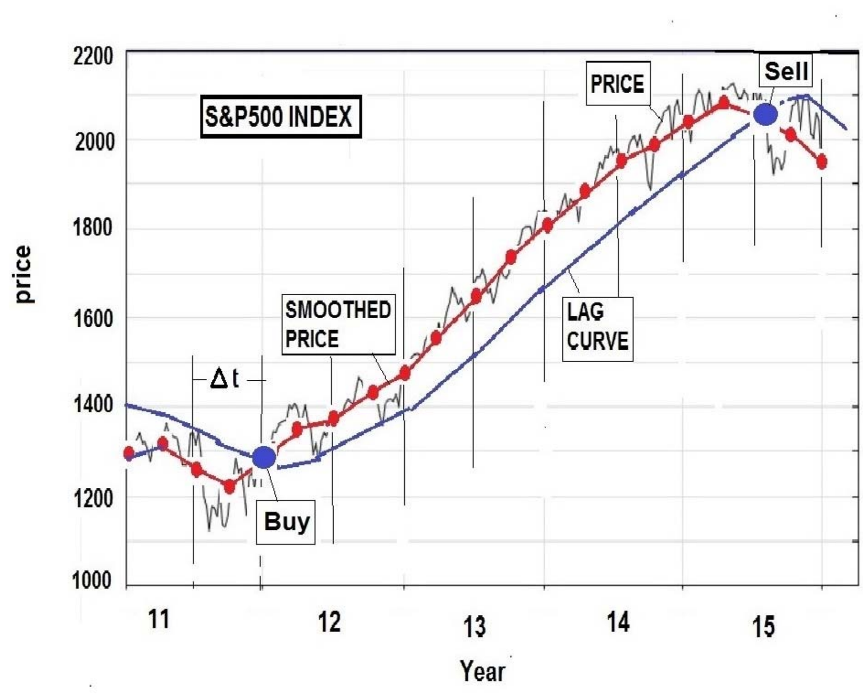
PRICE TREND DETERMINATION

INTRODUCTION:

It is well known that prices of commodities, be they equities, paintings, real-estate , precious metals, antiques, etc, exhibit price trends by which savvy investors and/or speculators can reap large monetary profits. The secret to success is that one recognize the trend and act on it early before the majority of the public becomes aware of it. Typically there will be periods when prices are in an uptrend (bull market) and when they are in a downtrend (bear market). This fact is well supported by the Dow Theory as applied to equities. It is our purpose here to show how price trends can be spotted and then show how to act on them before the trend reverses. Although it is not possible to predict the future of prices with any high degree of accuracy (and hence how long a trend will last) , one can nevertheless reap financial rewards by being on the right side of a trend.

TREND DETERMINATION:

To demonstrate how a trend can be recognized we begin with a historical five year graph of the S&P500 from 2011 through 2015. The S&P500 is one of the best measures of how the US stock market is doing. The graph looks like this-



To establish the trend we first break the graph into equally spaced time intervals Δt.Typically this interval is a small fraction of the time range T of the entire graph. For long term investors like myself I like to look at graphs with time lengths of five to 25 years. For the present five year graph we chose Δt =1/2=T/10 year. For a day trader where one looks at a daily graph so that T=1 day one might choose Δt=1/2 hour.
The next thing one does is to pick a point at time t=τ where the price is P(τ) and also the price P(τ-Δt) at τ-Δt . Taking a simple price average in the window τ-Δt<t<τ using only the end values produces-

$$P_{average}(\tau-\frac{1}{2}\Delta t)=\frac{P(\tau)+P(\tau-\Delta t)}{2}$$

This average value is then marked as a red dot onto the graph. Repeating the averaging procedure at all Δt/2 intervals produces twenty red dots which can be connected by a spline procedure into a continuous curve representing the smoothed price of the index. In effect what has been done is to remove those price fluctuations occurring over time intervals less than about Δt/2. Once the smoothed price curve has been found one can then construct a lag curve(shown in blue) drawn by hand and placed approximately 10 percent above or below the smoothed red curve. Unlike a running average this lag curve generally will react faster than a simple running average to any changes in trend.

ACTIONS ON TRENDS:

Once the lag curve has been constructed one is in a position to discuss a trend at any time up to the present. We have as follows-

Uptrend=bull market → **smoothed curve>lag curve**

Downtrend=bear market → **smoothed curve<lag curve**

In the above five year graph we have an uptrend starting in Jan 2012 and ending in July 2015. A bear market ending in Jan 2012 and a bear market starting in July 2015.
The points were one should buy(B) or short(S) occur when the smoothed curve and lag curve first become equal to each other(we call this a <u>turning point</u> marked by a blue circle in the above graph). Note that one does not know beforehand how long a new trend will last and so one must be ready at all times to act swiftly after a change in trend first appears. This would be the case with the S&P500 for the bear market signal in July 2015. Looking at later prices for the S&P500 curve, it shows that the bearish trend lasted only a short time until March of 2016 when a new uptrend occurred. This last uptrend (Trump Effect) has been a very powerful one continuing on to at least today (January 4, 2018). A reversal will occur eventually but no one knows when this will be. In the meanwhile, one should ride the uptrend but be ready for a quick exit when the trend changes.

CONCLUSION:

One can predict price trends of any commodity using a smoothed price curve versus a running lag curve both of which depend upon the time scale under consideration. One should be long during up-trends and short during down-trends with the best investment opportunities occurring shortly after a buy or short signal is given. Since one cannot predict the length of a trend with any degree of accuracy *it is best to stay with the trend presently in effect.* One should never act against a trend. It is possible that often a new trend will not stay in effect very long so that small losses will occur.This is referred to as being whipsawed. Such losses however are generally much smaller than what will be gained by any future long up-trends or down-trends. At the present time we have a highly bullish uptrend in equities which intensified right after Trumps victory over Clinton in November of 2016. The returns have been phenomenal. However, there may be quite a stampede to sell things when the next and almost certain downtrend occurs. In the present uptrend the high volume and hence liquid ETFs SPY, QQQ, XLE, and EEM look attractive for further gains.

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