What Works
in Technical Analysis

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Outline:

- What does it mean to have an edge in the market?
- A look at some tools from traditional technical analysis.
- A valid framework for market analysis
- Basic price tendencies
- What does it take to trade successfully?

Key Assumptions:

- Markets are very close to efficient.
- New information is quickly and properly assimilated into prices.
- Financial markets are extremely competitive with many smart, well-capitalized players.
- It is extremely difficult to make money in the market.
- It is absolutely essential to have an edge in the market to make money.

What Does It Mean to Have an Edge?

- Several possible definitions:
  - Relative returns
    - Superior risk-adjusted profits
    - Implies a benchmark
  - Absolute returns
- Over a large set of trades, a trader working with an edge will (possibly) realize a return greater than the baseline return of the market or markets he is trading.

The Lesson of Expected Value:

– E( ) = p(win) * size of avg win – p(loss) * size of avg. loss

– E( ) must be positive

– The whole equation matters.

  - There is no advantage to “high probability” trading and also no advantage to only focusing on “risk/reward” ratios.

– The relationship between the two matters.

Where Do People Look for an Edge?

- Fundamental Analysis
- Macro
- Arbitrage
- Trading Volatility
- Traditional Technical Analysis
- Relative Value (Spread trading)

A Pattern Analysis Methodology:

- Define test universe
  - Asset classes
  - Market environments
  - Consider correlation
- Define pattern to be tested
  - Must be testable
  - Simple is better
- Find all occurrences of the pattern and record subsequent returns
- Compare qualified returns with baseline returns

Traditional Technical Analysis:

- Technical Analysis is largely market lore and superstition.
- Mostly untested and much of it is untestable
- Concepts are often poorly defined and subjective.
- Traders often do not understand the reasons for their own success, so transmission of valid trading methods has been problematic.

Traditional TA - Moving Averages:

- Across a very wide sample universe, no moving average shows a departure from baseline tendencies
- Moving averages do not provide support and resistance
- Trend indicators based on moving averages provide no edge
- There is no quantifiable justification for moving averages, yet these are one of the most-used tools in technical analysis

Testing Moving Averages:

- Are there any distinguishable differences between price movement after price engages a moving average?
- Are there special moving averages? (50 day, 200 day, etc?) If so, they should be different from non-special averages.
- Test many different periods of MAs
- Consider both ‘touch and hold’ and ‘penetration’ scenarios.

Testing Moving Averages:

Touch and Hold Test, 200-Day SMA

	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	(13.3)**	(4.5)	48.1%	(5.7)	0.0	50.8%	(3.1)	2.9	55.7%
2	(10.6)**	(3.3)	50.0%	0.8	(4.8)	50.8%	(0.0)	14.5	59.4%
3	(13.2)**	2.2	51.0%	(12.3)	(22.4)	47.1%	9.5	18.4	60.4%
4	(16.6)**	6.1	51.4%	(6.3)	(14.0)	49.5%	4.3	12.1	58.5%
5	(11.0)*	10.5	51.9%	(12.1)	(8.2)	51.1%	(0.6)	(1.5)	54.7%
10	(57.5)**	(6.2)	51.1%	9.2	(23.2)	51.1%	12.9	1.5	52.8%
15	(78.6)**	11.9	52.6%	31.2	(13.1)	53.8%	11.6	(23.3)	53.8%
20	(97.4)**	9.6	53.1%	23.5	(20.1)	56.9%	5.5	(15.2)	53.8%
	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	(3.6)	(2.3)	49.5%	(4.0)	(13.4)	41.2%	0.1	(6.8)	44.4%
2	(8.5)*	0.6	50.5%	(11.3)	(8.8)	49.1%	3.2	(3.1)	50.9%
3	(15.0)**	4.6	51.4%	(15.6)	(10.5)	49.8%	(1.0)	(4.8)	50.9%
4	(6.3)	9.3	52.3%	(10.9)	(34.2)	46.8%	9.5	8.4	54.6%
5	(11.3)	8.7	52.4%	(11.0)	(12.9)	50.6%	11.3	(1.8)	52.8%
10	(28.0)**	30.2	54.0%	(9.0)	(22.7)	50.9%	13.9	25.3	59.3%
15	(49.4)**	43.1	54.7%	(26.4)	(52.8)	49.8%	5.1	12.7	57.4%
20	(62.4)**	48.7	54.5%	(14.0)	(50.0)	53.2%	(1.3)	(14.8)	52.8%

Results for means and medians are in basis points, excess returns over the baseline for that asset class. %Up gives the number of days that closed higher than the entry price on the day following the signal entry. For comparison, the percent of one day Up closes in the Equity sample is 50.07%; in the Futures sample, 50.59%, and in Forex 51.0%.
*indicates difference of means are significant at the 0.05 level, and **indicates they are significant at the 0.01 level.

Testing Moving Averages - Conclusions:

- Across a very wide sample universe, no moving average shows a departure from baseline tendencies.
- Moving averages do not provide support and resistance.
- Trend indicators based on moving averages provide no edge.
- There is no quantifiable justification for moving averages, yet these are one of the most-used tools in technical analysis.

