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FISCAL CHARACTERISTICS OF INCHEON INTERNATIONAL AIRPORT AND KANSAI INTERNATIONAL AIRPORT

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Abstract: Kansai International Airport (KIX) needed a large amount of initial investment is the land development by marine landfill to avoid environmental problems such as the noise. It brought a heavy debt to the KIX's administrator, KIAC. Seoul's Incheon International Airport faces the similar situation to KIX. This paper analyzes the two Airport's fiscal conditions by comparing with world's other airport operators and considers policy implications for the improvement of the airport management.

Key Words: Airport Management, Fiscal Analysis, Kansai International Airport, Incheon International Airport

1. INTRODUCTION

In East Asia and Southeast Asia, air demand recorded a high growth rate and construction and development of a huge airport continued from 1990's. The examples are Kansai International Airport (hereafter KIX) in 1994, Hong Kong Chek Lap Kok Airport, Kuala Lumpur International Airport in 1998, Shanghai Pudong Airport in 1999, Seoul's Incheon International Airport (hereafter ICN) in 2001. Furthermore, the opening of New Bangkok International Airport approaches in Thailand.

New airport construction needs a large amount of investment. Construction (only in Phase-1) of KIX took costs more than 1.5 trillion yen (about 13 billion dollar). It stands out in the world. 12 local governments supplied capital to Kansai Airport as an investor as well as the nation government. However, many of project costs are financed by a debt, and that is why a large amount of interest payment arises.

The greatest reason why KIX needed a large amount of initial investment is because the land was developed by marine landfill. The land development method was adopted to avoid an environmental problem such as the noise. Korea which was a Japanese neighboring country invested a large amount of land development expense same as KIX and built ICN.
KIX and ICN have various similarities, for example, airport on the ocean, a location of the east end of East Asia, hinterland city scale and distance from a down town area. Although KIX passes through ten years from the opening, ICN is a young airport. It is interesting for future policy decision of both airports to compare a performance of ICN with KIX. This paper reviews characteristics and differences of KIX and ICN, in particular, from a viewpoint of financial affairs and traffic demand.

2. COMPARATIVE ANALYSIS OF ICN AND KIX

2.1 Physical Aspects

Both of ICN and KIX were constructed by land development on the ocean. These airports furthermore have similarities for example the scale of hinterland city and access distance from downtown. This section summarizes specifications of the airports, the hinterland characteristics and the recent air transportation results before the financial comparative analysis.

Table-1 shows physical aspects of ICN and KIX. ICN has about 2 times site areas of KIX, and two runways. Although physical scale of an airport of ICN is larger, hinterland scale of the two airports is approximately the same. In addition, access environment from down town region is also similar. According to the transport results, the difference of cargo demand is larger than the flight movement's difference and the passenger demand's difference. KIX has a characteristic that a ratio of domestic demand is big and it is much different from ICN. Although the difference of the number of air carriers operated is small, ICN has 50 more points served than KIX.

Since Korea's airport policy gives ICN a role of an international airport of Seoul (Gimpo (GMP) as domestic airport), there are only three regular routes from ICN. Therefore, most of air demand in ICN are international service demand as a necessity. With respect to only international air services, the numbers of movements and passengers of ICN are almost 2 times of KIX. Although there is a much difference of international air demand (both passenger and cargo) between ICN and KIX, domestic air demand of KIX makes the demand difference of the two airports look small.

Table- 1 Specification of ICN and KIX

	Incehon Int'l Airport (ICN)	Kansai Int'l Airport (KIX)
Runway	2 x 3,750m (4 x 3750-4000m: Final Plan)	1 x 3,500m (1 x 3,500m, 1 x 4000m: Second Phase)
Airport Site Area	11,724,000m^2 (47,428,000m^2: Final Plan)	5,103,100m^2 (10,550,000m^2: Second Phase)
Passenger Terminal Floor Space	496,000m^2	301,636m^2
Administrator	IIAC (Incheon International Airport Corporation)	KIAC (Kansai International Airport Co.,Ltd)
Hinterland Population	about 2 million	about 2.4 million
Modes of Access	Exp way (,and Rail scheduled in 2005)	Exp way, Rail, High Speed Ferry
Accessibility from Downtown	52km, 50min (from Seoul by Exp way)	57km, 45min (from Osaka by rail)
Aircraft Movement Capacity	240,000 (410,000: Final Plan)	160,000 (230,000: Second Phase)
Passenger Handling Capacity	30 million passengers	25 million passengers
Cargo Handling Capacity	2.7 million ton	1.0 million ton
Aircraft Movement Result in FY2002 (international)	126,094** (122,518)**	108,366 (63,870)
Total Passenger Result in FY2002 (international)	20,924,167** (20,552,659)**	16,920,882 (10,441,672)
Total Cargo Result in FY2002 (international)	1,705,891 ton** (1,703,602 ton)**	767,310 ton (715,699 ton)
Airlines Operating*	51	49
Countries Served*	39	29
Cities Served*	119	69

