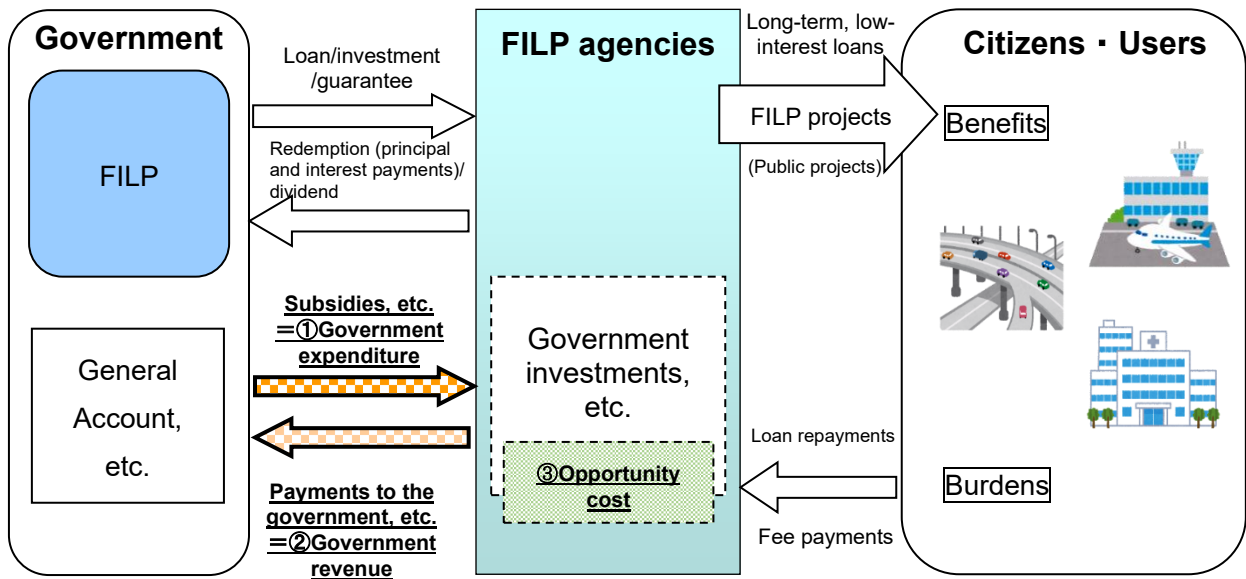


# Explanation of Policy Cost Analysis

## 1. Policy Cost Analysis (PCA)



The Fiscal Investment and Loan Program (FILP) provides investment or loans to projects in which it is adequate to recover investment or loans from beneficiaries' burdens. If beneficiaries' burdens are required to be mitigated for policy purposes, government expenditure (subsidies, etc.) may be provided.

The policy cost analysis (hereinafter referred to as PCA) is an initiative that estimates future revenue and expenditure for projects subject to FILP (hereinafter referred to as FILP projects), uses the following formula for determining the policy cost of these FILP projects and publishes the cost, useful for checking the adequateness and soundness of these FILP projects to promote the disclosure of FILP information.

$$\text{Policy cost}^{*1} = \text{①Government expenditure} - \text{②Government revenue} + \text{③Opportunity cost of government capital investment, etc.}^{*2}$$

(Note) Estimates ① to ③ are given in present value<sup>\*3</sup>

\*1-3: See Glossary on p. 7 for details of "policy cost," "opportunity cost" and "present value."

## **2. Assumptions for PCA**

In the course of PCA, FILP agencies estimate cash flow for projects subject to analysis over long periods to the completion of fiscal loan or investment recovery under certain assumptions and prepare income statements, balance sheets and other documents.

The assumptions include (1) common assumptions used for all FILP agencies and (2) individual assumptions that are set by FILP agencies according to the characteristics of their individual projects.

### (1) Common assumptions

#### ① Agencies subject to PCA

Agencies for which fiscal loan or government guarantee is earmarked under FILP for the fiscal year for analysis (excluding Public-private Investment Funds).

