Optimum Portfolio for a risk averse investor

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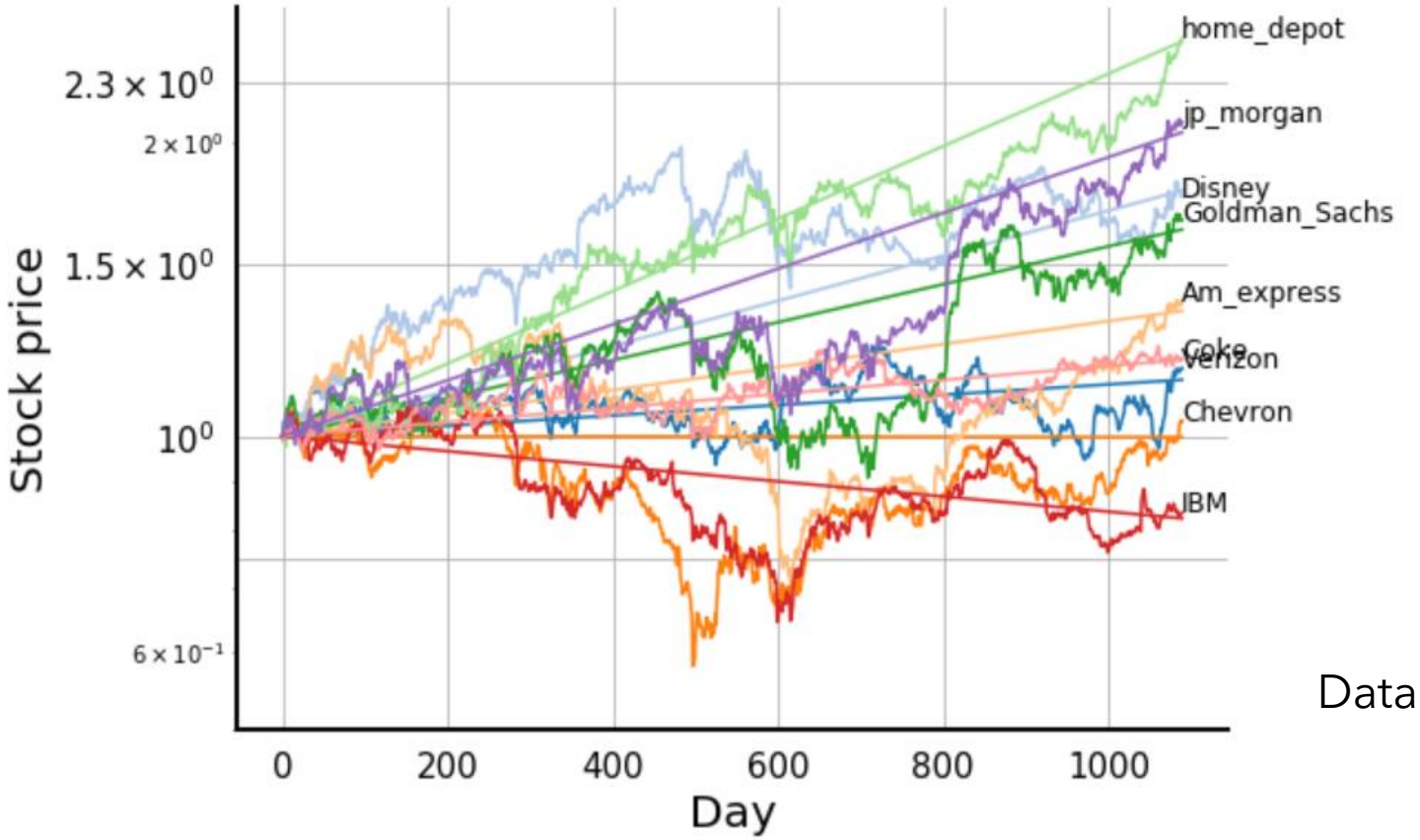
Analyzing the fluctuations of the stock market (2013-2017)



Data obtained from Quandl

The portfolio investment

```
Invest 10.5% on Verizon
Invest 11.0% on Disney
Invest 12.4% on Chevron
Invest 12.4% on Am_express
Invest 12.8% on Goldman_Sachs
Invest 10.2% on home_depot
