

# Financial Analysis of Social Capital Improvements by the Japanese Fiscal Investment and Loan Program in the Case of Highways and International Airports\*

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## 1. Introduction

In ongoing reforms of public corporations, many of them are about to change their corporate names or management systems by abolition or consolidations with other public corporations, incorporation as independent administrative institutions, privatization, etc. In particular, it has been determined that the four highway-related public corporations (Japan Highway Public Corporation, Metropolitan Expressway Public Corporation, Hanshin Expressway Public Corporation, Honshu-Shikoku Bridge Authority) and New Tokyo International Airport Authority (currently Narita International Airport Corporation) has already been privatized. For Kansai International Airport Co., Ltd. also, its future privatization is planned.<sup>1)</sup>

Since the above-mentioned agencies procure their funds from the Fiscal Investment and Loan Program (FILP), they are also called “FILP agencies.” The four highway-related public corporations, New Tokyo International Airport Authority and Kansai International Airport Co., Ltd. had developed social overhead capital relating to transportation networks, such as highways and international airports, by utilizing funds from FILP. Highways and international airports are quasi-public goods that are highly public, but they are unique in that they are technically able to collect tolls or fees for the purpose of maintaining exclusivity, unlike national or regional roads classified into genuine public goods that must principally be available free of charge. Therefore highway operating organizations collect tolls from users and international airports collect airport charges, including landing charges and aircraft parking charges, from airlines and others.

Separately from these FILP agencies, the government improves roads and airports, utilizing tax revenue and charges as financial resources of special accounts.<sup>2)</sup> The road improvement special account is primarily expended for improvements of national roads and subsidies for regional roads, and the airport improvement special account is expended for improvements of domestic airports other than Narita International Airport, Kansai International Airport and Central Japan International

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1) In “Reorganization and Rationalization Plan for Public Corporation,” which was adopted by the Cabinet in December 2001, a policy for privatization of the above mentioned public corporations was announced.

2) The road improvement special account contains earmarked funds for road improvements, such as gasoline tax, automobile weight tax and petroleum gas tax. The airport improvement special account contains airport charges (including landing charges and aircraft parking charges) and aviation fuel tax as earmarked funds.

Airport. The background for this is that social capital improvements by the FILP agencies initially started due to the recognition of the urgent necessity to construct highway networks and international airports. It can be said that FILP agencies are favorable for short-term and intensive social capital improvements because they are able to use borrowings from FILP.

Ongoing privatizations of highways and international airports can be interpreted as a transformation from the traditional policy. Some argue that it is questionable whether any significant change from the system of traditional public corporations can be achieved, since the initial stage of such privatization is merely a transformation into a special company of another type whose major shareholders are public sectors such as the national government and local governments. By aiming at privatization, however, they will undoubtedly be required to act in a behavioral principle similar to that of profit-earning private enterprises more strongly than ever. Should a special company fail, it would be bailed out at public expense, but such a situation must absolutely be avoided.

Now, the outline of the privatization of the four highway-related public corporations in October 2005 will be explained briefly. According to the "Basic Framework for the Privatization of the Four Highway-related Public Corporations" prescribed by the government in December 2003, it is intended that (i) the interest-bearing liabilities, exceeding 40 trillion yen in total, will be repaid without fail; (ii) necessary roads will be constructed with smaller public burdens; and (iii) a wide variety of flexible toll structures and services will become available. Moreover, the ex-four highway-related public corporations were segregated into upper organizations and a subordinate organization, *i.e.*, special companies in charge of construction and management of roads and toll collections and an agency as an independent administrative institution taking over properties and liabilities.

In the initial phase, the special companies were divided into six companies, namely, East Japan Expressway Corporation, Middle Japan Expressway Corporation, West Japan Expressway Corporation, Metropolitan Expressway Corporation, Hanshin Expressway Corporation and Honshu-Shikoku Bridge Corporation. When the management of Honshu-Shikoku Bridge Corporation is stabilized, it will merge with West Japan Expressway Corporation, reducing the number of special companies to five.

Special companies collect tolls from users. The agency managing properties and liabilities collects lease fees from special companies by leasing road properties and thereby repays liabilities. It is intended that the interest-bearing liabilities will be cleared in 45 years, and the estimation for full repayment was submitted by the Ministry of Land, Infrastructure and Transport in April 2004.

Now, in the case of a private enterprise in general, because its capital including equipment and facilities is more enriched by investments, the marginal profit-earning ratio obtainable from its capital declines. This is a generally known law of diminishing marginal efficiency of capital, which will be also the case with social capital technically capable of collecting tolls/fees. Improvements of highways and international airports are usually made selectively for highly populated cities. In the process of development of transportation networks, selection of candidate cities is gradually shifted from such large cities to more thinly populated cities. Therefore, the further social capital is improved, the smaller the ratio of revenues from tolls/fees to the scale of social capital becomes.

If society desires to continue improvements at public cost, it will be possible to operate social capital by imposing a tax burden, regardless of the deterioration of social capital profitability. In fact, highways are available to users, free of charge in principle, in the U.K. and Germany. In Japan, however, a sense of crisis about deterioration of public finance has caused a choice to privatize the FILP agencies related to highways and international airports by means of public corporation reform. This means that it is impossible to disregard profitability completely even in the case of highways or international airports. In the U.K., some domestic airports as well as international airports have been privatized, with the emphasis on profit performance.

When it comes to some realistic problems, if the ratio of tolls/fees revenues from social capital declines extremely, to the point that is lower than the ratio of interest cost and administrative expenses, it means not only that the organization is unable to repay its liabilities but also that the

organization is already failing. An organization that is stable in the long run must have sound financial standing. In this regard, it is necessary to check at least each organization's profit-earning ratio and rate of interest cost by examining its financial condition.

This paper is intended to verify the historical trend of investments in social capital improvements by the FILP agencies, by reviewing their financial statements based on the case study for highways and international airports, and consider the post-privatization management system of such FILP agencies. Additionally, it is also intended to compare and verify the financial analysis concerning the aforesaid FILP agencies by utilizing financial statements prepared specially for (i) the road improvement special account for improvements of national and regional roads and (ii) the airport improvement special account for improvements of airports, with Tokyo International Airport (Haneda Airport) at the top.

There are surprisingly few researches that analyze individual FILP agencies in charge of social capital improvements.<sup>3)</sup> In this paper, I will attempt financial analysis on the FILP agencies related to highways and international airports by using the accounting approach and some economic concepts.

This paper is composed of explanations about financial statements of the FILP agencies in Section 2; proposals for financial indicators in Section 3; financial analysis in Section 4; and Section 5, which summarizes the results and implication from this paper.

## 2. Financial Statements of the FILP agencies

Each FILP agency prepares and discloses its annual financial statements composed of the balance sheet and the profit and loss statement. In addition, cash flows are indicated in its financial plan to disclose its yearly cash income and expenditure. While this is entitled a "plan," it includes not only future cash flow planning but also reports on actual cash income and expenditure. As this financial plan is on a simple cash basis, the amount of any incoming cash is accounted for when the amount is actually received and the amount of any outgoing cash is accounted for when the amount is actually lost. Furthermore, a balance sheet and a profit and loss statement are prepared based on the past and present financial plans. Samples of the balance sheet and the profit and loss statement of a FILP agency are shown in Chart-1.

