zettacap

Finance 2.0

Stock Price Extraction from StockTwits
Creating a new form of Sentiment

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I. Stock Price Extraction

- Machine learning method that identifies asset prices within communications
- Provides easily quantifiable and intuitive approach to market levels being discussed

II. (Bullish – Bearish) Volume

- Oscillator measuring balance between bulls and bears for an asset
- Excellent for confirming trend line breaks and extreme levels

III. Price Range Indicator

- Indicator measuring % difference between median bullish and bearish price cohorts
- Helps to identify major shifts in market perception

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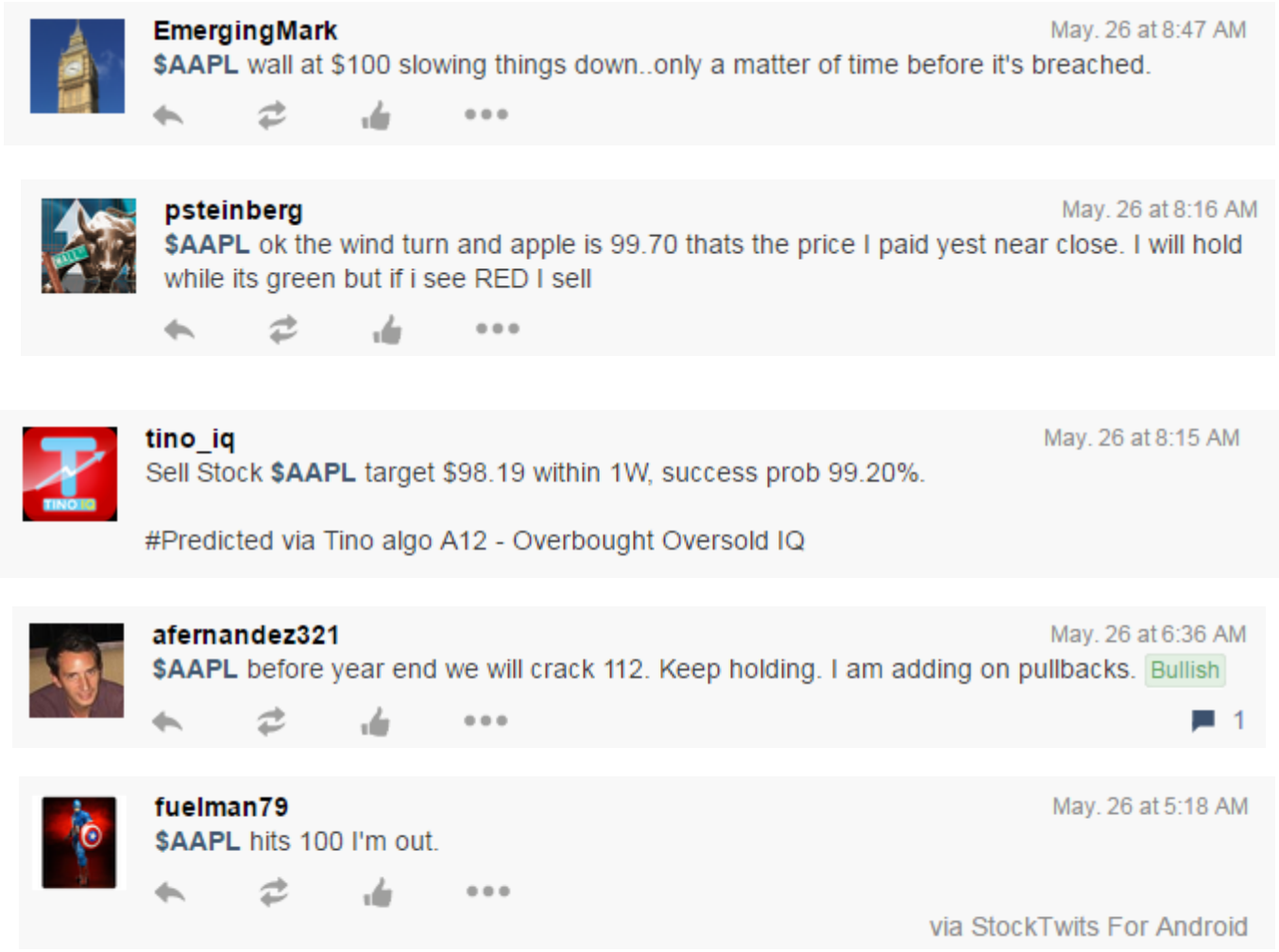
Stock Price Extraction



StockTwits® (Data Stream)

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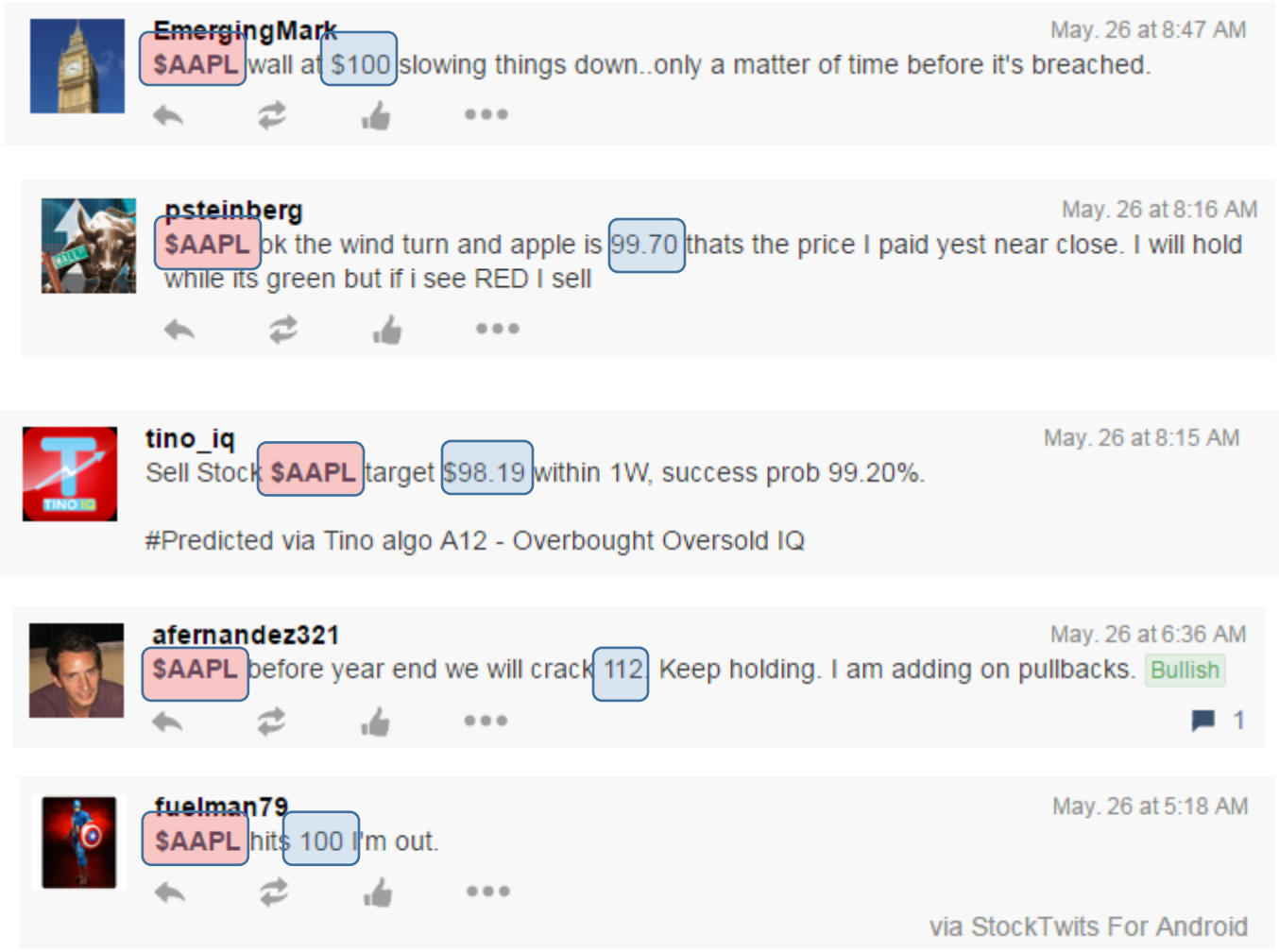
Stock Price Extraction



StockTwits® (Data Stream)

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zettacap (Machine Learning)

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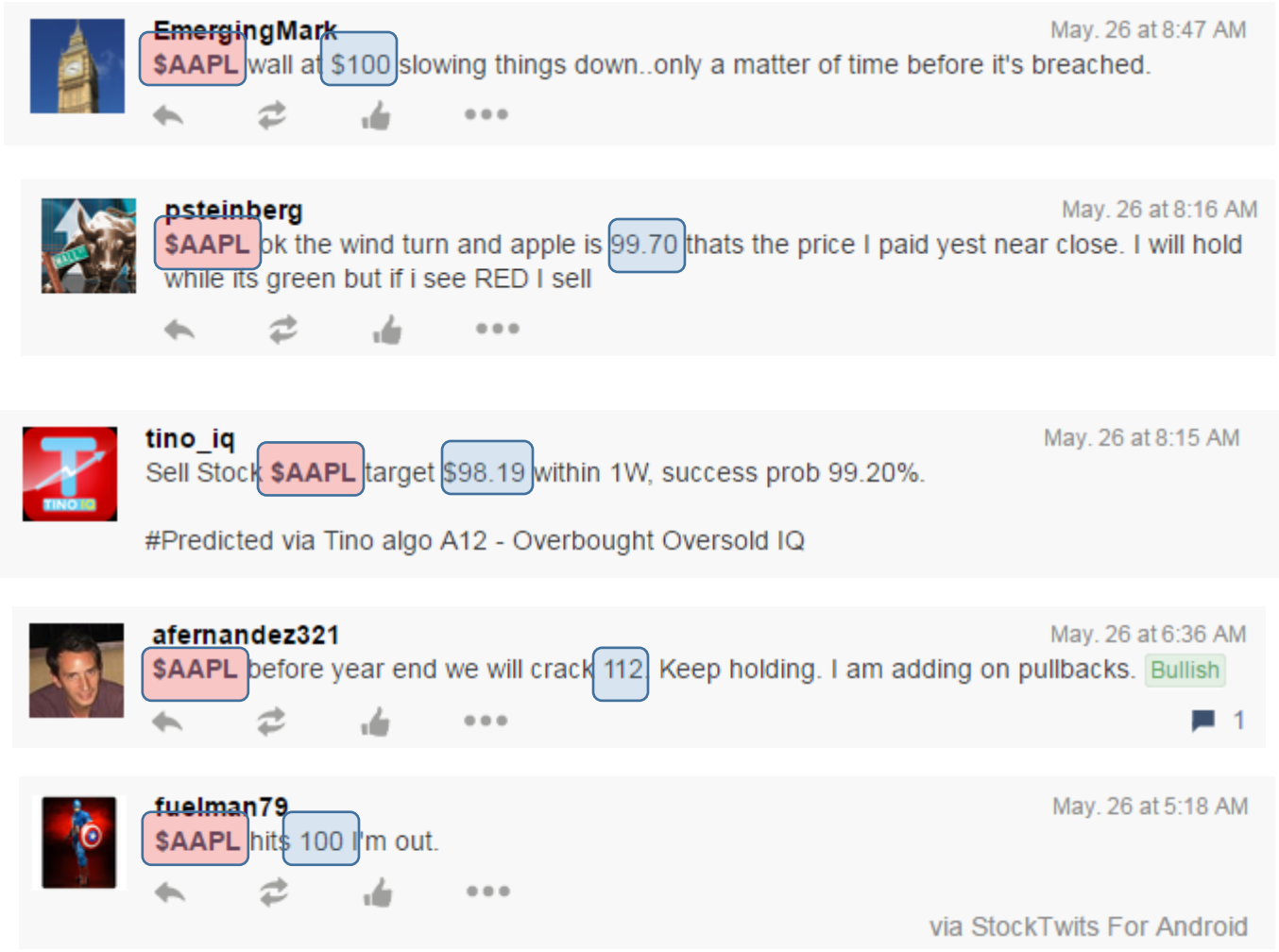
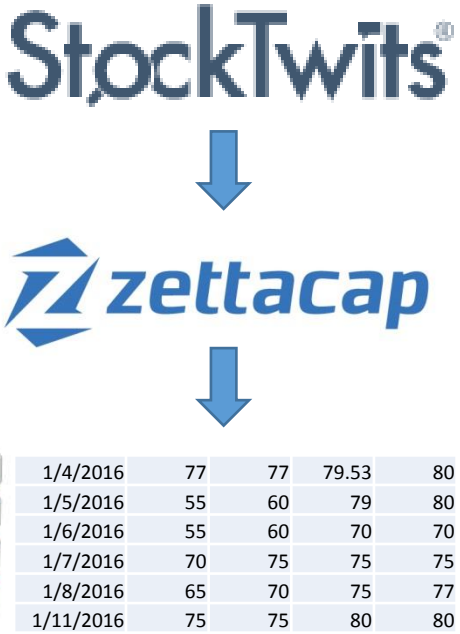
Stock Price Extraction





(Data Stream)

(Machine Learning)

(Storage by Ticker)

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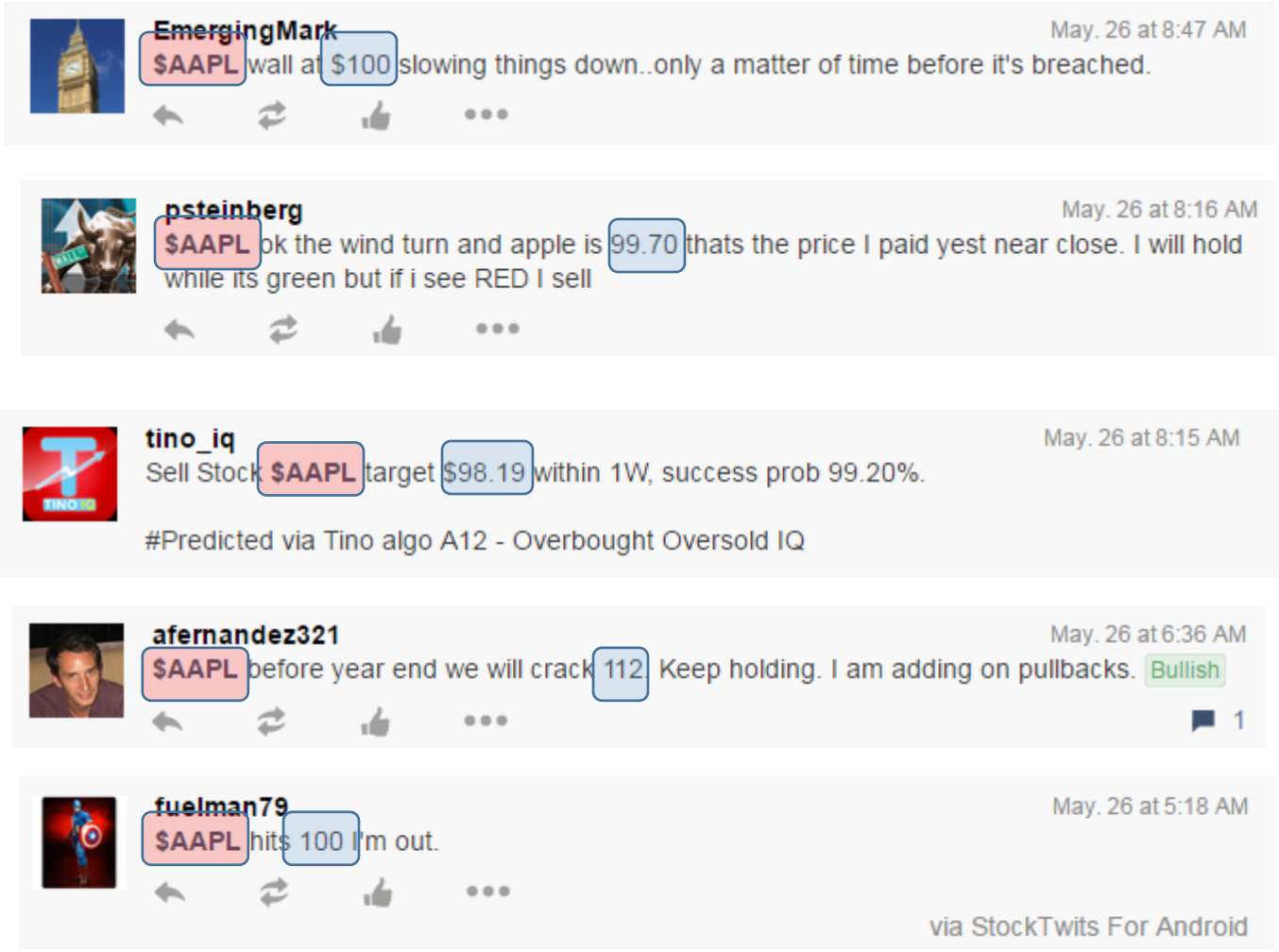
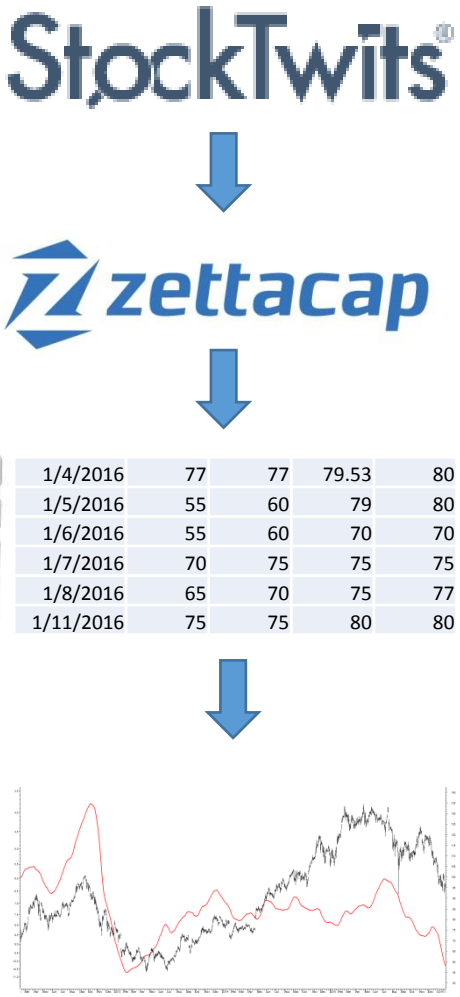
Stock Price Extraction





