Outline

- Why both Quant and Discretionary?
- The Nature of the Market
- Analyzing Market Problems—Finding an Edge
- The Two Forces (How Markets Move)
  - Mean Reversion
  - Momentum
- Application
  - Applying the patterns
  - Tradeoffs in designing trading strategies
  - The process of becoming a trader

Some Questions

- How do markets "really move"?
- Are there non-random, repeatable patterns in markets?
- Is it possible to make money trading?
  - We see successful traders. Are their results explainable by chance?

My Beliefs: Where I Start From

- Markets are almost always, but not always, efficient.
  - Inefficiencies = potential opportunities for profit.
  - Inefficiencies come in "spurts".
- Price movements are *usually* random.
- Behavioral factors strongly influence price movements at times.
- Market efficiency may be an evolving process.

- The bottom line:
  - Price movements are mostly random.
  - It is really hard to make money in the market, but…
  - There are patterns in prices.
  - Behavioral and psychological factors are important.

Randomness

- We have poor intuition and perception of randomness.
- Even well-educated traders suffer from this because it is a fundamental element of human perception.
- There are more runs in random data than people expect.
  - A trend in prices does not mean it's non-random.
  - The traditional "patterns" of technical analysis appear in random price data.
- The feeling of "that can't be random" often comes from a poor understanding of randomness.
- Why do we care? **Because if it's random, you can't make money with it.**

Coin Flips: Which Group is Random?

Group 1

H, H, H, H, T, T, T, H, T, T
T, H, T, T, H, T, T, H, H, H
H, H, T, H, T, H, H, H, H, H

Group 2

H, T, T, H, T, H, T, H, H, T
T, H, T, H, T, T, T, H, T, H
H, T, H, H, T, T, H, T, H, H

Runs Tests for Random Data

Group 1

H, H, H, H, T, T, T, H, T, T
T, H, T, T, H, T, T, H, H, H
H, H, T, H, T, H, H, H, H, H

4/2/3 [5 heads]
2/2/3 [5 heads]
2/5 [8 heads]

Group 2

H, T, T, H, T, H, T, H, H, T
T, H, T, H, T, T, T, H, T, H
H, T, H, H, T, T, H, T, H, H

2/2 [5 heads]
3 [4 heads]
2/2/2 [6 heads]

Runs Tests for Random Data

Group 1

H, H, H, H, T, T, T, H, T, T
T, H, T, T, H, T, T, H, H, H
H, H, T, H, T, H, H, H, H, H

Truly random (RNG using noise from nuclear decay.)

Group 2

H, T, T, H, T, H, T, H, H, T
T, H, T, H, T, T, T, H, T, H
H, T, H, H, T, T, H, T, H, H

Created by a human (professional statistician) in a best effort to appear random

Runs Tests for Random Data

Group 1

H, H, H, H, T, T, T, H, T, T
T, H, T, T, H, T, T, H, H, H
H, H, T, H, T, H, H, H, H, H

Truly random (RNG using noise from nuclear decay.)

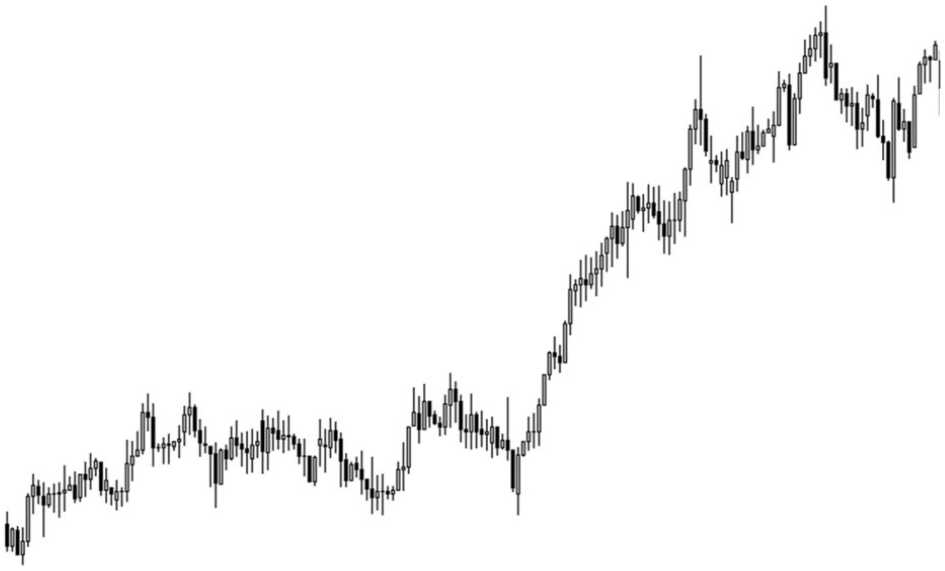
Group 2

H, T, T, H, T, H, T, H, H, T
T, H, T, H, T, T, T, H, T, H
H, T, H, H, T, T, H, T, H, H

Created by a human (professional statistician) in a best effort to appear random

The Market | Tools for Analysis | The Two Forces | Application

Random Price Series 1



Intuition and Randomness

- We have very poor intuition about randomness.
- Why?
  - Maybe because there was no evolutionary advantage to being able to discern random from non-random patterns.
  - In many endeavors, the errors certainly should be on the side of assuming non-randomness.
- Things that are random can “feel”, often very strongly, non random.