The balance sheet is a statement used to report the status of stocks such as assets and liabilities as of the end of March of each year. Assets are classified into current assets, fixed assets and deferred assets. Current assets are cash and deposits and other assets that have relatively high liquidity, and fixed assets are those with low liquidity. Deferred assets are expenses whose contents have effect over the coming years, and are recognized not as costs consumed within a year but as assets. Deferred assets are converted into expenses by amortization in phases.

The FILP agencies analyzed in this paper are in charge of improvements of social capital such as highways and international airports. The book values of these social capital assets as of the end of March of each year are recognized as business assets in the balance sheet. Amounts of investments in social capital in a year are recognized in the financial plan. We are therefore able to understand the status of investments and social capital stocks of the FILP agencies in charge of social capital improvements by reviewing their financial plans and balance sheets.<sup>4)</sup>

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3) Examples include Iwamoto (1998) and Nihon Keizai Shimbun (2001).

4) There is a dispute as to whether the values of business assets mentioned in balance sheets reflect actual social capital values correctly as described below. While it is of course important to pursue an absolutely correct criterion, it is reasonable to interpret business assets mentioned in balance sheets as the social capital values measured by one of the criteria.

Chart-1. Sample Financial Statement of a FILP Agency

Balance Sheet		Profit and Loss Statement	
Assets	Liabilities	Expenses	Revenues
Current assets	Current liabilities	General and administrative expenses	Operating revenues
Fixed assets	Fixed liabilities	Depreciation expenses	Revenues from tolls/fees collection
Business assets	Bonds	Addition to reserve	Other revenues
Tangible fixed assets	Long-term borrowings	Non-operating expenses	Non-operating revenues
△ Accumulated depreciation charges	Others	Interest cost	Extraordinary gains
Construction in progress	Shareholder's equity	Others	(Net loss)
Others	Capital	Extraordinary losses	
Deferred assets	Others	Net profit	
Total	Total	Total	Total

(Note) A mark of " △ " means an item to be deducted.

Similar to assets, liabilities are also classified into current liabilities and fixed liabilities, and how they are classified depends on their liquidity. In particular, fixed liabilities include bonds issued by the FILP agencies and long-term borrowings that may be borrowed from various sources. It goes without saying that increases of bonds or long-term borrowings in a year are recognized as increases of funds in the revenues section of the year's financial plan and accounted for in the liabilities section of the balance sheet at the year end.

In a profit and loss statement, expenses and revenues for each year are recorded. What must be noted is their correspondence with revenues/expenses in the financial plan. Revenues and expenses in the financial plan are not always accounted for in revenues and expenses respectively in the profit and loss statement. Expenses in the financial plan merely mean lost money, but expenses accounted for in the profit and loss statement may often include costs other than lost cash. For example, expenses disbursed to deferred assets are fully recognized in the current year's financial plan, but they are accounted for in the profit and loss statement with respect to certain amortized portions only. Similarly, values of fixed assets in balance sheets decrease gradually, in principle, by subtracting depreciation expenses in phases. Depreciation expenses are expenses that embody wear, obsolescence, aging, and so on. Because depreciation expenses do not entail actual receipt or disbursement of cash, they are not mentioned in any financial plan, but accounted for in the expenses section of a profit and loss statement. Therefore depreciation expenses in a profit and loss statement show the decreased portions of tangible fixed assets in the relevant year.

In order to maintain values of fixed assets, investments sufficient to cover lost values by depreciation are necessary at the minimum. Depreciation expenses are often recorded in the account item named "accumulated depreciation" in a balance sheet. In this case, values of accumulated depreciation must be subtracted to indicate values of fixed assets.

In the item named "construction in progress," fixed assets under construction and not yet used for business operations are accounted for. In general, such assets are accounted for in construction in progress until any social capital in which investments have been made becomes available for use for business operations, and thereafter transferred to business assets or others when used for business operations. Therefore, with respect to any social capital that brings about benefits, its value should not include construction in progress.

In addition to depreciation expenses, expenses in a profit and loss statement include ordinary expenses such as general and administrative expenses, addition to reserve and non-operating

expenses, and extraordinary losses. Non-operating expenses include interest cost that may accrue from liabilities. On the other hand, revenues include operating revenues such as revenues from tolls/fees collections for social capital, non-operating revenues such as earnings from investments of financial assets, and extraordinary gains.

The difference between the amount of expenses and the amount of revenues for a year constitutes that year's net profit or net loss, completing a profit and loss statement. When net profit is recognized, the equivalent amount increases in the capital in the balance sheet, and when net loss is recognized, the equivalent amount decreases in the capital in the balance sheet. By this arrangement, debit and credit are always equal; in other words, the total amount of the left part always equates to the total amount of the right part in both the balance sheet and profit and loss statement.

Now, let's move on to the topic about preparation of financial indicators for financial analysis in the subsequent section, following the above brief explanations about financial statements in this section.

### 3. Preparation of Financial Indicators

For the purpose of financial analysis using financial statements, let's prepare financial indicators in reference to Chart-1 again. In the FILP agencies' financial statements, a particularly important viewpoint is how much flows are generated from stocks. Social capital gives revenues from tolls/fees collections to the FILP agencies and long-term borrowings and bonds generate interest cost. As it is difficult to adjust stocks such as fixed assets and fixed liabilities in a short term, it is necessary to set them at adequate levels over a long period and pay out interest cost from collected tolls/fees arising as incoming cash flows in order to avoid bankruptcy. Based on the foregoing, the following four financial indicators are adopted as analysis tools in this paper.

- (1) Investment rate = Investment amount / Value of fixed assets used for business operations
- (2) Rate of return on assets = Operating revenues / Value of fixed assets used for business operations
- (3) Interest rate = Interest cost, etc. arising from liabilities / Value of fixed assets generating interest cost, etc.
- (4) Ratio of return on assets to interest cost = Operating revenues / Interest cost, etc., arising from liabilities

First, with respect to the investment rate in (1) above, the numerator is the investment amount in a financial plan, and the denominator is the calculated value of portions used for business operations out of the fixed assets in a balance sheet. If we set out these indicators in chronological order for each FILP agency, we can understand when investments were made, in how much volume, and which agency's investment scale is relatively large compared to others.

Second, with respect to the rate of return on assets in (2) above, the numerator is the operating revenues such as revenues from tolls/fees collections for social capital, and the denominator is the value of fixed assets used for business operations. Operating revenues are mentioned in a financial plan or a profit and loss statement. If we use these indicators, we can show the profit performance for the social capital of the FILP agencies. If we refer to Chart-1, the value of fixed assets used for business operations is equal to the value calculated by adding up the values of business assets and tangible fixed assets and then subtracting the accumulated depreciation. Operating revenues mentioned in a profit and loss statement are produced by these fixed assets for the FILP agencies.