(*ICN in Apr 2004, KIX in March 2004)
**include non-scheduled
sources: brochure of each airport , Incheon International Airport's web (http://www.airport.or.kr), IIA Newsletter (various issues), Kansai International Airport Co.,Ltd web (http://www.kiac.co.jp)

2.2 Administration System

There are 16 civil aviation airports in Korea including Incheon International Airport, and among them 7 airports are international airports. Pure civil aviation airports are only six airports in Korea, and the remainder are common use airports with the military authorities. The administrator of ICN is Incheon International Airport Corporation (hereafter: IIAC) and Korea Airport Corporation (hereafter: KAC) is the administrator of other 15 airports. IIAC is a public corporation fully financed by Korea's national government. KAC is also a public corporation which has a responsibility of operation and maintenance of airports and does not construct airports. The national government itself builds airports. Different from other airports, however, IIAC has a role of not only the management and maintenance of ICN but also the construction.

Airport Development Act prescribes Japanese airport administration system. Airport Development Act classifies airports to 4 classes in some standards such as a subsidy ratio by

national government for the airport development cost. National government or local governments are prescribed as airport administrators basically. Administrator of KIX is Kansai International Airport Co., Ltd. (hereafter: KIAC) which is the joint stock company shared by national government ,local government and private sectors. KIAC has a role of construction, management and maintenance of KIX. The establishment system of KIAC is an exceptional construction management framework in Japan, as well as IIAC in Korea. National government has 2/3 control shares of KIAC, and ,12 local governments hold 21.4% of the stocks. Remaining stocks are held by private enterprises.

2.3 Aspects of Profit and Loss

The flow analysis considers the situations and problems of ICN and KIX from viewpoints of sales scale, profit, expense and so on.

Although both airports appropriate operating profit, net deficits occurs (Table-2). The financial situations of the airport administrators are extremely near. The most representative common flow characteristic of IIAC and KIAC is that interest expense is the greatest cause of net deficits. Both ICN and KIX needed a large amount of financial resource for airport construction on the ocean and most of the cost was financed by debt. This point becomes clearer by the next section's comparative analysis of stock.

The structure of operating revenue in each airport is also similar. Airport charge includes landing charges, stoppage charges, and other airside charges such as lighting charges. Although KIX is often criticized for its high landing charges, the percentage that airport charge occupies in total revenue is only less than 20% (Figure-1). Airport charge is not equivalent to "aviation revenue" here. We cannot divide total revenue to "aviation revenue" and "non-aviation revenue" because of data constraint.

Table- 2 Profit Loss Statements of IIAC and KIAC

	IIAC	KIAC
Revenue	489.9	977.7
Airport Charge	129.7	188.5
Other Operating Revenue	360.3	789.3
Operating Expenses	359.0	813.5
Operating Profit	131.0	164.2
Non-operating Revenue	3.0	3.8
Interest Revenue	0.6	0.3
Other Non-operating Income	2.4	3.5
Non-operating Expenses	225.3	312.2
Interest Expenses	216.8	306.1
Other Non-operating Expenses	8.5	6.1
Ordinary Profit	-91.3	-144.2
Extraordinary Profit and Loss		-11.3
Income Taxes		-0.3
Net Profit	-91.3	-155.2

million $

source: IIAC (2003), KIAC (2003)
*Some errors occur because of round off.

