Stock Model Analysis and Investment Strategy Based on Chinese-Style Stock Valuation System

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Abstract. This study delves into the Chinese-style stock valuation system (CSVS), considering factors such as China's economic transformation, regulatory changes, and industry upgrades. The research first establishes a unique valuation system based on multidimensional features (policy background, market positioning, and expert analysis), screens stocks that meet Chinese characteristics, and constructs profiles for these stocks. It then extracts the features of these stocks (risk indicators, growth rates, etc.), including using the ARIMA model to capture the dynamic fluctuations in stock returns. Subsequently, the K-means clustering method is employed to classify Chinese-style stock companies into five types. Finally, the study designs and empirically tests investment portfolio strategy combining CSVS and economic hotspots, using both Markowitz optimization and equal weighting methods. The event-driven strategy with Markowitz optimization as a weighted approach achieved a 13.54% return rate from January to June 2024, outperforming the traditional equal weighting approach and providing valuable decision support for investors.

Keywords: Chinese-style stock valuation system (CSVS); Multidimensional Valuation System; K-means clustering; Investment Portfolio Strategy; Economic Hotspots.

1 Introduction

1.1 Background and Development

In the intricate mechanisms of the worldwide financial markets, the foundation of securities investment involves effectively managing returns and risks. The precise evaluation of the market value of securities significantly influences investment decisions.

Over the years, conventional valuation approaches like the price-to-earnings ratio,

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price-to-book ratio, and discounted cash flow models have been devised, providing diverse analytical viewpoints for various situations.

However, these models have their limitations[5]: Price Earnings Ratio (P/E) valuation models are suitable for mature and profitable enterprises, but may underestimate growth and risk factors; The valuation model based on the price-to-book ratio highlights the disparity in net assets and intercompany value, yet it overlooks the influence of intangible assets; The discounted cash flow model considers time value and risk, which is more accurate, but it is highly complex and susceptible to subjective judgment interference.

In the Chinese securities market, the challenges faced by investors are not limited to evaluating the financial status of individual companies but also require a comprehensive analysis based on the overall market environment and policy guidance to obtain accurate valuations. Yi, H[33] introduced the idea of a modern capital market with distinctive Chinese features, emphasizing the establishment of a valuation system that adapts to China's national conditions to enhance the effectiveness of market resource allocation. In this context, the valuation system with Chinese-style has become the focus of market attention. The Chinese-style valuation system (CVS) is based on its unique policy orientation and market adaptability, and mainly includes the following four core elements:

Primarily, the strategic guidance is crucial for China's Special Evaluation. In formulating policies, the government comprehensively considers the development phase and market demand of the securities market, with the objective of nurturing a robust and stable stock market by guiding market valuation. This strategic direction addresses not only the present market scenario but also integrates long-term development plans.[1]

Secondly, the Chinese approach to investment highlights the importance of value investing. It promotes a long-term and stable investment strategy, urging investors to concentrate on the intrinsic value and future growth potential of companies instead of short-term market volatility[10]. This approach adds to the general stability and endurance of the market.

Thirdly, the effectiveness of capital distribution is crucial in China's unique valuation system. By providing support to key national sectors and enterprises, this system facilitates the transformation and upgrading of the real economy[11]. An effective distribution of capital improves resource usage and supports the strategic goals of national economic development.

Finally, Chinese-style Estimation emphasizes risk management. While pursuing returns, we should focus on and control risks through reasonable valuation methods to reduce market foam and potential financial risks[10]. This principle supports the long-term sustainable and healthy expansion of the market.

It is crucial to prioritize the stock categories in Shanghai and Shenzhen A-shares when updating the traditional valuation system using insights from various theories proposed by securities firms, funds, and research institutions. State-owned enterprises play a pivotal role in national strategy and are recognized for their stability, high dividends, and alignment with national economic policies. Government backing for specific stocks in sectors such as new energy vehicles, advanced manufacturing, biopharmaceu-

ticals, and materials, as delineated in China's 13th and 14th Five-Year Plans[14][15], provides valuable indications of the economic trajectory of both leading and secondary companies, as well as publicly traded firms. Major national projects, including those in energy infrastructure, high-speed rail, and nuclear power, are also of significant importance. Additionally, stocks of innovative technology companies encompass individual firms that excel in the high-tech sector.

This study focuses on the Chinese-style Stock Valuation System structured into three parts:

1. Defining characteristic indicators of the Chinese stock valuation system (CVS) by integrating policy background, market positioning, and expert analysis.

2. Identifying financial characteristics of listed companies, clustering A-share market stocks, and analyzing investment characteristics.

3. Integrating market hotspots to develop an event-driven investment portfolio for stocks with Chinese characteristics valuation and conducting backtesting analysis.

The framework of the study is illustrated in Figure 1.

