

- Government Pension Investment Fund (“GPIF”) has reviewed its policy asset mix for the third medium-term plan, which starts from April 2015. In June 2014, Ministry of Health, Labour and Welfare (“MHLW”) published financial stability report (“Actuarial Valuation”) on public pension scheme, including several scenarios of targeted return for GPIF. Given that Japan is about to significantly transform itself from economy of persistent deflation, GPIF accelerated review process of its policy asset mix, which should be more compatible with the changes of long-term economic prospect, and has adopted its new policy asset mix.
- Since June 2014, GPIF’s Investment Advisory Committee, which consists of finance and economics professionals appointed by the Minister of Health, Labour and Welfare, has conducted thorough review on GPIF’s policy asset mix and intensely discussed optimal asset allocation; the Investment Advisory Committee was held seven times, the working sub-committee six times. Upon the approval by the Investment Advisory Committee, the President of GPIF submitted to the Minister the revised medium-term plan including new policy asset mix. It has just been authorized and becomes effective from October 31st, 2014.
- In addition to the new policy asset mix, the Investment Advisory Committee adopted a resolution as to the reinforcement of the governance structure. GPIF’s implementation includes:
 - (1) Reinforcement of the internal control
 - “Governance Council”, created under the Investment Advisory Committee
 - “Investment Principles” and “Code of Conducts” to be drawn by the “Governance Council”
 - “Compliance officer”, newly appointed by GPIF’s President
 - (2) Reinforcement of the risk management capabilities
 - Strengthen the capabilities for macro economic analysis and market forecast
 - Upgrade an IT system to analyze both investment asset and expected payout
 - Sophisticate risk management by adding multiple risk measurements of total portfolio, as well as permissible ranges of deviations of each asset class
 - (3) Enhancement of human resource management
- With regard to the policy asset mix, GPIF will monitor macro economic environment and market condition, will periodically verify the appropriateness of the assumptions used to this policy mix, and will consider reviewing it when needed.

Summary (2)

【Adoption of New Policy Asset Mix】

(Old)

	Domestic bonds	Domestic stocks	International bonds	International stocks	Short-term assets
Target allocation	60%	12%	11%	12%	5%
Permissible range of deviation	±8%	±6%	±5%	±5%	—



(New)

	Domestic bonds	Domestic stocks	International bonds	International stocks
Target allocation	35%	25%	15%	25%
Permissible range of deviation	±10%	±9%	±4%	±8%

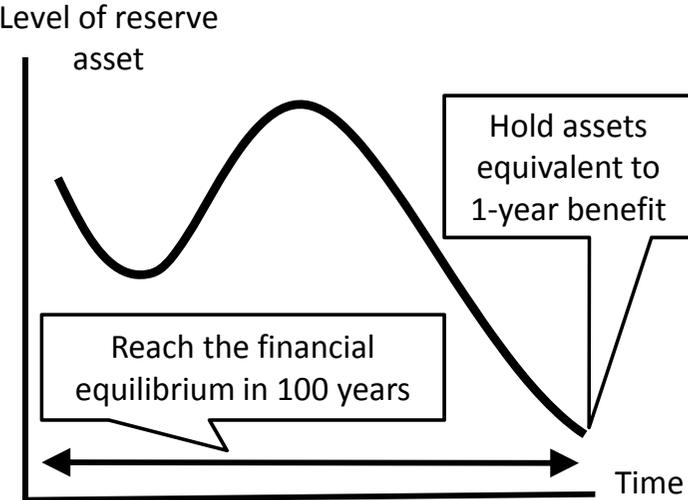
(Note 1) Alternative investment will be made within maximum 5% of total portfolio, in accordance with development of dedicated team. Infrastructure, private equities, real estates or other assets determined upon deliberation at the Investment Advisory Committee, are classified as domestic bonds, domestic stocks, international bonds or international stocks, depending on their risk and return profiles.

