

ANALYSIS OF FINANCIAL IMPLICATION OF THE PROPOSED KOREAN RAILWAY RESTRUCTURING

Keunyu YANG
 Transportation Policy Researcher
 Ministry of Planning and Budget
 Government of Korea
 520-3, Banpo-dong, Socho-gu, Seoul,
 137-756, Korea
 Fax: +82-2-3480-7654
 Email: keunyu@hanmail.net

Sunduck D. SUH
 Professor
 Dept. of Transportation Eng.
 Hanyang University
 1271, Sa 1-dong, Ansan,
 425-791, Korea
 Fax: +82-31-406-6290
 Email: sunduck@hanyang.ac.kr

Kyungwoo KANG
 Professor
 Dept. of Transportation Eng.
 Hanyang University
 1271 Sa 1-dong, Ansan,
 425-791, Korea
 Fax: +82-31-406-6290
 Email: kyungwoo@hanyang.ac.kr

Hwajoo BAE
 Partner
 Samil Accounting Corporation
 191 Hangangro 2-ga, Yongsan-gu, Seoul
 140-702, Korea
 Fax: +82-2-792-7001
 Email: hjbae@samil.co.kr

Abstract: Two previous attempts to restructure Korean National Railway (KNR) were not successful. An initiative to transform the KNR to a private company(s), while retaining construction functions in public sector, is under way. As one of the methods to justify the transformation, financial implication of the restructuring has been analyzed. This paper, first, introduces the general outline of the proposed restructuring scheme of KNR, along with the necessity of the restructuring. Anticipated effects of the restructuring are discussed from the perspective of the national transportation policy. The structure of the financial models utilized in the study is explained, and input data and outcomes are discussed. Issues in the financial analysis are also included.

Key Words: Railway, Railway Restructuring, Financial Analysis, Cost Analysis

1. INTRODUCTION

When the new government was launched in 1998, privatization of KNR was in the wish list of reformation. In 1999, a government restructuring study recommended to restructure KNR into two entities. The result of the study showed that the functions of construction and maintenance of rail infrastructure should remain in the public sector, and be handled by the

so-called Rail Construction Corporation, while operation of railway should be handled by a privatized company or companies. The result was confirmed as a government policy in 1999.

What are the benefits of restructuring? Why is the restructuring necessary? Is the current restructuring scheme optimal? What are the objectives of the restructuring? These are the frequent questions raised by many experts and people in general. Further researches clarified some of these issues. Some should be contributed to the decisions of top government body. The main impetus of restructuring is finding a way to deal with the increasing financial debt of KNR, and thus reverse declining share of railroad in passenger and freight transport. The declined modal share means more pressure on investments on highways, and this in turn attracts more vehicles on highways, more congestion, and more pressure for additional construction of highways. It is a vicious cycle.

To put an end to this declining trend and debt problem of KNR, two attempts were made, without success, to change KNR into corporation. Current restructuring attempt is the third try, and tries to make the operation company private. This paper introduces financial implication of restructuring from the perspective of the government. Next section introduces current KNR's financial performance, and rationale for restructuring. Models utilized to analyze the financial implication were introduced along with assumptions utilized. Analysis results, which show positive financial impact of restructuring, were described.

2. PROPOSED RESTRUCTURING OF KOREAN NATIONAL RAILWAY

2.1 Current Status of KNR

The Korean National Railroad (KNR) is the sole rail operator in Korea. It has revenue track of 3,029 Km and total track kilometer of about 6,500 Km. Approximately 35,000 employees are working at KNR and about 600 stations is operating today. It operates about 580 locomotives and 1,900 coaches and 15,000 freight cars.

Financially, KNR has been continually losing money. Table 1 shows recent financial performance of KNR. The poor financial performance of KNR has been due to several

factors. Limited line capacities and controlled fare are two major factors. Another more generic factor is the inability of KNR to adapt to changing market environment including consumer preference. For example, proportion of bulk freight is reducing. The high-valued small commodities are being transported by trucks instead of rail. Proportion of interest payment and labor cost is significant. Also government is not fully compensating KNR for the public service it provided by KNR. Table 2 shows proportion of government PSO (Public Service Obligation) payment compared to actual cost.

