Data 698

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**Final Project Proposal (version 1)**

**Research Objective**

What’s the best trading indicator/strategy in the stock market? There are broadly speaking two types of technical indicators, i.e., momentum vs oscillator indicators. Below is a short list of some popular indicators,

* Relative Strength Index (RSI)
* Moving Average Convergence Divergence (MACD)
* Commodity Channel Index (CCI)
* On-Balance Volume (OBV)
* DeMark9
* etc.

What’s the best indicator for “entry” and “exit” strategy in terms of ROI?

* In addition, does any indicator work the most effectively by sector, such as “Consumer Staples” vs “Energy”?

**Hypothesis**

Null hypothesis (H0): all indicators make no significant difference in terms of return of investment based on the signal that each generated

Alternative hypothesis (H1): there’s an interaction effect, i.e., “sector” x “indicators” would make a significant difference for ROI

**Methodology**

We can do simulation using historical data of the SP500. Let’s begin the simulation of investing $10,000 in January 2010 for each of the stock. The trading decision (“entry”, “exit”) is based on the indicators. At the end, say in January 2022, we can measure the ROI of each stock.   
  
Subsequently, we can apply ANOVA to compare the effectiveness of the indicators x sectors. We can possibly extend the analysis to different types of commodities or cryptocurrency, or small-cap stock market index (such as the Russell 2000).   
  
**Sample Data**

This is open-source data, e.g., quantmod. Here’s just a mock-up of what the data frame would look like for the experimental simulation,

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **symbol** | **company\_name** | **sector** | **RSI** | **MACD** | **OBV** | **DeMark9** | **etc.** |
| A | Agilent Technologies Inc | Health Care | $15,000 | $16,500 | $32,000 | $42,000 | … |
| AAL | American Airlines Group | Industrials | $20,000 | $9,500 | $20,000 | $12,000 | … |
| AAP | Advance Auto Parts | Consumer Discretionary | $35,000 | $32,000 | $35,000 | $56,000 | … |
| AAPL | Apple Inc. | Information Technology | $45,000 | $76,000 | $45,000 | $32,000 | … |
| ABBV | AbbVie Inc. | Health Care | $9,000 | $4,000 | $7,500 | $5,000 | … |

**Conclusion to look at**

* We can identify (and quantify) the best trading indicator/strategy (by sector or overall)
* We can possibly come up with an optimal trading strategy that draws on multiple indicators (by sector or overall)