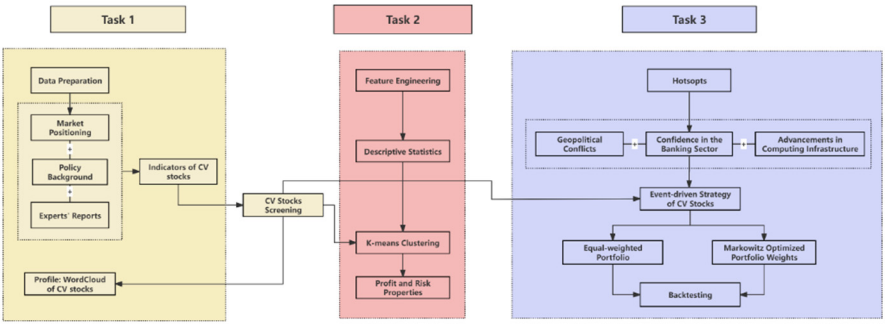

Fig. 1. Framework of the Study

2 Literature Review

2.1 Theoretical Foundation for the Chinese Stock Valuation System

Global financial markets have adapted valuation systems to fit their economic contexts. Traditional methods like P/E, P/B, and DCF are widely used but often misaligned with China's market dynamics. Smith[26] highlights the P/E ratio's tendency to underestimate growth and risk in China, especially in its fast-growing sectors. Zhang, Y. and Li, X. [35] notes this undervaluation is evident in Chinese tech companies compared to Western markets.

As China's economy evolves, distinct market phenomena emerge, influenced by policy directions, particularly in state-owned enterprises and government-backed industries[29].

The Chinese valuation system is supported by institutional economics, as North[24] suggests policies shape market behavior. Graham's[9] emphasis on intrinsic value and long-term investing informs this system. Merton[22] underscores the capital market's

role in resource allocation, aligning with China's focus on strategic industries to enhance economic efficiency.

2.2 Key Elements and Types of Stocks in the Chinese Stock Valuation System

The core elements of the Chinese-style stock valuation system (CSVS) can be summarized into four aspects: policy orientation, value investment, asset restructuring, and risk management[34]. Stocks with high valuations under this system typically meet one or more of the following conditions:

- Supported by policy orientation
- Potential for long-term stable growth
- Belong to critical sectors and enterprises endorsed by the government
- Aim for high returns with low-risk

Under the CSVS, the types of stocks worth investing in mainly include undervalued stocks and state-owned enterprises with reform potential[13]. Based on the analysis of Shanghai and Shenzhen A-shares, we can further subdivide undervalued stocks into the following six categories:

1. State-Owned Enterprise Stocks: These stocks are usually held or controlled by the state and hold important positions in national strategic and economic development. Examples include stocks in key national industries such as finance, oil, electricity, and telecommunications[34].
2. Government-Supported Enterprise Stocks: These enterprises play a key role in national economic development, such as storage chips and new energy materials in the high-tech industry[12].
3. National Key Project Stocks: These stocks involve national key projects such as high-speed rail, nuclear power, and aerospace[12][32].
4. Policy-Supported Industry Stocks: These belong to specific industries or fields supported by the government through policies, subsidies, etc., such as new energy vehicles, biomedicine, and the environmental protection industry[13].
5. Innovative Technology Enterprise Stocks: These enterprises have technological advantages and innovation capabilities in high-tech fields, such as the internet, artificial intelligence, big data, etc.[32].
6. Other securities industry concept stocks include those related to central enterprises, state-owned enterprise reforms, Tonghuashun CV, and East money CV[17].

The key fields and enterprises supported by the state mainly include: the National Security Field, Financial and Real Estate Sectors, High-Level High-Tech Industries, Digitalization and Decarbonization Transformation Enterprises, State-Owned Enterprises with Stable Operations.

Liang et al.[18] revalued the banking industry. Banks belong to key national enterprises, have good long-term profitable business models, and relatively low-risk levels. Banks can maintain stable profit growth and provide stable high dividends to investors, which aligns with our definition of CV stocks. Liang et al.[17] revalued the securities

industry. The securities industry, through in-depth research into the applicable scenarios of mature market valuation theories, grasps the valuation logic of different types of listed companies and has a stable profit model that meets the definition of CV stocks.

3 The Model Index Characteristics of Constructing a Chinese-Style Valuation System: A Profile of Chinese-Style Valuation (CV) Stocks Based on Policy Background and Market Positioning

In this section, the study aims to develop a comprehensive framework for constructing a Chinese-style valuation system (CSVS) that better captures the distinctive characteristics of the Chinese stock market. By integrating insights from policy background, market positioning, and expert analysis, the research seeks to define the key indicators and profile of "Chinese-style valuation (CV) stocks" - those exhibiting the unique valuation attributes aligned with China's economic transformation and policy priorities.

3.1 Data Preparation

Our study delves into the A-share market. The companies listed from 2022 to 2024, which serve as our research subjects, are crucial players in the Chinese economy. To guarantee the precision and credibility of the data, we utilize the CSMAR database and the Tonghuashun iFinD financial data terminal. We excluded companies under certain special circumstances, including those that have been delisted, and those that were marked for special treatment (ST) or special transfer (PT) in the given year. This rigorous screening process resulted in 5,135 valid sample observations, ensuring the robustness of our findings.