Invest 10.9% on IBM
Invest 7.8% on Coke
Invest 12.0% on jp_morgan
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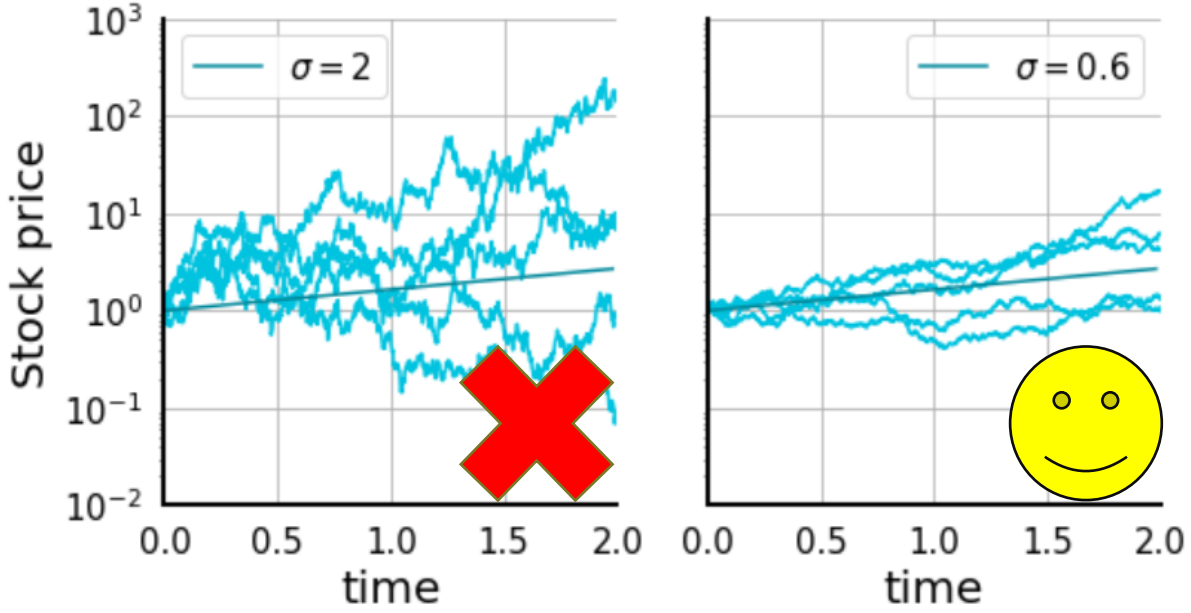
$$x = \begin{pmatrix} 0.105 \\ 0.110 \\ 0.124 \\ 0.124 \\ 0.128 \\ 0.102 \\ 0.109 \\ 0.078 \\ 0.120 \end{pmatrix} \qquad \sum_i x_i = 1$$

Main Goal

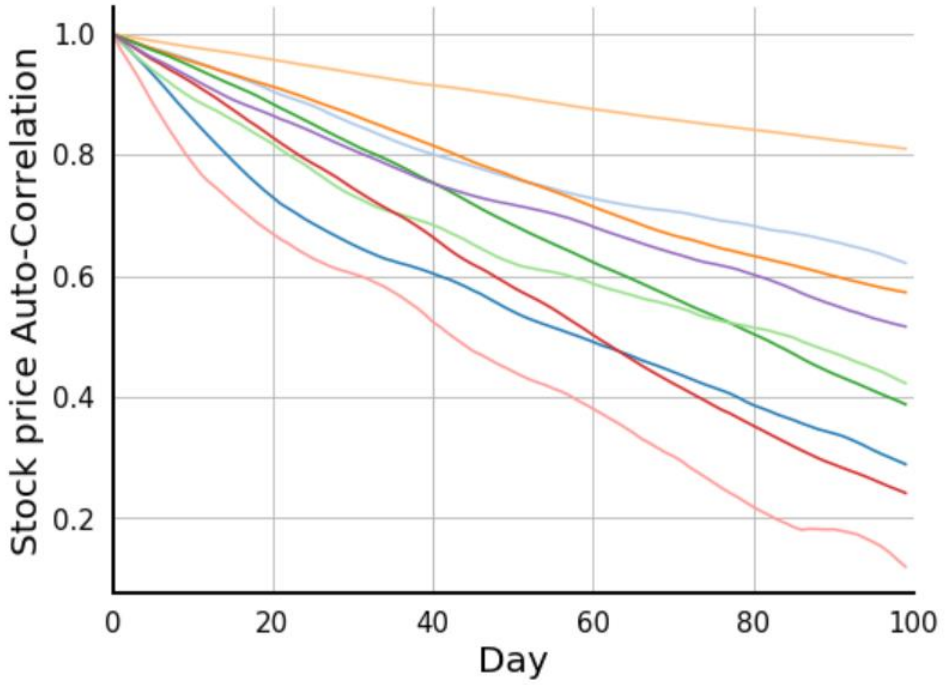
- Minimize the possible volatility of our utility!

