|  |  |  |  |
| --- | --- | --- | --- |
| Alpha | Final | Max | Min |
| 0 | 104.35 | 110.05 | 89.69 |
| 0.2 | 106.34 | 109.92 | 91.84 |
| 0.4 | 108.27 | 110.70 | 92.27 |
| 0.6 | 110.12 | 112.24 | 91.86 |
| 0.8 | 111.89 | 113.70 | 91.42 |
| 1 | 113.59 | 115.06 | 90.97 |

2016

2017

|  |  |  |  |
| --- | --- | --- | --- |
| Alpha | Final | Max | Min |
| 0 | 138.71 | 142.88 | 106.36 |
| 0.2 | 139.07 | 142.55 | 108.18 |
| 0.4 | 139.21 | 141.99 | 109.87 |
| 0.6 | 139.11 | 141.19 | 111.49 |
| 0.8 | 138.79 | 140.17 | 113.02 |
| 1 | 138.24 | 138.93 | 114.45 |

2018

|  |  |  |  |
| --- | --- | --- | --- |
| Alpha | Final | Max | Min |
| 0 | 137.60 | 169.27 | 129.66 |
| 0.2 | 137.22 | 165.54 | 129.17 |
| 0.4 | 136.46 | 161.81 | 128.32 |
| 0.6 | 135.31 | 158.94 | 127.12 |
| 0.8 | 133.80 | 155.76 | 125.58 |
| 1 | 131.92 | 153.38 | 123.70 |

2019

|  |  |  |  |
| --- | --- | --- | --- |
| Alpha | Final | Max | Min |
| 0 | 176.37 | 179.40 | 135.03 |
| 0.2 | 177.16 | 179.72 | 134.55 |
| 0.4 | 177.23 | 179.30 | 133.68 |
| 0.6 | 176.57 | 178.14 | 132.45 |
| 0.8 | 175.19 | 176.27 | 130.85 |
| 1 | 173.12 | 173.70 | 128.91 |

2020

|  |  |  |  |
| --- | --- | --- | --- |
| Alpha | Final | Max | Min |
| 0 | 228.62 | 240.30 | 138.80 |
| 0.2 | 225.99 | 234.57 | 136.16 |
| 0.4 | 222.12 | 227.82 | 132.97 |
| 0.6 | 217.08 | 220.03 | 129.29 |
| 0.8 | 210.94 | 211.93 | 125.16 |
| 1 | 203.81 | 203.91 | 120.62 |

The portfolio is created by the simple formula: Alpha \* SPY + (1 - Alpha) \* GOOGLE

The first thing I could find in the portfolio is that Google’s stock price grew faster from 2017 to 2020 due to the red colored cell in column ‘Final’. In the first year, the final price of Alpha = 0 is the lowest while alpha = 1 is the highest, which means that without Google in the portfolio, the total performance could be the best. However, from 2017 to 2020, the price of alpha = 1 is always the lowest, which means SPY grew slower than Google. On the other word, with the help of Google stock, the total performance of the portfolio could be better.

Therefore, I would recommend put all the fund into SPY in 2016. And, for the period from 2017 to 2020, choosing Alpha = 0.2 to Alpha = 0.4 might be a great decision. One may ask why I don’t just choose Alpha = 0 because of its high; also, SPY has a worst performance than Google. Here is the reason, though Google is a highly efficient choice to invest, SPY is more stable; so we introduce SPY to for hedging, which could effetely balance the high volatility of single stock. Don’t put all the eggs into one basket!