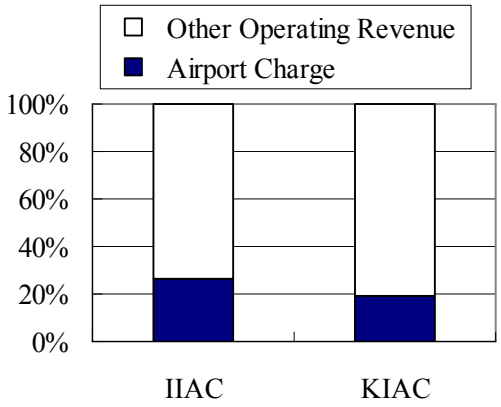

Figure- 1 Ratio of Airport Charge to Total Revenue

Although air passenger demand and movement of ICN is larger than KIX's, revenue of KIAC is larger than IIAC. Table-3 shows the comparison of revenue per passenger demand and revenue per movement between ICN and KIX. These values mean average price per passenger and average price of movement. KIX's price is over two times of ICN's price. Regarding the international airport competition, ICN has an advantage.

Table- 3 Revenue/Pax and Revenue/Movement

	IIAC	KIAC	KIAC/IIAC
Total Revenue/Total Pax ($)	23.4	57.8	2.47
Airport Charge/Total Pax ($)	6.2	11.1	1.80
Total Revenue/Total Movement ($)	3885.6	9038.1	2.33
Airport Charge/Total Movement ($)	1028.3	1742.1	1.69

2.4 Aspects of Capital Stock Situation

Table-3 Balance Sheets of IIAC and KIAC

	IIAC	KIAC
Assets		
Current Assets	127	353
Fixed Assets		
Property, Plant and Equipment (ex. Construction in Progress)	5,416	14,026
Accumlated Depreciation	-288	-2,562
Intangible Assets	117	47
Construction in Progress	44	3,348
Investments	43	16
Total Fixed Assets	5,331	14,875
Deffered Charges	0	13
Total Assets	5,459	15,241
Liabilities		
Current Liabilities	543	1,897
Long-term Liabilities	2,859	9,195
Total Liabilities	3,401	11,092
Shareholder's Equity		
Total Shareholder's Equity	2,057	4,149
Total Liabilities and Equity	5,459	15,241

million $

The analysis discusses on a fiscal resources system as well as financial conditions of ICN and KIX. The balance sheets (Table-3) describe that total assets of KIX is a little less than 3 times of ICN's assets. The physical scale comparisons of the airports mentioned above showed that a site area and terminal floor space of ICN were larger than KIX. Physical scale and assets scale reverse. A difference of land price level between Japan and Korea can be one of the reasons of it. However, the financial result shows that how large investment to KIX was.

Although equity ratio is in general an important index of safety in financial statements analysis, it simply means a capital finance system in this comparative analysis of the two airports where government is shareholder. More than 60% of fiscal resources of airport construction are supplied in both airports by debt. The airport administrator holds the assets. For this reason, an operator has to continue payments of interest cost constantly. This characteristic is common to ICN and KIX.

The following Figure-2 shows the comparison of assets and equity ratio of some world major airport administrators. The figure takes up administrators whose revenue are the highest of the world (BAA, Fraport, Aena, Schiphol Group: by Airline Business issue Dec 2003) and some Asian big airports administrators (NAA, AAHK, CAAS).

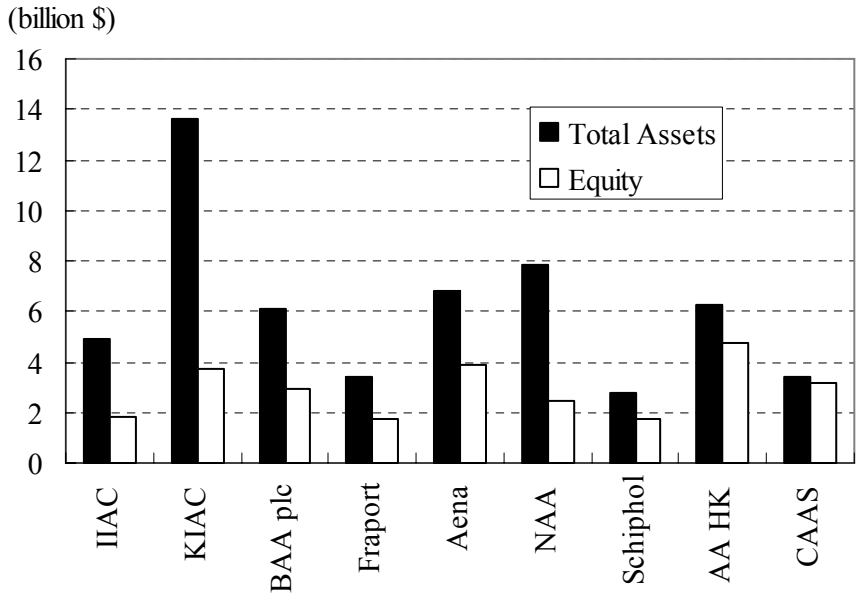

Figure- 2 Assets and Equity of the Airport Administrators

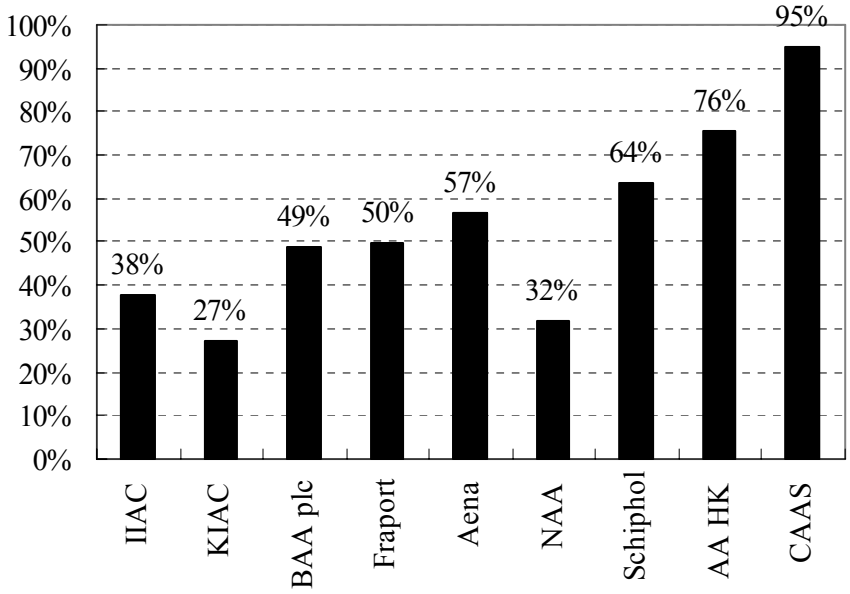

Figure- 3 Equity Ratio of the Airport Administrators

*NAA: Narita Airport Authority, AAHK: Airport Authority Hong Kong, CAAS: Civil Aviation Authority of Singapore
Sources: Financial Statements of each Airport Administrator,
Statistics Bureau (2004): for Exchange rate

Since these airport administrators include both private enterprise and one branch of government, it is not appropriate to easily compare the values. However, there is no doubt that assets scale of KIX is remarkably large. Although Fraport and Schiphol manage many airports, the assets of them are smaller than KIX, ICN, NAA and AAHK (These Asian airport administrator manages only one airport). In Asia, equity ratio of AAHK and CAAS are relatively high (Figure-3). These facts will reflect that a government invested it in hub airport development intensively. ICN and KIX (Japanese NAA) comparatively have a smaller equity ratio than other airport administrators.

2.5 Comparative Analysis of Financial Conditions of IIAC and KIAC

The financial analysis considers safety and profitability of IIAC and KIAC by some indexes. Since the government sectors are principal shareholders about both airport administrators, bankruptcy risk is small. Therefore, this analysis puts a focus in liquidity of financial resource than safety. Liquidity ratio and fixed assets ratio are often used as finance safety indexes. Since airport infrastructure has a characteristic that proportion of fixed assets is large, this analysis adopts ratio of fixed assets to long-term capital as an index (Equation (1)). The index shows balance of long-term capital finance source and money fixed in the long term. If the value is small, in general, the financial situation can be judged stable. If this value is large, short-term money liquidity is not good.

$$RFL = \frac{FA}{EQ + LL} \tag{1}$$

Where
RFL: Ratio of Fixed Assets to Long-Term Capital
FA: Fixed Assets
EQ: Equity
LL: Long Term Liability
About both of IIAC and KIAC, a large amount of interest expense causes net deficits. This analysis compares an interest coverage ratio (Equation (2)) index of both airport administrators. Interest coverage ratio is an index evaluating an interest on money ability to pay and expresses short-term financial safety from a viewpoint of flow.