3.2 Indicator System Construction

Based on the aforementioned review in section 2.2, we can outline the primary attributes of CV stocks:

- Supported by policies
- High-quality growth potential
- Balance between risk and return
- Reform potential
- Low valuation

In general, the fundamental attribute of CV stocks is stocks in areas guided by national policies. These industries have stable development potential and are expected to bring considerable returns from a long-term investment perspective[12].

We have established a multi-dimensional evaluation indicator system, including policy support, risk indicators, growth potential, reform potential, and low valuation, to comprehensively capture the characteristics of stocks under the CSV framework.

1. The policy support indicator (P_i) is described as a binary variable:

The Chinese stock market is significantly impacted by government policies, especially with regard to specific industries[37]. Taking this into consideration, we can define the policy support indicator in the following manner:

$$P_i = \{1, \text{If stock (i) belongs to the manufacturing category; } 0, \text{otherwise}\}$$

2. Risk indicators are calculated based on the volatility of stock prices.

Risk assessment is a key factor in investment decisions. Wang, W., & Wu, Y.[30] proposed a risk assessment method based on price volatility, which we have improved upon.

Initially, we determine the variability of stock prices:

$$\sigma_i{}^2 = \frac{1}{n}\sum(x_t - \mu)^2$$

where x_t is the stock price at time t, μ is the average price, and n is the number of observation periods.

Then, we normalize the variance:

$$\sigma_{norm,i} = \frac{\sigma_i{}^2 - \sigma_{min}{}^2}{\sigma_{max}{}^2 - \sigma_{min}{}^2}$$

Ultimately, we convert the normalized variance into a risk indicator within the ([0,1]) range:

$$R_i = \begin{cases} U(0.5, 1), if\ \sigma_{norm,i} > median(\sigma_{norm}) \\ U(0.2, 0.5), if\ Q1 \le \sigma_{norm,i} \le median(\sigma_{norm}) \\ U(0, 0.2), if\ \sigma_{norm,i} < Q1 \end{cases}$$

$U(a, b)$ stands for a uniform distribution within the interval [a, b], and $Q1$ represents the first quartile.

3. The growth indicator

The growth indicator G_i is determined by the yearly profit increase rate:

$$G_i = \begin{cases} 1, if\ \dfrac{Profit_{i,t} - Profit_{i,t-1}}{Profit_{i,t-1}} > 0 \\ 0, else \end{cases}$$

4. The reform potential indicator

The reform potential indicator RP_i is defined based on the industry category and company name:

$$RP_i = \begin{cases} 1, \text{if stock } i \text{ belongs to a specific industry or contains specific keywords} \\ 0, else \end{cases}$$

Specific industries and keywords include real estate, military industry, security, etc.

5. The low valuation indicator

The low valuation indicator LE_i is defined based on the nature of the enterprise and the industry category:

$$LE_i = \begin{cases} 1, \text{if stock (i) meets specific enterprise characteristics or industry categories} \\ 0, else \end{cases}$$

Specific corporate nature and industry categories include state-owned, information, computer, pharmaceutical, internet, technology, satellite, capital market services, etc.

3.3 Characteristics for Selecting China-Style Valuation (CV)

By summing up the aforementioned five indicators, we obtained a comprehensive score "ztg (Chinese abbreviation of CV)". Ultimately, stocks with a comprehensive score ztg greater than 0 are selected as special estimation stocks.

The profile of the selected special of 3585 estimation stocks is as follows:

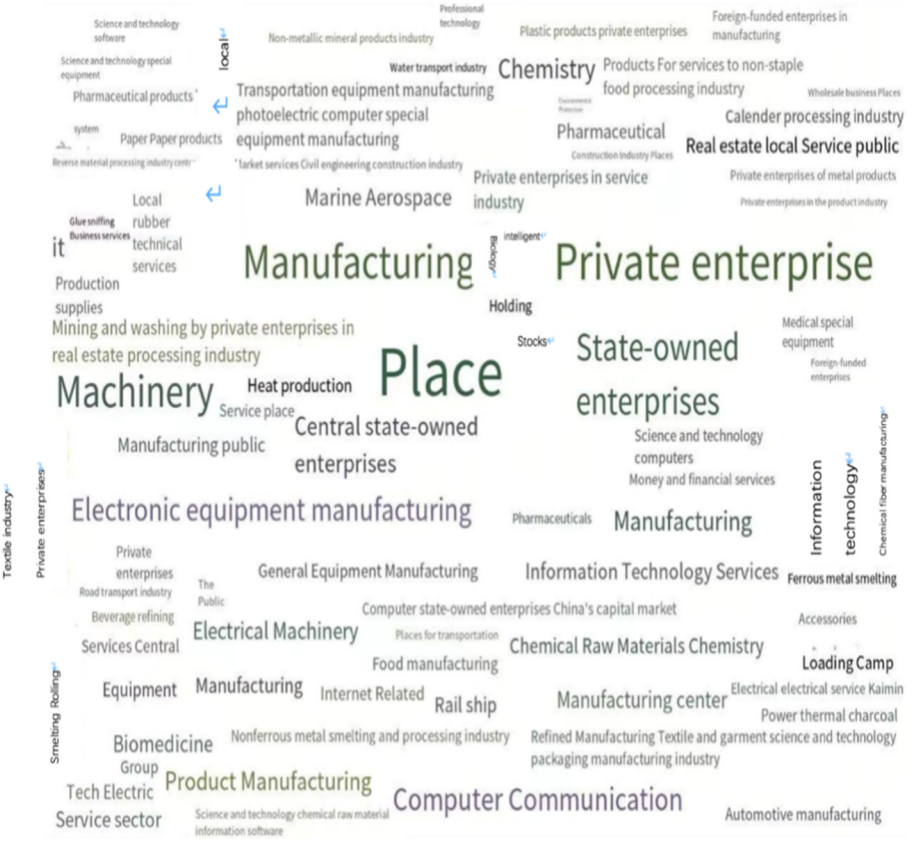

Fig. 2. WordCloud Figure for China Special Valuation Stock

As shown in Figure 2, through the idea of Central Special Evaluation (CSE) stocks, we can see how manufacturing, service industries, and information technology contribute to economic growth. The progress of these sectors is essential for the improvement and advancement of the economic framework[36], offering investors a variety of investment paths and prospects. Therefore, a deep understanding of the core elements and development trends in these fields is of significant importance for seizing investment opportunities and achieving capital appreciation.

4 Clustering and Investment Characteristics Analysis of Special Valuation Stocks in A-Shares: An Empirical Study Based on Clustering Analysis

4.1 Selection of Variables

Referring previous research[7], the selected feature indicators include the risk indicator(risk_score), profit trend indicator, growth rate (Growth), cash flow (Cashflow), fixed asset ratio (FIXED), board size (Board), and years listed (ListAge).

1. Risk Indicator: As mentioned in Section 1.2, we also apply it in this section.
2. Growth: As mentioned in Section 1.2, we apply $\frac{Profit_{i,t}-Profit_{i,t-1}}{Profit_{i,t-1}}$ as growth indicator in this section.
3. Profit Trend Indicator:

The profitability volatility trend is an important indicator reflecting changes in the expected returns of stocks. This study employs time series analysis methods, combining ARIMA models and standardized processing, to construct a feature capable of capturing the profitability volatility trends of stocks. This method mainly includes the following three steps: rate of price change calculation, time series forecasting, and standardized processing.

- Rate of Price Change Calculation:

To begin, we determine the monthly rate of price change for each stock. The formula for calculating the rate of price change, $R_{i,t}$, for stock i at time t is given as followss:

$$R_{i,t} = \frac{P_{i,t}}{P_{i,t-1}} - 1$$

Where $P_{i,t}$ represents the closing price of stock i at time t, and $P_{i,t-1}$ represents the closing price of stock i at time $t-1$. This method of computation is based on the estimation of logarithmic returns, which is a common approach in the analysis of financial time series[3][19].

- Time Series Forecasting:

We use the ARIMA(p,d,q) model to model and forecast the rate of price change series for each stock. The ARIMA model is a widely utilized method for time series analysis, capable of identifying both the autocorrelation and moving average properties of the data[2]. The conventional representation of the ARIMA model is as follows:

$$\varphi(B)(1-B)^d X_t = \theta(B)\varepsilon_t$$

Where B is the lag operator, $\varphi(B)$ is the autoregressive polynomial, $\theta(B)$ is the moving average polynomial, d is the differencing order, and ε_t is the white noise process.

We implement the ARIMA model using Python's statsmodels library and perform one-step-ahead forecasts for each stock:

$$F_i = E[R_{i,T+1}|R_{i,1}, R_{i,2}, \ldots, R_{i,T}]$$

Where F_i represents the forecast value for stock i for the next period, and T represents the current time point.

- Standardized Processing:

Finally, we standardize the forecast results for all stocks using the Z-score method:

$$Z_i = \frac{F_i - \mu_F}{\sigma_F}$$

Where Z_i is the standardized score of the forecast value for stock μ_F is the mean of all forecast values, and σ_F is the standard deviation of all forecast values.

1. Cashflow:

The ratio of net cash flow from operating activities to total assets highlights the company's capacity to generate cash, showing the cash produced by its core operations.

2. Board Size

The count of board members is represented using the natural logarithm, signifying the company's board size and indicating its governance framework. An appropriately sized board is beneficial for improving decision-making efficiency and supervisory capability and is an important indicator of the company's governance level.

3. Listing Tenure

This represents the length of time a company has been listed, indicating the company's maturity and market standing. Companies that have been listed for a longer period generally have stronger brand influence and market competitiveness but may also face pressures related to transformation.

