Food_Industry_Portfolio

September 29, 2021

1 Food Industry Portfolio Risk and Returns

[1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import math

import warnings
warnings.filterwarnings("ignore")

# fix_yahoo_finance is used to fetch data
import yfinance as yf
yf.pdr_override()
```

[2]:
```
# input
# Packaged Foods Stock
symbols =␣
 ↪['GIS','K','KHC','JJSF','BGS','UN','FLO','FARM','FAMI','FRPT','FTFT','TSN','TWNK','INGR','S
start = '2019-12-01'
end = '2020-03-31'
```

[3]:
```
df = pd.DataFrame()
for s in symbols:
    df[s] = yf.download(s,start,end)['Adj Close']
```

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[4]:
```python
from datetime import datetime
from dateutil import relativedelta

d1 = datetime.strptime(start, "%Y-%m-%d")
d2 = datetime.strptime(end, "%Y-%m-%d")
delta = relativedelta.relativedelta(d2,d1)
print('How many years of investing?')
print('%s years' % delta.years)
```

```
How many years of investing?
0 years
```

[5]:
```python
number_of_years = delta.years
```

[6]:
```python
days = (df.index[-1] - df.index[0]).days
days
```

[6]: 119

[7]:
```
df.head()
```

[7]:

Date	GIS	K	KHC	JJSF	BGS	UN	\
2019-12-02	52.985374	64.803337	30.426756	182.889145	15.700662	58.887077	
2019-12-03	53.153805	65.031174	30.279289	185.559265	15.700662	58.916847	
2019-12-04	52.807037	65.110420	30.505404	186.710709	15.719588	59.244331	
2019-12-05	53.401493	65.130226	30.721684	186.621368	15.908867	59.214558	
2019-12-06	52.816948	65.595802	30.564388	187.405533	16.372599	59.472572	

Date	FLO	FARM	FAMI	FRPT	…	JBSS	LW	\
2019-12-02	21.375975	15.00	1.20	52.549999	…	97.699997	83.820038	
2019-12-03	21.336317	15.05	1.17	52.430000	…	98.339996	84.199097	
2019-12-04	21.504866	14.95	1.14	54.820000	…	97.839996	83.919785	
2019-12-05	21.633755	14.94	1.10	57.369999	…	97.970001	84.199097	
2019-12-06	21.722986	15.41	1.11	56.709999	…	98.019997	84.009567	

Date	LANC	LNDC	LWAY	HSY	SENEA	SENEB	PETZ	\
2019-12-02	156.082001	11.36	1.93	148.242538	38.939999	37.000000	1.635	
2019-12-03	156.736053	11.30	1.87	148.083313	39.070000	37.000000	1.600	
2019-12-04	157.112625	11.26	1.88	149.436768	38.099998	37.000000	1.440	
2019-12-05	157.242035	11.18	1.92	149.247681	37.849998	38.049999	1.490	
2019-12-06	157.431152	11.11	1.88	148.531143	38.110001	37.790001	1.610	

Date	SMPL
2019-12-02	28.080000
2019-12-03	27.719999
2019-12-04	28.180000
2019-12-05	28.010000
2019-12-06	28.110001

[5 rows x 38 columns]

[8]:
```
df.tail()
```

[8]:

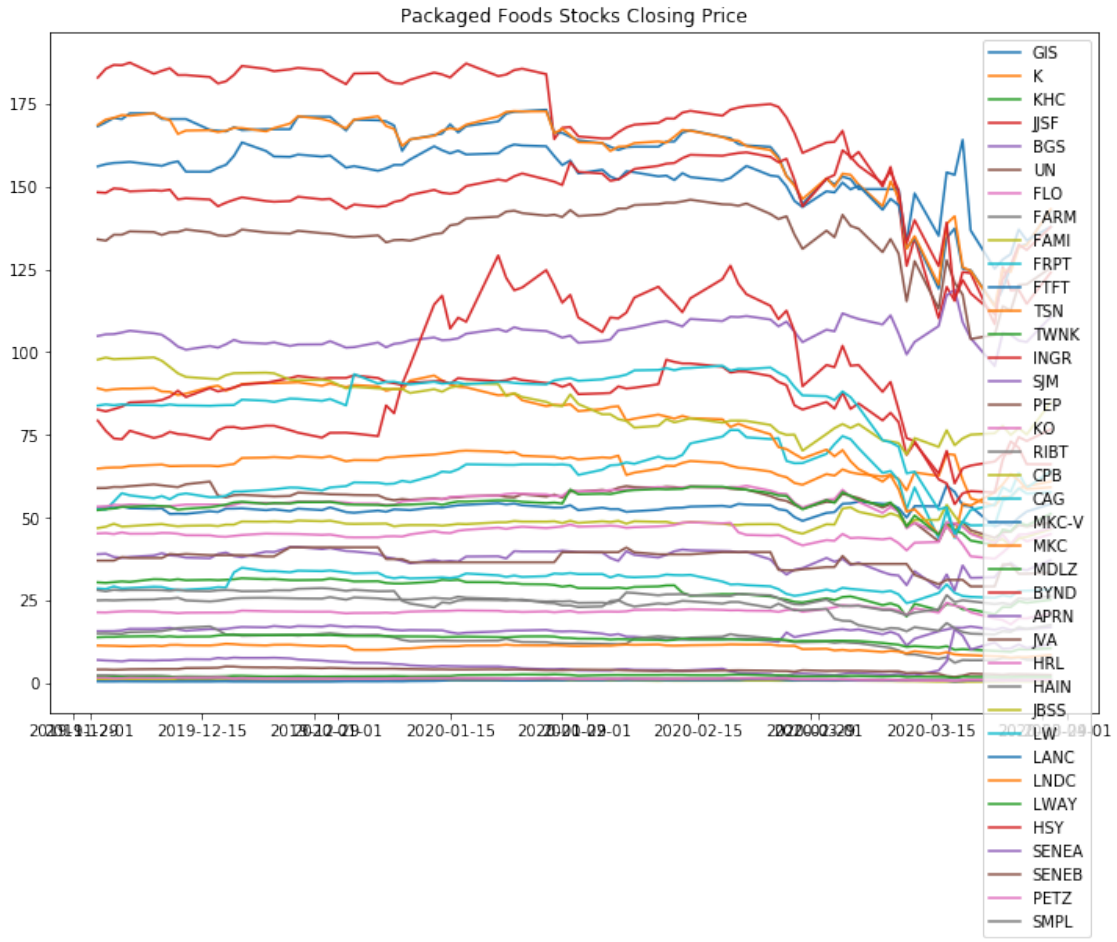
Date	GIS	K	KHC	JJSF	BGS	UN	\
2020-03-24	48.230000	56.270000	22.990000	125.760002	16.713692	45.549999	
2020-03-25	47.650002	56.169998	22.959999	118.650002	16.033482	45.770000	
2020-03-26	50.000000	58.759998	24.770000	118.760002	16.266697	47.759998	
2020-03-27	51.820000	59.470001	24.240000	114.559998	16.324999	47.290001	
2020-03-30	54.099998	60.910000	25.170000	124.040001	16.860001	48.459999	

Date	FLO	FARM	FAMI	FRPT	…	JBSS	LW	\

```
Date                                                 …
2020-03-24  19.049999  7.63  0.48  59.160000  …  77.699997  55.040001
2020-03-25  17.740000  7.53  0.55  57.750000  …  74.949997  56.330002
2020-03-26  19.580000  7.76  0.55  63.450001  …  76.989998  58.840000
2020-03-27  19.540001  7.06  0.53  58.939999  …  75.099998  57.250000
2020-03-30  21.080000  7.00  0.51  64.059998  …  84.790001  57.639999

                 LANC  LNDC  LWAY         HSY      SENEA      SENEB   PETZ  \
Date
2020-03-24  127.919998  8.10  1.83  121.919998  35.099998  35.820000  0.799
2020-03-25  129.589996  7.69  1.85  126.139999  36.270000  35.820000  0.830
2020-03-26  137.020004  7.84  1.89  132.449997  34.520000  33.029999  0.900
2020-03-27  133.699997  7.85  1.87  130.839996  34.110001  33.029999  0.950
2020-03-30  137.839996  8.47  1.84  137.779999  37.119999  33.419998  1.000

                SMPL
Date
2020-03-24  15.660000
2020-03-25  15.450000
2020-03-26  16.870001
2020-03-27  16.299999
2020-03-30  17.540001