Table 1. Financial Performance of KNR (billion Won)

	1995	1996	1997	1998	1999
Deficit	-162.7	-55.8	-20.9	-331.2	-251.0
Debt	790.2	1074.5	1082.7	1311.0	1529.1

Source: KNR Statistics, Annual (KNR)

Table 2. Comparison of PSO provided and payment (billion Won)

	1995	1996	1997	1998	1999
PSO occurred	216	326	403	538	445
PSO payment	53	270	383	217	194

Source: KNR Statistics, Annual (KNR)

Partly due to difficult financial status of KNR, infrastructure of railroad has not been expanded much from 1960s. And the modal share of railroad has been declining continually. For passenger transport, modal share, in terms of passenger kilometers, of 53% in 1961 declined to 27.9 % in 1998. For freight transport, 88.2% of share, in terms of ton kilometers, declined to 19.4% during the same period. Also, productivity of KNR is analyzed to be low compared to other countries. Because of decline in the modal share of railroad, Korea is experiencing heavy congestion on highways, paying dearly for logistic cost, and suffering from air pollution from automobiles and high highway accident rate. These are the basic reasons why railroad restructuring is urgently called for.

In 1988, a law was passed for changing KNR into corporation which aimed to transit in 1993 the transition in 1993. The law was later amended, in 1993, to change the target date to 1996, but finally the law was nullified in 1995. Several factors contributed in the process. High one-time financial requirement of government to meet transition cost, worry against formation of super-large labor union, and additional requirement of labor force were some of

the factors. A new law replaced the law to facilitate improvement of KNR's management efficiency. Under the new law, KNR achieved some notable management improvement. Current restructuring scheme was announced to further enhance railroad operation and level of service.

2.2 Proposed Restructuring

Korean government has some successful privatization histories of some government agencies. One of them is Korea Telecom. Ministry of Communication was restructured into Korea Telecommunication Corporation in 1982, and Korea Telecommunication Corporation became privatized in 1990 Korea Telecom. After the privatization, revenue increased by 20.3 % in 1990. Net profit also increased significantly. In the transition of Ministry of Communication to Korea Telecommunication Corporation, there was no major reduction in labor force. After it became corporation, operation surplus of 210 billion and 106 billion won was realized in 1982 and 1983, respectively. Also service quality was improved. Line capacity increased by 77% and number of subscriber increased by 25%. This is one of the success stories.

Another is the case of Tobacco and Ginseng Corporation. The Monopoly Administration, which was under the Ministry of Finance, was transformed into Monopoly Corporation with full government ownership in 1987. It became a corporate company in 1989. About 12 % of manpower was reduced in 1987, from 13082 to 11500 people. In 1988, the total number of employee reduced to 9430, which is reduction of 18%. After the restructuring, revenue increase of 13% was realized for tobacco, and 12 % for ginseng. Profit also increased by 112 billion in 1987 due to reduction in employees and increase in productivity.

Several corporations or government agencies are currently being restructured. Korea Power Company (KEPCO) is one of them, and KNR is also in the list. Whole electricity generation market is being deregulated. The main effects government seeks to achieve are cost reduction, productivity increase, and resulting self-reliance of the agencies. As shown previously, financial performance of KNR was not successful, to say the least. It is understandable to a certain way because railroad is engaged in the business of providing public service, not profit making. Still, to government that has to pay large amount of annual operation subsidy, it is reasonable to think that somehow privatization will solve the problem. It is expected that cost will be reduced and productivity will be enhanced by privatization of KNR. Actual results have to wait, but cost reduction is assumed possible to a certain extent and level of service of railroad operation can be enhanced.