(Note 2) GPIF adopts tactical asset allocation within permissible ranges of deviation for each asset class, and this allocation is solely based upon thorough analysis on economic and market environment, and prudent judgment.

Background of New Policy Asset Mix (1)

(1) Actuarial Valuation

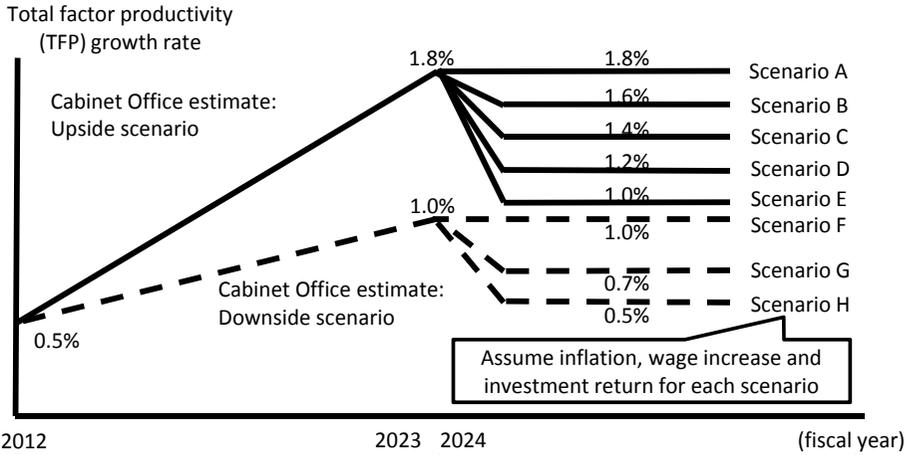
- Japan's public pension scheme (Employees' Pension Insurance and National Pension) is basically managed by pay-as-you-go system which incorporates the concept of intergenerational dependency, where the contributions paid by working generations support elder generations.
- Given decreasing birthrate and aging population, funding the pension benefits solely by the contribution from working generations would unduly weigh on them, thus the fiscal plan was drawn up to use the reserve asset (GPIF) to fund the benefits to later generations and after it will reach the financial equilibrium in 100 years, it will hold assets equivalent to 1-year benefits.



Schematic Diagram of Actuarial Valuation

- With regard to the pension finance, the government is required to make assessment and projection on the pension finance ("Actuarial Valuation") and verify the robustness every five years, and the Actuarial Valuation should be taken into account in drawing up a policy asset mix for the reserve investment management.

- The Actuarial Valuation announced on June 3rd 2014, refers Cabinet Office's "Medium to Long-term Economic and Fiscal Estimates" (January 2014) and assumes a wide variety of scenarios focused on total factor productivity (TFP) growth rate (such as technological advance) which is important in forecasting long-term economic situations.



Current period (in accordance with Cabinet Office estimate) Long-term average (assume several decelerations)

Background of New Policy Asset Mix (2)

(2) Changes of medium-term objective

- The revised medium-term objective set by the Minister of Health, Labour and Welfare stipulates target return, allowable risk and risk management procedures:
 - ① Given the present assessment and projection on the pension finance (“Actuarial Valuation”), the reserve asset must achieve a 1.7% “Real Investment Return” (nominal investment return less nominal wage increase) with the lowest risk while maintaining liquidity necessary for the pension benefits.
 - ② The policy asset mix must be based upon the expertise generally recognized for asset management, as well as long-term perspective with forward-looking risk analysis.
 - ③ Downside risk to underperform nominal wage increase should not be larger than that of portfolio comprised solely of domestic bonds. It should be fully noted that stocks may have larger unexpected downside risk. The degree of probability that the reserve asset becomes smaller than originally anticipated should be evaluated appropriately and the further examination should be carried out using various scenarios.