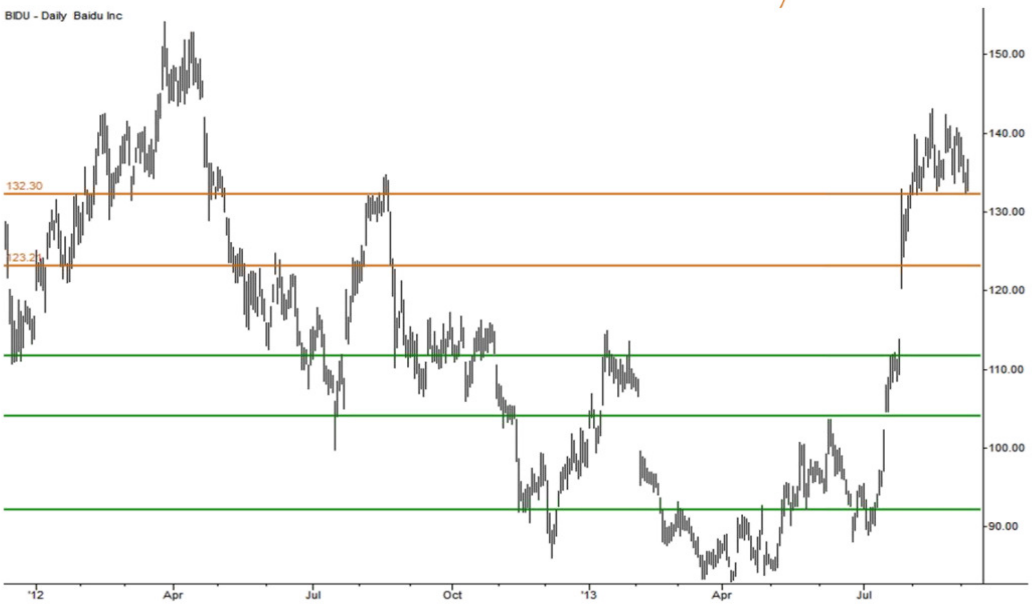
Traditional Technical Analysis: Support and Resistance Levels

- A price area which may offer sufficient supply (resistance) or demand (support) to stop prices.
  - Always think *potential* support or resistance…
- Usually zones, not exact levels.
  - If drawing, think crayons, not an architect's pen.
- Many ways to find these levels:
  - Visible chart points
  - Calculated levels (Gann, Fibonacci, Murrey Math, etc.)
  - Opening range
  - Volume analysis

Support and Resistance in Action

- These levels were calculated for Bidu, Inc. (Nasdaq: BIDU) at the end of 2010 based on the daily chart.
- Consider intraday engagements of these levels with the lessons of traditional technical analysis in mind:
  - Broad zones, not exact prices.
  - Support → Resistance and vice versa
  - Gap through levels can be significant
  - The more times a level is tested, the more valid it is.
- With calculated levels:
  - If a level fails to hold, price usually moves to the next level.

The Levels on the Daily Chart



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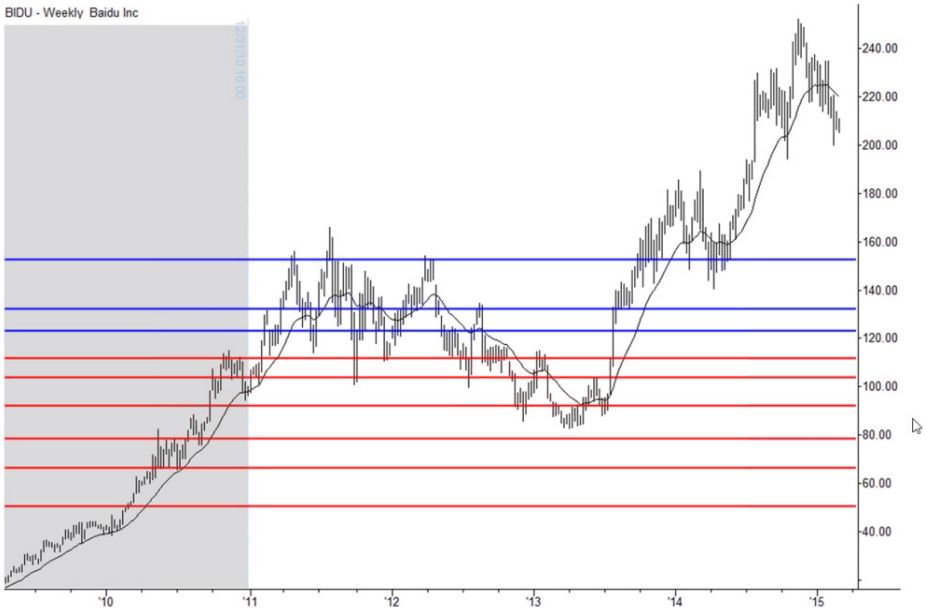
Intraday Levels

Moving Through Levels

…But Stopped at the Next Level

Equally Useful on All Timeframes

Longer-term Significance, as well



Where Did These Levels Come From?

