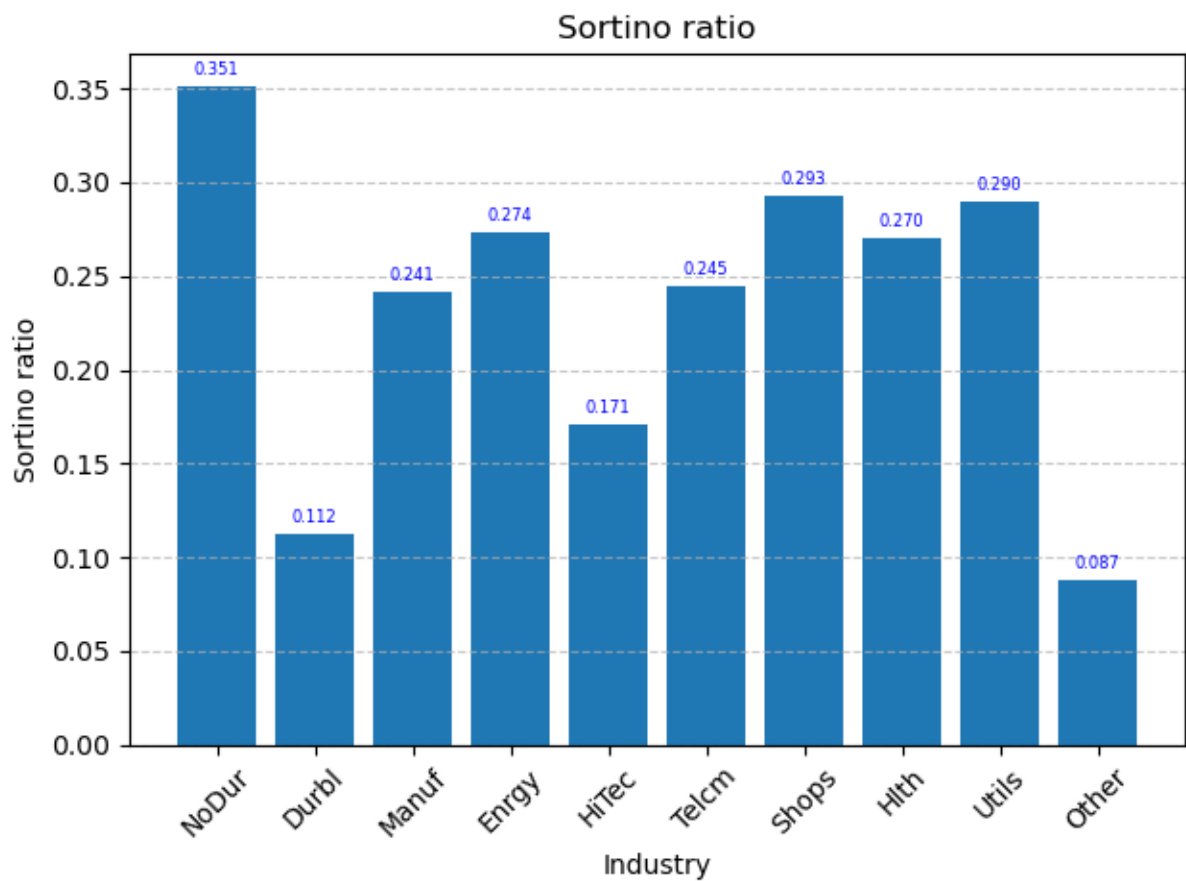
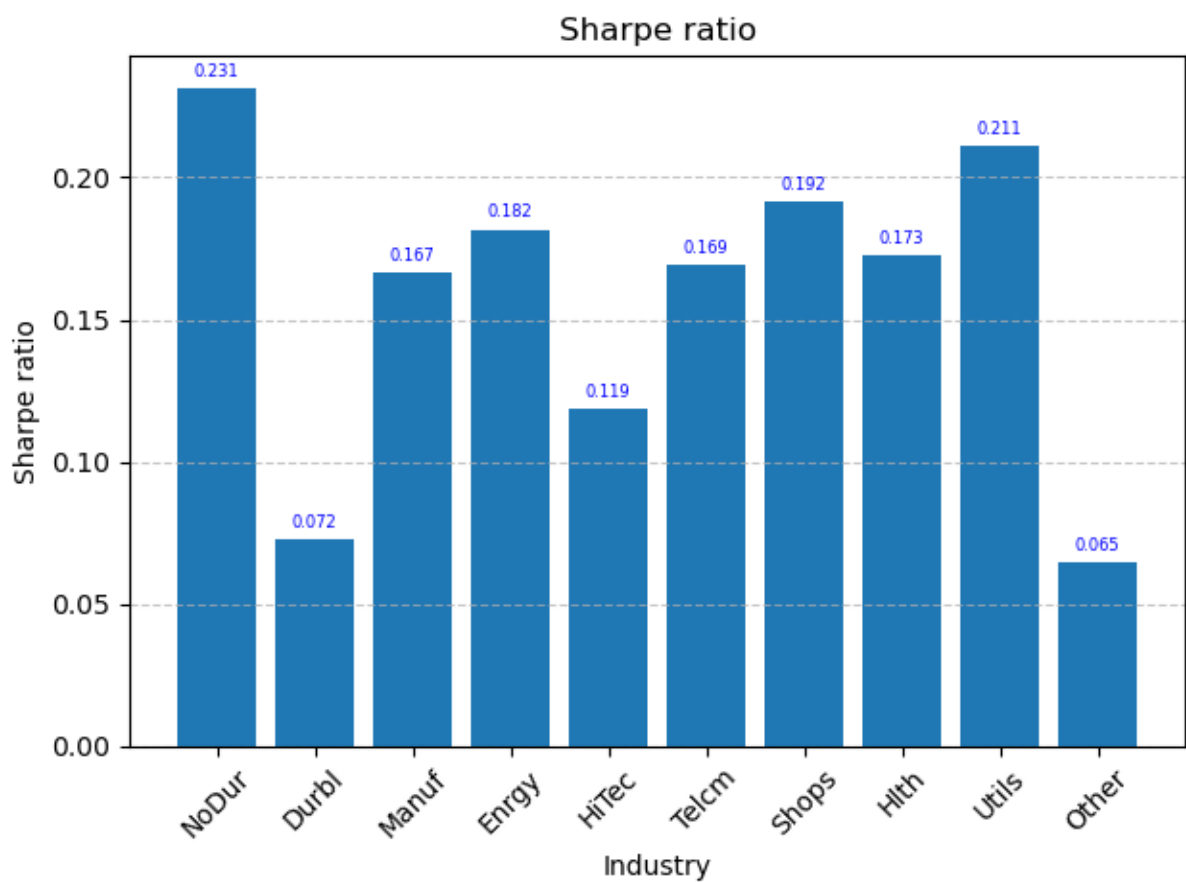


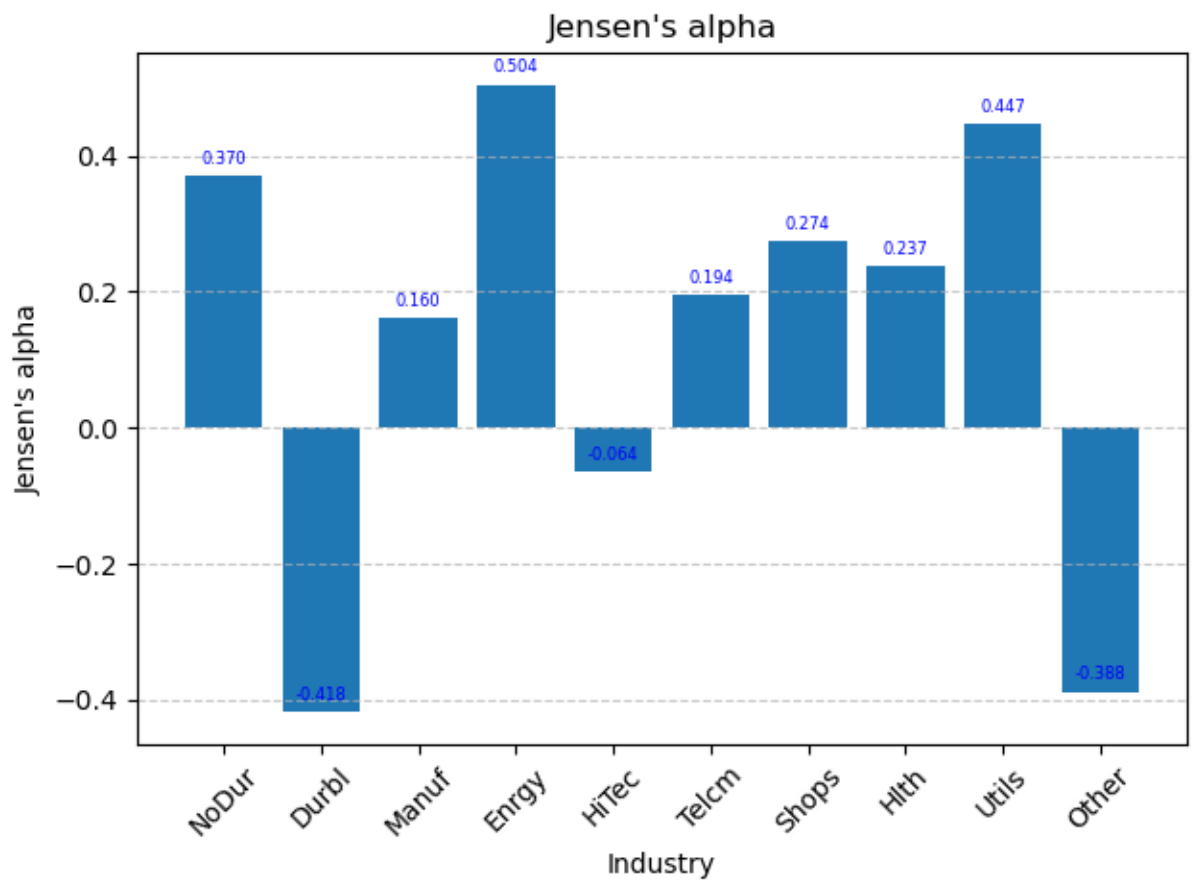
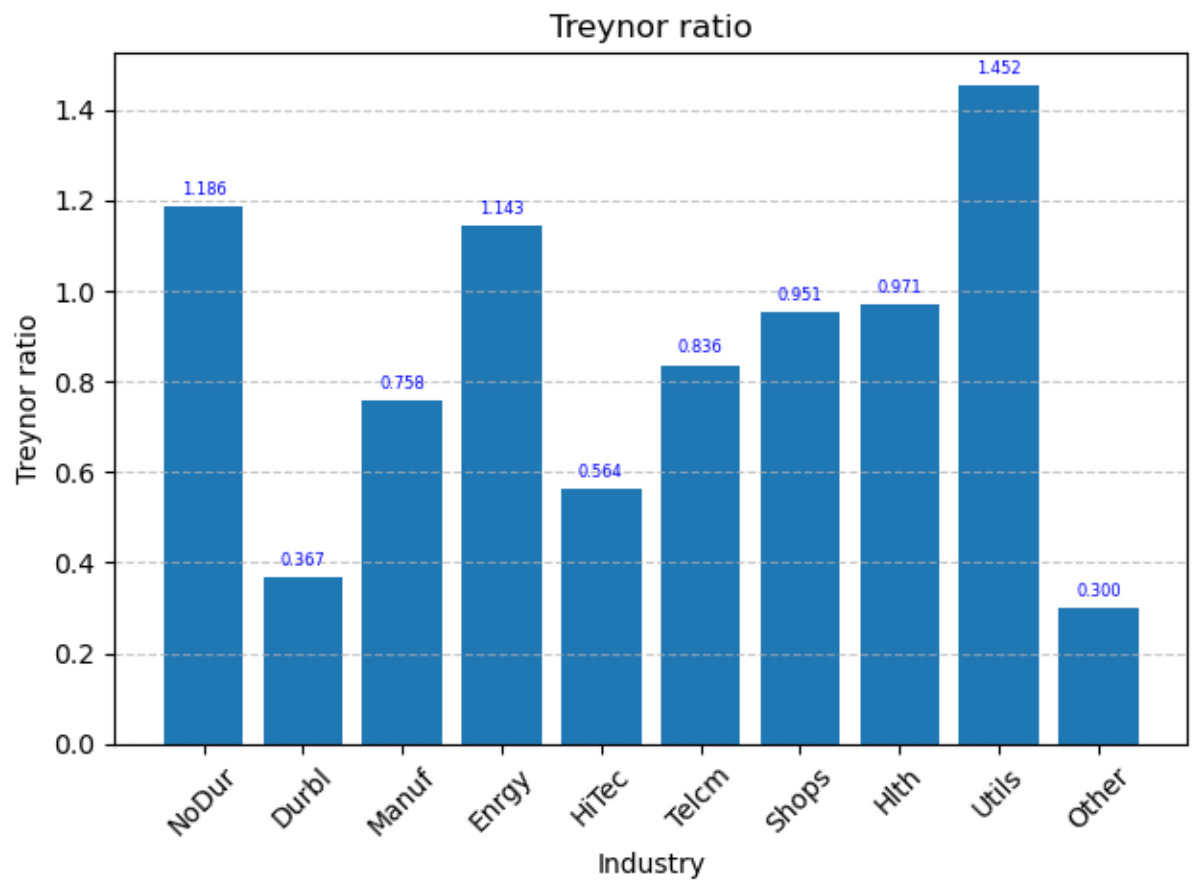
Kendrick Winata
QF600 – Asset Pricing
Homework 3

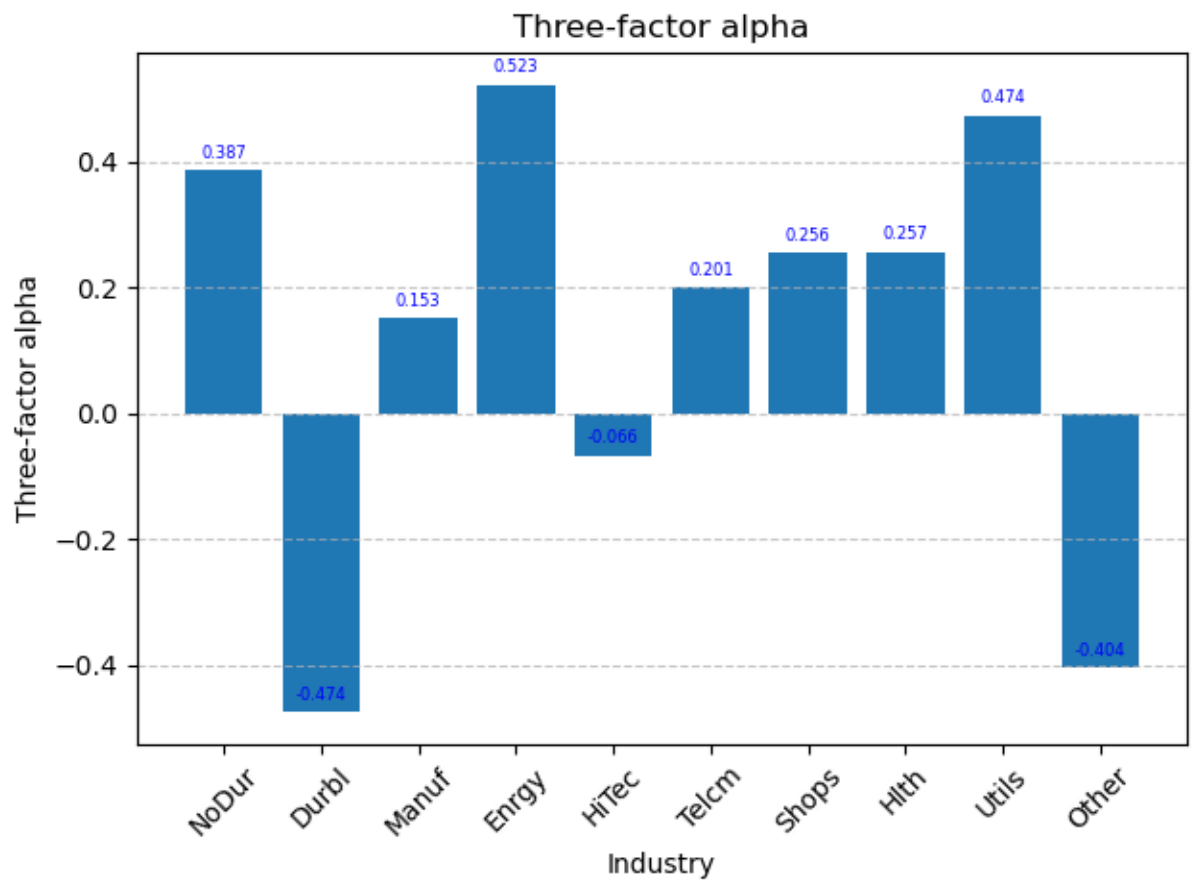
Create a table showing the performance metrics for the ten industry portfolios.

Industry	Sharpe ratio	Sortino ratio	Treynor ratio	Jensen's alpha	Three-factor alpha
NoDur	0.231099	0.350804	1.186372	0.369717	0.386704
Durbl	0.072356	0.111967	0.367463	-0.417903	-0.474342
Manuf	0.166616	0.241260	0.758251	0.160494	0.153285
Enrgy	0.181708	0.273612	1.143330	0.504485	0.523007
HiTec	0.118552	0.170620	0.564295	-0.064024	-0.065979
Telcm	0.169064	0.244940	0.836363	0.194348	0.200724
Shops	0.191753	0.293032	0.951258	0.274093	0.255941
Hlth	0.172529	0.270294	0.971435	0.236968	0.257472
Utils	0.210948	0.290044	1.452334	0.446523	0.474411
Other	0.064693	0.087351	0.299781	-0.387508	-0.404412

Plot your results as a bar chart for each performance metric.







Briefly explain the economic significance of each of the three performance ratios (but not α 's).

Sharpe ratio is risk premium per unit of standard deviation. All other things being equal, the higher the ratio, the greater the investment return relative to the amount of risk taken, and thus, the better the investment. The denominator is designed to capture total risk (both systematic and idiosyncratic risk). Hence not appropriate for comparing performance of individual investment to diversified portfolio. It is not appropriate to use Sharpe ratio if the portfolio includes idiosyncratic risk, therefore the only way to deal with this is to have well diversified portfolio. Moreover, the denominator ignores higher moments such as skewness and kurtosis, so it may not fully reflect risk of investment if return distribution is not normal.

Sortino ratio is the expected deviation from target (or benchmark) return, per unit of below-target semi-deviation (downside deviation). It suggests that investors are more sensitive to downside risk than upside risk. It is similar to Sharpe ratio but focuses specifically on downside risk. A high Sortino ratio is preferred, as it indicates that an investor will earn a higher return for each unit of downside risk. It will produce rankings similar to information ratio when return distribution is close to symmetric, and expected asset return is close to expected target return. It is more informative than information ratio or Sharpe ratio when return distribution is not normal.

Treynor ratio is risk premium per unit of market risk. The denominator is the Treynor ratio is designed to capture systematic (market) risk and ignore idiosyncratic risk. In principle, it can be used to compare the performance of individual investment to diversified portfolio. In practice, it will fail to account for other types of systematic risk besides market risk. A higher ratio indicates a more favourable risk/return scenario, as it suggests that the portfolio is generating higher returns relative to its market risk exposure.