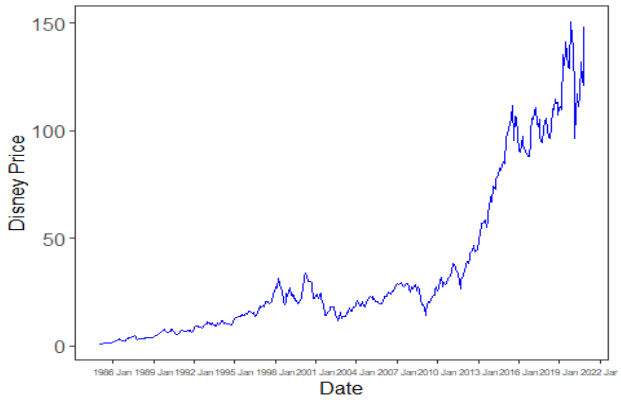
What if the Sample Changes?

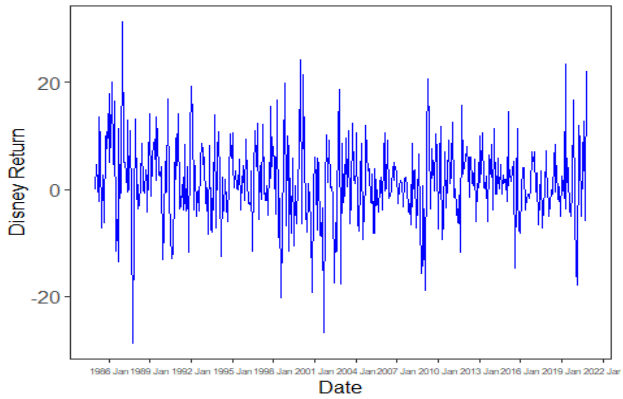
Eray Ferah

26-04-2022

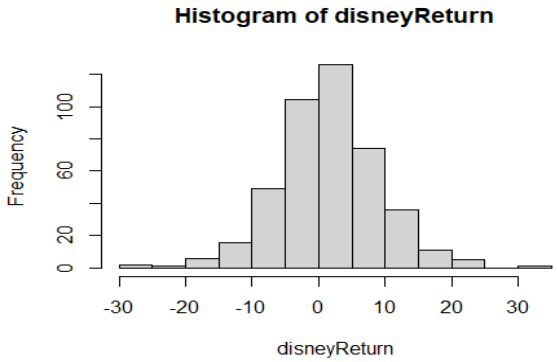
In this study, apart from the APL stock, we are analyzing Disney and General Electric stock performance. We will start with the basic analysis of returns and then move to financial economics concepts; such as Capital Asset Pricing Model (CAPM) and Fama-French 3 Factor model.



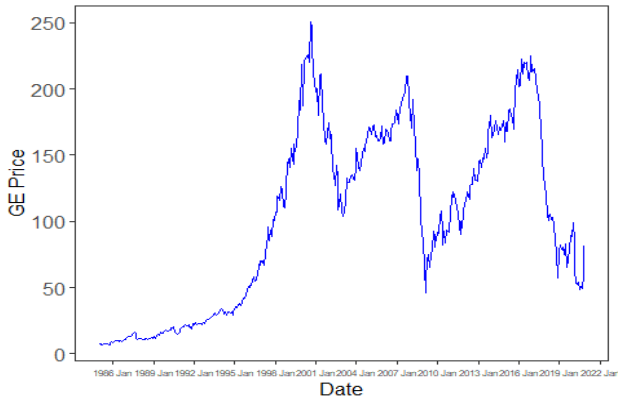
Disney, Level stock price movement. We see that it increased significantly since 2008.



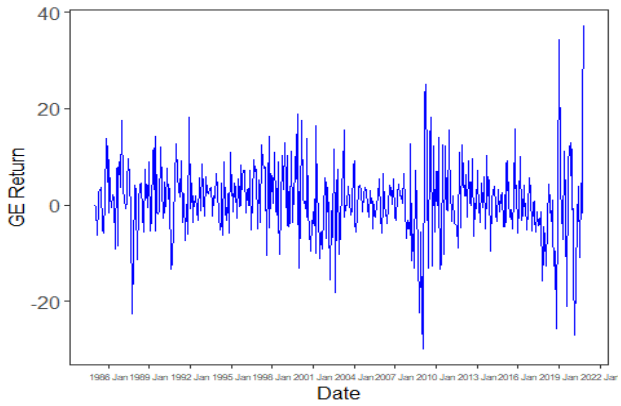
Disney returns, we see that it resembles stationary time series.