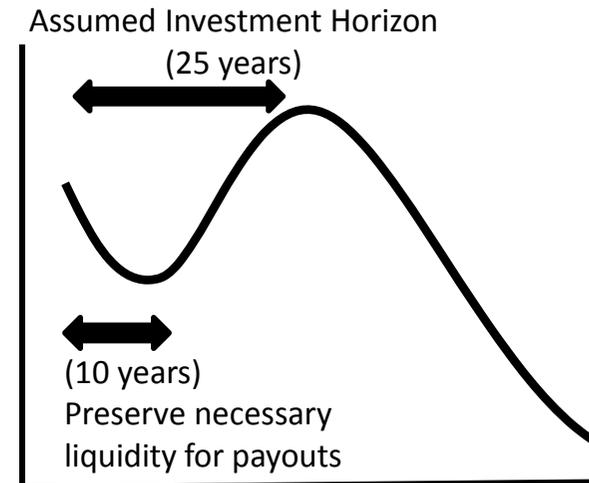
Key assumptions for New Policy Asset Mix

- Key assumptions for new policy asset mix are followings:
 - ① Instead of a long-term equilibrium rate, domestic bond return is based upon a scenario that interest rates are expected to rise for 10 years. This scenario is consistent with the Actuarial Valuation, conducted by MHLW.
 - ② When assessing risk of policy asset mix, we referred the probability (“Reference Probability”) that all-domestic-bond portfolio falls below the required value of the reserve assets. Specifically, we examined whether the probability that new policy asset mix fall below the required value of the reserve asset is smaller than Reference Probability. Moreover, we took into account the expected shortfall in case that new policy asset mix fall below the required value.
 - ③ We assumed two scenarios on Japan’s economic growth. Among scenarios in the Actuarial Valuation, “Upside Scenario” (Scenario E in the Actuarial Valuation: P3) is chosen, because the investment target in Scenario E is highest and able to secure necessary investment return in any scenario in the Actuarial Valuation. “Downside Scenario” (Scenario G: P3) is chosen, because interest rate levels in Scenario G are most consistent with current Yen yield curve.

Assumed Investment Horizon of Reserve Asset and Preservation of Liquidity for Pension Benefits

(1) Assumed Investment Horizon

- According to the Actuarial Valuation, the reserve asset level is to decrease for 10 years (payout is larger than contribution), which is followed by 15 years increase (payout is smaller than contribution). Then, the reserve asset level will decrease again.
- Hence, the assumed investment horizon was set to be 25 years (10+15years) , beyond which the reserve asset is expected to start declining and investment policy should be more focused on the preservation of liquidity.



Development of Planned Reserve Asset in the Actuarial Valuation (Schematic Diagram)

(2) Preservation of Liquidity for Pension Benefits

- As mentioned above, the reserve asset is expected to be paid out (“Payout”) for 10 years to come. During this period, sufficient liquidity is very important for the pensioners.
- Therefore, not only did we revise our policy asset mix, but also expanded a special fund for expected payouts between 2015 and 2019 (approximately 20 trillion yen, assumed in the Actuarial Valuation). In this fund, some of domestic bonds are held to maturity so that their redemptions and coupon payments meet payout for the pensioners.

Assumption of Returns

- Future real long-term interest rates are set to be 2.7% in Upside Scenario and 1.9% in Downside Scenario respectively (Future inflation rates are set to be 1.2% in Upside scenario and 0.9% in Downside scenario respectively.)
- Prior to this policy change, expected return of domestic bonds was a single rate which reflected long-term equilibrium states. This time, however, we conducted forward-looking risk analysis, assumed a scenario that interest rates are rising for 10 years and become flat thereafter, and averaged each year return for the assumed investment horizon.
- With regard to expected returns of domestic stocks, international bonds and international stocks, we used a short-term interest rate plus respective risk premiums. In terms of the real short-term interest rate, we used an estimation from historical short-term interest rates in Upside Scenario, taking into consideration the consistency to the Actuarial Valuation and a real long-term interest rate less term premium in Downside Scenario.

