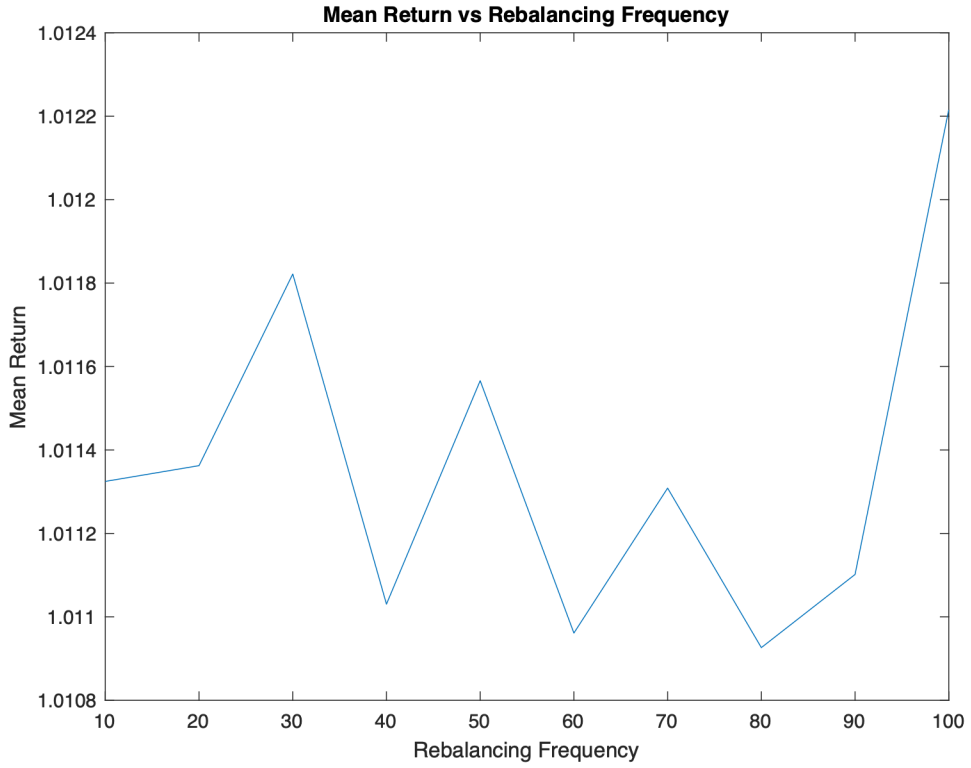
EDA for Ledoit-Wolf Quadratic Inverse Shrinkage (QIS)

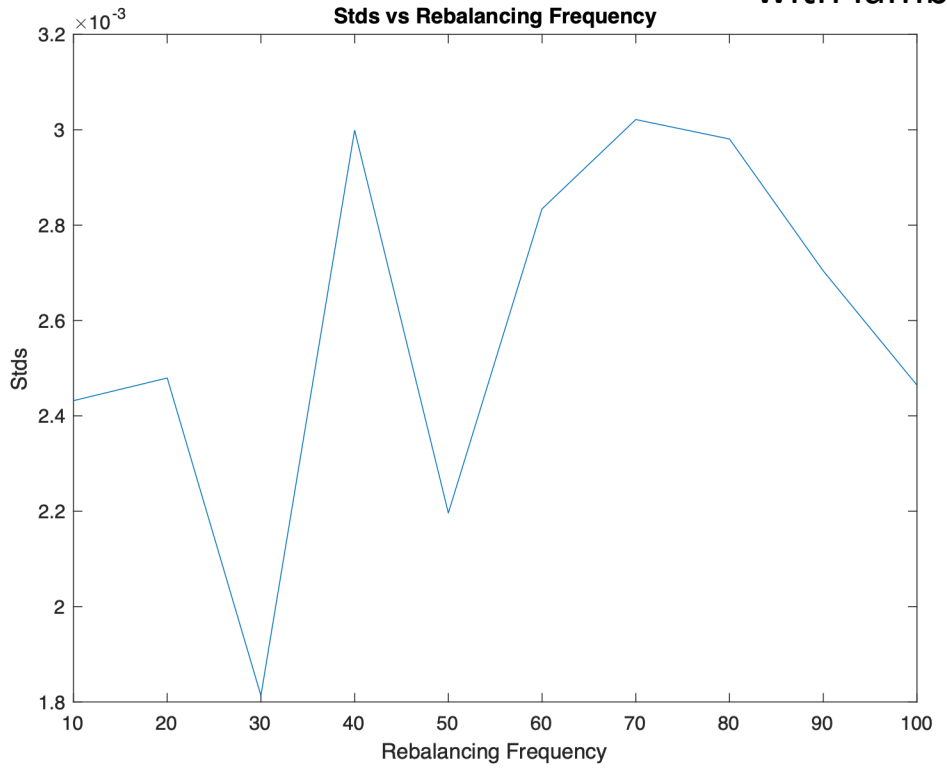
Ledoit-Wolf QIS: What happens if we vary rebalancing frequency

