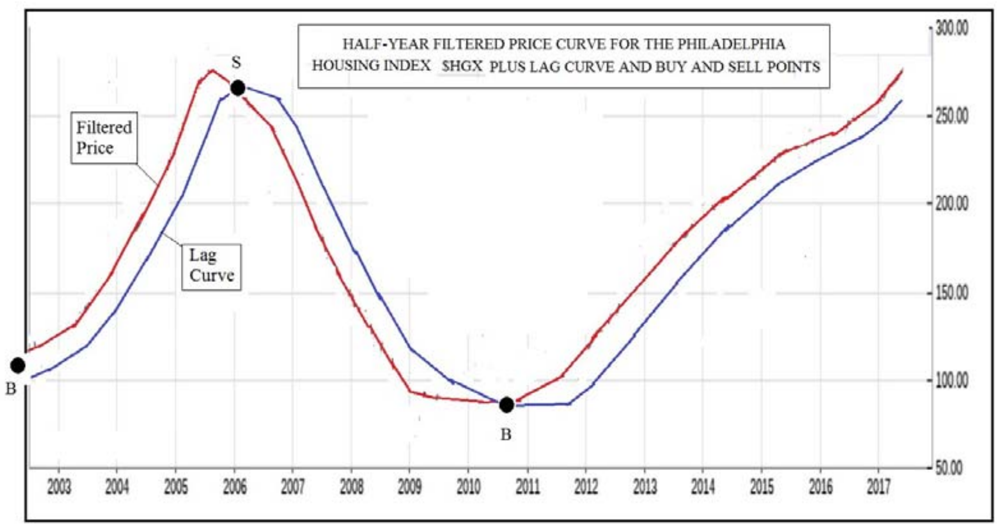
ANALYSIS OF STOCKS AND OTHER COMMODITY PRICES

All commodities be they stock prices, oil paintings, wheat futures, beachfront homes, coins, antique cars, etc will change their price in time following both uptrends and downtrends over different time periods. Those individuals with sufficient insight and information or those who are just plain lucky can profit by being on the right side of such price changes. What must always be kept in mind is that the price P(t) of any commodity is determined solely by supply versus demand. Typically prices should rise over time if demand exceeds supply and visa versa. By that measure paintings by famous artists like Picasso, growth stocks like Google with excellent earning prospects, west Texas oil prices and real estate in New York City should continue to rise in price over the long run , but can certainly drop over shorter time periods due to temporary adverse market factors. Market psychology also plays a major role in determining the supply-demand balance for any commodity. The recent extreme upward movements in the prices of certain stocks such as Amazon(AMZN). Google(GOOG), and Apple,(AAPL) cannot be justified by their fundamentals but are being mainly driven by the belief that their prices will be even higher in the near future. Such behavior brings to mind the tulip bulb mania in seventeenth century Holland. Nevertheless one cannot call for a reversal in price trend until it actually happens. When a commodity hits a new yearly high and has risen a considerable amount during the past year it is time to watch out for a rapid price reversal. Also when a commodity hits a new yearly low and has fallen an appreciable amount during the past year it is likely to rise in the future unless there is now something fundamentally wrong not realized before. **Although precise price trends are typically unknown until they occur, one can act on new trends once these are established.** Our purpose here is to show how to do this by examining price trends for several different commodities and do so independent of their fundamentals which will generally already be well known to the public.

Let us begin by looking at the twenty year historical prices P(t) and trends $\Delta P/\Delta t$ of house prices(^HGX) and stock averages (S&P500). Data for these charts were obtained from **www.barchart.com** . Here are the raw graphs-

and-

In examining these two graphs it is clear that there are trends in price at different time scales. There are daily and weekly fluctuations of interest to day traders, to weekly and monthly trends, to yearly changes. For most investors it is the longer trends which are of interest. Hence the first thing one must do with charts such as the above is to filter out the short term price variations. This is easiest to accomplish by choosing a short time interval Δt of two to six months and draw graphs which mark down the average price during this chosen time interval. Doing this has the effect of smoothing out the graph getting rid of the short term price fluctuations. (In terms of Fourier analysis one is in effect dropping the higher frequency components of the price spectrum). One next constructs a lag curve based on a year or longer time scale to indicate the price trends. This lag curve looks very much like a long term running average. We have carried out such a smoothing with the above two graphs to indicate the longer term price trends be they up or down. Here are the graphs-