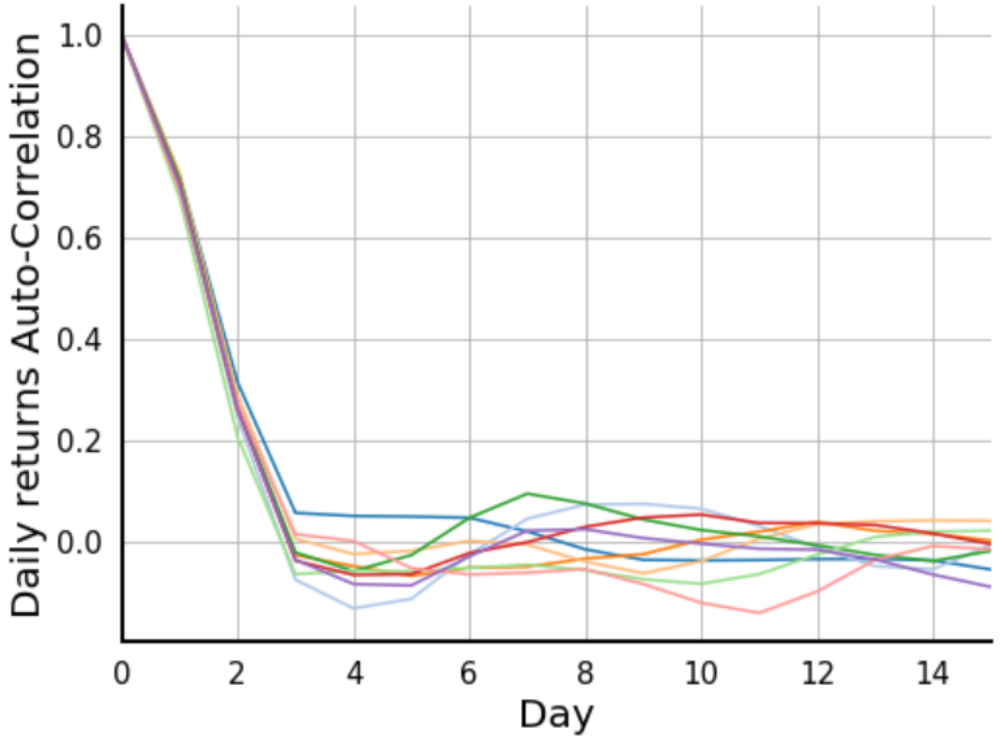
Type equation here.



$$ds = s(\mu dt + \sigma dW)$$

Autocorrelation





$$S_j - S_0$$

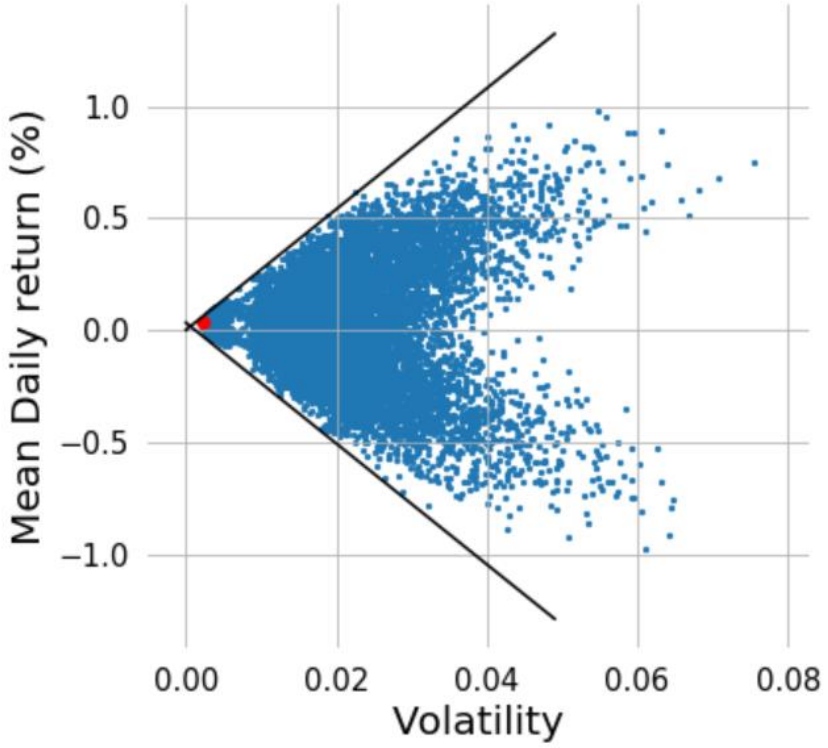
$$r_j = \frac{S_j}{S_{j-1}}$$

Combining different portfolio distributions, we can minimize volatility

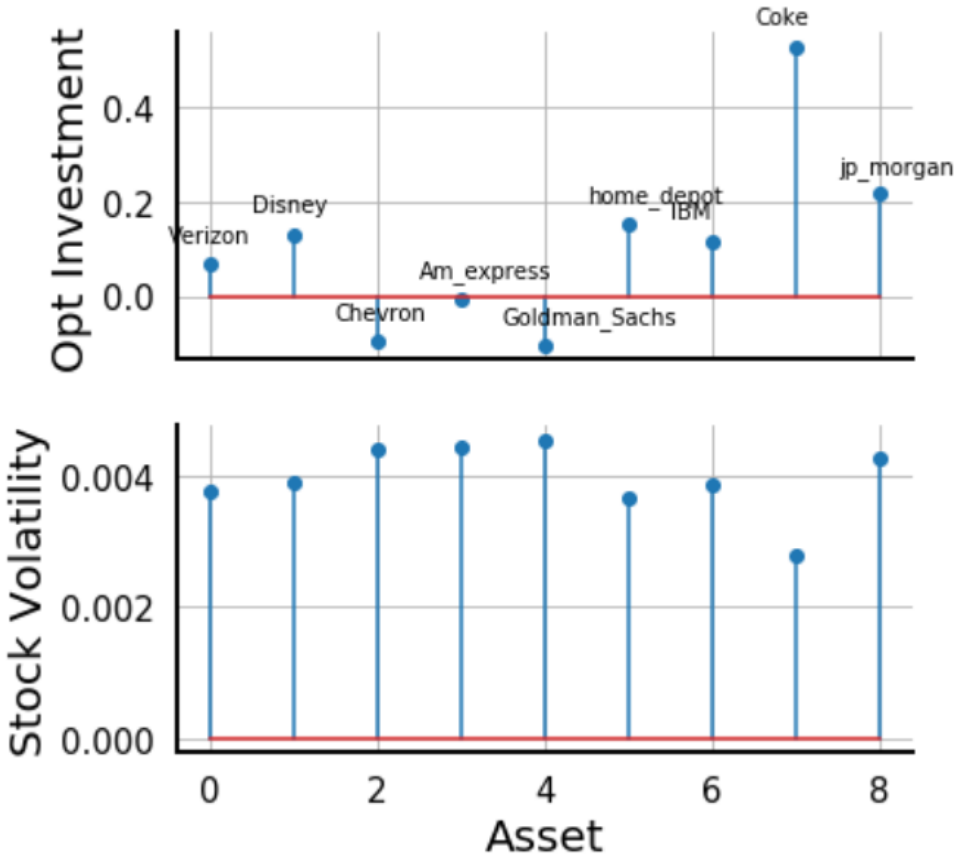
$$\mu = \sum_{i=1}^{N} x_i \overline{r_i}$$

$$\sigma^2 = x^+ V x$$

$$V_{lm} = \mathrm{cov}(r_l, r_m)$$



How is the optimum portfolio?

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To minimize the risk,
Invest 6.7% on Verizon
Invest 12.9% on Disney
Invest -9.8% on Chevron
Invest -0.7% on Am_express
Invest -10.4% on Goldman_Sachs
Invest 15.3% on home_depot
Invest 11.6% on IBM
Invest 52.9% on Coke
Invest 21.6% on jp_morgan
And you will obtain a return of: 12.5%, at the end of the year
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