k=3, nsims = 100

	10	20	30	40	50	60	70	80	90	100
Std	0.0024319	0.0024794	0.0018134	0.0029987	0.0021964	0.0028342	0.0030215	0.0029806	0.0027041	0.0024644
Mean Return	1.0113	1.0114	1.0118	1.011	1.0116	1.011	1.0113	1.0109	1.0111	1.0122
Loss (lambda = 1)	1.0089	1.0089	1.01	1.008	1.0094	1.0081	1.0083	1.0079	1.0084	1.0098
Loss (lambda = 5)	0.99917	0.99897	1.0028	0.99604	1.0006	0.99679	0.9962	0.99602	0.99758	0.99989

Seems to suggest 30 days as optimal (rather than varying with lambda)

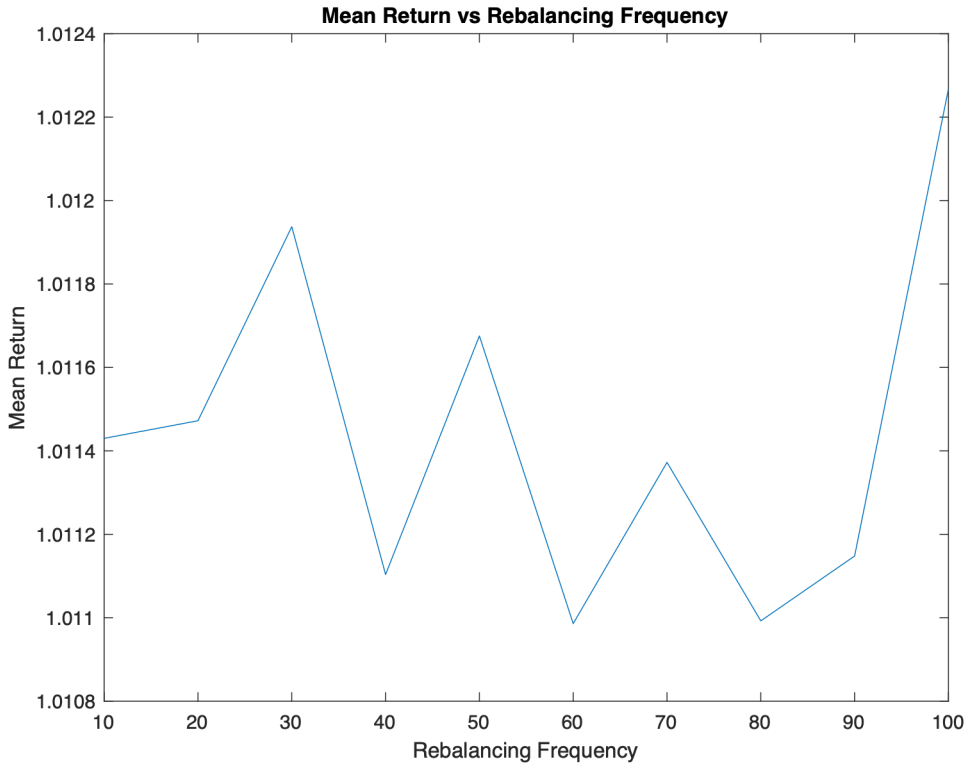


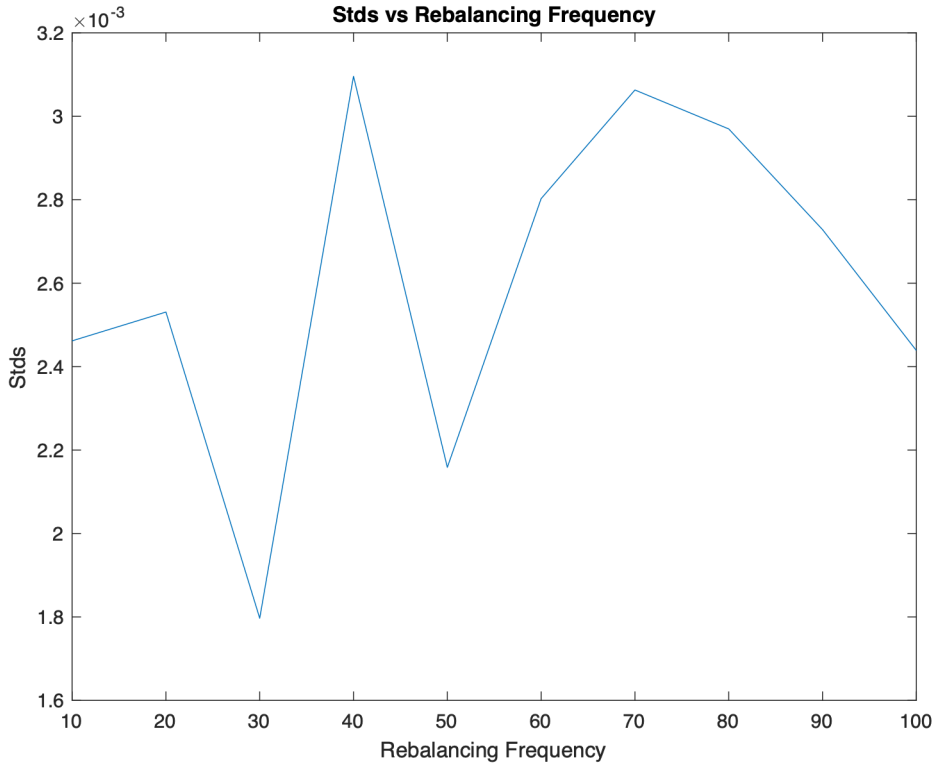


