

Model Portfolio Construction and Assessment of Risk Tolerance Level Using a Robo-Advisor

A robotic advisor (hereinafter referred to as "robo-advisor") is a service that uses the latest financial technology to provide free advice about portfolios with combined investment product types by analyzing the customer's risk tolerance level. Our aim is to support our customers' investment decisions for medium- to long-term asset formation through a simple process.

This document is intended to provide an overview of the suggested investment methods, and other information, in order to improve customers' financial and investment knowledge as well as their confidence toward the use of robo-advisors as a tool to achieve stable asset building.

In order to suggest suitable portfolios for our clients, the robo-advisor utilizes an improved calculation method utilizing Modern Portfolio Theory as a framework for investment methods. The mean-variance approach proposed by Markowitz (1952)¹ accesses portfolios according to the expected return and risk (return uncertainty) of the financial assets being invested. Used by institutional investors around the world, the mean-variance approach is considered to be a foundation of modern portfolio theory. However, it has been pointed out that the framework may lead to instability in the calculated asset allocation due to errors in estimating expected returns and other factors. Therefore, the robo-advisor is designed to make portfolio suggestions that are considered more robust and realistic, assuming the existence of estimation errors.

Mizuho Dai-ichi Financial Technology Co., Ltd. is in charge of constructing the assessment logic of the robo-advisor. Expected returns are calculated for each asset. Mizuho Dai-ichi Financial Technology is a specialized organization that develops services that use the latest investment theory and technology. They have extensive experience serving institutional investors.

0. Overview

After the customer's risk tolerance assessment, a model portfolio is presented as an example. The model portfolio is created using funds of individual asset classes ("individual asset funds") and principal guaranteed products, or a combination of balanced funds and principal guaranteed products.

1. Assessment of Risk Tolerance Level

Investment period and risk tolerance are estimated by using the items in Table 1. Calculations are made to obtain the final risk tolerance level.

Table 1: Items checked in the assessment of risk tolerance level

1	Customer age
2	Customer annual income
3	Price fluctuations in investments of less than 1 million yen per 1 year
4	Response to a hypothetical temporary 20% decline in assets under management in one month due to changes in economic conditions
5	Customers knowledge and experience in asset management

2. Model Portfolio Construction

The robo-advisor provides an example of either a combination of individual asset type and principal guaranteed products, or a combination of balanced type and principal guaranteed products similar to the model portfolio. The construction logic is identical for either, despite the differences in asset classes. The model portfolio construction assumes both individual asset type and balanced type products will not be combined in the same portfolio.

2.1 Estimated expected return and variance-covariance matrices

2.1.1 Benchmark indices

Define benchmark indices for each asset class as shown in Table 2.

¹ Markowitz, Harry "Portfolio Selection" The Journal of Finance, vol 7, no 1, Mar. 1952, pp 77–91

Table 2: Benchmark Indices

Asset Class	Index Name
Japanese Bonds	NOMURA-BPI (Overall)
Japanese Equities	Tokyo Stock Exchange Stock Price Index (TOPIX) (dividends included)
Foreign Bonds	FTSE World Government Bond Index (ex-Japan, in JPY, unhedged)
Emerging Bonds	JP Morgan Emerging Markets Bond Index Plus (in JPY, unhedged)
Foreign Equities	MSCI-KOKUSAI Index (in JPY, dividends included, unhedged)
Emerging Equities	MSCI Emerging Markets Index (in JPY, dividends included, unhedged)
Japanese REIT	Tokyo Stock Exchange REIT Index (dividends included)
Foreign REIT	S&P Developed REIT Index (ex-Japan, in JPY, dividends included, unhedged)

2.1.2 Estimated Expected Returns

Robo-advisors use the supply-side method to calculate expected returns. The supply-side method is a method of forecasting macroeconomic movements, such as GDP growth, and capturing how this will affect the factors that define the returns of each asset class (e.g., dividend yield in the case of stocks) and accumulating changes in each factor.

For example, the expected return on stocks is calculated from the dividend yield and inflation rate for each market. In particular, in the case of foreign equity indices, the expected return is estimated for each of its component countries using the supply-side method. It is then weighted by country to estimate the expected return for the foreign equity index.

However, REITs in Japan generally tend to have low retained earnings due to high dividend payouts, such as requiring dividends of 90% or more of distributable profit. Their growth potential is considered to be limited compared to that of ordinary stocks. Therefore, the growth potential of Japanese REITs is considered to be limited in comparison to that of ordinary equities. To compensate for this, the supply-side method is applied after adjusting the growth rate of each issue using multiples based on historical market data.

