

```
In [3]: mu = np.tanh(prices.apply(returns_adjust, com=32, clip=4.2).cumsum().apply(osc))
vola = prices.pct_change().ewm(com=32, min_periods=32).std()

# compute the series of Euclidean norms by compute the sum of squares for each row
euclid_norm = np.sqrt((mu*mu).sum(axis=1))

# Divide each column of mu by the Euclidean norm
risk_scaled = mu.apply(lambda x: x/euclid_norm, axis=0)

portfolio = Portfolio(prices=prices, position=risk_scaled/vola)
```

```
In [4]: analysis(portfolio.nav())
```

Conclusions

- Diagonal Markowitz already helps to improve the Sharpe Ratio.
- The risk position is always scaled such that the risk is constant.
This helps in particular to bring down the Kurtosis.
- The risk however does not reflect any cross-correlations.