Ledoit-Wolf QIS: What happens if we vary rebalancing frequency

k=1, nsims = 100

	10	20	30	40	50	60	70	80	90	100
Std	0.0024618	0.0025308	0.0017969	0.0030957	0.0021585	0.0028026	0.0030631	0.0029697	0.0027284	0.0024386
Mean Return	1.0114	1.0115	1.0119	1.0111	1.0117	1.011	1.0114	1.011	1.0111	1.0123
Loss (lambda = 1)	1.009	1.0089	1.0101	1.008	1.0095	1.0082	1.0083	1.008	1.0084	1.0098
Loss (lambda = 5)	0.99912	0.99882	1.003	0.99563	1.0009	0.99697	0.99606	0.99614	0.99751	1.0001





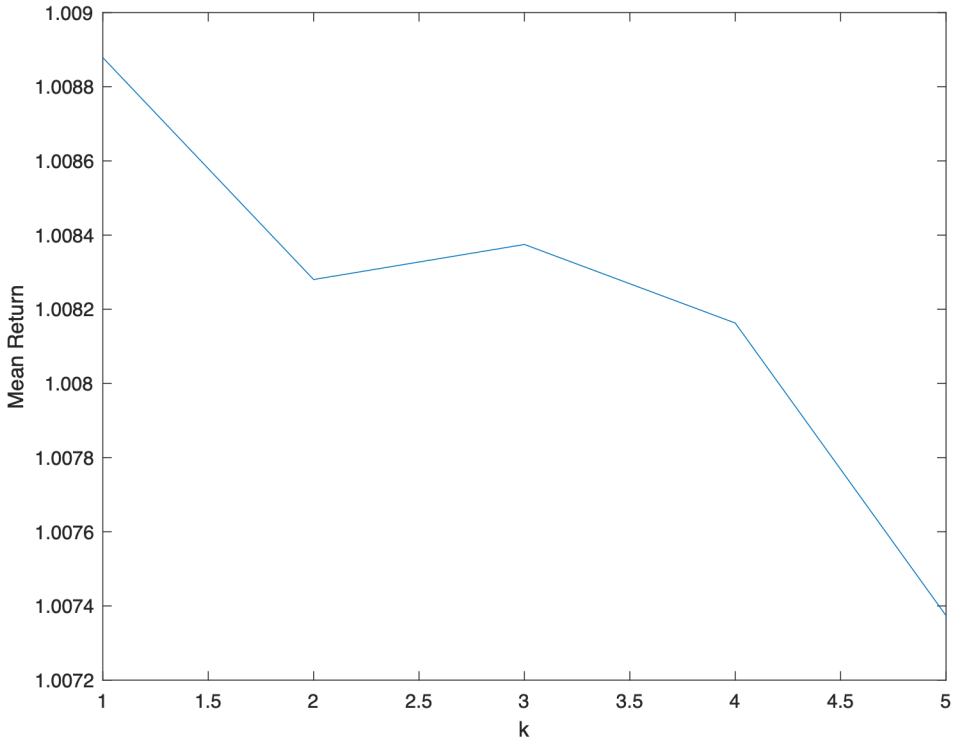
Also seems to suggest 30 day as optimal (rather than varying with lambda)