2.1.3 Estimation of variance-covariance matrix

Estimates are based on monthly index data since January 2000, assuming medium- to long-term investment and taking into account recent changes in the investment environment.

2.2 Model Portfolio Construction

2.2.1 Optimization

If the estimated expected return and variance-covariance matrices are correct, using the mean-variance approach will be optimal and the portfolio will lie on the efficient frontier. However, in general, expected returns and the like will include estimation errors. Therefore, assuming the existence of estimation error, it is likely to be a realistic optimal portfolio. As such, the robo-advisor determines the optimal portfolio by adjusting the mean-variance approach for the assumption of estimation error against the efficient frontier.

2.2.2 Constraints

In general, while emerging market assets offer the potential for higher returns on the back of high economic growth rates, they also carry significant market risk and country risk, making them a popular asset class for investors. Optimization based on the mean-variance approach without any constraints may result in an over-representation of emerging market assets, especially in high-risk portfolios. The robo-advisor will try to avoid over-emphasizing the inclusion of emerging market assets by setting constraints that limit the ratio of developed country assets to emerging market assets to a certain degree.

2.2.3 Risk tolerance level and model portfolios

The robo-advisor offers 6 levels of model portfolios in order of decreasing risk starting at 0% (principal guaranteed)

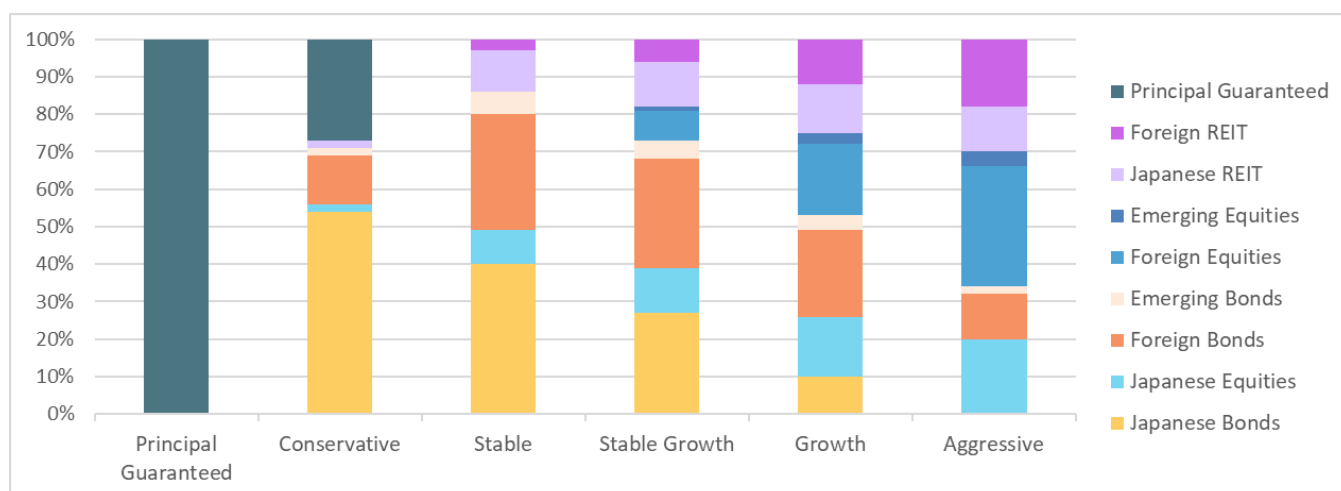
The portfolio will be optimized under the method and constraints described above, with target risks of 2% (conservative), 5% (stable), 7% (stable growth), 10% (growth), and 13% (aggressive).

Table 3: Model portfolios by risk tolerance level (investment type) (individual)

Investment Type	Risk	Expected return	Japanese Bonds	Japanese Equities	Foreign Bonds	Emerging Bonds	Foreign Equities	Emerging Equities	Japanese REIT	Foreign REIT	Principal Guaranteed
Principal Guaranteed	0.0%	0.2%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Conservative	2.0%	1.7%	54%	2%	13%	2%	0%	0%	2%	0%	27%
Stable	5.1%	3.5%	40%	9%	31%	6%	0%	0%	11%	3%	0%
Stable Growth	7.0%	4.1%	27%	12%	29%	5%	8%	1%	12%	6%	0%
Growth	10.1%	5.1%	10%	16%	23%	4%	19%	3%	13%	12%	0%
Aggressive	13.0%	5.9%	0%	20%	12%	2%	32%	4%	12%	18%	0%

