

# Final Project of Portfolio Management

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# PART 1

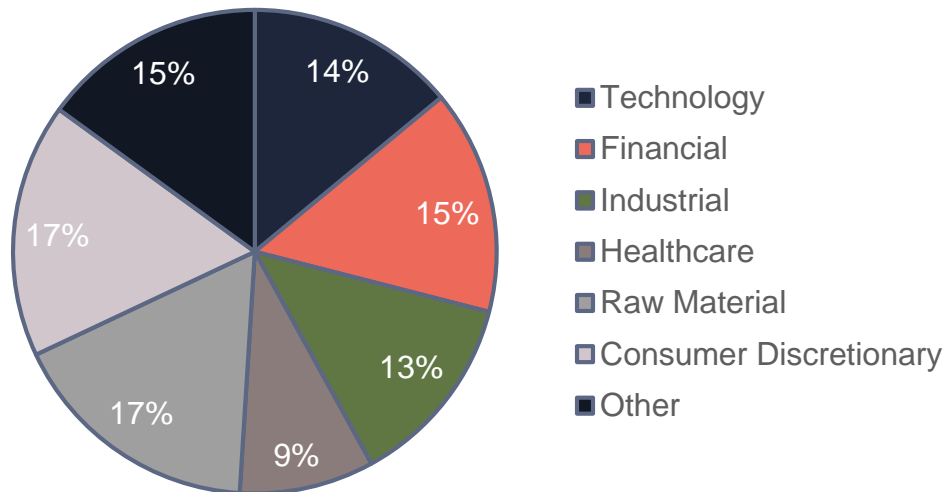
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## Overview

# Overview of DAX Index

- DAX Index is Value Weighted Index, the share of individual company is limited to 10%.
- Numbers of component stocks : 40
- Industry composition : 17% Technology, 17% in Raw material, 15% in Financial, 13% in Industrial.

## Industry Composition



## Main Company

Company	Ticker	Industry	Shares
Linde	LIN.DE	Material	10.47%
SAP	SAP.DE	Technology	10.18%
Siemens	SIE.DE	Industrials	8.65%
Allianz	ALV.DE	Financial	7.22%
Bayer	BAYN.DE	Healthcare	5.52%



# Country specific issue

- Global supply chain shortage : Supply chain hold-ups prevent some manufacturers from producing at full capacity. It indeed affected the Germany Industrial and automobile industry.
- Covid 19 : Surge in coronavirus infections in Germany affect the consumption demand. In the research, it forecast the consumer index will down 1.6 point in December. It definitely damaged the consumer industry.

## Supply chain shortage affect Industrials



## Main Company



# PART 2

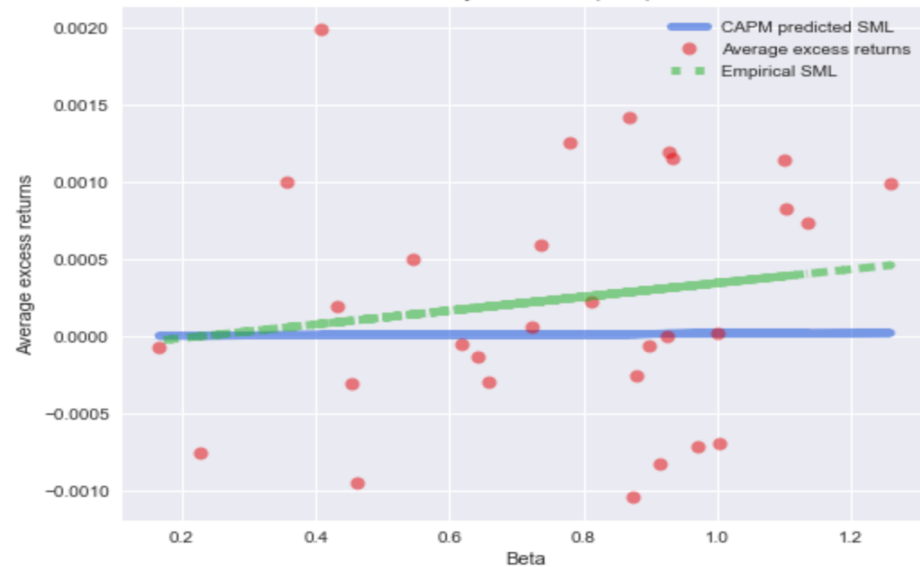
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Historical Return

# Historical risk-expected return for DAX

- NMSRP has the highest return in these portfolio.
- Most of portfolios have higher return than Value weighted portfolio which DAX used.
- CAPM predicted SML is flatter than Empirical SML because CAPM doesn't work so well in describing expected return.

## Security market line



## Historical Return for DAX



# PART 3

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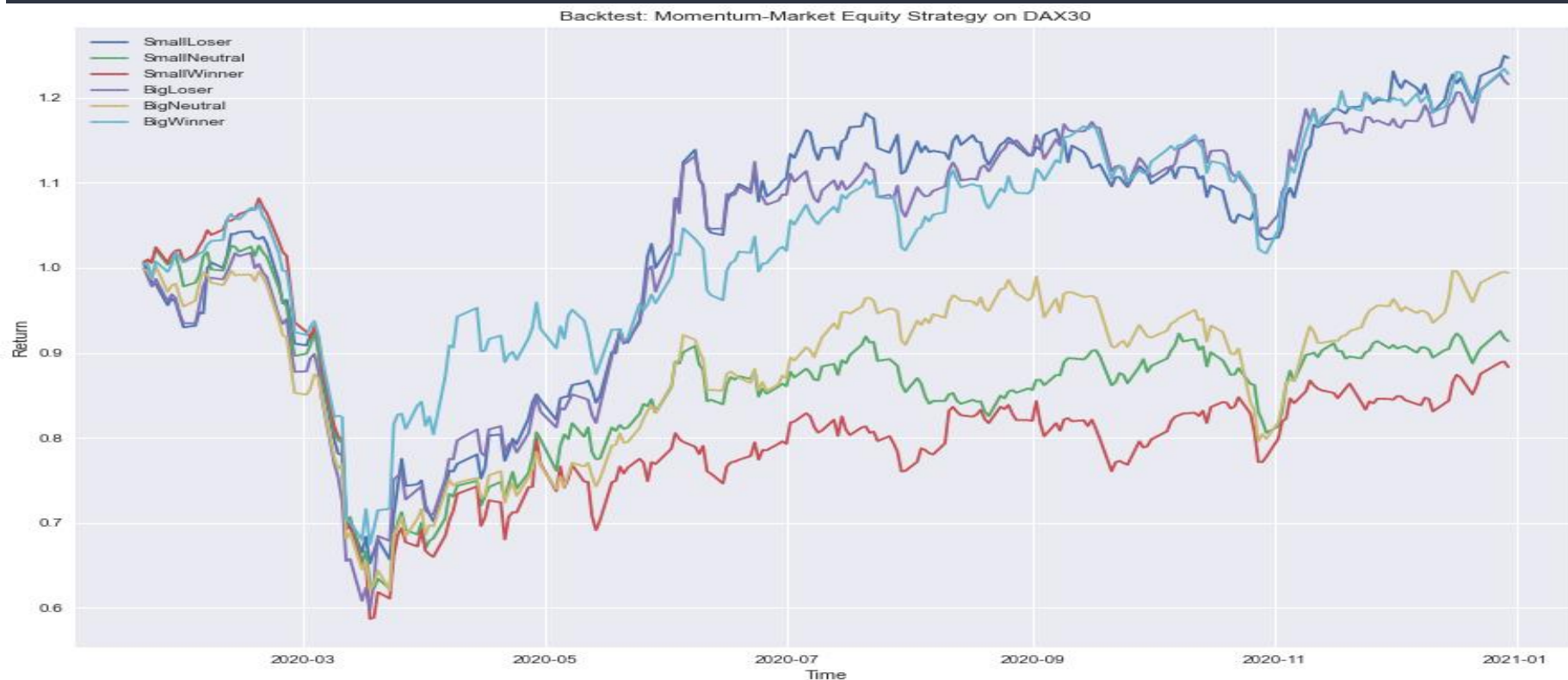
Strategy



# Proprietary strategy

- Used the 2 factor model (Market Equity and Momentum)
- Backtesting period: 2021.01.01~2020.12.31
- Identify each stock to one of the six sectors
- LONG the best performing three sector and SHORT the remaining sectors

## Factor for our ME+MOM strategy



# PART 4

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## Comparison

# Comparison

- Advantage: lowest volatility
- Disadvantage: did not outperform other strategies

## Comparison of strategy

Strategy	Return	Standard Deviation
MoM+ME	7.8%	1.8%
PWI	7.01%	4.3%
VWI	10.9%	5.3%
GMVP	-2.5%	6.1%
EW	9.8%	5.1%

## Comparison of cumulative return plot



# PART 5

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Potential Risk

# Potential Risk of our strategy

## Potential Risk :

- Momentum can be undependable
- Future performance may not be relevant with previous performance.
- Strategy' s transaction cost may be high because we need to adjust our strategy frequently.

## Implementary :

- Our strategy only contains different weight in DAX component, so it is implementary. However, we have short position in our portfolio, it is more difficult to implement our strategy.

# PART 6

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Performance



# Strategy's performance

- Strategy's Sharpe Ratio: 4.3%
- One Year cumulative return: 16.39%
- DAX30 cumulative return: 14.77%

## Our strategy performance (out of sample)

Out of Sample: LONG top three SHORT last three strategy



## Benchmark performance (out of sample)

