

TIP FactSet Taiwan AI 50 Index

I. Introduction

TIP FactSet Taiwan AI 50 Index utilizes FactSet's Revere Business Industry Classification System (RBICS) to screen stocks from the AI-related industry chain that fulfills the liquidity and market capitalization criteria while excluding those that are unable to satisfy measures for the financial quality, downside risk, and dividend quality. The top 50 constituents are finalized according to the comprehensive score which is based on the cash dividend yield, momentum, and the growth of the enterprise value and weighted by the modified equal weight. The Index aims to represent the performance of the Taiwan stocks belonging to the AI-related industry chain.

II. Calculation and Management

1. The index types of TIP FactSet Taiwan AI 50 Index include the “Price Index” and the “Total Return Index”, which are compiled by Taiwan Index Plus Corporation (TIP), and are calculated and transmitted in real time by TWSE.
2. TIP conducts periodic reviews of constituents in accordance with the Index Methodology.
3. TIP retains the closing market capitalization records of all constituents.
4. Please refer to the “[General Principles for TIP Securities Indices](#)” for the principles of index development, maintenance, and management.

III. Eligibility of Constituents

1. Sampling Universe:

A. Index Universe: Common stocks listed on the TWSE and the TPEx, excluding managed stocks, emerging stocks, and stocks with altered trading methods or suspended from trading; however, those suspended from trading due to corporate actions, including but not limited to capital reduction, conversion to holding company, exchange of shares into the shares of newly established companies or change of par value may still be included in the Index Universe.

B. Sampling Range: The stocks in the Index Universe excluding the Taiwan Innovation Board(TIB), with market capitalization at least NT\$ 5 billion.

2. Criteria of Constituent Selection:

A. Liquidity Test:

Both of the following conditions must be met in order to pass the liquidity test.

- a. Condition 1 is passed if one of the two is met:

Reference only, the Chinese version shall prevail.

- i. Stocks in the top 20% of total trading amount in the last 12 months.
- ii. The free float turnover ratio reaches 3% for at least 8 months in the last 12 months.
- b. Condition 2: Stocks that fall within the bottom 10% in the Sampling Universe of the total trading amount in the last 3 months are excluded.

B. Index Screening:

Stocks that pass the Sampling Universe must meet each of the following indicators.

- a. Quality indicator: The stocks with the lowest 5% of Return on Equity (ROE) in the last four quarters are excluded.
- b. AI industry indicator: Based on FactSet's RBICS industry classification, fall under the RBICS Level 6 Sub-industry listed in Appendix I¹, and whose operating revenue accounts for more than 30%² of the total revenue of TWSE or TPEx listed companies.
- c. Downside risk indicator: The stocks with the highest 5% of Downside risk³ in descending order are excluded.
- d. Dividend quality indicator:
 - i. Cash dividends are distributed in the most recent year, and distributed for at least 2 out of the most recent 3 years.
 - ii. On the periodic review in May, the cash dividends are not determined or will not be paid, as decided by the board of directors before the data cut-off date, or annual dividend-paying stocks that have gone ex-dividend before the effective date are excluded.

C. Sorting Method:

Stocks that pass the Liquidity Test and the Index Screening are ranked by the "Multi-factor Score" in descending order, with the top 50 selected as constituents.

The "Multi-factor Score" is weighted⁴ by the ranking scores of dividend yield, momentum, and the enterprise value growth indicator, in which:

$$\text{dividend yield} = \frac{\text{sum of cash dividends in the last four quarters}}{\text{closing price on the data cut - off date}}$$

¹ The listed RBICS Level 6 Sub-industry List is reviewed and evaluated every year, and in response to the RBICS categorization, is amended or adjusted for the latest generation of the artificial intelligence industry.

² If the number of stocks that pass the Liquidity test and Index Screening is less than 60, the threshold (30%) will be gradually reduced in 5% increments until reaches 5%.