There are other opinions that it would be better to use the net profit mentioned in a profit and loss statement, instead of operating revenues, for the purpose of measuring whether the profit performance of any FILP agency is declining. However, the FILP agencies are not necessarily motivated to achieve



net profit, and thus record the net profit as zero in actual accounting procedures in most cases. It is assumed that they probably appropriate allowances permissible by applicable accounting rules and retain profits as their internal reserves.<sup>5)</sup> In this case, it is impossible to use net profit as the data for reviewing profit performance. Such problem can be avoided if we use operating revenues; however, one must be careful that such operating revenues are a gross amount, and not a net amount.

Third, with respect to the interest rate in (3) above, the numerator is the amount of interest cost, etc. arising from liabilities, and the denominator is the value of liabilities generating interest cost, etc. The amount of interest cost, etc. is mentioned in a financial plan or profit loss statement. Liabilities generating interest cost, etc. includes bonds and long-term borrowings, which are mentioned in a balance sheet. This indicator shows the burden of interest cost arising due to the possession of bonds and long-term borrowings.

In addition, it is also important to correlate the rate of return on assets in (2) above and the interest rate in (3) above. Operating revenues arise from fixed assets and interest cost arises from liabilities. For a privatized FILP agency to aim at stable management, the rate of return on assets in (2) must be equal to or greater than the interest rate in (3) at the minimum. On the contrary, if the rate of return on assets in (2) remains at a level less than the interest rate in (3), that FILP agency is forced to use its internal reserves or capital for repayments of its liabilities and may eventually fail. In the event of failure, injection of public funds or other remedies will be implemented in the worst cases. In this paper, the rate of net return on assets is measured by subtracting the interest rate from the rate of return on assets.

From the investors' standpoint, it is important to compare the rate of net return on assets with the long-term interest rate, which is the yield of government bonds. If the rate of net return on assets is lower than the long-term interest rate, it is more efficient to invest funds in government bonds. After privatization, each FILP agency has to procure funds from various investors. In order to attract investors, it is necessary to offer at least a rate of net return on assets higher than the long-term interest rate.

Fourth, with respect to the ratio of return on assets to interest cost in (4) above, the numerator is the operating revenues, and the denominator is the interest cost, etc. arising from liabilities. This indicator is related to analysis from the viewpoint of flows, while the other three types of indicators explained above target stock items such as assets and liabilities. In other words, this indicator shows a portion of the interest cost, etc. that can be paid out from operating revenues. If the ratio of return on assets to interest cost in (4) is equal to or greater than 1, operating revenues are sufficient to pay interest cost, etc. On the contrary, if the ratio of return on assets to interest cost in (4) is less than 1, it is impossible to even pay the interest cost, etc., from operating revenues and the operating condition is considered to be failing in respect of flows. This indicator can therefore be an indicator to show internal reserves.

The four types of financial indicators are as explained above. The data for financial statements are extracted from "Monthly Finance Review (Japanese edition): A special number on FILP" by the Ministry of Finance. The correspondence between financial statements and account items for each FILP agency is as listed in Table-1 and Table-2. The data are available for 1967 and subsequent years. The data for 2002 and preceding years are actual figures, and the data for 2003 are planned figures.

With respect to the data for 1980 and preceding years, there are some problems such as the absence of profit and loss statements and non-subdivided account items. I have therefore attempted to choose account items that are deemed appropriate as financial indicators to the extent possible, but I have been forced to adopt some account items that are not necessarily appropriate due to data constraint. For example, although it is presumed that non-operating expenses recognized by Honshu-

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5) One example is the loss compensation reserve of the New Tokyo International Airport Authority.

Shikoku Bridge Authority may include some expenses that differ from the nature of interest cost, there is no other appropriate data available. I would like to remind the reader that some problems of this type remain in data collection.

With respect to the four highway-related public corporations, there is a problem in that depreciation has not been made for road assets that are their business assets. Without proper depreciation for fixed assets, it is likely that they may be overestimated, and thus the rate of return on assets in (2) may be underestimated. I will therefore briefly make hypothetical depreciation for highway assets for the purpose of this paper. The method of calculating hypothetical depreciation is as follows:<sup>6)</sup>

- The residual value of highways is 10%.
- The useful life is 47 years.
- The straight-line method is adopted.

In addition, the calculation is based on the assumption that any social capital constructed by utilizing funds from government loans or investment is to directly constitute business assets without an entry in construction in progress. Based on this, values of road assets after depreciation are calculated in such a way that accumulated depreciation are calculated and deducted from the amounts of road assets mentioned in the balance sheets.

By means of the arrangement explained above, the rate of return on assets as mentioned in (2) is calculated for both cases, with and without depreciation. To state the result here, there is no significant impact on the conclusion of this paper whether depreciation and amortization is considered or not.

In the following section I will illustrate the financial indicators as the analysis result in this paper and provide some consideration on the implication of the analysis.

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6) The method of calculating depreciation costs for road assets is based on Tanaka, Uemura and Sumi (2002) to facilitate comparison with the financial indicators obtained from the financial statements of the road improvement special account in the later section.

Table1 Correspondence between Financial Indicators and Account Items: Highways

		Japan Highway Public Corporation	Metropolitan Expressway Public Corporation	Hanshin Expressway Public Corporation	Honshu-Shikoku Bridge Authority
Investment rate	Period	1967-2003	1967-2003	1967-2003	1970-2003
	Numerator	Road construction expenses Social capital improvement project expenses Highway-related facilities construction expenses Highway-related road construction expenses Research expenses Road improvement expenses Disaster restoration project expenses	Highway construction expenses Social capital improvement project expenses Parking area construction expenses Highway renovation expenses Research expenses Maintenance and repair expenses	Highway construction expenses Social capital improvement project expenses Construction launching expenses Highway renovation expenses Highway-related road construction expenses Research expenses Maintenance and repair expenses Disaster restoration project expenses	Construction expenses Social capital improvement project expenses Research expenses Disaster restoration project expenses Road acquisition expenses
	Denominator	Business assets Tangible fixed assets	Business assets Tangible fixed assets	Business assets Tangible fixed assets	Business assets Tangible fixed assets
	Period	1967-2003	1967-2003	1967-2003	1981-2003
Rate of return on assets	Numerator	Operating revenues (Revenues from toll collections, for 1980 and earlier)	Operating revenues (Revenues from toll collections, for 1980 and earlier)	Operating revenues (Revenues from toll collections, for 1985 and earlier)	Operating revenues (Revenues from toll collections, for 1985 and earlier)
	Denominator	Business assets Tangible fixed assets	Business assets Tangible fixed assets	Business assets Tangible fixed assets	Business assets Tangible fixed assets
Investment rate	Period	1981-2003	1981-2003	1982-2003	1970-2003
	Numerator	Interest on borrowings Interest on bonds Interest on outstanding installments	Bonds handling expenses	Bonds handling expenses	Non-operating expenses
	Denominator	Road bonds Long-term borrowings Borrowings for subleasing funds	Road bonds Long-term borrowings Borrowings for subleasing funds	Hanshin Expressway bonds Long-term borrowings	Honshu-Shikoku Bridge bonds Long-term borrowings
Rate of return on assets interest cost	Period	1981-2003	1981-2003	1982-2003	1981-2003
	Numerator	Operating revenues	Operating revenues	Operating revenues (Revenues from toll collections, for 1985 and earlier)	Operating revenues (Revenues from toll collections, for 1985 and earlier)
Rate of return on assets interest cost	Denominator	Interest on borrowings Interest on bonds Interest on outstanding installments	Bonds handling expenses	Bonds handling expenses	Non-operating expenses