$$ICR = \frac{OP + II}{IP} \tag{2}$$

Where
ICR: Interest Coverage Ratio
OP: Operating Profit
II: Interest Income
IP: Interest Payable

The indices of other airport administrators are shown in Figure-4 in order to consider common point as well as difference of KIAC with IIAC. One of chosen airport administrators is BAA that the profitability is the highest of the world. The other is AAHK that is administrator of one Asian major airport Hong Kong.

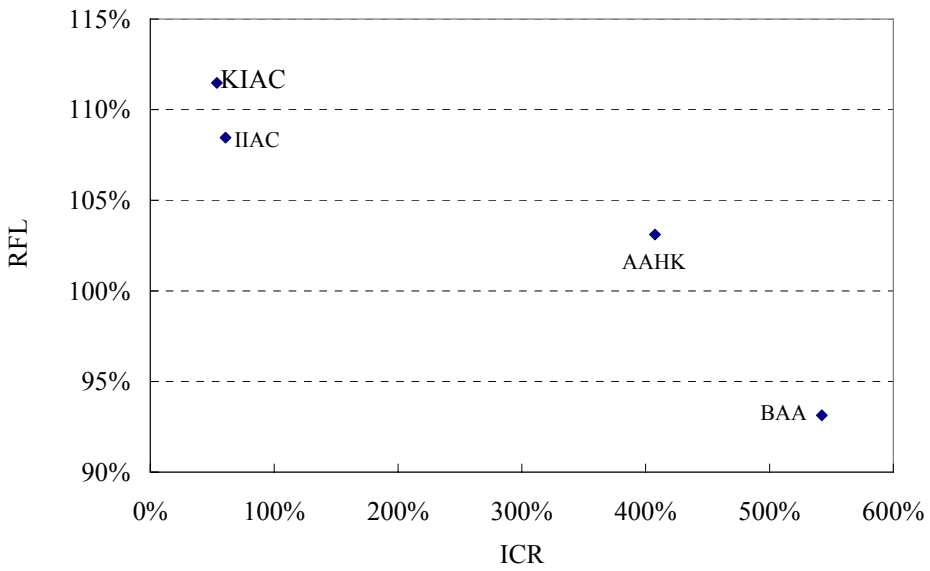

Figure- 4 Stability of the Airport Administrators

In Figure-4, the upper left direction means low safety, and the lower right direction means high safety. Comparing with BAA and AAHK, financial safety condition of IIAC and KIAC are not good. If value of FLR is larger than 100%, it means that investment is excessive to capital. Although FLR of KIAC is the highest, the difference with other airport administrator is small.

On the other hand, a comparison result of interest coverage ratio shows the tragic situation of IIAC and KIAC. Interest cost cannot be paid back only by operating activity if the index is smaller than 1. In other words net deficits will increase over future. Enlargement of operating profit or decrease of debt burden is necessary to improve this index. Compared with BAA and AAHK, there is remarkable difference.

The second financial analysis compares KIAC with IIAC from a viewpoint of profitability. Profitability analysis considers financial characteristic by two indexes which are Ratio of Operating Profit to Sales and Ratio of Net Profit to Sales. In this analysis, BAA and AAHK are comparison objects again.