[5 rows x 38 columns]
```

[9]:
```
plt.figure(figsize=(12,8))
plt.plot(df)
plt.title('Packaged Foods Stocks Closing Price')
plt.legend(labels=df.columns)
```

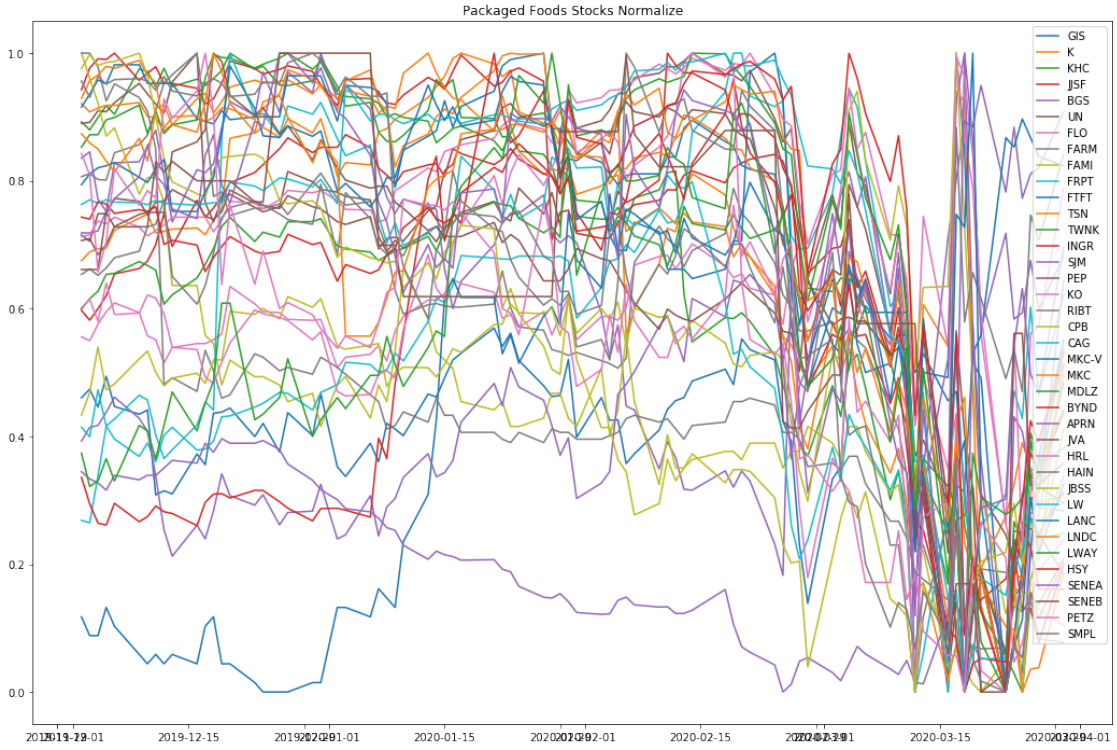
[9]:
```
<matplotlib.legend.Legend at 0x23b9559ae10>
```



[10]:
```
# Normalize the data
normalize = (df - df.min())/ (df.max() - df.min())
```

[11]:
```
plt.figure(figsize=(18,12))
plt.plot(normalize)
plt.title('Packaged Foods Stocks Normalize')
plt.legend(labels=normalize.columns)
```

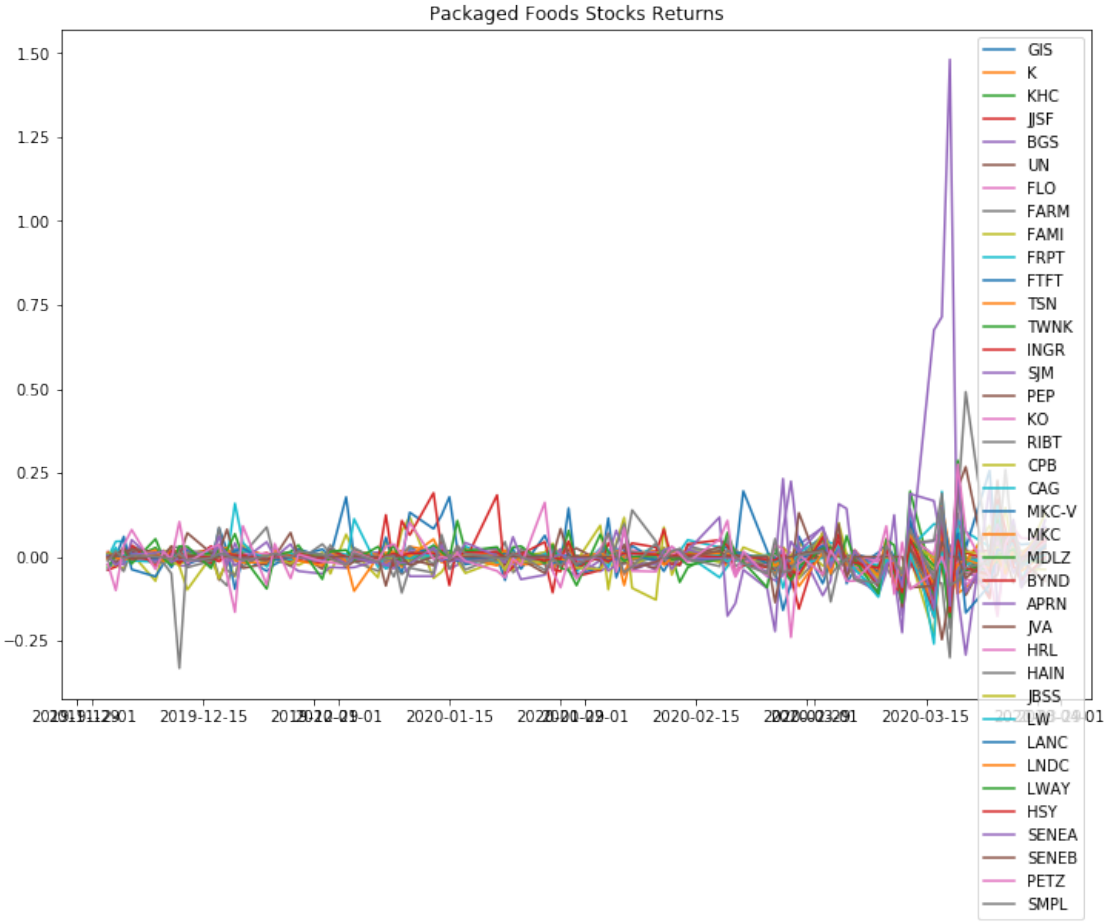
[11]: <matplotlib.legend.Legend at 0x23b96613dd8>



[12]:
```
stock_rets = df.pct_change().dropna()
```

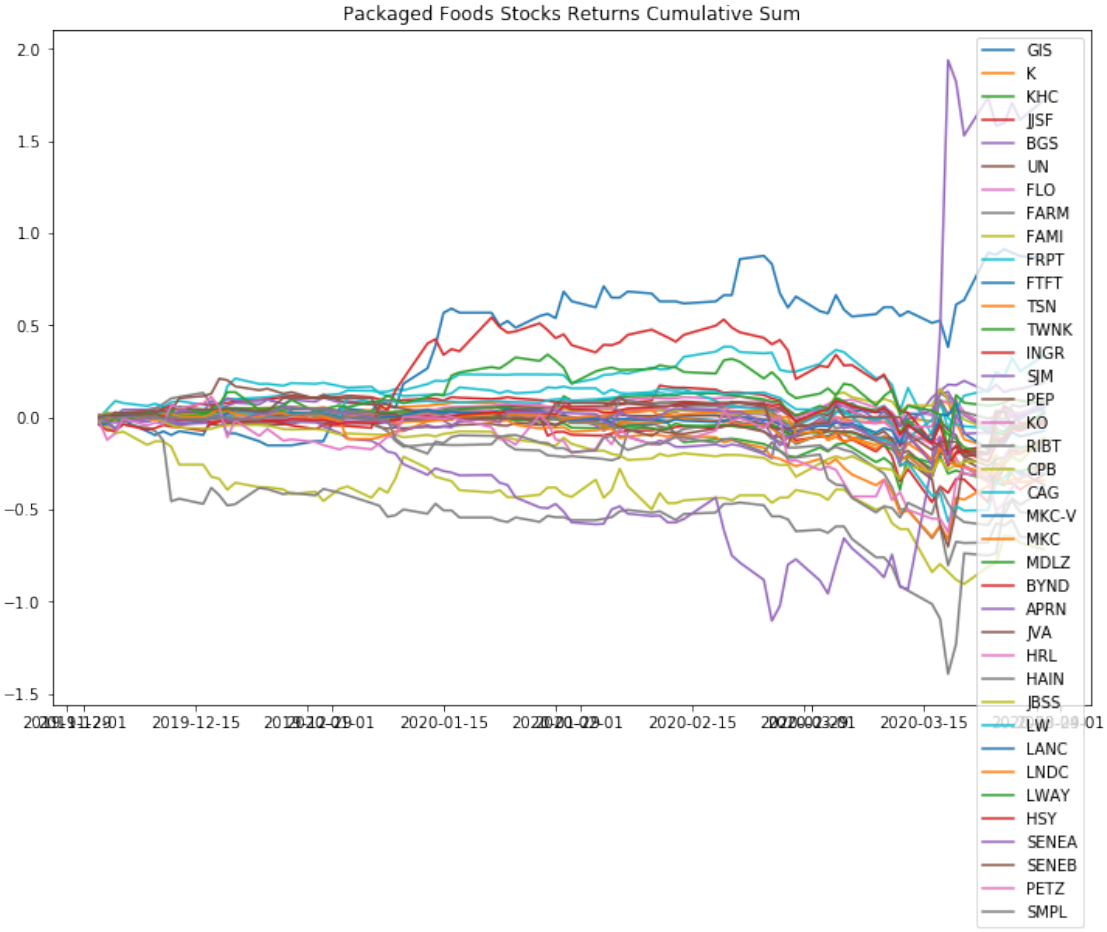
[13]:
```
plt.figure(figsize=(12,8))
plt.plot(stock_rets)
plt.title('Packaged Foods Stocks Returns')
plt.legend(labels=stock_rets.columns)
```

[13]: <matplotlib.legend.Legend at 0x23b966f83c8>

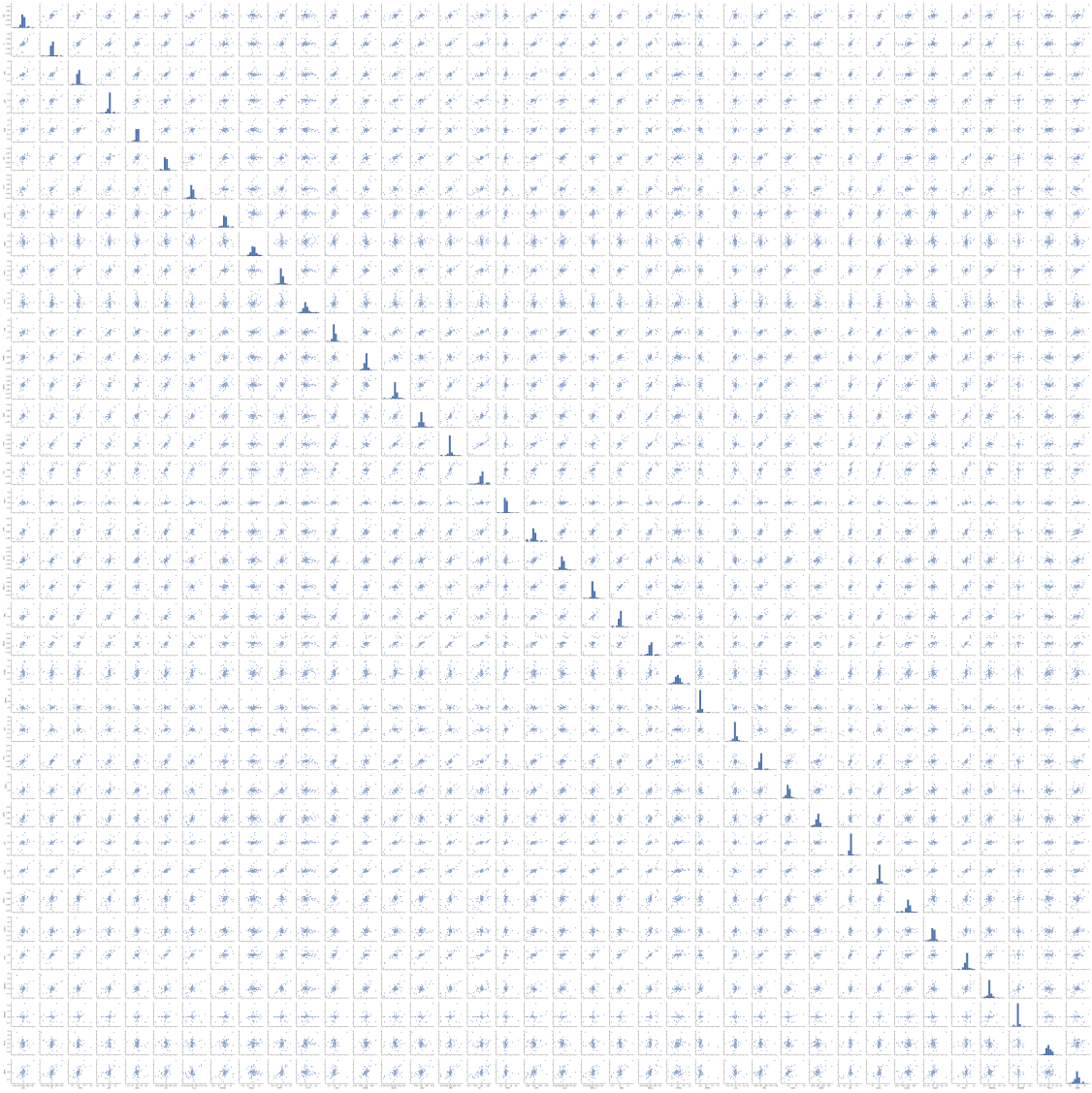


[14]:
```
plt.figure(figsize=(12,8))
plt.plot(stock_rets.cumsum())
plt.title('Packaged Foods Stocks Returns Cumulative Sum')
plt.legend(labels=stock_rets.columns)
```

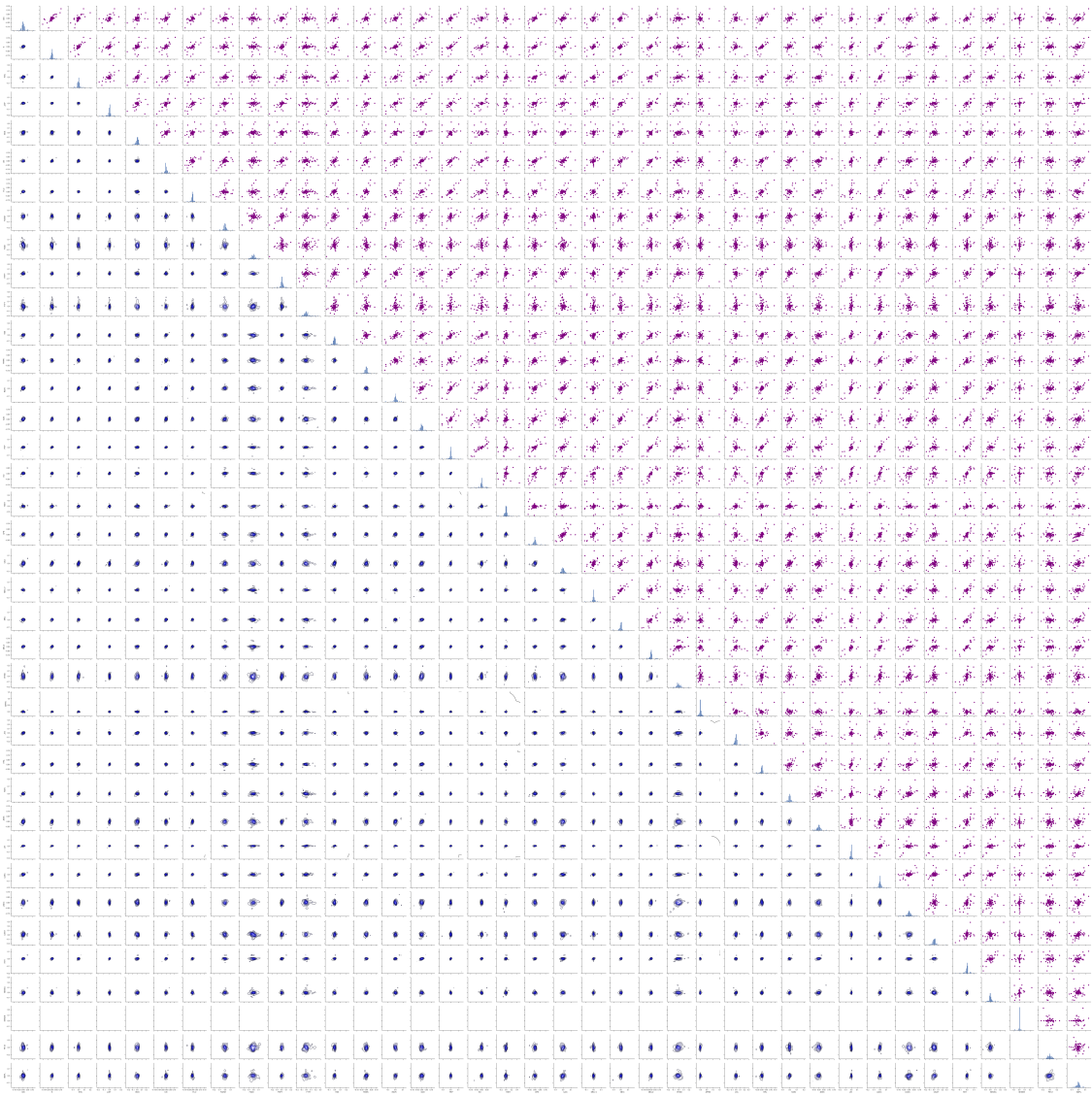
[14]: <matplotlib.legend.Legend at 0x23b967bdf98>



[15]:
```
sns.set(style='ticks')
ax = sns.pairplot(stock_rets, diag_kind='hist')