4.2 Variables Descriptive Statistics

In Table 1 (Basic statistical features) and Figure 3 (distribution violin plot), we present the following descriptive statistics:

1. Risk Score:

The average risk score is 0.457, indicating a moderate level of risk on average.

The risk score ranges from 0.000119 to 0.999988, highlighting significant stock variation.

With a median of 0.450719, the distribution is fairly balanced.

2. Growth:

The average growth rate is 17.95%, with a substantial standard deviation of 108.27%.

The growth rate ranges from -82.5% to 5686.75%, with some outliers displaying exceptionally high growth rates.

The median of 9.2% is lower than the average, indicating a right-skewed distribution.

3. Scaled Profit Rate:

The mean is 0.082, accompanied by a large standard deviation of 0.989.

The profit rate ranges from -5.22 to 10.74, showing significant variability.

With a median of 0.131 surpassing the mean, the distribution is left-skewed.

4. Cashflow:

The average cash flow ratio represents 4.91% of the total assets.

The cash flow ratio ranges from -66.24% to 116.97%, suggesting negative operating cash flows for some companies.

A nearly symmetrical distribution is indicated by a median of 4.57% close to the mean.

5. Board Size:

The average logarithmic listing age is 2.0988, corresponding to approximately 8.15 members.

Board sizes range from 4 to 18 members, with a compact distribution and low standard deviation.

6. Listing Age:

The mean log listing age is 2.066, approximately 7.89 years.

Listing ages range from 0 to 3.497, indicating a mix of newly listed and long-standing companies.

A left-skewed distribution is suggested by a median of 2.398, reflecting a larger number of recently listed companies.

Table 1. Descriptive Statistics

	risk_score	Growth	Profit_rate	Cashflow	Board	ListAge
count	3585	3585	3585	3585	3585	3585
mean	0.4574	0.1795	0.0823	0.0490	2.0988	2.0655
std	0.3078	1.0827	0.9886	0.0815	0.2005	1.0172
min	0.0001	-0.8250	-5.2178	-0.6624	1.3863	0.0000
25%	0.1595	-0.0102	-0.3656	0.0083	1.9459	1.0986
50%	0.4507	0.0920	0.1310	0.0457	2.1972	2.3979
75%	0.7230	0.2297	0.5826	0.0877	2.1972	2.9444
max	1.0000	56.8675	10.7387	1.1697	2.8904	3.4965

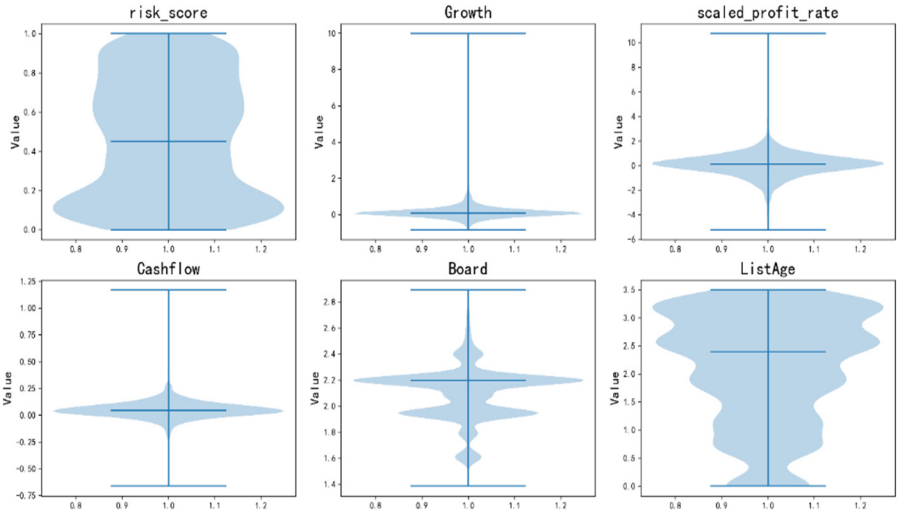

Fig. 3. Distribution Plot for Variables

4.3 Clustering Analysis

The K-means clustering algorithm is used in this section to classify stocks based on the Chinese-style valuation (CV)[31].

Initially, to remove discrepancies in measurement units across various indicators, we normalize all features. The Z-score normalization formula is as follows:

$$Z = \frac{X - \mu}{\sigma}$$

Where:

z is the standardized value, X is the original data, μ is the mean of the original data, σ is the standard deviation of the original data.

The goal of the K-means algorithm is to minimize the within-cluster sum of squares (WCSS):

$$WCSS = \sum_{i=1}^{k} \sum_{x \in C_i} ||x - \mu_i||^2$$

Where:

- k is the number of clusters,
- C_i represents the i cluster,
- μ_i represents the centroid of the i cluster,
- $||x - \mu_i||^2$ represents the squared Euclidean distance between a data point x and the centroid μ_i.