- On December 28, 2010 I generated these levels publicly
  - http://youtu.be/5mPp7_fajvo
- I drew *random horizontal lines* on the chart!
  - **These levels are completely random.**
  - (There is no "file drawer" problem. This was only done for BIDU.)
- If you are using levels, are they better than this?
  - Are you sure?
- The lesson:
  - Any line(s) on a chart will appear to be significant.
  - You cannot trust your perception.

Analyzing Market Data

- The goal is to be able to distinguish non-random price action from the noise.
  - "Hey, that's different."
  - Significance testing may be flawed.
- Also need to assess economic significance.
- Consider risk and volatility.
  - Sometimes it might be preferable to make less money with more certainty.
- Markets are very noisy and have a high degree of randomness
  - Simple and robust mathematical tools are often better.

Simple and Robust Tools

- Basic statistics
  - Ways to summarize a data set
    - Measures of central tendency
    - Measures of dispersion
- Simple statistical tests
  - Linear regression
  - Hypothesis tests (can be misleading)
  - Checks for stability (e.g., stationarity)
- Test procedures
  - Exploratory data analysis
  - "Bin" analysis
  - Event study methodologies

General Advice

- Do some work by hand. There is value in having close contact with the data.
- Conversely, make sure you also look at large amounts of data with appropriate tools.
- Avoid data snooping bias. Don't "shotgun test" many patterns. *Have an idea.*
- Understand *why* something should work. (Have an idea.)
  - Every good market idea has a reason why it should work.
  - It might not be obvious, but it is there.
- If something is too good to be true, you made a mistake.
- Consider economic significance in addition to statistical significance.

Event Study Methodology

- Define test universe.
  - Represent all important asset classes
  - Address several volatility regimes.
  - Adjust for baseline drift.
- Compute summary stats for each asset class.
  - Baseline drift is particularly important = hurdle rate.
  - If you're not making more than the baseline, why not just buy and hold?

Event Study (cont.)

- Define a precise condition that will result in a trading signal.
  - Symmetrical for buy and sell.
- Work through each bar of the universe looking for the condition.
- Record returns for each bar following the condition.
- Combine all N+1, N+2, … returns to get a composite for each bar following the signal.
- Create excess return measure (signal – baseline) for each bar.

Event Study Summary Output

	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	11.3**	8.3	51.7%	(12.1)	4.0	51.0%	5.9	(1.4)	50.0%
2	15.6**	9.3	51.8%	(20.7)	2.5	52.7%	(0.9)	7.1	53.8%
3	(5.8)	(9.8)	49.5%	(36.8)*	(29.0)	47.3%	5.5	14.6	60.0%
4	(15.3)*	(9.1)	49.8%	(24.2)	(33.2)	45.9%	(4.1)	6.5	55.0%
5	(5.9)	(6.3)	50.3%	(31.2)	(26.8)	49.0%	14.3	7.4	55.0%
10	(34.2)**	(12.3)	50.7%	(20.8)	(35.1)	49.3%	(1.1)	7.5	53.8%
15	(46.2)**	(1.0)	51.8%	(34.4)	(81.8)	47.3%	(21.9)	22.2	57.5%
20	(63.5)**	15.5	52.9%	(29.7)	(89.0)	48.6%	(8.6)	28.6	62.5%
	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	(10.5)**	(9.7)	47.8%	(3.2)	(10.4)	47.1%	(7.1)	(7.0)	44.6%
2	(26.8)**	(9.5)	48.9%	7.4	5.3	54.6%	(22.9)*	(16.6)	40.2%
3	(24.0)**	(12.8)	48.9%	20.1	21.5	55.3%	(19.2)	(12.4)	43.5%
4	(33.8)**	(14.1)	49.1%	19.3	16.2	54.9%	(18.0)	(17.8)	47.8%
5	(24.7)**	(8.5)	50.1%	30.8	2.9	54.9%	(6.2)	(4.0)	51.1%
10	(70.2)**	(11.2)	50.8%	27.4	(7.2)	54.3%	(8.8)	22.5	59.8%
15	(83.6)**	7.2	52.5%	29.7	(57.0)	49.8%	(28.2)	(12.4)	55.4%
20	(83.0)**	12.0	53.0%	12.8	(23.8)	53.9%	(22.4)	(3.2)	55.4%

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 Results

- Too much to go into detail here, but you will find much information on my blog.
- Bottom line is that most of the tools of traditional technical analysis fail to show any statistical edge at all.
  - Some are more difficult to test than others
  - Easy are Fibonacci ratios and moving averages
- Some indicators and tools do show an edge, particularly if they capture mean reversion or momentum.
- We only want to use tools that show some edge over randomness.
  - This is, perhaps, *the* most critical point.

A Useful Construct: The Two Forces

- Price movements are shaped by
  - Mean reversion (range contraction)
    - 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.)

Mean Reversion

- Fading large single bars
  - Volatility-adjusted measures are best
- Fading N-day runs
- Fading breakouts of N-day highs or lows
  - Donchian channels
- Fading large excursions from moving averages
  - Keltner channels or Bollinger bands
  - Perhaps we should be suspicious of precise values?

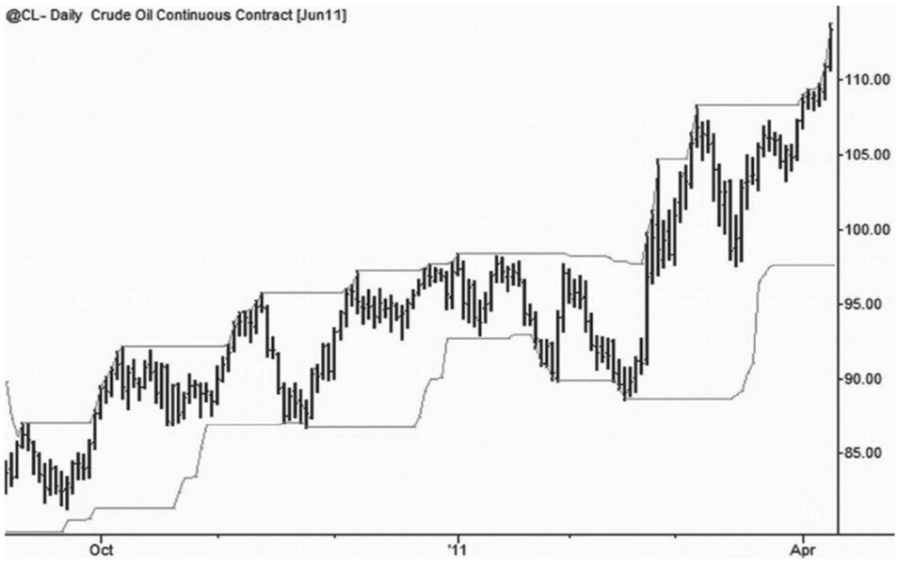
- Different asset classes and timeframes have different tendencies for mean reversion!
  - Can we use any tool on any timeframe in any market?

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%

Crude Oil with 20 Day Channels



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%

Stocks at 52 Week Highs

- Many fundamental systems include some token technical criteria.
- A common one is to only buy stocks that are at or near 52 week highs.
- The logic is that a stock going up is supported by buying pressure, and that the market has already voted.
- This is very logical, but, unfortunately, also wrong.
- Buying stocks at 52 week highs puts you on the wrong side of one of the strongest statistical tendencies in the market: mean reversion.

Trading 260 Day (~52 week) 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	(10.9)**	(6.4)	47.0%	4.8	2.1	52.1%	4.2	3.7	55.4%
2	(22.6)**	(10.0)	47.4%	13.8	20.3	59.0%	6.6	5.3	53.1%
3	(33.0)**	(10.0)	48.1%	16.4	14.3	57.9%	2.4	13.9	58.5%
4	(41.7)**	(17.0)	47.8%	17.9	19.7	59.0%	12.9	28.8	59.8%
5	(50.4)**	(15.8)	48.3%	14.8	13.6	56.9%	14.2	33.2	65.6%
10	(79.6)**	(22.7)	49.3%	56.9**	44.7	58.4%	10.2	20.1	55.8%
15	(90.9)**	(19.7)	51.0%	72.4**	23.8	57.9%	18.6	(2.3)	56.3%
20	(102.4)**	(17.2)	51.7%	101.7**	11.9	57.5%	20.4	14.6	59.4%
	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	1.7	(2.3)	49.5%	(3.6)	(1.0)	50.9%	(8.9)	(6.9)	48.5%
2	23.0*	3.8	50.6%	(3.2)	(4.6)	50.7%	(24.1)	(27.7)	42.6%
3	37.5**	22.8	52.2%	(1.5)	(13.7)	49.1%	(51.2)*	(30.9)	38.2%
4	54.7**	27.0	52.4%	(14.7)	(19.4)	48.8%	(52.9)	(26.8)	41.2%
5	122.5**	57.9	53.9%	(7.3)	(17.6)	49.1%	(40.1)	(19.1)	44.1%
10	122.7**	92.7	54.8%	(23.3)	(35.1)	49.9%	(57.5)	(28.7)	44.1%
15	151.1**	166.0	56.7%	(68.2)*	(67.7)	47.0%	(103.9)*	(34.2)	47.1%
20	233.6**	234.2	58.9%	(68.2)*	(72.3)	49.9%	(71.0)	(11.2)	54.4%

