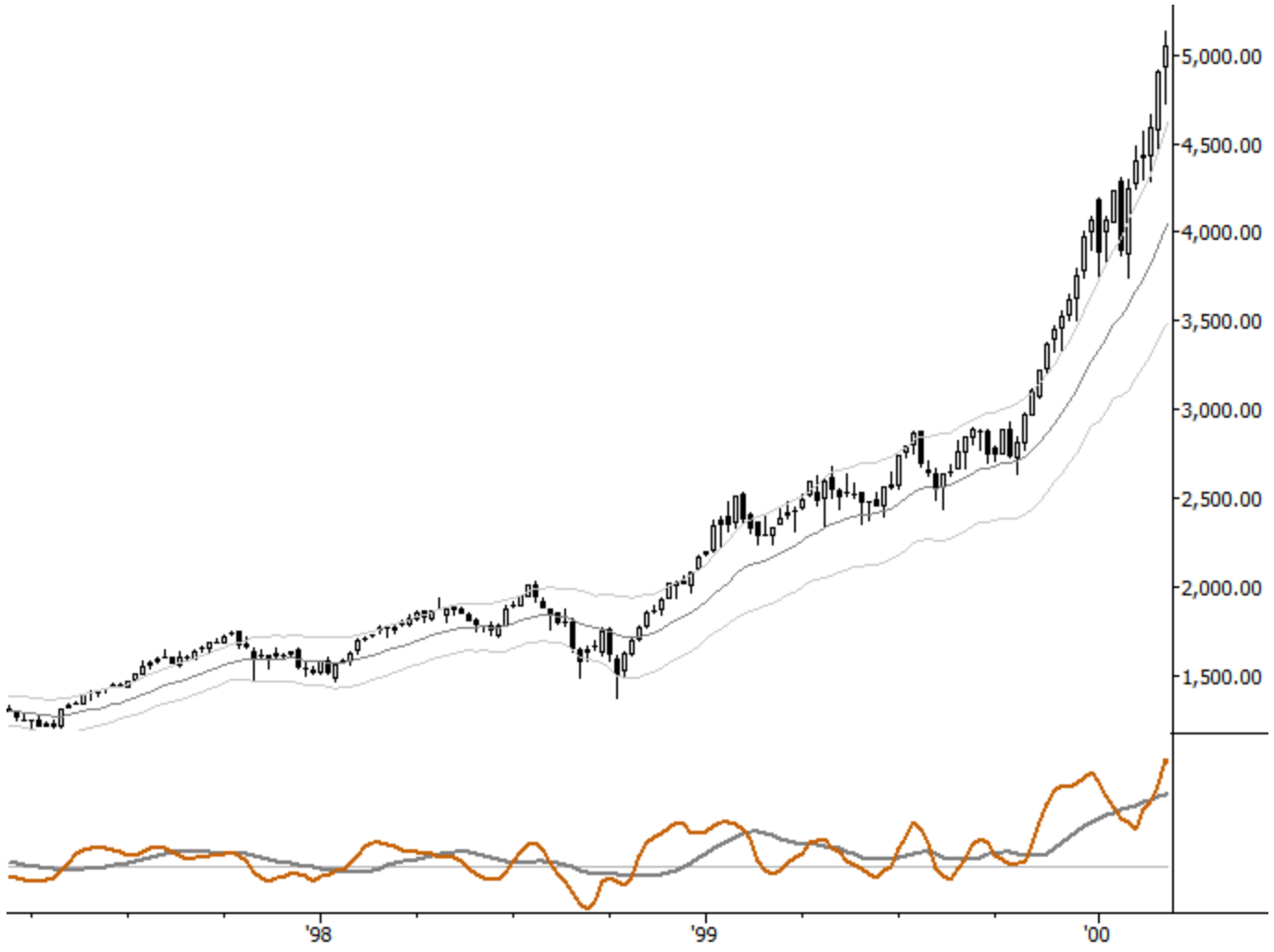
Nasdaq Composite: Boom



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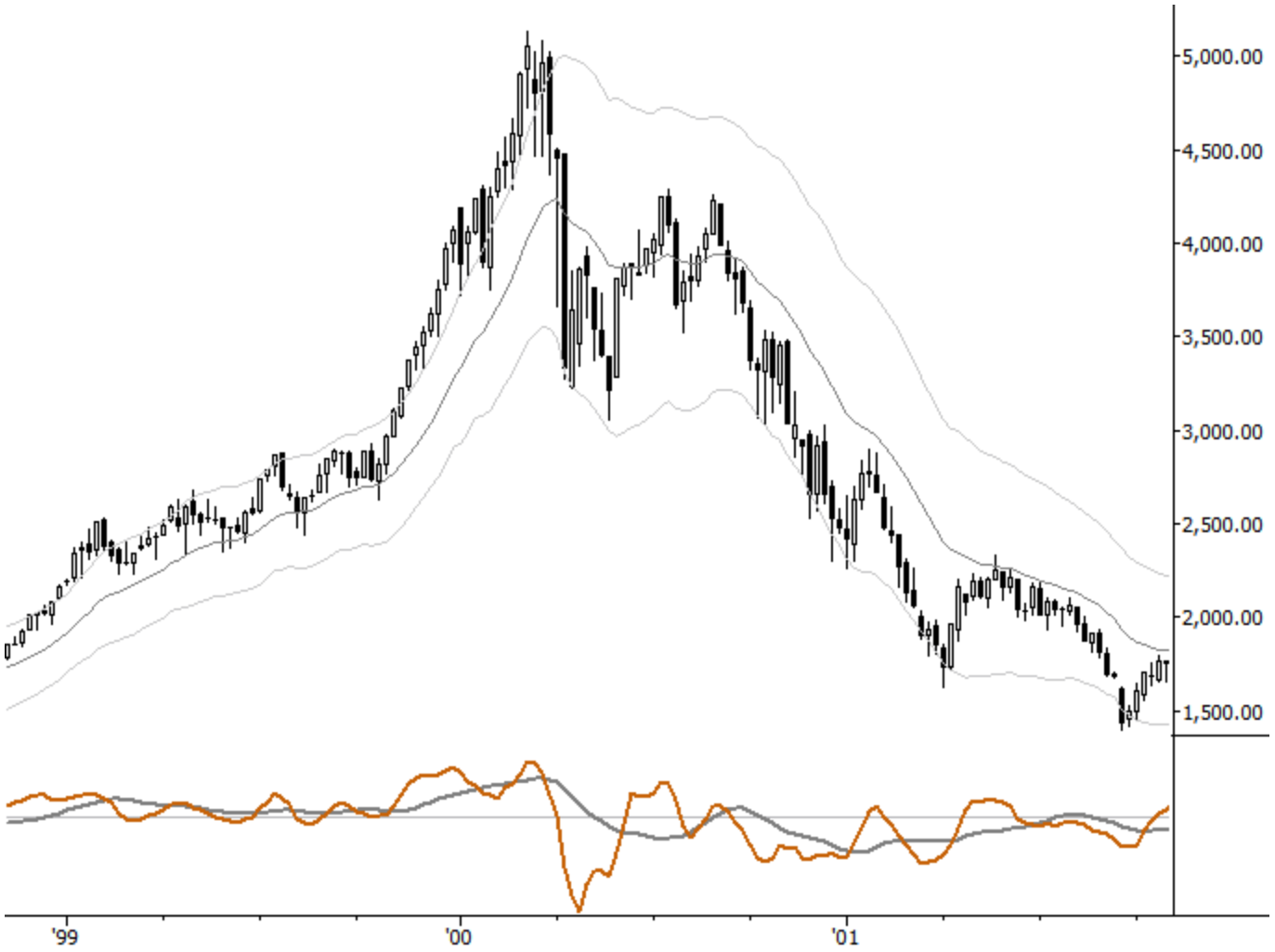
… and Bust



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Market Behavior Following Climax

- "Last buyer" phenomenon
  - When the last willing buyer has chased prices as high as he is willing to pay, the market is vulnerable to collapsing.
  - There is a vacuum on the other side.
- Typical behavior following a climax is a large spike in the opposite direction.
  - Can lead to extended trend change.
  - Usually get at least two legs against the old trend.

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Measuring Climax: Technical Tools

- Oscillators
- Price patterns
  - Swing Analysis
  - Trendlines
- Bands
- System/Indicators

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The Two Forces Behind Price Action

- Price movements are shaped by
  - Mean reversion
    - Large movements are reversed
  - Momentum (range expansion)
    - Large movements lead to more movement in same direction
- Over a large sample of market action, these two forces balance each other out.
  - Random walks describe price movements well when the forces balance.
- Is it possible to identify conditions that will show when one force is likely to predominate?
  - This is a quantitative way to address the trading problem.
  - (The answer is yes.)

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Overbought/Oversold Oscillators

- Make sure you understand what your tool is measuring and how it works.
- Oscillators can be broadly divided into two categories
  - Overbought/Oversold
  - Momentum
  - (Some oscillators have dual character and can be used as either.)
- Oscillators can be bounded or unbounded.

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Understanding OB/OS

- Overbought and oversold are valid concepts in "normal markets"…
- But the they break down in strong trends.
- One definition of trend is a market that is overbought and keeps getting more overbought!
- A standard oscillator going to a large extreme is actually a sign of with-trend strength rather than OB/OS.
  - These tools give many early signals in trends

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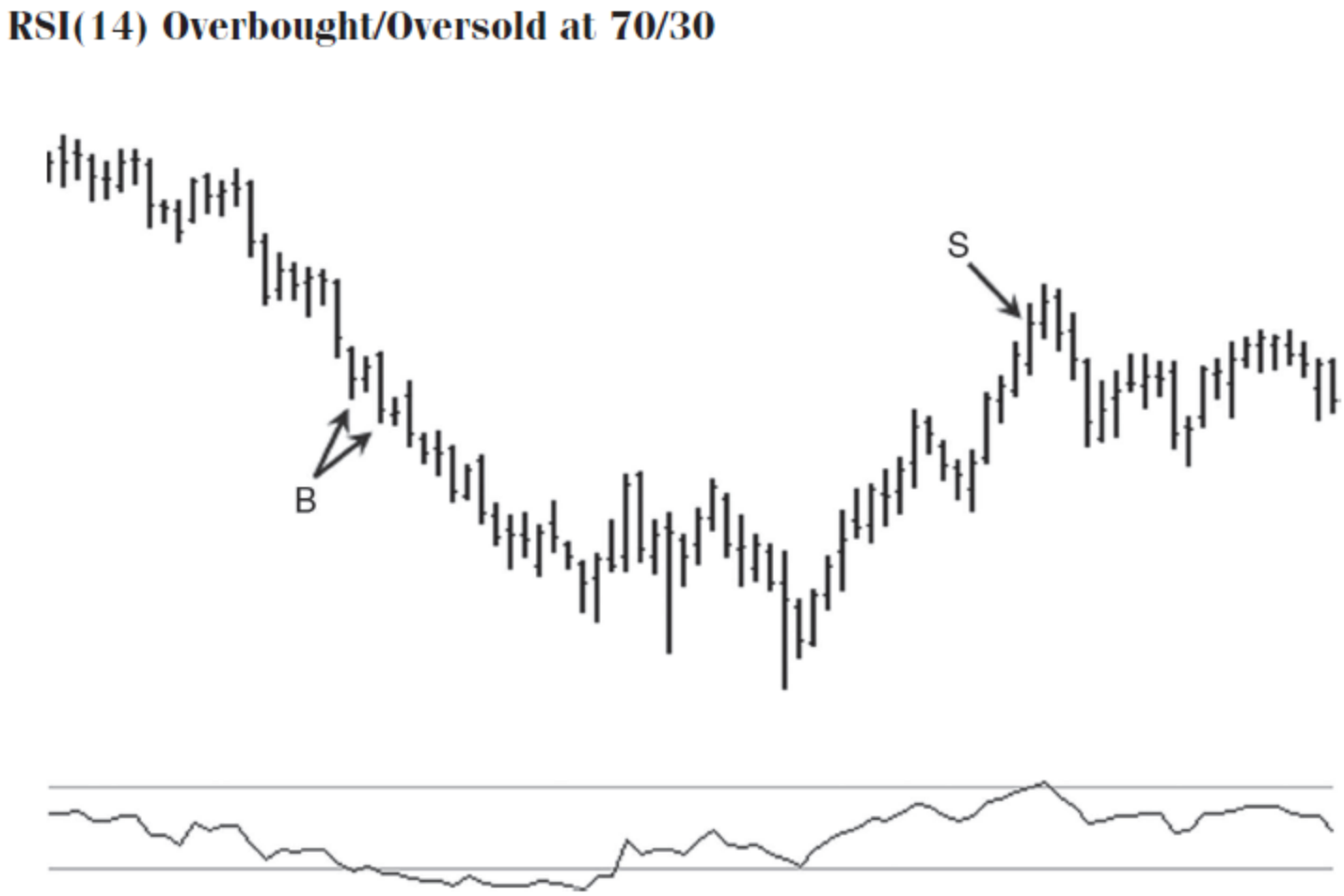
Example of Signals from RSI



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RSI-14 Test

	Equities—Buy			Futures—Buy			Forex—Buy		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	15.8**	14.3	52.8%	(13.7)	4.7	52.9%	(18.7)**	0.6	51.7%
2	32.2**	28.8	53.9%	(8.4)	16.5	55.8%	(21.5)*	(3.0)	50.3%
3	38.8**	42.6	54.9%	(11.6)	(5.0)	50.5%	(20.3)	(14.4)	45.5%
4	42.4**	46.8	54.8%	(20.6)	4.4	54.8%	(26.7)	(15.0)	46.9%
5	53.8**	57.6	55.6%	(20.0)	(24.0)	48.8%	(26.4)	(9.7)	50.3%
10	64.9**	81.2	56.3%	(53.5)*	(31.9)	50.3%	(47.3)*	(38.0)	45.5%
15	89.9**	137.0	58.4%	(30.0)	(33.3)	52.2%	(30.9)	(1.6)	55.9%
20	98.9**	150.6	58.5%	(21.8)	(15.8)	54.3%	(32.5)	(20.0)	53.1%
	Equities—Sell			**Futures—Sell**			**Forex—Sell**		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	(16.1)**	(10.4)	46.7%	3.0	(3.5)	49.1%	1.1	(2.1)	48.9%
2	(29.6)**	(16.6)	46.9%	14.6	10.3	54.7%	8.5	0.2	52.2%
3	(38.5)**	(19.8)	47.5%	13.1	9.5	54.0%	1.4	9.6	56.9%
4	(40.3)**	(21.2)	47.8%	14.5	11.9	55.7%	3.4	9.6	57.6%
5	(47.5)**	(19.4)	48.6%	15.0	7.1	55.3%	10.5	26.5	56.9%
10	(63.5)**	(19.8)	50.1%	11.7	(15.2)	52.0%	24.0*	31.3	60.5%
15	(72.9)**	(8.6)	51.8%	23.7	(64.8)	49.0%	28.0	21.6	60.9%
20	(76.4)**	4.9	53.3%	33.9	(47.8)	52.6%	28.4	32.3	62.0%

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RSI(14) on Nasdaq Composite

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Oscillators: Summary

- More useful in normal market conditions.
- Possibly less useful in climactic conditions.
- Can be used with some adaptations or by focusing on patterns in the oscillator (e.g., second touch, etc.)
- Make sure you understand your tools and how they may work differently in different markets or different timeframes.

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Using Patterns to Identify Climaxes

- Large single moves
  - Large ATR or Standard Deviation moves
  - Very large bars
- Sets of large moves
  - N-day highs or lows
  - Channel highs or lows
  - Higher timeframe climax
- Accelerating trend legs
  - “Parabolic move”
- Three pushes to an extreme

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Fading +/- 3σ Closes

Close in top 75% of range, and Open in Bottom 25% (for sells).

	Equities—Buy			Futures—Buy			Forex—Buy		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	25.7**	19.2	53.8%	(9.7)	4.7	51.7%	14.0	(1.4)	50.0%
2	32.4**	21.8	53.6%	(25.1)	(3.5)	51.3%	8.8	2.4	50.0%
3	11.1	2.6	50.9%	(34.9)*	(26.8)	47.6%	9.4	17.4	58.3%
4	1.2	3.2	51.1%	(21.5)	(21.8)	47.2%	14.6	15.1	56.7%
5	8.4	5.8	51.4%	(27.8)	(25.0)	49.1%	28.1	29.1	58.3%
10	(12.3)	9.2	52.1%	(16.7)	(35.1)	49.8%	13.7	14.3	56.7%
15	(25.6)*	13.3	52.4%	(24.1)	(80.0)	47.2%	(16.5)	27.1	56.7%
20	(47.7)**	37.3	53.9%	(19.8)	(90.2)	48.7%	(7.2)	42.6	63.3%

	Equities—Sell			Futures—Sell			Forex—Sell		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	(18.3)**	(15.2)	46.4%	(9.9)	(13.0)	46.5%	(3.3)	(2.1)	48.2%
2	(33.8)**	(19.0)	47.6%	6.6	5.8	55.1%	(13.1)	(15.3)	39.8%
3	(28.6)**	(16.2)	48.5%	14.3	11.7	54.7%	(12.3)	(9.8)	47.0%
4	(41.6)**	(17.0)	48.7%	16.7	15.1	55.1%	(6.1)	(7.2)	50.6%
5	(30.1)**	(11.3)	49.8%	20.8	0.4	54.7%	3.6	0.7	53.0%
10	(67.5)**	(12.4)	50.7%	11.2	(11.6)	54.3%	16.9	25.1	62.7%
15	(67.2)**	10.6	52.8%	8.8	(69.8)	49.2%	(18.2)	(4.5)	57.8%
20	(75.7)**	7.7	52.7%	0.5	(32.8)	53.1%	(4.1)	29.2	59.0%

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Fading 5-Day Runs

	Equities—Buy			Futures—Buy			Forex—Buy		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	18.4**	8.1	52.0%	13.5*	12.4	57.1%	(0.1)	3.6	53.9%
2	24.4**	14.3	52.6%	3.2	4.3	53.1%	(8.8)	3.3	55.1%
3	39.2**	19.6	53.1%	2.9	(3.0)	51.6%	(13.8)	(11.4)	48.5%
4	61.0**	30.4	54.2%	(0.1)	(16.3)	48.6%	(31.7)*	(24.8)	42.5%
5	76.5**	46.7	55.4%	3.5	(7.6)	51.0%	(30.4)*	(21.3)	46.7%
10	45.2**	48.8	54.8%	15.5	(21.0)	53.3%	(22.8)	(17.7)	50.9%
15	47.6**	70.9	56.0%	12.3	(46.7)	50.8%	(10.8)	12.8	56.9%
20	79.4**	107.6	57.8%	30.5	(14.1)	54.7%	(9.4)	(4.7)	56.9%
	Equities—Sell			**Futures—Sell**			**Forex—Sell**		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	(18.7)**	(3.9)	48.8%	1.2	(0.4)	50.2%	(1.9)	(2.1)	48.5%
2	(25.6)**	(8.4)	48.5%	8.2	7.0	53.8%	(2.0)	0.4	55.0%
3	(28.9)**	(12.9)	48.6%	16.8	13.0	54.3%	(3.1)	5.9	55.7%
4	(33.5)**	(13.2)	49.0%	12.4	17.1	54.6%	(3.8)	2.9	55.7%
5	(36.3)**	(11.3)	49.5%	14.8	19.6	55.9%	5.6	11.1	57.6%
10	(59.3)**	(5.3)	51.4%	15.9	2.3	55.0%	(7.0)	13.1	56.9%
15	(56.0)**	12.7	53.1%	(1.5)	(39.4)	51.2%	(2.1)	13.2	59.5%
20	(50.9)**	35.8	54.7%	9.6	(37.3)	52.8%	(4.6)	18.6	56.9%

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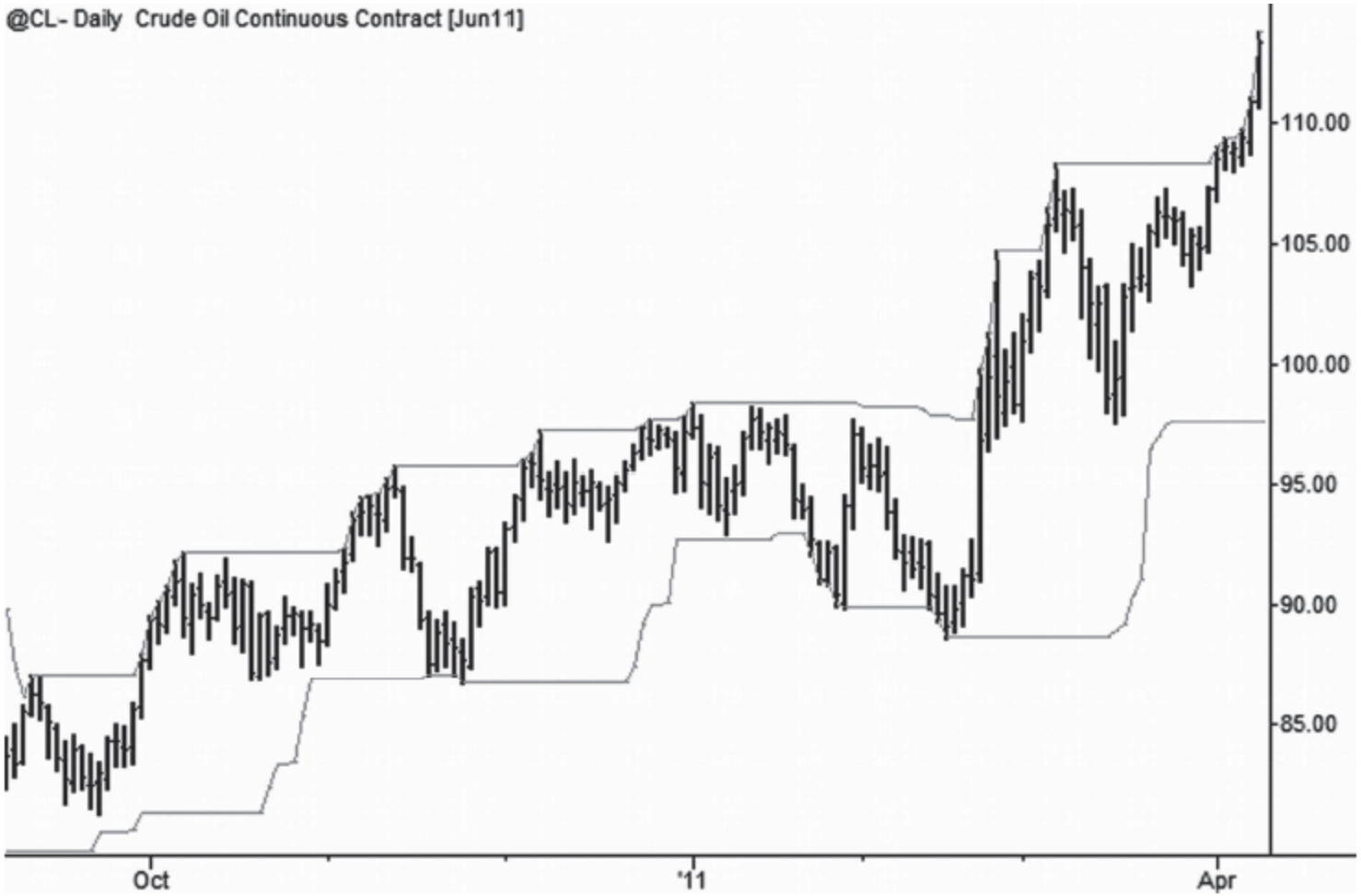
Crude Oil with 20 Day Channels



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Trading 100 Day Channels

(at least 5 days between entries)

	Equities—Buy			Futures—Buy			Forex—Buy		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	(12.0)**	(6.2)	47.4%	10.1*	2.6	52.9%	0.5	2.1	51.9%
2	(24.2)**	(11.1)	47.3%	14.1	17.9	58.2%	10.8*	3.0	53.1%
3	(33.3)**	(12.6)	47.9%	23.7*	18.2	57.7%	4.8	9.9	57.0%
4	(39.1)**	(18.7)	47.8%	25.0*	21.1	59.2%	13.6*	18.6	58.5%
5	(46.7)**	(17.4)	48.3%	21.0	14.7	57.5%	14.2	29.0	60.9%
10	(77.1)**	(22.7)	49.2%	43.2*	22.2	56.1%	18.3	19.0	57.6%
15	(87.2)**	(18.2)	51.0%	59.6**	10.7	56.7%	29.7*	18.8	59.4%
20	(98.4)**	(15.0)	52.0%	73.3**	0.3	57.3%	31.8*	45.6	61.5%
	Equities—Sell			**Futures—Sell**			**Forex—Sell**		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	4.1	2.1	50.4%	(10.1)	(3.5)	49.5%	(11.5)	(10.3)	44.7%
2	18.7**	12.1	51.7%	(4.8)	(2.2)	51.0%	(15.1)	(4.2)	49.3%
3	25.5**	26.1	53.1%	(6.4)	(13.7)	48.7%	(21.8)	(15.4)	45.4%
4	29.9**	28.2	52.8%	(26.9)*	(21.7)	48.2%	(27.6)	(16.7)	46.1%
5	74.7**	50.9	54.6%	(26.6)	(19.1)	49.2%	(28.2)	(15.5)	47.4%
10	79.5**	81.9	55.9%	(52.5)**	(46.7)	47.7%	(46.8)*	(40.1)	42.8%
15	93.8**	132.9	57.2%	(87.8)**	(85.3)	45.5%	(79.4)**	(49.6)	44.7%
20	133.1**	173.3	58.5%	(115.6)**	(107.7)	46.5%	(85.5)**	(59.7)	48.0%

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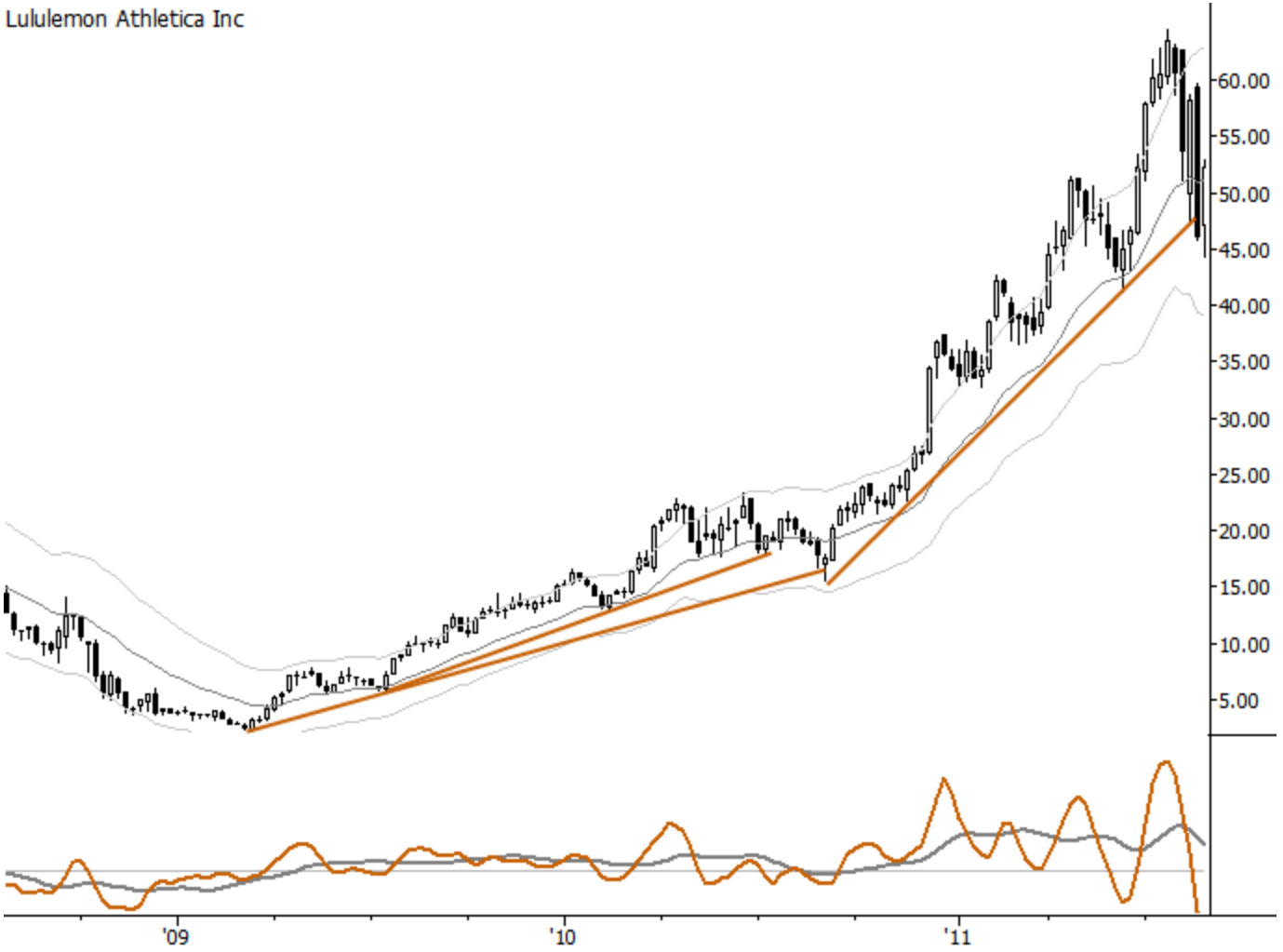
Steepening Trendlines Can Lead to Climax



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But Trading Trendlines Is Not Trivial

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Other Potentially Useful Patterns

- Three Pushes to an Extreme
- Failure Test
- Failed Flag
- Etc.

- Many of these are more useful when combined with bands for an over/under extension reference level.

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Bands for Climaxes

- Large moves from moving averages can be significant.
- But how do we define “large moves”? What is normal?
- Bands are one solution.
  - Prefer adaptive bands (volatility) to static.
- Keltner Channels
  - Based on Average True Ranges around a moving average
- Bollinger Bands
  - Standard Deviation (of Price) around a moving average

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Bands: Know Your Stats

Excursion Stats for 2.25 ATR Modified Keltner Channels

	Mean	Min	Max
	Large-Cap Stocks (496 stocks)		
Inside	87.7%	67.0%	100.0%
Free bars	3.4%	0.0%	11.7%
	Small-Cap Stocks (500 stocks)		
Inside	85.4%	36.0%	96.2%
Free bars	4.3%	0.2%	21.2%
	Futures (16 contracts)		
Inside	85.9%	77.8%	92.5%
Free bars	3.8%	0.7%	6.4%
	Forex (9 pairs)		
Inside	89.8%	87.8%	92.0%
Free bars	2.3%	1.5%	3.7%
	Randomly Generated Data (7 series)		
Inside	86.8%	85.8%	87.7%
Free bars	3.8%	3.3%	4.4%

"Inside" records the percentage of the total trading range that is inside the bands.
"Free bars" are the percentage of all bars that are completely outside the bands.
Min and Max show the lowest and highest stat for individual instruments (i.e., individual stocks, futures markets, etc.) in the sample classes.

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An Edge for Keltners

Keltner Fade Buy

Equities—Combined

12,623 of 1,381,685 Bars [0.91%]

	Signal							Significance Test		
Day	% Up	% Unch	% Down	Average Return	*Standard Deviation*	Median Return	*IQR*	Diff. of Means	Diff. of Medians	*p-val*
1	54.0%	0.8%	45.2%	**0.34%**	*3.74%*	0.24%	*2.46%*	0.28%	0.22%	*0.00*
2	54.2%	0.6%	45.2%	**0.49%**	*5.29%*	0.32%	*3.39%*	0.38%	0.28%	*0.00*
3	55.0%	0.4%	44.6%	**0.65%**	*6.29%*	0.46%	*4.09%*	0.48%	0.39%	*0.00*
4	55.1%	0.4%	44.5%	**0.78%**	*7.07%*	0.56%	*4.67%*	0.55%	0.47%	*0.00*
5	55.1%	0.4%	44.5%	**0.91%**	*7.79%*	0.66%	*5.28%*	0.63%	0.54%	*0.00*
10	54.7%	0.3%	45.0%	**1.15%**	*9.99%*	0.77%	*7.21%*	0.59%	0.54%	*0.00*
15	56.8%	0.2%	43.0%	**1.50%**	*11.84%*	1.32%	*8.86%*	0.66%	0.97%	*0.00*
20	57.9%	0.2%	41.9%	**2.00%**	*13.73%*	1.70%	*10.25%*	0.87%	1.25%	*0.00*

Keltner Fade Sell

17,330 of 1,381,685 Bars [1.25%]

	Signal							Significance Test		
Day	% Up	% Unch	% Down	Average Return	*Standard Deviation*	Median Return	*IQR*	Diff. of Means	Diff. of Medians	*p-val*
1	46.3%	1.1%	52.6%	**(0.14%)**	*2.29%*	(0.11%)	*2.07%*	(0.20%)	(0.13%)	*0.00*
2	46.7%	0.7%	52.6%	**(0.21%)**	*3.07%*	(0.15%)	*2.90%*	(0.32%)	(0.20%)	*0.00*
3	47.0%	0.7%	52.3%	**(0.25%)**	*3.62%*	(0.17%)	*3.47%*	(0.42%)	(0.23%)	*0.00*
4	47.8%	0.5%	51.7%	**(0.18%)**	*4.08%*	(0.14%)	*4.01%*	(0.40%)	(0.23%)	*0.00*
5	48.6%	0.5%	50.9%	**(0.18%)**	*4.53%*	(0.09%)	*4.54%*	(0.46%)	(0.20%)	*0.00*
10	50.4%	0.3%	49.2%	**(0.09%)**	*6.19%*	0.08%	*6.29%*	(0.65%)	(0.15%)	*0.00*
15	51.9%	0.2%	47.9%	**0.15%**	*7.56%*	0.29%	*7.71%*	(0.70%)	(0.05%)	*0.00*
20	53.3%	0.2%	46.4%	**0.48%**	*8.73%*	0.54%	*9.16%*	(0.64%)	0.09%	*0.00*

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And Also for Bollingers

Bollinger Fade Buy

Equities—Combined

21,694 of 1,381,685 Bars [1.57%]

	Signal							Significance Test		
Day	% Up	% Unch	% Down	Average Return	*Standard Deviation*	Median Return	*IQR*	Diff. of Means	Diff. of Medians	*p-val*
1	51.6%	0.9%	47.5%	**0.15%**	*3.22%*	0.09%	*2.26%*	0.10%	0.07%	*0.00*
2	52.1%	0.6%	47.3%	**0.20%**	*4.35%*	0.15%	*3.19%*	0.09%	0.10%	*0.00*
3	52.2%	0.5%	47.3%	**0.27%**	*5.15%*	0.19%	*3.90%*	0.10%	0.12%	*0.00*
4	52.7%	0.5%	46.9%	**0.39%**	*5.94%*	0.26%	*4.48%*	0.17%	0.17%	*0.00*
5	53.0%	0.4%	46.6%	**0.46%**	*6.63%*	0.33%	*5.06%*	0.18%	0.22%	*0.00*
10	52.4%	0.3%	47.3%	**0.43%**	*8.61%*	0.35%	*7.18%*	(0.13%)	0.13%	*0.02*
15	54.0%	0.3%	45.7%	**0.71%**	*10.37%*	0.73%	*8.81%*	(0.13%)	0.39%	*0.06*
20	55.6%	0.1%	44.3%	**1.25%**	*11.86%*	1.14%	*10.26%*	0.12%	0.69%	*0.14*

Bollinger Fade Sell

26,951 of 1,381,685 Bars [1.95%]

	Signal							Significance Test		
Day	% Up	% Unch	% Down	Average Return	*Standard Deviation*	Median Return	*IQR*	Diff. of Means	Diff. of Medians	*p-val*
1	48.3%	1.1%	50.6%	**(0.03%)**	*2.41%*	(0.04%)	*2.10%*	(0.09%)	(0.06%)	*0.00*
2	48.8%	0.8%	50.5%	**(0.09%)**	*3.21%*	(0.04%)	*2.94%*	(0.20%)	(0.09%)	*0.00*
3	49.2%	0.6%	50.2%	**(0.09%)**	*3.73%*	(0.03%)	*3.57%*	(0.26%)	(0.10%)	*0.00*
4	49.4%	0.5%	50.2%	**(0.07%)**	*4.26%*	(0.03%)	*4.11%*	(0.29%)	(0.12%)	*0.00*
5	49.8%	0.4%	49.8%	**(0.08%)**	*4.73%*	0.00%	*4.67%*	(0.36%)	(0.11%)	*0.00*
10	51.1%	0.3%	48.6%	**(0.07%)**	*6.60%*	0.16%	*6.65%*	(0.63%)	(0.07%)	*0.00*
15	52.1%	0.3%	47.6%	**0.02%**	*8.16%*	0.34%	*8.26%*	(0.83%)	(0.00%)	*0.00*
20	53.3%	0.2%	46.4%	**0.30%**	*9.41%*	0.58%	*9.66%*	(0.83%)	0.13%	*0.00*

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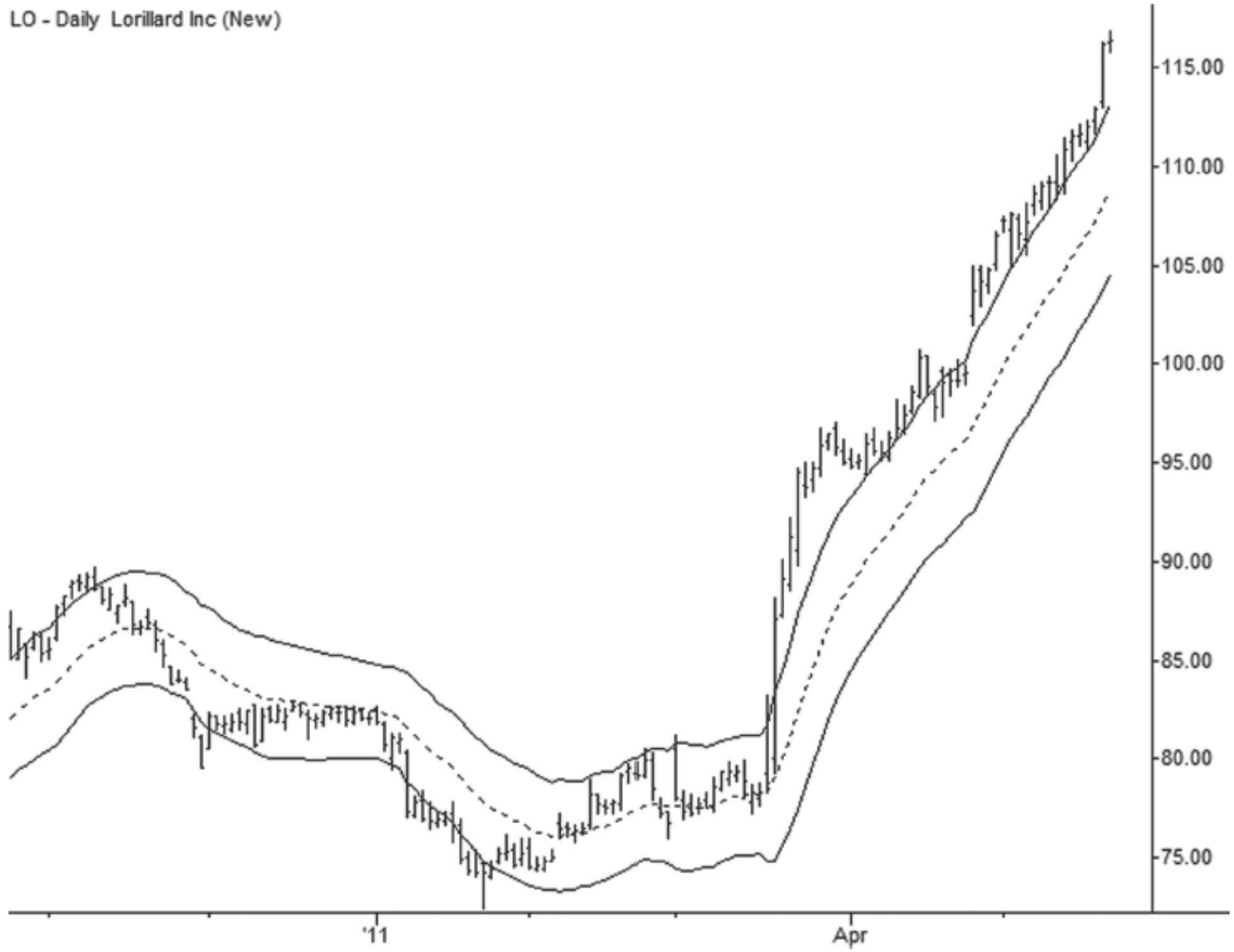
But Simply Fading Can Be Difficult



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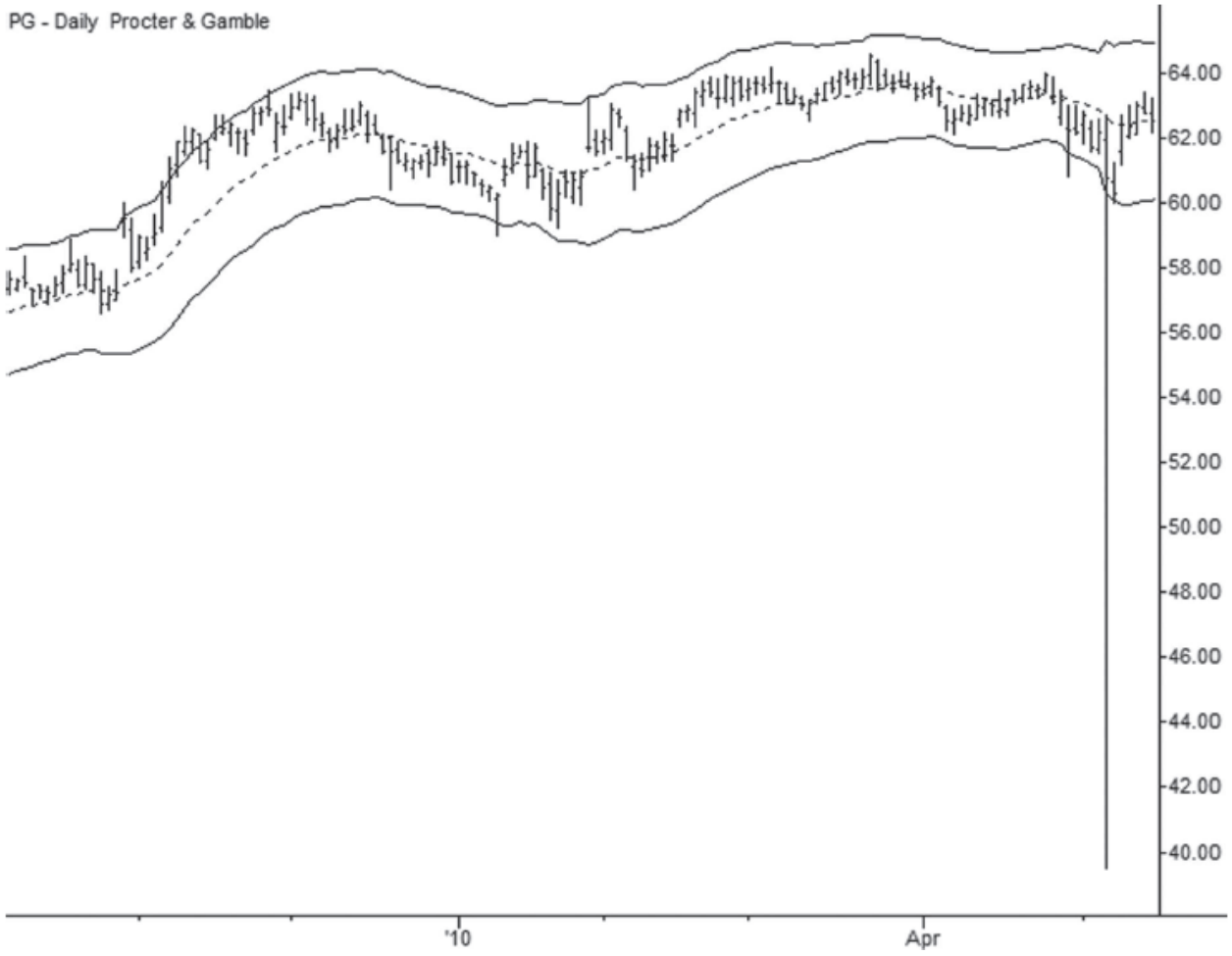
…Or Really Painful



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Be Careful

- Markets are capable of doing anything at any time.
- History is a guide to what might be considered normal and extreme, but only a guide.
- Circuit breakers (limit moves in futures) can help, but there is also a school of thought that says they can hurt.
  - They create artificial constraints.
- Very large moves can come from external influences ("acts of God") or internal (HFT distortions).
- Risk management is essential in any trading strategy.

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Using Bands

- Moving averages represent centers—areas of consensus, relative balance, and rest.
- Channels represent emotional extremes.
  - Must be properly calibrated, but should be robust in most markets.
- A market outside a band is, by definition, at an extreme.
- A market at an extreme can be in climax, or simply very strong (weak.)
- Best use is probably to combine with confirming tools.

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Systematic Indicators

- It is possible to create a rule set that identifies markets primed for reversal.
- Can draw from:
  - Oscillators
  - Price Patterns
  - Band-type reference levels
- The standard concerns of backtesting and data mining apply, so work must be done correctly.
- This indicator can be used in several ways.

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Waverly Advisors Extension Screen

Waverly Advisors Extension Screen Buy (Component A)

Equities - Combined

5,324 of 218,050 Bars [2.44%]

	Signal							Significance Test		
Day	% Up	% Unch	% Down	Average Return	*Standard Deviation*	Median Return	*IQR*	Diff of Means	Diff of Medians	*p-val*
1	54.6%	0.6%	44.8%	**0.29%**	*4.18%*	0.22%	*1.95%*	0.25%	0.20%	*0.00*
2	56.7%	0.5%	42.7%	**0.45%**	*7.71%*	0.41%	*2.62%*	0.37%	0.35%	*0.00*
3	56.8%	0.4%	42.8%	**0.55%**	*8.13%*	0.47%	*3.12%*	0.42%	0.39%	*0.00*
4	56.3%	0.5%	43.2%	**0.62%**	*8.38%*	0.55%	*3.72%*	0.45%	0.45%	*0.00*
5	57.6%	0.3%	42.1%	**0.83%**	*7.58%*	0.72%	*4.06%*	0.62%	0.59%	*0.00*
10	55.4%	0.3%	44.3%	**0.84%**	*9.12%*	0.67%	*5.61%*	0.41%	0.41%	*0.00*
15	60.3%	0.2%	39.5%	**1.66%**	*10.12%*	1.46%	*7.03%*	1.02%	1.07%	*0.00*
20	61.4%	0.2%	38.4%	**2.54%**	*21.27%*	1.80%	*8.08%*	1.69%	1.28%	*0.00*

Waverly Advisors Extension Screen Sell (Component A)

6,560 of 218,050 Bars [3.01%]

	Signal							Significance Test		
Day	% Up	% Unch	% Down	Average Return	*Standard Deviation*	Median Return	*IQR*	Diff of Means	Diff of Medians	*p-val*
1	44.4%	1.2%	54.4%	**(0.16%)**	*2.46%*	(0.13%)	*1.58%*	(0.20%)	(0.16%)	*0.00*
2	46.4%	0.7%	52.9%	**(0.20%)**	*3.54%*	(0.13%)	*2.22%*	(0.29%)	(0.18%)	*0.00*
3	47.7%	0.6%	51.8%	**(0.21%)**	*3.96%*	(0.10%)	*2.71%*	(0.34%)	(0.18%)	*0.00*
4	48.0%	0.5%	51.5%	**(0.19%)**	*3.76%*	(0.09%)	*3.11%*	(0.36%)	(0.20%)	*0.00*
5	48.9%	0.6%	50.4%	**(0.18%)**	*4.26%*	(0.04%)	*3.51%*	(0.39%)	(0.17%)	*0.00*
10	52.4%	0.4%	47.2%	**0.10%**	*5.12%*	0.23%	*4.94%*	(0.32%)	(0.03%)	*0.00*
15	54.5%	0.3%	45.2%	**0.38%**	*6.68%*	0.48%	*6.12%*	(0.26%)	0.09%	*0.00*
20	55.5%	0.2%	44.3%	**0.55%**	*7.96%*	0.67%	*7.36%*	(0.30%)	0.14%	*0.00*

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Toward a Climax Trading Plan

- First, indentify markets in climax
  - Extension beyond bands
    - Free bars
  - “Parabolic” extension
- Next, look for two entry conditions
  - Failure test on retest of extreme
  - First flag following countertrend price shock

- This is a countertrend trading strategy.

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Two "Styles" of Trading

- With-Trend
  - Seeks to enter a position in alignment with the preexisting trend, or at the beginning of a new trend.
  - Common structures are pullbacks and breakouts.
  - Ideal entries are often around "centers".

- Counter Trend
  - Looks to take positions against the current dominant trend on the trading timeframe.
  - Is there any true countertrend trading?
  - Hope is to be able to capitalize on a shorter trend against the main trend.
  - Trades often come around extremes.

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Comparison of the Two Styles

With-trend

- Trades can often be held a long time.
  - "Ride your winners".
- Winners tend to be larger than losers.
- May reward a more passive mindset.

Counter-trend

- Trades tend to have limited expectation.
  - Important to take profits proactively.
- Losers are often bigger than winners.
- Often require aggressive (decisive) psychology.
  - Immediate gratification
- More trades

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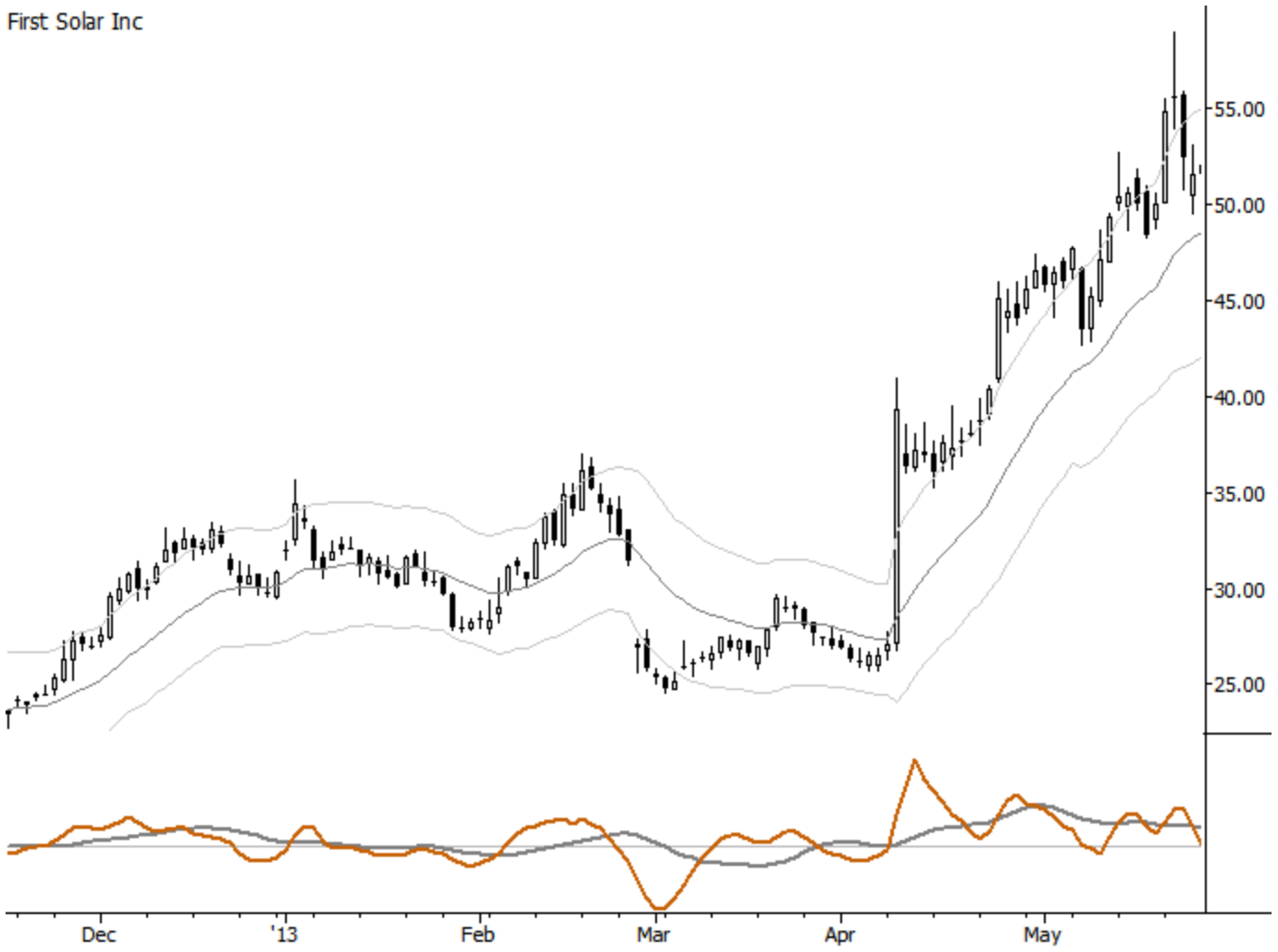
Example of Climax?



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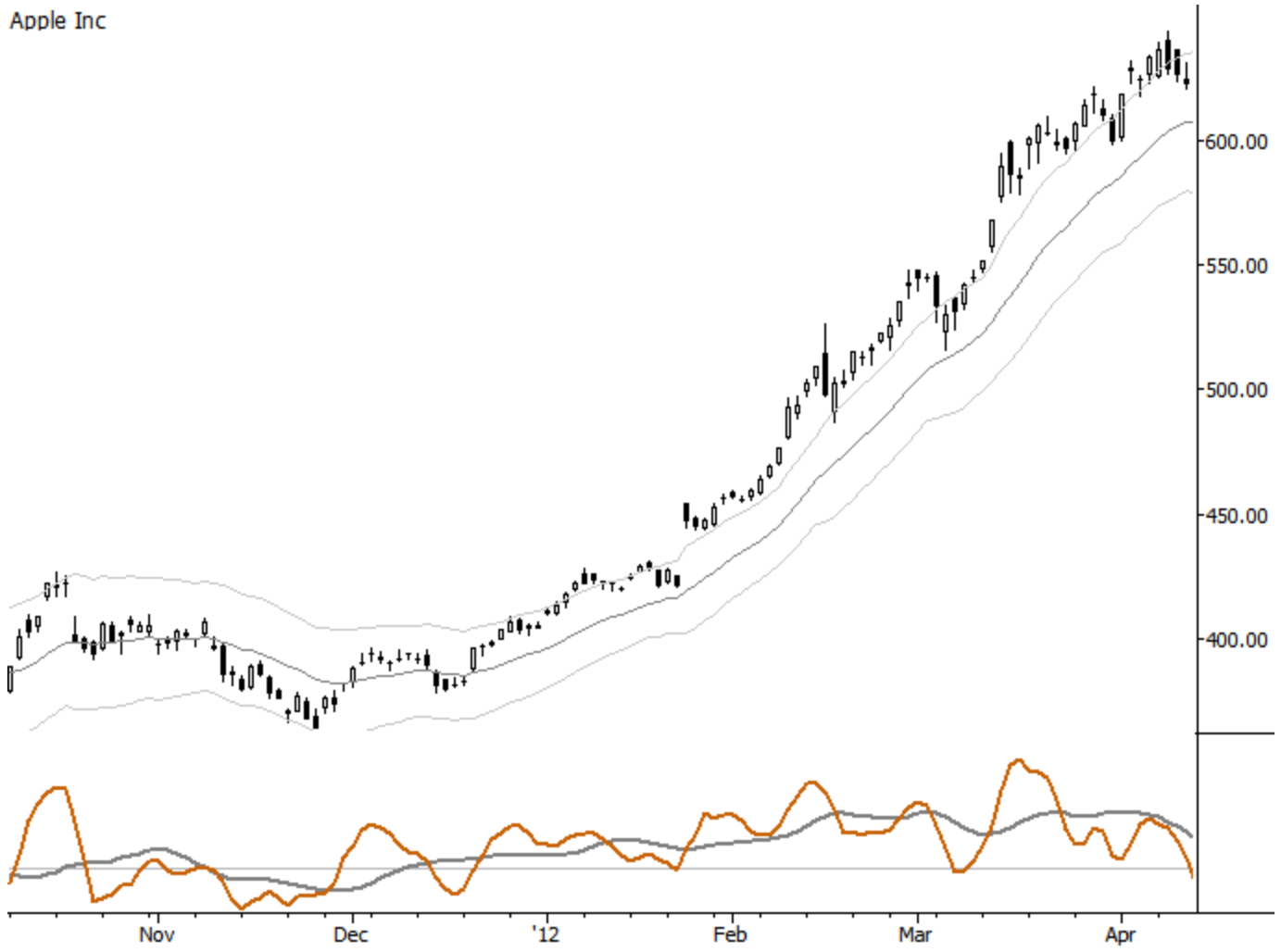
Climax (or strong trend?)



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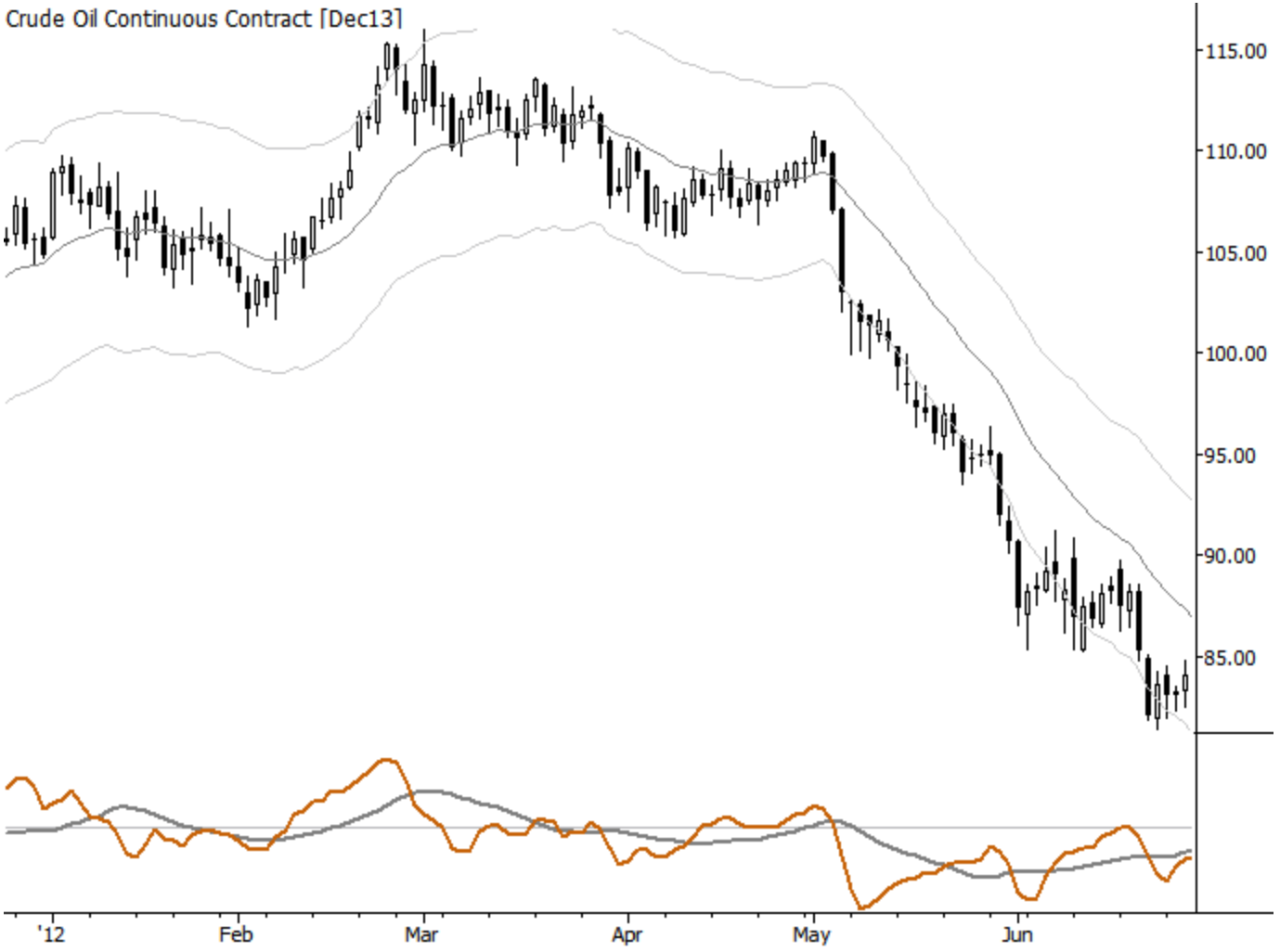
Potential Climax



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Step by Step

1. Identify potential climax
2. Wait for counter-trend price shock to show the dominant force is weakening.
3. Look for specific entry triggers
    1. First pullback following shock
    2. Failure test at previous extreme

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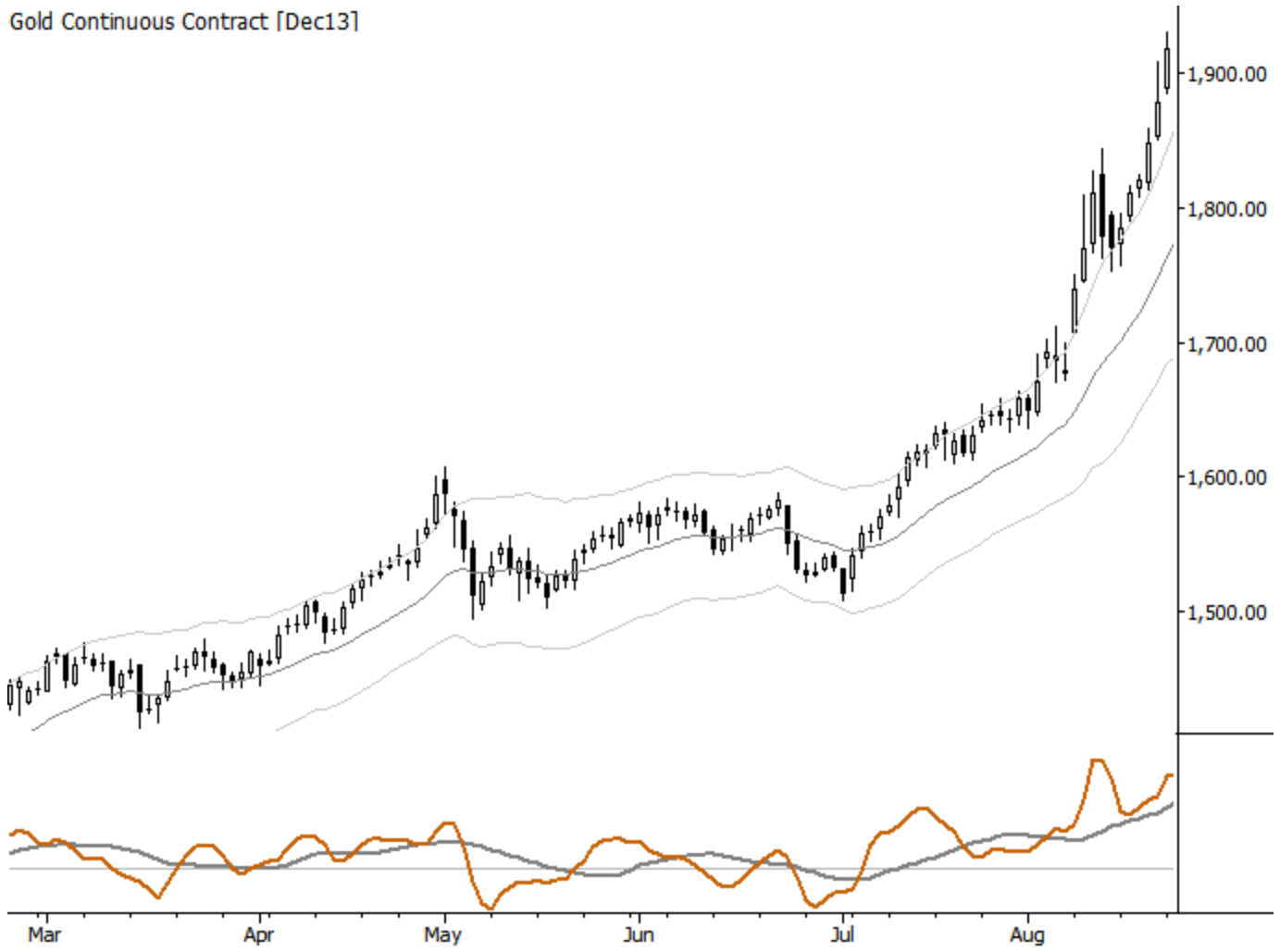
An Example: Trading a Climax