4.4 Determining the Optimal Number of Clusters

We employ the Elbow Method to identify the best number of clusters[27]. We determine the number of clusters by plotting the WCSS against the cluster count and selecting the point where the graph forms an 'elbow' shape.

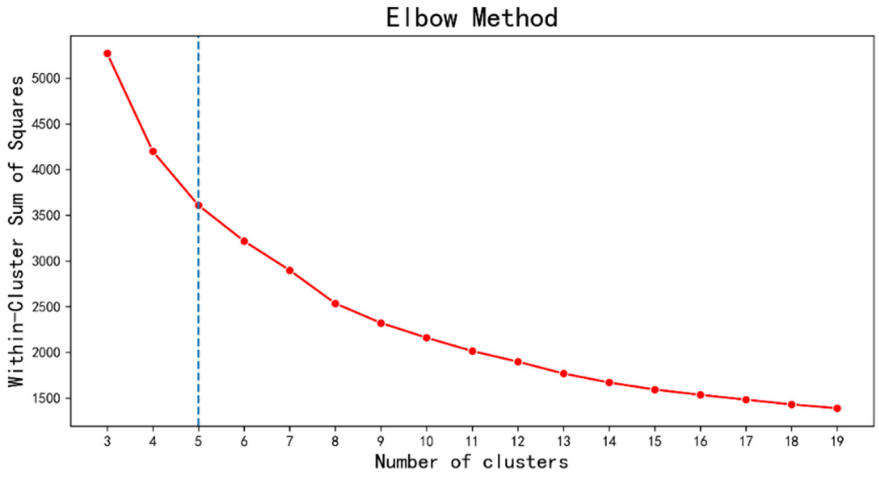

Fig. 4. WCSS Versus. Number of Cluster

In Figure 4, on the graph depicting the relationship between WCSS and the number of clusters, please identify the position where the curve shows a distinct change in direction at 5, referred to as 'the elbow.' Beyond this point, the decrease in WCSS slows significantly. This juncture indicates the optimal number of clusters.

Through K-Means clustering analysis of companies listed on the Shanghai and Shenzhen A-shares, we classified “CV” stocks into the following five categories, with cluster centers shown in Table 2:

Table 2. Clustering Results

variables\cluster	0	1	2	3	4
risk_score	0.3498	0.5033	0.5808	0.7018	0.6501
scaled_profit_rate	0.2385	-0.6069	1.1781	4.4373	-2.1268
Growth	0.1281	0.1023	0.3728	0.7040	0.2191
Cashflow	0.0472	0.0460	0.0599	0.0904	0.0371
FIXED	0.2080	0.1856	0.1883	0.1486	0.1391
Board	2.1033	2.0957	2.1045	2.0915	2.0615
ListAge	2.4853	1.6246	2.2008	1.1154	0.4857

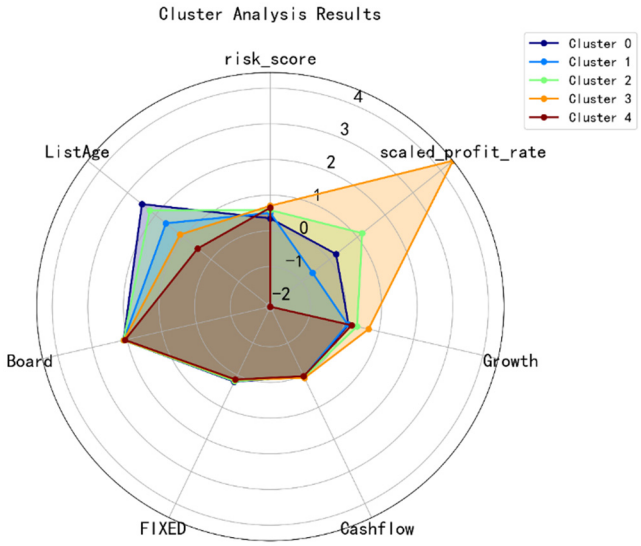

Fig. 5. Radar Chart for Clustering Analysis

Based on the analysis presented in Table 2 (Cluster center values) and Figure 5 (Radar chart of cluster analysis), the clustering results can be summarized as follows:

1. Stable Growth Type (Category 0)

These companies have moderate risk (risk_score=0.350), high profitability (scaled_profit_rate=0.239), moderate growth (Growth=0.128), and good cash flow (Cashflow=0.047). Representative companies include China Great Wall, Wuliangye, and TCL. This reflects the value investment characteristics of "Chinese-style", with these companies having brand advantages and stable operating performance.

2. Value Defensive Type (Category 1)

These companies have low risk (risk_score=0.503), weak profitability (scaled_profit_rate=-0.607), slow growth (Growth=0.102), and low cash flow (Cashflow=0.046). Representative companies include Vanke A and CRRC. These companies have strong risk resistance and are closely related to national macro policies.