Table2 Correspondence between Financial Indicators and Account Items: International Airports

		New Tokyo International Airport Authority	Kansai International Airport Co., Ltd.
Investment rate	Period	1973-2003	1987-2003
	Numerator	New airport construction expenses Research expenses	Airport construction expenses Research expenses
	Denominator	Business assets △ Business assets, construction in progress Tangible fixed assets	Airport business fixed assets Railway business fixed assets Other business fixed assets
Rate of return on assets	Period	1981-2003	1994-2003
	Numerator	Operating revenues (P/L)	Operating income
	Denominator	Business assets △ Business assets, construction in progress Tangible fixed assets	Airport business fixed assets Railway business fixed assets Other business fixed assets
Interest rate	Period	1981-2003	1985-2003
	Numerator	Interest cost	Interest paid and bond issuance expenses
	Denominator	New Tokyo International Airport bonds Long-term borrowings	Short-term borrowings Corporate bonds which will expire within one year Corporate bonds Long-term borrowings
Ratio of return on assets to interest cost	Period	1981-2003	1994-2003
	Numerator	Operating revenues (P/L)	Operating income
	Denominator	Interest cost	Interest paid and bond issuance expenses

Note 1: For New Tokyo International Airport Authority, “operating revenues” is an account item in its profit and loss statements.

Note 2: A mark of “△” means an item to be deducted. In New Tokyo International Airport Authority balance sheets, “business assets” includes “business assets, construction in progress.”

## 4. Result of Analysis of Financial Indicators

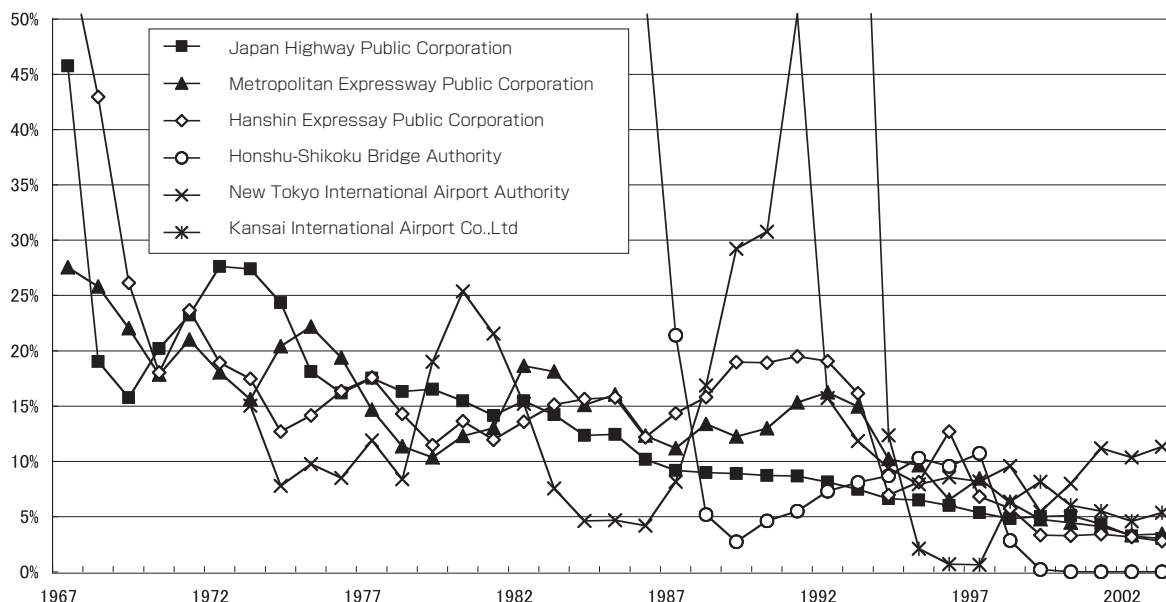
### 4.1. Investment rate

In Chart-2, the investment rates of the FILP agencies related to highways and international airports analyzed in this paper are indicated in chronological order. Temporarily excessive investment rates are found, for example, in the cases of international airports and the Honshu-Shikoku Bridge, because they are such social capital that requires huge amounts of intensive short-term investment until their operations become possible.

We can see that the investment rates were rising in the first half of the 1990s for New Tokyo International Airport Authority, Hanshin Expressway Public Corporation and Metropolitan Expressway Public Corporation, but they became lower in general as the overall trend. This is due to the background that social capital stocks have been enriched and improvements of transportation

networks are nearly completed. Another background is that the nominal investment rates are low because the costs necessary for highway improvements are smaller in rural areas than in urban areas and further because the scale of social capital stocks, which is adopted as the denominator of the investment rate, has been increasing.

Chart-2. Investment Rate



#### 4.2. Rate of return on assets

##### (1) Highways

In Chart-3, the rates of return on assets of highways are indicated. As explained in the preceding section, no arrangement for depreciation has been made for road assets in the accounting procedures of the four highway-related public corporations. The rates of return on assets after values of business assets have been depreciated as per the previously explained method are therefore indicated in full lines. Thin lines show the rates of return on assets without depreciation. When depreciation is made, the amount of social capital stocks adopted as the denominator decreases and the rate of return on assets becomes higher; however, the overall downward trend of the rates of return on assets remains unchanged, even if such depreciation is taken into consideration.

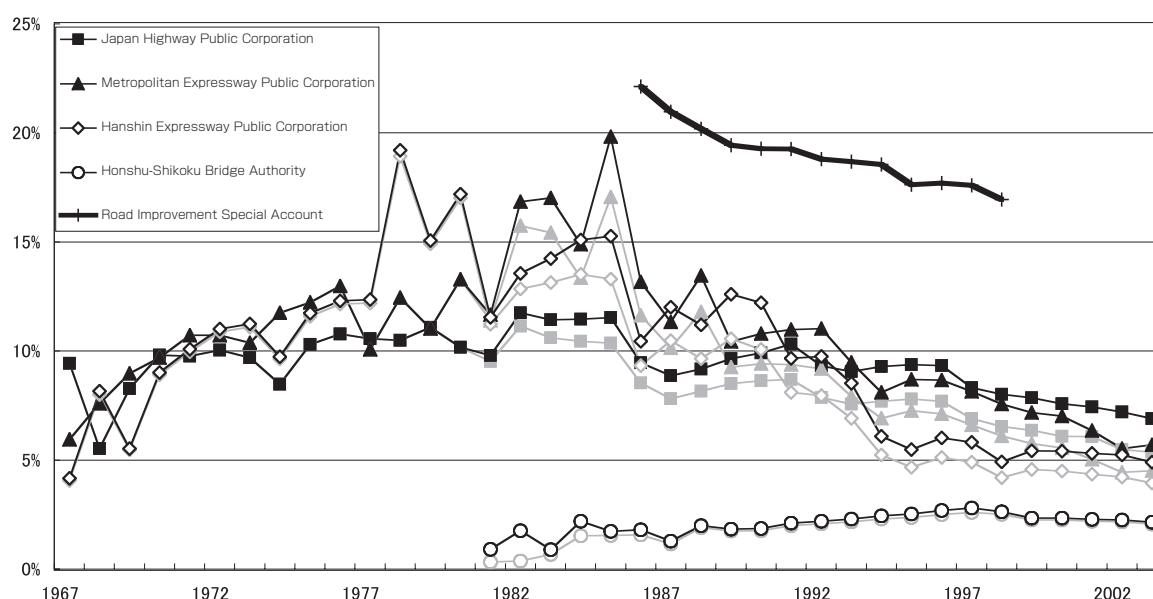
With respect to the highway-related public corporations other than Honshu-Shikoku Bridge Authority, the rate of return on assets reached the peak in the 1980s and then declines gradually towards the 1990s. The rate of return on assets reached as high as 10% to 20% in the 1980s, but has remained at a level below 10% since the latter half of the 1990s. The decrease of the rate of return on assets during this period is considered to be caused by sluggish transportation demand due to economic downturn, as well as expansion of social capital improvements in rural areas.

Furthermore, the rate of return on assets for Honshu-Shikoku Bridge Authority is extremely low. Considering that the rate of return on assets has already passed the peak and is in a gradual downward trend with respect to other highway-related public corporations, Honshu-Shikoku Bridge Authority is already at its peak, and it is difficult to expect that the rate of return on assets would improve any further.

In Chart-3, the movement of the rate of return on assets for the road improvement special account

is also indicated. The data adopted are estimated in Tanaka, Uemura and Sumi (2002). The data are collected from the financial statements for 1986 to 1998 on an accrual basis, and depreciation was made for road assets. The road improvement special account is in charge of construction of national and regional motorways, instead of highways, and earns revenues from earmarked funds for road improvement, as typified by gasoline tax; therefore, its rate of return on assets is calculated using the amount of earmarked funds for road improvement as the numerator and the total amount of infrastructure assets and administrative assets as the denominator.

Chart-3. Rate of Return on Assets: Highways



The rate of return on assets for the road improvement special account is also in a decreasing trend, like the four highway-related public corporations; however, the rate of return on assets for the road improvement special account is almost twice as high as those of the four highway-related public corporations. We must seriously consider the fact that the rates of return on assets for the four highway-related public corporations are lower than that of the road improvement special account, which carries out road improvements by directly utilizing funding resources relying on tax burdens.<sup>7)</sup>

In particular, the remarkable downward trend of the rate of return on assets means that the construction of profit-making highways has completed. We can imagine that the construction of social capital continued without regard to profitability, rather than ensuring the rate of return on assets, in and after the latter half of the 1990s and on following the collapse of the bubble economy. This has brought about an outstanding decrease in the rate of return on assets. If priority is placed on profitability after privatization, it would be necessary to refrain from additional social capital improvements.

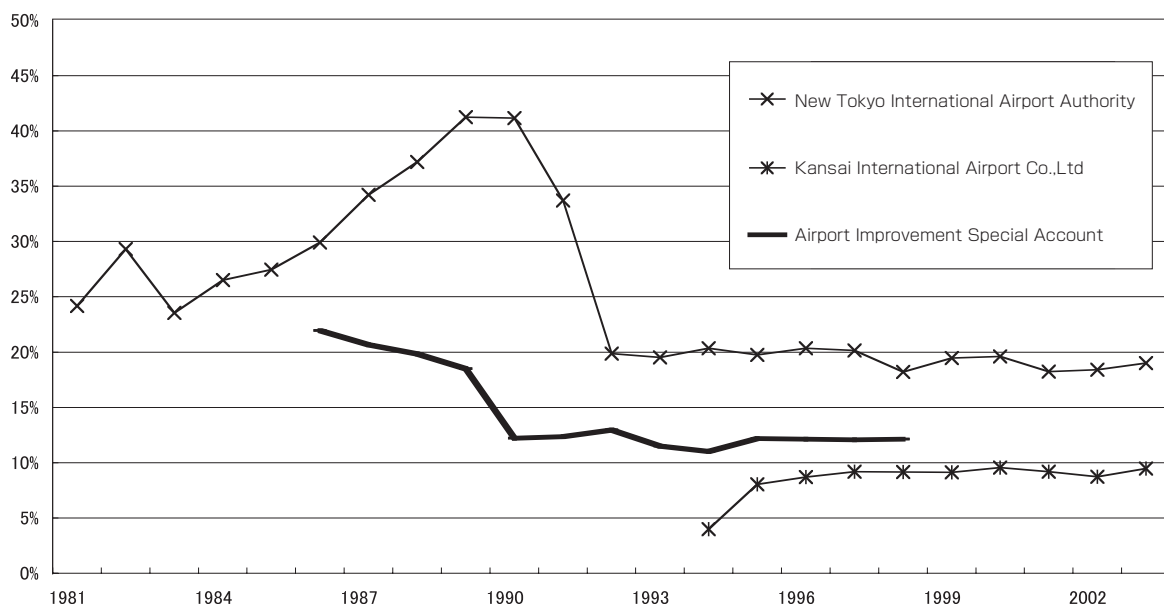
7) In view of profitability, the road improvement special account might be more suitable for privatization than the four highway-related public corporations. In other words, it imposes much more expensive taxes on automobile users than tolls imposed by the four highway-related public corporations. Most earmarked funds for road improvement include a premium portion above the standard tax rate called a "temporary tariff."

## (2) International airports

Chart-4 indicates the rates of return on assets for New Tokyo International Airport Authority and Kansai International Airport Co., Ltd. The rate of return on assets for New Tokyo International Airport Authority fluctuated in the first half of the 1990s and earlier, but thereafter remains stable at about 20%. The rate of return on assets for Kansai International Airport Co., Ltd. also remains stable at around 10%.

There is as much as a twofold gap in the rate of return on assets between New Tokyo International Airport Authority and Kansai International Airport Co., Ltd. Both airports impose the world's highest airport charges as international airports. Nevertheless, such gap arises due to a slump in demand for Kansai International Airport Co., Ltd. and further due to its peculiarity that the construction of the airport island entails huge amounts of investment.

