May 20th, 2026
Sumitomo Mitsui Banking Corporation
Toshiba Corporation

SMBC and Toshiba Jointly Develop New Equity Indices Using Advanced Quantum-Driven Technologies

Tokyo and Kawasaki, Japan – Sumitomo Mitsui Banking Corporation (President & CEO: Akihiro Fukutome; "SMBC") and Toshiba Corporation (President & CEO: Taro Shimada; "Toshiba") today announced the joint development of the SMBC/TOSHIBA Quantum Driven Diversified Japan Equity Index[*1] and the SMBC/TOSHIBA Quantum Driven Diversified U.S. Equity Index[*2], new equity indices realized with advanced quantum-driven technologies. Collectively, the indices are referred to as "SMBC/TOSHIBA Quantum Diversified" (the "Indices").

1. Background and Objectives

Equity investment is central to asset management, but it also carries the ever-present risk of abrupt and substantial market fluctuations driven by geopolitical developments, changes in economic policy, and other external factors. In uncertain markets, investors are constantly seeking innovations in risk diversification that can protect their assets from unexpected market shocks.

SMBC and Toshiba have together developed new Indices that combine SMBC's expertise in financial markets with Toshiba's advanced quantum-driven technologies. These Indices use solutions to large-scale combinatorial optimization problems to realize well diversified equity portfolios that are difficult to construct with traditional methodologies. They aim to maintain the benefits of diversification even during times of market volatility, and to contribute to effective risk mitigation.

2. Overview of the Indices

The Indices use the constituent stocks of existing Japanese and U.S. equity indices as their pools of candidate securities, the universes they explore. Individual components for the Indices are selected quarterly through calculations made by the Simulated Bifurcation Machine, Toshiba's quantum-driven optimization computer. The weight given to an individual stock is determined based on its historical price volatility. Calculation of the Indices has started, with the end of 2015 as the base date.

3. Key Features of the Indices

(1) Risk diversification through rigorous selection of low correlation stocks

The Indices are constructed through an optimization process that selects a subset of stocks from the universe so as to keep correlations across constituent pairs low. By building a portfolio of stocks whose price movements are less likely to move in tandem, the Indices aims to preserve the benefits of diversification even during broad market downturns.

(2) Large-scale combinatorial optimization enabled by advanced quantum-driven technology

Executing these calculations across a large universe is a challenge for conventional classical computers, due to the immense scale of potential combination patterns. However, it can be done with Toshiba's Simulated Bifurcation Machine, the technology underpinning the Indices (see "Reference" below).

(3) Practical Index design for real-world implementation

The methodology powering the Indices is geared to actual fund management, and the aim is to use the capabilities of advanced technologies to provide investors with a diversified equity portfolio. This is done by adopting proprietary and practical calculation rules that consider the liquidity of constituent stocks, the need to contain the transaction costs of periodic rebalancing and other factors (joint patent application pending).

4. Roles of Each Company

SMBC led the development of the Indices, using financial engineering expertise cultivated within its global market and treasury divisions to develop the calculation methodology. It will now promote diversified investment strategies based on the Indices to asset management companies.

Toshiba provides the Indices with a customized version of the quantum-driven optimization technology of the Simulated Bifurcation Machine. It also handles system maintenance and will execute the quarterly rebalancing calculations.

Daily calculation and distribution of the Indices will be done by S&P Dow Jones Indices (S&P DJI), one of the leading independent providers of global indices. S&P DJI manages accurate adjustments of market data that provides the basis for corporate actions such as stock splits and dividend payments, and delivers transparent, reliable index data to the market.

5. Outlook

Publication of the Indices marks the start of a collaborative initiative by SMBC and Toshiba. They will now move forward by promoting proposal activities that aim for broad utilization of the Indices in financial markets.

As a first step, they will start exploratory discussions with management firms on index funds, ETFs and other investment vehicles linked to the Indices. While the Indices are built on advanced computational technologies, value to investors can only be realized when they are used to develop financial products that offer investors in Japan and overseas practical diversification options.

Alongside new indices derived from the current methodology, SMBC and Toshiba will continue to pursue the application of advanced technologies in the financial sector, including quantum and quantum-driven technologies.

