R Skills Test

Questions

Note: Please use data.table and ggplot libraries for your analysis. Please include a well commented R script for our review.

1. Chart the aggregate Enterprise Value to aggregate Sales and median Enterprise Value to Sales relative to the World for all US listed stocks on the same chart. Please exclude any sectors where this valuation metric doesn't make sense.
2. Create a daily total return price index for the largest 500 stocks (at each point in time) listed on the US market
   a. Present a chart of this time-series
   b. Calculate the 3Y rolling return of your index and plot against the 3Y rolling return of the S&P 500 on the same chart
   c. Present a table with the following summary statistics of your index

Start Date	Start Index Value	End Date	End Index Value	Cumulative Total Return	Cumulative Total Return p.a.	Volatility of Daily Returns (annualised)

3. Chart the 30d average annualised standard deviation of daily returns for all US stocks in the top quintile of market capitalisation (at each point in time).
4. If 5% of your portfolio was invested in Microsoft, how could you completely hedge out the risk of downward price movements in the most capital efficient way?

Description of datasets

daily_US_prices.fst

A dataset containing daily prices for all US listed stocks.

DATE	TICKER	COUNTRY	SECTOR	PRICE	MARKET_CAP
Date (daily)	FactSet Ticker	Country of Listing	Sector	USD, split, spinoff and dividend adjusted	USD market capitalisation in millions

monthly_world_val.fst

A dataset containing monthly EV and Sales information for all stocks globally.

DATE	TICKER	COUNTRY	SECTOR	NAME	EV	SALES
Date (daily)	FactSet Ticker	Country of Listing	Sector	Stock Name	USD Enterprise Value in millions	USD Sales in millions