Expected Real Return (Nominal Return minus Wage Increase)

	Domestic Bonds	Domestic Stocks	International Bonds	International Stocks	Short-term Assets
Upside Scenario	-0.2%	3.2%	0.9%	3.6%	-1.7% (Note)
Downside Scenario	-0.1%	3.1%	1.4%	4.1%	-1.1% (Note)

Expected Nominal Return

	Domestic Bonds	Domestic Stocks	International Bonds	International Stocks	Short-term Assets	Wage Increase
Upside Scenario	2.6%	6.0%	3.7%	6.4%	1.1% (Note)	2.8%
Downside Scenario	2.0%	5.2%	3.5%	6.2%	1.0% (Note)	2.1%

(Note) Expected returns of short-term assets are not ones generally observed in markets but ones which incorporate cash reserve for the payouts.

Assumption of Risks and Correlations

- We estimated the risks (standard deviation) and the correlations among 4 assets using historical data for the past 20 years (Note)

Risk (Standard Deviation)

	Domestic Bonds	Domestic Stocks	International Bonds	International Stocks	Short-term Assets	Wage Increase
Standard Deviation	4.7%	25.1%	12.6%	27.3%	0.5%	1.9%

Correlation

	Domestic Bonds	Domestic Stocks	International Bonds	International Stocks	Short-term Assets	Wage Increase
Domestic Bonds	1.00					
Domestic Stocks	-0.16	1.00				
International Bonds	0.25	0.04	1.00			
International Stocks	0.09	0.64	0.57	1.00		
Short-term Assets	0.12	-0.10	-0.15	-0.14	1.00	
Wage Increase	0.18	0.12	0.07	0.10	0.35	1.00

(Note) In estimating the risk of domestic bonds, the extension of duration in the future was taken into consideration.

Preserving Necessary Reserve Asset and Minimizing Downside Risk (1)

(1) Identification of the Policy Asset Mix

- As follows, while preserving the necessary reserve asset, from a view point of minimizing the downside risk, we identified a portfolio to meet the investment requirement (nominal wage increase plus 1.7% (Note 1)) with the lowest risk.
 - ① Based on the expected returns and risks of 4 assets, we generated various candidates of asset allocations and estimated the return, risk (standard deviation), probability to underperform nominal wage increase (“Lower Partial Probability”) and its average shortfall (“Expected Shortfall”). With regard to the constraints on asset allocation, no less allocation should be made to international stocks than international bonds, however, there is no constraint that same or more allocation should be made to domestic stocks than international stocks.
 - ② We identified a portfolio which meets the return requirement (nominal wage increase plus 1.7%) in both Upside and Downside Scenarios, and examined whether the “Lower Partial Probability” is smaller than “Reference Probability” (P5). Moreover, Expected Shortfall of the portfolio is found smallest.

Profiles of Policy Asset Mix

	Real Return	Nominal Return	Standard Deviation	Lower Partial Probability	Expected Shortfall (Normal Distribution)	Expected Shortfall (Empirical Distribution) (Note2)
Upside Scenario	1.77%	4.57%	12.8%	44.4%	9.45%	11.2%
Downside Scenario	1.98%	4.08%	12.8%	43.8%	9.38%	11.2%