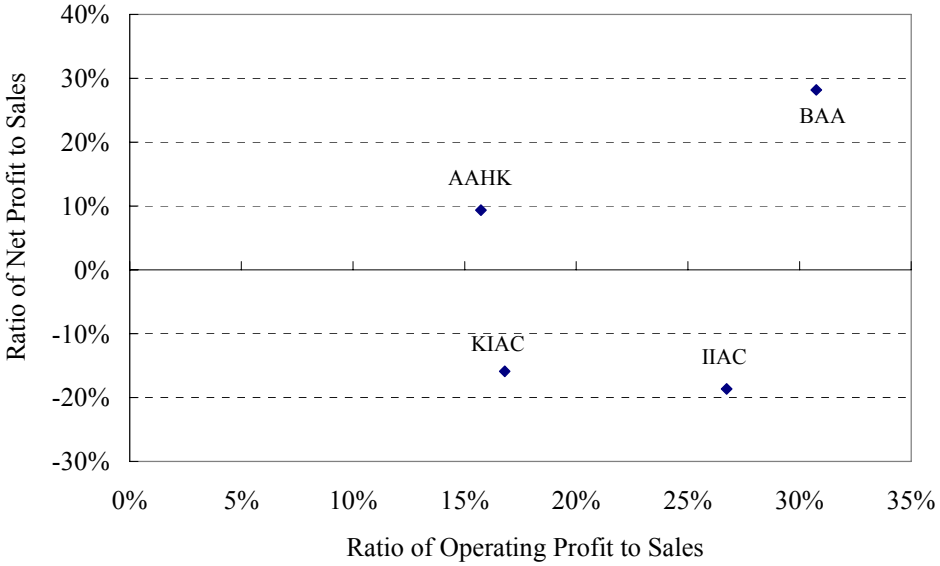

Figure- 5 Profitability of the Airport Administrators

Figure-5 shows the two indexes of the airport administrators. Both IIAC and KIAC are under net deficit condition. Operating profit to sales ratio of IIAC is higher than AAHK and KIAC and it is almost BAA's level. IIAC compresses operating cost, and that is the productive efficiency is high. Operating profit to sales ratio of KIAC is also higher than AAHK, that is, the productivity is not bad at all. The comparison with other major airport operators shows the same result (Figure-6). This fact shows that non operating expense of interest cost is fatal reason of difficult financial condition of IIAC and KIAC.

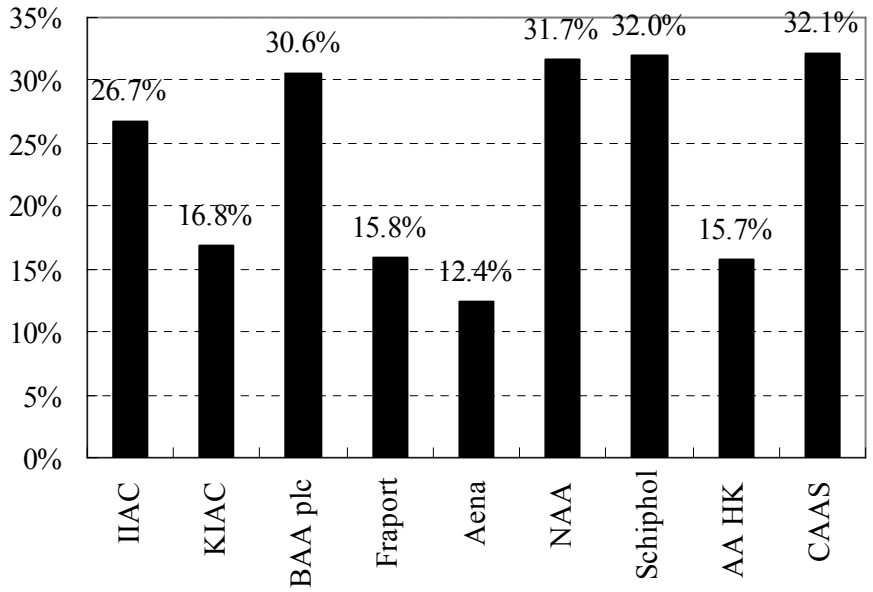

Figure- 6 Operating Profit to Sales Ratio

2.6 Summary and Prospect of the Fiscal Characteristics

A serious problem of KIX which ICN did not experience is the slump of demand growth (Figure-7, Figure-8). Actual passengers demand of KIX is less than estimated value before the open. The Asian economic crisis of the later half of 1990's, 9.11 Attack in 2001, and SARS and Iraq War in 2003 brought an undesirable influence on Asian international air demand. Air demand of KIX was not of course an exception.

