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Client Profiling via AI
Speaker：Changle Lin

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1 Robo-Advisor Service Process

2 Client Profiling Technology

3 Client Lifetime Value Model

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1 Robo-Advisor Service Process

1.2 Content of Robo-Advisor

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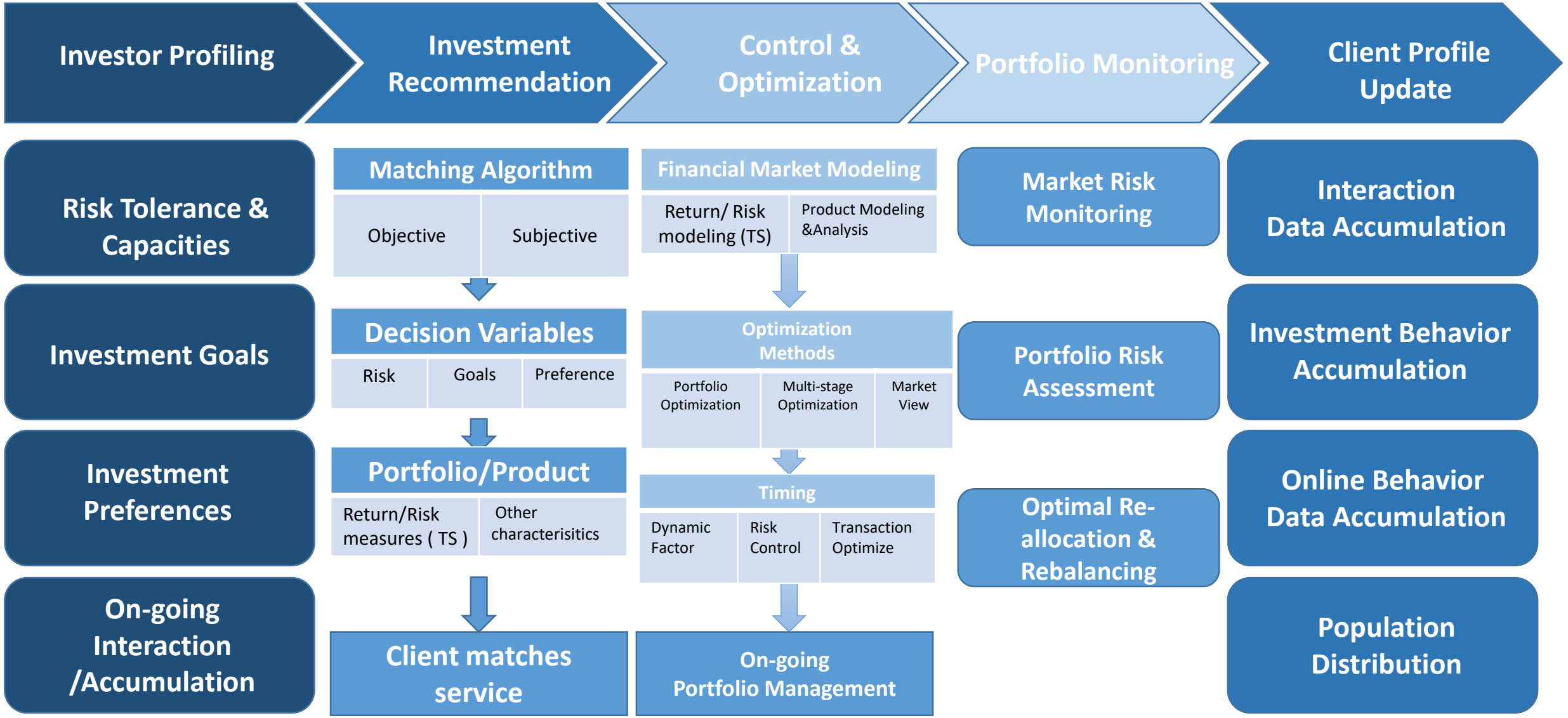

1.4 Regulatory of Robo-Advisor

- Important regulatory documents include the December 1997 issue of "Securities, Futures Investment Advisory Management Method",
- issued in October 2010, "Interim Provisions on Securities Investment Advisors,
- Issued in 2013 on the use of "stock recommended software "

- Currently under the supervision of traditional services: "Investment Advisors Act 1940" (Investment Advisors Act of 1940)
- On May 8, 2015, the Securities and Exchange Commission, the Financial Industry Regulatory Authority (FINRA), issued the "Investor Alert: Automated Investment Tools" to alert investors regarding risks and limitations in using them
- On March 15, 2016, the Office of Investor Education issued a Report on Digital Investment Advice, focusing on five areas: Algorithms, client portfolios, regulatory and conflicts of interest, client profiling, combined rebalancing, and training of staff

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2 Client Profiling

2.1 Basic tags

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Tags: Basic Information

- Name
- Asset account
- gender
- Date of birth
- Address
- Account opening date
- client risk level
- Sales Department
- client account status
- Asset Account Status

Tags: Asset (asset accounts)

- Daily total assets
- Daily fund balance
- Daily total position market value
- Daily security market value
- Daily open fund market value
- Daily Stock Position
- Daily transfer(turn in) of funds
- Daily transfer(turn out) of funds

Tags: Trade

- Turnover (the lastest year)
- Daily total purchase securities(asset accounts)

2.1 Basic tags

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Tags: Profit and loss analysis

- Daily profit of stock (asset accounts)
- Daily profit (asset accounts)
- Daily rate of return (asset accounts)
- Weekly return (asset accounts)
- Monthly Yield (asset accounts)
- Annual rate of return (asset accounts)
- Cumulative Rate of Return (asset accounts)
- Winning stock (the latest year)
- Daily Cost (weekly)
- Daily cost (monthly)
- Daily cost (yearly)
- Daily cost (the latest year)
- Daily cost (cumulative)
- Single Securities Day Cost (the latestYear)
- Industry day cost (the latest year / SW level one)

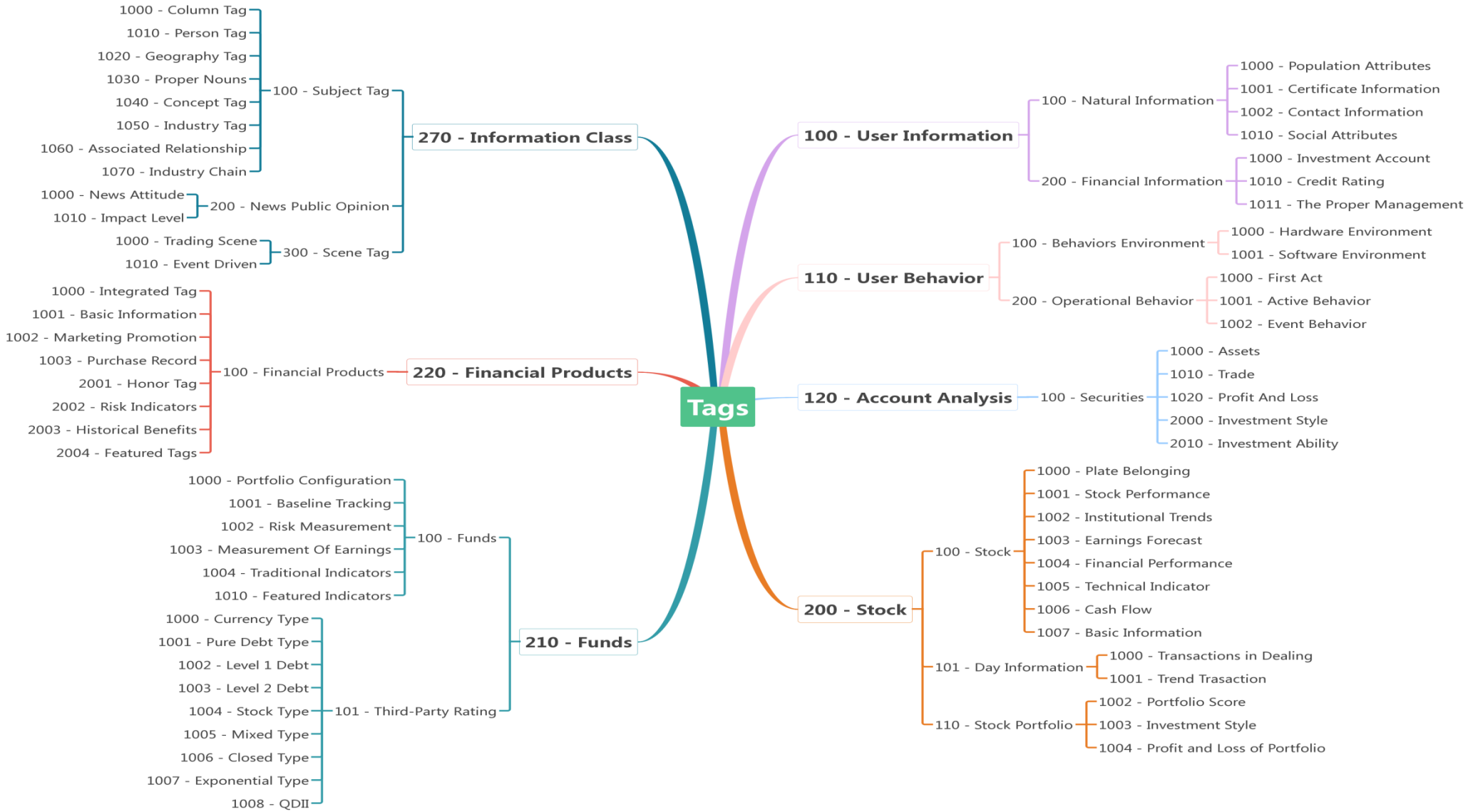
Tags: Interest

- Stock sector (SW level one)
- Stock concept
- Interest concept (the latest year)

Tags: Account Diagnosis

- Timing ability
- Profit-making ability
- Stability
- Courage
- Discipline
- Account score total (account)

2.1 Basic tags



2.2 Investment Evaluation

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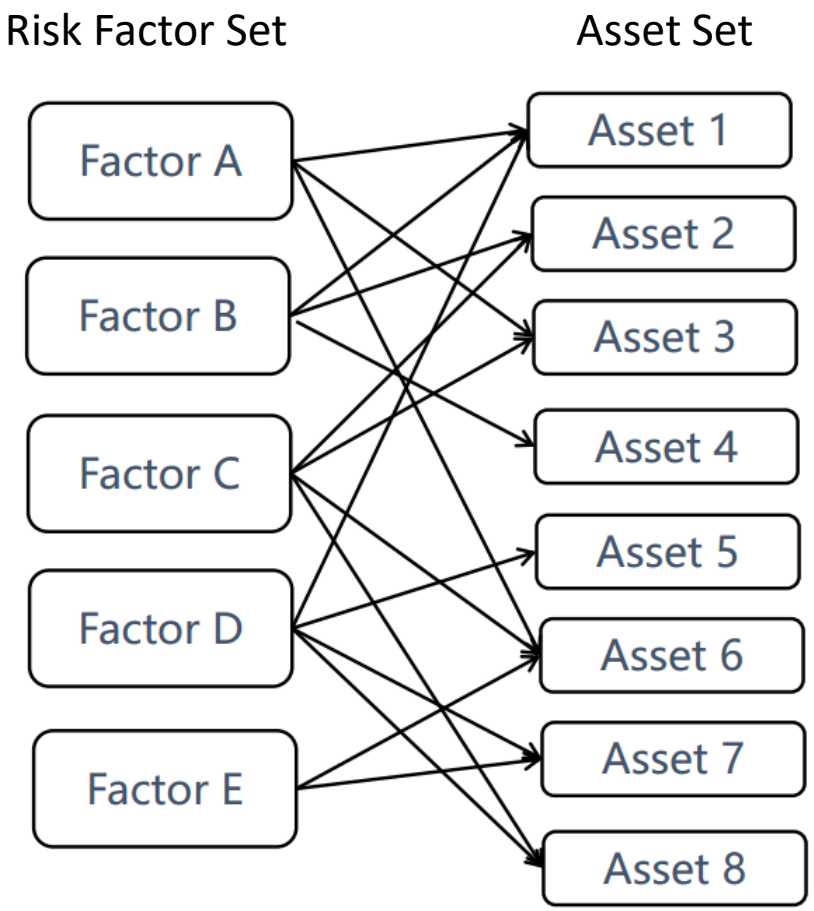
Classification of Tags	Type of Tags	Representative Tags
Investment Abilities	Investment	Stutzer Index, Sortino Ratio, Treynor Index, M.C.V Index
	Timing Ability	C-L Timing Ability Coefficient, Timing Ability Index
Baseline Tracking	Benchmarking	Relative Performance, Performance Contribution
Risk Measures	Loss class measures	Average loss,Loss frequency
	Persistence measures	Shadow Price Deviation, Style switching measures
	Downside	Downside Beta, Downside Risk Factor
Return Measures	Return Measures	Morningstar Risk Adjusted Return MRAR, Adjusted Return,Continuous Return, Monthly Rate Of Return
Others	Portfolio level	Portfolio Average P/E Rate of Return,Portfolio Average P/B Rate of Return,Portfolio Average Net Asset Rate of Return

2.3 Factor Decomposition



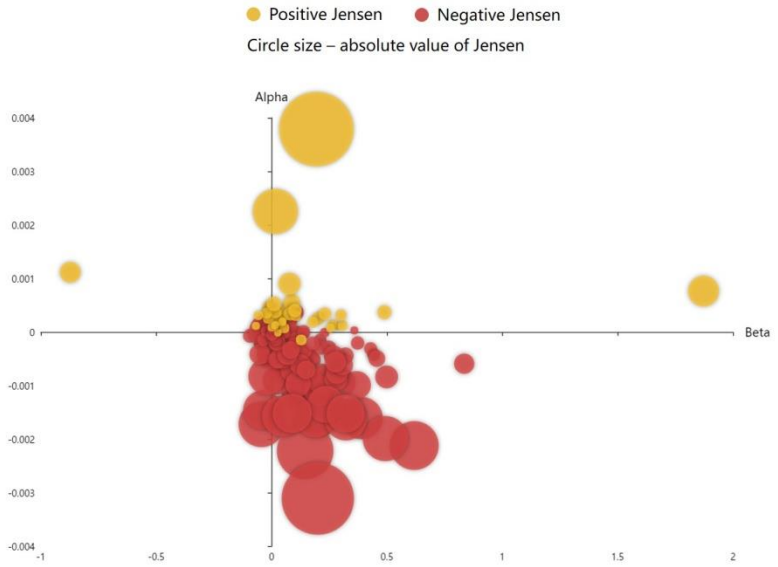
- Based on the local market, combined with empirical studies and economic insights.
- Decompose investment performance into major risk-drivers
- Why the investor makes/loses money ? Investment style, preferences, etc.

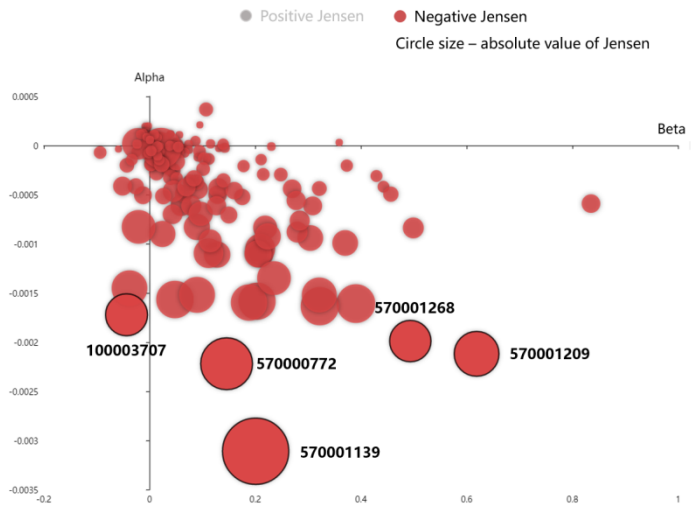
2.4 Some empirical results

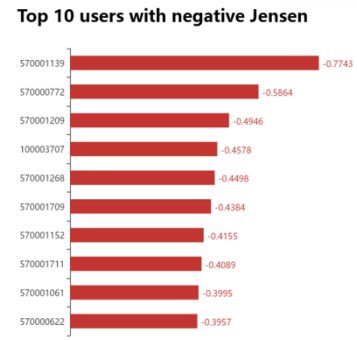
Richard Thaler says investors are generally over-confident

1. The Jensen Index reflects excess

2. Jensen's alpha are generally negative





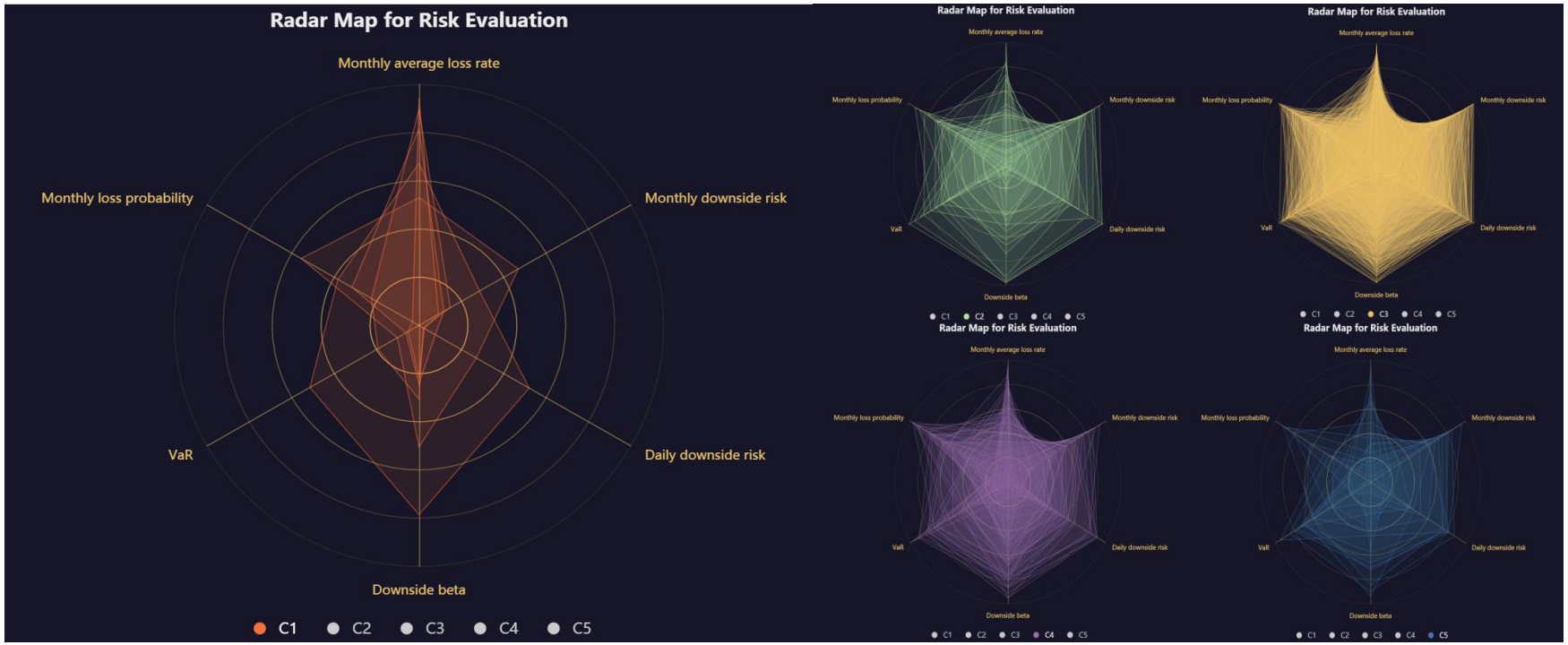


2.5 Personas Analysis-Based on Investor Applicability

Are you answering risk questionaires accurately?

Is the risk questionaire designed correctly?

Risk measures in different risk categories



2.6 Personas Analysis-Based on User Ranking

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-Who are the abnormalities ?

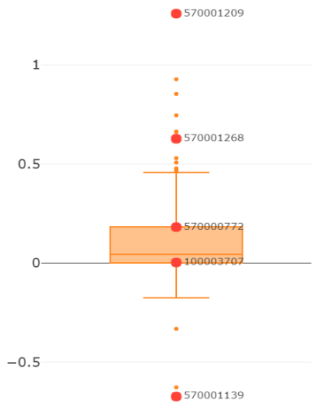
- What should securities firms do?

- For financial advisors?

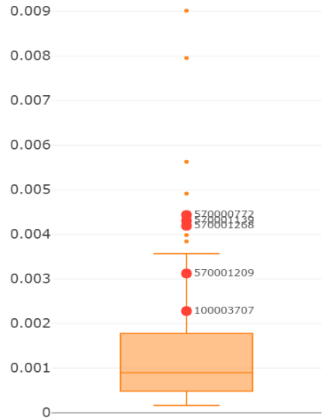
- For regulators?

- For clients themselves?

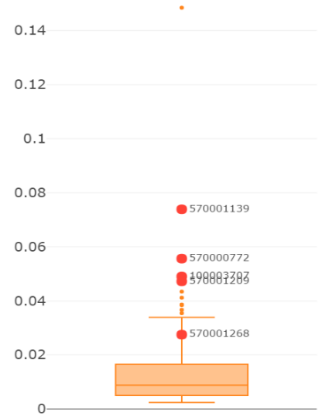
Risk Evaluation



Downside beta



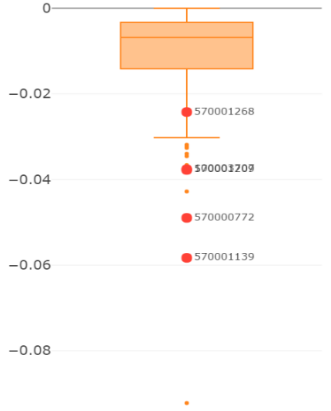
Downside risk-day



Downside risk-month

VaR

Monthly loss probability



Monthly average loss rate

2.7 Personas Analysis-Based on User Clustering

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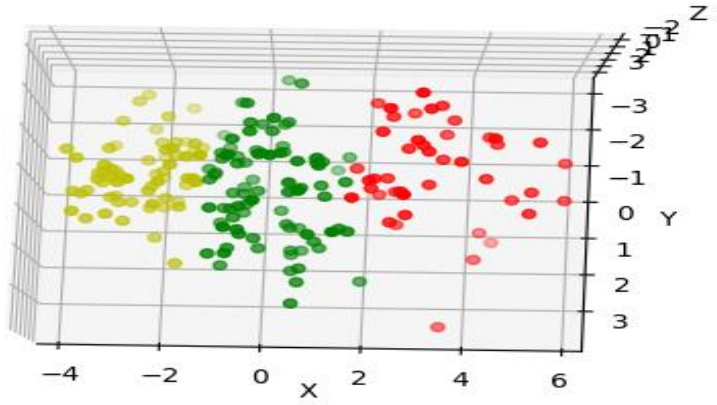
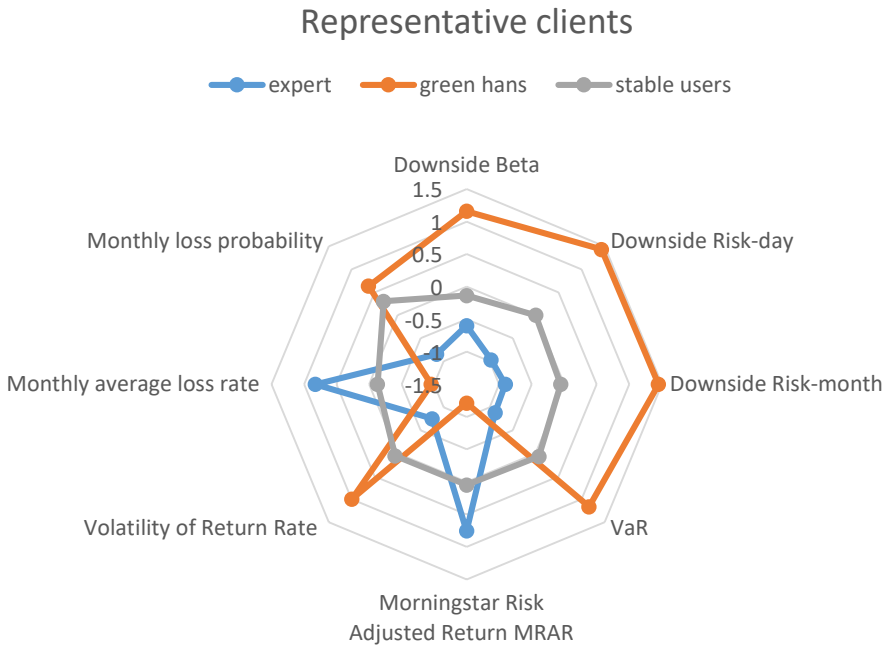
-Unsupervised learning

- Classification shows different client categories



Distribution of client Sample

Result of Clustering



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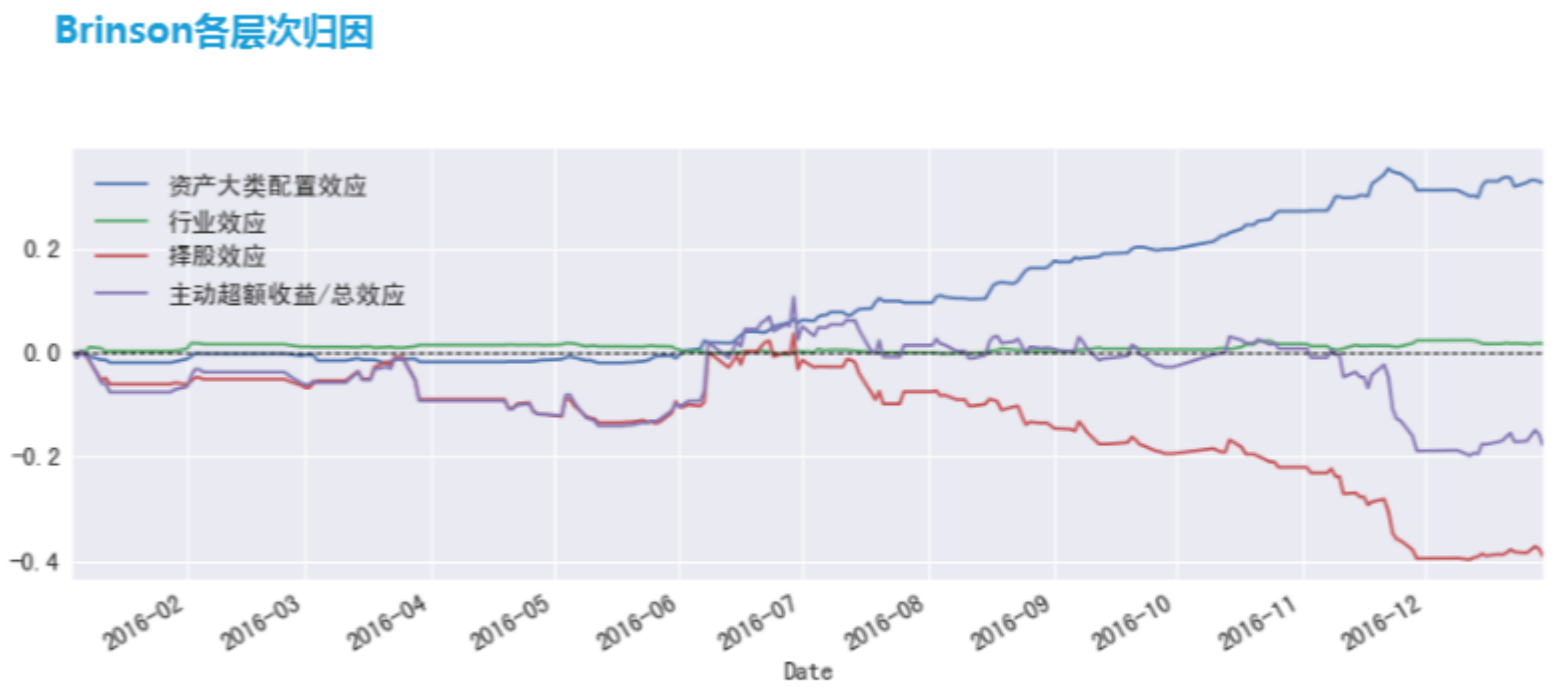

