# Project: Trading strategies with FF3 sorted by EM and Free-cash-flow

## Introduction

Motivation:

* why we need to trade strategies with FF3?
* why we use EM and Free-cash-flow to sort strategies?
* why this two combined? Correlation?

## Model

### Data Selection

* Data source: CSMAR (China Securities Market Analysis and Research)
* Data range: 2014-01-01 to 2023-12-31
* Data frequency: Monthly
* Data coverage: Equities, Fixed Income, Commodities, and FX// dys to impute missing data

### Main Sorting Criteria

* **EM**: Expected Market Return (EM) is the expected return of the market portfolio, which is the sum of the expected returns of all the assets in the portfolio. It is calculated by multiplying the market return by the total market capitalization.
* **Free-cash-flow**: Free-cash-flow (FCF) is the cash flow that an investor can withdraw from the bank or other financial institutions without having to pay interest. It is calculated by subtracting the total liabilities from the total assets.

### Strategy Selection

FF3 is a popular trading strategy that combines the following three factors. And why we choose FF3?

\to do

### Results

This section will show the results of the strategy selection and evaluation.

#### Average Monthly Raw Return

table 1

#### Average Monthly Return with t-stat

table 2

#### Ablation Test

* Individually sortings: FCF EM

Two same table as before, but with different sorting criteria.

* Combined: to compare the difference between the two sorting criteria and the combined sorting criteria.

#### Main Program Steps

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* Data Preprocessing
* Strategy Selection
* Strategy Evaluation
* Strategy Backtest
* Strategy Optimization
* Strategy Deployment

#### Conclusion