³ Using the natural logarithm return sequence of the daily adjusted price of the last 252 trading days. If the price increase on that day is greater than the average return of the sequence, the fluctuation on that day is replaced by zero. At least 64 data are required. After the adjustments above, then calculate the annualized sample volatility. The formula is as follows:

$$\frac{252}{T-1} \sum_{t=1}^T (ret_t - \overline{ret})^2 * dummy, \quad dummy = \begin{cases} 1, & ret_t < \overline{ret} \\ 0, & ret_t \geq \overline{ret} \end{cases}$$

⁴ For the Periodic Review in May, the weight of dividend yield, momentum, and enterprise value growth indicator is 80%, 10%, and 10% respectively. For the Periodic Review in November, the weight is 10%, 45%, and 45% respectively.

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$$\text{momentum} = \frac{\text{adjusted closing price in the most recent 1 week}}{\text{the maximum adjusted highest price in the most recent 52 week}}$$

$$\text{enterprise value growth indicator} = \frac{EBEV_t - EB EV_{t-1}}{|EBEV_{t-1}|}^5$$

3. Weighting Method:

Modified equal weight; the constituents are ranked by free float adjusted market capitalization in descending order. The top 10 stocks are classified as Group 1, the 11th to 25th as Group 2, and the 26th to 50th as Group 3. The individual constituents of each Group are weighted by 4%, 2%, and 1.2%, respectively.

IV. Index Calculation

1. Index Calculation Frequency:

A. Starting July 1, 2024, the real-time TIP FactSet Taiwan AI 50 Index is calculated and disseminated every five seconds during the trading hours of the TWSE and the TPEX, based on the latest trading prices of the constituent stocks. The end-of-day (EOD) index is calculated once a day after the market closes.

B. TIP has also compiles the TIP FactSet Taiwan AI 50 Total Return Index, which adjusts the TIP FactSet Taiwan AI 50 Index after considering the cash dividend factor, in order to reflect cash dividend-included returns. The index is calculated and published once a day after the market closes.

2. Calculation Formula:

A. TIP FactSet Taiwan AI 50 Index is a “Price Index”:

$$\text{Index} = \frac{\text{total index market values}}{\text{index divisor}} \times \text{base value}$$

$$\text{Index}_t = \frac{\sum_{i=1}^n cp_{i,t} \times s_{i,t} \times p_{i,t}}{\text{Divisor}_t} \times 5000$$

$$cp_{i,t} \times s_{i,t} \times p_{i,t} = \text{index market value of constituent } i \text{ on day } t$$

$$n = \text{number of index constituents}$$

$$p_{i,t} = \text{price of constituent } i \text{ on day } t$$

$$s_{i,t} = \text{number of issued shares of constituent } i \text{ on day } t$$

⁵ $EBEV_t = \frac{\text{EBITDA}}{\text{market capitalization} + \text{preferred stock} + \text{liability} - \text{cash and cash equivalents}}$, except for the market capitalization, which is the data on the data cut-off date, the other indicators are the average of the last four quarters; $EBEV_{t-1}$ is the data for the same period of the previous year.

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$cp_{i,t}$ = adjustment coefficient of constituent i on day t; the coefficient used is determined according to the Market-Value Investment Index Category under the “[TIP Corporate Actions and Events Methodology](#)”.

Divisor = index divisor for the “Price Index”; after the market closes, the index divisor of the constituent is adjusted according to the Market-Value Investment Index Category under TIP’s “[TIP Corporate Actions and Events Methodology](#)”, to maintain the index continuity. The adjustment method is as follows:

Index divisor = index divisor on the previous day

$$\times \left(\frac{\text{total index market values at the previous day's close} \pm \text{total index market values changes}}{\text{total index market values at the previous day's close}} \right)$$

Note 1: The base date is May 29, 2024, and the base value is set at 5000

points.