According to the proposed restructuring plan, current KNR will be divided into two functions. The first is infrastructure part, which will be consolidated into the so-called 'Railroad Construction Corporation'. It will be in public sector, funded by government. The second part is for operation. Operation will be handled by a private company or companies). This scheme is traditional operation/infrastructure separation, similar to Swedish or German policy. Whole restructuring will happen in stage. The restructuring process will proceed by stages. The first stage is division of operation and infrastructure in the early 2002. The so-called Railroad Construction Corporation will be responsible for construction and maintenance of regional rail and high-speed rail lines. By the end of the 2002, operation part of KNR will become a corporation, wholly owned by government. Stocks will be sold out gradually to make the company private. In the current proposal, there will be two separate companies handling passenger and freight, respectively. The separation of passenger and freight transport will be realized when some extra line capacities are released by commissioning of KTX in 2004. Operation of some lines might be contracted out to private companies even before the setup of private operation company. This scheme requires enhancement of rail policy function in the Ministry of Construction and Transportation.

Draft of law was forwarded to the National Assembly recently for review. Also studies to develop detailed action plans for transition are being carried out (for example, MOCT 2000). One of the major tasks is to change current government based accounting system to a private one. It was argued to be the bottleneck in the whole process of transition. Also a study to identify some lines for private management is being carried.

Final form of restructuring might be changed in the approval process of government and enactment process at the National Assembly. It is assumed, however, major scheme will be retained. Timing is somewhat flexible. Current administration expires in two years, and there are some concerns that the process cannot be finalized within this time frame, and it might repeat previous unsuccessful restructuring attempts.

3. FINANCIAL ANALYSIS PROCEDURE AND MODEL

3.1 Some Assumptions and Demand

Forecasting financial status of a complex and large organization is a very complex task, and it inevitably involves many assumptions regarding current and future operation of the organization, and environment. Also the model utilized is very important considering complexity of KNR's operation. To give more insight into the financial analysis utilized, assumptions employed are explained first followed by description of actual spreadsheet model.

Analysis period covered from the year 2001 to 2020. Asset and debt related to Seoul-Pusan high speed rail was taken over by KNR on January 2004 under the current structure scenario. For privatization case, it was assumed that only rolling stock related asset and cost were taken over by the operation company. Current debt of KNR, which is to be estimated to be 1475 billion Won at the end of 2001, was written off to the operation company under privatization scenario. That amount might be transferred to the Construction Corporation, but still it will not be transferred to the operation company. Subsidy for public service obligation (PSO) is a very important factor. It was assumed that amount totaling 12.5% of passenger revenue was contributed to PSO subsidy under the current structure, while in privatized case, no subsidy from government was assumed. Granted that PSO still exists even under privatized company, but different scheme was assumed. For example, Ministry of Defense should acquire budget and pay to the operation company the actual amount accounted for discount for military personnel. Track usage charge was considered to be equal to the depreciation and track maintenance cost of the operation company. For privatized company, corporate tax and value-added-tax were levied. For purchasing, ten percent of operating cost except labor cost was deducted from the purchase cost, and to revenue, ten percent of fare-box revenue was added as tax. For any additional borrowings, different payback and interest schemes were used. Under the current structure, 60% of borrowing was for 7.11% of interest rate, with three years of grace period and paying back in full after the grace period. 40% was for 6.5% of interest rate, with five years of grace period and paying back in 15 years. For privatized company, corporate bond with 10% annual interest with 5 years of equal payback was used.

One of the important factors in calculating financial implication of restructuring is to identify

impacts of restructuring. Once the KNR, which is a government agency, becomes a corporation that is governed by corporate law, it should anticipate two major changes. The first is that it will operate under the principle of revenue and market oriented operation. It will launch aggressive marketing efforts, enhance process to reduce cost, pursue active investment to improve level of service, seek rail-related developments, and actively seeking strategic alliance with other transport modes and sectors. The second is that it will strive to improve productivity through innovation of organizational structure. It will employ professional technique of manpower planning and management, pursue flexibility and accountability in management, and introduce active incentive system. Aggregate impacts of these factors should be considered in cost and revenue terms. In terms of revenue, it will accompany revenue improvement through rail demand increase and increased revenue from ancillary operation. In terms of cost, it means material and labor cost reduction. This line of thinking can be demonstrated by the German's restructuring forecast, that showed 21.6% of material cost reduction, 9.4% of labor cost reduction, and 4.7% increase in revenue after restructuring. Four percent of non-operation revenue was assumed under the current structure, and 6% for privatized company. Also these figures can be compared with the results from Japanese experience, which showed increased non-operation revenue from 2.8% to 6.3 to 15.3% after privatization. Material cost was expected to reduce; 5% reduction for power, 5% track maintenance, 5% for rolling stock maintenance. These can be compared with 3.6% reduction realized after the Tobacco office was privatized, and 21.6% reduction forecasted for Germany. No major change in labor cost was assumed in calculating financial implication of restructuring, because higher rate will compensate for the reduced number of employees.