#### ② Projects subject to PCA

FILP Projects that are planned to be implemented in the fiscal year for analysis and later.

#### ③ Analysis period

An analysis period will end when fiscal loans or government-guaranteed bonds to be raised in or after the fiscal year for analysis are redeemed and the recovery of funds amounting to loans or assets acquired through the abovementioned projects subject to analysis is completed.

#### ④ Assumed interest rates (discount factor and future interest rate)

These rates are calculated based on the spot Japanese Government Bonds market yield on the day when a budget proposal for the fiscal year for analysis is decided.

\* If the spot market yield is negative, the interest rate is set at 0% (with the discount factor set at 1%)

### (2) Individual assumptions

Estimates for loan claw-backs (financing institutions), operating revenues (project institutions), non-operating revenues, various costs, etc.

\*These assumptions are set individually by each agency subject to analysis based on the latest settlement of accounts.

## **3. Details of PCA**

Since PCA initiative was fully launched in FY2001, we have expanded analytical approaches and disclosure. At present, the analysis is done from a

diversity of viewpoints, covering not only basic analysis but also ①Breakdown of policy cost by time of provision of funds, ②Sensitivity analysis, ③Past year comparison analysis (real fluctuation analysis), and ④Analysis by causative factor. We are also trying to enhance the analysis by providing the social and economic benefits of relevant projects as circumstantially as possible.

### ① Breakdown of policy cost by time of provision of funds

By estimating the policy cost at the beginning of the analysis period and that during the (future) analysis period, we can project fiscal burdens for a project subject to analysis.

### ② Sensitivity analysis

Sensitivity analysis estimates policy cost rises or falls on changes in some assumptions, including interest rates and project operating revenues, to measure the effects of those changes.

<Reference> Relationship between assumed interest rate change and policy cost

Component	Fall in assumed interest rate (↓)	Rise in assumed interest rate (↑)
①Subsidies, etc. <cost rise (+)>	<ul style="list-style-type: none"> <li>• Rise in present value of subsidies, etc. ⇒ Rise in policy cost (+)</li> </ul>	<ul style="list-style-type: none"> <li>• Fall in present value of subsidies, etc. ⇒ Fall in policy cost (-)</li> </ul>
	<ul style="list-style-type: none"> <li>• Fall in coupon fee ⇒ Fall in subsidies, etc. ⇒ Fall in policy cost (-)</li> </ul>	<ul style="list-style-type: none"> <li>• Rise in coupon fee ⇒ Rise in subsidies, etc. ⇒ Rise in policy cost (+)</li> </ul>
②Payments to the government, etc. <cost fall: (-)>	<ul style="list-style-type: none"> <li>• Rise in present value of payments to the government, etc. ⇒ Fall in policy cost (-)</li> </ul>	<ul style="list-style-type: none"> <li>• Fall in present of payments to the government, etc. ⇒ Rise in policy cost (+)</li> </ul>
	<ul style="list-style-type: none"> <li>• Fall in coupon fee ⇒ Rise in payments to the government, etc. ⇒ Fall in policy cost (-)</li> </ul>	<ul style="list-style-type: none"> <li>• Rise in coupon fee ⇒ Fall in payments to the government, etc. ⇒ Rise in policy cost (+)</li> </ul>
③Opportunity cost <cost rise: (+)>	<ul style="list-style-type: none"> <li>• Fall in opportunity cost (equivalent to interest) ⇒ Fall in policy cost (-)</li> </ul>	<ul style="list-style-type: none"> <li>• Rise in opportunity cost (equivalent to interest) ⇒ Rise in policy cost (+)</li> </ul>

\*Factors in brackets meet some FILP agencies.

### ③ Past year comparison analysis (real fluctuation analysis)

Past year comparison analysis (real fluctuation analysis) compares policy cost estimates made for the current fiscal year and the previous year under equal assumptions to find real changes in the policy cost.

Given that the policy cost represents a long-term estimate for a project subject to analysis, the cost for one project changes greatly depending on assumptions (particularly assumed interest rates).