Indicators: Standard RSI-14 (70/30)

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%

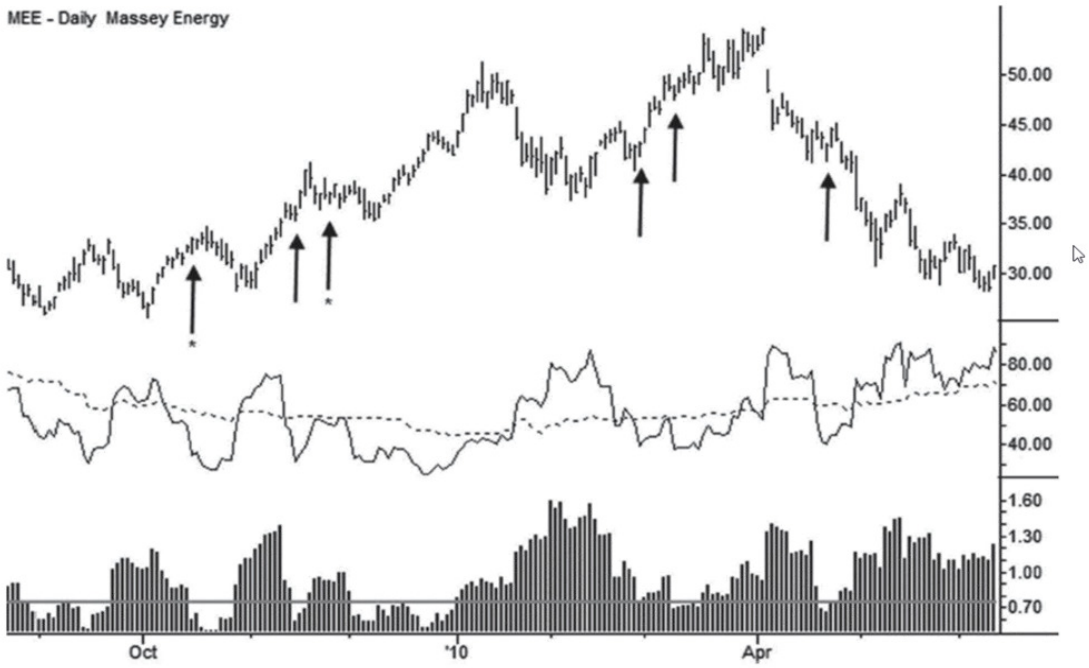
Momentum

- Volatility compression
- Pullbacks

- These tendencies can be captured in some traditional chart patterns.

Volatility Compression:

10 and 50 Day Historical Vols



Volatility Compression Test

- Most breakouts fail (mean reversion).
- Can we qualify breakouts with a volatility condition?
  - Ratio of 5 to 40 day ATR is < 0.5.
  - Current day's range is >= 5 day ATR.
  - Current day closes in top 50% of range.

- These are crude criteria, but good for general test.
- (Volatility evolves differently in forex, so sample size too small.)