nplot = len(stock_rets.columns)
for i in range(nplot) :
    for j in range(nplot) :
        ax.axes[i, j].locator_params(axis='x', nbins=6, tight=True)
```

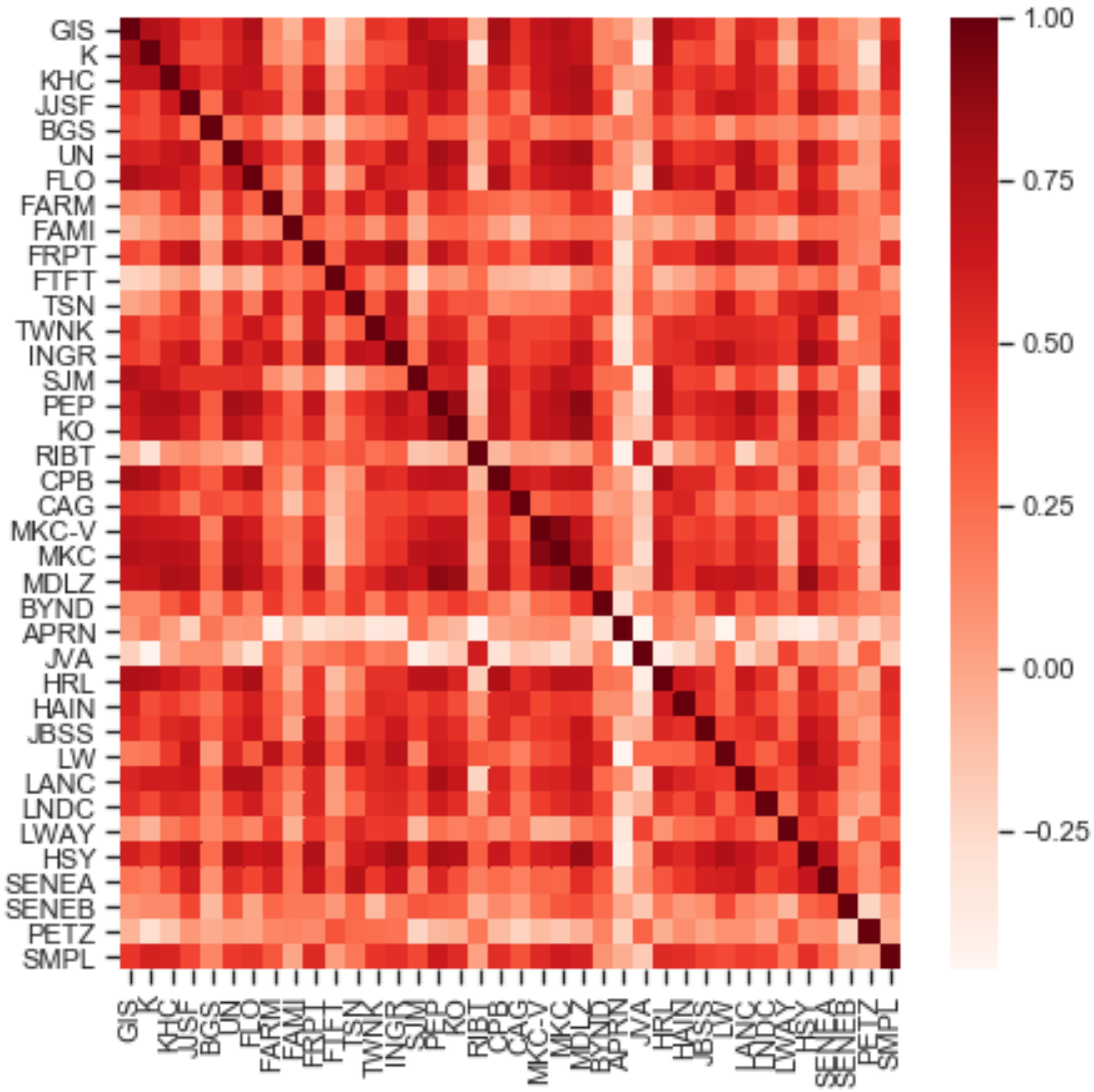


[16]:
```
ax = sns.PairGrid(stock_rets)
ax.map_upper(plt.scatter, color='purple')
ax.map_lower(sns.kdeplot, color='blue')
ax.map_diag(plt.hist, bins=30)
for i in range(nplot) :
    for j in range(nplot) :
        ax.axes[i, j].locator_params(axis='x', nbins=6, tight=True)
```



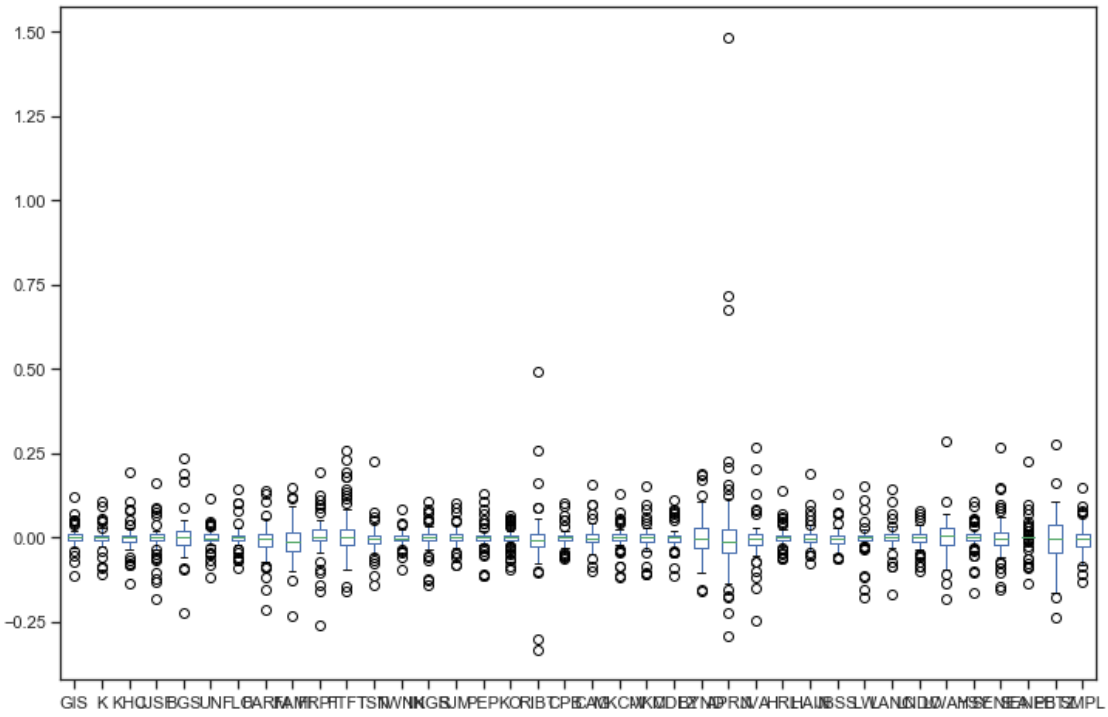
[17]:
```
plt.figure(figsize=(7,7))
corr = stock_rets.corr()

