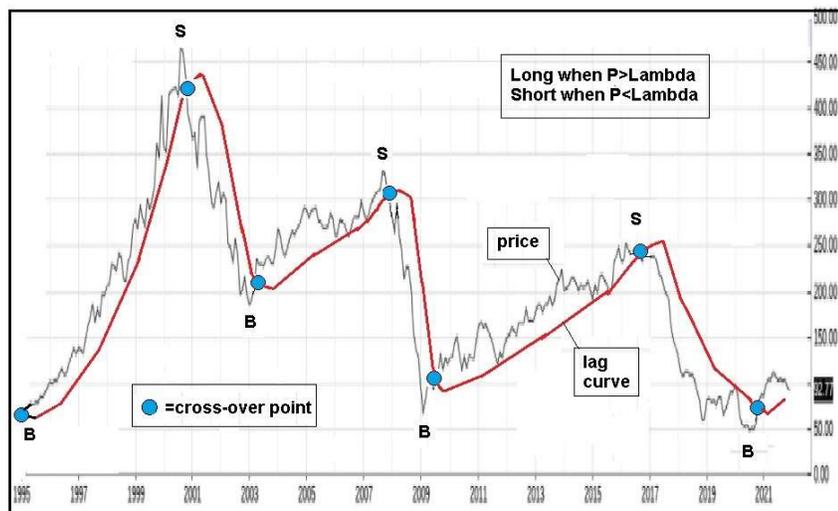


DETERMINING MARKET TRENDS BY THE USE OF SDS CHANNELS PLUS LAG CURVES AND CROSS-OVER POINTS

Introduction: It is well known that markets can be looked at from a purely fundamental view point or via their technical behavior or both. I have found through well over seventy years of investing that a purely technical approach based on the use of price history together with lag curves and crossover points have worked well for me and continue to do so. It is the purpose of this article to discuss the details of such an approach and in particular show how market prices are not random but rather follow trends of unknown duration.

As a starting point we show the typical behavior of a stock(in this case of GE) over an extended time period of 26 years-



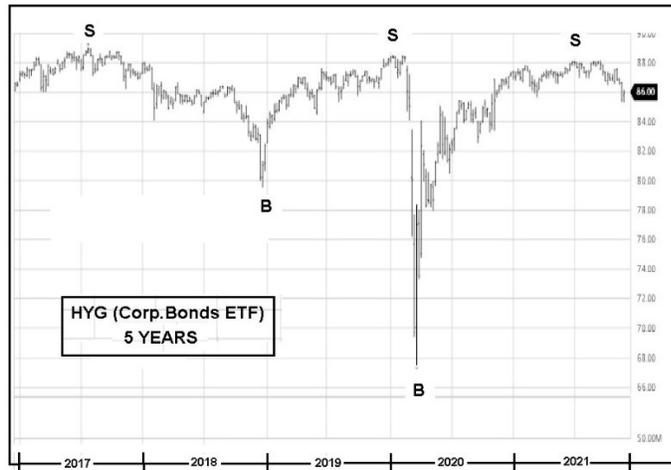
The price data can be obtained at barchart.com by typing in GE (for General Electric). Onto this price history I have marked local maxima(S) and local minima(B) in price. These typically occur at multi-year intervals. In addition, a lag curve, shown in red, is added. Where the price and lag curve cross each other is being designated as a cross-over point. One wants to be-

Long when Price>Lag Curve

Short when Price <Lag Curve.

The best returns occur when one acts shortly after a cross over point is reached. A market uptrend exists when $P > \lambda$ and a downtrend exists when $P < \lambda$. These trends are real although the price changes on a short term basis are indeed random. Once a trend has been in effect for several years it is wise to be cautious as a change in trend is likely to occur soon. At the moment the chart shows an uptrend but it is somewhat late for this uptrend to extend much longer. One is awaiting the beginning of a downward trend.