Separate demand forecasts were carried out for both cases. For the current structure, Table 3 shows demand forecasted. To forecast demand under private operation company, some assumptions regarding level of service were utilized. Line haul time was kept constant. Access time was reduced by 10% assuming that private company will utilize many schemes to reduce waiting time, and ticketing time utilizing innovative scheme, such as internet or mobile phone. Fare was assumed to increase by 10%. It was not a concrete figure, but it considered the fact that current fare level is low because of government control. New demand forecast is developed as shown in Table 4. These forecast shows 14.4% increase in passenger demand, and 19.1% increase in freight demand, as compared for the year 2010.

Table 3. Demand forecast for current structure

- Passenger (million passenger.km/year)

	1997	2002	2004	2010	2016	2020	Increase Rate (%)		
							'97-'04	'04-'10	'10-'20
Regional Rail	20,188	21,996	21,187	26,854	41,402	46,057	0.7	4.0	5.5
Metropolitan Rail	9,441	13,450	14,797	23,549	31,770	37,773	6.6	8.1	4.8
HSR			14,475	24,615	29,321	39,965	-	9.3	5.0
Total	29,630	35,446	50,459	75,018	102,493	123,795	9.0	6.8	5.1

- Freight (million Ton.km/year)

	1997	2002	2004	2010	2016	2020	Increase Rate (%)		
							'97-'04	'04-'10	'10-'20
Container	2,404	3,432	3,958	5,457	8,903	10,822	7.4	5.5	7.1
Freight	10,306	7,510	7,606	10,039	15,875	17,092	-4.2	4.7	5.5
Total	12,710	10,942	11,563	15,496	24,778	27,914	-1.3	5.0	6.1

Source: Suh (2000)

Table 4. Rail Demand for Private Company

- Passenger Demand (million passenger.km/year)

	1997	2002	2004	2010	2016	2020	Increase Rate (%)		
							'97-'04	'04-'10	'10-'20
Regional Rail	20,188	31,223	26,356	31,991	49,154	52,957	6.4	3.3	5.2

Metropolitan Rail	9,441	19,092	21,332	28,054	37,719	43,432	12.4	4.7	4.5
HSR			15,176	25,756	29,877	40,738	-	9.2	4.7
Total	29,629	50,315	62,864	85,801	116,750	137,127	12.3	5.3	4.8

- Freight Demand**(million ton.km/year)**

	1997	2002	2004	2010	2016	2020	Increase Rate (%)		
							'97-'04	'04-'10	'10-'20
Container	2,404	3,713	4,281	5,903	9,631	11,707	8.6	5.5	7.1
Freight	10,306	10,512	10,751	12,553	19,787	21,027	0.6	2.6	5.3
Total	12,710	14,225	15,033	18,456	29,418	32,734	2.4	3.5	5.9

Source: Suh (2000)

Increase rate of rail demand for privatized company to current structure can be compared with experiences of Japan, UK, and Germany. For example in Japan, between 1986 and 1994, demand of private rail increased by 11.2% while that of JR showed 25.2%, which implies about 14.1% might be contributed to privatization. Also in UK, demand increase after two years of privatization showed 14% increase in passenger-kilometers, and 25% in terms of freight ton-kilometers. Between 1993 and 1997 in Germany after privatization, 15.1% of increase in passenger-kilometers, and 12.0% in freight ton-kilometers were observed (MOCT, 2000).