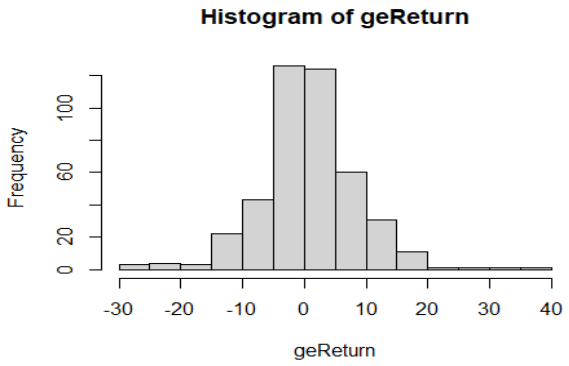
Distribution of Disney returns; normally distributed.



GE, Level stock price movement. We see that there are ups and downs.



GE returns, similar to white noise.



GE returns distribution, resembles to normal distribution.

```
## t test of coefficients:
##
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 0.323897   0.279328  1.1596   0.2469
## mktrf       1.134783   0.061361 18.4934   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
## ================================================
##                          Dependent variable:
##                      --------------------------
##                            Excess_Returns
## ------------------------------------------------
## mktrf                         1.135***
##                                (0.061)
##
## Constant                       0.324
##                                (0.279)
##
## ------------------------------------------------
## Observations                    431
## R2                             0.444
## Adjusted R2                    0.442
## Residual Std. Error      5.720 (df = 429)
## F Statistic          342.007*** (df = 1; 429)
## ================================================
## Note:                *p<0.1; **p<0.05; ***p<0.01
```

Commentary:

According to CAPM model, Disney stock is slightly riskier (aggressive) than market (Systemic Risk) because beta is bigger than 1. Jensen’s Alpha (constant) seems statistically insignificant.

```
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.267957   0.289492 -0.9256   0.3552
## mktrf        1.153052   0.063594 18.1315   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
## ================================================
##                         Dependent variable:
##                     ---------------------------
##                           Excess_Returns
## ------------------------------------------------
## mktrf                        1.153***
##                               (0.064)
##
## Constant                      -0.268
##                               (0.289)
##
## ------------------------------------------------
## Observations                    431
## R2                             0.434
## Adjusted R2                    0.433
## Residual Std. Error      5.928 (df = 429)
## F Statistic          328.750*** (df = 1; 429)
## ================================================
## Note:               *p<0.1; **p<0.05; ***p<0.01
```

Commentary:

According to CAPM model, GE stock is slightly riskier (aggressive) than market (Systemic Risk) because beta is bigger than 1. Jensen’s Alpha (constant) seems statistically insignificant.

Verdict:

According to CAPM, Disney stock seems better option. It is slightly less risky than GE and provides positive alpha (return) than the market (constant).

```
## t test of coefficients:
##
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.285019   0.278578  1.0231  0.30683
## mktrf        1.168912   0.063334 18.4564  < 2e-16 ***
## smb         -0.074603   0.094553 -0.7890  0.43054
## hml          0.197425   0.095406  2.0693  0.03912 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
## ================================================
##                         Dependent variable:
##                     ---------------------------
##                           Excess_Returns
## ------------------------------------------------
## mktrf                        1.169***
##                               (0.063)
##
## smb                           -0.075
##                               (0.095)
##
## hml                           0.197**
##                               (0.095)
##
## Constant                       0.285
##                               (0.279)
##
## ------------------------------------------------
## Observations                    431
## R2                             0.451
## Adjusted R2                    0.447
## Residual Std. Error      5.695 (df = 427)
## F Statistic          116.932*** (df = 3; 427)
## ================================================
## Note:               *p<0.1; **p<0.05; ***p<0.01
```

Commentary:

According to Fama-French model, Disney stock is slightly riskier than market (Systemic Risk) because beta is bigger than 1. Jensen’s Alpha (constant) seems statistically insignificant yet still positive.

```
## t test of coefficients:
##
##              Estimate Std. Error t value  Pr(>|t|)
## (Intercept) -0.351725   0.281673 -1.2487   0.21246
## mktrf        1.235583   0.064037 19.2948 < 2.2e-16 ***
## smb         -0.245369   0.095603 -2.5665   0.01061 *
## hml          0.385338   0.096465  3.9946 7.632e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
## ================================================
##                          Dependent variable:
##                      --------------------------
##                            Excess_Returns
## ------------------------------------------------
## mktrf                         1.236***
##                                (0.064)
##
## smb                           -0.245**
##                                (0.096)
##
## hml                           0.385***
##                                (0.096)
##
## Constant                       -0.352
##                                (0.282)
##
## ------------------------------------------------
## Observations                     431
## R2                              0.468
## Adjusted R2                     0.465
## Residual Std. Error      5.758 (df = 427)
## F Statistic          125.374*** (df = 3; 427)
## ================================================
## Note:               *p<0.1; **p<0.05; ***p<0.01
```

