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

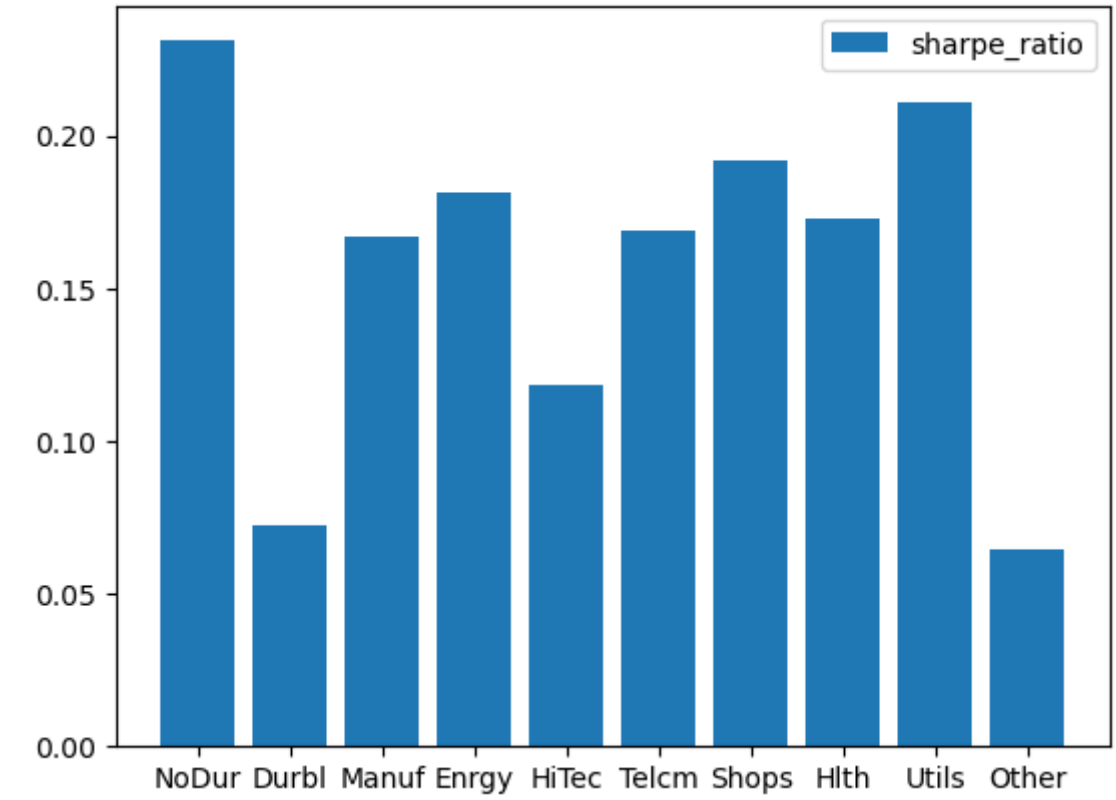
In [14]:

Out[14]:

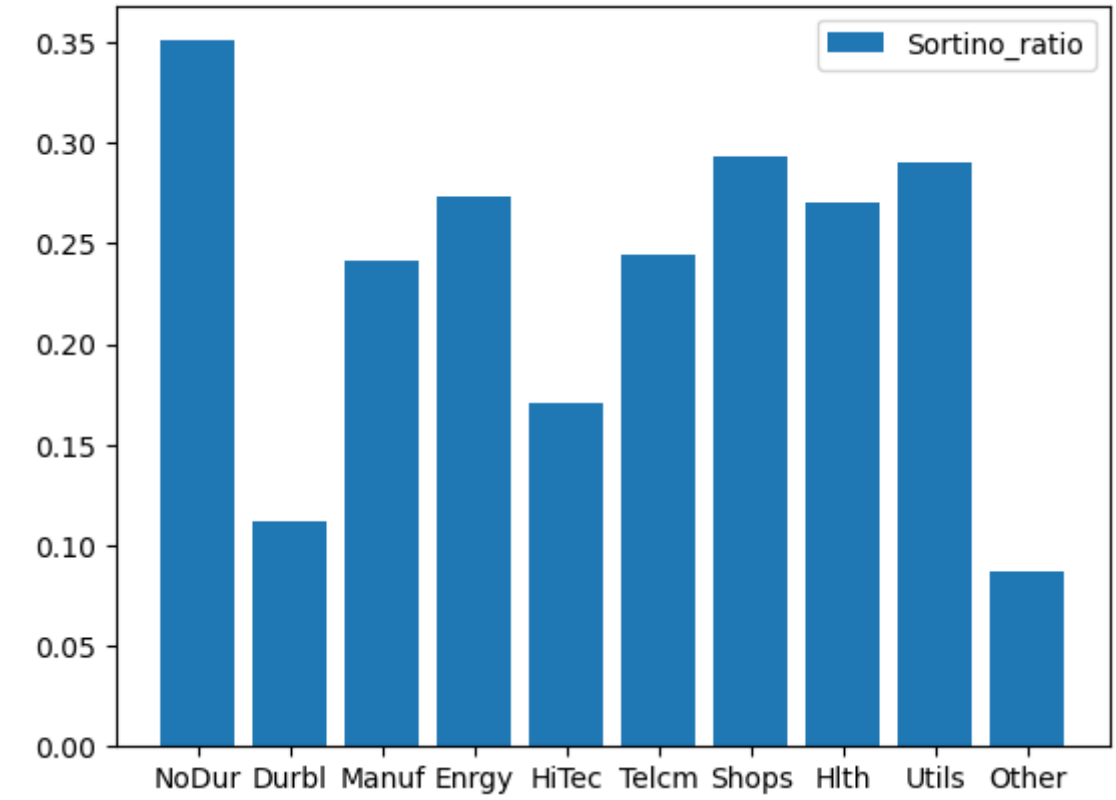
	sharpe_ratio	Sortino_ratio	Trynor_ratio	Jensen_alpha	three_factor_alpha
NoDur	0.231099	0.350804	1.186372	0.369717	0.386704
Durbl	0.072356	0.111967	0.367463	-0.417903	-0.474342
Manuf	0.166616	0.241260	0.758251	0.160494	0.153285
Enrgy	0.181708	0.273612	1.143330	0.504485	0.523007
HiTec	0.118552	0.170620	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

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

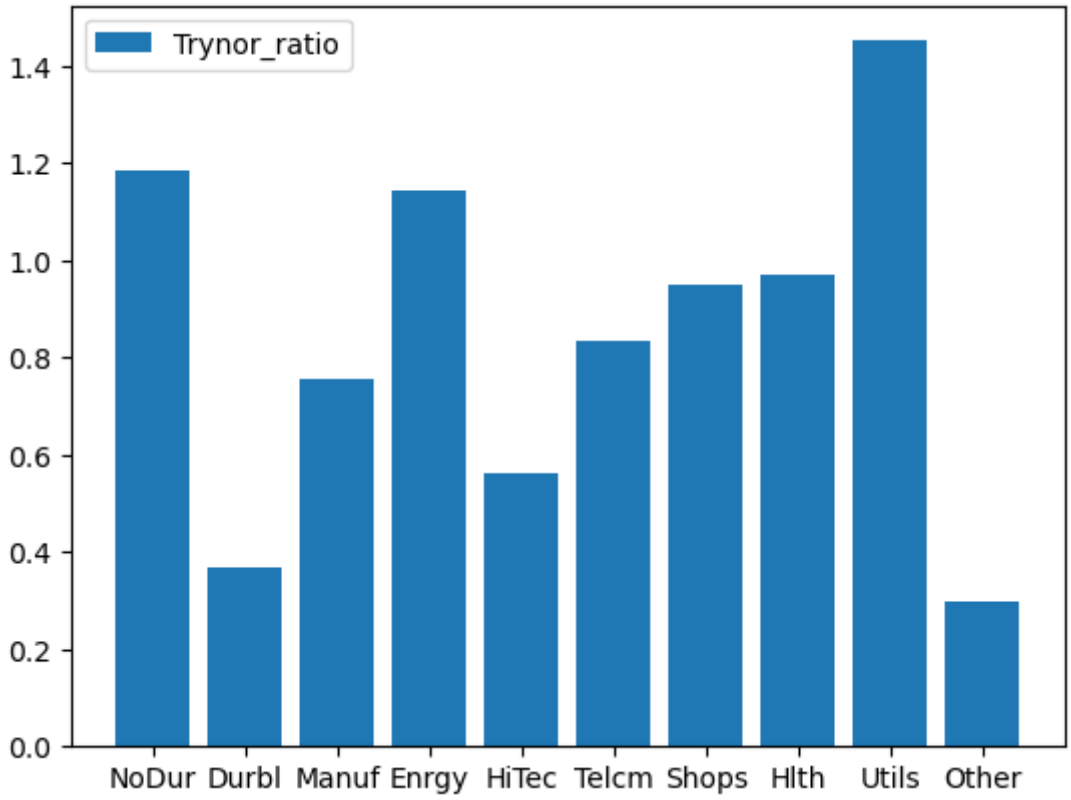
In [18]:


sharpe_ratio
0.20
0.15
0.10
0.05
0.00
NoDur
Durbl
Manuf
Enrgy
HiTec
Telcm
Shops
Hlth
Utils
Other

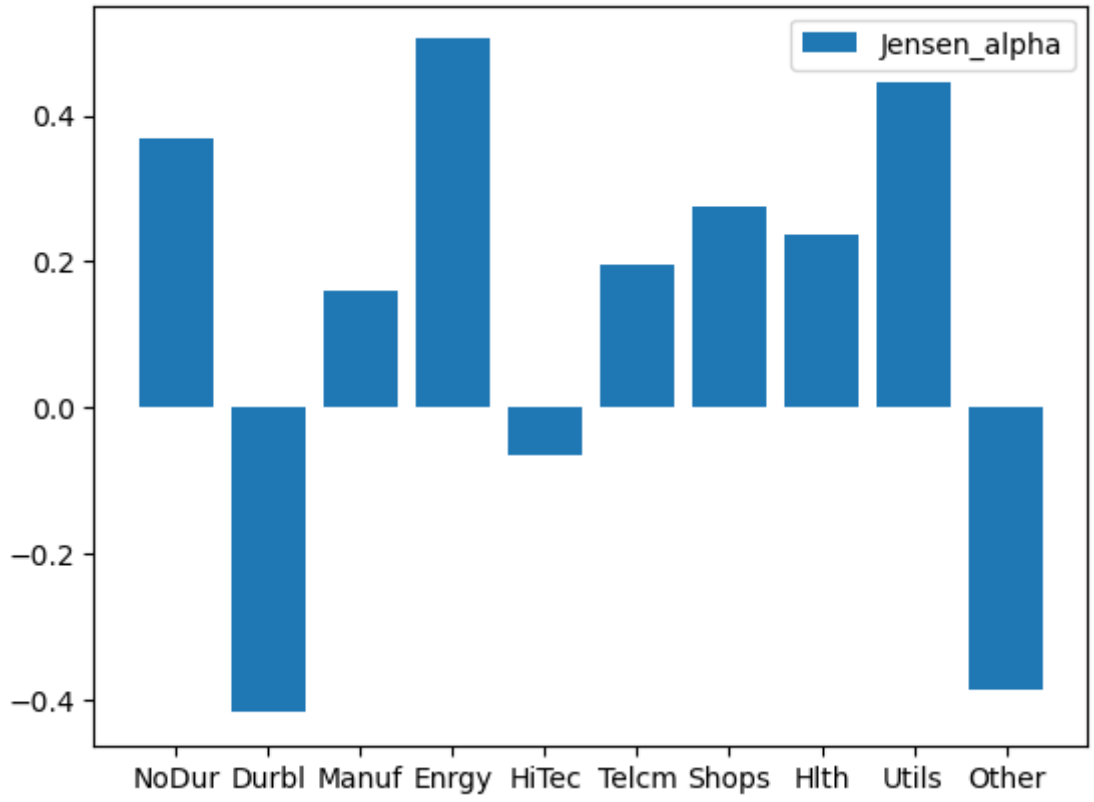
In [19]:


Sortino_ratio
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
NoDur
Durbl
Manuf
Enrgy
HiTec
Telcm
Shops
Hlth
Utils
Other