3.2 Financial Model

Models based on Excel spreadsheets were devised to calculate actual financial application of restructuring. Figure 1 shows one typical screen of model. They were developed based on the KNR's accounting system.

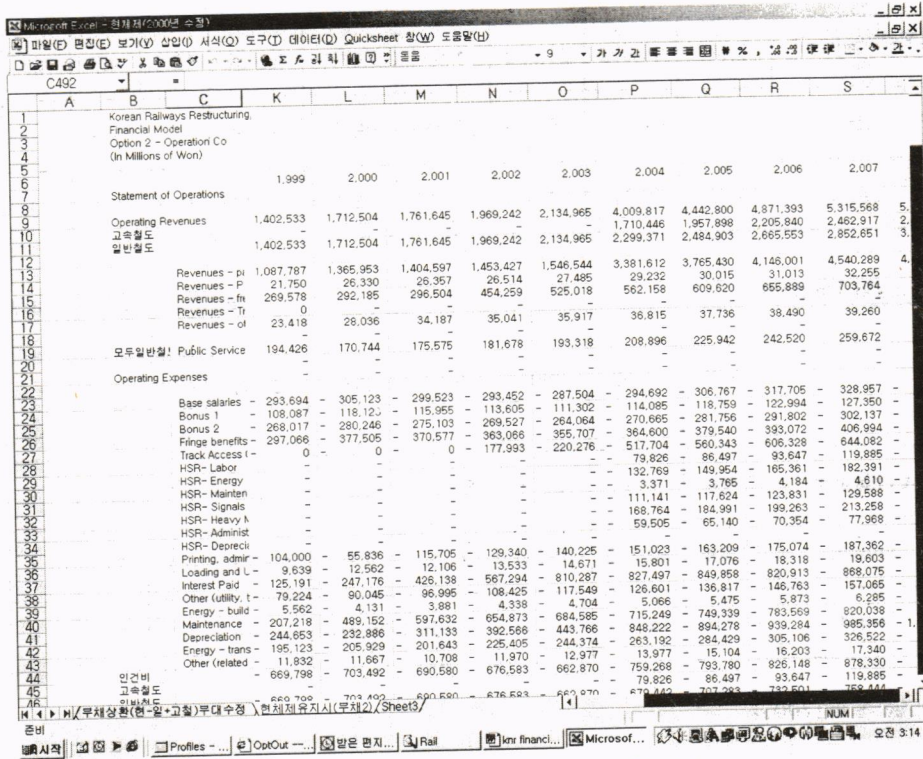


Figure 1. Screen shot of Financial Model

For revenue, revenues from passenger transport, freight transport, PSO subsidy, non-operation revenue and other revenues were calculated. For operation cost, labor, administrative, financial cost, other, fuel and maintenance, depreciation, and power and fuel cost were calculated.

4. FINANCIAL IMPLICATION OF THE PROPOSED RESTRUCTURING

The main impetus of the paper is to forecast financial status of KNR under the current organizational structure and proposed restructured organization. By comparing the two outcomes, financial impact of proposed restructuring can be demonstrated. In calculating financial implication, no expenditure for infrastructure was considered. It was assumed that infrastructure investments are implemented as planned in the National Transportation Plan by the Korean government. Depreciation and maintenance cost, however, are included as

transportation cost. More specifically, after the restructuring, track usage charge that operator will pay to the Corporation is assumed to be equal to be the sum of maintenance and depreciation.

Privatization was assumed to take place in June 2003. To forecast financial status under the current structure, no special performance improvement was assumed, while for privatization, improvement on cost and revenue was assumed comparable to other nations' experience. Net impact of national financial status was calculated based on the fact that the government is the owner for the both case. Transition cost and revenue were calculated and discounted to give present value.