Therefore, a simple comparison between the policy cost estimates for the

current fiscal year and the previous year cannot specify whether their gap is attributable to different assumptions or significant changes in a project subject to analysis.

Then, policy cost estimates are made for the current fiscal year and the previous year under equal assumptions for the interest rate and analysis period (the beginning of the analysis), which are not directly related to projects, to identify real factors behind policy cost changes.

#### « Calculation method »

##### (A) Adjusting assumed interest rates

The assumed interest rate for the previous fiscal year is used for estimating the comparative policy cost (for the current year).

##### (A) Adjusting assumed interest rates

Policy cost for the current year: 100.0 billion yen (assumed interest rate for the current year)



Using the assumed interest rate used for the previous year

Policy cost for comparison for the current year: 120.0 billion yen (assumed interest rate for the previous year)



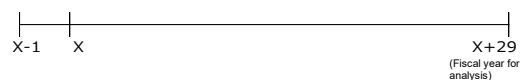
##### (B) Adjusting initial years

Policy cost for the previous year: 140.0 billion yen



Excluding a policy cost accruing in the initial year

Exclusion Comparative policy cost (for the previous year: 110.0 billion yen (production cost from the second year of the analysis period))



##### (C) Computing real fluctuation (summary)

(A) Policy cost for comparison for the current year: 120.0 billion yen (assumed interest rate for the previous year)

(B) Comparative policy cost (for the previous year: 110.0 billion yen (production cost from the second year of the analysis period)) Real fluctuation

Real fluctuation: +10.0 billion yen  
(A) 120.0 billion yen – (B) 110.0 billion yen = + 10.0 billion yen



##### (B) Adjusting initial years

A policy cost accruing in the initial year of the analysis period is excluded from PCA in the previous year to compute the comparative policy cost (for the previous year).

##### (C) Computing real fluctuation (summary)

Policy cost amounts for comparison computed in (A) and (B) are compared to determine the effective change.

#### << Factors behind the effective change >>

- Effect of business plan or institutional changes (common)
- Past year fluctuations in clerical and general administrative costs (common)
- Effect of new loans provided in the fiscal year for the analysis (financing institutions)
- Past year fluctuations in loan losses and prepayments (financing institutions)
- Effect of new projects launched in the fiscal year for the analysis (project institutions)
- Past year fluctuations in project revenues and costs (project institutions)

#### ④ Analysis by causative factor

The analysis finds a financing institution's policy cost for each causative factor (including prepayments, loan losses and others (profit margin, etc.)).

#### **4. Estimation of social and economic benefits**

Given that the policy cost represents public financial burdens of FILP projects that are estimated under certain assumptions, it is important to integrally assess the policy cost and these projects' financial benefits for citizens and society. However, it is difficult to uniformly measure quantitative benefits from characteristically different projects. Furthermore, there are many matters that cannot be converted into financial benefits, including lives saved through the promotion of highly advanced medical treatment and wider schooling opportunities.

Therefore, PCA tries to explain how projects subject to analysis contribute to national life and society as specifically as possible, using quantitative social and economic benefits that each agency estimates on its own.

As the Cost-Benefit Analysis Manual and other guidelines prepared by the relevant government agencies can be utilized to quantitatively estimate social and economic benefits of public works projects under generally unified standards, PCA assumptions (including the discount factor and analysis period) are applied for their re-estimation and their comparison with the policy cost.

#### **5. Utilization of PCA**

Various documents prepared during PCA are important for checking project prospects, financial conditions, the redeemability of fiscal investment and loans, etc. Agencies subject to analysis and relevant government ministries and agencies share and discuss challenges arising through the series of PCA procedures, expecting that such discussions would lead project implementers to improve and revise their projects. This process is also significant from the viewpoint of public fund providers' governance.

We continue to steadily implement PCA and enhance the published contents as well as further utilizing it.

