

Answers to the Momentum Project

1. Distribution of Work

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Code:

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Question(b): Shunran He

Question(c): Shengdi Yao

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2. Answers to the questions

Q(a)

(1) File Introduction

The code to clean and reshape the data is included in the first section of 'momentum.m'

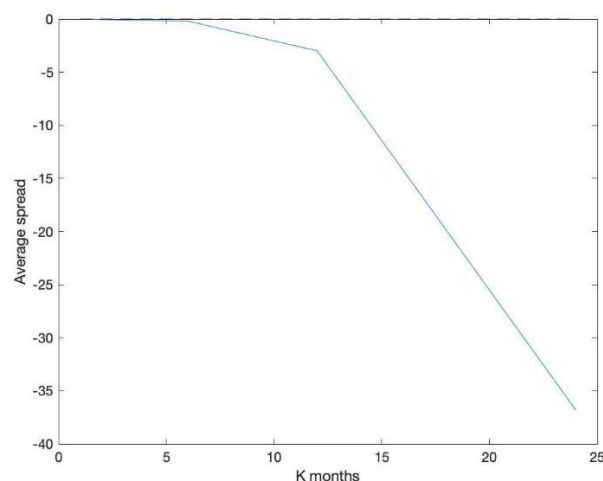
Q(b)

(1) File Introduction

This question requires six files to solve. The main function is in the second section of 'momentum.m', and 'cumret.m', 'cumret_bucket.m', 'ewret_return.m', 'prod_new.m', and 'wavg.m' are functions used in the main function.

'cumret.m' and 'prod_new.m' calculate cumulative returns, 'cumret_bucket.m' sorts stocks into different groups using their cumulative returns, 'wavg.m' calculates the equal-weighted returns of different portfolios, and 'ewret_return.m' returns the equal-weighted returns of portfolios in a table.

(2) Results Explanation



We plot the average equal-weighted return spread between high and low previous stock returns portfolios for $K = 1; 3; 6; 12; 24$. The figure above demonstrated reversal effect that is the tendency of securities with high returns over the past 1-24 months to underperform relative to

securities with low returns during the same period. Besides, the effect becomes more pronounced as the period is extended.

Q(c)

Files are in both main branch and momentum pca branch.

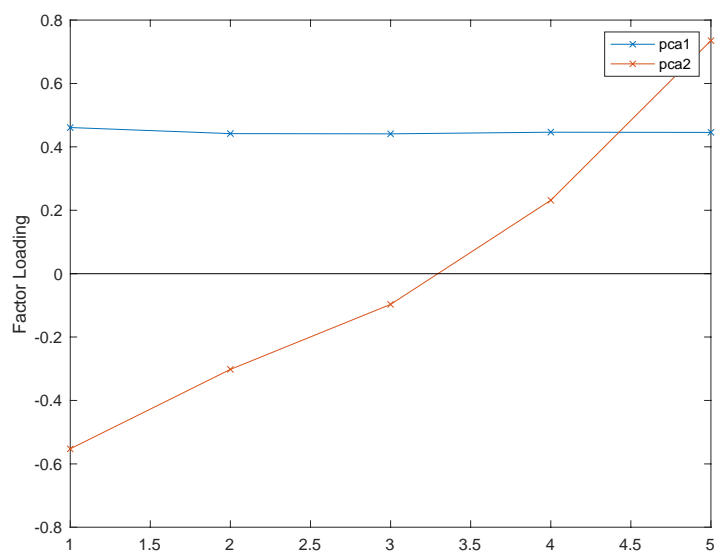
(1) File Introduction

This question requires two files to solve. The main function is in the third section of 'momentum_pca.m', and 'bucket.m' is a function used in the main function.

'bucket.m' divides stocks into different groups by break points.

(2) Results Explanation

We plot the coefficients of first two PCs.



The first PC mainly means the average of five portfolio returns. The second PC mainly means the “slope” of these returns, which means how many rates high previous stock returns portfolio is higher than low previous stock returns portfolio.

We unitize the coefficients of momentum factor and calculate the explained Var of both PCs factors and momentum factor. They can explain 0.0352, 9.1039e-04 and 7.6805e-04, which means that the Var momentum factor can explain is lower than the Vars PCs can explain.

According to coefficients of these factors, we can also find that momentum factor is similar to the second PC factor.