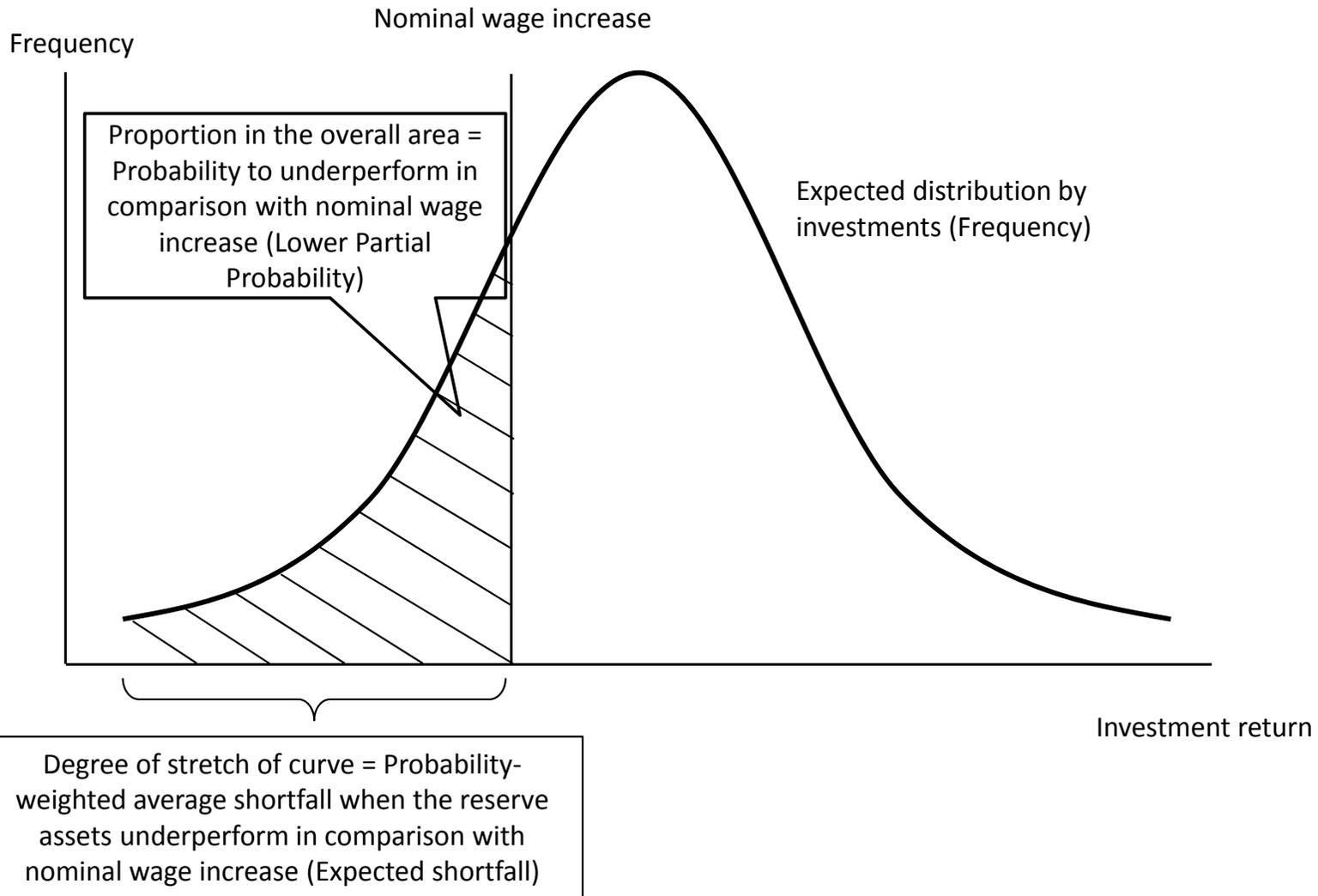
(Reference) Profiles of All-Domestic-Bond Portfolio

				Reference Probability		
Upside Scenario	-0.20%	2.60%	4.7%	51.7%	3.86%	3.52%
Downside Scenario	-0.10%	2.00%	4.7%	50.8%	3.83%	3.48%

(Note 1) Although the return requirement is 1.7%, we assume a 2% allocation to short-term assets whose returns are very low. Hence, 1.7% target is adjusted to 1.77% in Upside Scenario and 1.76% in Downside Scenario respectively.

(Note 2) “Expected Shortfall (Empirical Distribution)” is supplementarily estimated by Monte Carlo simulation based on historical data (Empirical Distribution) with consideration that stocks may have larger downside probability than expected (“Tail Risk”).