(Data Stream)

(Machine Learning)

(Storage by Ticker)

(Market Analysis)

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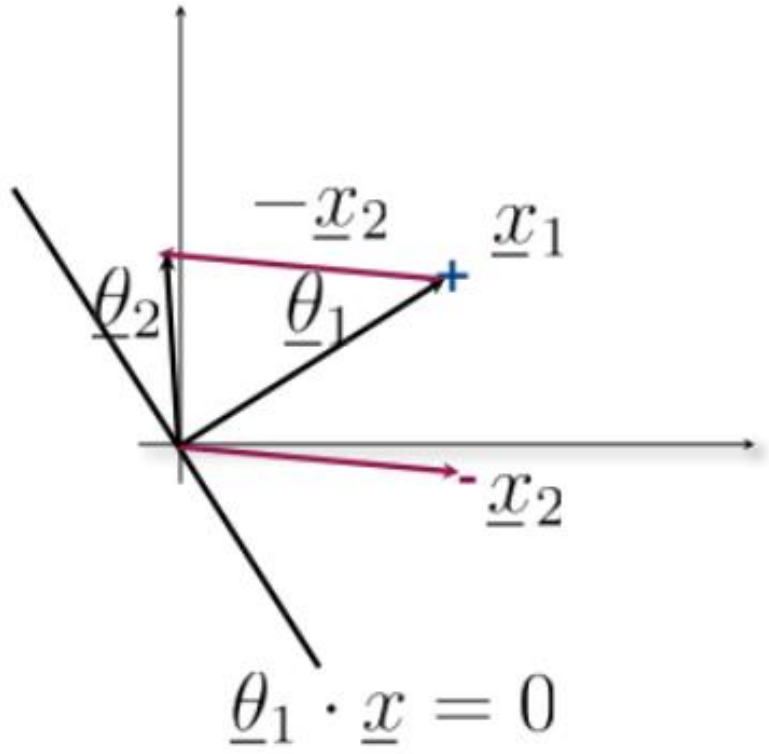
Machine Learning

- Machine Learning allows us to make predictions by "training" an algorithm based on prior evidence
- Simple Example: "Perceptron" algorithm at right updates prediction on every new data point
- Math:
  - IF $y_t (\Theta_t \cdot x_t) < 0$
  - $\Theta_{t+1} = \Theta_t + y_t x_t)$



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Machine Learning

- Thousands of price mentions were hand-labeled by a team of financial industry veterans
- Each number in a tweet was labeled as either "price-related" or "not price-related"
- Each "price-related" number was further categorized under trading terms such as "price target", "resistance", "support", etc. depending on the context
- Our model uses this data to identify asset prices
- Asset prices are then tagged, extracted, and organized by ticker and timestamp

			Tweet Level Either p/n	Tweet Level Either p/n	Tweet Level Either p/n	Tweet Level Either p/n	# Level Price	# Level Price	# Level Price	# Level Price	# Level Price
filtered_tweet	numbe	pr	bullish/bear	entry / ex	st/lt	technical analysis	targe	suppo	resista	current	conditions
dailyplay tues jan20 tagTkr bullish trend w positive momentum after bouncing off $61.36 support tagURL tagURL	$61.36	p	bullish			technical		support			
tagUser same here. i'm trying to average down. tagTkr should be good for $16 - 17 range in my opinion	$16	p	bullish					support			conditional
tagTkr is testing its $12 support level as the tagQty/tagQty trends are bullish. look for moves higher tagURL	$12	p						support			
there was so much good buzz the last couple of weeks about tagTkr jetblue but it got crushed today right at that $10 support	$10	p						support			
tagTkr tagQty trend is bearish and tagQty trend neutral as it tests its $44.52 resistance level. support at $43 tagURL	$44.52	p	bearish						resistance		
tagTkr constructive day. keep an eye on 43.46, seems to be a resistance point. tagURL	43.46,	p							resistance		
tagTkr gaps up tagPctMult as both tagQty/tagQty trends turn bullish and moves up towards its $48.32 resistance level. tagURL	$48.32	p	bullish			technical			resistance		
tagTkr has multi timeframed resistance near 48.50 and support near 42. tagURL	48.50	p							resistance		
tagTkr gapped into multi timeframed resistance fri between 47 - 49 tagURL	47	p				technical	target		resistance		
tagTkr gapped into multi timeframed resistance fri between 47 - 49 tagURL	49	p				technical	target		resistance		
tagTkr daily chart lined 52.50 resistance tagURL	52.50	p				technical			resistance		
tagTkr almost $50, needs to break to negate poss head & shoulders tagURL tagURL	$50,	p				technical			resistance		conditional
buffalo wild wings tagTkr trading near $140.43 resistance level (tagURL)	$140.43	p							resistanc	current	
buffalo wild wings tagTkr showing resistance near $138.67 (tagURL)	$138.67	p							resistance		
was really hoping for one more down day in tagTkr to add to my position, but analyst upgraded stock today. 130 strong support 142 re	142	p							resistance		
buffalo wild wings tagTkr showing bearish technicals with resistance at $148.88 (tagURL)	$148.88	p	bearish			technical			resistance		
bullish, resistance next at 50.02 - 50.15 tagTkr tagURL/	50.02	p	bullish				target		resistance		
bullish, resistance next at 50.02 - 50.15 tagTkr tagURL/	50.15	p	bullish				target		resistance		
tagTkr (tagTkrliburton) stock continuation breakout watch above 44.52 to fill the gap (+tagPctMult), tagURL tagURL	44.52	p				technical			resistance		
profiting from tagTkrliburton company tagTkr s $47.5 major resistance area: scott bauer tagURL	$47.5	p							resistance		
tagTkr gap up on china's surprise rate cut, bullish sto and macd xovers, s 8.30, pivot r 10.37 tagURL	10.37	p	bullish			technical			resistance		
tagTkr gap up this morning, tagMovavg at 11.44 remains the obstacle to be penetrated, next r at 11.34. swing position	11.44	p				technical			resistance		
tagTkr gap up this morning, tagMovavg at 11.44 remains the obstacle to be penetrated, next r at 11.34. swing position	11.34.	p				technical			resistance		
tagTkr at an interesting point here. broke down hard, but now retesting 72. watch 75 (up), 71 (dn). tagURL	75	p							resistance		
tagTkr $61.24 continue the +ve momentum & heading to the next weekly resistance line $61.62 tagURL	$61.62	p	bullish						resistance		
tagTkr daily chart have been posting this one broke above 60.00 friday tagURL	60.00	p							resistanc	current	
tagTkr watching for 60.30 to break up over resistance tagURL	60.30	p							resistance		conditional
after a weekly box break tagTkr now breaking its daily box. 17 area is the high. tagURL	17	p			long term	technical			resistance		
jetblue airways tagTkr trading near $11.07 resistance level (tagURL)	$11.07	p							resistanc	current	
tagUser tagUser you do realize that i owned tagTkr at $6. up here you are begging to get screwed.	$6.	p									
tagUser i bought tagTkr @ $30, profit taking because of the price of oil going up, should report solid earnings	$30,	p		entry							
tagUser i invested heavy in tagTkr at $6 when cramer was screaming airlines is garbage and going bankrupt.my only mistake was selling	$6	p									
tagUser i invested heavy in tagTkr at $6 when cramer was screaming airlines is garbage and going bankrupt.my only mistake was selling	$12	p									
delta airlines up tagPctMult to $47.20 in pre - market trading on tag@trs results tagTkr tagURL	$47.20	p	bullish							current	
delta airlines up tagPctMult to $47.20 in pre - market trading on tag@trs results tagTkr tagURL	$47.20	p	bullish							current	
tagTkr jan $50 calls just saw a huge buy order at $.16 of 13,500 calls tagURL	$50	p	bullish	entry							
perhaps a short term put? tagTkr mar $46 tagURL	$46	p	bearish		short term						
tagURL $3,120 profit in tagTkr i anticipated covering at $46.50 from my last video on ig /twitter but trading live on soci	$46.50	p									
tagTkr: delta air lines pt set at $58.00 by cowen and company (nyse:tagTkr) tagURL tagURL	$58.00	p					target				
shaking in my pants. lol. i see $50. did u know it only costs saudi arabia $10 to extract? us $75 can $100 !! tagTkr tagURL	$50.	p					target				
tagUser i picked up some tagTkr stock at the height of the ebola scare at $31.50. wish i bought more!	$31.50.	p									
tagTkr nice flag pattern forming, on breakout this is headed to $48 tagURL	$48	p	bullish			technical	target				
tagUser i was talking to a fitx investor who could buy tagTkr at $30 bc he was all - in. shame.	$30	p									

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Deliverables

- Open to negotiation with potential clients

- Possibilities might include:
  - Daily .csv dump of ticker/date/stock price extraction
  - Daily .csv dump of trading signals and proprietary indicators as described in this presentation
  - Daily alerts of customized signals to fit clients needs and goals (holding period duration, sector or asset focus, technical overlays, etc.)

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(Bullish – Bearish) Volume

Calculation

1. Each price mention is compared to the asset's price
   - If above, then considered Bullish
   - If below, then considered Bearish
2. For each time period, count #bullish and #bearish mentions to create volume measures
3. Subtract Bearish Volume from Bullish Volume and divide result by Total Volume for a standardized percent rating
4. Create a smoothed time series for analysis

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(Bullish – Bearish) Volume

Usage

- Stock Price Extraction, "SPE", (Bullish – Bearish) Volume is an oscillator that measures the balance between implied bulls and bears commenting on an asset
- Above zero implies net bullishness, below implies net bearishness
- Investors should look for:
  - Extremes which can identify overbought and oversold conditions
  - Inversions which can offer trading opportunities
  - Divergences with asset prices which can signal price reversals
  - Confirmation of trend line breaks or price pattern formations
- The following series of charts has the SPE (Bullish – Bearish) Volume oscillator in green and its zero line in blue, using the left scale, and asset price on right scale

* Note we smoothed this oscillator to match multi-month trading, but it can be used under a variety of circumstances and trading styles. We simply offer this as a proof-of-concept and potential use case.

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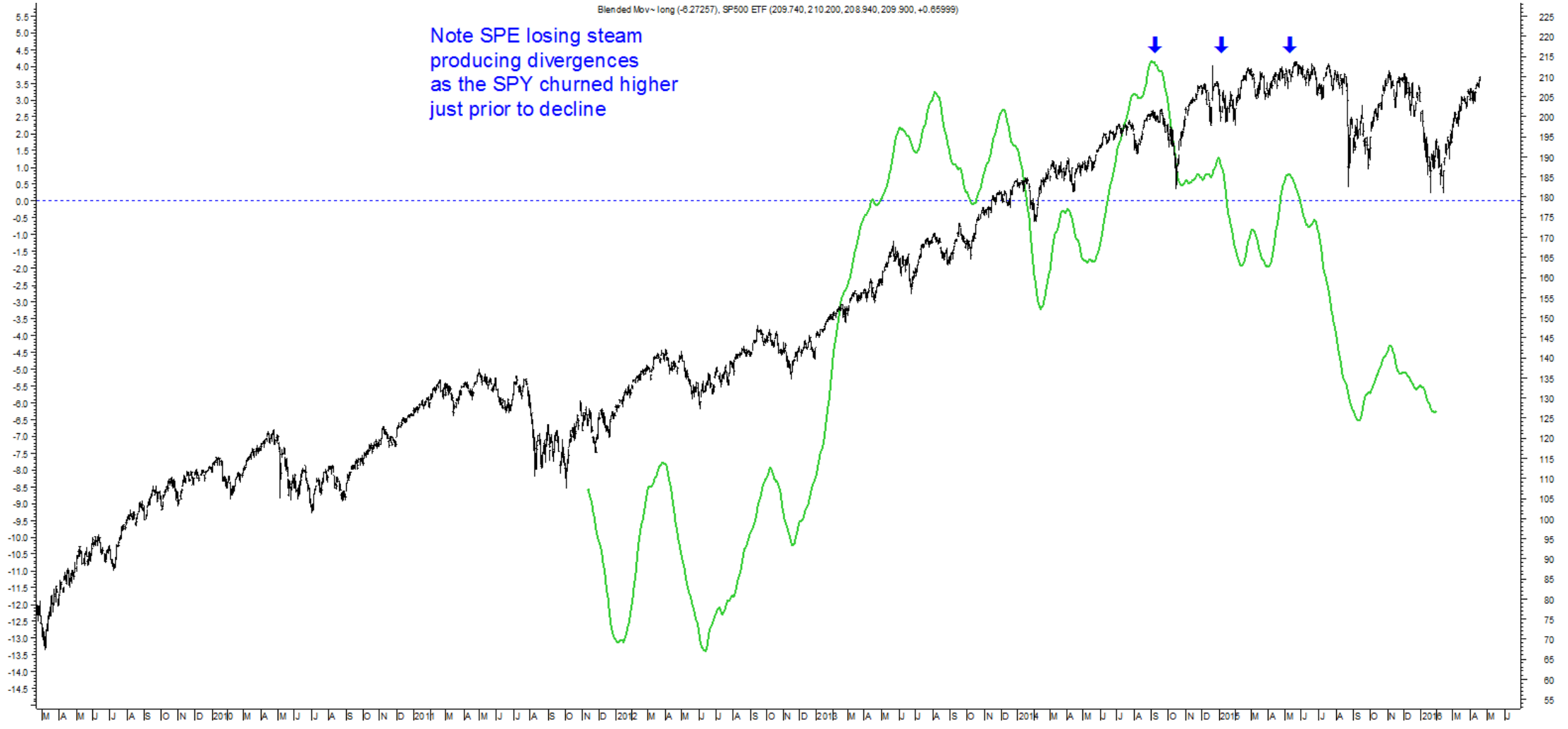
SPY