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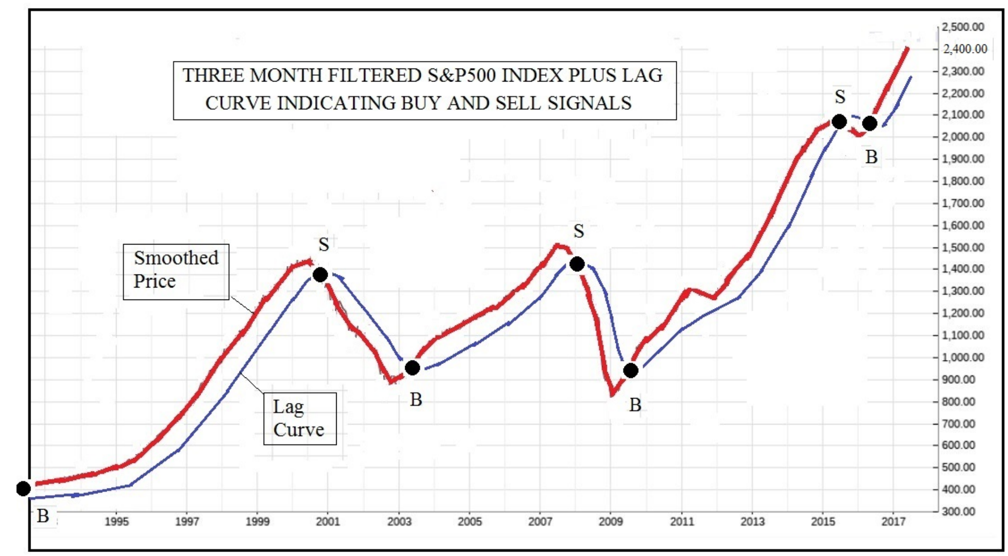


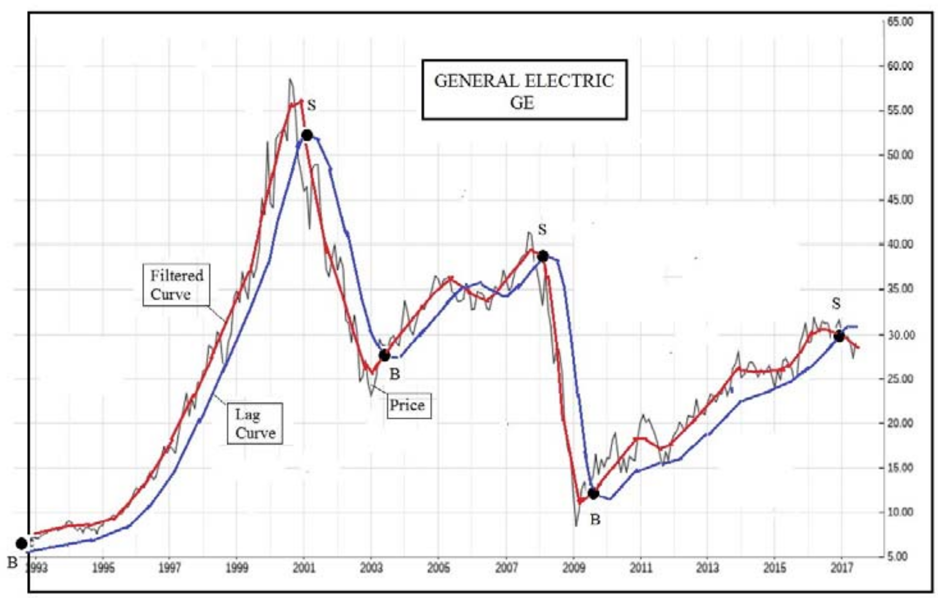
These smoothed price curves clearly show when it is time to buy or sell a given commodity. The closer one acts near the buy (B) or sell (S) points with long or short positions the more the potential gain will be. The buy and sell points occur when the lag curve first crosses the smoothed price curve. We have the following-

Be LONG a Commodity when the smoothed Price is greater than the Lag Curve

Be SHORT a Commodity when its smoothed Price lies below the Lag Curve

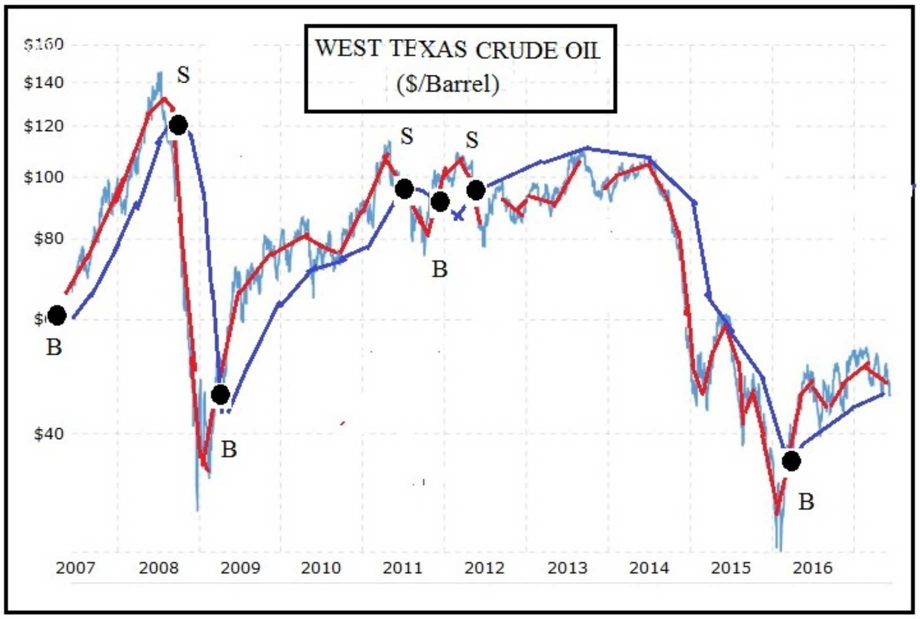
It is not known how long a price trend will last and so one must be prepared to act quickly after a price trend changes. At the moment the housing index is in a strong up trend (sellers market). Back in 2007-2010 it was in strong down trend (buyers market). The S&P500 stock index is at the moment in a strong uptrend triggered most likely by promises of tax cuts and potential earnings increases under the new Trump administration. However one needs to carefully watch some of the more speculative stock issues for price reversal. Certainly the AMZNs price at $1000/sh with a PE of 185 seems unrealistic. To avoid the sometimes huge fluctuation in prices of speculative issues, it is a good idea to consider the alternative of ETFs which represent market averages. These averages very closely follow the trend of the above S&P500 Stock index and so have more predictable future values. In my own experience I re-entered the stock market shortly after the Trump November of 2016 election victory over Hillary Clinton and held things until March of this year for a quick seven percent net gain. My reason for selling was that the new administration was being hindered by multiple side-issues from getting its programs through congress. It suggested to me major impediments to changes in health care and tax reform. My view on this may change. In that case I will return to the market via my favorite ETFs of QQQ and SPY which were still in an uptrend until this week.

We can apply the above procedure of smoothing prices (filtering higher frequencies) and then applying a lag curve to individual stocks not just averages. The price, filtered price, and lag curve can all be placed on the same graph. On this graph one can also indicate the change in price trend from sell to buy and visa versa. To demonstrate this point we show in the following graph the twenty year behavior of General Electric (GE) stock-



Whenever the smoothed price(red curve) lies above the lag curve(blue curve) we have a buy condition. The reverse indicates a sell or short position.This stock is of particular historical interest to me since I inherited several thousand shares of GE upon the passing of my parents in 2000. My father clearly had made a good investment back in the 1960s. Note the very rapid price rise especially from 1996 through 1999. Following my lag curve approach I sold all of this inherited GE stock in 2001 at $54/sh since a new sell signal was in effect. I have never gone back into GE stock since that time since it became clear to me that the new CEO Jeffrey Immelt was no Jack Welsh and that the stock and company were in a long term downtrend. Today Immelt finally resigned after a 17 year tenure, meaning GE stands to have a better future. However, the latest sell signal given above indicates this better future may not emerge right away.