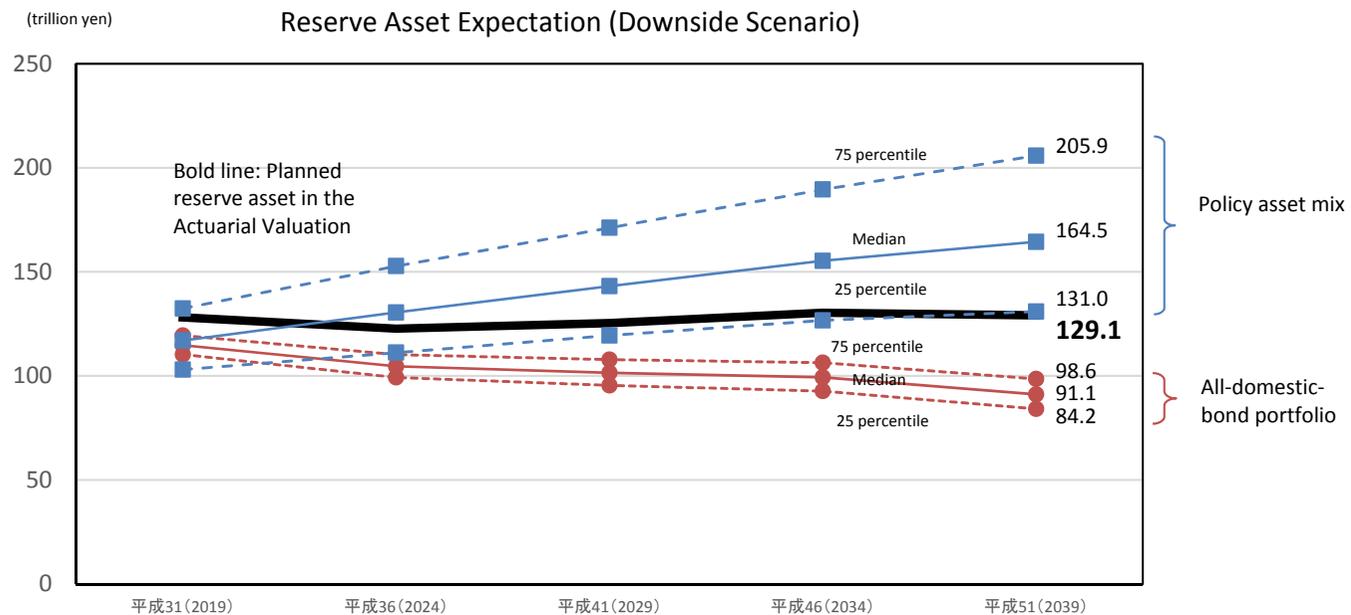
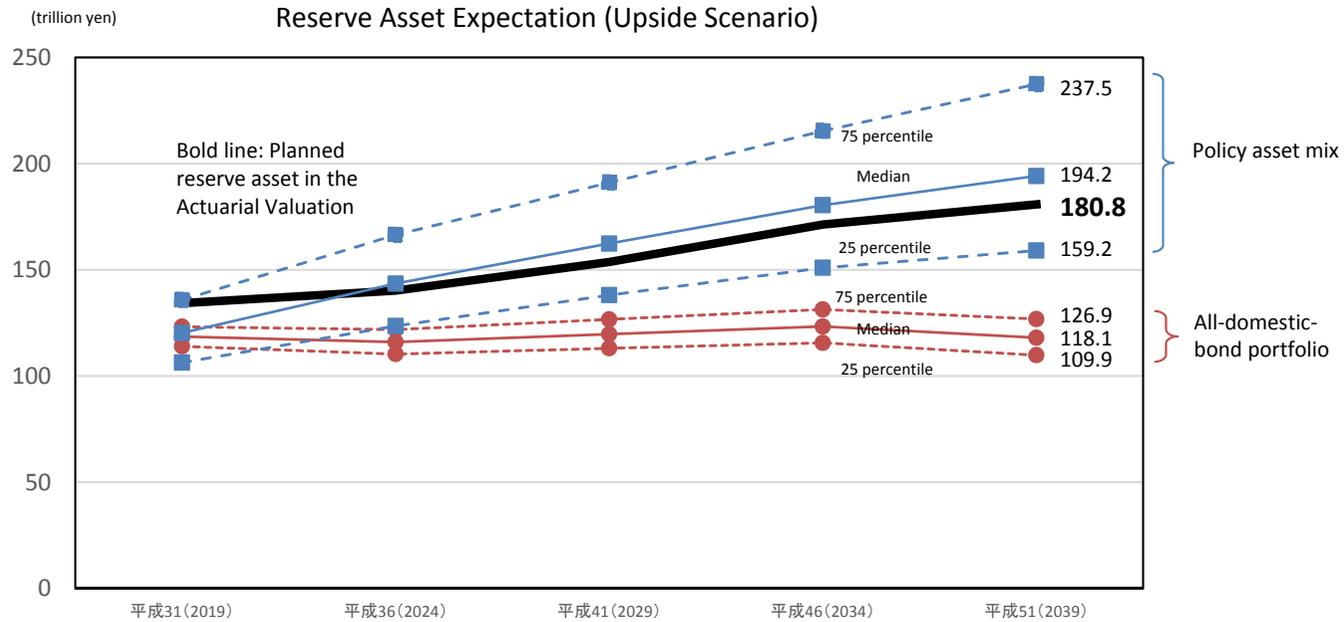
Lower Partial Probability and Expected Shortfall