Determination of SDS Price Channels: The first modification one applies to any historical price record for any equity or commodity is the location of its SDS points. These are picked out visually and marked as sell S for sale or B for buy locations. Such a modification for the corporate bond ETF known as HYG follow-



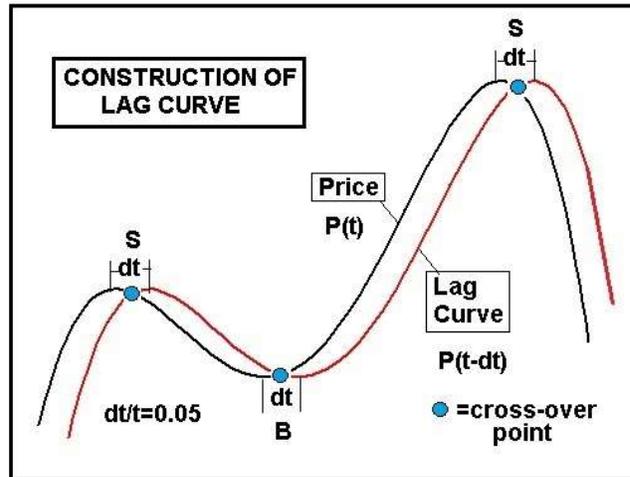
One clearly sees that there are multiple S and B points in a typical five year historical price range. Following Rothschild's market theory, one should only be long when the price lies slightly to the right of B and short when the price lies slightly to right of its sell signal S. At the moment one should expect a price drop in bonds to occur shortly.

Another SBS channel follows for McDonald Corporation(MCD)-



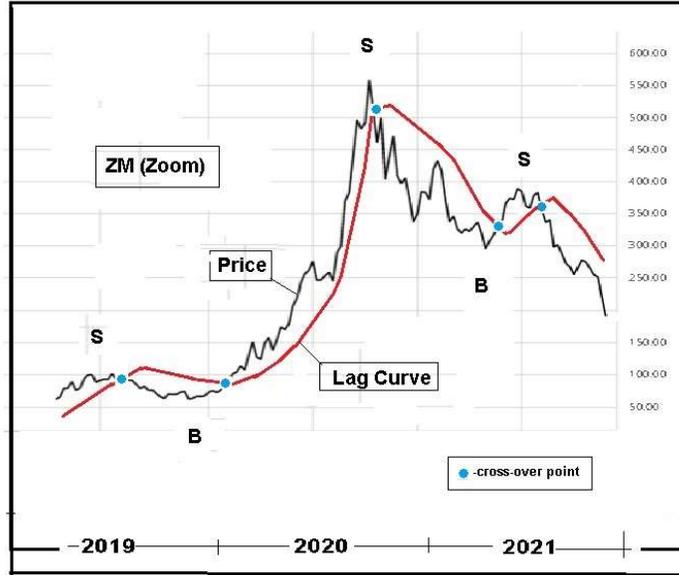
Note that the SBS channel forces one to buy low and sell high. Most amateur investors do just the opposite of what the SDS signals indicate and hence end up losing money.

Determining Lag Curves: The next important addition required in our technical market approach is the construction of Lag Curves λ to be superimposed on historical price data. Such curves differ from standard running averages in that they resemble more shifted price values as opposed to summed prices. They react much faster to changes in market trends. Typically such curves are constructed as shown in the following picture-



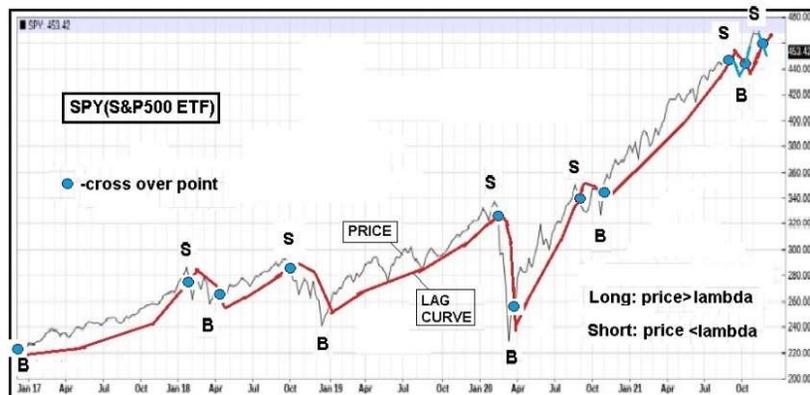
One starts with a historic price data of a three year or longer duration and shifts the data by an amount dt to the right to generate a second curve indicated in red. The new red curve will be the desired Lag Curve λ . The time-shifted values dt will be about $0.05t$, where t is the width of the entire window of price data being looked at. The points where the black and red curves cross are designated by cross-over points. They are marked by small blue circles. The actual lag curves can be drawn in by hand using dt as a guide.

Some Historic Price Charts with superimposed Lag Curves and Cross-Over Points: Here follow the historic price patterns with lag curves and cross-over points for several different stocks indicating when market uptrends and downtrends are occurring. Let's begin with the stock ZM. Here is its pattern-



I remember there was much talk about this stock back in the middle of 2020 at our weekly lunch meetings. The stock had risen from \$50 to \$500 sh. The company had a great idea about arranging computer conferences between individuals throughout the world. I remember telling my colleagues at the University that the price was overdone in view of potential competition from other companies. Indeed I was right as reflected by the subsequent price drop in the following year. Had I owned the stock my lag curve crossover pattern would have prevented me from holding things after the sell signal in the fall of 2020 despite of all its fundamental strong points. As seen, the stock fell to \$200.sh at its latest value.

The next graph I show is for the ETF SPY representing the value of several hundred stocks contained in the S&P500 average-



Following the B signals and subsequent cross-over points, I have received excellent returns over the last five years with this ETF. At the moment the price is indicating a sell signal S.

Consider next the price history of the stock COST together with its lag curve shown in red-

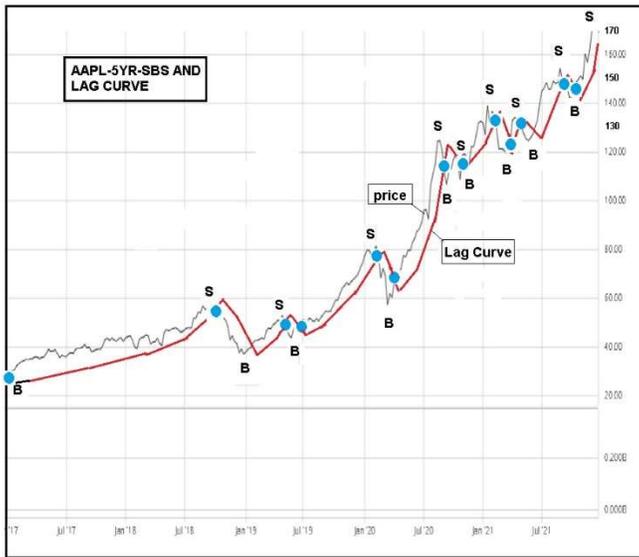


The lag curve and price are clearly indicated with buy points occurring near B and sell points near S. The cross over points are not indicated here but occur when the price and lag curves first cross each other. At the moment we are very close to a sell signal S.

Another interesting price-lag curve and cross-over point pattern occurs for Microsoft(MSFT). A five year price pattern with superimposed red lag curve and blue cross-over points looks as follows-



A final stock to which we apply the lag curve and cross-over point is AAPL. Here is its five year historic price behavior-



The price swings are more rapid than for the other stocks shown earlier above. It means that trends are shorter and hence difficult to get returns from. At the moment AAPL is near a sell point with a cross-over point being awaited.

Concluding Remarks: We have shown that many stocks follow up and down trends which can be taken advantage of by buying when the price exceeds a lag curve ($P > \lambda$) and a cross-over point has been reached. The stock should be shorted when $P < \lambda$ and a cross-over point has been reached. For those interested in only up trends and not involvrd in the more risky task of shorting, one should be in the market for only restricted periods of time where $P > \lambda$. At other times where $P < \lambda$ one should be in cash.

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