客户资产配置能力较强，行业配置能力一般，择股能力较差。其中大类资产配置效应将择股差造成的损失挽回了一半。

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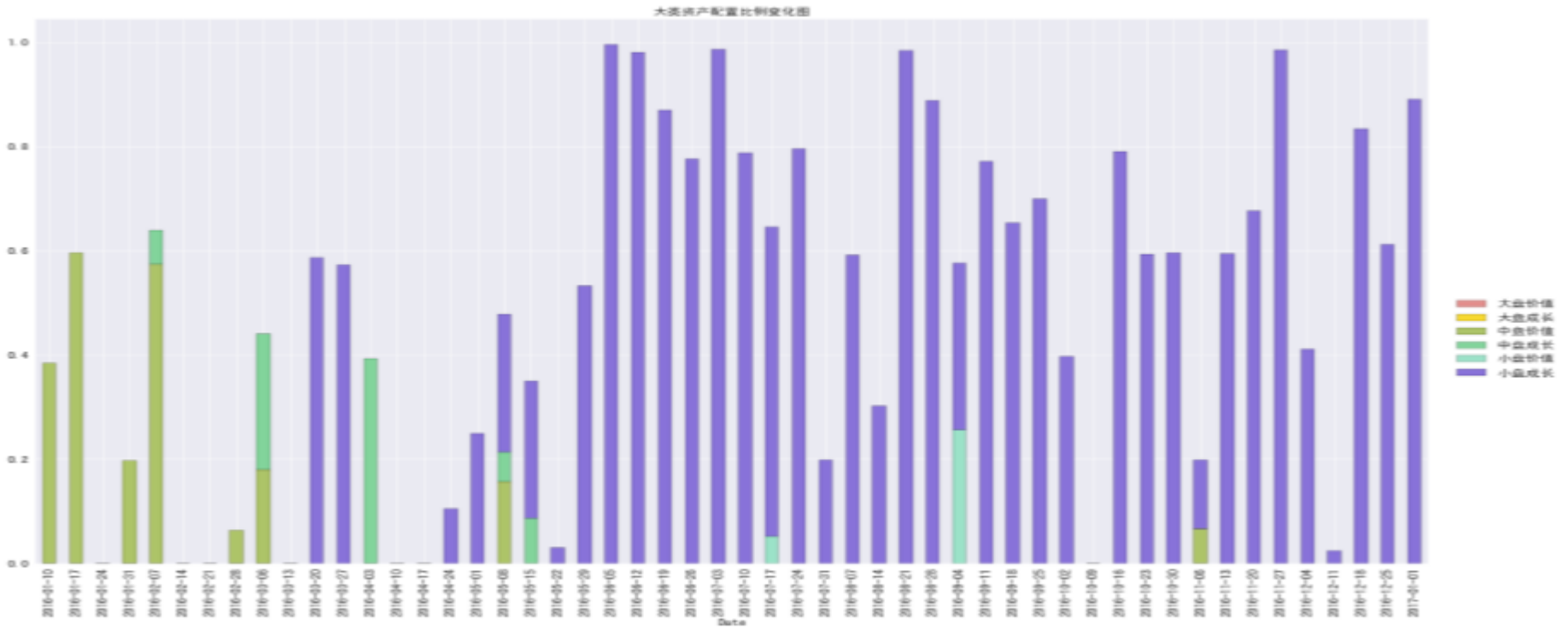
资产大类配置归因

○月 ◉周



客户年初主要持有中盘价值股；从3月份开始，主要持有小盘成长股。

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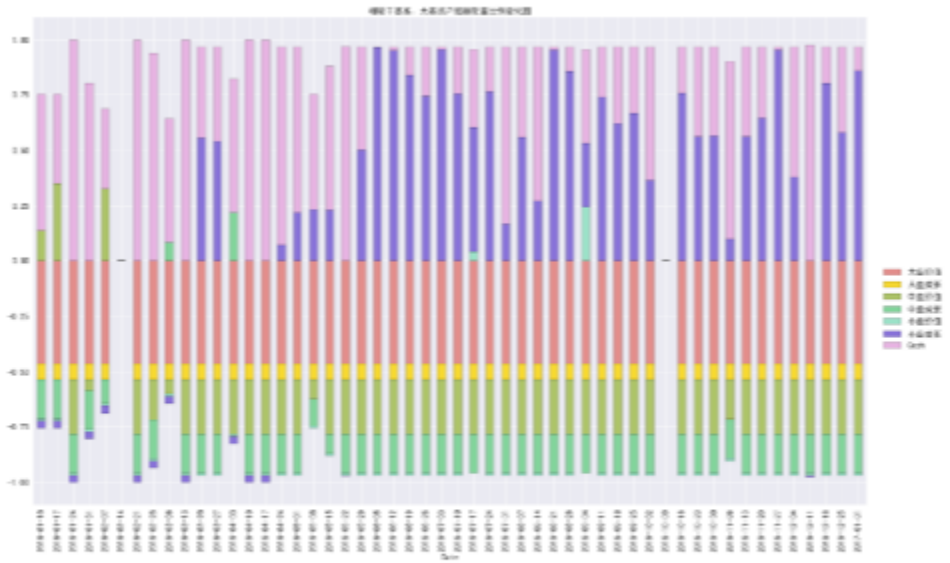

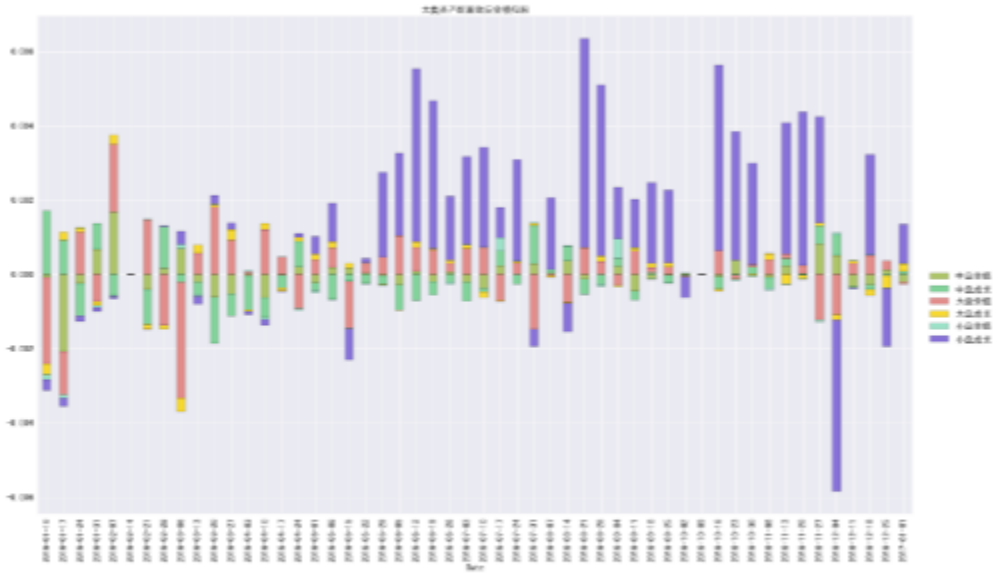

通过比较相较于基准的大类资产超额持有比例图（左图）与大类资产配置效应归因图（右图），可以看出：客户持有的小盘成长股贡献了资产配置层面的绝大多数收益；联系上面图2，注意到可以没有持有的大盘价值、中盘成长股在年中后仍然带来业绩收益的波动，这是由于这些资产类型收益率可能在0左右波动，在收益率为负时，客户没有配置该类型资产，反而相较于基准会获得正的收益。

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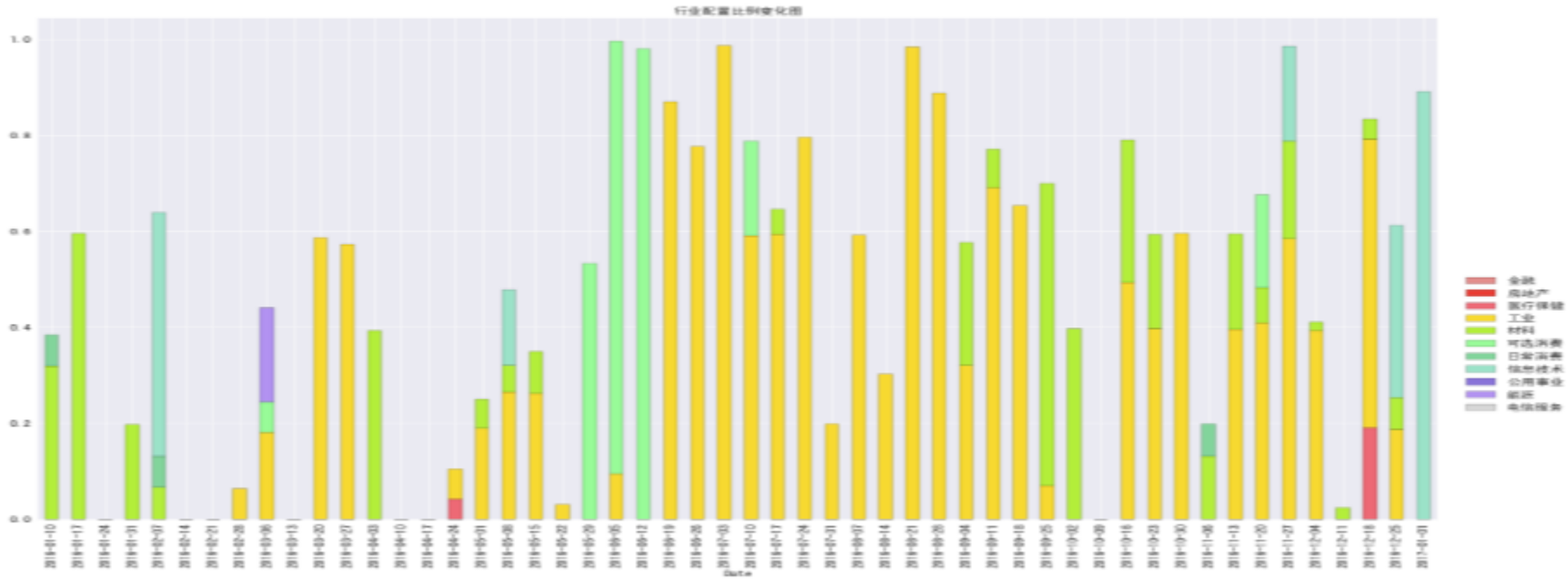
行业配置归因

○月 ◉周



客户主要配置了工业股，在年初及9月、10月、11月配置了一定比例材料股；在5月下旬、6月上旬、中旬主要配置了可选消费股；2月上旬及年末短暂持有信息技术股。

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通过比较相较于基准的行业配置超额持有比例图（左图）与行业配置效应业绩归因图（右图），可以看出：工业股、材料股收益受行业周期影响较大，正负收益基本抵消； 可选消费收益贡献基本为负；由于市场不景气，其余行业收益接近0或者为负，相较于基准，减少各行业配置股票配置这一决策反而带来了正的收益，即股票收益率低于现金收益率。

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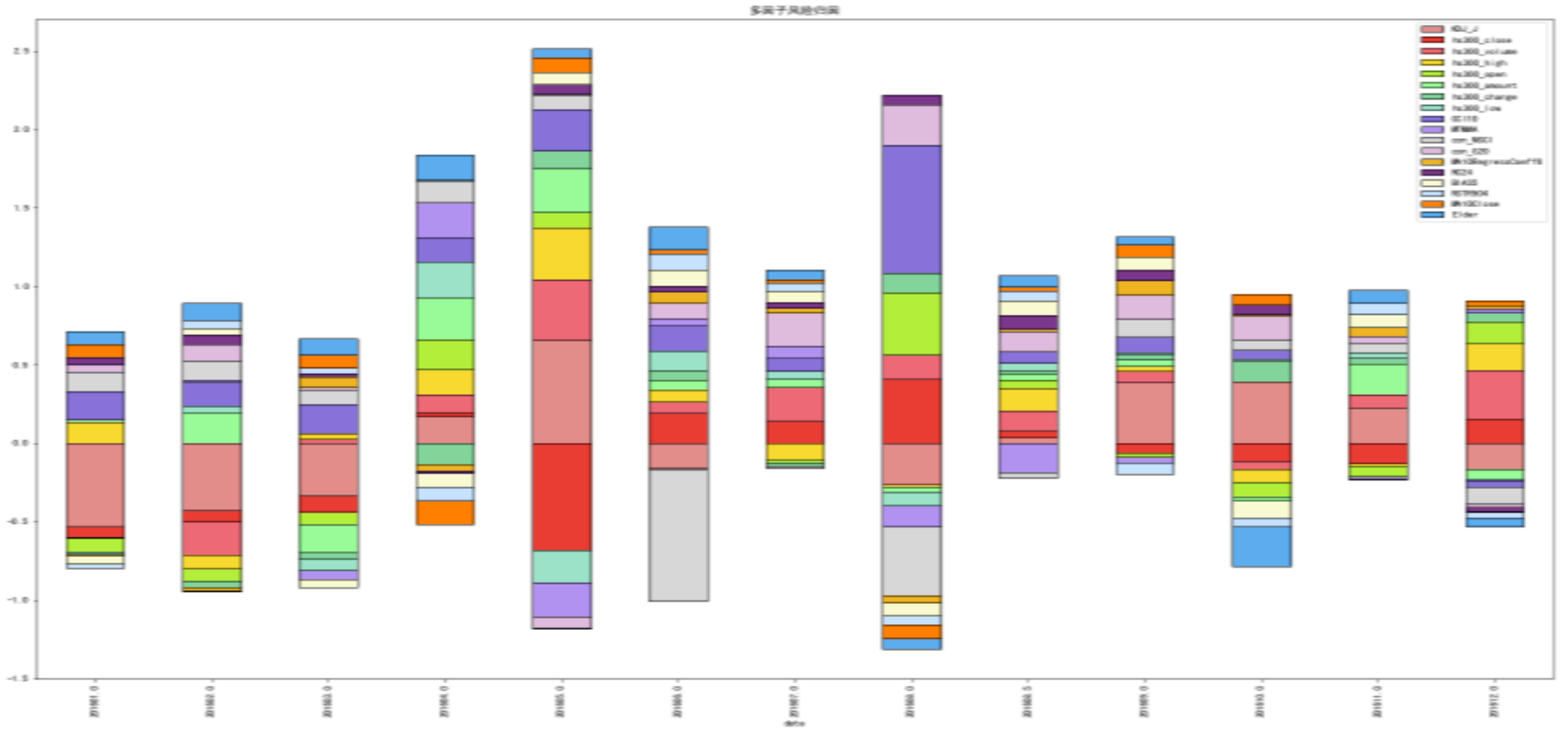
多因子框架



客户年初时，尽管市场遭遇股灾，由于相关因子暴露敞口小，收益受大影响较小；4、5月份起由于大盘反弹相关因子的影响，客户收益为正；6月份受A股无缘MSCI影响，MSCI因子贡献为负，收益影响较大；下半年收益受G20概念因子、市场相关因子、随机因子等的影响，收益稳中有升

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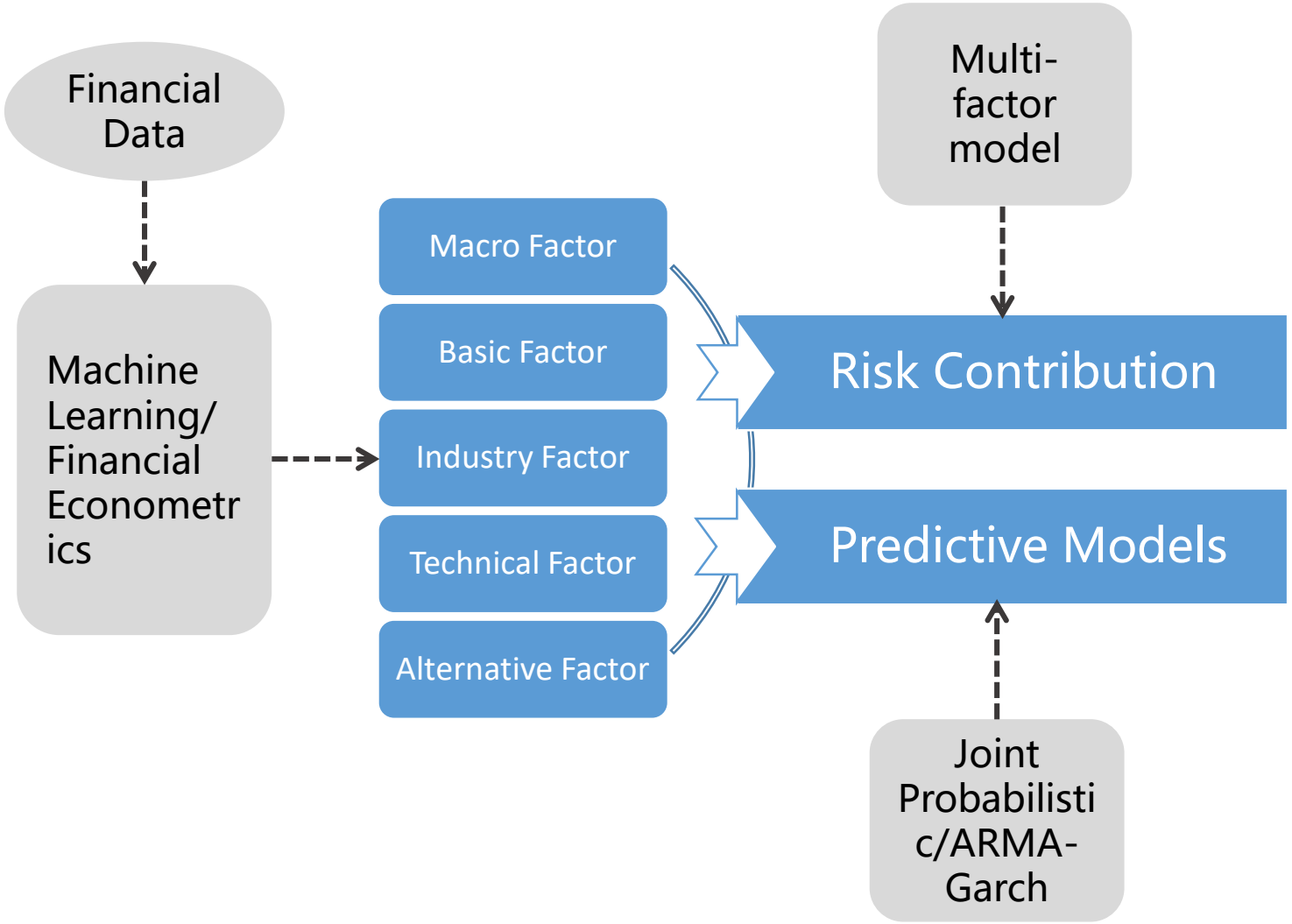

- ✓ Machine learning for selecting potential explanatory/predictive factors from factor pools
- ✓ Econometrical models to be built for actual usage

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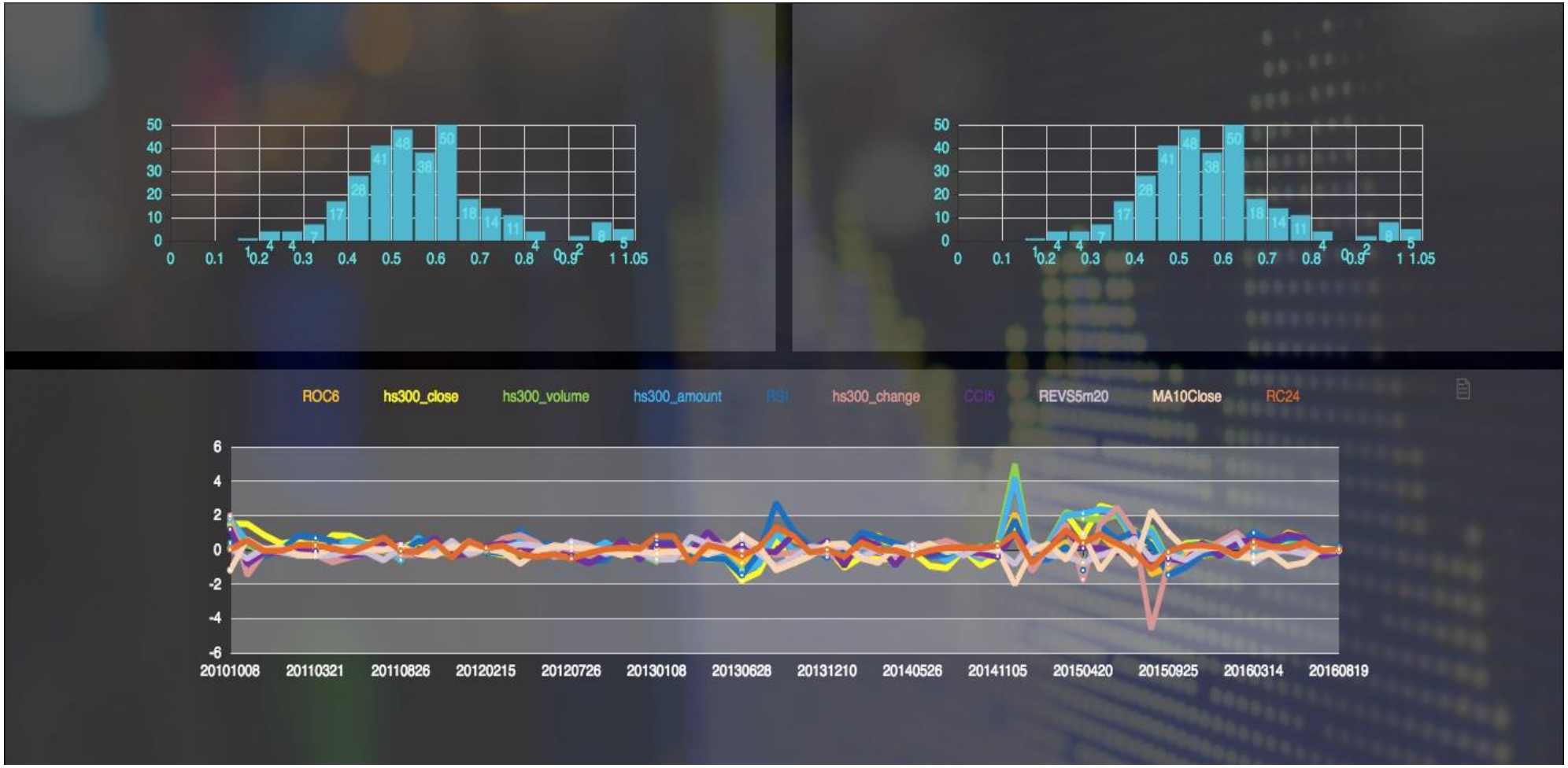

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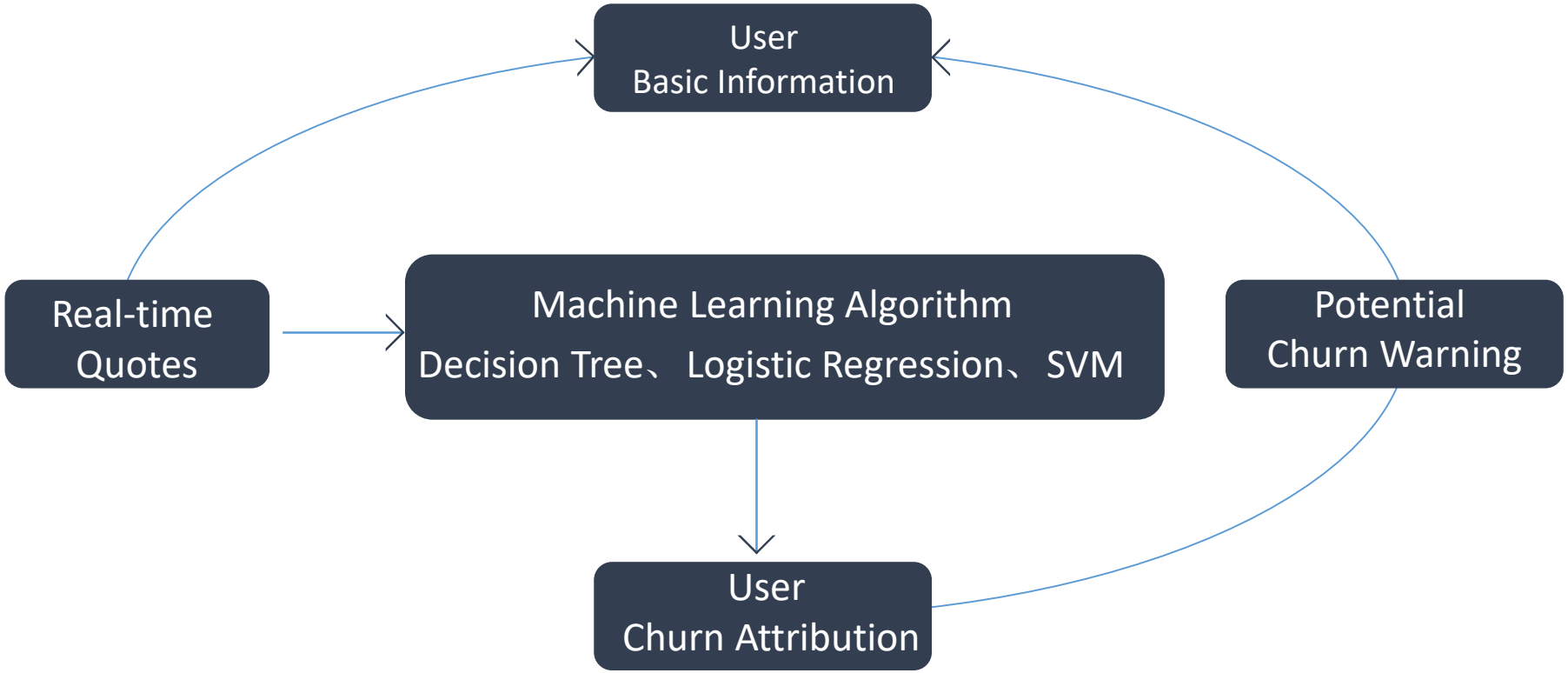
3 Client Lifetime Value Model

3.2 Client Churn Model



3.2 Client Recommendation Model

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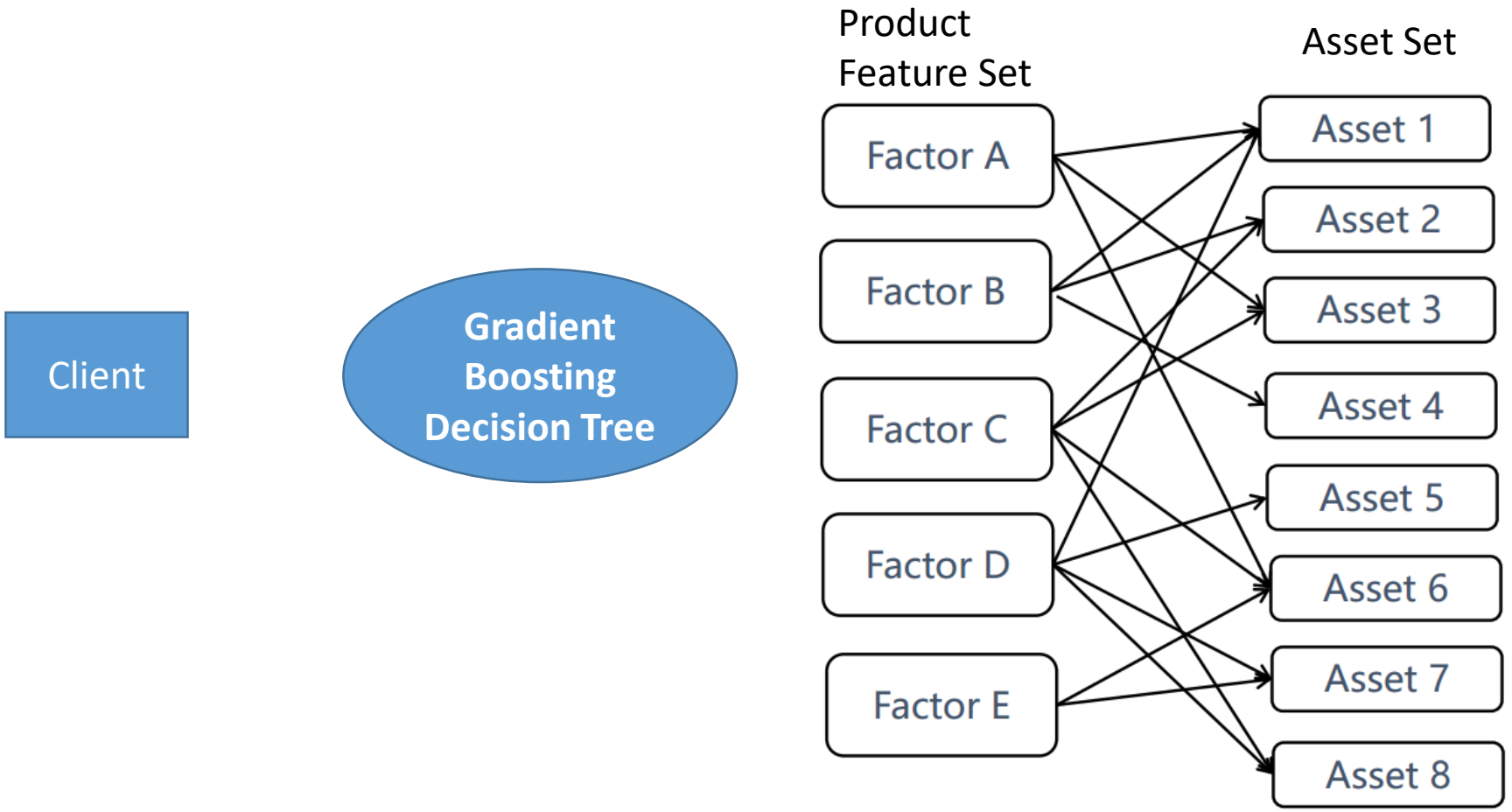


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