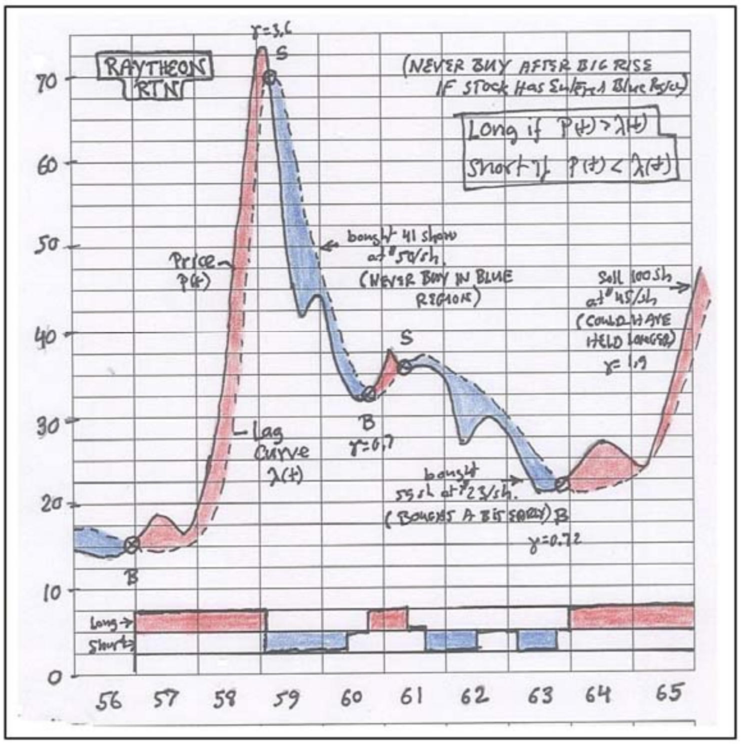
As another commodity, let us look at West Texas Crude Oil prices. A ten year graph together with a smoothing operation and a lag curve follows-



This time (like for many other commodities such as wheat and copper), the fluctuations short term can become large making it more difficult to draw good filtered and lag curves and hence predict the current trend. One is more likely to get whipsawed in one's transactions such as those during the 2011-2013 period . Nevertheless some longer term price trends in oil are present allowing profits both on the long and short side. At the present time oil seems to be in an uptrend although this trend can easily be broken by the price dropping below $40/barrel. In the longer term (decades) oil is certainly in an uptrend considering the expanding world population and the increasing use for petroleum products despite of fracking , electric cars and new oil field discoveries.

It has been shown above that price trends of commodities including stocks, oil, and housing can be predicted using a two step procedure starting with a smoothing of the long term price curve to avoid short term price fluctuations and then drawing in a lag curve. This produces longer term buy and sell signals occurring when the smoothed price curve is crossed by the lag curve. One does not know beforehand how long a trend will last and so one must be ready to act at once when a reversal occurs. It took me many years to arrive at the above conclusions. I certainly remember from my early investment days that I often followed earlier price uptrends after they had reversed. For example in 1959 as a graduate student at Princeton I bought 41 shares of Raytheon(RTN) at $50/sh having noticed that the stock price had risen from 18 to 73 dollars per share in the previous year and had corrected down to $50/sh by the late summer of 1959. Thinking the price should go back up to its all time high of $73/sh I bought 41 shares. To my surprise the stock price kept on falling and it was not until six years later that I was able to exit with a small profit. Clearly I had violated my later understanding that one should never buy when a commodity price is in a downtrend (blue) until this trend changes. A scan of my Raytheon adventure follows-

MY EARLY EXPERIENCE WITH RAYTHEON STOCK



A lot can be learned from this chart of why neophytes tend to loose money in markets.

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