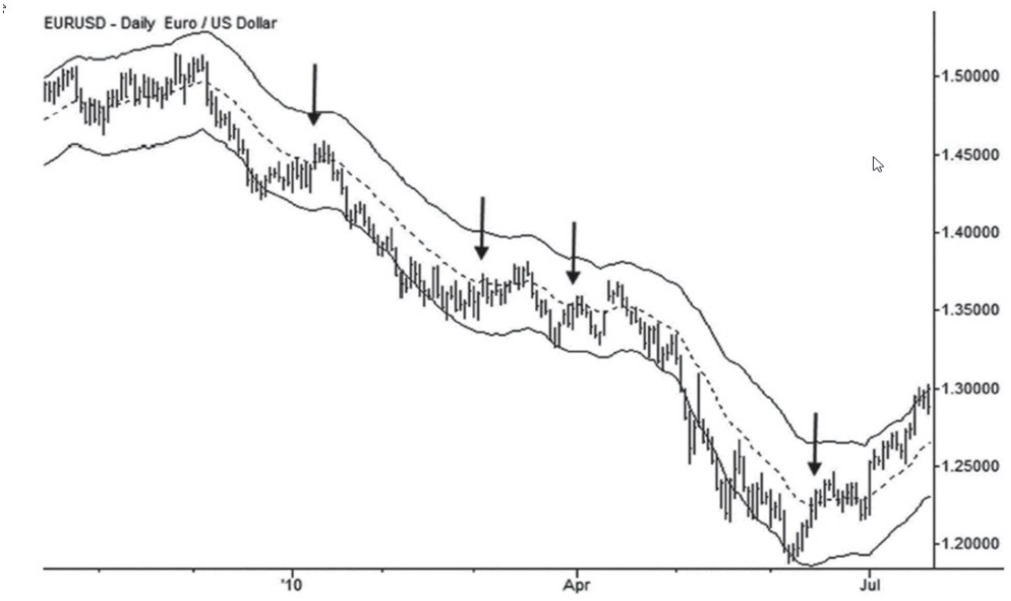
Volatility Compression Test

	Equities—Buy			Futures—Buy		
Days	$\mu_{sig}-\mu_b$	Diff. Med.	%Up	$\mu_{sig}-\mu_b$	Diff. Med.	%Up
1	45.1**	22.1	55.2%	53.8	3.3	51.4%
2	74.1**	28.5	56.0%	69.6	30.8	56.8%
3	72.1**	19.1	54.1%	91.8*	53.6	62.2%
4	56.1**	13.2	52.7%	128.2**	78.7	64.9%
5	28.7*	14.3	52.7%	89.5*	26.6	73.0%
10	(70.5)**	(22.7)	49.7%	28.1	(10.7)	59.5%
15	(108.6)**	(18.5)	50.9%	(18.0)	(43.2)	51.4%
20	(130.0)**	(68.5)	48.6%	(58.5)	(7.2)	56.8%
	Equities—Sell			**Futures—Sell**		
Days	$\mu_{sig}-\mu_b$	**Diff. Med.**	**%Up**	$\mu_{sig}-\mu_b$	**Diff. Med.**	**%Up**
1	(4.3)	(0.1)	50.2%	(37.7)	(16.8)	43.8%
2	(22.5)*	(4.5)	49.7%	(39.5)	(7.5)	50.0%
3	(27.5)*	(10.9)	49.3%	2.1	10.7	58.3%
4	(42.8)**	(15.2)	48.6%	(15.0)	4.9	54.2%
5	(50.8)**	(17.2)	49.1%	(6.1)	21.4	56.3%
10	(120.8)**	(46.0)	48.8%	(28.0)	(111.3)	37.5%
15	(123.8)**	(71.7)	47.8%	(105.2)	(99.6)	41.7%
20	(76.2)*	(57.5)	49.4%	(119.2)	(122.3)	45.8%

Pullback Test Example

- Buys are allowed after the market closes above the upper channel.
- Entry trigger is a touch of the previous day's 20 period XMA.
- Only one entry allowed per touch of the channel. Condition is reset after entry.
- Rules are symmetrical to the sell side.

Keltner Pullback Entry



Keltner Pullback Entry 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	50.1**	36.3	57.3%	0.7	0.7	51.3%	23.0**	35.7	68.6%
2	58.1**	47.1	57.9%	5.6	(2.8)	51.0%	24.8**	31.3	64.7%
3	63.7**	54.1	58.0%	2.9	(11.2)	49.6%	37.8**	43.5	65.4%
4	71.6**	66.7	58.6%	12.8	(7.2)	51.3%	28.6**	20.6	59.0%
5	73.3**	75.6	58.8%	15.0	(23.6)	49.4%	24.2*	17.9	59.0%
10	74.3**	83.2	58.4%	18.7	6.6	54.0%	29.9	28.4	59.6%
15	53.0**	99.7	58.4%	16.9	(7.6)	54.8%	15.0	0.3	55.8%
20	45.8**	115.2	58.5%	26.5	(3.6)	54.8%	12.3	(4.9)	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	(53.3)**	(14.3)	47.9%	(59.0)**	(30.4)	40.4%	(23.3)*	(6.5)	47.3%
2	(56.5)**	(14.5)	48.7%	(54.7)**	(25.1)	46.4%	(8.2)	(5.9)	49.5%
3	(65.7)**	(21.4)	48.5%	(45.5)**	(33.1)	44.9%	(8.3)	1.8	50.5%
4	(63.7)**	(27.9)	48.3%	(30.9)	(17.5)	48.6%	(4.0)	(2.5)	51.6%
5	(81.0)**	(43.0)	47.2%	(40.0)*	(43.0)	46.7%	(5.2)	(6.6)	50.5%
10	(96.3)**	(28.1)	49.7%	(63.5)*	(69.4)	46.9%	(7.3)	(3.9)	55.9%
15	(94.7)**	1.3	51.8%	(76.6)*	(97.3)	44.4%	(44.1)	22.1	55.9%
20	(70.2)**	43.8	53.9%	(86.4)*	(105.3)	48.6%	(21.9)	(27.5)	51.6%

The Two Forces: Summary

- Mean reversion and momentum would balance each other out in random walk markets.
- Certain trigger conditions can tilt the scales in favor of one condition over the other.
- These are simple but robust tests.
  - Avoid "full system" tests for tendencies. (These are common but potentially misleading.)
- Understand the balance of these forces in your chosen market and as they apply to your trading patterns.

Now what?

- There is more to successful trading than knowing what to do.
- Successful trading comes from the successful application of correct principles of price behavior.
- If we know the right thing to do, why is it so hard?
  - "It is not so much that the market is against us; it is that the market sets us against ourselves." (TAAS, 347)
- Most people are not prepared for the extreme variability of trading returns.

