

# Quantitative Investing

---

A systematic approach to stock selection  
based on statistical data analysis

Hong Kong, June 2020

# Agenda

---

1. Introduction
2. Factor Investing
  - a. French/Fama Five-Factor Model
  - b. Develop and Test Investment Hypothesis [Demo]
3. Conclusion
4. Questions

# Quantitative Strategies - Drivers

---

Data

1982 Bloomberg  
Terminal

1990 Bloomberg  
News

2005 1bn  
Internet users

Tools

Python and open  
source libraries

Jupyter  
Notebook

Cloud and  
Computing

**“USD 1.5 trillion** invested in smart beta, quant and factor-based strategies with AUM growing by **17% per year** on average since 2010.” Morgan Stanley

Quantitative  
Investing

Smart beta  
Investing

Factor Investing

Alternative Factor  
Investing

# French/Fama Five-Factor Model

## Factor Investing

- Factors represent certain security-specific attributes that explain the return and risk of a group of securities in the long run.
- Statistical pattern recognition on factor constellations, which historically led to market outperformance.

### French/Fama Five-Factor Model

1 Market risk	2 Size	3 Book-to-Market	4 Profitability	5 Investment
Low sensitivity	Small Cap	Low	Weak	Conservative
High sensitivity	Large Cap	High	Robust	Aggressive

## Fund Factsheet

- Market: APAC ex Japan
- Asset class: Equity
- Size: Small Cap
- AUM: US\$ 1bn
- Strategy: Active manager  
Traditional long only

# French/Fama Dataset – APAC Equity Small Cap

<EQUITY> <APAC ex JP> <Size> <Profitability> <Investment>

- Asia Pacific ex Japan covers Hong Kong, Singapore, Australia and New Zealand stock market
- Small cap stocks represent the bottom 10% of the market in terms of market capitalization
- Profitability (EBT) and Investment ( $\Delta$  Total Assets) factors are defined using quartiles
  - Lo (Low) represents the first quartile
  - Hi (High) represents the fourth quartile
- Monthly Average Value Weighted Returns [%]

Portfolios	Small Cap		Investment	
			LoINV	HiINV
	Profitability			
	LoOP		LoOPLoINV	LoOPHiINV
	HiOP		HiOPLoINV	HiOPHiINV

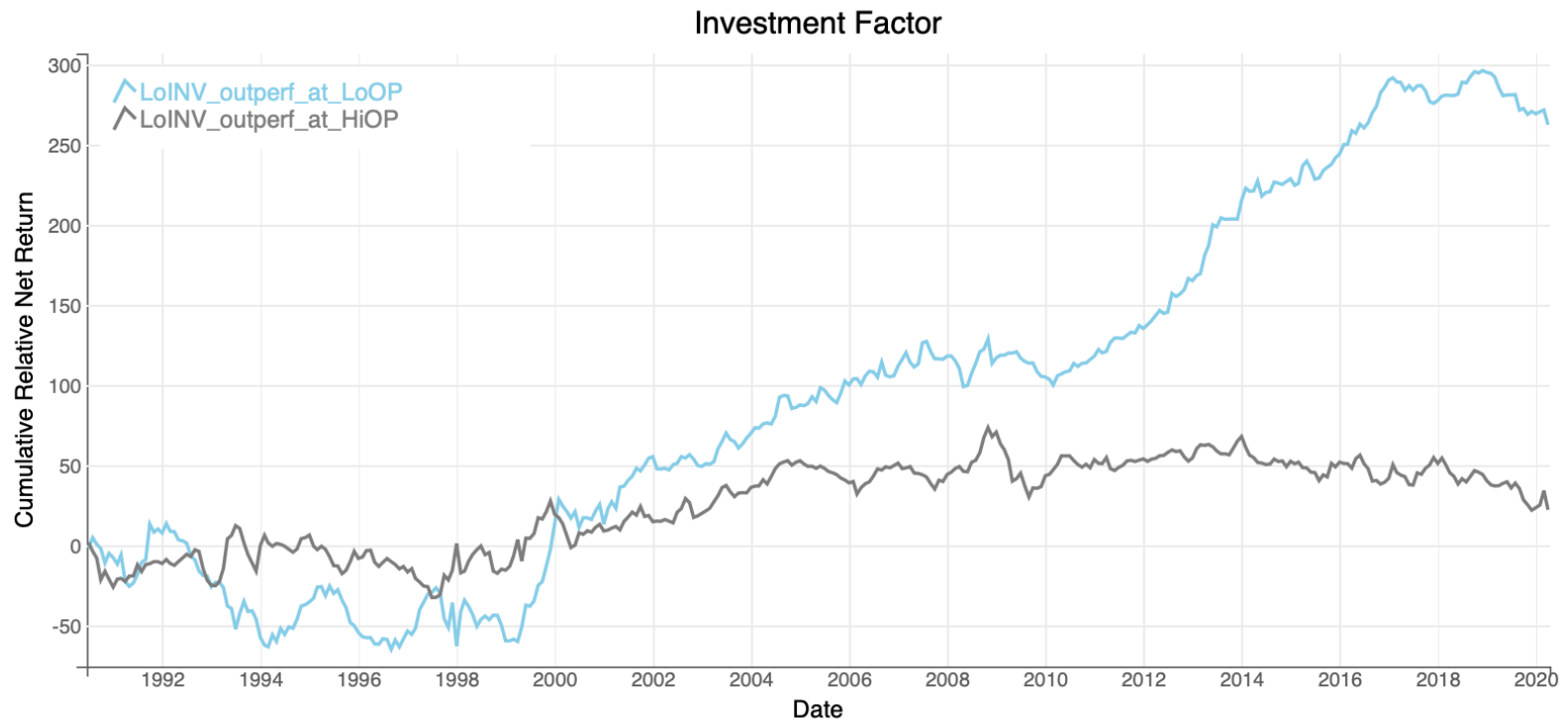
# Investment Hypothesis – Investment Factor