Note 2: The index divisor on the base date is the total index market values at that time.

$$\sum_{i=1}^n cp_{i,launch} \times s_{i,launch} \times p_{i,launch}, launch = \text{base date}$$

B. TIP FactSet Taiwan AI 50 Total Return Index is a “Total Return Index”:

$$\text{Index} = \frac{\text{total index market values}}{\text{index divisor}} \times \text{base value}$$

$$Index_t = \frac{\sum_{i=1}^n cp_{i,t} \times s_{i,t} \times p_{i,t}}{DivisorTR_t} \times 5000$$

DivisorTR = index divisor of the “Total Return Index”; after the market closes, the index divisor of the constituent is adjusted according to the Market-Value Investment Index Category under the “[TIP Corporate Actions and Events Methodology](#)” to maintain the index continuity. The adjustment method is as follows:

index divisor = index divisor on the previous day $\times$

$$\left(\frac{\text{total index market values at the previous day's close} \pm \text{total index market values changes}}{\text{total index market values at the previous day's close}} \right)$$

V. Constituent Adjustment and Index Maintenance

1. Periodic Review and Adjustment of Constituents:

A. The constituents are reviewed twice a year, with the 7th trading day of May and the 19th trading day of November as the review dates, and the data cut-off dates are the last trading day of April and the 12th trading day of November. After each periodic review, A fixed number of 50 constituents is selected after each periodic review.

B. The turnover limit on the number of constituents: A maximum of 24 replacements is required

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to be met on the Periodic Review.

- C. The results of the constituent periodic review will become effective following a five-trading days after the review date. The index is rebalanced over 5 consecutive trading days starting from the review effective date (the rebalancing period). A transitional weight is allocated to each security in the index during the rebalancing period.
- D. For the index divisor maintenance, the closing data of each previous trading day during the rebalancing period is adopted to calculate the difference, which is used as the total index market value changes between the total index market value of the new portfolio and the original one.
- E. For the periodic review of holding companies or newly established companies, if the period of the selected data of constituents is insufficient, and if the representative companies of the converted stocks meet the Sampling Universe qualification, the data of the representative companies or their stocks may also be used in the review.
2. TIP FactSet Taiwan AI 50 Index is a Market-Value Investment Index Category. The related maintenance such as the non-periodic adjustment of constituents, the adjustment coefficient, the number of issued shares, and the index divisor is handled according to the “[TIP Corporate Actions and Events Methodology](#)” of the Company; if a constituent is deleted as a result, no substitution will be made to fill the vacancy.
3. Principles for implementation of the Free Float Coefficient:
- A. If the Free Float Coefficient is lower than 10%, the stock will not be included in the constituents for sampling.
- B. The update for the Free Float Coefficient of all the constituents shall be in conjunction with the effective date of constituent Periodic Review.
- C. The Free Float Coefficient of constituents are updated according to the most recent data generated from TIP’s “[TIP Free Float Coefficient Calculation Guide](#)”.

Appendix I RBICS Level 6 Sub-industry names selected for the index

RBICS L6	
Autonomous Drone Manufacturers	Communication and Collaboration Content Sites
Imaging Laboratories	Enterprise Middleware Software
Manufacturing Industry Software	General and Mixed-Type Software
Monitoring and Control Sensor/Instrument Products	Server Computer Systems
Other Automation Support Product Manufacturing	Vehicle Autonomous Control Software
Surgical Robotic Systems	Web Search Sites and Software

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Vehicle Autonomous Control Electronics Makers	General Communications Equipment
Colocation and Data Center Services	International Mobile Satellite Services
Data Storage Drives and Peripherals	Wireless and Wi-Fi Equipment
Data Storage Media	Wireless Infrastructure Services
Data Transport Carrier Services	Diversified Technology Hardware
Disk Storage Systems	Semiconductor Foundry Services
Flash Memory Semiconductors	Multi-Process Assembly Services
Microprocessor (MPU) Semiconductors	Turnkey Assembly Manufacturing Services
Networking Semiconductors	Electronic Materials Manufacturing
Other Memory Semiconductors	Power Module and Subassembly Electronic Components
Other Processor Semiconductors	General Graphics Accelerator/Controller
Other Programmable Logic and ASIC Semiconductors	A.I./Data Center/Large Scale Processing GPU
Programmable Logic Device Semiconductors	Computer/Gaming Graphics Accelerator/Controller
Video Multimedia Semiconductors	Information Aggregator
Volatile Memory Semiconductors	Handheld Graphics Accelerator/Controller
Automotive Industry Software	Photovoltaic Power Module/Subassembly Components
Business Intelligence Software	Neural Processor (NPU) Semiconductors
Artificial Intelligence Data Centers	