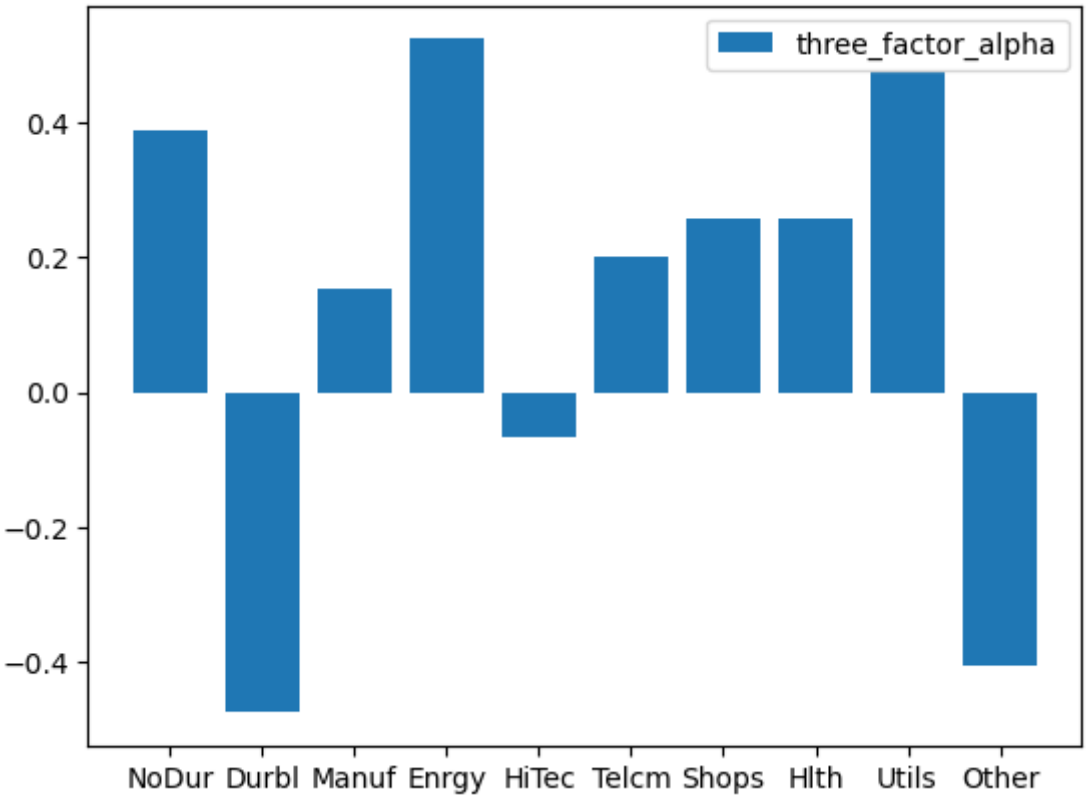
In [20]:


Trynor_ratio
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
NoDur
Durbl
Manuf
Enrgy
HiTec
Telcm
Shops
Hlth
Utils
Other

In [21]:


Jensen_alpha
0.4
0.2
0.0
−0.2
−0.4
NoDur
Durbl
Manuf
Enrgy
HiTec
Telcm
Shops
Hlth
Utils
Other

In [22]:



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

3.1.Sharpe ratio

Sharpe ratio is risk premium per unit of standard deviation.

Denominator is designed to capture total risk.

It's not appropriate for comparing performance of individual investment to diversified portfolio.

Denominator ignores higher moments such as skewness and kurtosis, not fully reflect risk of investment if return distribution is not normal.

3.2.Sortino ratio (using risk-free rate as target)

Sortino ratio is expected deviation from target return, per unit of below-target semi-deviation.

Will produce rankings when return distribution is close to symmetic, and expected asset return is close to expected target return.

More informative than information ratio or Sharpe ratio when return distribution is not normal.

3.3.Treynor ratio (using CAPM β)

Treynor ratio is risk premium per unit of market risk.

Denominator is designed to capture systematic risk and ignore idiosyncratic risk.

In principle, can be used to compare performance of individual investment to diversified portfolio.

In practice, will fail to account for other types of systematic risk besides market risk.