**BlogPost**

1.Introduction

The objective of this analysis is to carry out an evaluation of multiple ESG Funds and compare them with the Market.

The code has been written following the DRY principles and this is confirmed by the short amount of coding needed to perform all the operations eventually displayed in the tables and charts.

1.Developing Business understanding

The ESG Funds have been chosen among the top performing ESG ETFs available in the market. ESG stands for Environment Social and Corporate Governance and refers to those funds or companies which have low impact on the environment (Climate Change, Sustainability), are socially responsbile towards their community, customers, employees (Diversity, Human rights, Consumer Protection, Animal Welfare) and practice a culture of corporate governance aimed at decreasing social injustice (Management structure, Employee relations, Executive compensation, Employee compensation). These criteria are deemed to help determine better future financial performance and form the category of “Responsible Investing”.

The ETFs chosen for this analysis can be found here:

<https://etfdb.com/etfs/investment-style/socially-responsible/>

A descriptive list has also been reported here below:

-SPDR S&P 500 ETF (SPY)

-Columbia Select Large Cap Growth Inst (UMLGX)

-US Vegan Climate ETF (VEGN)

-Green Century Equity Individual Investor (GCEQX)

-VALIC Company I Large Capital Growth (VLCGX)

-MFS Massachusetts Inv Gr Stk A (MIGFX)

-Vanguard Mega Cap Growth ETF (MGK)

-Dreyfus Appreciation Investor (DGAGX)

-Ave Maria Growth (AVEGX)

-Polen Growth Institutional (POLIX)

-JPMorgan Growth Advantage A (VHIAX)

An ETF is a fund formed by a collection of companies’ stocks and is traded on stock exchanges. Among these funds there are special ETFs which attempt to replicate the market.

The fund chosen to represent the Market is the SP500 in the form of ETF, more specifically the State Street SPDR (SPY).

The approach taken in this analysis is Questions to Data in order to extract Solutions or insights.

The questions we attempted to answers are the following:

1. Are ESG Funds more volatile than the market?
2. Are ESG Funds correlated to the market?
3. Which funds are providing higher Risk Adjusted Returns?

2.Developing Data understanding

The data used in this analysis is stocks data. The funds presented in the previous section are all traded on exchange and their data is publicly available and is recorded with daily frequency.

The main data point that we will take into consideration is the stock price also known as stock returns and we will transform it into percentage change and log returns (both versus previous day price)

3.Preparing the data to be analysed

In our case the dataset is not physically stored in a file or repository but accessed every time that the code runs. In order to carry out this operation the code gets access to the free Yahoo Finance APIs thanks to the Pandas Datareader library.

The date range selected includes one year worth of stock data starting on January 2019 and ending with the date in which the code runs.

4.Modelling the data

The code is displaying the raw dataset that been used first in a view which includes a detailed view of the stocks (Table 1) and then a view which shows only the Daily Returns returns removed from missing values (Table 2).

The code output continues by displaying the charts of each ESG Fund compared with the Market SP500 ETF returns.

After that, the code output shows the correlation between every Fund (including the market) in a seaboarn correlogram and heat map (Figures 11 and 12).

The visual stock analysis continues with Figure 13 where  each fund is compared on a Risk-Returns basis.

Finally the last chart (Figure 14) is displaying the results of predictive analysis used to understand if the market returns can be explained by the top performing ESG funds analysed given that these funds are composed by stocks present in the Market Fund (SPY).

5. Evaluate the results

Are ESG Funds more volatile than the market?

The charts displaying each single fund returns versus the market returns clearly show that the much lower volatility of the ESG Funds, perhaps due to the fact that the companies included in the ESG funds are more resilient to disruptive events like Covid-19 (SPY downwards spike between March and July)

Are ESG Funds correlated to the market?

Both the correlogram and the heat map are showing that the ESG Funds are positively correlated with the market, meaning that the stocks included in the ESG Funds are also included in the SPY ETFs. This intuition along with the previous answer tells us that the risk element in the market is coming from stocks (i.e. companies which do not adhere to the Responsible Investing policies).

Which funds are providing higher Risk Adjusted Returns?

From Figure 13 we can say that the market is providing lower returns compare to most of the ESG Funds and confirm the intuition that responsible investing is not just a an ethic investor’s position but also a profitable choice.

Finally the Figure 14 plots the predictive model which attempts to explain the market with the ESG Top performers. This is giving us a sense of the idea that investing in ESG Funds retains the positive elements of investing in the market in terms of growth and returns given the common companies in the SP500 and the ESG Funds considered.