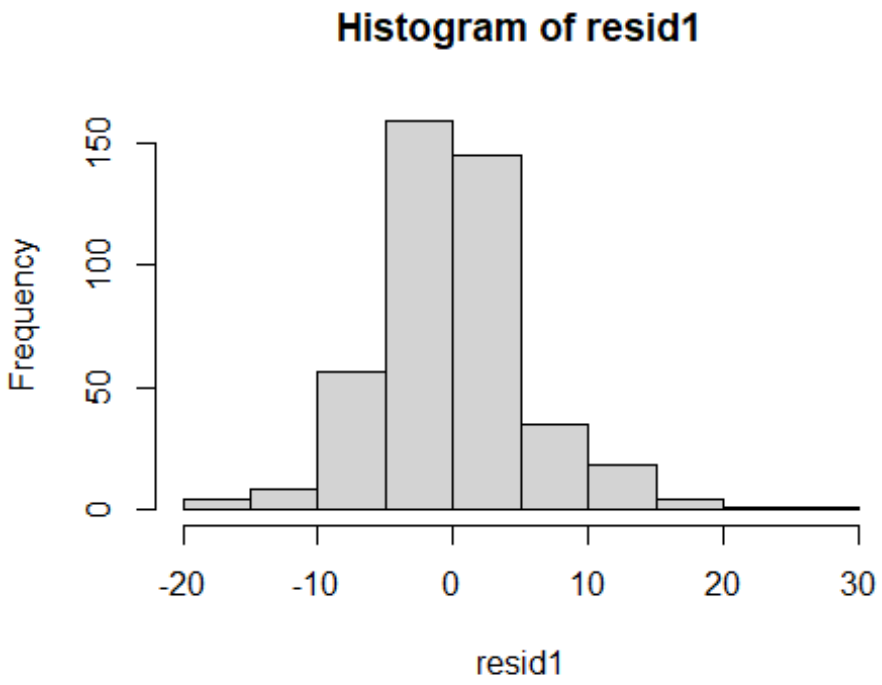
Commentary:

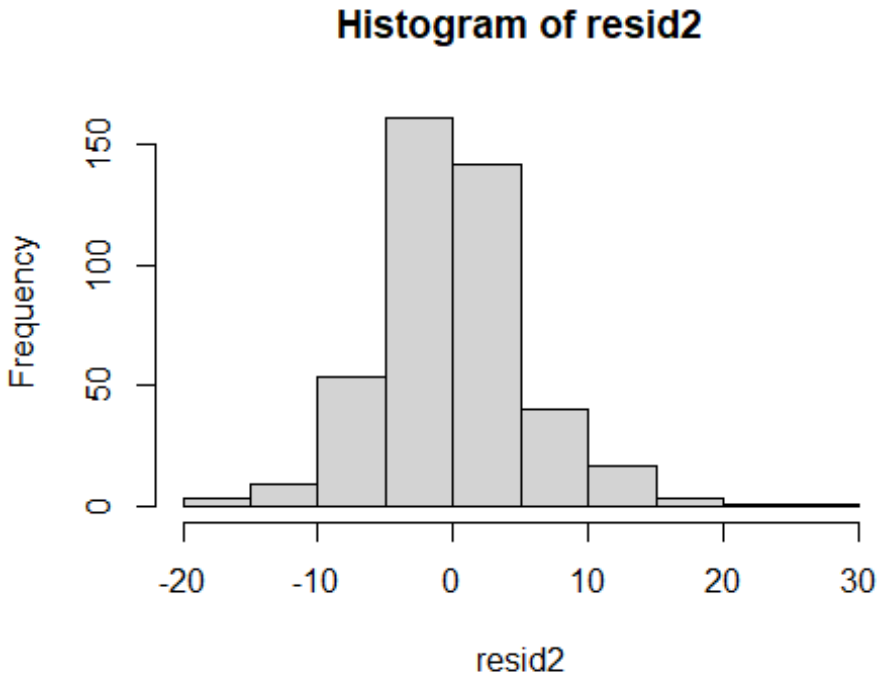
According to Fama-French model, GE stock is slightly riskier than market (Systemic Risk) because beta is bigger than 1. Jensen’s Alpha (constant) seems statistically insignificant.