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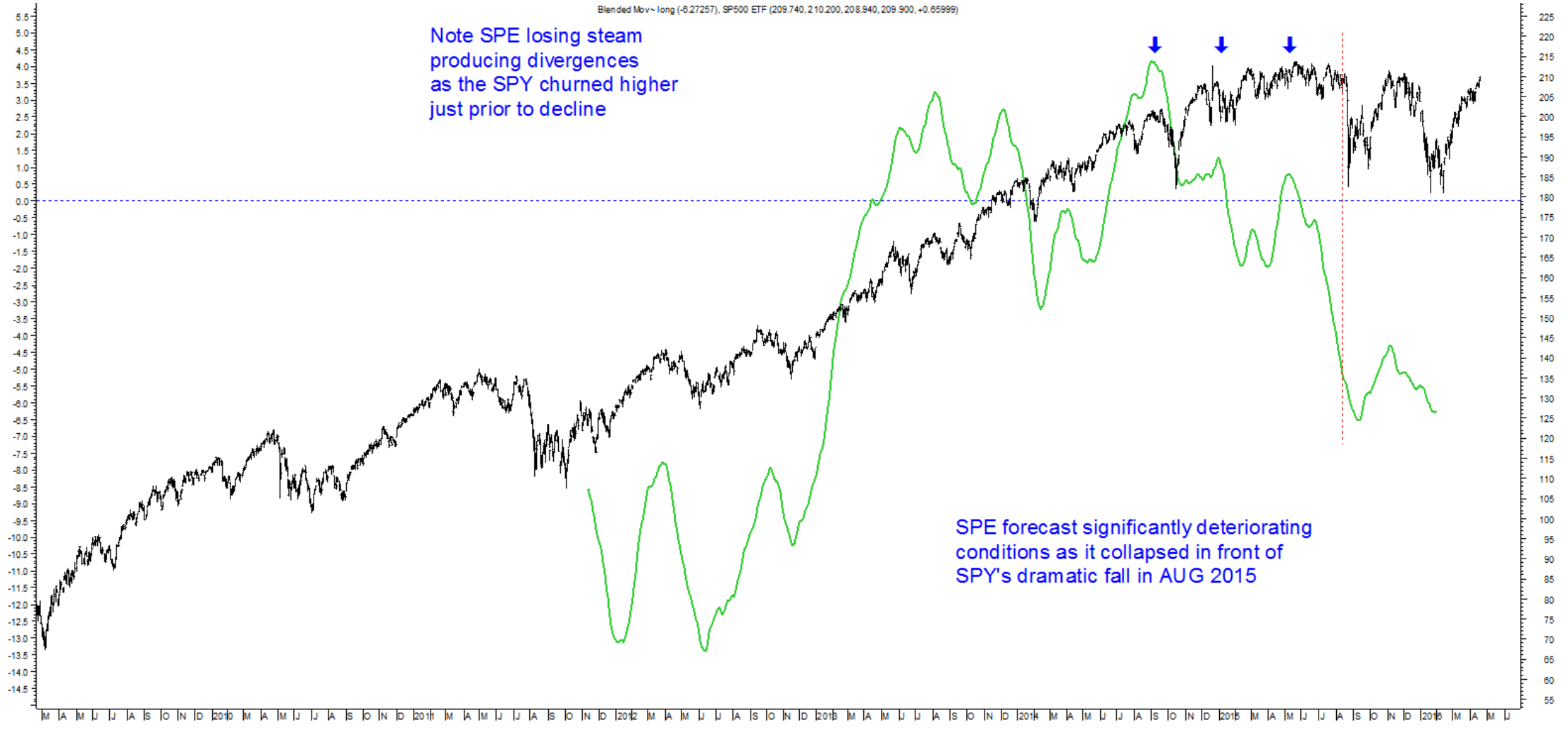

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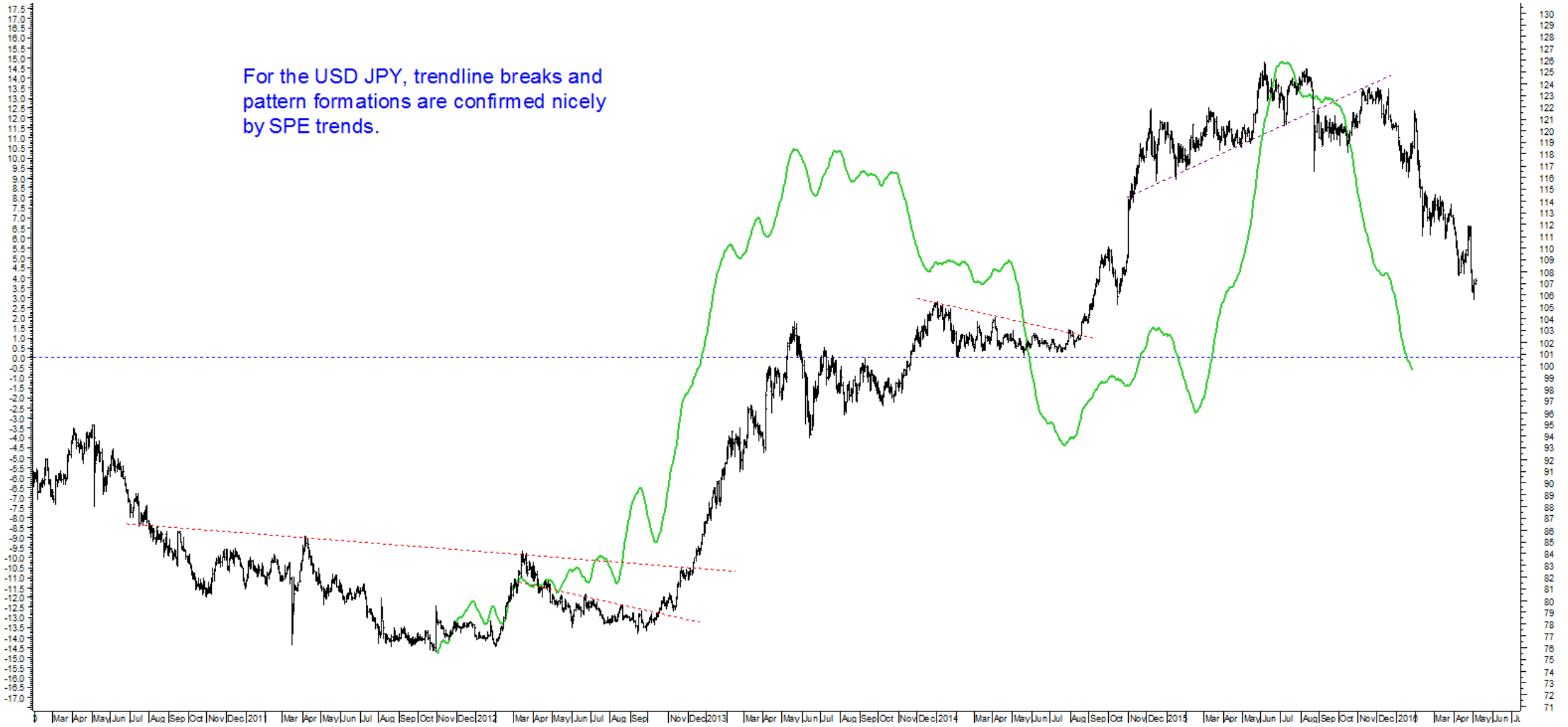
USDJPY



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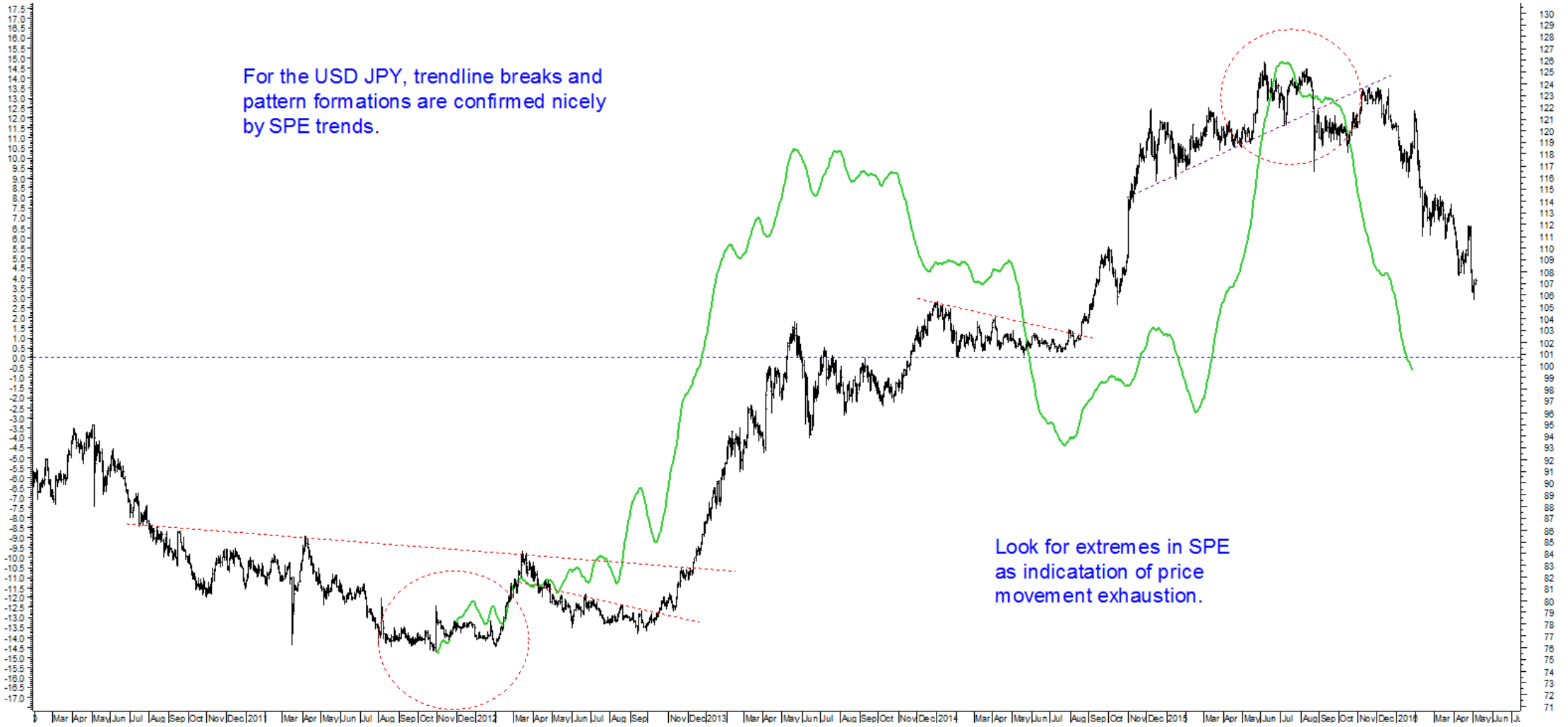

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Crude Oil

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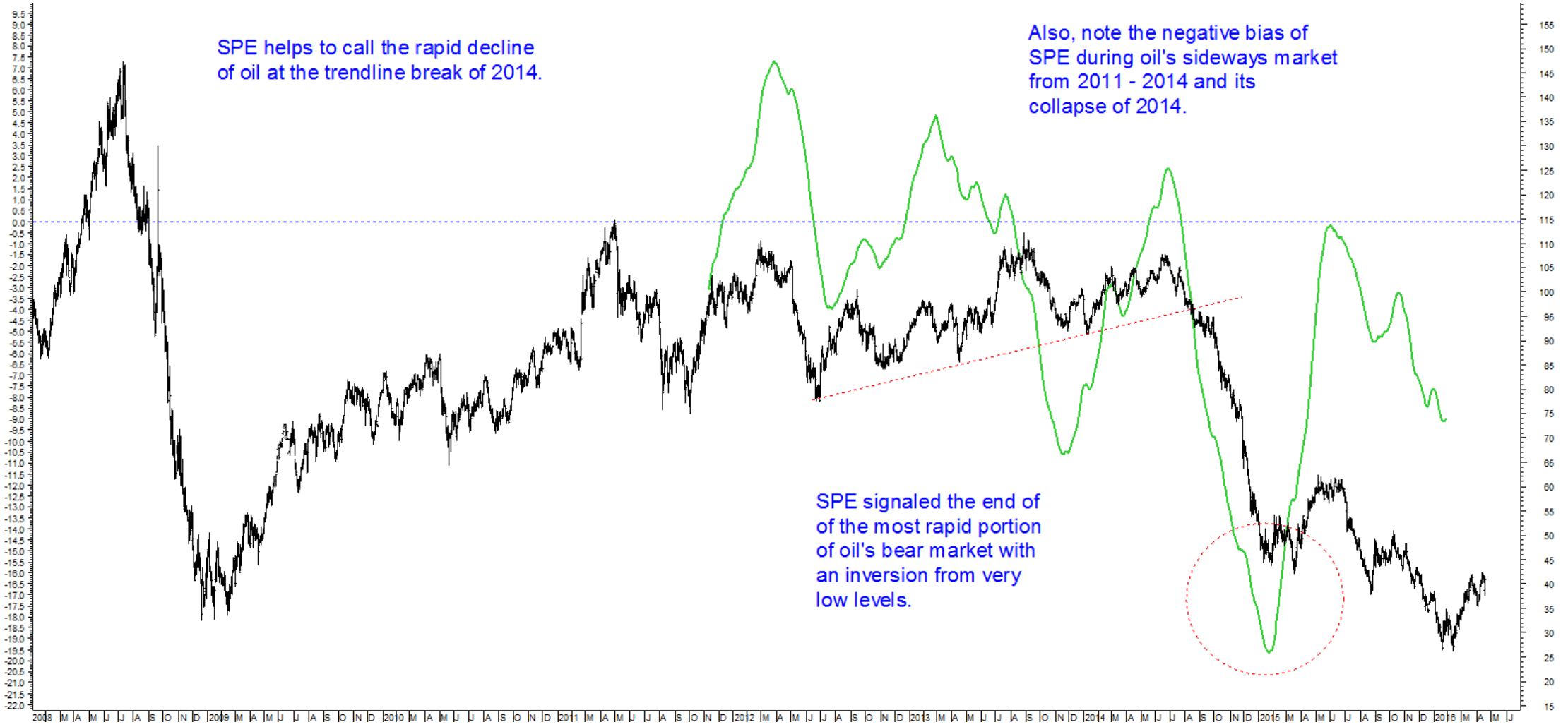
Crude Oil



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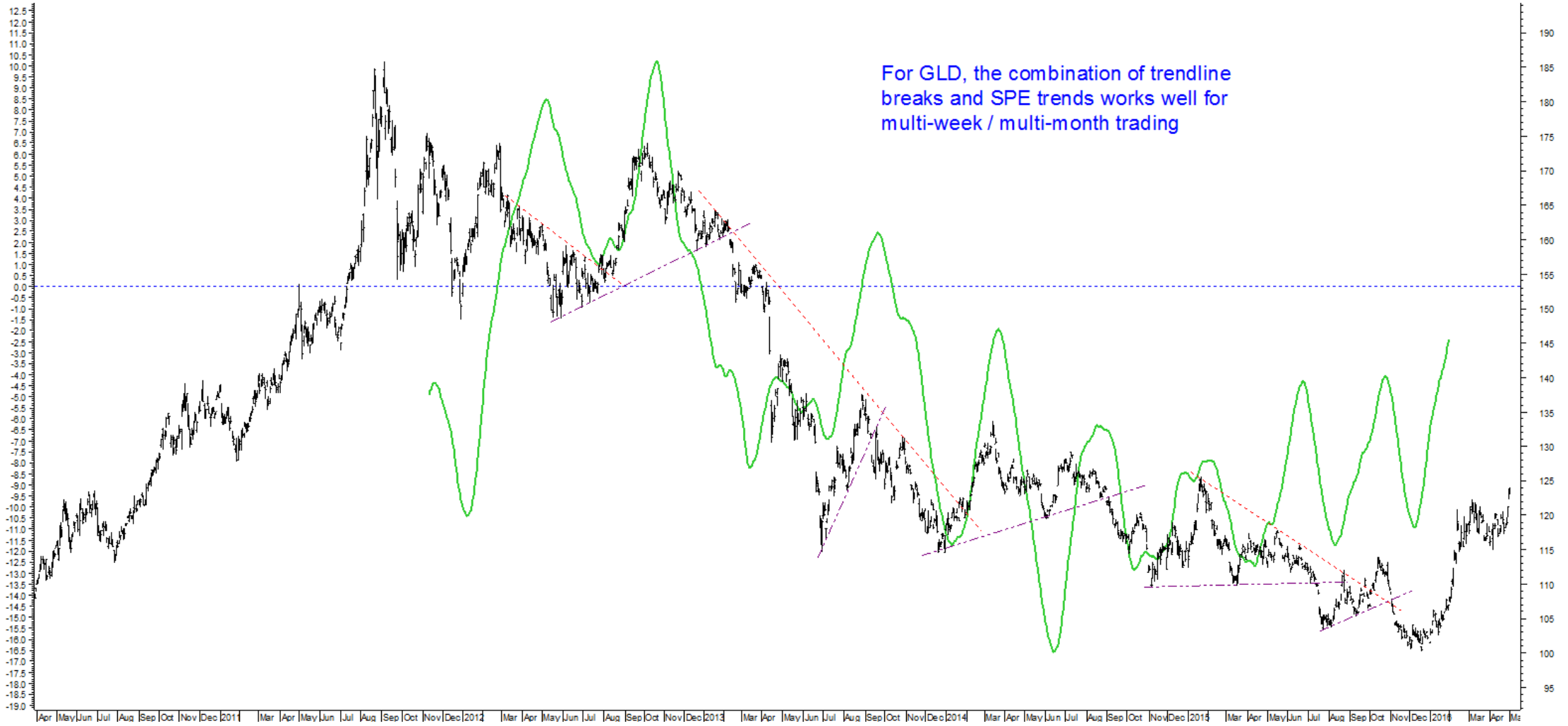

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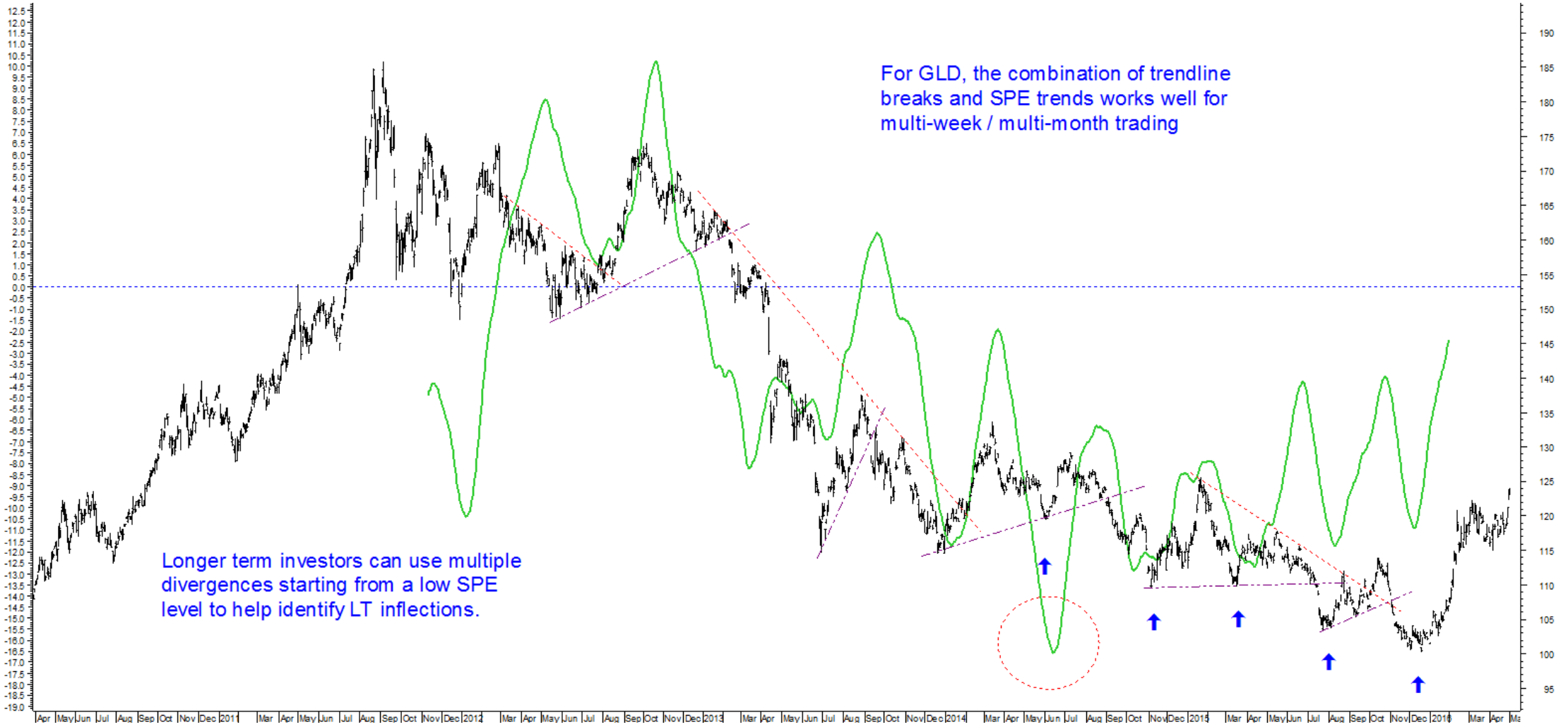

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GDX

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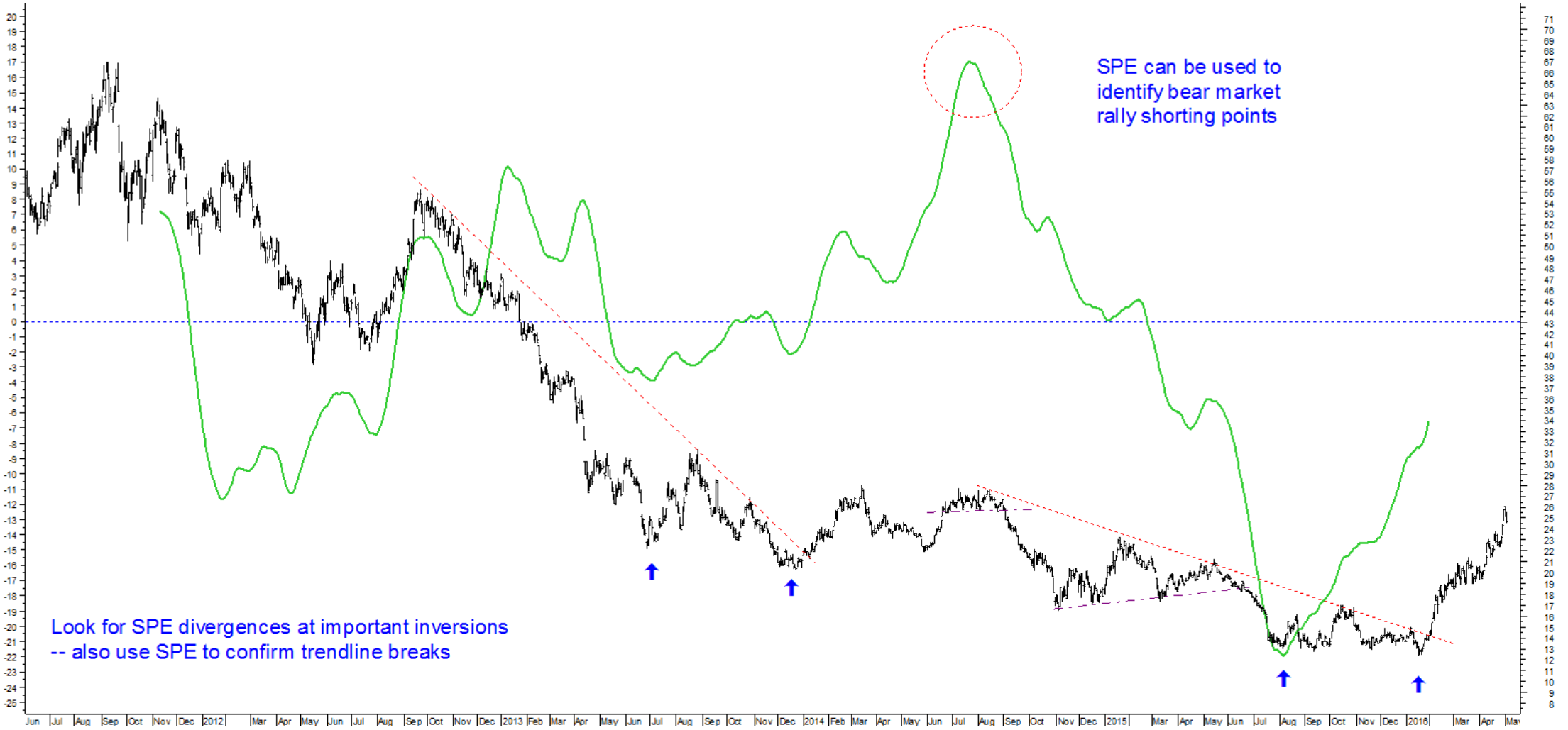
GDX



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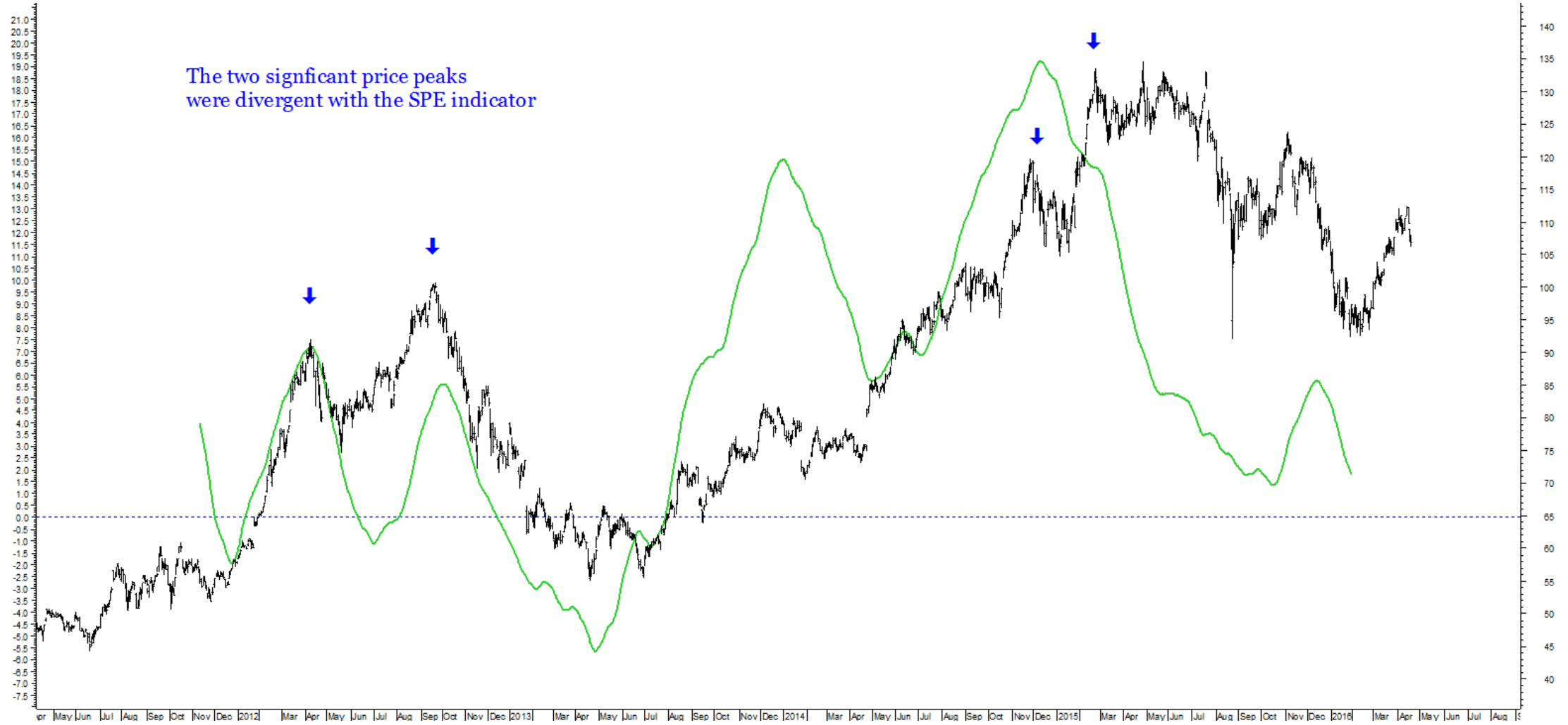

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AAPL

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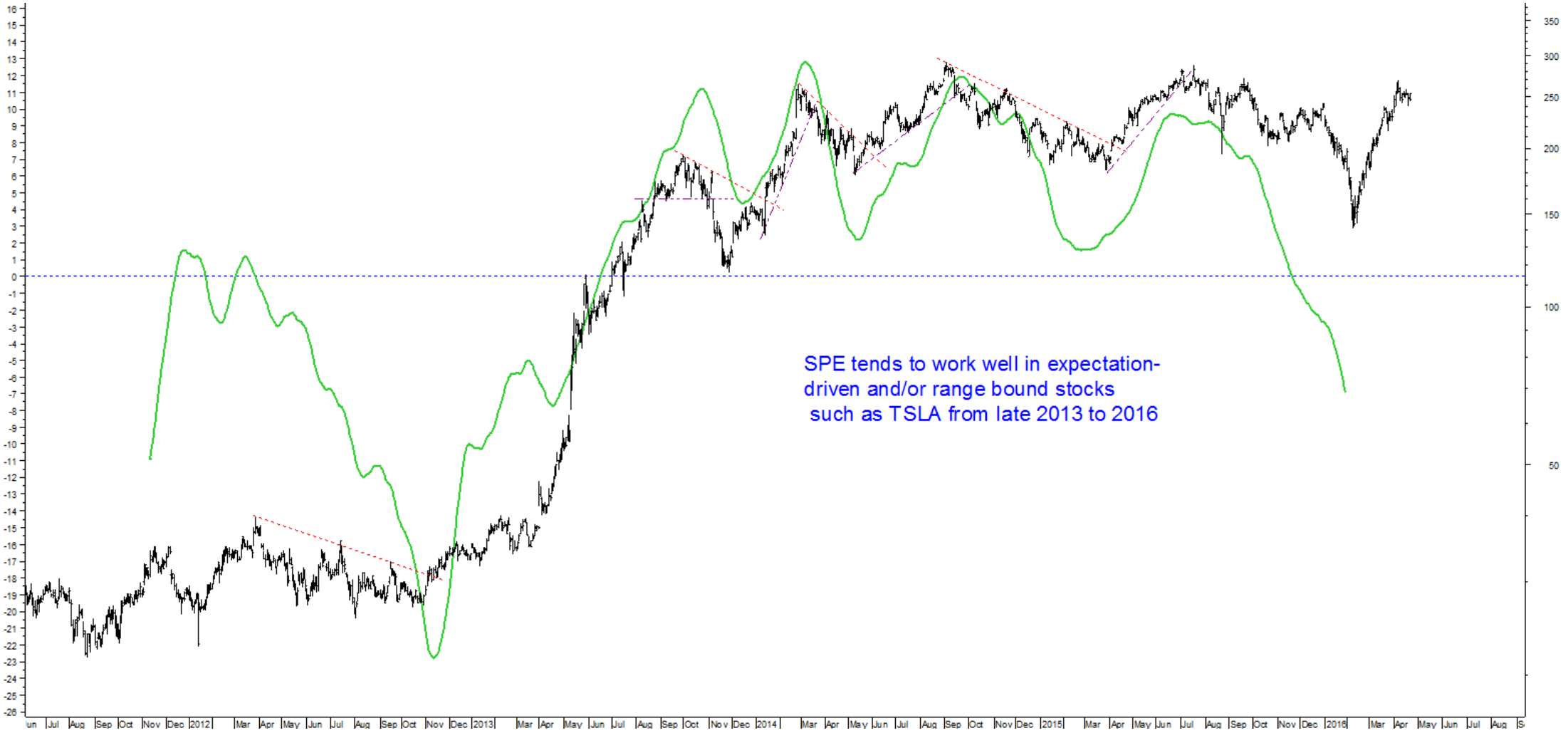

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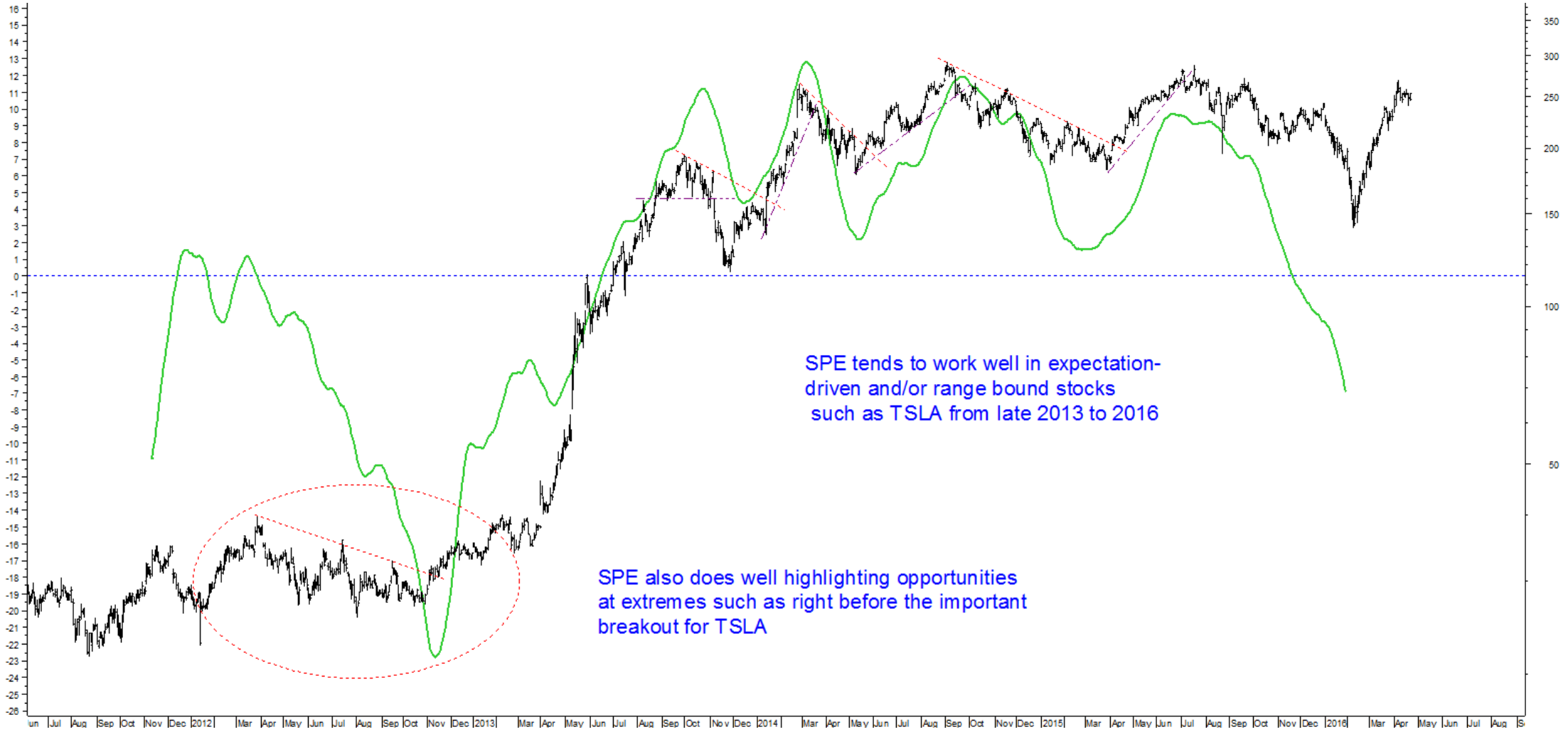

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AMZN

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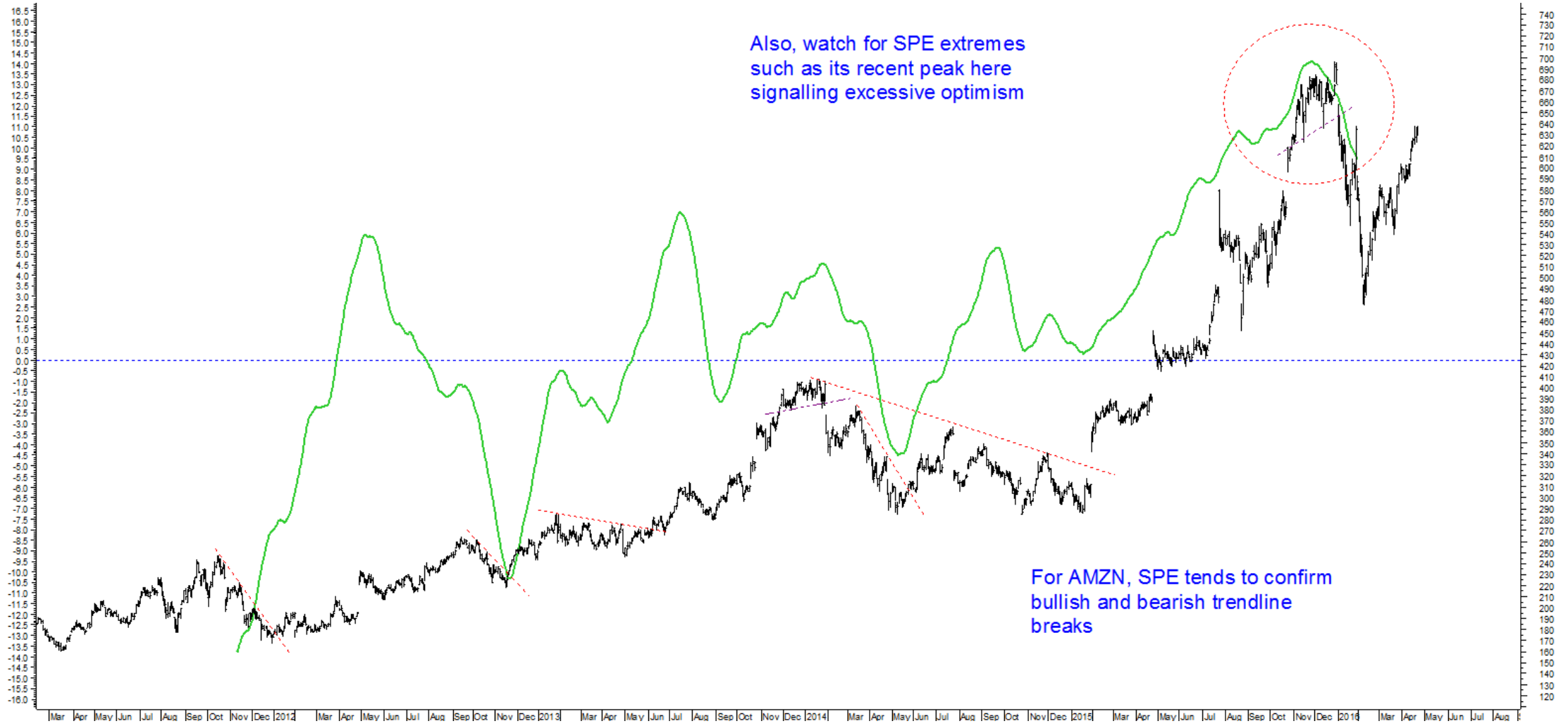
AMZN



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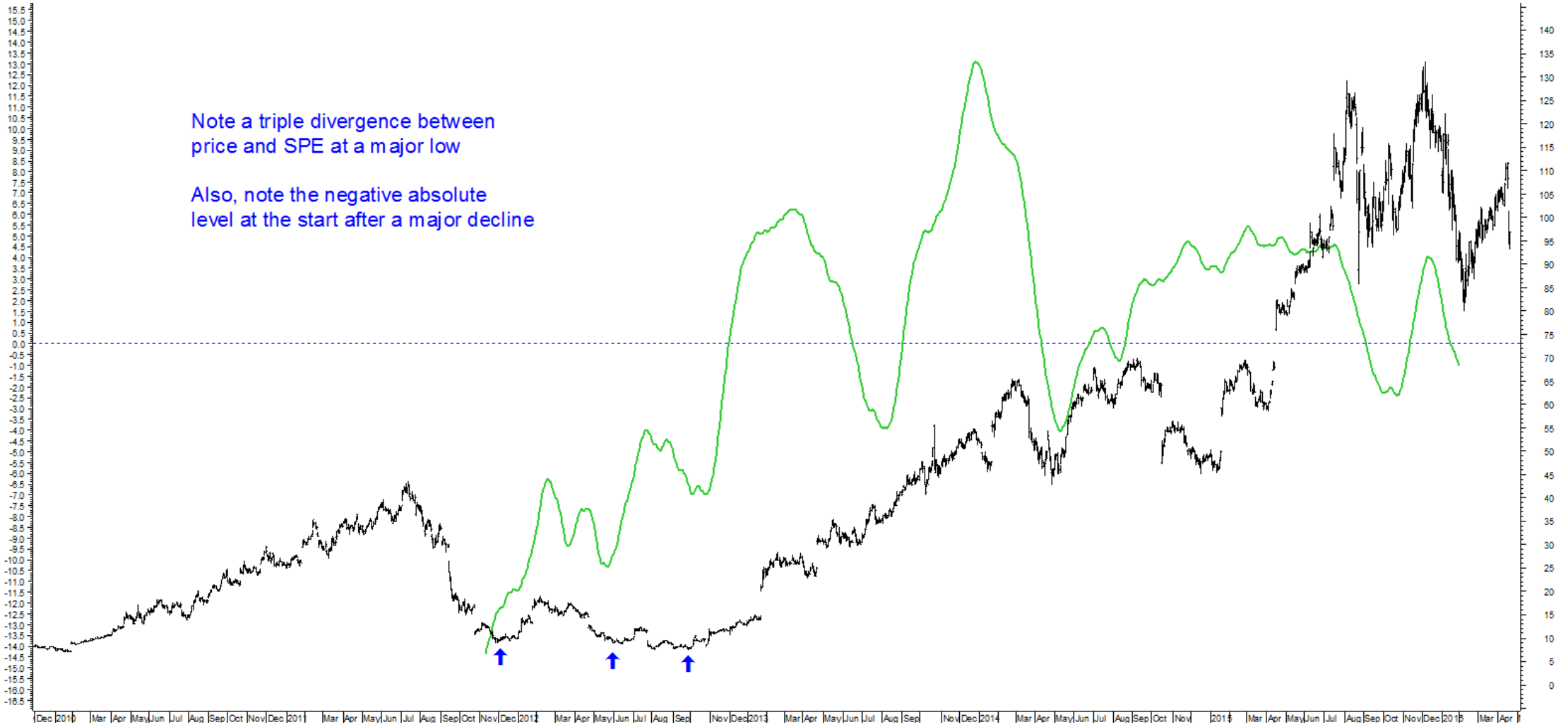

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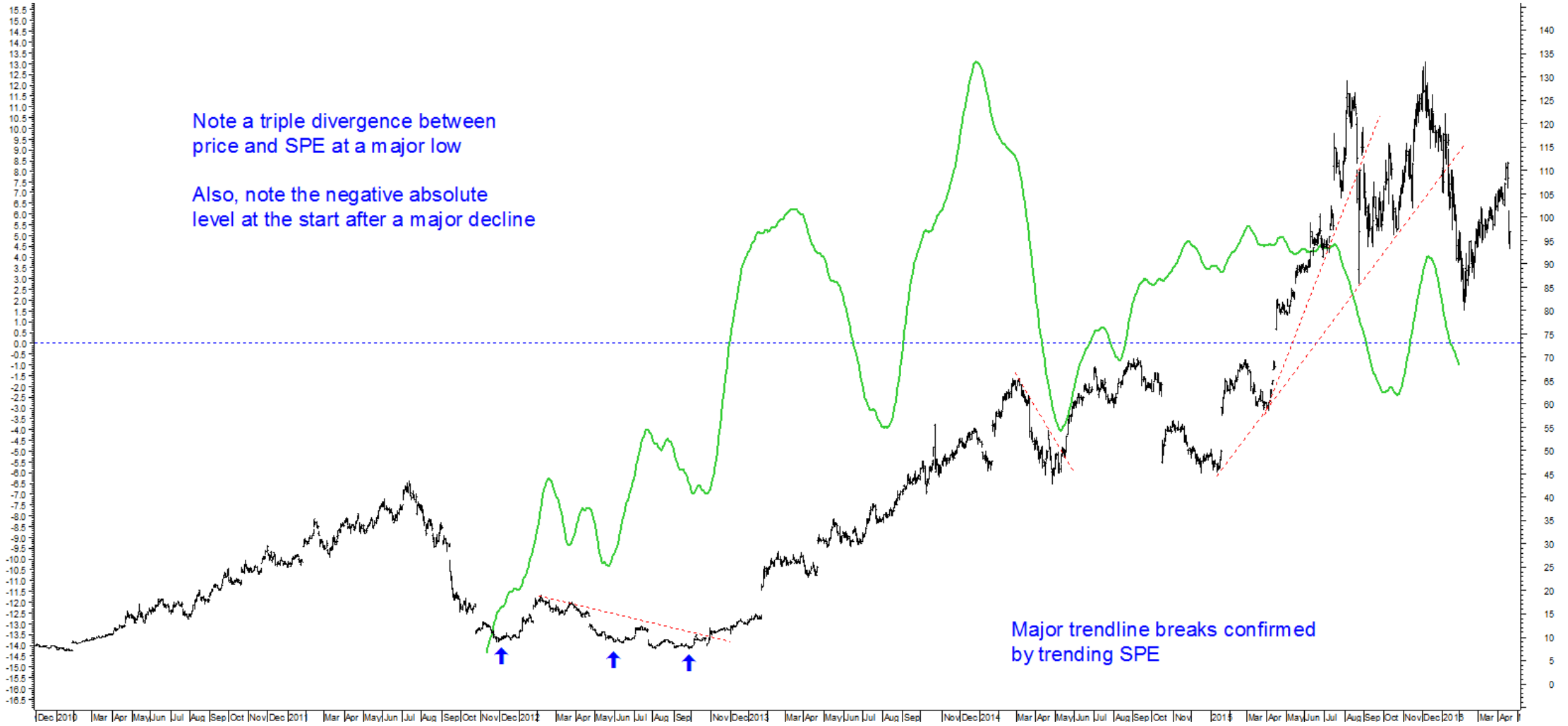
NFLX



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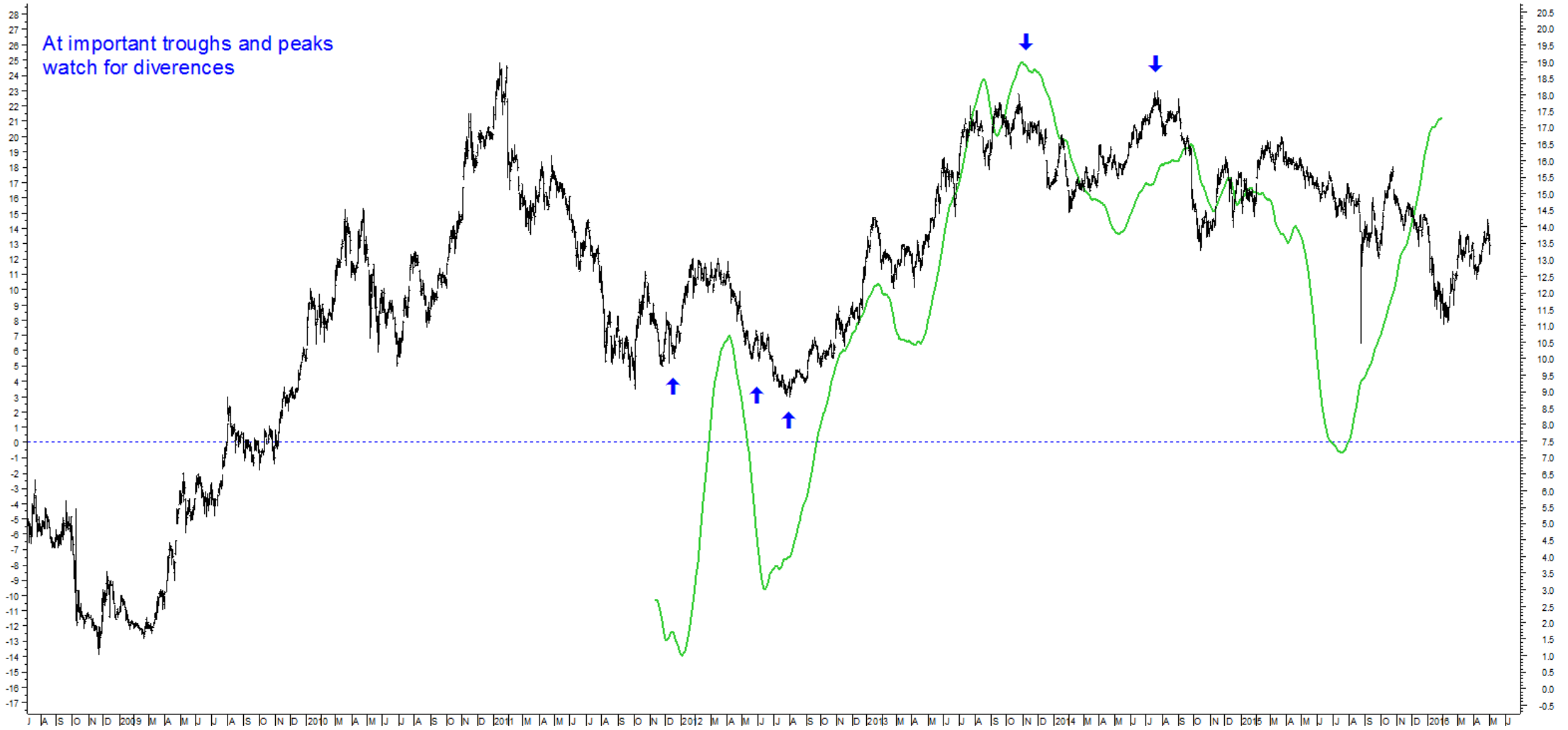

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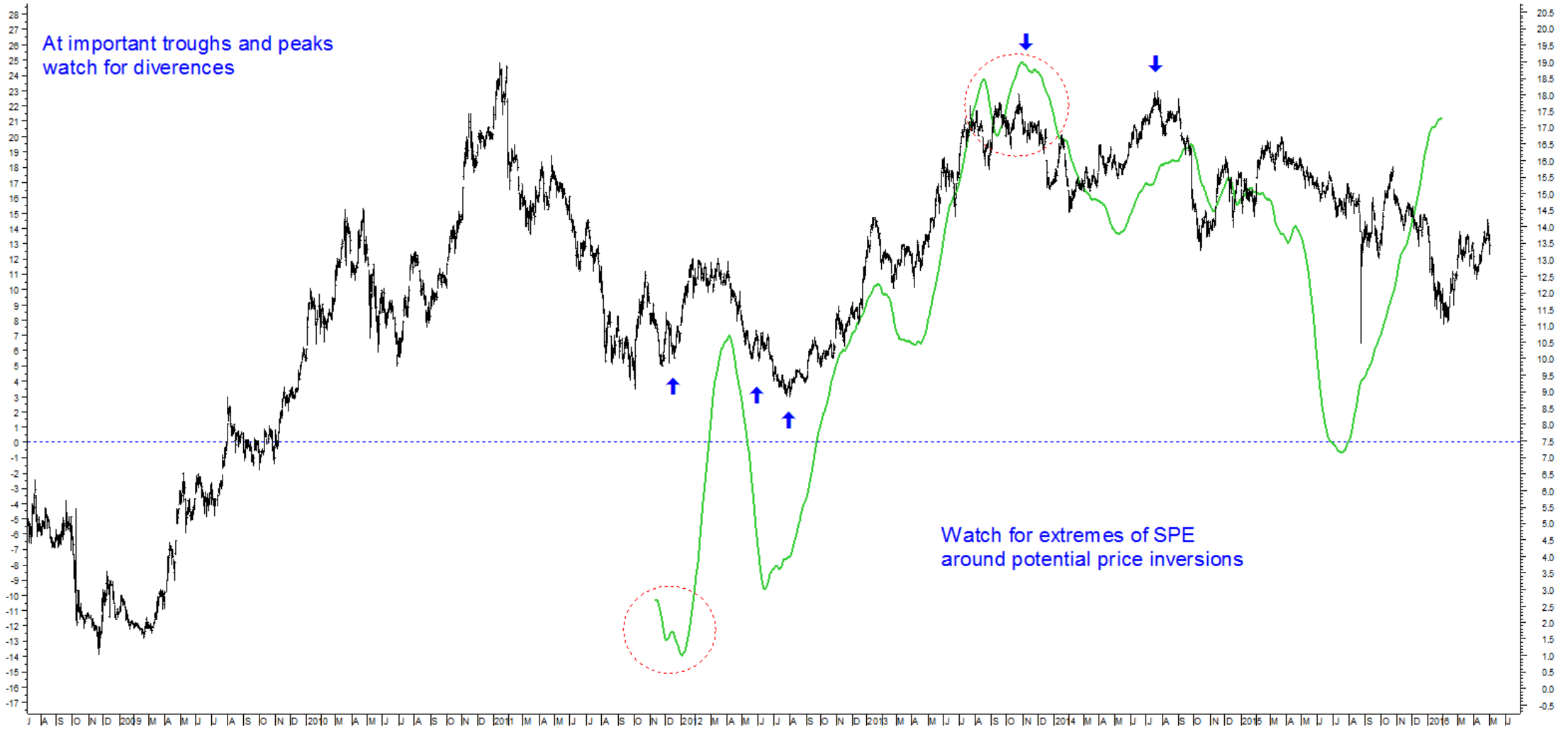

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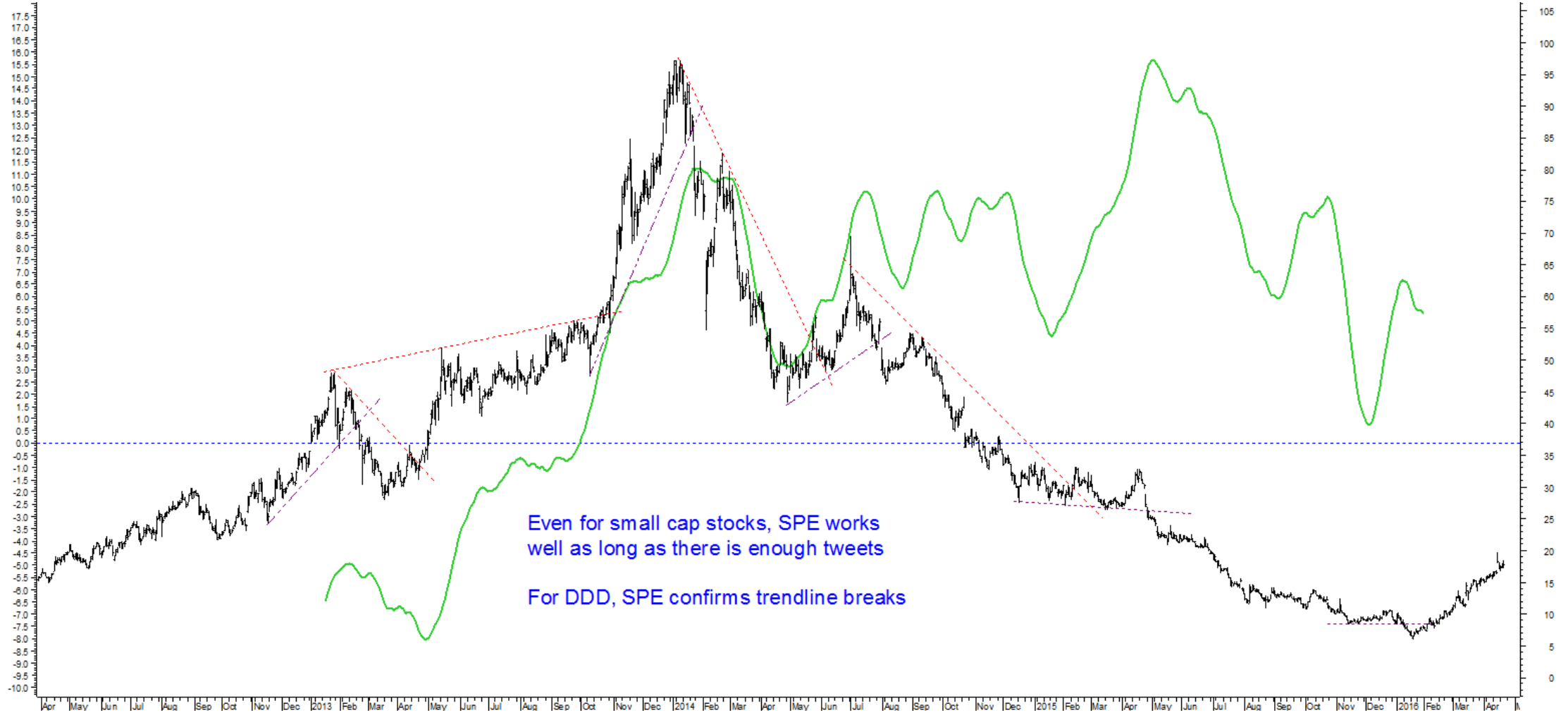

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GILD

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GILD

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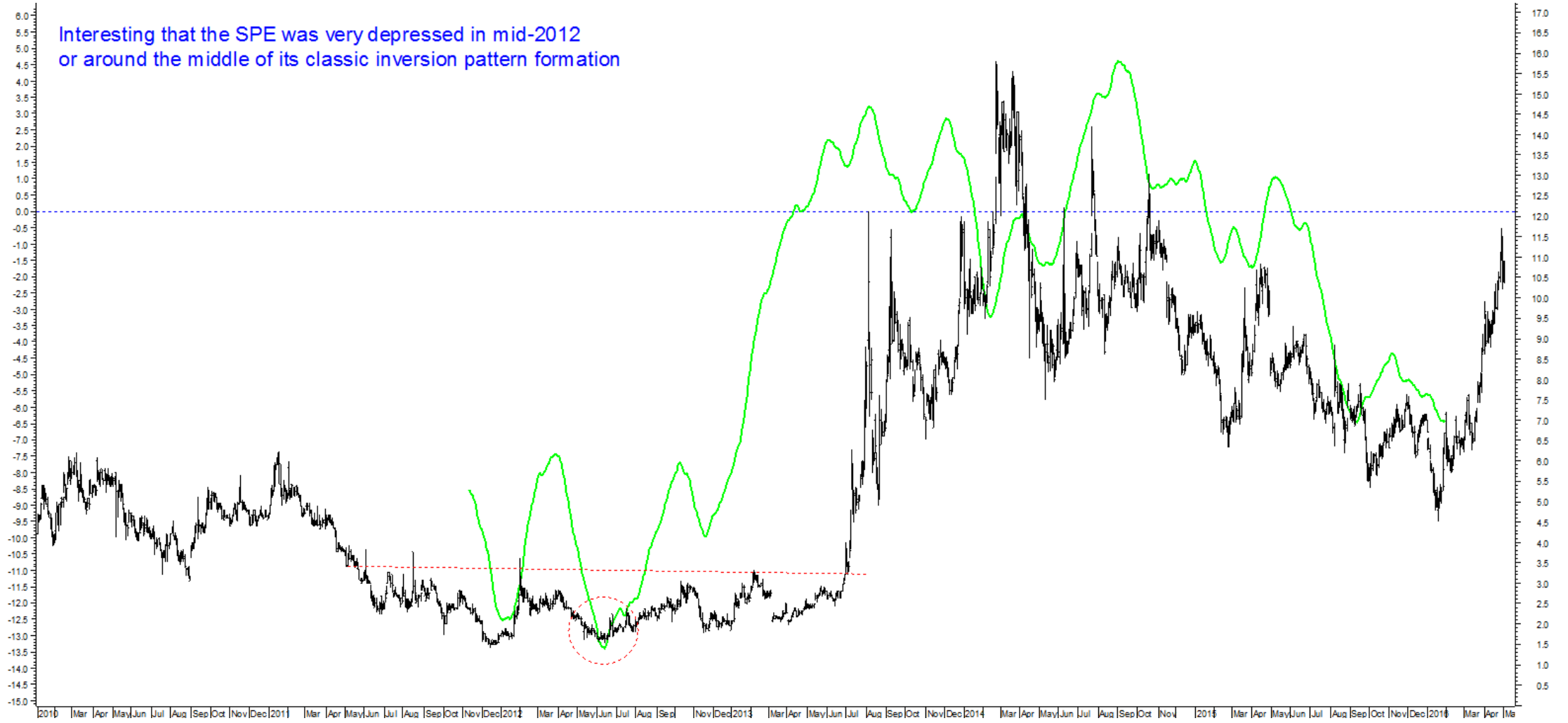

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INO

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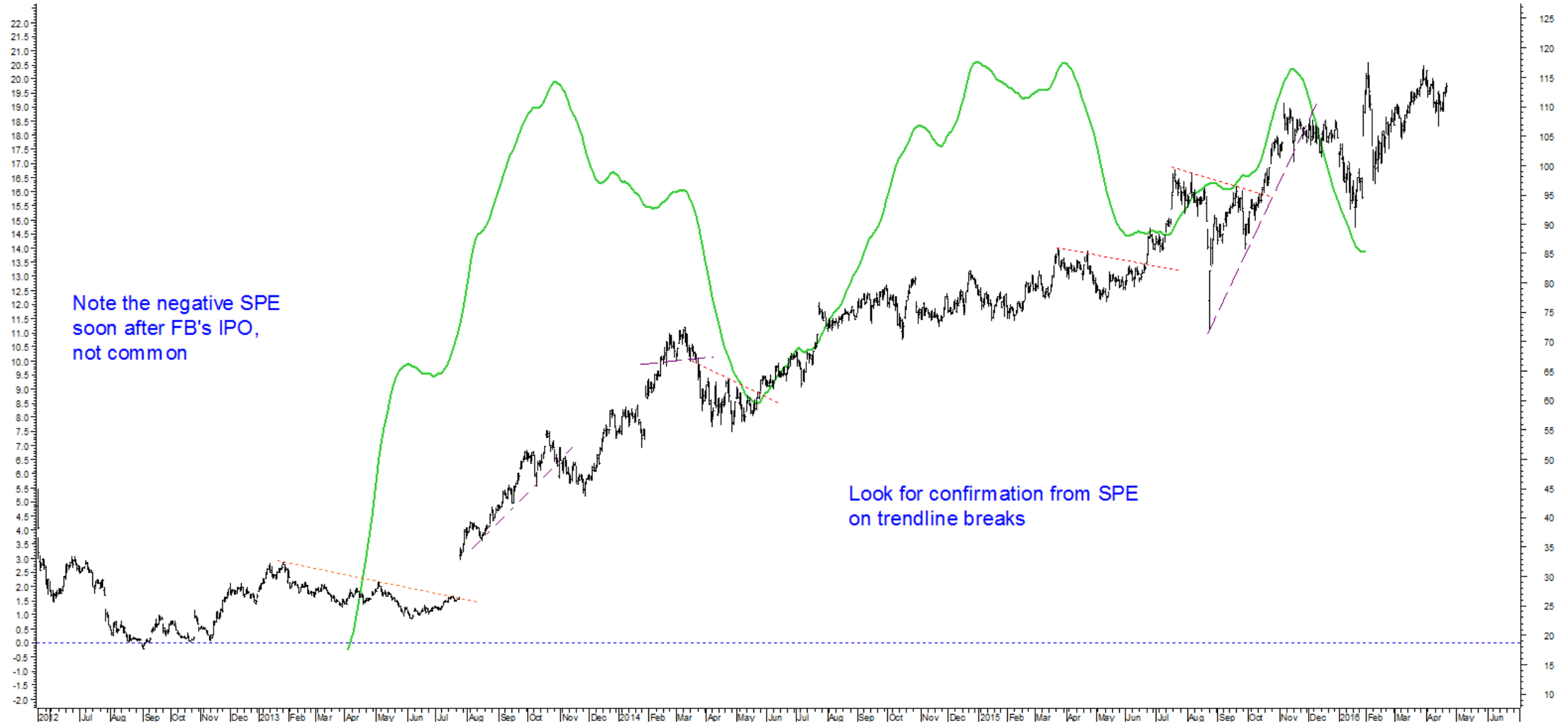

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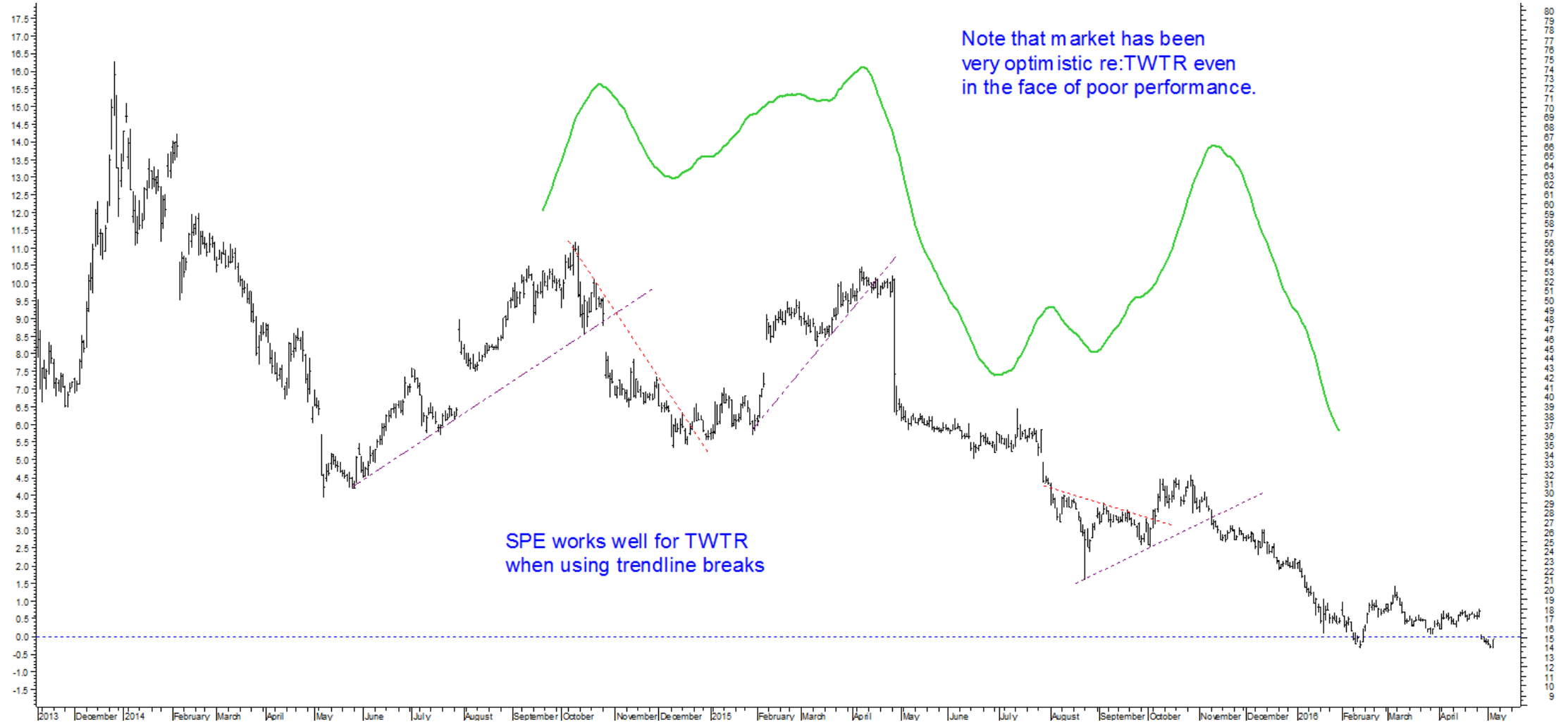

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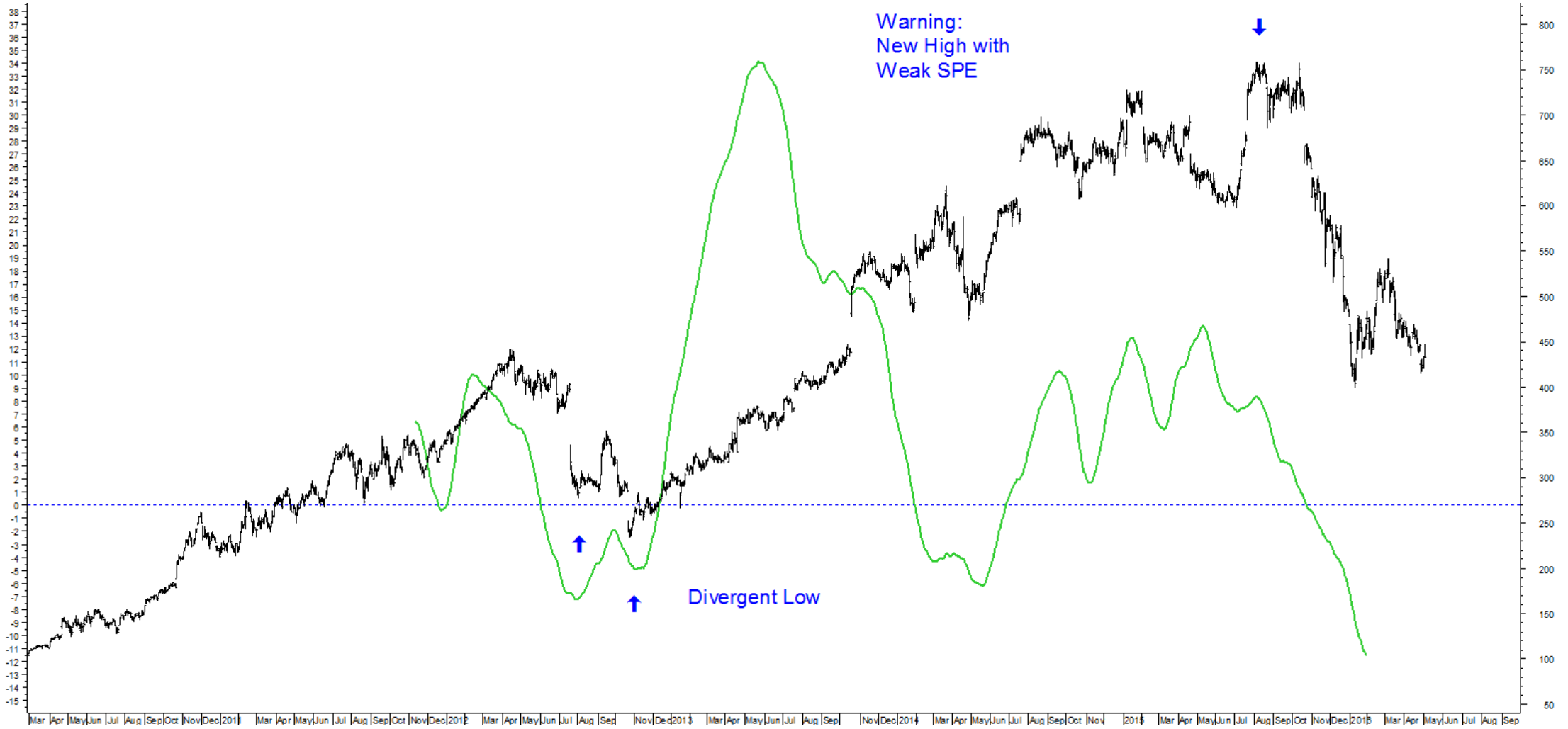
CMG



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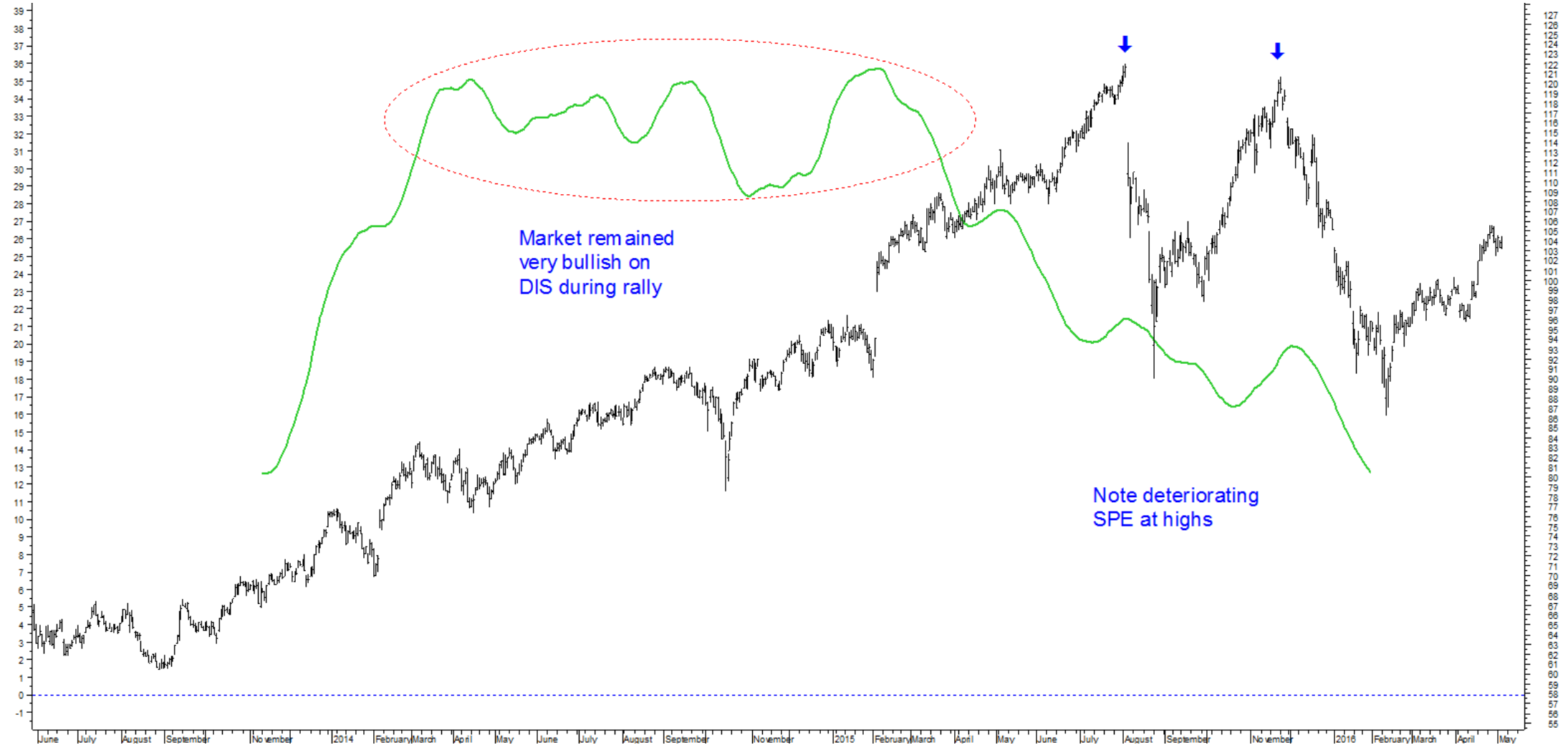
DIS



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Price Range Indicator

Calculation

1. Each price mention is compared to the asset's price
   - If above, then considered Bullish
   - If below, then considered Bearish
2. For each time period, medians are calculated for the Bullish and Bearish price cohorts
3. Subtract Bearish Median Price from Bullish Median Price and divide result by asset's price for each time period
4. Create a smoothed time series for analysis

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Price Range Indicator

Usage

- Price Range Indicator is an oscillator that measures the % difference between the median bull and bear prices of an asset
- Closer to zero equals market expectations nearing equilibrium which is normally followed by rapid price moves, especially to the downside
- Investors should look for:
  - Historical highs and lows which tend to forecast coming significant turns in asset prices
  - Inversions which signal a shift in investor outlook
- The following series of charts has the Price Range Indicator in orange, using the left scale which is inverted, and asset price on right scale

* Note we smoothed this oscillator to match multi-month trading, but it can be used under a variety of circumstances and trading styles. We simply offer this as a proof-of-concept and potential use case.

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SPY

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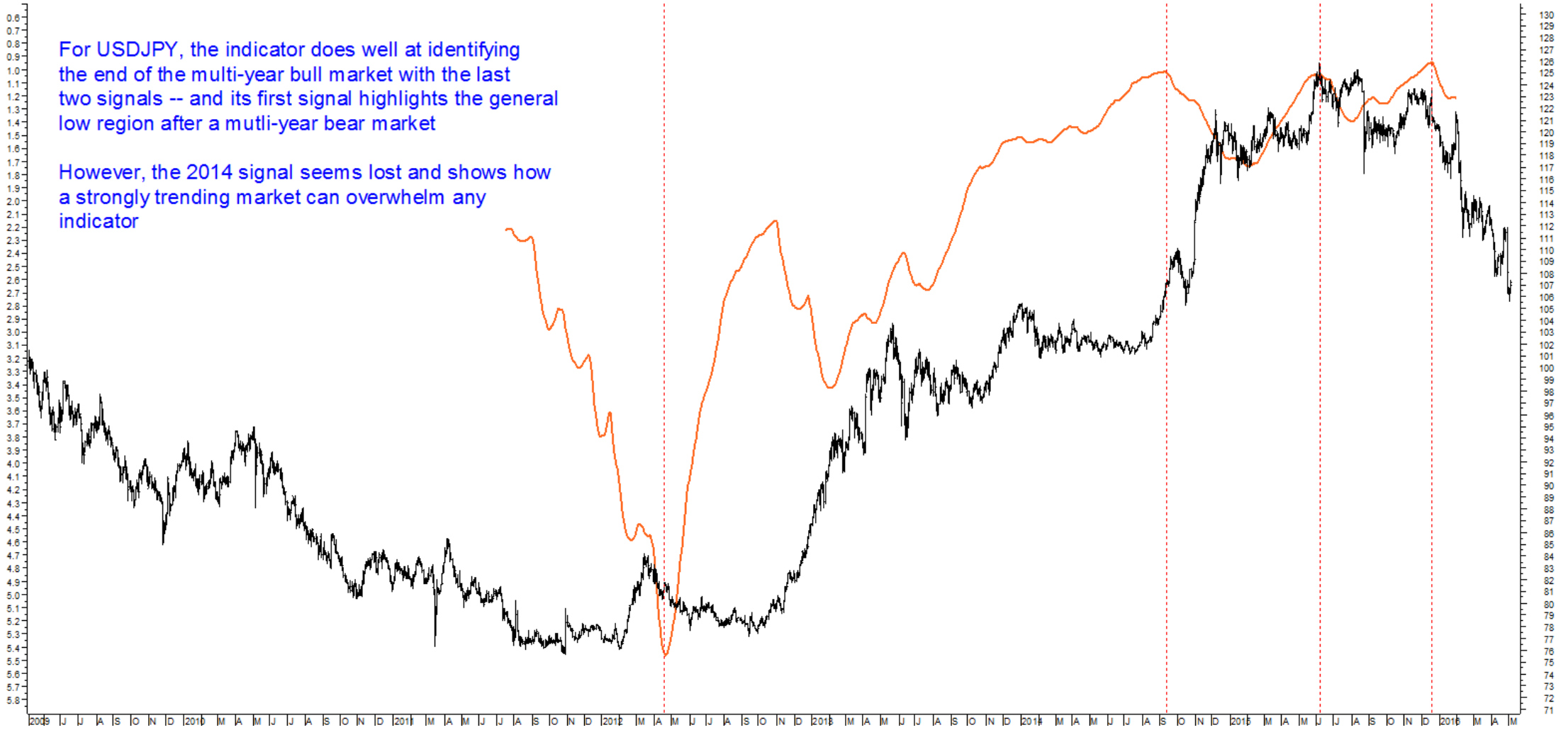
USDJPY



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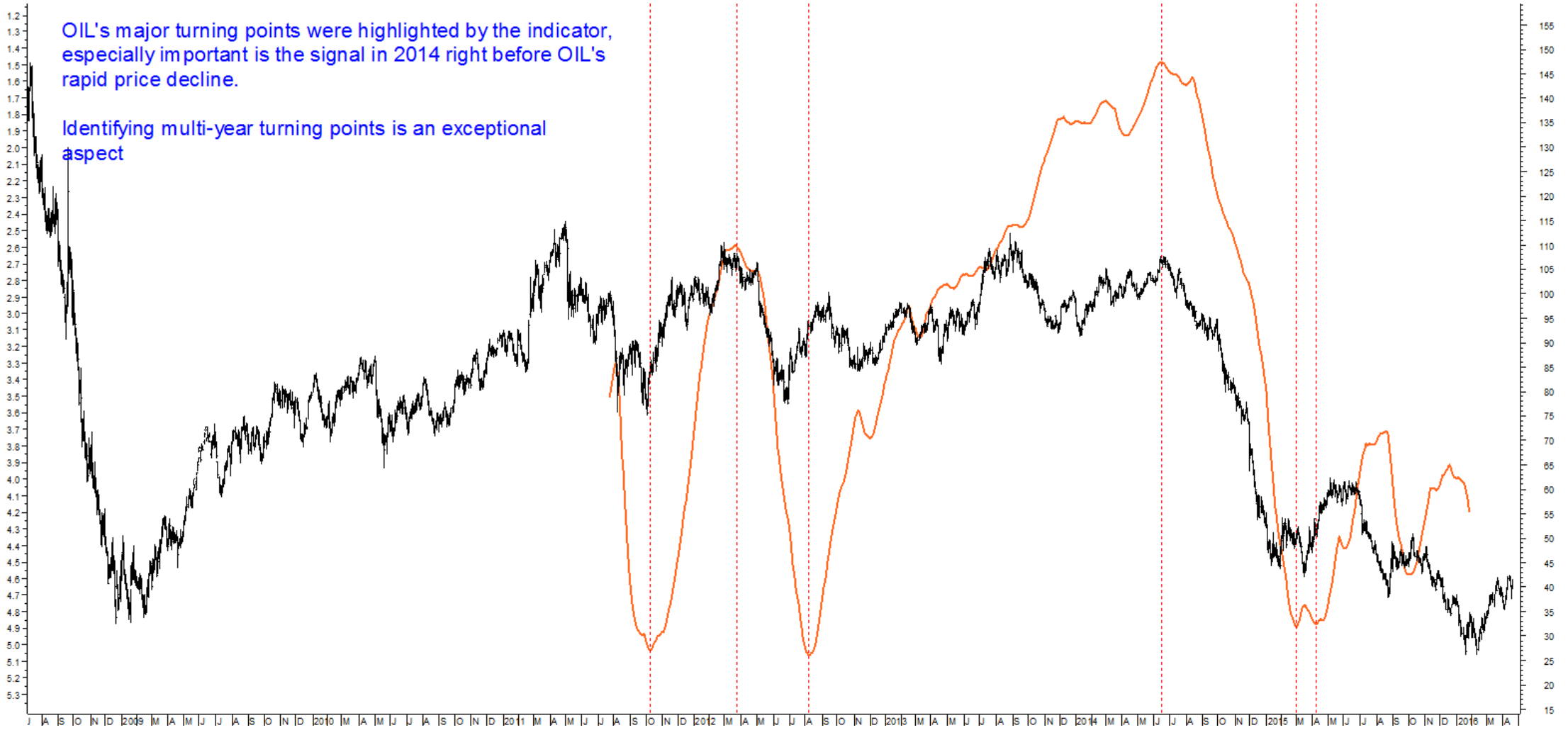