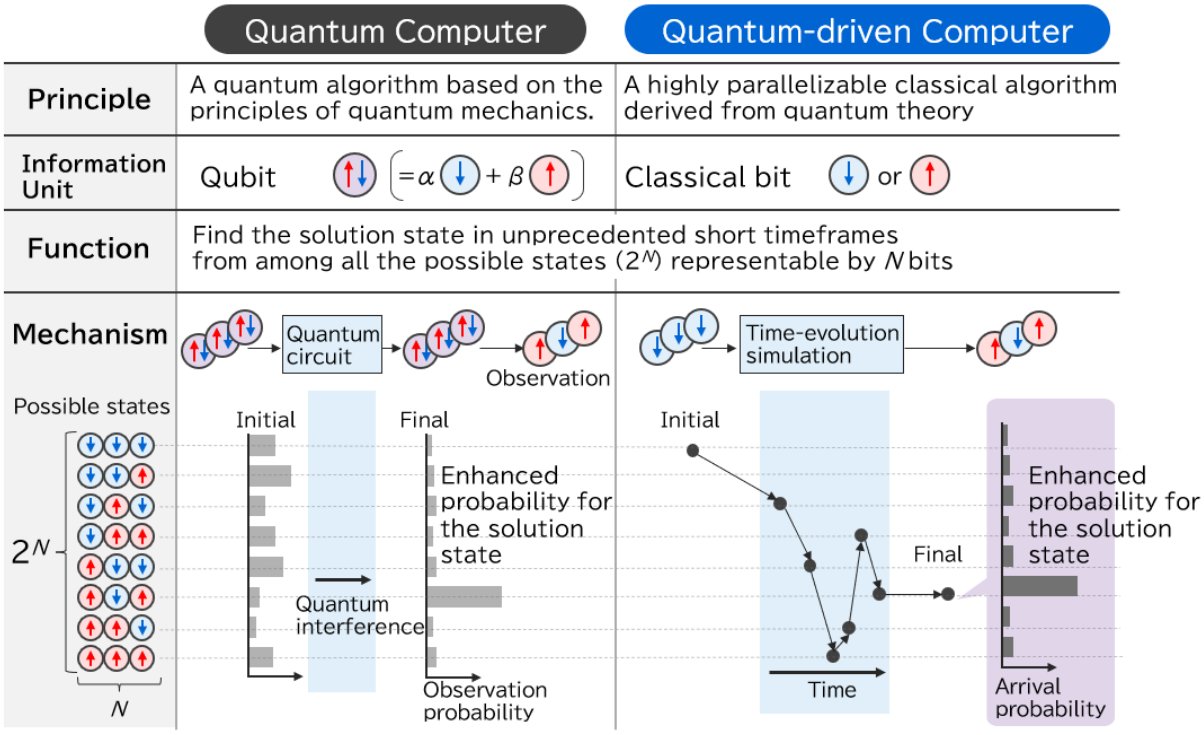
*1 SMBC/TOSHIBA Quantum Driven Diversified Japan Equity Index Methodology:
https://www.spglobal.com/spdji/en/documents/custom/methodology-custom-smbc-toshiba-jp.pdf
*2 SMBC/TOSHIBA Quantum Driven Diversified U.S. Equity Index Methodology:
https://www.spglobal.com/spdji/en/documents/custom/methodology-custom-smbc-toshiba-us.pdf
(The overview and the index of the indices are to be published on S&P DJI website (as of 20th May, 2026))

END

■**Reference: Quantum-driven optimization computer**

Quantum computers and quantum-driven (quantum-inspired) computers enable us to identify solutions from an enormous number of candidates with high probability in unprecedentedly short timeframes. Quantum computers find high-quality solutions by evaluating solution candidates in parallel, leveraging quantum superposition and quantum interference. Quantum-driven computers find high-quality solutions by simulating, in cyberspace, the time evolution of classical physical systems derived from quantum principles (specifically, many oscillators with complex interactions).

Toshiba derived innovative algorithms from its work on a quantum computer, the Quantum Bifurcation Machine, and implemented them on classical computers as the Simulated Bifurcation Machine. This quantum-driven optimization computer excels in solving large-scale complex combinatorial optimization problems. Toshiba offers the technology in a broad range of applications as a quantum-inspired combinatorial optimization solution, "SQBM+" *.



Figure：Quantum computer and quantum-driven computer

*SQBM+ is a registered trademark or trademark of Toshiba Corporation in Japan and other countries.