Preserving Necessary Reserve Asset and Minimizing Downside Risk (1)

(2) Verification of Risk of Policy Asset Mix

- It is important to verify the degree of risk (long-term probability) that a certain policy asset mix may fall below the reserve asset which the Actuarial Valuation assumes. In order to estimate how new asset policy mix performs in comparison with the assumed level of reserve asset, we made a simulation 100,000 times for each scenario and looked into the distribution (see P12).
- The results show that the probability that New Asset Policy Mix falls below the assumed level of reserve asset in year of 2039 is 40% in Upside Scenario and 25% in Downside Scenario respectively.
- We also conducted a similar simulation for all-domestic-bond portfolio and the result indicates that this hypothetical portfolio always fall below the assumed level of reserve asset in Upside and Downside scenario. Based upon the analysis from P9 to P11, the new asset policy mix is the most efficient to achieve the assumed level of reserve asset, while minimizing the downside risk.



(Note) "Reserve Asset Expectation" is expressed as real reserve asset (present value discounted by nominal wage increase).

Diversifying Investment Strategies

(1) Alternative Investments

- In order to achieve efficient investments by diversification, policy on alternative investment is stated in the new policy asset mix for the first time.
- Alternative investment will be made within maximum 5% of total portfolio, in accordance with development of dedicated team. Infrastructure, private equities, real estates or other assets determined upon deliberation at the Investment Advisory Committee, are classified as domestic bonds, domestic stocks, international bonds or international stocks, depending on their risk and return profiles.

(2) Multi-Asset Investment

- We will consider multi-asset investments. For example, an external manager whose expertise widely covers both international and domestic stocks is considered. Multi-asset investments will be reconciled and classified into either of four asset classes when we compute a percentage of each asset class in accordance with the policy asset mix.

(3) Change of International Stock Benchmark

- Formerly, the benchmark of International Stock, with which we compare the investment results, was “MSCI KOKUSA1” representing public equity markets in developed countries. We have changed it to “MSCI ACWI ex. Japan” including public equity markets in emerging countries.
- With regard to the passive investments, we have completed this transition.

Management of Policy Asset Mix

(1) Tactical Asset Allocation

- GPIF adopts tactical asset allocation within permissible ranges of deviation for each asset class, and this allocation is solely based upon thorough analysis on economic and market environment, and prudent judgment.

