|  |  |  |
| --- | --- | --- |
| Variables | Data Source and/or index used | Data frequency used |
| R\_HD | HD (1990-1999, yahoo finance) | Monthly |
| R\_AAPL | AAPL(1990-1999, yahoo finance) | Monthly |
| R\_VZ | VZ(1990-1999, yahoo finance) | Monthly |
| R\_CSCO | CSCO((1990-1999, yahoo finance) | Monthly |
| R\_f | Rf(1990-1999, Fama/French 3 Factors) | Monthly |
| R\_m | MKT(1990-1999, Fama/French 3 Factors) | Monthly |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Construct | HD | AAPL | VZ | CSCO |
| E(R): Average Return | 0.03442089 | 0.01907947 | 0.00951885 | 0.06354 |
|  | 0.01824811 | 0.00212455 | -0.0005642 | 0.04250946 |
| p-value for : 𝛼 = 0 | 0.00532951 | 0.8688089 | 0.9158122 | 1.66E-05 |
|  | 1.069054 | 1.137749 | 0.5341991 | 1.50628 |
| p-value for : 𝛽 = 0 | 3.07E-11 | 0.00031871 | 4.64E-05 | 3.97E-10 |
| |  | | --- | |  | | 0.2738766 | 0.09970289 | 0.1241768 | 0.2538626 |

1. We use the whole market profit and the Wilshire 5000 index respectively as the return on the market portfolio for regression. Though we are not sure whether they belong to any index pool in 1990s, considering that some of the companies are founded at that time, we decide to apply the index of small companies (whole market profit and Wilshire 5000). For the data frequency, we use the monthly data to balance the accuracy and the efficiency of linear regression.
2. For the E(R), it measures the monthly average profitability of each stock and we can see that each of these stocks has a strong profitability over 1990-1999.

And for the , it measures the excess profit of each stock over the whole share market. By analyzing the alpha value and the related p-value, we can find that only HD and CSCO has a relatively stable excess profit.

For the , it measures volatility and risk of individual stock relative to the market variation. And we can find that all of these stocks are in the positive correlation with the market. VZ has a lowest volatility and CSCO has a highest volatility.

For , we can see that they all have a relatively low value, which means that it's not good to use a single-factor linear regression to fit the profit relative to market profit. And since we have try to change to another index and get the similar result, we may need more factors and do a new regression to better fit the stock profit.

1. For alpha in HD, we can reject the null hypotheses in >99%.

For beta in HD, we can reject the null hypotheses in >99%.

For alpha in AAPL. we cannot reject the null hypotheses.

For beta in AAPL, we can reject the null hypotheses in >99%.

For alpha in VZ, we cannot reject null hypotheses.

For beta in VZ, we can reject the null hypotheses in >99%.

For alpha in CSCO, we can reject the null hypotheses in >99%

For beta in CSCO, we can reject the null hypotheses in >99%