

Econometric models for stock selection

Econometric theory and models can be considered as essential tools for understanding and trying to predict stock price movements. The advantage of these techniques over other modes of stock selection is that they make it possible to understand changes in share prices in a cold, coherent and reasoned way. This is a guarantee of success in the medium or long term. We applied these techniques to different asset classes: S&p500, Nasdaq, gold and gold mining stocks. The purpose of these procedures is to obtain an equation that can explain the behavior of an asset (S&P500, mining stocks, etc.) called an independent variable as a combination of dependent variables (interest rate, offset values of S&p500, etc.).

Asset price = $b_0 + b_1V_1 + b_2V_2 + \dots + b_nV_n + \text{residuals}$

Observations are collected on a monthly, quarterly and annual basis. The field of analysis is vast ranging from 1966 to 2023 for the monthly and quarterly models. The annual model runs from 1905 to 2023. As a result, a very large number of bull and bear markets are considered, which gives credence to the best models.

The integration of machine learning and deep learning techniques has significantly impacted the accuracy and effectiveness of asset pricing models and Portfolio Management (PM) strategies. Machine learning, a subset of artificial intelligence, has emerged as a powerful tool for enhancing PM and asset allocation strategies. By leveraging advanced algorithms and statistical models, machine learning enables investors and fund managers to make data-driven decisions, uncover hidden patterns, and optimize portfolio performance (Shahbeyk & Banihashemi, [2024](#)).

Until 2023, I used the NCSS statistical processing software to develop and test different statistical models. Since 2023, I have also relied on the processing power of Chatgpt (thinking mode option for the most refined analyses). The latest version of Chat GPT, Chat GPT 5.1 released last November, is very powerful in terms of econometrics and selection of the most efficient models. I am attaching an example of a modeling of the S&P500, this is an annual periodicity which I supplement with monthly periodic models in order to base my decisions ([click here](#)).

Investment principles and portfolio management

The principles underlying our investment strategies and econometric models are based on the reading of numerous documents relating to the formation of stock prices as well as on the empirical verification of the various strategies suggested by these theories. The

adoption of these principles and models has served us well in the past (performance well above the market) and should continue to do so in the future. This conviction is due to the depth (large number of bullish and bearish phases considered) and the stability of our mathematical models.

The most convincing financial theory, widely demonstrated from an empirical point of view, is the theory of long-term mean reversion.

This theory can be illustrated by a document written by Vitali Kalesnik, Ph.D, [click here](#). it outlines an approach to equity investment management centered on the concepts of **noisy** and **mean-reverting** stock. **Noisy** prices are defined as containing errors, where the market over- or undervalued stocks, often due to **noise traders** acting irrationally. **Mean reversion** suggests that stock prices, like a pendulum, will eventually reverse direction and return to their average levels after extreme upward or downward swings. The text reviews empirical evidence supporting this theory, citing studies that demonstrate the superior subsequent performance of **loser portfolios** compared to **winner portfolios**, illustrating long-term mean reversion (see the classic study of overreaction and mean reversion published in 1985 by De Bondt and Thaler. Finally, the author discusses how agency issues, as formalized by Shleifer and Vishny, explain why arbitrage may not quickly correct mispricing (fear of losing clients among managers).

I also include a powerpoint [presentation](#) of the concept of mean reversion (better in diaporama mode).