Q). Implement one Smart beta strategy and discuss its pros and cons compared to a benchmark.

The strategy I implemented is the low vol smart beta strategy. The universe we consider here is the S&P 500 constituents as of today. The strategy is implemented by first calculating the rolling 6-month vol of each stock. The stocks with volatilities in the lowest decile are selected and an equal weighted portfolio is formed from them. The portfolio is constituents are calculated every month and the holdings are held constant for the duration of the month. The strategy is back-tested from 2010-06-01 to 2017-07-31.

Results:

|  |  |  |  |
| --- | --- | --- | --- |
| **Strategy** | **Mean Return** | **Vol** | **Sharpe Ratio** |
| **Low Vol** | 12.58% | 9.45% | 1.331 |
| **SPY Equity** | 13.03% | 11.66% | 1.117 |

The benchmark chosen is the SPY (proxy for S&P 500).

Possible Improvements:

1. Point in time constituents of S&P 500 constituents should be considered to avoid survivorship bias.
2. Possible sector biases can be avoided by constructing low vol portfolios for each sector and then combining them.
3. The beta of the resulting portfolio should be made close to 1.
4. Dividends for the stocks were ignored and should be incorporated.

Pros:

1. This portfolio is meant to have a lower volatility than the benchmark and is less volatile.
2. Historically this portfolio has outperformed the benchmark in terms of Sharpe Ratio and hence, for equal risk, this portfolio beats the benchmark.
3. The portfolio is negatively correlated to the index, and hence can be incorporated along with the index for better overall Sharpe Ratio.

Cons:

1. May include very low market cap stocks at a high weight.
2. Might induce exposures to known risk-premia incidentally as this is not an established source of risk premium.
3. Costly to invest in because of the transaction costs compared to the benchmark