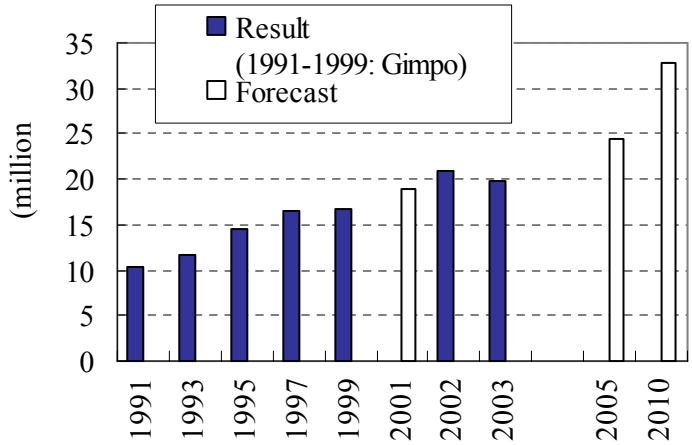

Figure- 7 Passenger Demand Result and Forecast of ICN

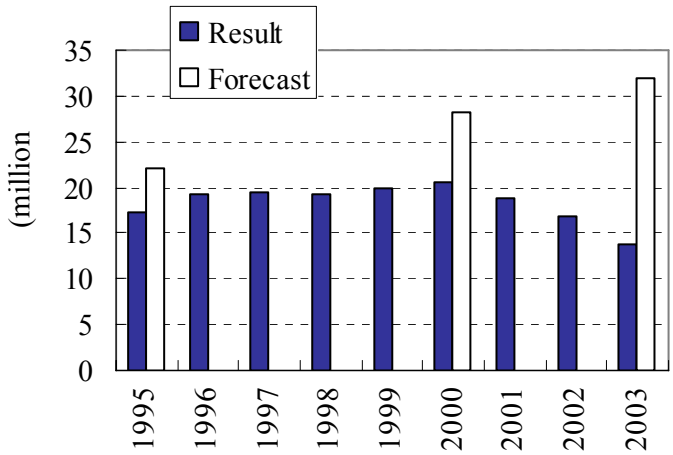

Figure- 8 Passenger Demand Result and Forecast of KIX

As well as the social economy situation, the effect of competition between domestic airports is also one element of KIX's demand slump. Second runway of NRT opened in 2002, and the capacity increased. As a result, some of international air demand of KIX shifted to NRT. KIX and nearby Osaka Itami Airport are competitive relationship in terms of domestic air transport. Domestic air passengers of Osaka area in general prefer Osaka airport that is

closer from the city center. Since there is no rule regulating domestic air route assignment between the neighbor 2 airports, airlines let services at Osaka Itami Airport be substantial. This artificial supply constraint may help to shift some air demand to KIX. However, it will be hard to acquire drastic increase.

The airport administrator undertook not only airport operation but also debt burden of the construction costs including the land development cost. As a result, only the revenue of the operation of a single airport and some related businesses must cover debt service payment as well as operating cost. The current difficult financial condition of KIAC is the consequence which is not avoided by capital finance scheme and assets transfer scheme.

3. CONCLUDING REMARKS

Although the current financial situation of IIAC and KIAC is not stable, the operating profit of these operators does not have serious problems. Only "interest payment" is a fatal reason of net loss. Both airport administrators recognize necessity of buildup of equity capital. User charge increase to cover interest cost (as a fixed cost) enlarges the gap of Airport price and marginal cost.
It will decrease benefit of user and be a factor of demand shift. Decrease of debt burden is the simplest and most fundamental method to improve financial condition.

Korean government and Japanese government cannot share the budget easily for financing to the airport administrators. In Japan, non-efficiency of public work projects is criticized strictly, and public investment budget is reduced. Even if it meets under such situation, it is task of the government which is largest shareholder to find a way of capital buildup. The Japanese government decided subsidy expenditure of 9 billion yen per year from FY2003 in order to strengthen management foundation of KIAC (Ministry of Land, Infrastructure and Transport(2003)). Such strategic fiscal policy is important to achieve successful airport privatization that needs enormous initial cost.

REFERENCES

Incheon International Airport Corporation (2003): **Financial Statement 2002**

Kansai Airport Research Institute, Kansai International Airport Co., Ltd. and Kansai International Airport Land Development Co., Ltd. (2001): **Report of International Airport Symposium 2001**

Kansai International Airport Co., Ltd. (2003): **Fiscal 2002 Accounts Settlement**

Ministry of Land, Infrastructure and Transport (2003): **White Paper on Land, Infrastructure and Transport in Japan 2003**

Statistics Bureau (2004): **Sekai no Toukei 2004**