A Moving Average Trend Indicator:

Triple Moving Average Trend Indicator, Categorical Returns

	Equities	Futures	Forex	Random	Total
Down					
N=	365,690	12,372	4,204	14,621	396,887
Excess Ret	166.9	(203.0)	43.6	(74.9)	144.5
StDev Raw Returns	319.2	158.8	78.0	119.9	308.6
Mean HisVol	40.8	20.7	10.7	18.5	39.0
% Close Up	50.2%	49.8%	50.5%	50.9%	50.2%
Up					
N=	537,896	14,652	6,137	17,515	576,200
Excess Ret	(157.9)	80.7	43.9	98.6	(141.5)
StDev Raw Returns	217.6	152.3	66.4	114.6	212.7
Mean HisVol	30.2	20.2	9.6	17.2	29.4
% Close Up	49.9%	51.5%	51.7%	52.0%	50.0%
All					
N=	903,586	27,024	10,341	32,136	973,087
Raw Returns	2.0	1.3	1.9	1.4	2.0
StDev Raw Returns	263.5	155.3	71.3	117.0	256.2
Mean HisVol	34.5	20.4	10.1	17.8	33.3
% Close Up	50.0%	50.7%	51.2%	51.5%	50.1%

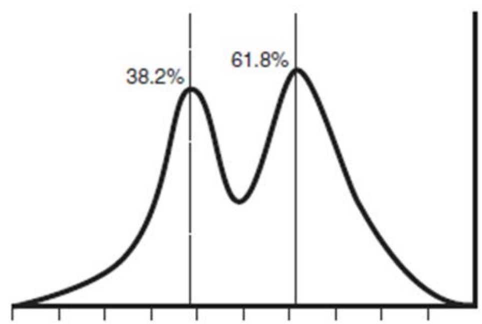
Traditional TA: Fibonacci Ratios:

- Traders look for support and resistance at common Fibonacci retracements
  - 38.2%
  - 61.8%
  - 50.0%
- Retracement ratios are used many ways
- Entering trades near retracement ratios
- Placing stops just beyond retracement ratios
- Using “Fibonacci numbers” as inputs into other technical studies
- How to test this?

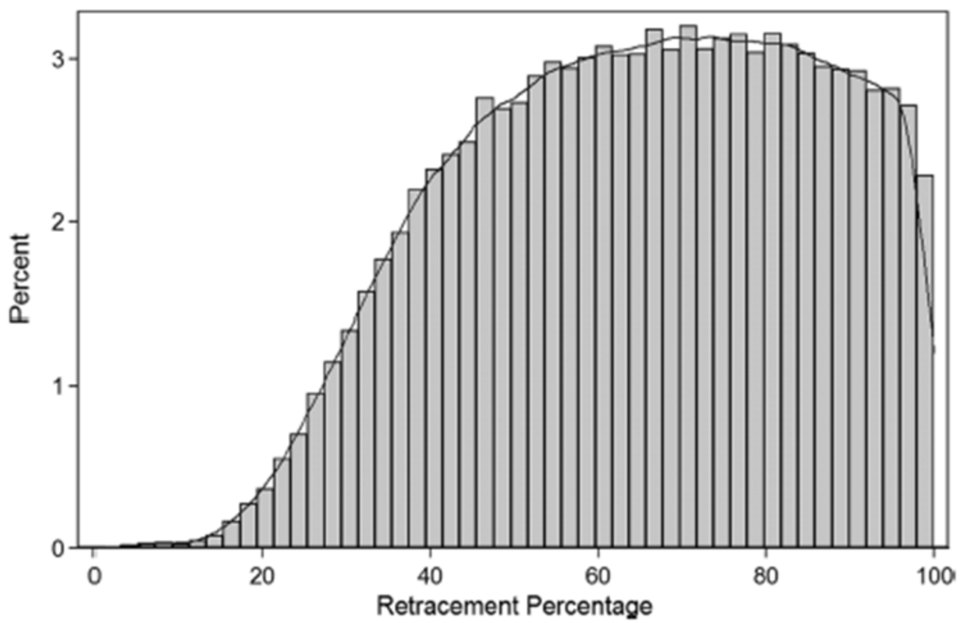
How Retracement Ratios are "supposed to" work:

Fibonacci Test:

- Create a tool that defines "swings" in markets
- Many ways to do this
- Consider volatility, price movement, etc.
- Measure each swing relative to previous swing
- Can qualify in other ways
- "Good" trades vs "bad" trades
- If Fibonacci ratios work, a histogram of retracements should look like this:



Retracement Ratios: What the Data Says



Enough of What Doesn't Work… What Does?

- Markets are usually in equilibrium and usually move randomly. No technical edge is possible in such an environment.
- Patterns in prices are determined by the interaction of buying and selling interests.
  - This is profoundly important because it means that behavioral factors can influence price patterns.
- Every technical edge we have, as technical traders, comes from an imbalance of buying and selling pressure.

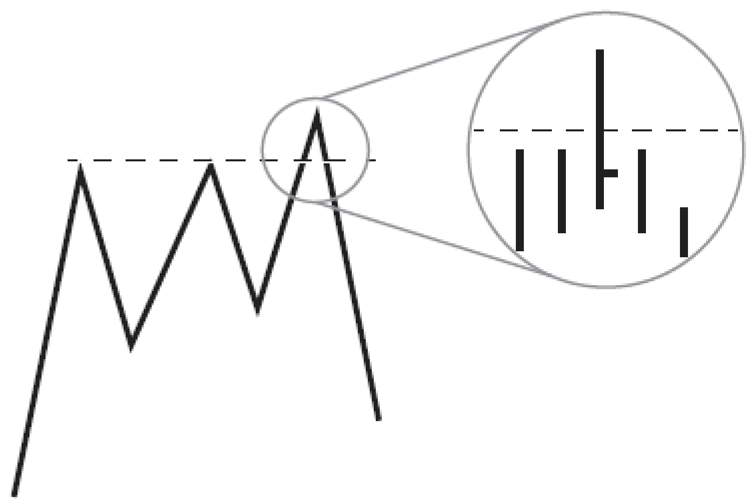
A Framework for Technical Analysis:

- Two basic forces in price movement:
  - Mean reversion
  - Range expansion
- Find patterns that have a statistical edge.
- Which of the forces is more likely to be in play?
- We only want to be involved in markets when there is an edge.
- Exposure = risk

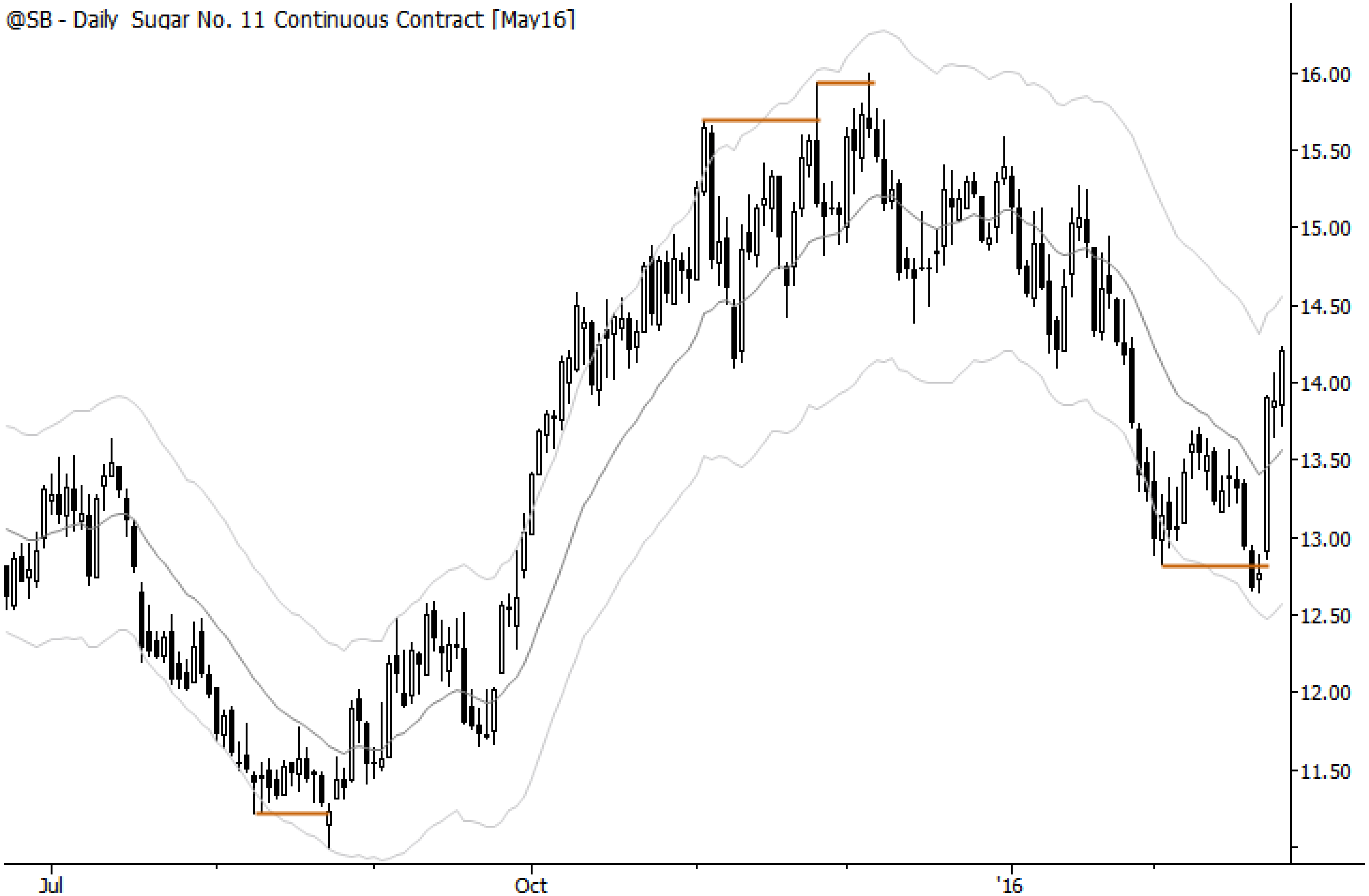
Some Basic Patterns:

- A market makes a sharp move in one direction followed by a pause or pullback. This generally sets up another move in the same direction.
  - Pullback trades
  - Flags
- A market probes beyond a previous level, but finds no conviction there.
  - Failure test
  - “2B trade”
  - Bull or bear traps
  - Wyckoff springs and upthrusts

The Failure Test:



The Failure Test:



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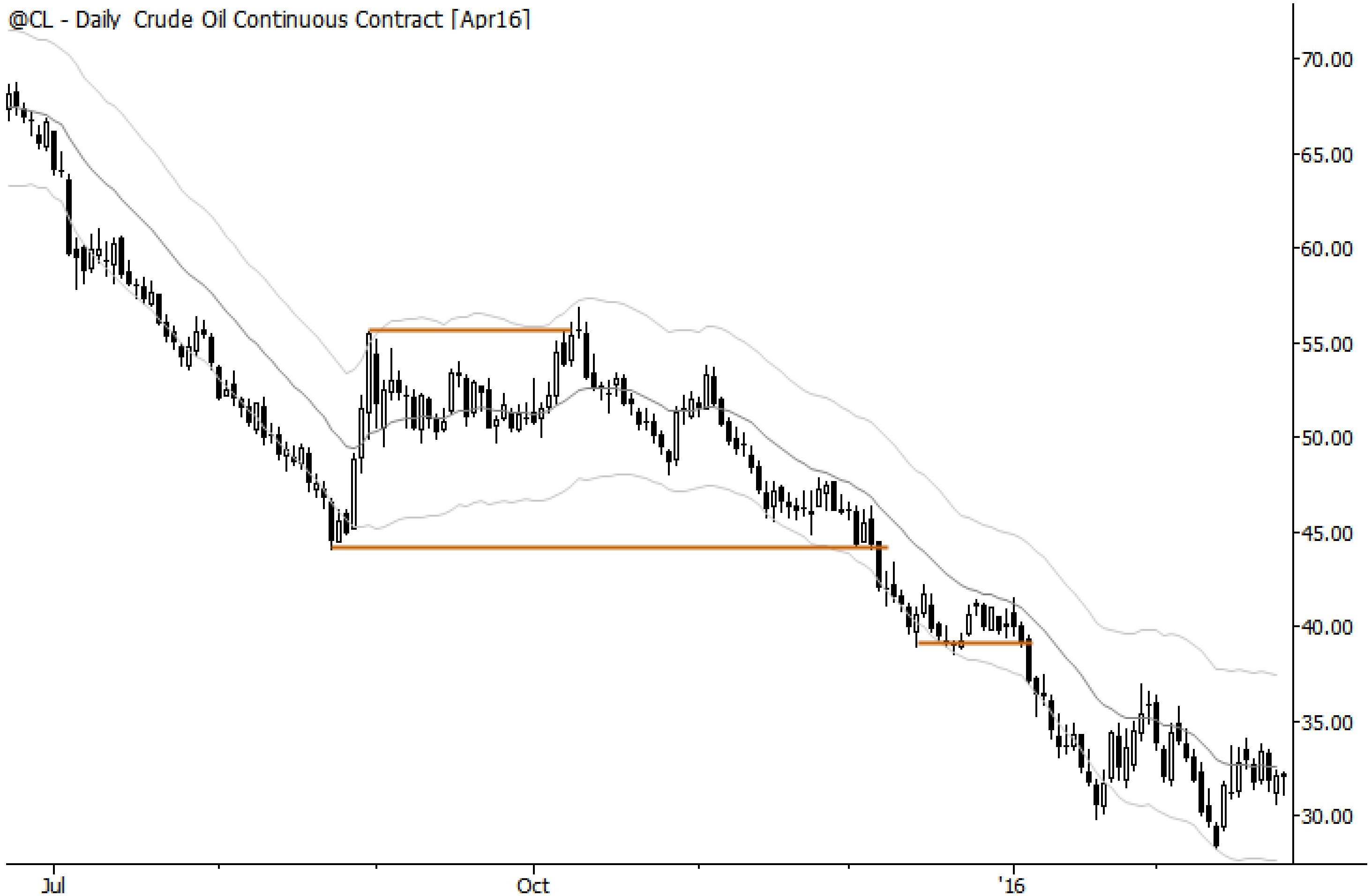
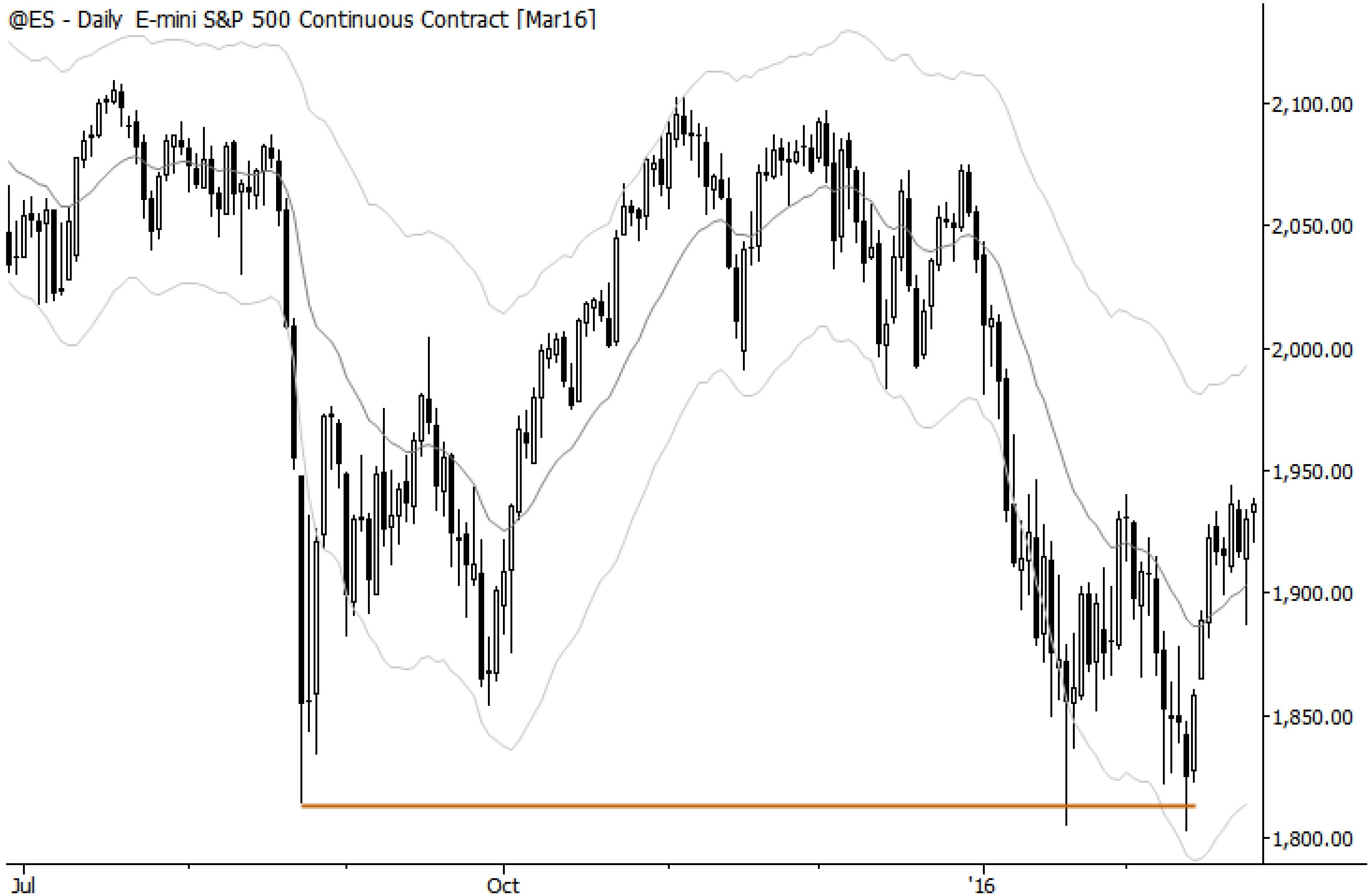
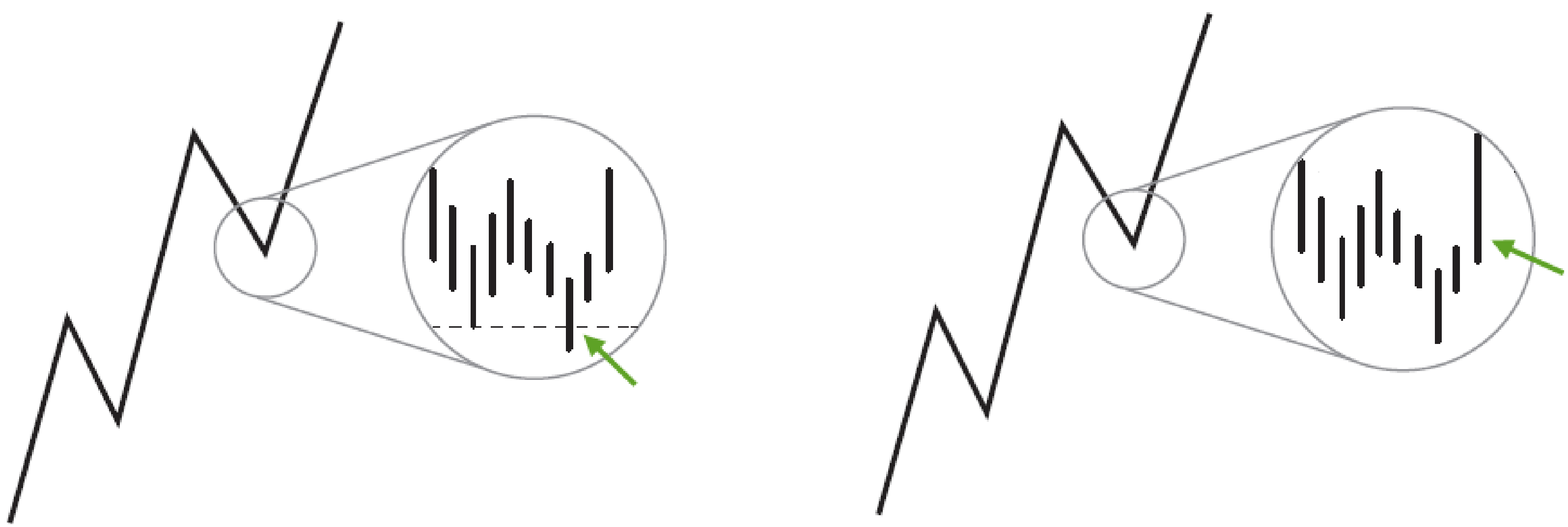


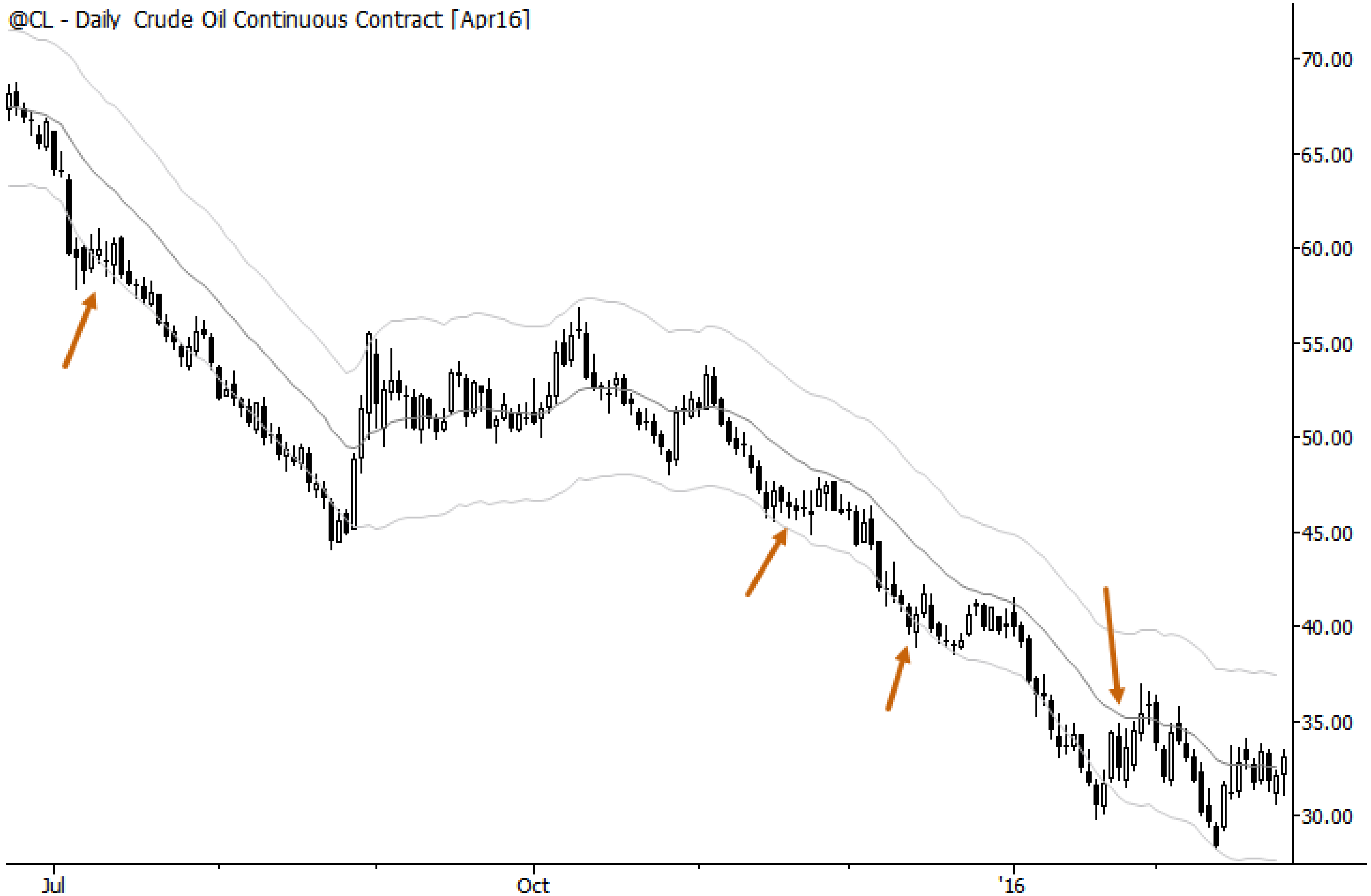
The Failure Test:



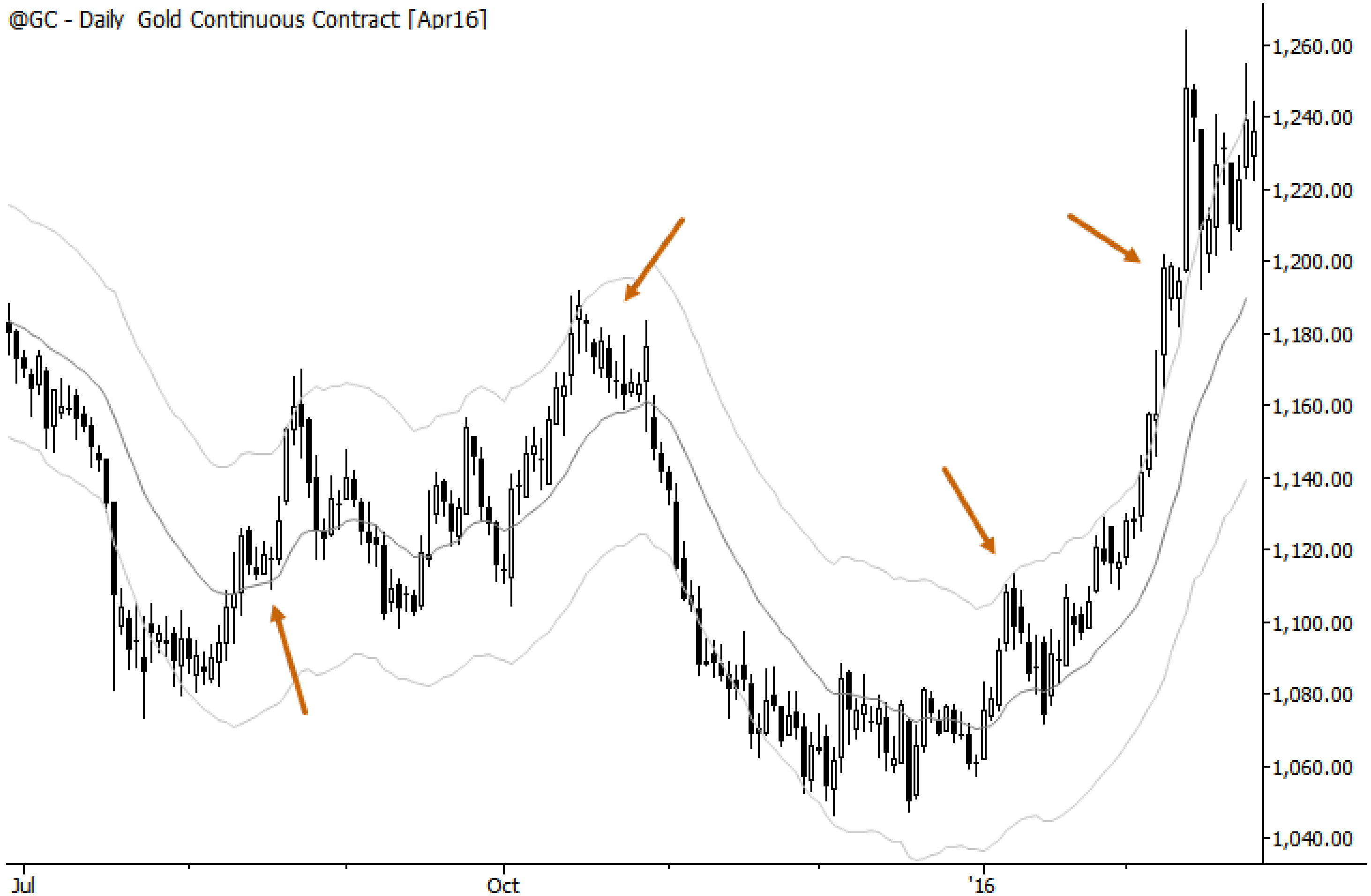
The Pullback:



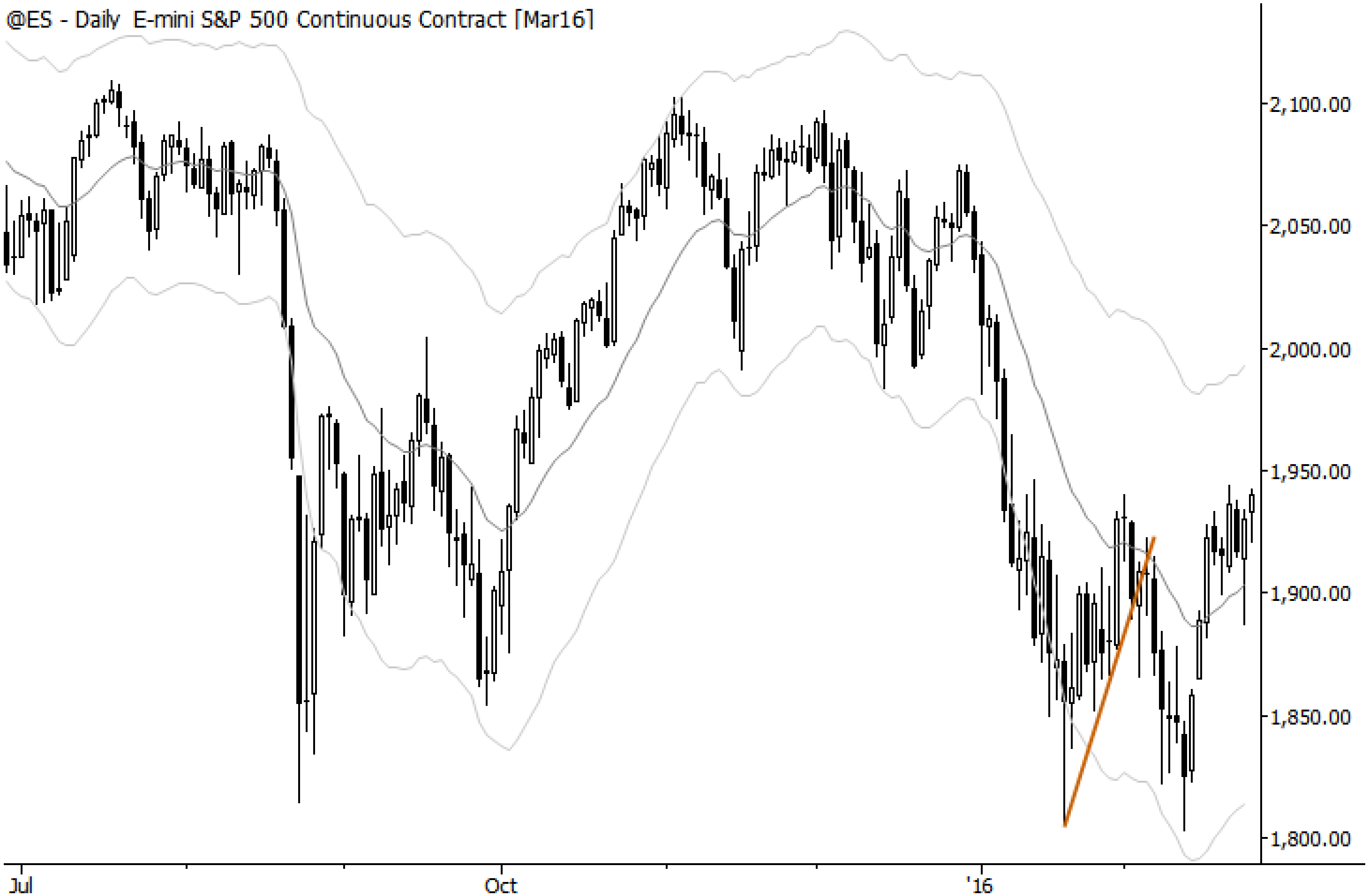
The Pullback:



The Pullback



The Pullback:



Quantitative Screens

- Traders and investors work across a spectrum from purely quantitative to purely discretionary.
- It may be a mistake to see these as opposites
  - Successful discretionary trading is guided by quantitative principles.
  - Successful discretionary trading requires "knowing the odds"
  - Successful quantitative work incorporates some element of discretion.
  - If nothing else, we have to decide what to test (what to do that quantitative work on), and that requires some discretion!
- Blending quantitative and discretionary tools is a possibility.

A Blended Approach

- There are many stock "screeners", but a key question that is never asked: what edge does the screener have?
  - In other words, when the screen conditions align, does it say anything about the future direction of the market?
  - (This is simply the same methodology we apply to patterns.)
- One way to blend quantitative and discretionary tools is to combine a certain type of screen with human trade entry and risk management.

A Few More Thoughts:

- Entry patterns are only one small piece of the puzzle.
- The decisions you make after you get into a position (trade management) are at least as important for profitability.
- (The same patterns inform both sets of decisions.)

Behavioral Considerations:

– As technical traders, all we are doing is playing the slight probabilistic tilts in markets. Flipping a coin, but the coin is weighted in our favor.

– Most people can't trade successfully. Why?

– The market has evolved to put our normal cognitive tools and behavior adaptations against us.

– It is not so much that the market is against us as that the market sets up against ourselves.

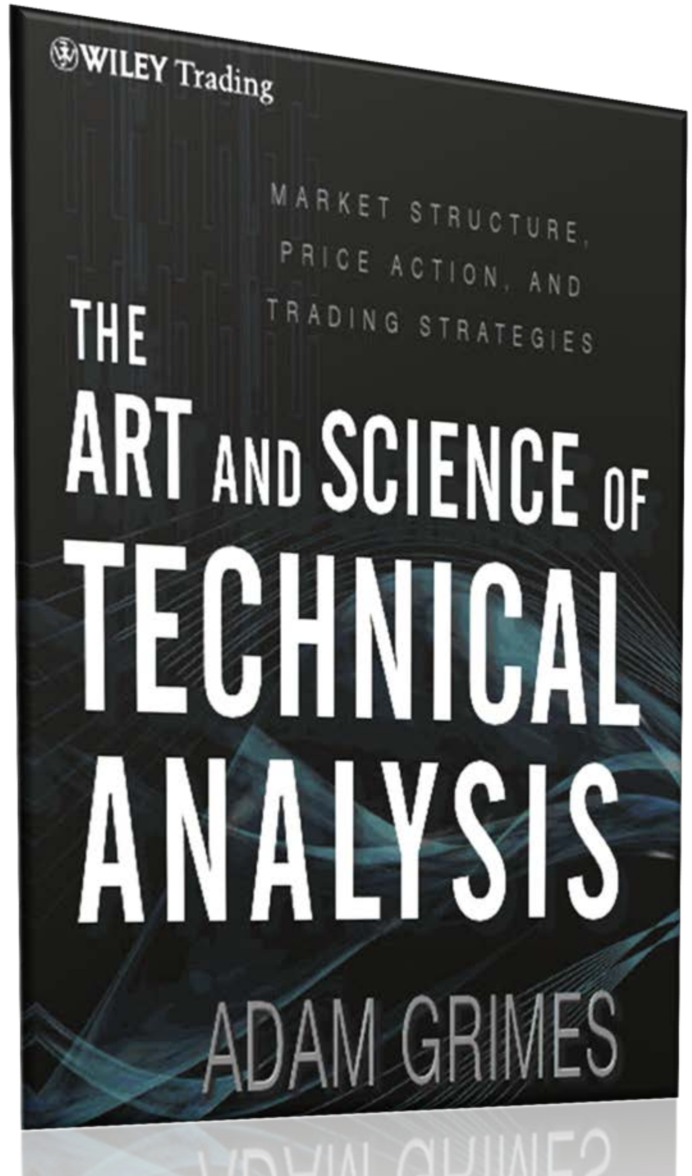
– Part of the task of trading is learning to manage behavior and risk.

Tools for Success:

- Understanding how markets move
- Using this information to know when to get in and out of trades.
- Discipline
- Consistency
- Correct position sizing

Using Our Research

- Idea Generation
- Risk Management
- Timing
- Blended systematic/discretionary trades
- Tactical inputs to existing processes
  - Educational background
  - Using inputs from relative strength, tactical equity tools, etc. as part of bigger decision making process
  - Incorporating relative strength
  - Inputs (return assumptions, etc.) to portfolio processes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MarketLife Ep 28 – So you want to be a trader? Here's what you can do next.

Sep 8, 2015

This week's podcast picks up where we left off last week, and looks at how to apply the lessons and ideas to your own development as a trader. These two podcasts are targeted at developing traders, or perhaps longer-term investors who want to learn to trade more… read more

One, two, three steps to shorting stocks

Sep 2, 2015

I want to share a quick short setup in the S&P 500 index today. This is a repeatable pattern, and draws on many elements I have discussed here on my blog, and also in my book, The

Waverly Advisors, LLC: Research Products

- Tactical Playbook – Available on Interactive Brokers
  - Written for the active trader on the daily/weekly timeframes
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- Tactical Portfolio Outlook – Contact Waverly Directly
  - Written for the longer-term manager / allocator
  - Focus on Equities, Equity Sectors, and other asset classes

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