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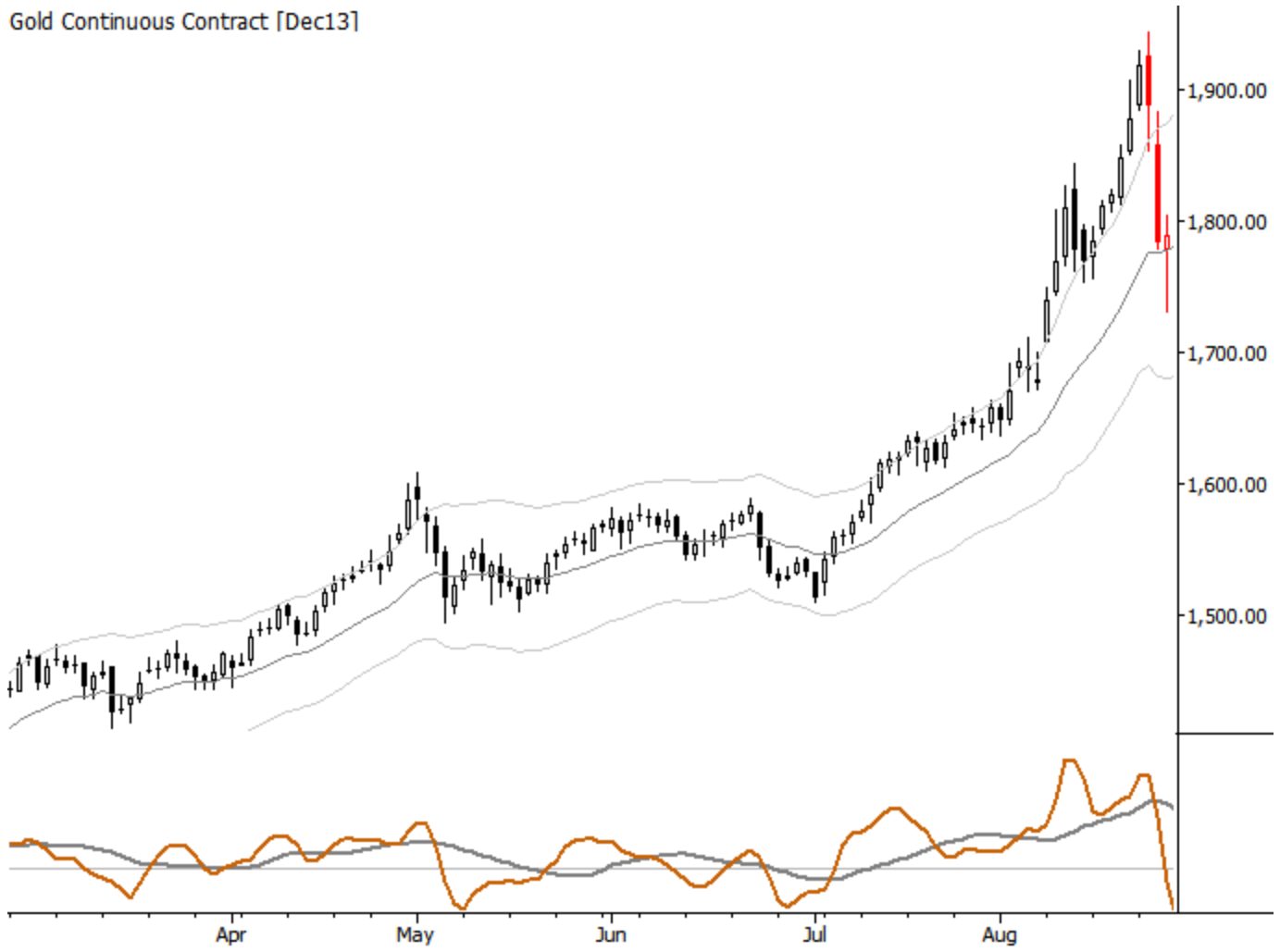
First Countertrend Shock



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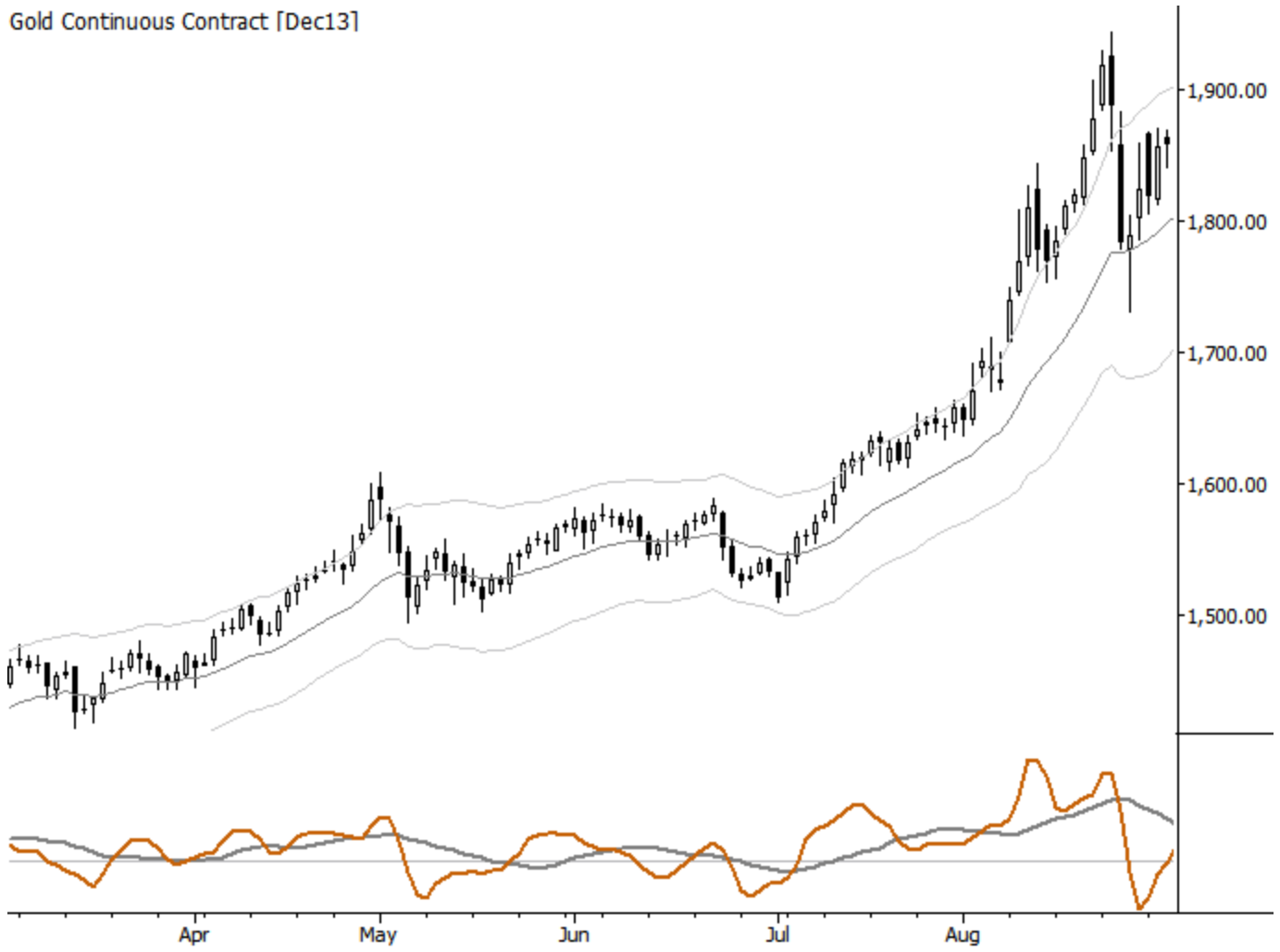
Potential Short on Breakdown



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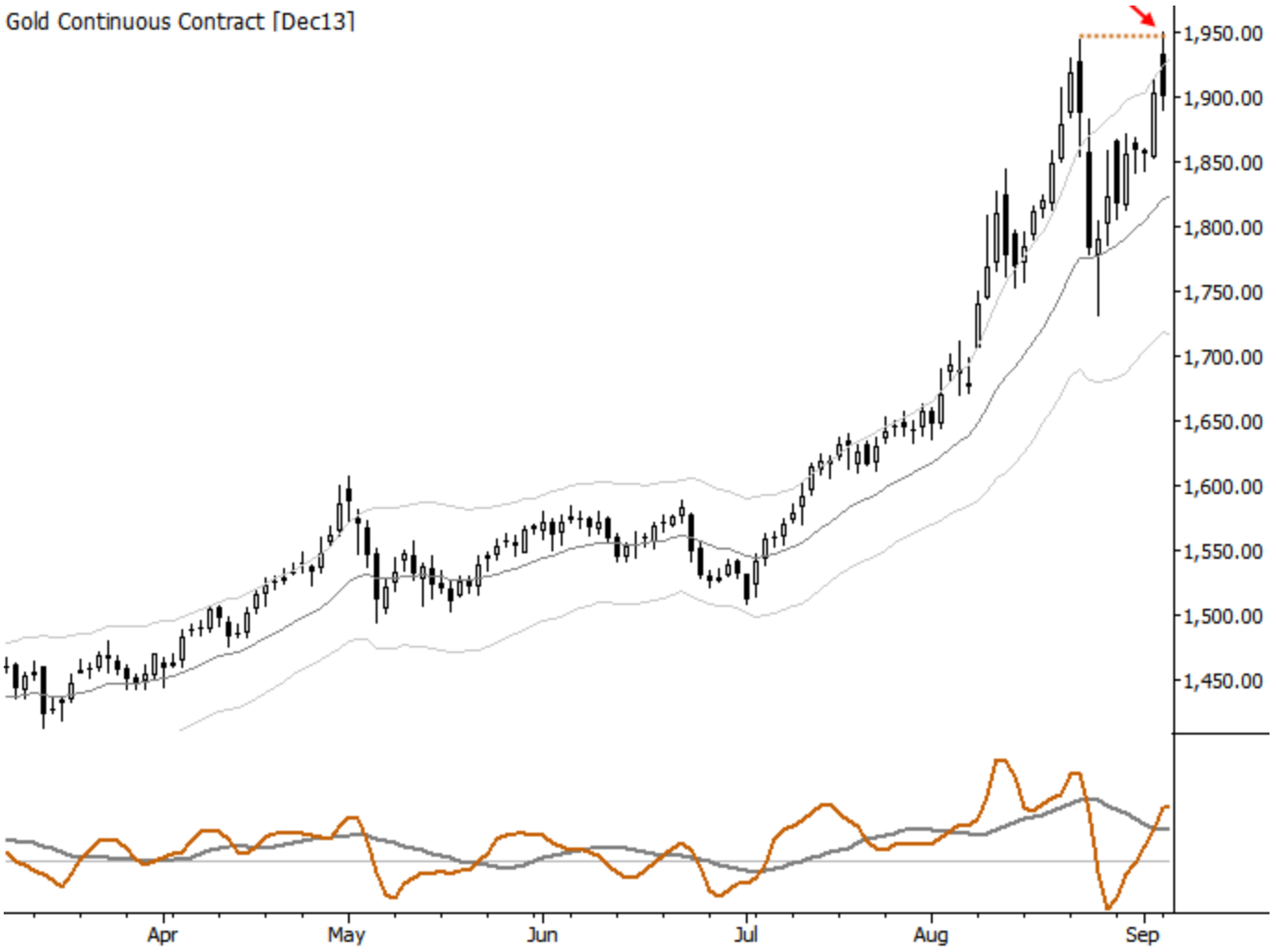
Failure Test Entry