## <Example cases for utilization of PCA>

### I. Utilization for formulating FILP

(1) Checking present conditions and latest financial statements for projects

Analysis results for the previous year and latest financial statements are compared to check whether any unusual fluctuations are posted in operating revenues (project institutions), loan losses (financing institutions) and other items that would exert influence on future balance sheets.

(2) Verifying redeemability of fiscal investment and loans

Future cash flow and financial statement estimation results prepared through the analysis are screened to verify the redeemability of fiscal investment and loans and check whether terms and conditions for fiscal loan funds are adequately based on revenue and expenditure projections.

(3) Assessing FILP projects

Checking whether FILP projects are adequate in terms of the policy cost's relationship with social/economic benefits, their complementarities for the private sector and other matters.

### II. Utilization by FILP agencies

(1) Financial improvements, risk management, etc.

- Confirming how interest rate, operating revenue, loan loss and other fluctuations would affect future financial conditions and considering countermeasures depending on conditions
- Utilizing PCA for considering how to use cash on hand and reserves
- Checking effects of business plan changes on future financial conditions
- Considering measures to narrow duration gaps (gaps between average asset and liability durations)

(2) Disclosure

- Providing PCA on websites
- Providing PCA in bond prospectuses when issuing FILP agency bonds (documents prepared for investors in compliance with the prospectuses required under the Financial Instruments and Exchange Act)

## Glossary

### **Policy cost**

PCA is an initiative launched in response to a recommendation given in discussions in a run-up to the FY2001 FILP reform, which called for clarifying future burdens on users accompanying FILP projects.

Generally, the word “cost” is used to mean expenditure, original value or price. PCA considers government expenditure (subsidies, etc.) for FILP projects to be “cost” but uses the term “policy cost” to specify that the “policy cost” concept differs from the general “cost” concept.

\* For details of the FILP reform, see FILP reform-related documents on the Ministry of Finance website

Reference URL: [http://www.mof.go.jp/filp/reference/reform\\_report/index.htm](http://www.mof.go.jp/filp/reference/reform_report/index.htm)

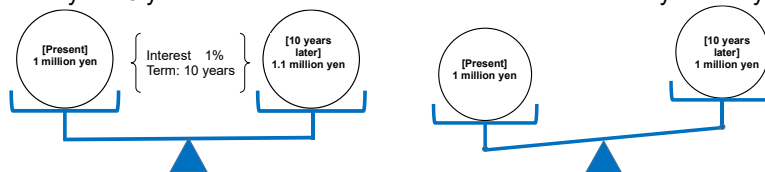
### **Opportunity cost**

The opportunity cost is an economic term meaning “a gain forgone due to an economic action or received due to another economic action.”

If this concept is applied to FILP system, the results are as follows. If investment is not provided to a FILP agency, Japanese Government Bonds issuance amount will be reduced by the equivalent of the investment to cut interest payments. Therefore, “Japanese Government Bonds interest cut lost due to investment” is identified as opportunity cost and added in PCA.

### **Present value**

Will 1 million yen today have the same value 10 years later? If 1 million yen is invested for 10 years at an interest rate of 1% (simple interest), a combination of the principal and interest (1% (10,000 yen) × 10 years) will come to 1.1 million yen. In this case, 1 million yen today will have the value of 1.1 million yen 10 years later. In other words, 1 million yen 10 years later will have a lower value than 1 million yen today.



In order to compare asset values at different time points estimated through a long-term analysis like PCA, therefore, we must discount a future value (principal + interest) by the equivalent of the interest to determine the present value (= principal). A future amount (future value) is multiplied by a coefficient called “discount factor” to determine the present value.



In PCA, the discount factor is calculated based on the market yield on government bonds on the day when the budget proposal for the fiscal year for the analysis is adopted.

[Reference] Discount factor calculation formula

$$PV \times (1 + r)^n = FV \quad \xrightarrow{\text{Converted}} \quad FV \times \frac{1}{(1 + r)^n} = PV$$

↓  
Discount factor

PV for present value, FV for future value, n for the number of years, r for interest rate: