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Class of 2025 – 4th year internship
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ESILV | ÉCOLE D'INGÉNIEURS PARIS-LA DÉFENSE
LÉONARD DE VINCI

中泰证券 ZHONGTAI SECURITIES

Analyst of asset allocation
Shanghai - Zhongtai Securities Research Institut
Tutor: Xiaowei Ni

Objective: Establishment of Investment Clock strategies

❶ Allocation on 4 major assets

Stock   **$ Bonds $**
Commodities   **Gold**

❷ Study on Investment Clock & Data treatment with Python

Source: Royal London
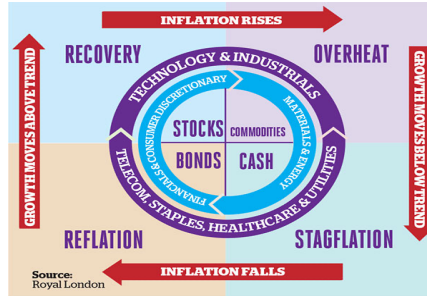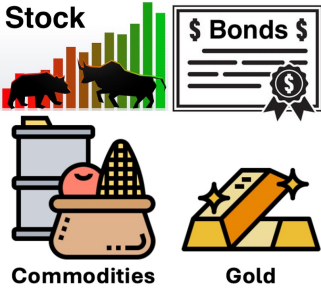
- **Monthly** data from Wind **API**
- **Uniformization** of every data
- Filling **missing values**
- Detection of **seasonality**
- **HP filter** (focusing on **variation**)
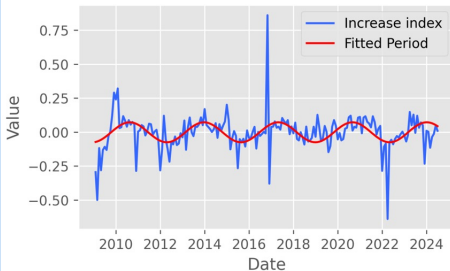- **Year-on-year** conversion
- Selection of **leading indices**

❹ Construction of factor indices & Period fitting

Increase index constructed by OECD method

Legend: Increase index, Fitted Period

❸ Selection of 4 macro factors & Corresponding benchmark indices

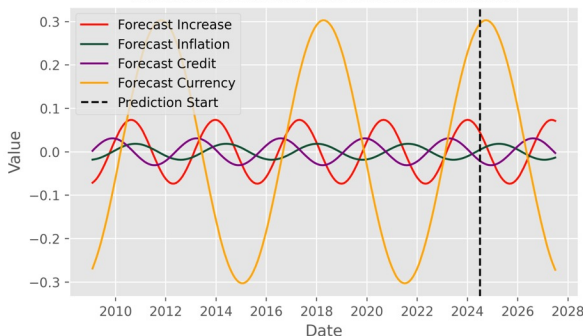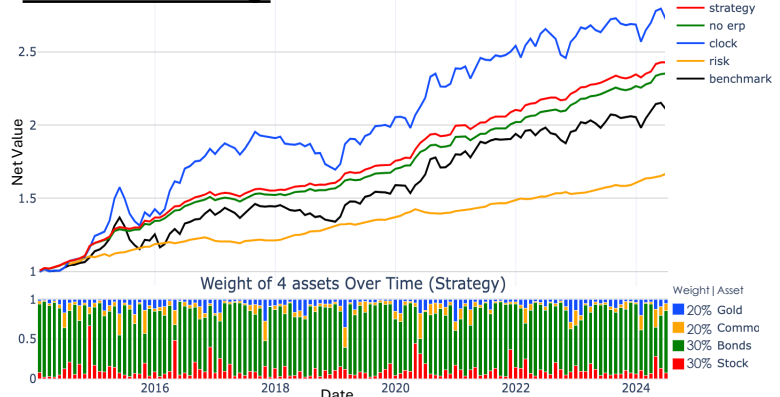| Macro factors	Benchmark indices	Leading indices
Increase	PMI	Electricity Generation, Aluminum, Sulfuric Acid, Air Conditioners, Automobiles, Forklifts, Total Freight Turnover, Tax Revenue, Real Estate Development Investment Completed Amount
Inflation	CPI & PPI	Pork, Rebar, CRB Oil and Fat Index, Crude Oil, Cement
Credit	M1 - PPI	M2, Total Social Financing, Financial Institution Loan Balance
Currency	One-year Treasury bond yield	R007, SHIBOR: 3 Months, USD/CNY

❺ Macro – asset mapping & Factor's period prediction

Factor's signal		Stock	Bonds	Commodities	Gold
Increase	⬆	Long	Short	Long	Hold
	⬇	Small short	Long	Small short	Small long
Inflation	⬆	Hold	Small short	Long	Long
	⬇	Hold	Hold	Short	Short
Credit	⬆	Long	Hold	Small long	Small long
	⬇	Small short	Hold	Small short	Small short
Currency	⬆	Hold	Small long	Short	Hold
	⬇	Hold	Small short	Long	Hold

Combined Indices with Future Predictions

Legend: Forecast Increase, Forecast Inflation, Forecast Credit, Forecast Currency, Prediction Start

❻ Backtesting & Optimisation

((Period + Momentum = Clock) + Risk = No ERP) + ERP = Strategy
Result of backtesting

Legend: strategy, no erp, clock, risk, benchmark

Weight of 4 assets Over Time (Strategy)

Weight | Asset: 20% Gold, 20% Commo, 30% Bonds, 30% Stock

2014.1 - 2024.6	Net value	Annual return %	Volatility %	Max Drawdown %	Sharpe Ratio
Strategy	2.43	8.82	3.65	-1.99	1.60
No ERP	2.35	8.49	3.46	-2.07	1.59
Clock only	2.72	10.00	9.91	-16.59	0.71
Risk only	1.67	4.99	1.98	-3.23	1.00
Benchmark	2.11	7.37	8.27	-15.82	0.53