# plot the heatmap
sns.heatmap(corr,
        xticklabels=corr.columns,
        yticklabels=corr.columns,
            cmap="Reds")
```

[17]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x23b9677b198>
```

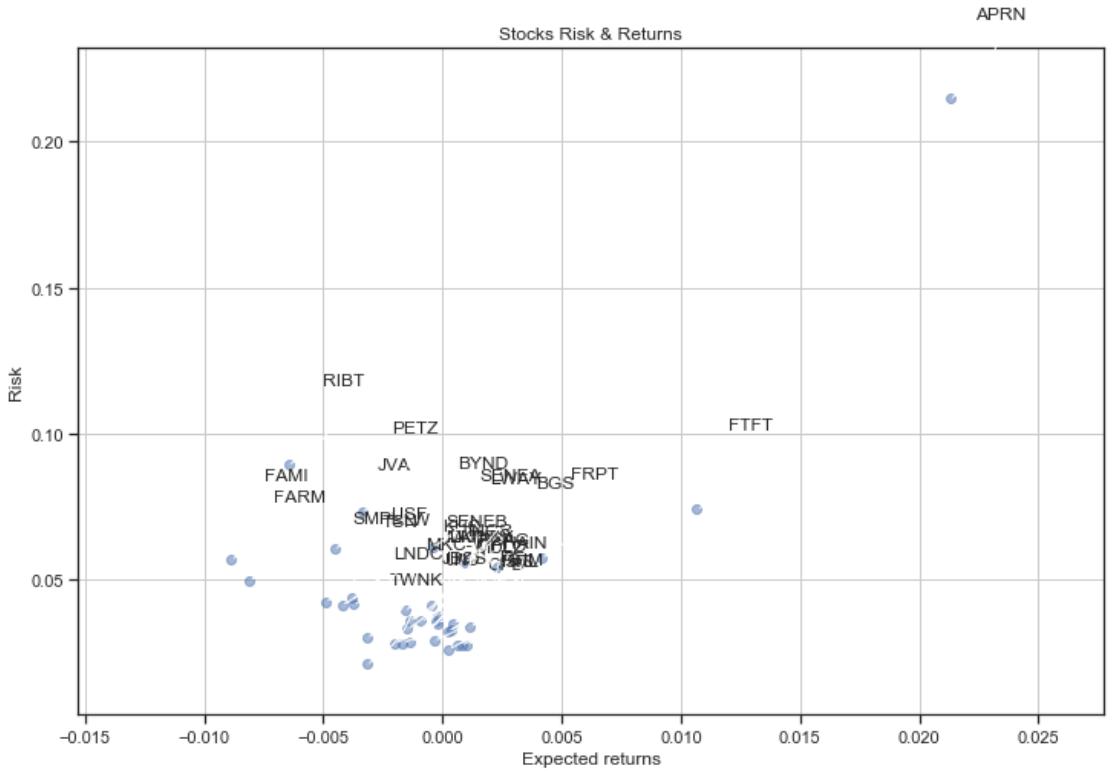


[18]:
```
# Box plot
stock_rets.plot(kind='box',figsize=(12,8))
```

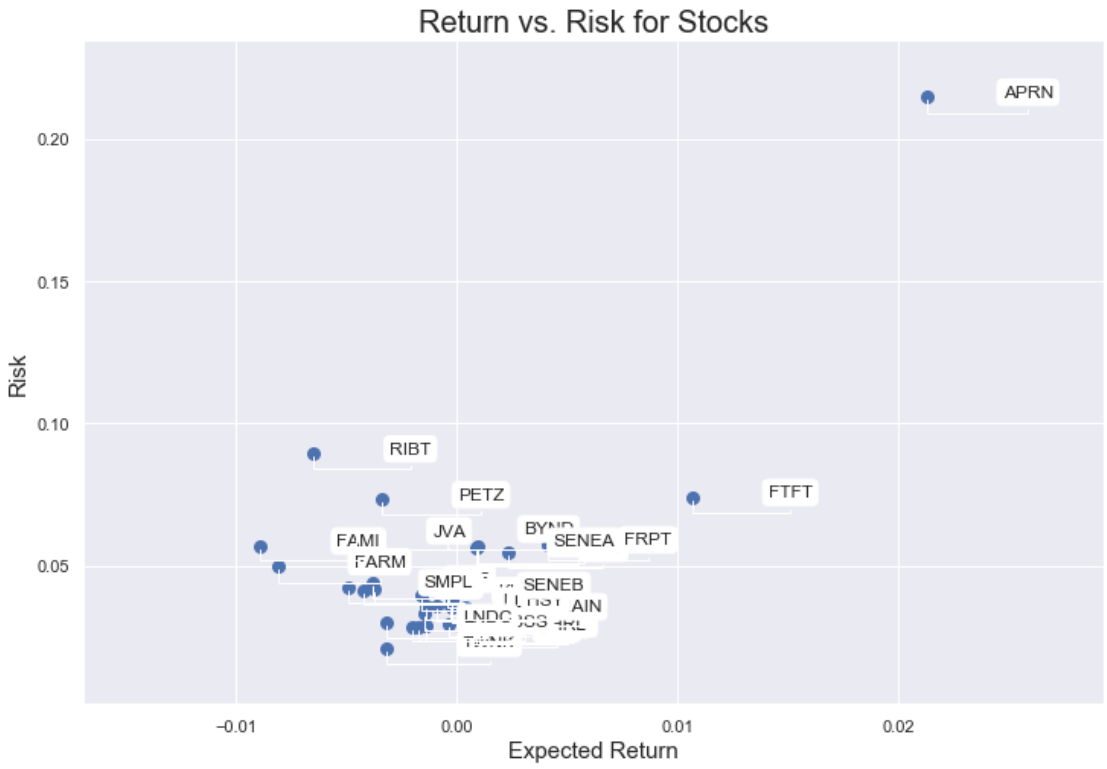
[18]: <matplotlib.axes._subplots.AxesSubplot at 0x23bc17bab00>



[19]:
```
rets = stock_rets.dropna()

plt.figure(figsize=(12,8))
plt.scatter(rets.mean(), rets.std(),alpha = 0.5)

plt.title('Stocks Risk & Returns')
plt.xlabel('Expected returns')
plt.ylabel('Risk')
plt.grid(which='major')

for label, x, y in zip(rets.columns, rets.mean(), rets.std()):
    plt.annotate(
        label,
        xy = (x, y), xytext = (50, 50),
        textcoords = 'offset points', ha = 'right', va = 'bottom',
        arrowprops = dict(arrowstyle = '-', connectionstyle = 'arc3,rad=-0.3'))
```



[20]:
```
rets = stock_rets.dropna()
area = np.pi*20.0

sns.set(style='darkgrid')
plt.figure(figsize=(12,8))
plt.scatter(rets.mean(), rets.std(), s=area)
plt.xlabel("Expected Return", fontsize=15)
plt.ylabel("Risk", fontsize=15)
plt.title("Return vs. Risk for Stocks", fontsize=20)

for label, x, y in zip(rets.columns, rets.mean(), rets.std()) :
    plt.annotate(label, xy=(x,y), xytext=(50, 0), textcoords='offset points',
                 arrowprops=dict(arrowstyle='-',␣
 ↪connectionstyle='bar,angle=180,fraction=-0.2'),
                 bbox=dict(boxstyle="round", fc="w"))
```



[21]:
```
rest_rets = rets.corr()
pair_value = rest_rets.abs().unstack()
pair_value.sort_values(ascending = False)
```

[21]:
```
SMPL   SMPL     1.000000
CPB    CPB      1.000000
MKC-V  MKC-V    1.000000
MKC    MKC      1.000000
MDLZ   MDLZ     1.000000
BYND   BYND     1.000000
APRN   APRN     1.000000
JVA    JVA      1.000000
HRL    HRL      1.000000
HAIN   HAIN     1.000000
JBSS   JBSS     1.000000
LW     LW       1.000000
LANC   LANC     1.000000
LNDC   LNDC     1.000000
LWAY   LWAY     1.000000
HSY    HSY      1.000000
SENEA  SENEA    1.000000
CAG    CAG      1.000000
RIBT   RIBT     1.000000
```

```
PETZ   PETZ     1.000000
KO     KO       1.000000
K      K        1.000000
KHC    KHC      1.000000
JJSF   JJSF     1.000000
BGS    BGS      1.000000
UN     UN       1.000000
FLO    FLO      1.000000
FARM   FARM     1.000000
FAMI   FAMI     1.000000
FRPT   FRPT     1.000000
                  …
TSN    SJM      0.013787
SJM    TSN      0.013787
RIBT   MKC      0.013185
MKC    RIBT     0.013185
UN     FTFT     0.012890
FTFT   UN       0.012890
RIBT   UN       0.012822
UN     RIBT     0.012822
APRN   CPB      0.011722
CPB    APRN     0.011722
PETZ   FLO      0.011066
FLO    PETZ     0.011066
APRN   SENEB    0.010869
SENEB  APRN     0.010869
GIS    TSN      0.010503
TSN    GIS      0.010503
FTFT   HAIN     0.008345
HAIN   FTFT     0.008345
JBSS   PETZ     0.006179
PETZ   JBSS     0.006179
FLO    SENEB    0.004835
SENEB  FLO      0.004835
JVA    KHC      0.004767
KHC    JVA      0.004767
FAMI   JBSS     0.004321
JBSS   FAMI     0.004321
LNDC   PETZ     0.003332
PETZ   LNDC     0.003332
FAMI   SMPL     0.000920
SMPL   FAMI     0.000920
Length: 1444, dtype: float64
```

[22]:
```
# Normalized Returns Data
Normalized_Value = ((rets[:] - rets[:].min()) /(rets[:].max() - rets[:].min()))
Normalized_Value.head()
```

[22]:
```
                 GIS         K       KHC      JJSF       BGS        UN  \
Date
2019-12-03  0.505675  0.522647  0.399195  0.572917  0.492692  0.509384
2019-12-04  0.463843  0.511994  0.436232  0.548249  0.495324  0.531369
2019-12-05  0.540503  0.507754  0.435096  0.528608  0.518977  0.504997
2019-12-06  0.444776  0.539491  0.398373  0.542362  0.556324  0.526142
2019-12-09  0.479838  0.528751  0.495032  0.477249  0.493954  0.547115

                 FLO      FARM      FAMI      FRPT  …      JBSS        LW  \
Date                                                 …
2019-12-03  0.382116  0.615384  0.549450  0.566319  …  0.367973  0.551316
2019-12-04  0.424315  0.587074  0.547760  0.671877  …  0.307931  0.527726
2019-12-05  0.416069  0.604028  0.522846  0.673930  …  0.341026  0.547723
2019-12-06  0.407985  0.695186  0.639361  0.545985  …  0.336802  0.530935
2019-12-09  0.370398  0.631704  0.425304  0.536747  …  0.354174  0.535564

                LANC      LNDC      LWAY       HSY     SENEA     SENEB  \
Date
2019-12-03  0.553765  0.534564  0.319575  0.608477  0.371064  0.374453
2019-12-04  0.547974  0.544185  0.397597  0.646326  0.304342  0.374453
2019-12-05  0.542861  0.524493  0.431706  0.607768  0.347612  0.452610
2019-12-06  0.544088  0.529153  0.341534  0.594666  0.379429  0.355634
2019-12-09  0.521763  0.673117  0.500047  0.619657  0.391128  0.374453

                PETZ      SMPL
Date
2019-12-03  0.424277  0.432655
2019-12-04  0.271451  0.537843
2019-12-05  0.533422  0.456928
2019-12-06  0.622510  0.491268
2019-12-09  0.393436  0.481045

[5 rows x 38 columns]
```

[23]:
```
Normalized_Value.corr()
```

[23]:
```
             GIS         K       KHC      JJSF       BGS        UN       FLO  \
GIS     1.000000  0.769128  0.687784  0.478029  0.412663  0.587583  0.773598
K       0.769128  1.000000  0.692747  0.388173  0.381947  0.563398  0.690337
KHC     0.687784  0.692747  1.000000  0.638835  0.502046  0.657097  0.666358
JJSF    0.478029  0.388173  0.638835  1.000000  0.257161  0.703323  0.580317
BGS     0.412663  0.381947  0.502046  0.257161  1.000000  0.222742  0.360778
UN      0.587583  0.563398  0.657097  0.703323  0.222742  1.000000  0.680582
FLO     0.773598  0.690337  0.666358  0.580317  0.360778  0.680582  1.000000
FARM    0.151421  0.121662  0.381291  0.570769  0.069322  0.513415  0.301965
FAMI   -0.052954  0.033961  0.152780  0.169874 -0.096917  0.334284  0.055588
FRPT    0.404406  0.330052  0.614688  0.725311  0.058109  0.672694  0.567647
```

FTFT	-0.221009	-0.175276	-0.031817	0.055461	-0.221259	0.012890	-0.121490
TSN	0.010503	0.057943	0.274010	0.537643	0.105625	0.514855	0.186472
TWNK	0.494098	0.355106	0.447805	0.478199	0.168334	0.473391	0.649844
INGR	0.449517	0.385782	0.581423	0.665223	0.250665	0.685920	0.552103
SJM	0.747535	0.701620	0.595156	0.493268	0.494599	0.498211	0.524457
PEP	0.619296	0.761257	0.766968	0.667910	0.323772	0.812480	0.753640
KO	0.575421	0.700690	0.688376	0.558839	0.299407	0.722608	0.612371
RIBT	-0.040710	-0.290343	0.070804	0.130099	0.045419	-0.012822	-0.124142
CPB	0.800988	0.747930	0.603529	0.427443	0.314739	0.608498	0.758879
CAG	0.511789	0.492652	0.402331	0.195934	0.383502	0.334266	0.409740
MKC-V	0.689025	0.644195	0.637092	0.616618	0.172263	0.686906	0.614285
MKC	0.745025	0.709351	0.725848	0.707074	0.253124	0.741835	0.683615
MDLZ	0.655903	0.670616	0.782351	0.761290	0.293306	0.810479	0.696027
BYND	0.143043	0.140889	0.331466	0.470214	0.100385	0.360252	0.157379
APRN	0.056364	0.188464	0.029371	-0.199873	0.216691	0.060626	0.084498
JVA	-0.204153	-0.438534	0.004767	0.113585	0.110471	-0.098959	-0.285309
HRL	0.776665	0.749162	0.633393	0.561578	0.366894	0.650461	0.784252
HAIN	0.580322	0.379044	0.454449	0.355625	0.245297	0.466934	0.600656
JBSS	0.525643	0.414809	0.544668	0.577337	0.307508	0.510495	0.648438
LW	0.191329	0.217010	0.464988	0.674227	0.052893	0.558249	0.318275
LANC	0.565416	0.615195	0.611723	0.635642	0.260107	0.745754	0.761188
LNDC	0.512615	0.402064	0.537854	0.522141	0.162331	0.490179	0.613335
LWAY	0.054417	-0.063585	0.198885	0.301066	0.131127	0.250711	0.142639
HSY	0.597010	0.493265	0.623840	0.734534	0.258606	0.738474	0.633370
SENEA	0.218447	0.179368	0.390515	0.599291	0.094634	0.530334	0.406570
SENEB	0.081454	0.129492	0.127395	0.411072	-0.090678	0.330778	-0.004835
PETZ	-0.059233	-0.272727	-0.139635	0.068334	-0.023373	0.027169	0.011066
SMPL	0.482166	0.577377	0.568058	0.413804	0.137775	0.465801	0.494025

	FARM	FAMI	FRPT	…	JBSS	LW	LANC	\
GIS	0.151421	-0.052954	0.404406	…	0.525643	0.191329	0.565416	
K	0.121662	0.033961	0.330052	…	0.414809	0.217010	0.615195	
KHC	0.381291	0.152780	0.614688	…	0.544668	0.464988	0.611723	
JJSF	0.570769	0.169874	0.725311	…	0.577337	0.674227	0.635642	
BGS	0.069322	-0.096917	0.058109	…	0.307508	0.052893	0.260107	
UN	0.513415	0.334284	0.672694	…	0.510495	0.558249	0.745754	
FLO	0.301965	0.055588	0.567647	…	0.648438	0.318275	0.761188	
FARM	1.000000	0.146460	0.681127	…	0.343456	0.713094	0.373073	
FAMI	0.146460	1.000000	0.290746	…	-0.004321	0.361687	0.201561	
FRPT	0.681127	0.290746	1.000000	…	0.644852	0.733709	0.550384	
FTFT	0.245142	0.166693	0.292620	…	0.133223	0.272124	0.048577	
TSN	0.638253	0.277596	0.655930	…	0.408134	0.670871	0.448907	
TWNK	0.478004	0.079641	0.661219	…	0.512932	0.548398	0.544322	
INGR	0.676614	0.341446	0.805999	…	0.623445	0.724357	0.574864	
SJM	0.105362	-0.034607	0.199638	…	0.441893	0.150501	0.447664	
PEP	0.504380	0.280436	0.691476	…	0.587876	0.605835	0.796546	
KO	0.430266	0.298643	0.546224	…	0.510038	0.566637	0.654318	

RIBT	0.308386	0.205714	0.316683	…	0.200442	0.339686	-0.221768
CPB	0.261815	0.033259	0.438623	…	0.544984	0.302355	0.556282
CAG	0.195697	-0.119201	0.279993	…	0.373269	0.167818	0.310376
MKC-V	0.262213	0.195825	0.522398	…	0.457735	0.372186	0.561907
MKC	0.298422	0.174362	0.569567	…	0.495328	0.418489	0.575348
MDLZ	0.513952	0.248105	0.709342	…	0.673614	0.653651	0.683980
BYND	0.458705	0.239785	0.437959	…	0.338517	0.555373	0.268956
APRN	-0.411099	-0.110705	-0.284278	…	-0.086183	-0.447279	0.111955
JVA	0.232175	0.040619	0.181973	…	-0.047115	0.271986	-0.232517
HRL	0.274196	-0.041394	0.484780	…	0.550853	0.269256	0.662701
HAIN	0.335323	0.107740	0.475717	…	0.505021	0.291307	0.561858
JBSS	0.343456	-0.004321	0.644852	…	1.000000	0.431937	0.477110
LW	0.713094	0.361687	0.733709	…	0.431937	1.000000	0.453642
LANC	0.373073	0.201561	0.550384	…	0.477110	0.453642	1.000000
LNDC	0.346103	0.087723	0.551184	…	0.555594	0.307763	0.471270
LWAY	0.445000	-0.047787	0.455473	…	0.280364	0.467673	0.374371
HSY	0.675452	0.252905	0.764812	…	0.667250	0.766177	0.666924
SENEA	0.567823	0.228292	0.658967	…	0.578018	0.604675	0.648805
SENEB	0.276575	0.203460	0.201148	…	0.108778	0.402463	0.152738
PETZ	0.139810	0.149060	0.121266	…	0.006179	0.091879	0.096647
SMPL	0.348291	-0.000920	0.546023	…	0.433445	0.394213	0.456898

	LNDC	LWAY	HSY	SENEA	SENEB	PETZ	SMPL
GIS	0.512615	0.054417	0.597010	0.218447	0.081454	-0.059233	0.482166
K	0.402064	-0.063585	0.493265	0.179368	0.129492	-0.272727	0.577377
KHC	0.537854	0.198885	0.623840	0.390515	0.127395	-0.139635	0.568058
JJSF	0.522141	0.301066	0.734534	0.599291	0.411072	0.068334	0.413804
BGS	0.162331	0.131127	0.258606	0.094634	-0.090678	-0.023373	0.137775
UN	0.490179	0.250711	0.738474	0.530334	0.330778	0.027169	0.465801
FLO	0.613335	0.142639	0.633370	0.406570	-0.004835	0.011066	0.494025
FARM	0.346103	0.445000	0.675452	0.567823	0.276575	0.139810	0.348291
FAMI	0.087723	-0.047787	0.252905	0.228292	0.203460	0.149060	-0.000920
FRPT	0.551184	0.455473	0.764812	0.658967	0.201148	0.121266	0.546023
FTFT	0.044765	0.283600	0.176931	0.292773	0.057447	0.353788	0.041217
TSN	0.283703	0.554962	0.607389	0.726842	0.273184	0.258793	0.206168
TWNK	0.510166	0.461636	0.691669	0.461580	-0.094411	0.251032	0.491189
INGR	0.540483	0.476099	0.818778	0.640377	0.198189	0.227262	0.515303
SJM	0.378129	-0.085977	0.476998	0.149432	0.346141	-0.221057	0.403605
PEP	0.616246	0.250567	0.790183	0.564355	0.309774	-0.082103	0.625354
KO	0.514239	0.175048	0.748425	0.367305	0.290473	-0.043623	0.532141
RIBT	0.079706	0.237315	0.310965	0.177244	-0.060830	0.200778	0.022697
CPB	0.510716	0.092450	0.640030	0.258870	0.126607	-0.095287	0.517317
CAG	0.221603	0.242517	0.425723	0.171260	0.044567	-0.206852	0.365030
MKC-V	0.446476	-0.045991	0.587369	0.292856	0.231313	-0.099212	0.537195
MKC	0.528325	-0.035067	0.618514	0.283613	0.337133	-0.153840	0.622128
MDLZ	0.597915	0.203110	0.848262	0.520775	0.382864	-0.049399	0.585850
BYND	0.403466	0.294259	0.543975	0.333139	0.254343	0.159032	0.079857

```
APRN  -0.174992 -0.328932 -0.391226 -0.189495 -0.010869 -0.205852 -0.035053
JVA   -0.061631  0.419301  0.086966  0.126150 -0.152202  0.294307 -0.169245
HRL    0.494394  0.083616  0.595245  0.346867  0.190944 -0.037908  0.541578
HAIN   0.397675  0.251286  0.540486  0.468646  0.056628  0.107718  0.514636
JBSS   0.555594  0.280364  0.667250  0.578018  0.108778  0.006179  0.433445
LW     0.307763  0.467673  0.766177  0.604675  0.402463  0.091879  0.394213
LANC   0.471270  0.374371  0.666924  0.648805  0.152738  0.096647  0.456898
LNDC   1.000000  0.237108  0.570430  0.410693  0.095441  0.003332  0.426605
LWAY   0.237108  1.000000  0.460346  0.508109 -0.073529  0.318700  0.214172
HSY    0.570430  0.460346  1.000000  0.667760  0.296091  0.104543  0.507334
SENEA  0.410693  0.508109  0.667760  1.000000  0.352268  0.117685  0.301361
SENEB  0.095441 -0.073529  0.296091  0.352268  1.000000 -0.218865  0.014944
PETZ   0.003332  0.318700  0.104543  0.117685 -0.218865  1.000000 -0.032774
SMPL   0.426605  0.214172  0.507334  0.301361  0.014944 -0.032774  1.000000

[38 rows x 38 columns]
```