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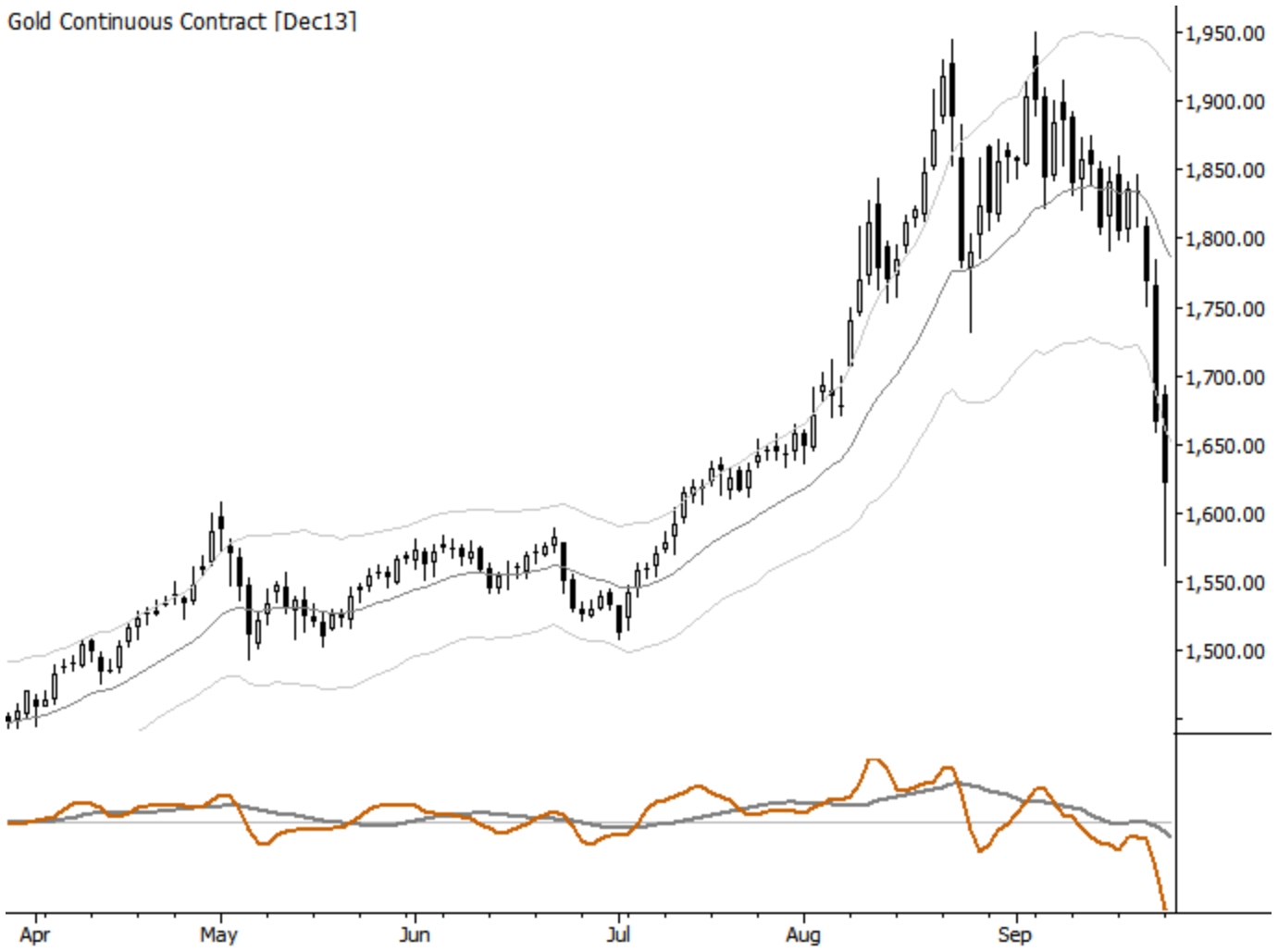
Downside Climax? Reversal?



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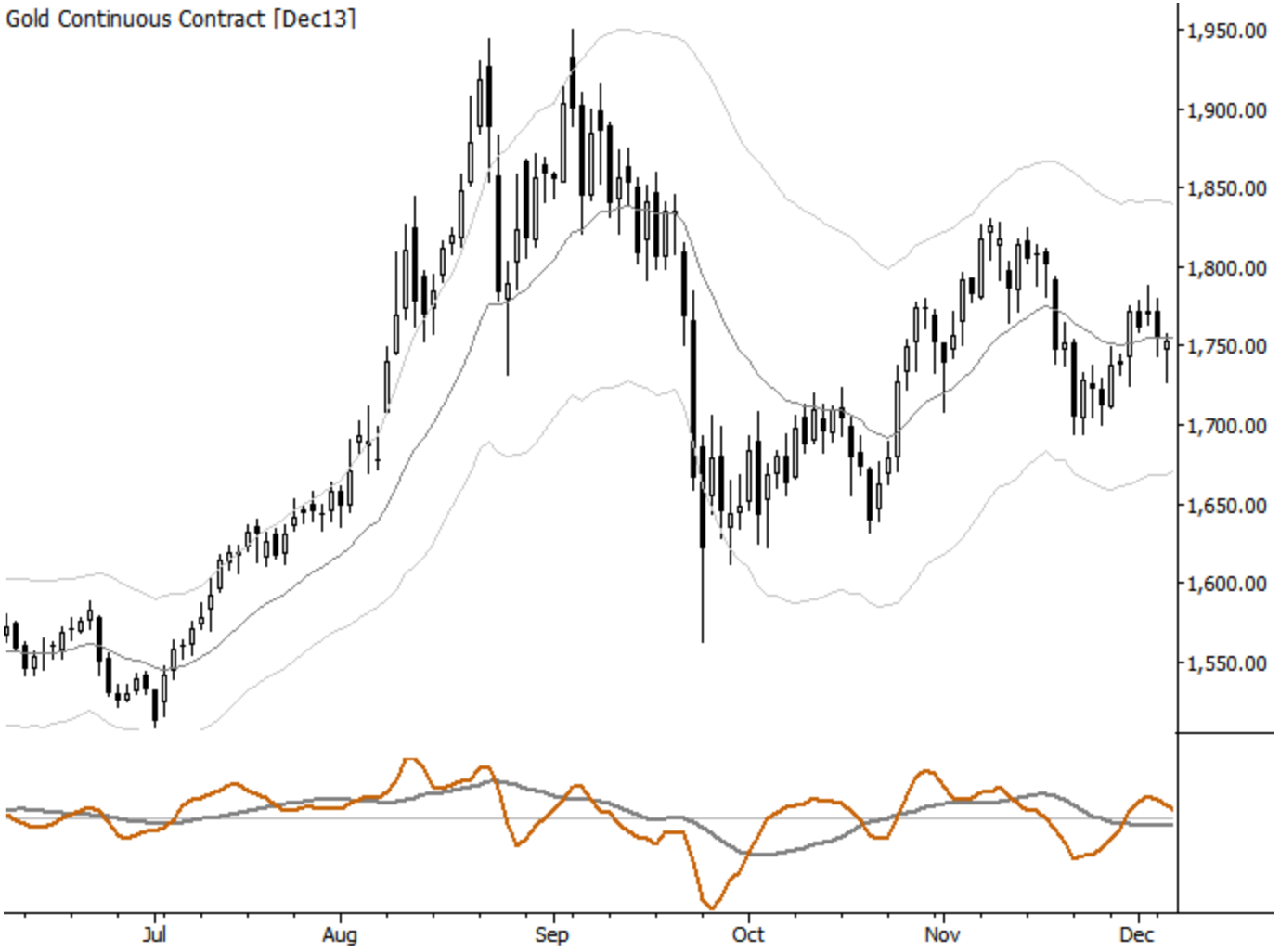
No Upside Shock



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Summary

- Markets normally move in alternating waves of buying and selling pressure.
- Sometimes a feedback loop develops and this normal pattern breaks down.
- There is no reliable way to tell how far, how fast a market may go in a climax.
- These patterns happen on large and small scales.
- These extremes may offer trading opportunities.
  - Risk management is essential.
  - Must suit your psychology.
  - Maybe better to wait for the market to stumble than to try to fade a climax move.

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Waverly Advisors' Research

- Tactical commentary highlighting potential extremes.
- Specific trade entries in climaxes.
- Using climaxes as a filter to avoid lower-probability with-trend trades.
- Specific stock screens published daily:
  - Consecutive closes
  - Extremes
  - Big Movers
  - Historical Big Movers (published weekly)

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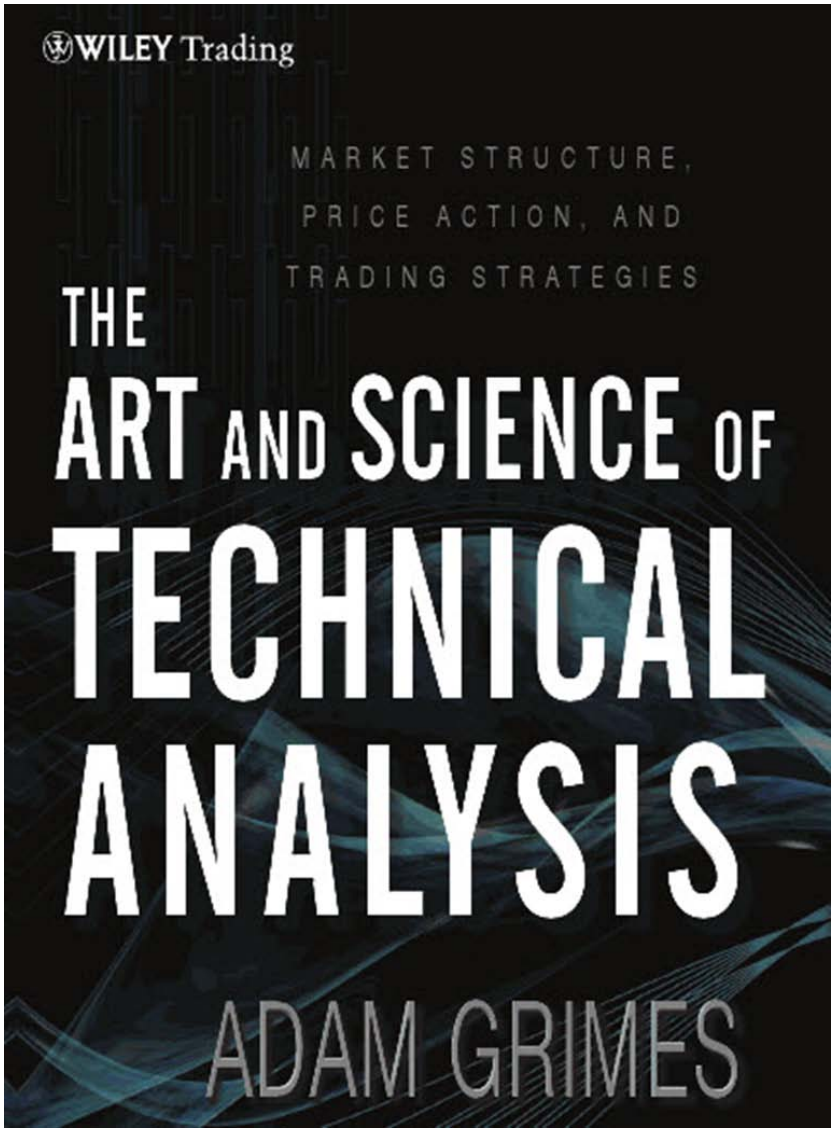

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Waverly Advisors, LLC: Research Products

Tactical Playbook – Available on Interactive Brokers

- Written for the active trader on the daily/weekly timeframes
- Exact trade recommendations
  - Hybrid systematic-discretionary methodology
- In-depth technical "drill down" into a set of markets.
- Bigger-picture overview of all liquid asset classes.

Tactical Portfolio Outlook– Available on Interactive Brokers

- Written for the longer-term manager
  - Addresses both the allocator and the longer-term active trader.
- Emphasis on executing with ETFs in a long-only and long-short environment
- Focus on Equities, Equity Sectors, and other asset classes
- Macro perspective on risk factors and major economic events.

Options Market Outlook – Contact Waverly Directly

- Proprietary, quantitative analysis of options market
- Incorporates both volatility and directional analysis
- Macro risk factors and cross-asset perspective
- Actionable trade ideas

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Contact:

Waverly Advisors
228 Cedar Street
Corning, NY 14830

(607) 684-5300

www.waverlyadvisors.com
info@waverlyadvisors.com

Adam Grimes
CIO, Quantitative Analysis, Risk Management
grimes@waverlyadvisors.com

Andrew Barber
CEO, Macroeconomic Analysis
barber@waverlyadvisors.com

Damon Krytzer, CFA
Managing Director, Portfolio Construction & Management
krytzer@waverlyadvisors.com

Chris Noye
Managing Director, Head of Sales
noye@waverlyadvisors.com

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