Chart-4. Rate of Return on Assets: International Airports



Similar to Chart-3, Chart-4 shows the rate of return on assets for the airport improvement special account. The airport improvement special account is in charge of social capital improvements of domestic airports other than New Tokyo International Airport Authority, Kansai International Airport Co., Ltd. and Central Japan International Airport Co., Ltd. Such domestic airports include Tokyo International Airport (Haneda Airport) and Osaka International Airport (Itami Airport) at the top, airports scattered in regional cities and airports in remote islands. The rate of return on assets for the airport improvement special account has been gradually decreasing, which means that diversified investments have been made in unprofitable airports in the meantime.<sup>8)</sup>

The rate of return on assets for the airport improvement special account is lower than that of New Tokyo International Airport Authority and higher than that of Kansai International Airport Co., Ltd. Although the airport improvement special account has been carrying out inefficient diversified investments without regard to profits, the rate of return on assets for Kansai International Airport Co.,

8) For financial analysis on the airport improvement special account, refer to Uemura (2002). While only infrastructure assets are used for the purpose of calculating the rate of return on assets in Uemura (2002), administrative assets are additionally used in this paper in order to facilitate the comparison with the rates of return on assets of the FILP agencies to the extent possible.

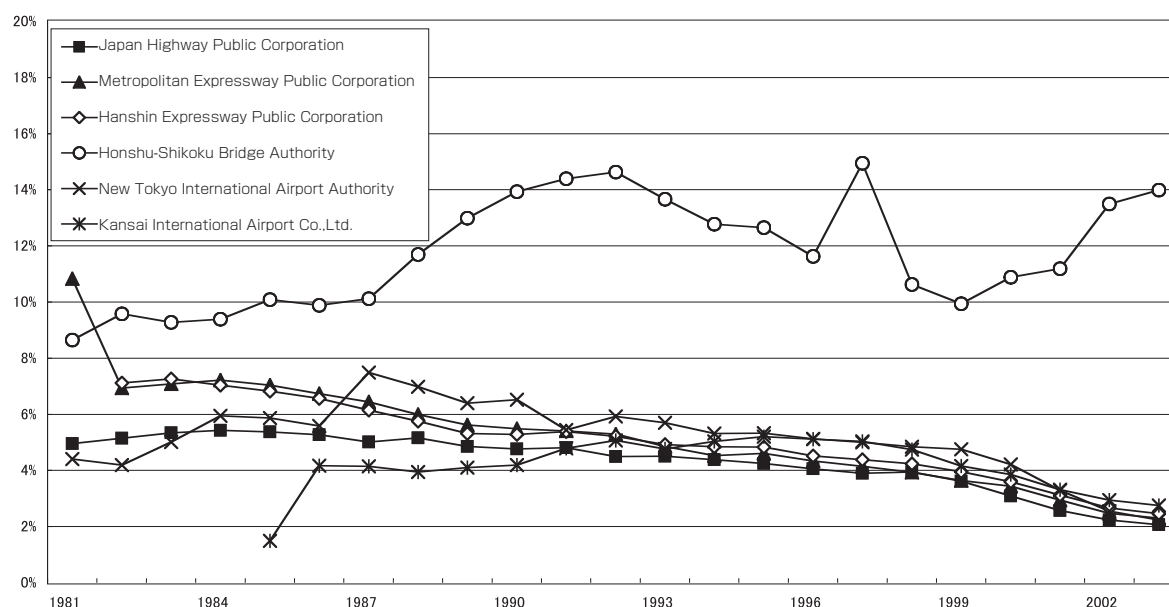
Ltd. is lower than that of the airport improvement special account, and this fact casts a dark shadow over the future management of Kansai International Airport. The rate of return on assets for Kansai International Airport Co., Ltd. is already at the peak and it seems difficult to enhance profit margin any further.

As highways and airports are two different forms of social capital, it may be difficult to find significance in their comparison; however, in light of the analysis across the organizations by using common financial indicators, I am going to try to compare Chart-3 and Chart-4. The rate of return on assets for the four highway-related public corporations is lower than that of international airports. If this is explained in a more emphasized manner, Kansai International Airport Co., Ltd. is generally known for its management vulnerability, but the four highway-related public corporations mark a lower rate of return on assets than Kansai International Airport Co., Ltd. The four highway-related public corporations after privatization must strive for much more efficient investment of assets and establish more appropriate tolls/fees structures.

### 4.3. Interest rate

In Chart-5, interest rates are shown in chronological order. With respect to the FILP agencies other than Honshu-Shikoku Bridge Authority, the interest rate is in a gradual downward trend and has been staying at around 2% to 3% in recent years. It is desirable for the FILP agencies to be able to procure funds for social capital improvements at low interest rates. The FILP agencies have so far received grant money from the government in the form of an interest subsidy, etc.; therefore, they actually have been able to procure funds at interest rates lower than those indicated in Chart-5.

Chart-5. Interest Rate



However, the interest rate for Honshu-Shikoku Bridge Authority remains at a considerably high level. Honshu-Shikoku Bridge Authority is considered to also be in a difficult position in terms of fund raising, but yet this may be a problem caused by the availability of data. With respect to other FILP agencies, interest cost, bond handling expenses or equivalents were adopted as the analysis

data, but there was no choice other than adopting non-operating expenses in the case of Honshu-Shikoku Bridge Authority.

It is highly probable that such non-operating expenses may include costs other than interest cost. In the financial statements of Honshu-Shikoku Bridge Authority, non-operating expenses are not subdivided and, according to the explanation on account items, a major component of non-operating expenses is interest cost. This shows a problem in that Honshu-Shikoku Bridge Authority's financial statements are not sufficient in terms of information disclosure.

#### 4.4. Rate of net return on assets

The rate of net return on assets indicated in Chart-6 is calculated by subtracting the interest rate indicated in Chart-5 from the rate of return on assets indicated in Chart-3 and Chart-4. The rate of return on assets originates from fixed assets, and the interest rate originates mainly from fixed liabilities. Because it is difficult to adjust fixed assets and fixed liabilities in a short term, the greater the rate of net return on assets, the more stable the profit-making structure of the FILP agencies.

It is also significant to compare the rate of net return on assets and long-term interest rate. From the investors' standpoint, it is critical which would be more favorable, investing in the FILP agencies or in publicly offered bonds. If a FILP agency's rate of net return on assets is lower than the long-term interest rate, that organization is not attractive for investors. If such a FILP agency were privatized, it would be forced out of the market or need protection or remedies by the government.

According to Chart-6, it is New Tokyo International Airport Authority that has been achieving the highest rate of net return on assets. The rate of net return on assets being 10% or more is a very high rate compared with the long-term interest rate illustrated in Chart-6. This means that New Tokyo International Airport Authority has been a very attractive investee.

Looking into other FILP agencies, the highway-related public corporations, except for Honshu-Shikoku Bridge Authority, show a trend in the rate of net return on assets similar to that in the long-term interest rate. While they are slightly greater than the long-term interest rate in recent years, they sometimes become lower than the long-term interest rate, so it is necessary to improve profit performance from now on.