[24]:
```
normalized_rets = Normalized_Value.corr()
normalized_pair_value = normalized_rets.abs().unstack()
normalized_pair_value.sort_values(ascending = False)
```

[24]:
```
SMPL   SMPL     1.000000
CPB    CPB      1.000000
MKC-V  MKC-V    1.000000
MKC    MKC      1.000000
MDLZ   MDLZ     1.000000
BYND   BYND     1.000000
APRN   APRN     1.000000
JVA    JVA      1.000000
HRL    HRL      1.000000
HAIN   HAIN     1.000000
JBSS   JBSS     1.000000
LW     LW       1.000000
LANC   LANC     1.000000
LNDC   LNDC     1.000000
LWAY   LWAY     1.000000
HSY    HSY      1.000000
SENEA  SENEA    1.000000
CAG    CAG      1.000000
RIBT   RIBT     1.000000
PETZ   PETZ     1.000000
KO     KO       1.000000
K      K        1.000000
KHC    KHC      1.000000
JJSF   JJSF     1.000000
BGS    BGS      1.000000
UN     UN       1.000000
```

```
FLO     FLO       1.000000
FARM    FARM      1.000000
FAMI    FAMI      1.000000
FRPT    FRPT      1.000000
                    …
TSN     SJM       0.013787
SJM     TSN       0.013787
RIBT    MKC       0.013185
MKC     RIBT      0.013185
UN      FTFT      0.012890
FTFT    UN        0.012890
RIBT    UN        0.012822
UN      RIBT      0.012822
APRN    CPB       0.011722
CPB     APRN      0.011722
PETZ    FLO       0.011066
FLO     PETZ      0.011066
APRN    SENEB     0.010869
SENEB   APRN      0.010869
GIS     TSN       0.010503
TSN     GIS       0.010503
FTFT    HAIN      0.008345
HAIN    FTFT      0.008345
JBSS    PETZ      0.006179
PETZ    JBSS      0.006179
FLO     SENEB     0.004835
SENEB   FLO       0.004835
JVA     KHC       0.004767
KHC     JVA       0.004767
FAMI    JBSS      0.004321
JBSS    FAMI      0.004321
LNDC    PETZ      0.003332
PETZ    LNDC      0.003332
FAMI    SMPL      0.000920
SMPL    FAMI      0.000920
Length: 1444, dtype: float64
```

[25]:
```
print("Stock returns: ")
print(rets.mean())
print('-' * 50)
print("Stock risks:")
print(rets.std())
```

```
Stock returns:
GIS      0.000638
K       -0.000339
KHC     -0.001580
```

```
JJSF    -0.003810
BGS      0.002326
UN      -0.002004
FLO      0.000346
FARM    -0.008093
FAMI    -0.008857
FRPT     0.004165
FTFT     0.010679
TSN     -0.004212
TWNK    -0.003166
INGR    -0.000201
SJM      0.001043
PEP     -0.000200
KO      -0.001684
RIBT    -0.006463
CPB      0.000264
CAG      0.000443
MKC-V   -0.001474
MKC     -0.001377
MDLZ     0.000252
BYND    -0.000416
APRN     0.021291
JVA     -0.004530
HRL      0.000794
HAIN     0.001164
JBSS    -0.001348
LW      -0.003728
LANC    -0.000889
LNDC    -0.003159
LWAY     0.000929
HSY     -0.000241
SENEA    0.000957
SENEB   -0.000433
PETZ    -0.003382
SMPL    -0.004901
dtype: float64
--------------------------------------------------
Stock risks:
GIS      0.027750
K        0.029238
KHC      0.039620
JJSF     0.043666
BGS      0.054455
UN       0.028218
FLO      0.032790
FARM     0.049732
FAMI     0.057021
FRPT     0.057475
```

```
FTFT     0.074106
TSN      0.041435
TWNK     0.021131
INGR     0.037826
SJM      0.027831
PEP      0.035123
KO       0.028198
RIBT     0.089387
CPB      0.026241
CAG      0.035099
MKC-V    0.033195
MKC      0.036068
MDLZ     0.032534
BYND     0.061269
APRN     0.214699
JVA      0.060649
HRL      0.027598
HAIN     0.033952
JBSS     0.028784
LW       0.041508
LANC     0.035793
LNDC     0.030187
LWAY     0.056047
HSY      0.036028
SENEA    0.056986
SENEB    0.041420
PETZ     0.073250
SMPL     0.042460
dtype: float64
```

[26]:
```
table = pd.DataFrame()
table['Returns'] = rets.mean()
table['Risk'] = rets.std()
table.sort_values(by='Returns')
```

[26]:

	Returns	Risk
FAMI	-0.008857	0.057021
FARM	-0.008093	0.049732
RIBT	-0.006463	0.089387
SMPL	-0.004901	0.042460
JVA	-0.004530	0.060649
TSN	-0.004212	0.041435
JJSF	-0.003810	0.043666
LW	-0.003728	0.041508
PETZ	-0.003382	0.073250
TWNK	-0.003166	0.021131
LNDC	-0.003159	0.030187

```
UN    -0.002004  0.028218
KO    -0.001684  0.028198
KHC   -0.001580  0.039620
MKC-V -0.001474  0.033195
MKC   -0.001377  0.036068
JBSS  -0.001348  0.028784
LANC  -0.000889  0.035793
SENEB -0.000433  0.041420
BYND  -0.000416  0.061269
K     -0.000339  0.029238
HSY   -0.000241  0.036028
INGR  -0.000201  0.037826
PEP   -0.000200  0.035123
MDLZ   0.000252  0.032534
CPB    0.000264  0.026241
FLO    0.000346  0.032790
CAG    0.000443  0.035099
GIS    0.000638  0.027750
HRL    0.000794  0.027598
LWAY   0.000929  0.056047
SENEA  0.000957  0.056986
SJM    0.001043  0.027831
HAIN   0.001164  0.033952
BGS    0.002326  0.054455
FRPT   0.004165  0.057475
FTFT   0.010679  0.074106
APRN   0.021291  0.214699
```

[27]:
```
table.sort_values(by='Risk')
```

[27]:
```
         Returns      Risk
TWNK  -0.003166  0.021131
CPB    0.000264  0.026241
HRL    0.000794  0.027598
GIS    0.000638  0.027750
SJM    0.001043  0.027831
KO    -0.001684  0.028198
UN    -0.002004  0.028218
JBSS  -0.001348  0.028784
K     -0.000339  0.029238
LNDC  -0.003159  0.030187
MDLZ   0.000252  0.032534
FLO    0.000346  0.032790
MKC-V -0.001474  0.033195
HAIN   0.001164  0.033952
CAG    0.000443  0.035099
PEP   -0.000200  0.035123
```

```
LANC  -0.000889  0.035793
HSY   -0.000241  0.036028
MKC   -0.001377  0.036068
INGR  -0.000201  0.037826
KHC   -0.001580  0.039620
SENEB -0.000433  0.041420
TSN   -0.004212  0.041435
LW    -0.003728  0.041508
SMPL  -0.004901  0.042460
JJSF  -0.003810  0.043666
FARM  -0.008093  0.049732
BGS    0.002326  0.054455
LWAY   0.000929  0.056047
SENEA  0.000957  0.056986
FAMI  -0.008857  0.057021
FRPT   0.004165  0.057475
JVA   -0.004530  0.060649
BYND  -0.000416  0.061269
PETZ  -0.003382  0.073250
FTFT   0.010679  0.074106
RIBT  -0.006463  0.089387
APRN   0.021291  0.214699
```

[28]:
```
rf = 0.01
table['Sharpe Ratio'] = (table['Returns'] - rf) / table['Risk']
table
```

[28]:

	Returns	Risk	Sharpe Ratio
GIS	0.000638	0.027750	-0.337387
K	-0.000339	0.029238	-0.353613
KHC	-0.001580	0.039620	-0.292285
JJSF	-0.003810	0.043666	-0.316258
BGS	0.002326	0.054455	-0.140922
UN	-0.002004	0.028218	-0.425416
FLO	0.000346	0.032790	-0.294409
FARM	-0.008093	0.049732	-0.363808
FAMI	-0.008857	0.057021	-0.330700
FRPT	0.004165	0.057475	-0.101516
FTFT	0.010679	0.074106	0.009157
TSN	-0.004212	0.041435	-0.343005
TWNK	-0.003166	0.021131	-0.623086
INGR	-0.000201	0.037826	-0.269678
SJM	0.001043	0.027831	-0.321857
PEP	-0.000200	0.035123	-0.290421
KO	-0.001684	0.028198	-0.414361
RIBT	-0.006463	0.089387	-0.184172
CPB	0.000264	0.026241	-0.371034

```
CAG    0.000443  0.035099     -0.272271
MKC-V -0.001474  0.033195     -0.345644
MKC   -0.001377  0.036068     -0.315422
MDLZ   0.000252  0.032534     -0.299635
BYND  -0.000416  0.061269     -0.170012
APRN   0.021291  0.214699      0.052588
JVA   -0.004530  0.060649     -0.239583
HRL    0.000794  0.027598     -0.333591
HAIN   0.001164  0.033952     -0.260242
JBSS  -0.001348  0.028784     -0.394238
LW    -0.003728  0.041508     -0.330730
LANC  -0.000889  0.035793     -0.304220
LNDC  -0.003159  0.030187     -0.435936
LWAY   0.000929  0.056047     -0.161839
HSY   -0.000241  0.036028     -0.284246
SENEA  0.000957  0.056986     -0.158683
SENEB -0.000433  0.041420     -0.251884
PETZ  -0.003382  0.073250     -0.182683
SMPL  -0.004901  0.042460     -0.350945
```

