

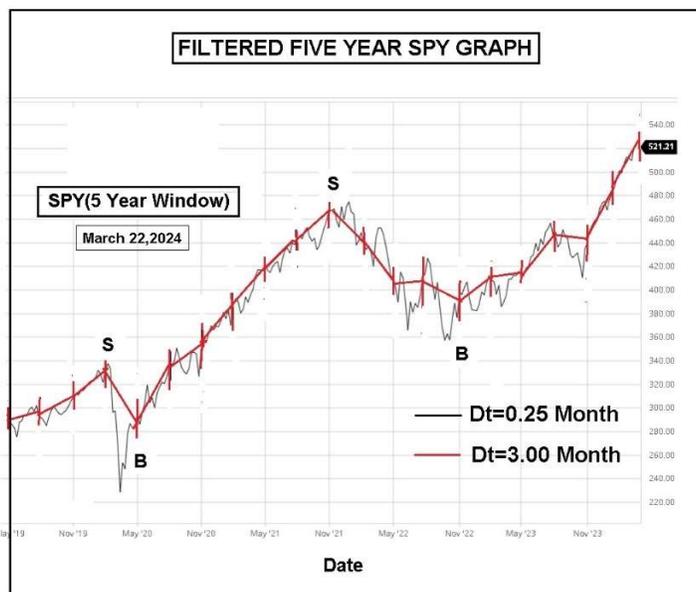
USE OF FILTERING TO DETECT PAST PRICE TRENDS AND THEN EXTRAPOLATING THESE INTO THE NEAR FUTURE

It is well known that price of stocks, bonds commodities, and real estate vary in time between local minima and local maxima with the exact location of these price extrema and their connecting price path generally unknown until after they have occurred. We here partially get around this difficulty for generating profits by first filtering out random price fluctuations within a N Year Price Window of the past to establish price trends and then extrapolating the latest trend into the near future. This proposed procedure is far superior to the use of running averages used extensively by market technicians. It is our purpose here to show the details of how this new method is applied to several different stocks .

We begin by looking at time-price charts for a given equity. Such charts are available without charge at-

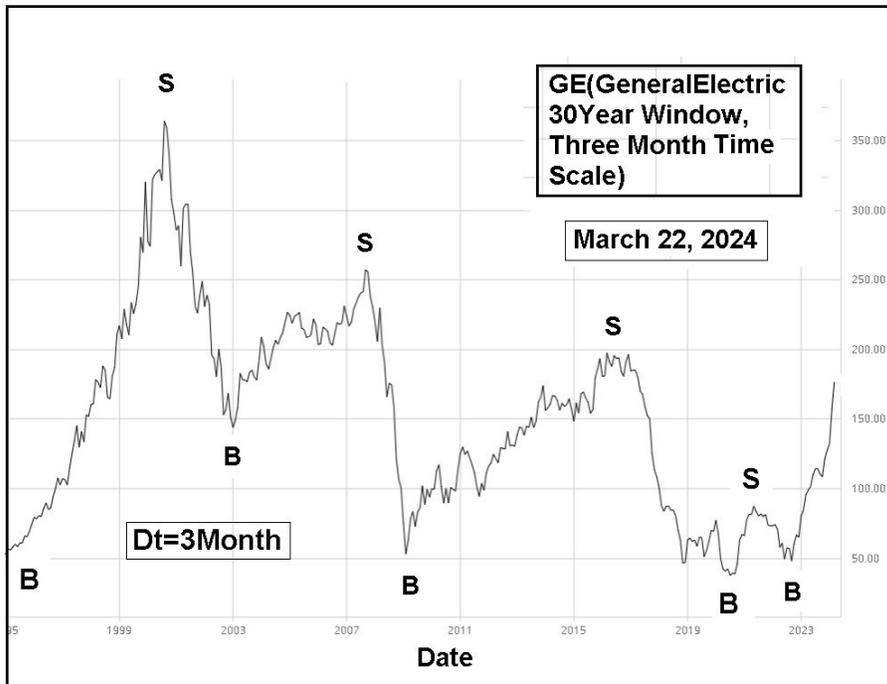
<https://www.barchart.com>

These charts present the starting point for our price-filtering analysis and trend detection. Typically we start with price charts extending N years into the past. We call such a chart an **N-Year-Price-Window**. An example for such a five year price window is that for SPY shown-



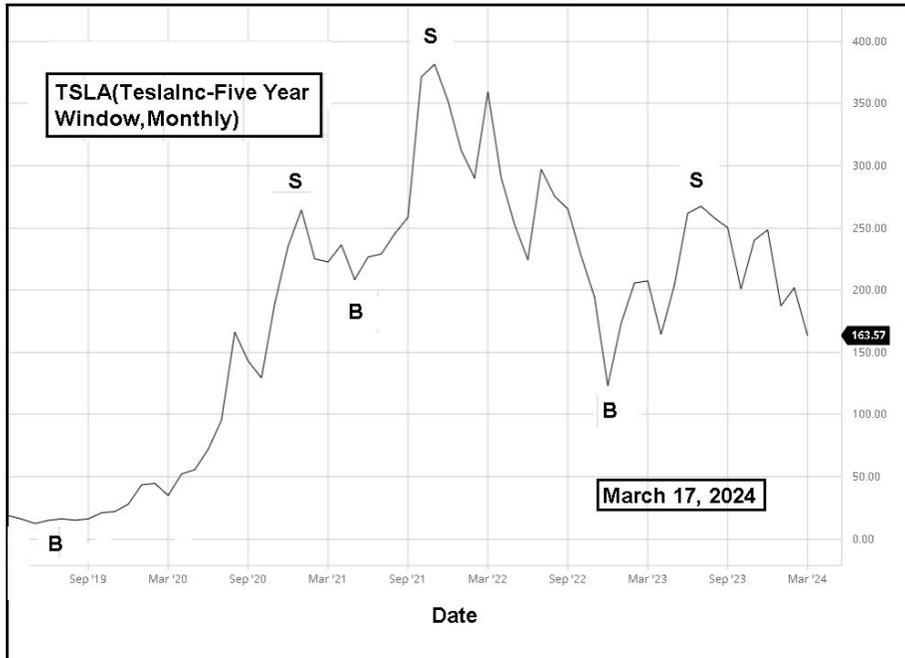
The black part of the price variation is gotten directly from Barchart using the time increments of $Dt=1\text{week}=0.25\text{ month}$. When applying a $Dt=3\text{ month}$ filter to this result the rather wild fluctuations of the black curve converts to the much smoother filtered curve. This red curve represents the trend line for this ETF over the past five years. Extrapolating this curve three months into the future suggests SPY is likely to reach \$556/sh at that time. One must of course follow the red trend curve continually as future predictions will vary. At the present time Buy(B) and Sell(S) signals based on the trend curve will occur as indicated . They follow the Rothschild advice of Buying Low and Selling High.

Another stock with a multi year downtrend is general Electric(GE). We studied its 30 year Widow and found that $Dt=3\text{ month}$ presented the following trend curve-



This graph could have been used to buy the stock at B and short it at S. At the moment the stock is in an uptrend which should take it above \$200/sh in the next few months. I myself inherited several thousand shares of GE in 1990 and sold it at once to never go back into its stock mainly because of negative experiences I had with their stoves refrigerators and dish washing machines in our all electric home kitchen. The only viable business which GE has left is its jet engine manufacturing business. This helps explain why GE price has been on a long term decline after Jack welch left the company in 1990.

As another filtered stock we looked at TSLA (Tesla, Inc). Here we took a five year window and slowly started raising the time increment Dt. At Dt=1 month the graph produced the filtered version shown-



It looks like the price is heading for a low point of $P=\$100$ per share before a buy point B is reached. Part of this recent decline has been caused by a new lack of enthusiasm for EVs due to their high cost, lack of charging stations, the cost of battery replacement and limited cruising range.

The above three examples have shown that relatively simple looking trends can be produced by making Dt large enough but not too large. Typically the Windows should show about three to four S and B points. Often one or more of the S and B points will disappear in the increasing Dt process meaning that a true buy or sell signal does not exist there. The present filtering process should also be applicable to bonds and real estate and especially commodities such as gold, silver, and copper.

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Gainesville, Florida

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