## Investment Factor

Difference between returns on diversified portfolios with stocks showing conservative vs aggressive investment behavior

## Investment Hypothesis

Stocks of small cap companies with conservative investment behavior have historically outperformed those with a high total asset growth over long term.



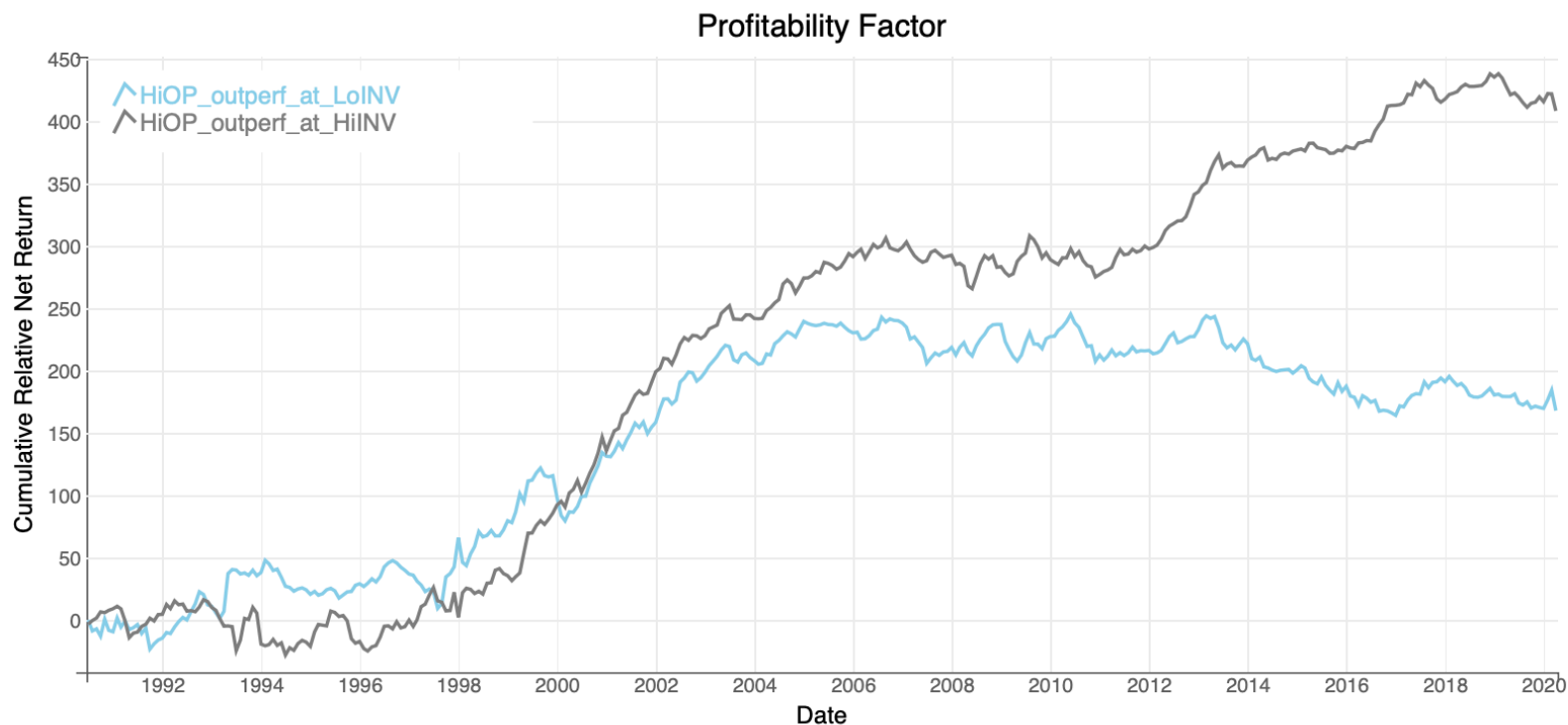
# Investment Hypothesis – Profitability Factor

## Profitability Factor

Difference between returns on diversified portfolios of stocks with robust and weak operating profitability.

## Investment Hypothesis

Stocks of small cap companies with a high profitability have historically outperformed those with a weak operating profitability over long term.

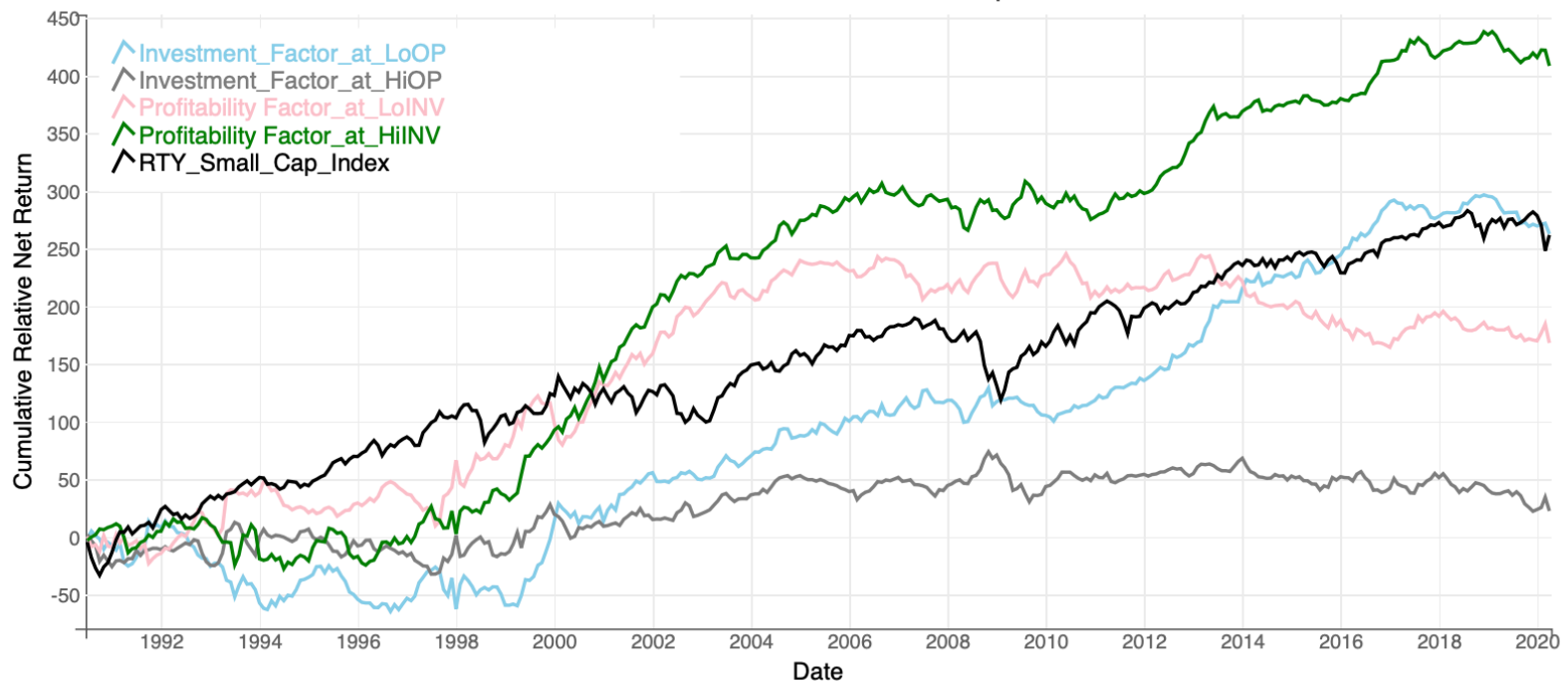


# Investment Hypothesis – Testing

## Testing tools

- ✓ Performance testing relative to Market Index over time
- ✓ Investigation of historical stock outliers
- ✓ Momentum anomaly testing
- ✓ Factor strategy testing across asset classes, markets and time periods

Performance relative to Small Cap Index





# Quantitative Strategies - Conclusion

## Tailored investment analysis

Quantitative testing of tailored factor analysis using quantitative data platform:

- ✓ Dynamic factor selection definition of factor thresholds
- ✓ Interactive data visualisation and exploration
- ✓ Performance tracking relative to Market Index
- ✓ State of the art backtesting tools
- ✓ Access to machine readable, standardized and cleaned quantitative datasets



### Investment Screening

- ✓ Stock selection based on tailored factor model and fund's investment universe
- ✓ Regular systematic review of stock recommendations



### Passive Strategy

- ✓ Automated ETF stock selection based on tailored factor model
- ✓ Automated rules based portfolio rebalancing
- ✓ Robust portfolio diversification across factors

Questions?