With respect to the remaining Honshu-Shikoku Bridge Authority, its rate of net return on assets is calculated in two patterns, taking into consideration the possibility that the interest rate data indicated in Chart-5 may be incomplete. In the first pattern, the interest rate data indicated in Chart-5 is used as is. Because there is a possibility that other kinds of non-operating expenses may be incorporated in the interest rate, the rate of net return on assets may be extremely low.

In the second pattern, the average of the interest rates for all the highway-related public corporations other than Honshu-Shikoku Bridge Authority is used as the interest rate for Honshu-Shikoku Bridge Authority. In this case, such interest rate is a hypothetical one, but it is possible to calculate the expected rate of net return on assets as if Honshu-Shikoku Bridge Authority were facing the interest rate similar to that of other highway-related public corporations.

In Chart-6, the first and second patterns are illustrated in the thin and dark lines, respectively (the latter is marked with \* in the legend). The first pattern's rate of net return on assets is very low, possibly because of incomplete data. For this reason, the second pattern is analyzed here.

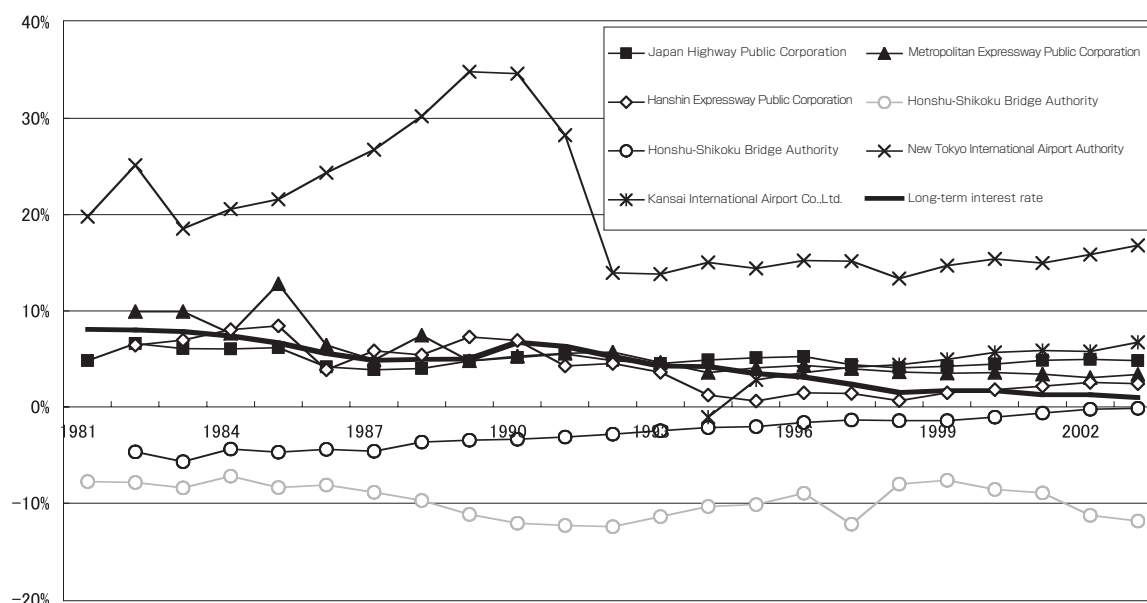
Honshu-Shikoku Bridge Authority's rate of net return on assets has been rising gradually, but never marked a level exceeding the long-term interest rate. In addition, the rate of net return on assets has always been negative. This proves that Honshu-Shikoku Bridge Authority has been under a poor profit structure since its establishment. With the average of the interest rates for other highway-related public corporations adopted in the second pattern, the actual trend of the rate of net return on assets may possibly be worse than as indicated in Chart-6.

Honshu-Shikoku Bridge Authority is likely to fail after privatization unless it receives drastic liability waivers or other remedies. Due to this background, it was decided in April 2003 that the



government would take over the Authority's interest-bearing liabilities of about 1,300 billion yen. If its rate of net return on assets remains negative even after this liability waiver, the Authority's failure would be unavoidable in the future.

Chart-6. Rate of Net Return on Assets (= Rate of Return on Assets – Interest Rate)



#### 4.5. Ratio of return on assets to interest cost

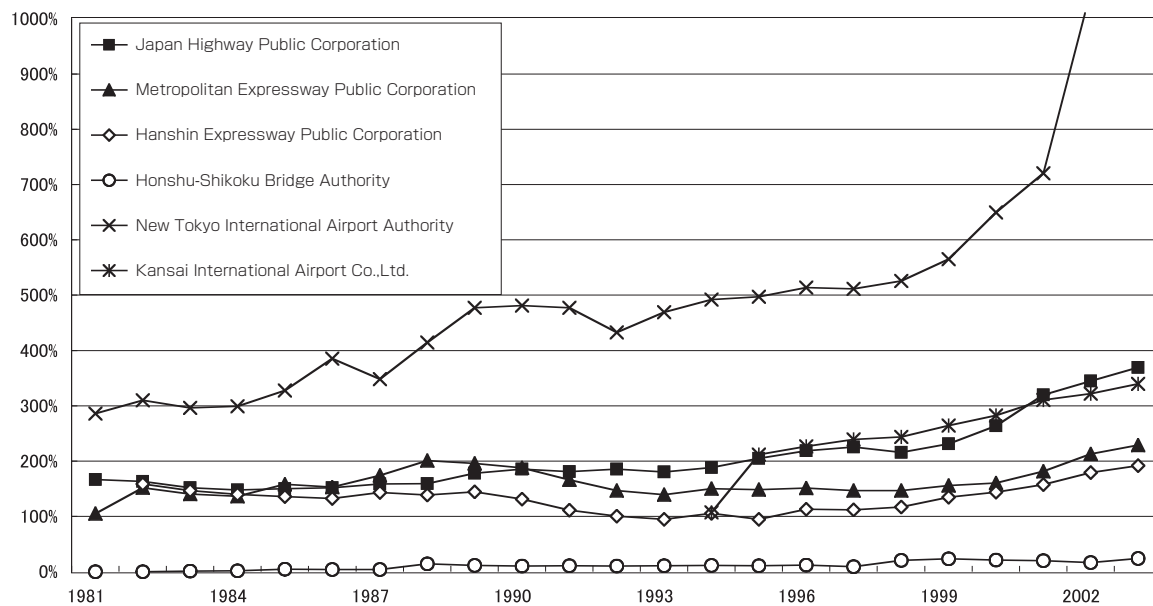
In Chart-7, the ratio of return on assets to interest cost is indicated. If this financial indicator is 100% or more, that organization can afford to pay interest as fixed expenditures from the cash flows earned from its ordinary operating revenues. Since the FILP agencies need to bear administrative costs and other expenses in addition to interest cost, it is desirable to mark this indicator exceeding 100% far more. Unlike other indicators that focus on stocks, this financial indicator represents the level of financial soundness in respect of flows, and shows the amount of internal reserves accumulated.