Example: Hypothetical Trading System

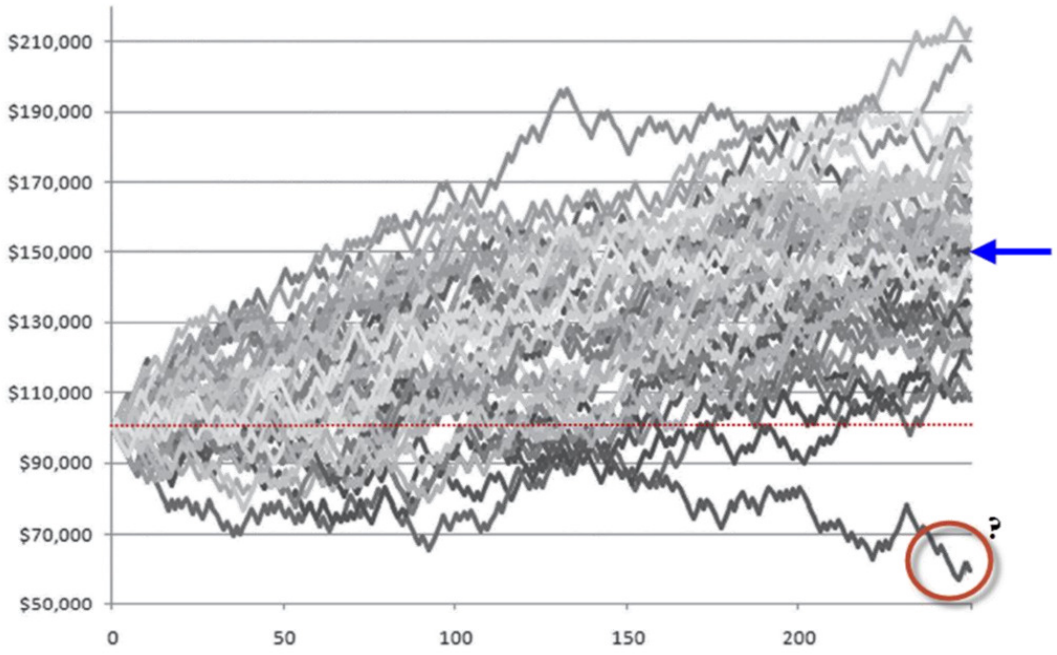
- Wins 50% of the time. Wins are always 1.2R
- Loses 50% of the time. Losses are always 1.0R
- What is the expected value of this system?

  (50% * 1.2) – (50% * 1.0) = 0.1

  - (What does this mean?)
- Assume we trade 250 trades from this system, risking $2,000 per trade with a starting equity of $100,000.
  - "Should" end up with $150,000

  (250 * $2,000 * 0.10) = $50,000 profit

Results Are Not Always What You Expect



Learning to Trade: Two Mistakes

The Quest for the Holy Grail

- Always looking for a better indicator, system, or tool.
- Reliance on gurus.
- Paralysis by analysis.
- Easy to blame losses on imperfect tools.

"Tell me about your Mother…"

- The idea that all your answers are to be found in psychology.
- "Anything works" you "just have to find what works for you."
- Places the blame for losses on imperfect psychology.

Building a Solid Foundation

- Both answers are right, but both are wrong without the other.
  - Must have a system aligned with market reality.
  - Must be able to apply it.
- Solid principles can be applied anywhere in the spectrum of discretionary → systematic trading.
  - The total gut-feel trader.
    - Probably not many of these who work successfully outside of a few specific environments.
  - The nearly completely systematic trader
    - If you are not trading 100%, purely systematically, you are partially discretionary.
- Discipline is key
  - The market has evolved because of traders' mistakes.
  - The difficult thing is often the right thing.

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.

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

If the Only Tool You Have Is a Hammer…

Trading Mean Reversion

- The concept is to trade large moves.
- Markets "probe" areas looking for stops (attempting to generate volume.)
- Some traders simply fade large moves.
  - May quantify many different ways.
  - Requires scaling in.
  - Invites emotional reactions.
  - May work for years then blow up and lose everything.
- The Failure Test is a good alternative.

The Failure Test

- Price probes beyond a level, finds no conviction, and quickly reverses.
  - Can occur in a trending market or a trading range
  - Consider relationship to higher timeframe trend.
- Objective entry pattern with a clearly defined risk point
- Other names:
  - Spring or Upthrust (Wyckoff)
  - 2B (Victor Sperandeo)
  - Bull or Bear Traps

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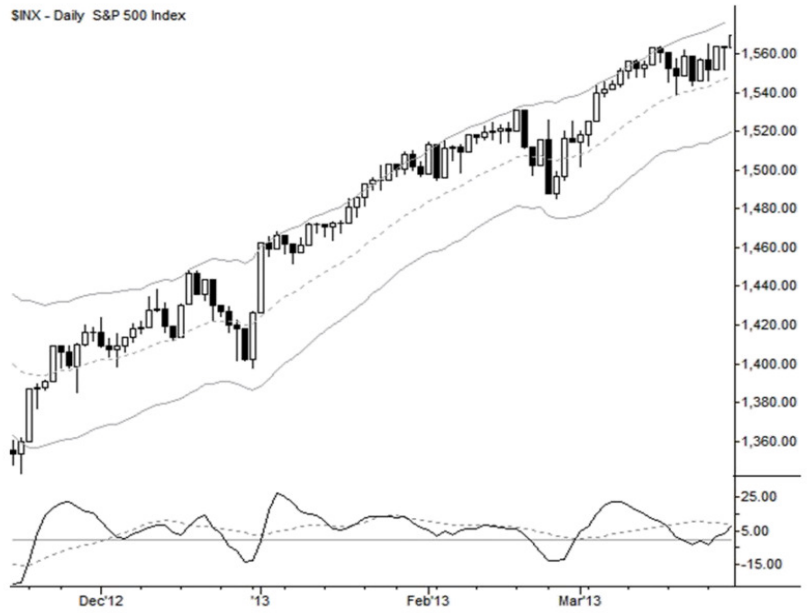
Be Careful of this Environment

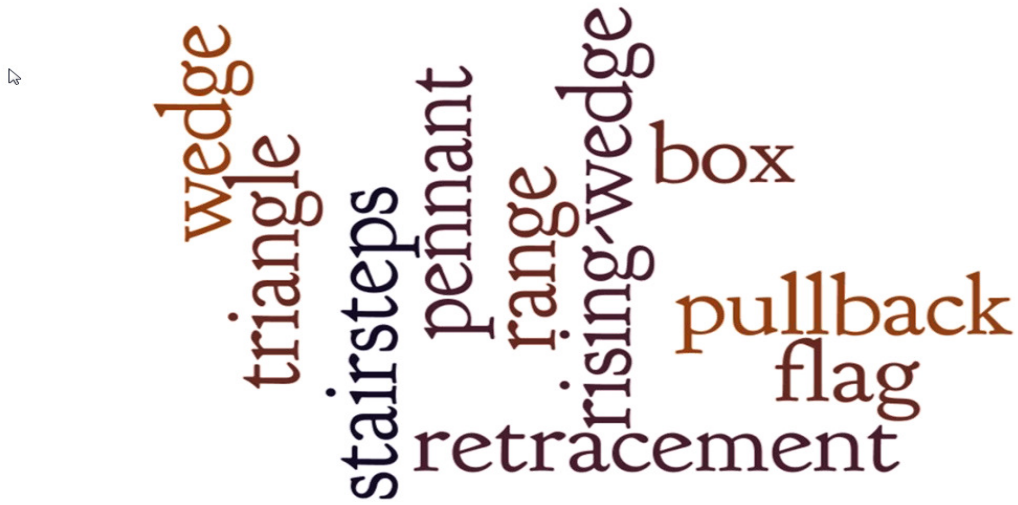


Trading Momentum: The Pullback

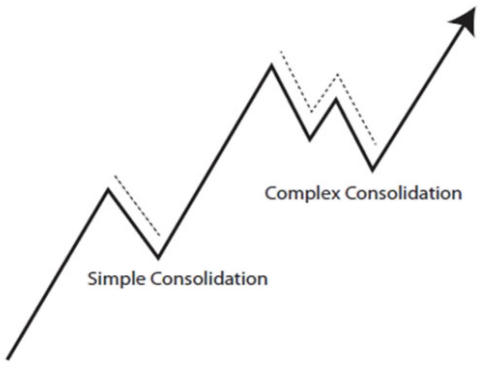
- Trends tend to move in alternating patterns of with-trend strength and retracement.
- The pullback captures this fundamental element of price behavior.
- Uses market structure to limit and define risk.

- A pullback is a shorter-term countertrend move in a larger trend.

Many Names for One Idea



Two Important Variations



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This Is Only a Beginning

- Other patterns:
  - Breakouts
  - The Anti
  - Other Pullback entries
  - Pattern Failures
- Using multiple timeframes to refine entries and manage risk.
- Position sizing
- Trade management
- Understanding trading psychology
- Monitoring performance
- Ongoing research
- Developing the *skills* of successful trading

Larger stops

Free Trading Course

- www.adamhgrimes.com/TAAS
- Completely, truly free—no upsell, no "premium area".
- Complete education in discretionary technical trading
  - Patterns, how to learn, how to research
  - Tools to work on your psychology and mental game
  - Tools to track performance of backtests and actual trading
- 30+ hours of video and audio and hundreds of pages of chart work for homework.

Other Resources

- Follow me on Twitter: @AdamHGrimes
- My blog: http://adamhgrimes.com/blog/
- My book: *The Art and Science of Technical Analysis*
- My firm: http://waverlyadvisors.com/

Contact Information

Adam Grimes

email: adamhgrimes@gmail.com

blog: http://adamhgrimes.com

website: http://waverlyadvisors.com

momentum mean reversion