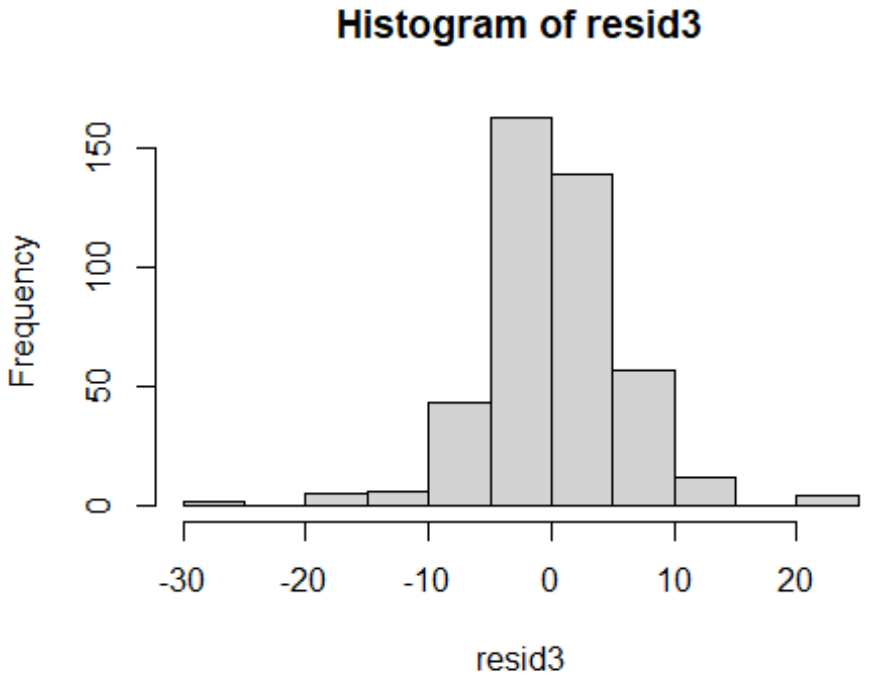
Verdict:

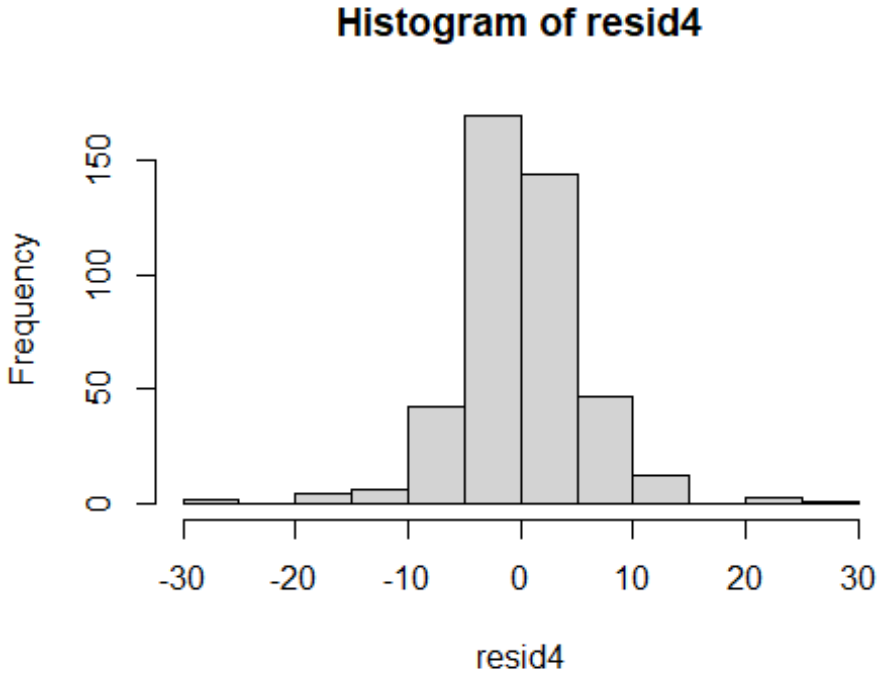
Based on FAMA-French model, Disney stock seems better option both in terms of systemic risk sensitivity and provides positive alpha (return) than the marke t (constant).

Models residual distributions:






Histogram of resid3
Frequency
0
50
100
150
-30
-20
-10
0
10
20
resid3


Histogram of resid4
Frequency
0
50
100
150
-30
-20
-10
0
10
20
30
resid4