(2) Sophistication of Portfolio Management

- We will sophisticate risk management by adding multiple risk measurements of total portfolio, as well as permissible ranges of deviations of each asset class.

(3) Permissible Ranges of Deviation during Transition Period to New Policy Asset Mix

- In order to minimize market impact which our transition may cause, actual asset allocation may exceed the permissible ranges of deviation of the new policy asset mix.

(4) Short-term Assets

- In the previous policy asset mix, we allocated 5% to short-term assets and calculated the allocations of the other assets (i.e. allocated 95% to the four asset classes). In the new policy asset mix, however, we do not assume short-term assets and the four asset classes account for 100% .
- In actual operations, short-term assets held in both GPIF and the Pension Special Account are included in the new policy asset mix. As such, holding short-term assets reduce the allocation to the four asset classes and we take it into consideration in managing each asset within the corresponding permissible range of deviation.

Reinforcing Governance Structure (1)

- Acknowledging the importance of internal control, Investment Advisory Committee has established “Governance Council” , will draw up GPIF’s “Investment Principles” and “Code of Conducts” and will monitor how GPIF is governed.
- In addition to the new policy asset mix, the Investment Advisory Committee adopted a resolution as to the reinforcement of the governance structure in a following manner:

Recommended actions for better governance structure

Upon adoption of new policy asset mix, acknowledging that the governance structure of GPIF has been strengthened and will be further discussed at the government body, the Investment Advisory Committee encourages GPIF to continue investment management safely and efficiently and to strengthen the governance structure with following view points:

1. Reinforce the internal control

- (1) Clarify and implement thoroughly the rules of information security management
- (2) Appoint a compliance officer
- (3) Expand the role of auditors and reinforce the internal auditing system
- (4) Review disclosure policy, which considers importance of transparency and effective investment management

2. Reinforce the risk management capabilities

- (1) Strengthen the capabilities for macro economic analysis and market forecasts
- (2) Sophisticate risk management by adding multiple risk measurements of total portfolio, as well as permissible ranges of deviations
- (3) Upgrade the risk management capabilities for investing in a new asset class.

3. Enhance human resource management

- (1) Revise the remuneration scheme for executives and professional staffs
- (2) Report to the Investment Advisory Committee the progress of human resource management

With regard to the policy asset mix, GPIF should monitor macro economic environment and market condition, periodically verify the appropriateness of the assumptions used to this policy mix, and consider reviewing it when needed.

Reinforcing Governance Structure (2)

- GPIF fully respects the resolution by the Investment Advisory Committee and starts implementation in a following way:

【Reinforce the internal control】

- ① A newly appointed “Compliance officer” will monitor how “Investment Principles” and “Code of Conducts” are implemented and observed, and will report to the “Compliance Committee” chaired by the President of GPIF.
- ② In accordance with the reform of independent administrative agencies, we will reinforce the internal audit procedure.

【Reinforce the risk management capabilities】

- ① Strengthen our capability of macro economic analysis and market forecasts by adding external consultants (Fall, 2014) and continue to increase and train internal professionals
- ② Install an IT system to jointly analyze both the investment asset and the expected payout(Fall, 2014), in order to enhance risk management
- ③ Sophisticate risk management by adding multiple risk measurements of total portfolio, as well as permissible ranges of deviations of each asset class
- ④ Create comprehensive risk management tool which covers overall portfolio including alternative assets

Reinforcing Governance Structure (3)

【Enhance human resource management】

- ① Revise the remuneration scheme with the help of external consultants and add new professionals
- ② Report to the Investment Advisory Committee the progress of human resource management and reflect their feedback to enhance better management

【Review the policy asset mix】

- With regard to the policy asset mix, GPIF will monitor macro economic environment and market condition, will periodically verify the appropriateness of the assumptions used to this policy mix, and will consider reviewing it when needed.