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AAPL

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GOOG

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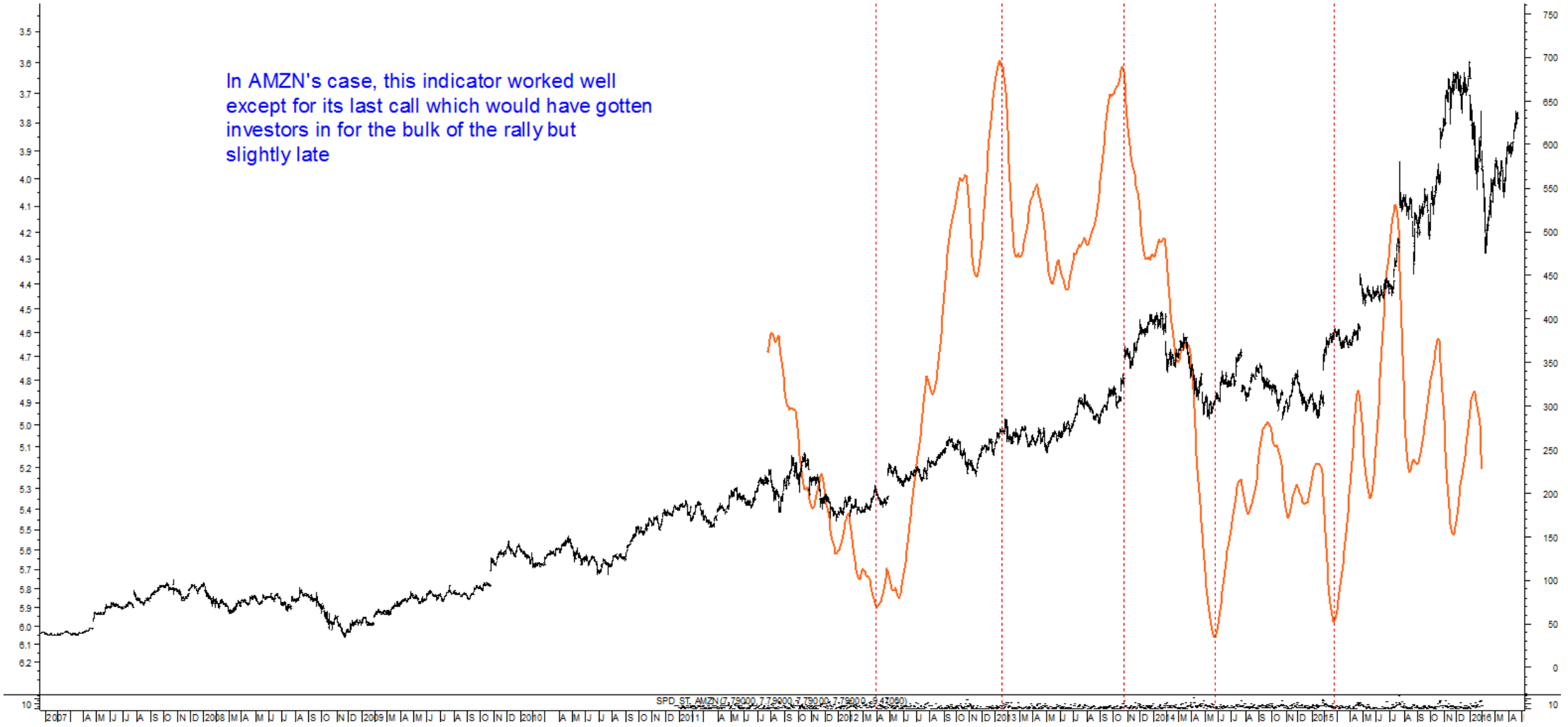

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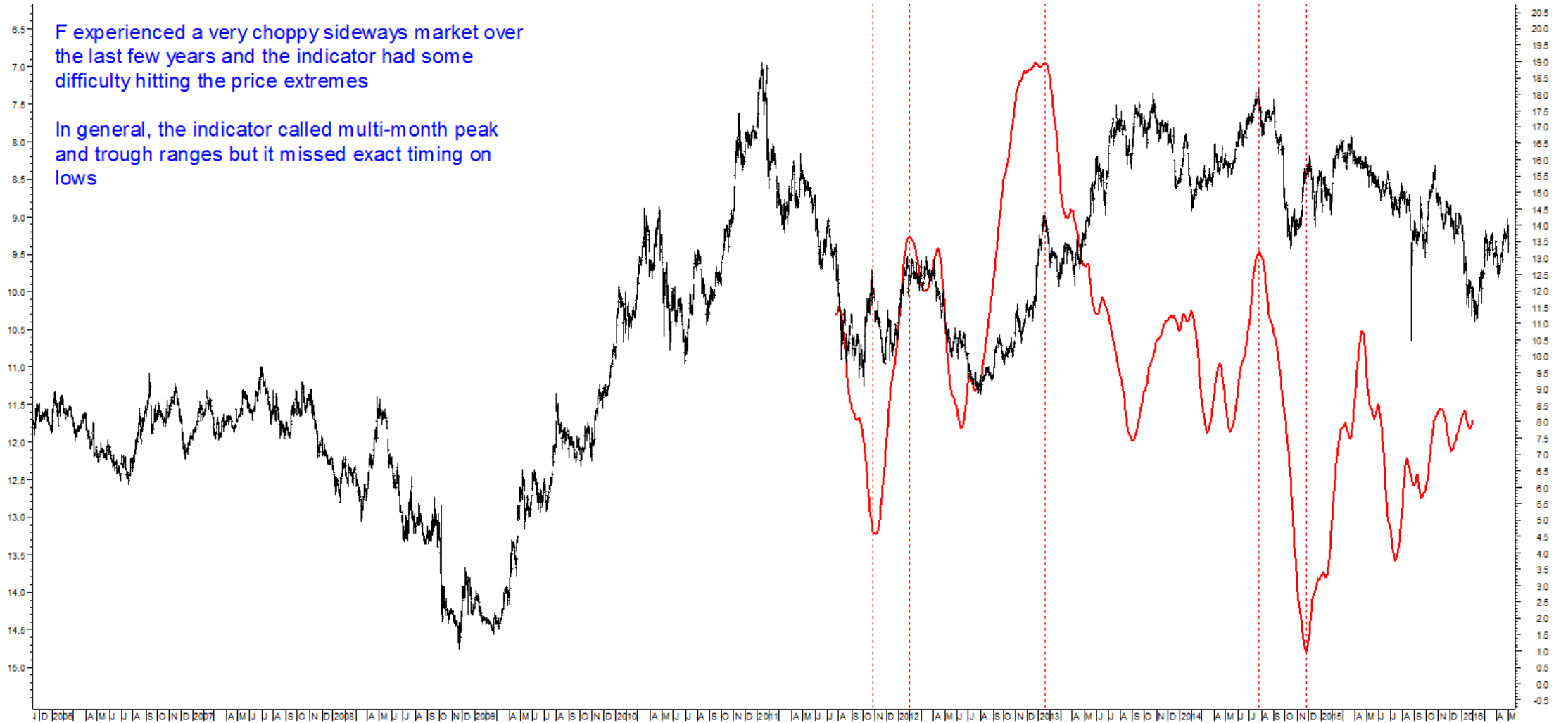

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GILD

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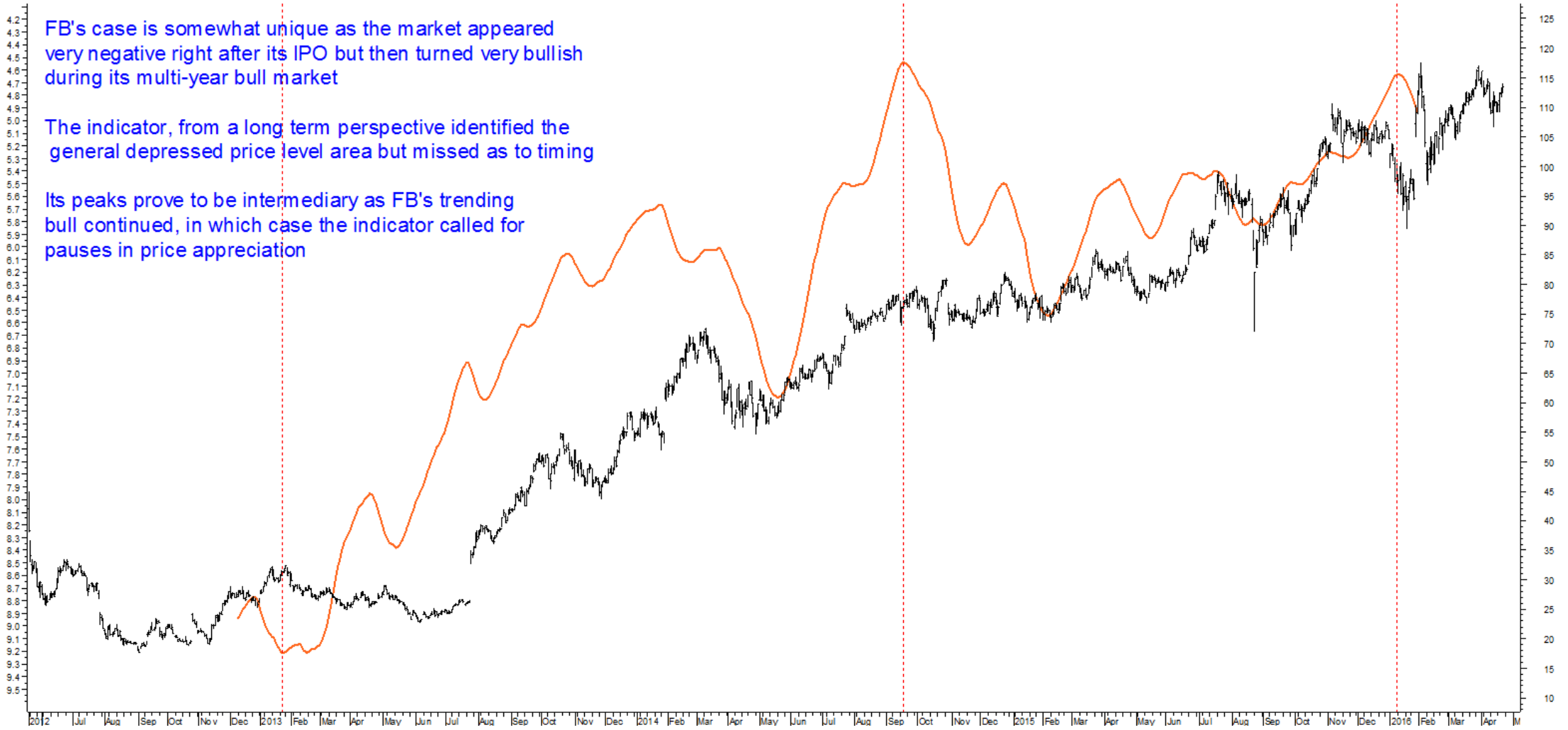

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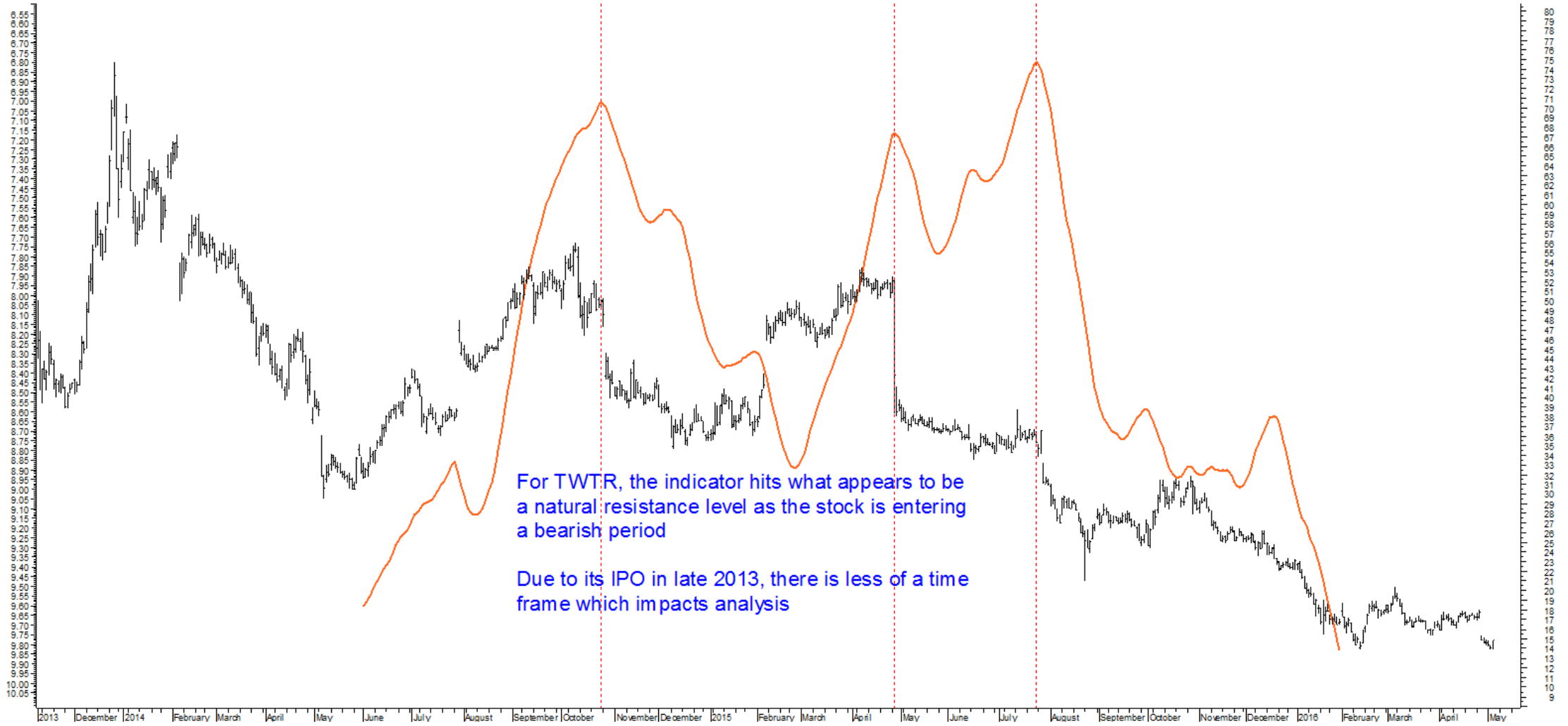

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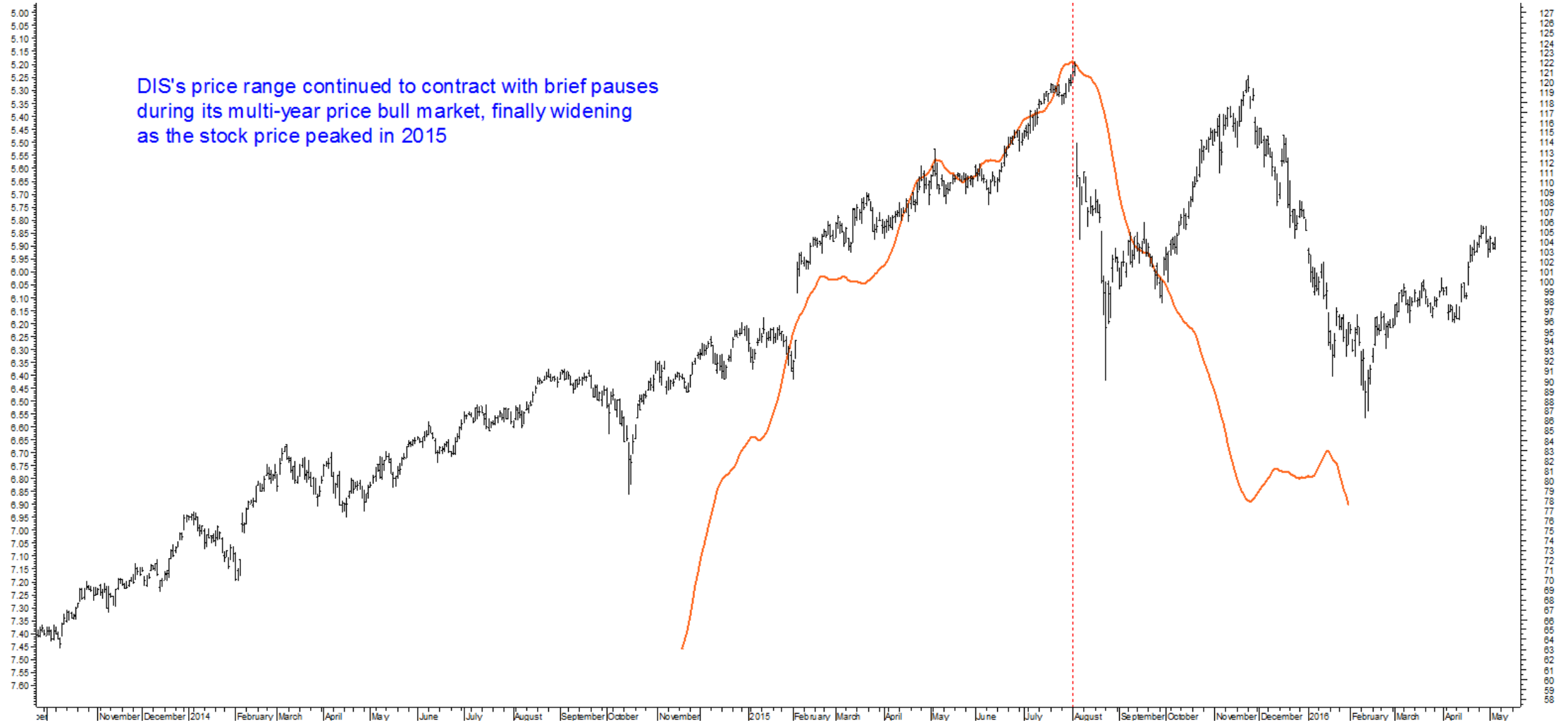
DIS



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TSLA

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