With respect to almost all the FILP agencies indicated in Chart-7, the ratio of return on assets to interest cost is on an upward trend. This means that their financial condition has been gradually improving in terms of flows. In the case of New Tokyo International Airport Authority, this indicator is incomparably higher than that of other FILP agencies. We can easily see the financial soundness of New Tokyo International Airport Authority here also.

Except for Honshu-Shikoku Bridge Authority, all other FILP agencies marked this indicator at a figure exceeding 100%. If these organizations are able to ensure and maintain the current level of operating revenues, they will be able to avoid failure caused by inability to pay interest from their cash flows. To ensure this, the key is to make certain of revenues from assets and avoid new liabilities.

However, the foregoing is not the case with Honshu-Shikoku Bridge Authority. As often mentioned, Honshu-Shikoku Bridge Authority has been unable to even pay interest from its own operating revenues. Such situation has continued since its establishment to date. We must watch the level of its recovery by liability waiver and management efforts.

Chart-7. Ratio of Return on Assets to Interest Cost



## 5. Conclusion

In this paper, the financial analysis was made from some unique aspects, focusing on the 6 FILP agencies capable of collecting tolls/fees from the users of highways and international airports that they constructed. Since these FILP agencies have already been privatized or are planned to be privatized after some time, they are, or will be, required in principle to earn their own revenues independent from the government's care. In this paper, I made the financial analysis in order to examine whether these FILP agencies are in such financial condition that would enable them to undergo privatization. In this section, I would like to summarize the analysis results of this paper and provide some comments on the respective FILP agencies.

The case of highways is reviewed at first. The financial indicators for highway-related public corporations other than Honshu-Shikoku Bridge Authority show similar trends. Their rates of return on assets have already reached the peak and entered a downward trend, and their rates of net return on assets remain at a level slightly greater than the long-term interest rate. Their rates of return on assets to interest cost are greater than 100%; therefore, failure immediately after privatization will not occur to these organizations. We can say that the basis for privatization has already been established as far as the aforementioned organizations are concerned.

The highway-related public corporations do not, however, retain sufficient internal reserves, and thus they will have to rely on either extra borrowings or issuance of new bonds if they intend to construct additional highways. In addition, further social capital improvements may possibly deteriorate their rates of return on assets and impair their financial standing<sup>9)</sup>

If the rate of net return on assets is positive and profits are appropriated to repayments of liabilities, the existing liabilities will gradually decrease. According to the scheme for the privatization of the four highway-related public corporations, interest-bearing liabilities exceeding 40

9) The existing highway-related public corporations have been carrying out highway improvements pursuant to execution orders by the Ministry of Land, Infrastructure and Transport. After privatization, they will have discussions with the government on improvements of highways and, if any new construction is rejected by the newly privatized company, the issue will be subject to a decision by the Council for Social Capital Improvement.

trillion yen in total are to be cleared in 45 years, but this scenario cannot be achieved unless the rate of net return on assets is positive. Maintaining the current positive rate of return on assets is the way to achieve early full repayments of liabilities. Freezing of new construction, if realized, will enable full repayments of outstanding liabilities and, at the same time, reductions of tolls/fees.

If the long-term interest rate rises in the future, however, this scenario will fall into a critical situation. The current interest rate is very low, which in a way is allowing a slump in the rate of return on assets for the highway-related public corporations. When the long-term interest rate rises, it is necessary to further enhance the rate of return on assets in order to maintain the positive rate of net return on assets. Otherwise, the rate of net return on assets will become negative and the management will gradually make its way to bankruptcy. In order to respond to such risk, it is also necessary to reconsider the construction of new highways.

When it comes to Honshu-Shikoku Bridge Authority, its financial condition is much worse than other highway-related public corporations. Its rate of return on assets is very low and its rate of net return on assets is negative. This situation will not in any way attract investors' attention. In relation to the privatization of Honshu-Shikoku Bridge Authority, the government has decided a huge amount of liability waiver, since its management would have been impossible without such liability waiver. If the rate of net return on assets remains negative, however, the risk of future failure will not be avoided completely, even though it will be temporally relieved by the liability waiver.

Next, the case of international airports is reviewed. New Tokyo International Airport Authority has already been privatized as "Narita International Airport Corporation." Its financial condition is substantially sound compared to other FILP agencies analyzed in this paper, and its rate of net return on assets is also high. If the present financial condition continues, this corporation will become an attractive investee. Its ratio of return on assets to interest cost is also high and capable of accumulating sufficient internal reserves.

However, whether this sound condition will continue or not depends on the environment surrounding Narita International Airport Corporation. Narita International Airport always encounters limitation to available lands whenever it intends to increase runways. On the other hand, this limitation has worked as a brake for reckless capital investment and thus contributed to formation of its sound financial condition. In the long run, however, its small capacity as an airport and the long distance from the inner city may emerge as management problems.

Regarding Kansai International Airport Co., Ltd., the financial condition is not extremely bad, but it is not good either. Insofar as the present environment continues, it may be possible to maintain the current business conditions. In view of the fact that the rate of return on assets is unlikely to reach the peak, however, additional social capital improvements will deteriorate the rate of return on assets and impair its financial soundness. In particular, Kansai International Airport is not efficient in respect to the rate of return on assets since it must construct an airport island to increase runways.

In addition, there is a concern about future demand for airline service. Now, there are three airports in Kinki District: Osaka International Airport (Itami), Kobe Airport, and Kansai International Airport. In East Asia, there already exist international airports possessing many spacious runways, and thus it is highly likely that competition among airports will become severer. Central Japan International Airport has also been completed. This will make competition among airports much severer. Kansai International Airport's charges are the second highest, next to Narita Airport. If Kansai International Airport reduces its airport charges in order to avoid decrease of demand, its rate of return on assets is likely to be much lower. In short, Kansai International Airport is forced to continue its business operations as if skating on thin ice, looking carefully at the trend of future demand.

In this paper, I examined whether the FILP agencies related to highways and international airports can undergo privatization, through the means of a financial analysis incorporating some economic approach, by basically using the FILP agencies' financial statements that are disclosed to the public

as the generally available data.

Compared to the generally accepted accounting principles to which private enterprises conform, the FILP agencies' accounting procedures are quite unique, and thus the cross-organizational analysis on their financial statements is considered to be difficult. Yet I believe I was able to avoid such difficulty to some extent, since the objects of the analysis in this paper are restricted to the FILP agencies in charge of improvements of transportation networks such as roads and airports. In fact, these organizations are already preparing financial statements equivalent to those of private enterprises, and it is more desirable to use such financial data. Nevertheless, because financial statements equivalent to those of private enterprises are not available for past fiscal years, the currently available financial statements were used for the purpose of this paper.

The analysis in this paper may enable us to speculate whether or not privatization will bring about stable management in the future, but it is difficult to make a perfect prediction. This is because future financial standing is largely affected by future transportation demands. Close examination of the forecast of future transportation demands will therefore facilitate monitoring of the management status after privatization; however, a drastic increase of transportation demands is highly unlikely when the population is decreasing. If we consider even this point only, it is easily predicted that new social capital improvements after privatization will deteriorate the rate of return on assets.

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