3. Blue Chip Value Type (Category 2)

These companies have high risk (risk_score=0.581), good profitability (scaled_profit_rate=1.178), slow growth (Growth=0.373), and moderate cash flow (Cashflow=0.060). Representative companies include CSG A and Lixin New Energy. This is the first choice for value investors, reflecting the achievements of China's economic transformation and upgrading.

4. High Growth Type (Category 3)

These companies have high risk (risk_score=0.702), the strongest profitability (scaled_profit_rate=4.437), high growth (Growth=0.704), and the best cash flow (Cashflow=0.090). Representative companies include Sungrow Power and Wantai BioPharm. These enterprises benefit from policy backing and signify advancements in crucial technologies within China.

5. Emerging Growth Type (Category 4)

These companies have high risk (risk_score=0.650), losses (scaled_profit_rate=-2.127), low growth (Growth=0.219), and the lowest cash flow (Cashflow=0.037). Representative companies include Yunda Holding and Raycus Laser. These companies are in a period of rapid development, representing future industry directions but with higher risks[25][16].

5 Design and Empirical Testing of Short-Term Investment Portfolios Based on the "Chinese-Style" Valuation Model: A Dynamic Strategy Study Combined with Market Hotspots

5.1 Overview of the Issue

In the current global economic climate, economic centers are increasingly impacting the stock market, especially in the development of the Chinese stock valuation model. This model focuses on capturing and analyzing the sensitivity of economic events, with the goal of building an investment portfolio that can achieve consistent growth amidst market fluctuations by selecting stocks that are positively impacted by such events. This article aims to explore the impact of several key economic events in 2023 on the Chinese-specific stock valuation model and reassess value investment strategies and international considerations based on these events.

5.2 Hotspots Events

Firstly, a new round of large-scale conflicts in the Palestine-Israel region in 2023 has not only intensified geopolitical uncertainties but also led to fluctuations in oil prices and a rise in the demand for risk-averse assets. Under such circumstances, energy stocks and safe-haven assets such as gold have become the focus of investors, providing new investment directions for the CITIC Securities stock model.[28]

Secondly, Huijin's increased investments in the stocks of the four major banks indicate a substantial rebound in market confidence within the banking sector. This move has not only boosted the market performance of bank stocks but also given investors a signal that it may be a wise choice to select bank stocks with strong capital and stable returns as part of the investment portfolio in the current economic environment.[4]

What's more, the action plan to promote the high-quality development of computing power infrastructure heralds the further development of the technology sector. For the CITIC Securities stock model, this means that it is necessary to focus on companies at the forefront of the technology industry, especially in areas such as cloud computing and artificial intelligence. These companies tend to have strong growth potential and can bring considerable returns to investors in the future.[23]

Finally, the decision of the two departments to halve the stamp duty on securities transactions will have a positive impact on the securities market. The measures to cut taxes are predicted to boost trading activities and improve market liquidity, which will in turn have a positive impact on the stock market. For the CITIC Securities stock

model, this is a favorable factor that cannot be ignored when constructing an investment portfolio.[8]

In summary, through the analysis of key economic events in 2023, we can see that these events have a direct impact on the construction of the CITIC Securities stock model. In order to better adapt to this change, we propose to select the types of stocks that benefit from the event by means of event-driven approach, construct investment portfolios, and conduct semi-annual backtesting from January 2024 to June 2024.

5.3 Further Stock Selection and Weight Setting

Based on specific policies and industries (such as "banking," "gold," "oil," "securities") and the need to meet at least two characteristics of state-owned enterprise valuation, the selection of state-owned enterprise valuation stocks is carried out.

This method belongs to the thematic investment strategy, aiming to capture investment opportunities in specific industries or policy orientations. The screening process can be expressed as:

$$S = \{s | k \in s.name, k \in K\}$$

where S is the set of screened stocks, s is a single stock, and K is the set of keywords.

Following this hotspot influence, we have selected a total of 45 stocks from the state-owned enterprise valuation stock pool.

For the selection of 45 stocks, we compare two weighting methods:

1. Equal Weight Strategy: Allocate the same investment amount to each selected stock. This is a simple but effective diversification strategy.[6]

The weight is expressed as: $w_i = \frac{1}{n}$

2. Markowitz Mean-Variance Optimization Strategy: Markowitz Mean-Variance Optimization Strategy:

We formulated an optimization problem according to modern portfolio theory[20]:

$$\min_{w} w^T COV w = \sum w_i w_j cov_{ij}$$

$$s.t. \begin{cases} \sum w_i p_i \geq \mu \\ \sum w_i = 1 \\ \forall i, 0 \leq w_i \leq 1 \end{cases}$$

Where μ represents the necessary investment return rate, which is set at 0.1 in this research. Merton[21] studied the expected stock market returns and found that the historical average stock return is around 10%-12%.

5.4 Performance Evaluation

Our study use realized return and maximum drawdown to evaluate strategy performance.