(Source: Mizuho Dai-ichi Financial Technology Co. (as of the end of May 2025))

Figure 1: Model portfolios by risk tolerance level (investment type) (individual)

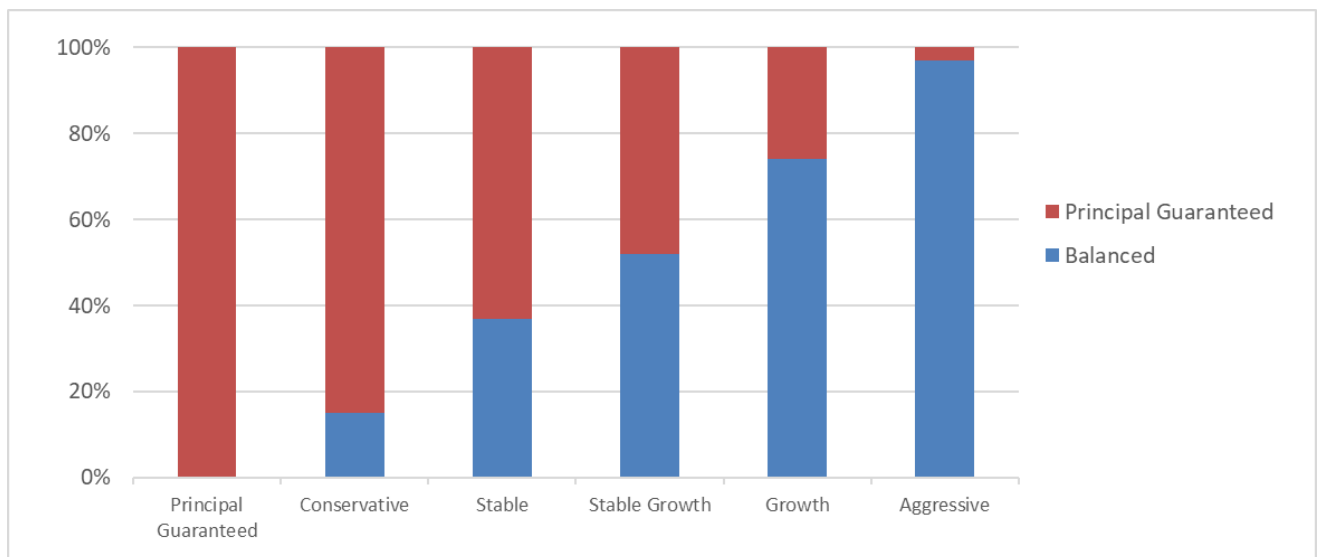


(Source: Mizuho Dai-ichi Financial Technology Co. (as of the end of May 2025))

Table 4: Model Portfolio (Balanced) by Risk Tolerance Level (Investment Type)²

Investment Type	Risk	Expected return	Balanced	Principal Guaranteed
Principal Guaranteed	0.0%	0.0%	0%	100%
Conservative	1.9%	0.8%	15%	85%
Stable	5.0%	2.0%	37%	63%
Stable Growth	6.9%	2.8%	52%	48%
Growth	10.0%	3.9%	74%	26%
Aggressive	13.0%	5.1%	97%	3%

(Source: Mizuho—DL Financial Technology Co., Ltd. (as of the end of May 2025))

Figure 2: Model portfolio (balanced) by risk tolerance level (investment type)

(Source: Mizuho—DL Financial Technology Co., Ltd. (as of the end of May 2025))

3. Data Update

The expected return and variance-covariance matrix are updated and model portfolios are created for each risk tolerance level during the statement date at the end of May of each.

In the event of market turmoil — such as a financial crisis, etc. — the Company will consider whether or not to update the model portfolio upon separate consultation.

² Balance is an example as each fund has different asset weights.

【Notice】

- This document was prepared by Sampo Japan DC Securities Inc. for informational purposes. the distribution or presentation of this material to third parties, other than related parties, may violate the Financial Instruments and Exchange Law. Sampo Japan DC Securities Inc. shall not be held liable in any way for any actions taken by third parties, other than related parties, in reference to the contents of this document. This document is not intended as a solicitation for investment in any individual products.
- This document is not a disclosure document based on the Financial Instruments and Exchange Act.
- When purchasing an investment trust, please make your own decision after reviewing the explanatory materials for defined contribution pension plans or the investment trust explanatory document (prospectus).
- Investment trusts invest in securities that fluctuate in price, such as bonds, stocks, and real estate investment trusts (REITs) (currency risk is also involved when investing in assets denominated in foreign currencies). There is also the risk of foreign exchange rate fluctuations when investing in assets denominated in foreign currencies. As such, principal and investment results are not guaranteed. Profits and losses from the management of mutual funds are the responsibility of the customers who purchase the mutual funds.
- This document was prepared based on various data that Sampo Japan DC Securities Inc. considers reliable, but we do not guarantee its accuracy or completeness. The data and other information presented here is based on past performance and is not a guarantee or promise of future results.
- The information in this document is current as of October 2025 and is subject to change without notice.
- All intellectual property rights and other rights to the data contained in this document, including benchmark indices, belong to their issuers and licensors.
- In general, the management of alternative investments is more complex than that of conventional investments in traditional assets. Please consider alternative investments based on a thorough understanding of their characteristics, risks, and other product details.
- Investment trusts are not
- Deposit or insurance policies. In addition, they are not covered by the protection of the Deposit Insurance Corporation of Japan or the Insurance Policyholders Protection Corporation of Japan. Additionally, if you are not purchasing the products through a brokerage firm, you are not covered by the Investor Protection Fund.
- There is neither a guarantee of principal nor a guarantee of yield on the purchase amount.
- The value of the invested asset may decrease to less than the purchase price. The buyer is responsible for any loss caused by this.

Indices used in this document:

[Japanese Bonds] NOMURA-BPI (Overall) [Foreign Bonds] FTSE World Government Bond Index (excl. Japan, yen basis, no currency hedge) [Emerging Government Bonds] JP Morgan Emerging Market Bond Index Plus (yen basis, no currency hedge) [Japanese Equities] Tokyo Stock Exchange Stock Price Index (TOPIX) (including dividends) [Foreign Equities] MSCI-KOKUSAI Index (yen-denominated basis, including dividends, no currency hedge) [Emerging country Equities] MSCI Emerging Markets Index (yen-denominated basis, including dividends, no currency hedge) [Japanese REIT] Tokyo Stock Exchange REIT Index (including dividends) [Foreign REIT] S&P Developed REIT Index (excluding Japan, on a yen basis, including dividends, without currency hedging)

Index Copyrights, etc.:

The TOPIX and TSE REIT Index values and the marks or trademarks associated with the TOPIX and TSE REIT Indexes are the intellectual property of JPX Research Institute, Inc. or its affiliates (hereinafter referred to as "JPX"). ("JPX"), and JPX retains all rights and know-how related to the TOPIX and TSE REIT Indexes, including the calculation, publication and use of the index values, as well as all rights to the marks or trademarks related to the TOPIX and TSE REIT Indexes.

The intellectual property rights and all other rights to the NOMURA-BPI (Overall) belong to Nomura Fiduciary Research & Consulting Co. Nomura Fiduciary Research & Consulting Co., Ltd. does not guarantee the accuracy, completeness, reliability, or usefulness of the index and assumes no responsibility for the performance of the fund.

All copyrights, intellectual property rights, and other rights related to the MSCI-KOKUSAI Index and the MSCI Emerging Markets Index are the property of MSCI Inc. MSCI Inc. also reserves the right to change the content of the Index and to suspend its publication.

The FTSE World Government Bond Index is a bond index managed by FTSE Fixed Income LLC. The Index is the intellectual property of FTSE Fixed Income LLC and all rights to the Index are reserved by FTSE Fixed Income LLC.

J.P. Morgan Securities LLC retains all intellectual property and other rights related to the JPMorgan Emerging Markets Bond Index Plus. The S&P Developed REIT Index is a product of S&P Dow Jones Indexes LLC, a division of S&P Global, or its affiliate ("SPDJI"), and the license to use it is granted to its consignment company. Standard & Poor's® and S&P® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"), a division of S&P Global, and Dow Jones®, Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC ("Dow Jones"). This product is not sponsored, endorsed, sold, or promoted by SPDJI, Dow Jones, S&P, or any of their respective affiliates, and none of them make any representation as to the suitability of investing in such product, and S&P Developed REIT Indexes and shall not be liable for any errors, omissions, or interruptions in the S&P Developed REIT Indexes.

Sampo Japan DC Securities Co., Ltd.

資産サ-202509-18