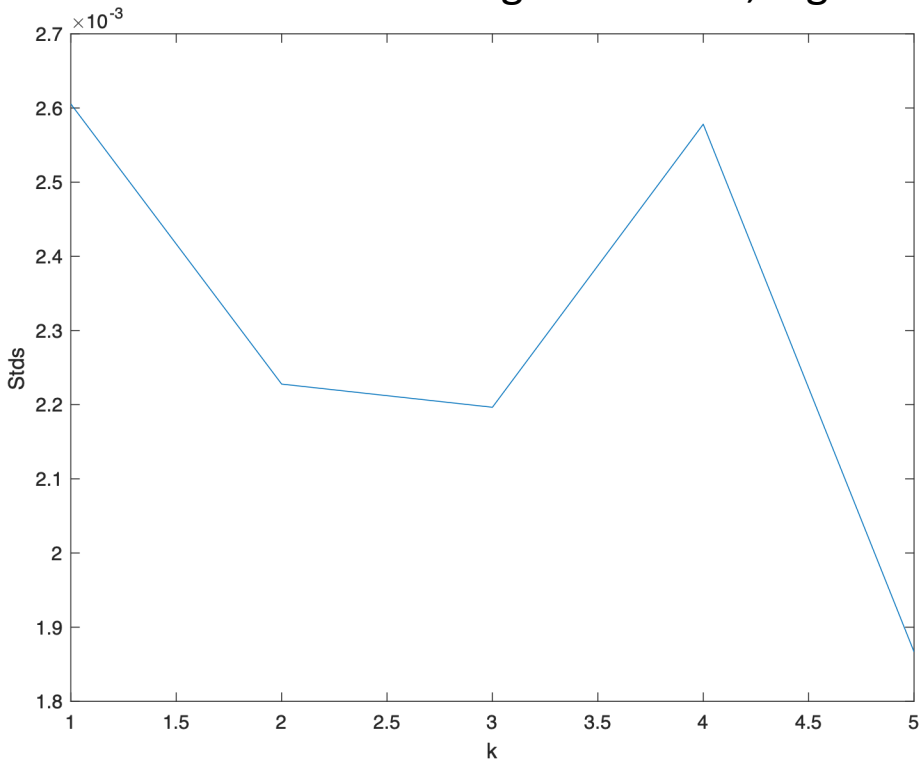
Ledoit-Wolf QIS: What happens if we vary k

	1	2	3	4	5
Std	0.0026054	0.0022278	0.0021965	0.0025781	0.0018668
Mean Return	1.0089	1.0083	1.0084	1.0082	1.0074
Loss (lambda=1)	1.0063	1.0061	1.0062	1.0056	1.0055
Loss (lambda = 5)	0.99585	0.99714	0.99739	0.99527	0.99804

Here, rebalancing_periods = 30

Higher k – lower ret and stds.
So: higher lambda, higher k?



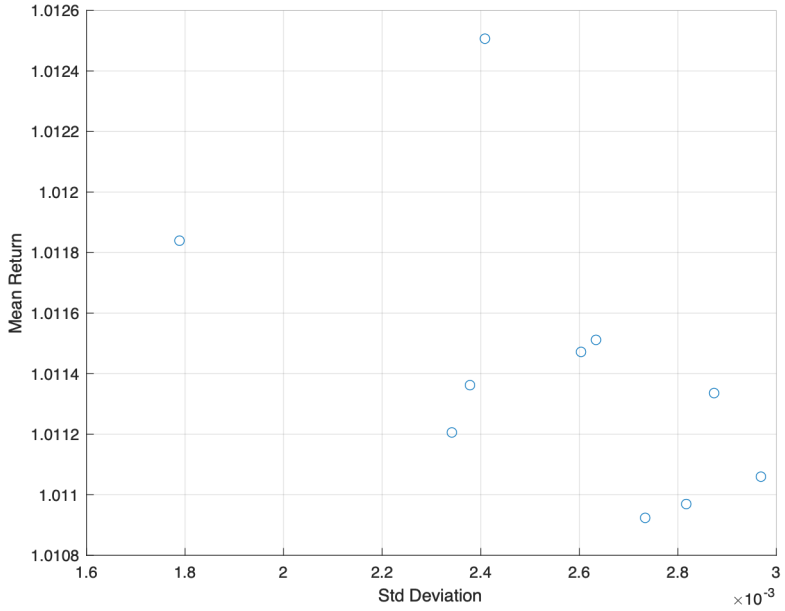


Try k = round(lambda);

```
loss_values =

  1×10 table
```

0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
1.0115	1.0115	1.0118	1.011	1.0113	1.0109	1.0113	1.0109	1.0112	1.0125



Doesn’t work….