We utilize the closing price data from the entire year of 2023 to train the model for estimating expected returns and the covariance matrix. Subsequently, we perform

backtesting on the data from January to June 2024. This methodology enables us to evaluate the model's predictive accuracy and the strategies' real-world performance.

The results show that during the period from January to June 2024:

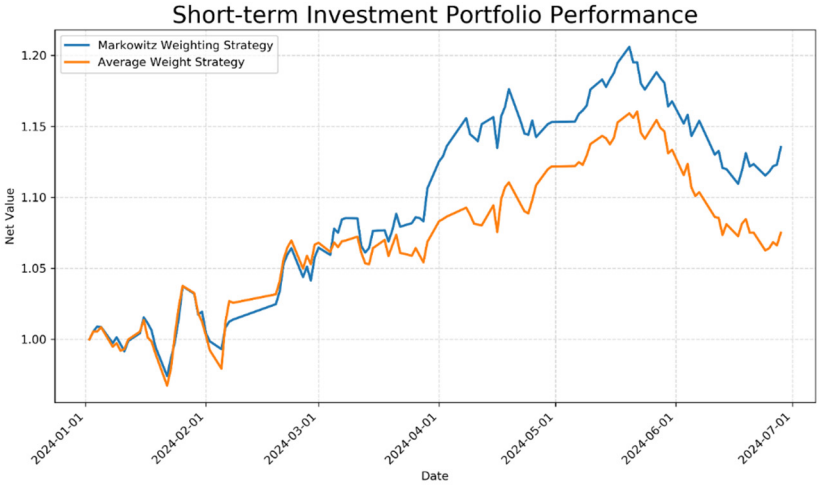

Fig. 6. Backtest Results

- Markowitz Optimization Strategy:

— Return: 13.5364%
— Maximum Drawdown: 23.1706%

- Equal Weight Strategy:

— Return: 7.5081%
— Maximum Drawdown: 19.2914%

During the backtest period (January to June 2024), the CSI 300 Index fell from 3494 to 3461, a decline of about 0.94%. In this slightly declining overall market environment, both strategies achieved positive returns, with the Markowitz strategy performing particularly well, as shown in Figure 6. This indicates that these strategies have certain advantages in-stock selection and weight allocation. This significant advantage largely stems from combining the valuation theory of Chinese socialist characteristics with current market hotspots (such as banking, gold, oil, securities, etc.) in stock selection. This approach not only considers traditional financial indicators but also includes industries in line with national policy directions and economic development priorities, thereby achieving excess returns in the market.

This demonstrates that within the current market conditions, the Markowitz optimization strategy, which balances risk and return, achieves better returns compared to the straightforward equal-weight strategy. However, it also involves a higher level of risk, evidenced by a larger maximum drawdown. The higher return of the Markowitz strategy is due to its balance of risk and return, but the larger maximum drawdown indicates

that it is based on historical data estimates and may be more susceptible to market volatility. The equal weight strategy, while producing lower returns, exhibits comparatively lower risk.

6 Conclusion

This study provides a comprehensive examination of the Chinese-style Stock Valuation System (CSVS), which has been meticulously tailored to align with China's unique economic and policy environment. By constructing a multidimensional evaluation framework that integrates key factors such as risk, profitability, growth potential, and policy support, the research highlights the distinct characteristics of CSVS. The empirical analysis, including the use of K-means clustering and the application of both equal-weighting and Markowitz optimization strategies, has demonstrated the effectiveness of combining CSVS with significant economic events to develop robust investment portfolios.

The clustering analysis identified five distinct categories of stocks within the CSVS framework, each exhibiting unique risk and return profiles. This classification offers investors a more detailed and comprehensive understanding of the diverse investment opportunities available in the Chinese market. The successful application of the Markowitz optimization strategy during backtesting further underscores the potential benefits of integrating modern portfolio theory with the principles of CSVS.

However, the study also identified several areas for further research. The larger maximum drawdown observed in the Markowitz strategy suggests that while this approach can yield higher returns, it is also more vulnerable to market volatility. Future research could explore ways to mitigate this risk by refining model parameters or incorporating additional economic indicators. Moreover, while the event-driven approach of CSVS typically has a short-term focus, there is a need for a more thorough multi-factor analysis of China's unique stock valuation fundamentals to construct a long-term strategy. This could include distributionally robust optimization (DRO) and asset allocation models based on the principle of risk parity.

Additionally, the applicability of the CSVS framework could be extended to other emerging markets with similar economic characteristics, providing a broader understanding of how policy-driven valuation systems can be effectively utilized. Developing dynamic investment strategies that can adapt to shifting market conditions and policy changes will also be crucial for ensuring the long-term relevance and effectiveness of CSVS.

The outcomes of this research, particularly the positive results obtained during backtesting, underscore the capability of CSVS to offer valuable insights into stock selection and investment strategies within the Chinese market. This study not only provides guidance on the efficient allocation of capital but also helps identify promising investment opportunities in China. However, as with any research, this study has its limitations, and further exploration is needed to fully optimize and apply the CSVS framework.

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