[29]:
```
table['Max Returns'] = rets.max()
```

[30]:
```
table['Min Returns'] = rets.min()
```

[31]:
```
table['Median Returns'] = rets.median()
```

[32]:
```
total_return = stock_rets[-1:].transpose()
table['Total Return'] = 100 * total_return
table
```

[32]:

	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	\
GIS	0.000638	0.027750	-0.337387	0.117834	-0.114109	
K	-0.000339	0.029238	-0.353613	0.106458	-0.109194	
KHC	-0.001580	0.039620	-0.292285	0.194915	-0.137575	
JJSF	-0.003810	0.043666	-0.316258	0.159934	-0.180361	
BGS	0.002326	0.054455	-0.140922	0.232394	-0.225699	
UN	-0.002004	0.028218	-0.425416	0.113265	-0.116567	
FLO	0.000346	0.032790	-0.294409	0.140977	-0.090187	
FARM	-0.008093	0.049732	-0.363808	0.138889	-0.213555	
FAMI	-0.008857	0.057021	-0.330700	0.145833	-0.233333	
FRPT	0.004165	0.057475	-0.101516	0.194381	-0.259096	
FTFT	0.010679	0.074106	0.009157	0.256098	-0.158879	
TSN	-0.004212	0.041435	-0.343005	0.227026	-0.142068	
TWNK	-0.003166	0.021131	-0.623086	0.081568	-0.096861	
INGR	-0.000201	0.037826	-0.269678	0.108447	-0.140393	
SJM	0.001043	0.027831	-0.321857	0.103769	-0.082787	
PEP	-0.000200	0.035123	-0.290421	0.129366	-0.114283	

KO	-0.001684	0.028198	-0.414361	0.064408	-0.096725
RIBT	-0.006463	0.089387	-0.184172	0.491228	-0.331731
CPB	0.000264	0.026241	-0.371034	0.101086	-0.062407
CAG	0.000443	0.035099	-0.272271	0.158692	-0.099590
MKC-V	-0.001474	0.033195	-0.345644	0.128358	-0.119437
MKC	-0.001377	0.036068	-0.315422	0.152280	-0.109197
MDLZ	0.000252	0.032534	-0.299635	0.112807	-0.114297
BYND	-0.000416	0.061269	-0.170012	0.190174	-0.157542
APRN	0.021291	0.214699	0.052588	1.480916	-0.292190
JVA	-0.004530	0.060649	-0.239583	0.267857	-0.246429
HRL	0.000794	0.027598	-0.333591	0.138400	-0.064883
HAIN	0.001164	0.033952	-0.260242	0.188283	-0.078660
JBSS	-0.001348	0.028784	-0.394238	0.129028	-0.064757
LW	-0.003728	0.041508	-0.330730	0.153637	-0.178700
LANC	-0.000889	0.035793	-0.304220	0.141969	-0.166789
LNDC	-0.003159	0.030187	-0.435936	0.078981	-0.102059
LWAY	0.000929	0.056047	-0.161839	0.286667	-0.180328
HSY	-0.000241	0.036028	-0.284246	0.104582	-0.165277
SENEA	0.000957	0.056986	-0.158683	0.268833	-0.153300
SENEB	-0.000433	0.041420	-0.251884	0.227133	-0.135962
PETZ	-0.003382	0.073250	-0.182683	0.274667	-0.239597
SMPL	-0.004901	0.042460	-0.350945	0.145833	-0.133809

	Median Returns	Total Return
GIS	0.000376	4.399843
K	0.000906	2.421387
KHC	-0.001305	3.836635
JJSF	0.001342	8.275143
BGS	0.000612	3.277193
UN	-0.001878	2.474092
FLO	0.000000	7.881264
FARM	-0.004223	-0.849858
FAMI	-0.011905	-3.773582
FRPT	0.002280	8.686799
FTFT	0.000000	-0.990098
TSN	-0.001892	0.955797
TWNK	-0.002125	3.645329
INGR	0.002727	4.829090
SJM	0.001437	7.376491
PEP	0.000583	4.167362
KO	0.000930	5.115624
RIBT	-0.009709	-0.970873
CPB	0.000406	5.295316
CAG	-0.003601	1.110313
MKC-V	0.000000	7.616886
MKC	-0.000579	8.209238
MDLZ	-0.000335	7.404688

```
BYND        -0.003113     -0.045382
APRN        -0.012970     10.953728
JVA         -0.002740     -7.196972
HRL          0.000452      4.048042
HAIN        -0.001955      3.627760
JBSS        -0.001687     12.902800
LW          -0.000110      0.681222
LANC         0.000064      3.096484
LNDC        -0.000888      7.898094
LWAY         0.004132     -1.604277
HSY          0.001937      5.304190
SENEA       -0.004666      8.824387
SENEB        0.000000      1.180743
PETZ        -0.005072      5.263159
SMPL        -0.003948      7.607373
```

[33]:
```
table['Average Return Days'] = (1 + total_return)**(1 / days) - 1
table
```

[33]:

	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	\
GIS	0.000638	0.027750	-0.337387	0.117834	-0.114109	
K	-0.000339	0.029238	-0.353613	0.106458	-0.109194	
KHC	-0.001580	0.039620	-0.292285	0.194915	-0.137575	
JJSF	-0.003810	0.043666	-0.316258	0.159934	-0.180361	
BGS	0.002326	0.054455	-0.140922	0.232394	-0.225699	
UN	-0.002004	0.028218	-0.425416	0.113265	-0.116567	
FLO	0.000346	0.032790	-0.294409	0.140977	-0.090187	
FARM	-0.008093	0.049732	-0.363808	0.138889	-0.213555	
FAMI	-0.008857	0.057021	-0.330700	0.145833	-0.233333	
FRPT	0.004165	0.057475	-0.101516	0.194381	-0.259096	
FTFT	0.010679	0.074106	0.009157	0.256098	-0.158879	
TSN	-0.004212	0.041435	-0.343005	0.227026	-0.142068	
TWNK	-0.003166	0.021131	-0.623086	0.081568	-0.096861	
INGR	-0.000201	0.037826	-0.269678	0.108447	-0.140393	
SJM	0.001043	0.027831	-0.321857	0.103769	-0.082787	
PEP	-0.000200	0.035123	-0.290421	0.129366	-0.114283	
KO	-0.001684	0.028198	-0.414361	0.064408	-0.096725	
RIBT	-0.006463	0.089387	-0.184172	0.491228	-0.331731	
CPB	0.000264	0.026241	-0.371034	0.101086	-0.062407	
CAG	0.000443	0.035099	-0.272271	0.158692	-0.099590	
MKC-V	-0.001474	0.033195	-0.345644	0.128358	-0.119437	
MKC	-0.001377	0.036068	-0.315422	0.152280	-0.109197	
MDLZ	0.000252	0.032534	-0.299635	0.112807	-0.114297	
BYND	-0.000416	0.061269	-0.170012	0.190174	-0.157542	
APRN	0.021291	0.214699	0.052588	1.480916	-0.292190	
JVA	-0.004530	0.060649	-0.239583	0.267857	-0.246429	
HRL	0.000794	0.027598	-0.333591	0.138400	-0.064883	

HAIN	0.001164	0.033952	-0.260242	0.188283	-0.078660
JBSS	-0.001348	0.028784	-0.394238	0.129028	-0.064757
LW	-0.003728	0.041508	-0.330730	0.153637	-0.178700
LANC	-0.000889	0.035793	-0.304220	0.141969	-0.166789
LNDC	-0.003159	0.030187	-0.435936	0.078981	-0.102059
LWAY	0.000929	0.056047	-0.161839	0.286667	-0.180328
HSY	-0.000241	0.036028	-0.284246	0.104582	-0.165277
SENEA	0.000957	0.056986	-0.158683	0.268833	-0.153300
SENEB	-0.000433	0.041420	-0.251884	0.227133	-0.135962
PETZ	-0.003382	0.073250	-0.182683	0.274667	-0.239597
SMPL	-0.004901	0.042460	-0.350945	0.145833	-0.133809

	Median Returns	Total Return	Average Return Days
GIS	0.000376	4.399843	0.000362
K	0.000906	2.421387	0.000201
KHC	-0.001305	3.836635	0.000316
JJSF	0.001342	8.275143	0.000668
BGS	0.000612	3.277193	0.000271
UN	-0.001878	2.474092	0.000205
FLO	0.000000	7.881264	0.000638
FARM	-0.004223	-0.849858	-0.000072
FAMI	-0.011905	-3.773582	-0.000323
FRPT	0.002280	8.686799	0.000700
FTFT	0.000000	-0.990098	-0.000084
TSN	-0.001892	0.955797	0.000080
TWNK	-0.002125	3.645329	0.000301
INGR	0.002727	4.829090	0.000396
SJM	0.001437	7.376491	0.000598
PEP	0.000583	4.167362	0.000343
KO	0.000930	5.115624	0.000419
RIBT	-0.009709	-0.970873	-0.000082
CPB	0.000406	5.295316	0.000434
CAG	-0.003601	1.110313	0.000093
MKC-V	0.000000	7.616886	0.000617
MKC	-0.000579	8.209238	0.000663
MDLZ	-0.000335	7.404688	0.000600
BYND	-0.003113	-0.045382	-0.000004
APRN	-0.012970	10.953728	0.000874
JVA	-0.002740	-7.196972	-0.000627
HRL	0.000452	4.048042	0.000334
HAIN	-0.001955	3.627760	0.000299
JBSS	-0.001687	12.902800	0.001020
LW	-0.000110	0.681222	0.000057
LANC	0.000064	3.096484	0.000256
LNDC	-0.000888	7.898094	0.000639
LWAY	0.004132	-1.604277	-0.000136
HSY	0.001937	5.304190	0.000434

```
SENEA       -0.004666      8.824387             0.000711
SENEB        0.000000      1.180743             0.000099
PETZ        -0.005072      5.263159             0.000431
SMPL        -0.003948      7.607373             0.000616
```

[34]:
```
initial_value = df.iloc[0]
ending_value = df.iloc[-1]
table['CAGR'] = ((ending_value / initial_value) ** (252.0 / days)) -1
table
```

[34]:

	Returns	Risk	Sharpe Ratio	Max Returns	Min Returns	\
GIS	0.000638	0.027750	-0.337387	0.117834	-0.114109	
K	-0.000339	0.029238	-0.353613	0.106458	-0.109194	
KHC	-0.001580	0.039620	-0.292285	0.194915	-0.137575	
JJSF	-0.003810	0.043666	-0.316258	0.159934	-0.180361	
BGS	0.002326	0.054455	-0.140922	0.232394	-0.225699	
UN	-0.002004	0.028218	-0.425416	0.113265	-0.116567	
FLO	0.000346	0.032790	-0.294409	0.140977	-0.090187	
FARM	-0.008093	0.049732	-0.363808	0.138889	-0.213555	
FAMI	-0.008857	0.057021	-0.330700	0.145833	-0.233333	
FRPT	0.004165	0.057475	-0.101516	0.194381	-0.259096	
FTFT	0.010679	0.074106	0.009157	0.256098	-0.158879	
TSN	-0.004212	0.041435	-0.343005	0.227026	-0.142068	
TWNK	-0.003166	0.021131	-0.623086	0.081568	-0.096861	
INGR	-0.000201	0.037826	-0.269678	0.108447	-0.140393	
SJM	0.001043	0.027831	-0.321857	0.103769	-0.082787	
PEP	-0.000200	0.035123	-0.290421	0.129366	-0.114283	
KO	-0.001684	0.028198	-0.414361	0.064408	-0.096725	
RIBT	-0.006463	0.089387	-0.184172	0.491228	-0.331731	
CPB	0.000264	0.026241	-0.371034	0.101086	-0.062407	
CAG	0.000443	0.035099	-0.272271	0.158692	-0.099590	
MKC-V	-0.001474	0.033195	-0.345644	0.128358	-0.119437	
MKC	-0.001377	0.036068	-0.315422	0.152280	-0.109197	
MDLZ	0.000252	0.032534	-0.299635	0.112807	-0.114297	
BYND	-0.000416	0.061269	-0.170012	0.190174	-0.157542	
APRN	0.021291	0.214699	0.052588	1.480916	-0.292190	
JVA	-0.004530	0.060649	-0.239583	0.267857	-0.246429	
HRL	0.000794	0.027598	-0.333591	0.138400	-0.064883	
HAIN	0.001164	0.033952	-0.260242	0.188283	-0.078660	
JBSS	-0.001348	0.028784	-0.394238	0.129028	-0.064757	
LW	-0.003728	0.041508	-0.330730	0.153637	-0.178700	
LANC	-0.000889	0.035793	-0.304220	0.141969	-0.166789	
LNDC	-0.003159	0.030187	-0.435936	0.078981	-0.102059	
LWAY	0.000929	0.056047	-0.161839	0.286667	-0.180328	
HSY	-0.000241	0.036028	-0.284246	0.104582	-0.165277	
SENEA	0.000957	0.056986	-0.158683	0.268833	-0.153300	
SENEB	-0.000433	0.041420	-0.251884	0.227133	-0.135962	

```
PETZ  -0.003382  0.073250     -0.182683     0.274667    -0.239597
SMPL  -0.004901  0.042460     -0.350945     0.145833    -0.133809
```

	Median Returns	Total Return	Average Return Days	CAGR
GIS	0.000376	4.399843	0.000362	0.045072
K	0.000906	2.421387	0.000201	-0.122965
KHC	-0.001305	3.836635	0.000316	-0.330787
JJSF	0.001342	8.275143	0.000668	-0.560550
BGS	0.000612	3.277193	0.000271	0.162838
UN	-0.001878	2.474092	0.000205	-0.338135
FLO	0.000000	7.881264	0.000638	-0.029094
FARM	-0.004223	-0.849858	-0.000072	-0.800899
FAMI	-0.011905	-3.773582	-0.000323	-0.836673
FRPT	0.002280	8.686799	0.000700	0.521065
FTFT	0.000000	-0.990098	-0.000084	2.993969
TSN	-0.001892	0.955797	0.000080	-0.579534
TWNK	-0.002125	3.645329	0.000301	-0.441426
INGR	0.002727	4.829090	0.000396	-0.147384
SJM	0.001437	7.376491	0.000598	0.120335
PEP	0.000583	4.167362	0.000343	-0.130283
KO	0.000930	5.115624	0.000419	-0.300770
RIBT	-0.009709	-0.970873	-0.000082	-0.830755
CPB	0.000406	5.295316	0.000434	-0.012173
CAG	-0.003601	1.110313	0.000093	-0.025461
MKC-V	0.000000	7.616886	0.000617	-0.293842
MKC	-0.000579	8.209238	0.000663	-0.292854
MDLZ	-0.000335	7.404688	0.000600	-0.045033
BYND	-0.003113	-0.045382	-0.000004	-0.319602
APRN	-0.012970	10.953728	0.000874	2.012830
JVA	-0.002740	-7.196972	-0.000627	-0.663909
HRL	0.000452	4.048042	0.000334	0.075845
HAIN	-0.001955	3.627760	0.000299	0.112474
JBSS	-0.001687	12.902800	0.001020	-0.259272
LW	-0.000110	0.681222	0.000057	-0.547499
LANC	0.000064	3.096484	0.000256	-0.231410
LNDC	-0.000888	7.898094	0.000639	-0.462955
LWAY	0.004132	-1.604277	-0.000136	-0.096182
HSY	0.001937	5.304190	0.000434	-0.143579
SENEA	-0.004666	8.824387	0.000711	-0.096395
SENEB	0.000000	1.180743	0.000099	-0.193861
PETZ	-0.005072	5.263159	0.000431	-0.646943
SMPL	-0.003948	7.607373	0.000616	-0.630834

[35]:
```
table.sort_values(by='Average Return Days')
```

[35]:
```
       Returns      Risk  Sharpe Ratio  Max Returns  Min Returns  \
JVA  -0.004530  0.060649     -0.239583     0.267857    -0.246429
```

FAMI	-0.008857	0.057021	-0.330700	0.145833	-0.233333
LWAY	0.000929	0.056047	-0.161839	0.286667	-0.180328
FTFT	0.010679	0.074106	0.009157	0.256098	-0.158879
RIBT	-0.006463	0.089387	-0.184172	0.491228	-0.331731
FARM	-0.008093	0.049732	-0.363808	0.138889	-0.213555
BYND	-0.000416	0.061269	-0.170012	0.190174	-0.157542
LW	-0.003728	0.041508	-0.330730	0.153637	-0.178700
TSN	-0.004212	0.041435	-0.343005	0.227026	-0.142068
CAG	0.000443	0.035099	-0.272271	0.158692	-0.099590
SENEB	-0.000433	0.041420	-0.251884	0.227133	-0.135962
K	-0.000339	0.029238	-0.353613	0.106458	-0.109194
UN	-0.002004	0.028218	-0.425416	0.113265	-0.116567
LANC	-0.000889	0.035793	-0.304220	0.141969	-0.166789
BGS	0.002326	0.054455	-0.140922	0.232394	-0.225699
HAIN	0.001164	0.033952	-0.260242	0.188283	-0.078660
TWNK	-0.003166	0.021131	-0.623086	0.081568	-0.096861
KHC	-0.001580	0.039620	-0.292285	0.194915	-0.137575
HRL	0.000794	0.027598	-0.333591	0.138400	-0.064883
PEP	-0.000200	0.035123	-0.290421	0.129366	-0.114283
GIS	0.000638	0.027750	-0.337387	0.117834	-0.114109
INGR	-0.000201	0.037826	-0.269678	0.108447	-0.140393
KO	-0.001684	0.028198	-0.414361	0.064408	-0.096725
PETZ	-0.003382	0.073250	-0.182683	0.274667	-0.239597
CPB	0.000264	0.026241	-0.371034	0.101086	-0.062407
HSY	-0.000241	0.036028	-0.284246	0.104582	-0.165277
SJM	0.001043	0.027831	-0.321857	0.103769	-0.082787
MDLZ	0.000252	0.032534	-0.299635	0.112807	-0.114297
SMPL	-0.004901	0.042460	-0.350945	0.145833	-0.133809
MKC-V	-0.001474	0.033195	-0.345644	0.128358	-0.119437
FLO	0.000346	0.032790	-0.294409	0.140977	-0.090187
LNDC	-0.003159	0.030187	-0.435936	0.078981	-0.102059
MKC	-0.001377	0.036068	-0.315422	0.152280	-0.109197
JJSF	-0.003810	0.043666	-0.316258	0.159934	-0.180361
FRPT	0.004165	0.057475	-0.101516	0.194381	-0.259096
SENEA	0.000957	0.056986	-0.158683	0.268833	-0.153300
APRN	0.021291	0.214699	0.052588	1.480916	-0.292190
JBSS	-0.001348	0.028784	-0.394238	0.129028	-0.064757

	Median Returns	Total Return	Average Return Days	CAGR
JVA	-0.002740	-7.196972	-0.000627	-0.663909
FAMI	-0.011905	-3.773582	-0.000323	-0.836673
LWAY	0.004132	-1.604277	-0.000136	-0.096182
FTFT	0.000000	-0.990098	-0.000084	2.993969
RIBT	-0.009709	-0.970873	-0.000082	-0.830755
FARM	-0.004223	-0.849858	-0.000072	-0.800899
BYND	-0.003113	-0.045382	-0.000004	-0.319602
LW	-0.000110	0.681222	0.000057	-0.547499

TSN	-0.001892	0.955797	0.000080	-0.579534
CAG	-0.003601	1.110313	0.000093	-0.025461
SENEB	0.000000	1.180743	0.000099	-0.193861
K	0.000906	2.421387	0.000201	-0.122965
UN	-0.001878	2.474092	0.000205	-0.338135
LANC	0.000064	3.096484	0.000256	-0.231410
BGS	0.000612	3.277193	0.000271	0.162838
HAIN	-0.001955	3.627760	0.000299	0.112474
TWNK	-0.002125	3.645329	0.000301	-0.441426
KHC	-0.001305	3.836635	0.000316	-0.330787
HRL	0.000452	4.048042	0.000334	0.075845
PEP	0.000583	4.167362	0.000343	-0.130283
GIS	0.000376	4.399843	0.000362	0.045072
INGR	0.002727	4.829090	0.000396	-0.147384
KO	0.000930	5.115624	0.000419	-0.300770
PETZ	-0.005072	5.263159	0.000431	-0.646943
CPB	0.000406	5.295316	0.000434	-0.012173
HSY	0.001937	5.304190	0.000434	-0.143579
SJM	0.001437	7.376491	0.000598	0.120335
MDLZ	-0.000335	7.404688	0.000600	-0.045033
SMPL	-0.003948	7.607373	0.000616	-0.630834
MKC-V	0.000000	7.616886	0.000617	-0.293842
FLO	0.000000	7.881264	0.000638	-0.029094
LNDC	-0.000888	7.898094	0.000639	-0.462955
MKC	-0.000579	8.209238	0.000663	-0.292854
JJSF	0.001342	8.275143	0.000668	-0.560550
FRPT	0.002280	8.686799	0.000700	0.521065
SENEA	-0.004666	8.824387	0.000711	-0.096395
APRN	-0.012970	10.953728	0.000874	2.012830
JBSS	-0.001687	12.902800	0.001020	-0.259272