Impact on the national financial balance of restructuring is very important issue. It can be analyzed considering financial balance of the private company and subsidy, and tax income for national financial account. By keeping current structure, until 2020, total of 8531 billion Won of financial deficit was forecasted including deficit of 3514 billion Won and subsidy of 9606 billion Won. For private company, total of 5047 billion Won of financial income to government was forecasted, including 4328 billion Won from operation, corporate and value added tax of 3129 billion Won. Table 5 shows impact of both alternatives on national financial balance.

Table 5. Impact on National Financial Balance

(Unit: Billion Won, Current Price (NPV) Cumulative of 2003-2020)

	Item	KNR (A)	Privatization (B)	Balance (B-A)
Private Company (a)	○ Operation Balance	6,092	4,328	-1764
	○ Operation Subsidy	-9,606	-2,410	7,196
National Account (b)	○ Tax	-	3,129	3,129
	- Corporate Tax	-	548	548
	- VAT	-	2,581	2,581
Net Impact of National Balance (a+b)		-3,514	5,047	8,561

Transition from government agency to private company cannot be done without cost. It cannot be achieved without some transition cost involved. Severance cost for the current government employees of KNR should be paid from government account. Amount of 389 billion Won should be paid from the general account. In theory, however, this severance cost is not net cost to government, because it involves paying same established amount in advance. Also the private company can assume severance cost of the KNR employees. Current KNR's debt and debt related to the construction of the high-speed rail should be paid from public fund. KNR's debt is about 1500 billion Won, and infrastructure related cost of high-speed rail is about 3800 billion Won. Rolling stock related debt of the high-speed rail (KTX) will be taken over by the operation company. Table 6 shows impact of both alternatives on national financial balance when transition costs were considered. One can see that even with transition cost considered, financial impact of privatization is very positive.

Table 6. Impact on National Financial Balance with Transition Cost
(Unit: Billion Won, Current Price (NPV) Cumulative of 2003-2020)

	Item	KNR (A)	Privatization (B)	Balance (B-A)
Private Company (a)	○ Operation Balance	6,092	4,328	-1764
	○ Operation Subsidy	-9,606	-2,410	7,196
National Account (b)	○ Tax	-	3,129	3,129
	- Corporate Tax	-	548	548
	- VAT	-	2,581	2,581
	○ Severance Cost		-389	-389
Net Impact of National Balance (a+b)		-3,514	4,658	8,172

5. CONCLUDING REMARKS

Current financial status of the government-owned Korean National Railway (KNR) was introduced, along with rationale to restructure the organization. Two previous unsuccessful

attempts to make the KNR a corporation were introduced. Currently proposed restructuring proposal that includes the transformation of KNR into private operation company by 2002 was presented. Provision of rail related infrastructure remains in the public sector. The so-called 'Rail Construction Corporation' will take the responsibility of construction and maintenance of infrastructure. Financial impact of the proposed restructuring of Korean National Railway (KNR) was analyzed with financial models.

No financial models are complete without some restricting assumptions on the operation of organization and future environment. Various assumptions employed in the application of battery of financial models, which were developed in Excel spreadsheet, were presented. Model structure was explained. Under the current structure of government agency, the size of debt will increase dramatically with the commissioning of the high-speed rail (KTX). Commissioning of KTX will contribute to enhance competitiveness of rail, while it will also transfer large sum of debt to KNR. Under this situation, government will have hard time to secure fund to expand rail infrastructure further. Finally financial implication of the proposed privatization was analyzed in very positive term, at least from the point of government financial balance. Some may argue that those numbers did not indicate 'true' benefit of privatization, and they have point. But to the government that suffers from financial drain for large amount annual operation subsidy, it is a sure welcome.

Improvement in financial status is just one benefit of privatization. There will be other 'true' benefits to users through increased level of rail service and reduced social transport cost by reduction of congestion on highways, which will be result from increased share of rail transport.

Granted that some are concerned about negative impacts of privatization, such as discontinuation of unprofitable service, safety concerns, transport policy issues, and equity issues. Some of these factors are very hard to quantify or analyze before the actual implementation. Comprehensive study to identify these impacts was done in 2000 (MOCT, 2000). Decision to privatize KNR was confirmed in the study.

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