DIVISION AND PRIVATIZATION
OF THE JAPANESE NATIONAL RAILWAYS -- THE IMPACT
UPON THE RE-VITALIZATION OF JAPANESE RAILROADS

by

Shigeaki Ono

Master of Engineering in Information Engineering
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Submitted to the Center for Transportation Studies on
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MASTER OF SCIENCE
in Transportation

at the

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February 1994

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Signature of the author

Center for Transportation Studies
January 7, 1994

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Professor of Civil and Environmental Engineering
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Accepted by

Joseph Sussman
Chairman, Department Committee on Graduate Studies
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ABSTRACT

This thesis is aimed at analyzing how and why the division and privatization
of the Japanese National Railways (JNR), or the JNR Reform, re-vitalized
JNR's railroad enterprise, which had suffered from many problems,
including huge financial losses, inefficiency, and service issues.

In Chapter 1, the author describes about the JNR problems, necessity of the
division and privatization, details of the policies taken as part of the JNR
Reform, and the implementation of the reform.

Then, in Chapter 2, the author introduces major post-reform topics, such as
the implementation of the JNR Reform and new government policies on
capital investment in railroad infrastructure.

Next, the effects of the reform, such as financial performance, service level,
management, and labor-management relationships, are discussed in Chapter
3. It is shown that the division and privatization of the JNR Reform brought
about management and labor incentives and resulted in improved
performance.

In Chapter 4, the author discusses general lessons of the reform.

In Chapter 5, based on the evaluation of the policies implemented during and
after the JNR Reform, the author draws suggestions for other foreign
railroads considering privatization and the new private railroad companies
which the JNR Reform created (the JR-Companies).

Thesis Supervisor: Joseph Sussman

Title: JR East Professor
       Professor of Civil and Environmental Engineering
Acknowledgments

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The author thanks greatly his wife, Miwako, who always supported him mentally with her ideas.

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1. What Was the JNR Reform?

1.1 Outline of the JNR Reform

On April 1, 1987, the Japanese National Railways (JNR), which operated Japan's nationwide railroad network since 1949, was divided and privatized into regional six passenger companies, one nationwide freight company, and several other companies and corporations. This organizational reform was aimed at solving JNR's financial and managerial difficulties and ensuring national railroad service.

The purpose of this thesis is to evaluate the effect of the reform (the JNR Reform) by reviewing the performance of the privatized companies (the JR Companies) and derive some lessons both for the future of the JR Companies and other railroads thinking about privatization.

JNR began to take a loss in 1964 and accumulated huge long-term debt, which amounted to 14.4 trillion yen (137 billion U.S. dollars if a dollar equals to 105 yen), five times as large as its annual revenue, in 1980. It was known that the JNR had many problems in labor productivity, management, labor-management relationships, and the ways of political controls. In the 1980's, the national government concluded that JNR's organization -- a nationwide public corporation -- was the fundamental reason for JNR's managerial failure, and enforced the JNR Reform.

The fundamental elements of the JNR Reform are as follows:
(1) Organizational Reform

JNR's organization was essentially the cause of its managerial failure. Being a public corporation resulted in a lack of independence and responsibility. A nationwide, single organization was too big to deal with local needs adequately.

The JNR Reform was to divide and privatize JNR into one freight and six passenger companies.

(2) Financial Restructuring

The new private companies were planned to ensure sound financial conditions for the companies under efficient management. 60 percent of JNR's liabilities was separated from railroad operation.

(3) Change of Labor

The size of work force was cut to achieve high productivity as in private railroads.

(4) Reaffirmation of Efficiency and Sound Management in Railroads

JNR could not achieve efficiency, which was one of its goals, due to its managerial failure and political control. An organization reform was called for to eliminate those causes.
(5) Established Idea of Railroads' Role

JNR had to continue services for which other modes were more suitable. After the Reform, the railroad was expected to use the capability of railroad appropriately.

(6) Improved Management

Through the organizational reform, the new companies were expected to improve management, such as cost control, adequate service, and labor-management relationship.

(7) Improved Service

The new companies were expected to improve service so that railroads would use the capability of railroad appropriately.

1.2 Background (1) -- Brief History of the JNR Problem

The first railroad in Japan was opened in 1872 by the government. Subsequently, national and private railroads formed a nationwide network. In 1906 most lines except urban and local lines were nationalized; the Japanese military and industry wanted a single operator for efficient operation.

In 1949, the Japanese National Railways, a nationwide public corporation, was established to give some freedom and independence for management of the railroad which the Ministry of Railways had operated. It was also aimed at forbidding strikes in exchange for the guarantee of employment as government officials. As the JNR Act
said, the national goals in establishing this public corporation were to operate efficiently and to promote public welfare. However, the two goals were incompatible with each other after JNR began to lose its monopoly power in competition with automobiles and airplanes; the public welfare goals, such as national economical development and equity were emphasized more than efficiency.

In the late 1950's, JNR had recovered from overuse and damage during and after World War Two, and its financial condition was good. However, as the Japanese economy developed rapidly, road and air transportation expanded their shares, as shown in Figures 1-1 and 1-2, due to several changes in the transportation market:

(1) The income level went up, so people could afford to buy automobiles and use airplanes.

(2) Highways and airports were constructed after the war.

(3) The freight transportation market changed greatly. First, heavy industries emerged and were located by new modern ports. Japan has to rely on imported raw materials, and such locations made exporting products easier. Second, coal mining declined. Hence, domestic shipping maintained its share in freight transportation, but less raw materials were to be carried by land.

Despite the worldwide reputation and the commercial success of the bullet train, or Shinkansen, which began to operate in 1964, JNR became unprofitable in the same year. JNR's passenger and freight traffic also began to decrease in the 1970's, as Figures 1-3 and 1-4
Figure 1-1  RR Share in Passenger-km

Figure 1-2 RR Share in Ton-km

Figure 1-3  Change of Passenger Traffic Volume


Figure 1-4  Change of Freight Traffic Volume

Source: Ministry of Transport, Suuji de Miru Tetsudou 1992, 1992, p. 15
show; in addition to the changes in the transportation market, strikes, which were illegal, sabotage, and fare increases were part of the cause of the traffic decrease.

An underlying problem in the failure of those restructuring plans was the political control imposed upon JNR in the name of public welfare. For example, JNR could abolish few rural lines; it even built some new rural lines. The goals of having rural lines were not only to provide public transportation to local communities but also to contribute to regional development, which is an important policy objective in Japan. In fact, however, politicians were understandably concerned about local interests of the region from which they were elected. Another example is that the Diet suppressed and often rejected fare increases as part of price suppression policies for public service; JNR's fare was set by the JNR Fare Act until 1977. Consequently JNR could not increase its revenue as it expected.

JNR's low labor productivity was another cause of its deficit. In FY1980\(^1\), the average revenue per employee was 10.3 million and 5.3 million yen for private railroads and JNR respectively\(^2\). The government pointed out that JNR's labor productivity was lower than that of private railroads (The Prime Minister's Office, 1984, p. 111). Take an example of train drivers. In a private railroad, the average daily work hours exceeded the standard which the labor agreement had set to 6 hours and 34 minutes in all of the railroad's ten depots;

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\(^1\) In this thesis, FY means fiscal year. Japanese fiscal year begins on April 1. For example, FY1993 begins on April 1, 1993 and ends on March 31, 1994.

the drivers were paid allowances for extra work. JNR's average of works hours was 6 hours and 16 minutes, while the standard was 6 hours and 40 minutes. The difference of 24 minutes per day per employee was a waste of personnel expense. Such a waste was due to JNR's labor agreement, which could not be changed because JNR's labor unions were so strong.

Since 1969, four restructuring plans of JNR were planned and failed successively.

(1) The first plan (FY1969) was to eliminate the deficit by FY1978 by reducing 60,000 employees. The plan was stopped in FY1972 because revenue was below expectations because of low traffic growth.

(2) The second plan (FY1973) was to reduce 110,000 employees by FY1982. Due to the Oil Shock, revenue and increase differed much from expectations, and the plan was given up in 1974.

(3) The third plan (FY1976) included the deregulation of fare. JNR raised its fare by about 50 percent, but JNR lost traffic. In addition, the fare increase was behind schedule. Thus, the plan failed.

(4) The fourth plan (FY1979) included the abandonment of rural lines, reduction of the labor force, and the government's expense for JNR's liabilities. It was replaced by the division and privatization of JNR, which was proposed in 1982.
The change of JNR's long-term debt and annual loss is shown in Table 1-1 and Figure 1-5. JNR's loss was increasing exponentially; its long-term debt amounted to 14.4 trillion yen in 1980.

JNR's deterioration in management and finance was perceivable to passengers. JNR's fare became much higher than private railroads, as shown in Figure 1-6; it raised passenger fares 11 times during FY1974 - FY1986. Until the mid 1970's, labor unions repeated illegal strikes; JNR's poor labor-management relationships were well-known. In 1982, JNR's deteriorated work rule and morale were reported sensationally by mass media and caused public distrust of JNR's management and labor. Still JNR had an important role in Japanese passenger transportation; in FY1980, its share in passenger-km amounted to 24.5 percent, while JNR carried only 8.3 percent of freight traffic in ton-km.

1.3 Background (2) -- Existing Private Railroads

Since 1883, when the first private railroad began service, private railroads formed a nationwide network with the national railroad. In 1906, the nationwide network was nationalized, and only local service was left to private operators. Nonetheless, as urbanization began in the 1910's, private railroads in urban areas began to develop as urban/suburban rapid transit.

Private railroads were active to engage in related business such as retail and real estate. Since the 1950's, related business
Table 1-1  Financial Results of JNR  
(unit: billion yen)

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<td>634.1</td>
<td>793.9</td>
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<td>1,820.9</td>
<td>2,963.7</td>
<td>3,552.8</td>
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<td>511.4</td>
<td>632.6</td>
<td>757.1</td>
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<td>2,744.4</td>
<td>3,964.3</td>
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<td>(of which interest expenses)</td>
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<td>[64.6]</td>
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<td>0.7</td>
<td>3.2</td>
<td>8.8</td>
<td>(7.8)</td>
<td>172.3</td>
<td>339.1</td>
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<td>Net profit (or loss)</td>
<td>57.4</td>
<td>(30.0)</td>
<td>(123.0)</td>
<td>(60.1)</td>
<td>(151.7)</td>
<td>(914.7)</td>
<td>(1,008.4)</td>
<td>(1,847.8)</td>
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<td>Profit reserve (or deficit carried forward)</td>
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<td>129.5</td>
<td>6.5</td>
<td>(53.6)</td>
<td>(565.4)</td>
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<td>831.3</td>
<td>1,110.2</td>
<td>1,368.9</td>
<td>2,603.7</td>
<td>6,779.3</td>
<td>14,399.2</td>
<td>23,561.0</td>
<td>25,065.2</td>
</tr>
</tbody>
</table>

Note: The fiscal year 1964 ended in red ink for the first time and a carry-over deficit (53.6 billion) was incurred in 1966.

Source: Tanahashi, 1992; Nihon Kokuyu Tetsudou Kansa linkai, 1986, pp. 200-201
Figure 1-5  JNR Annual Deficit and Long-term Debt

Annual Revenues, Expenses
Trillion Yen

Deficit Carried Forward
Long-term Debt

Accumulated Debt
Trillion Yen

Annual Expenses
Annual Revenues


Source: JNR (Quoted from Kusano, 1989, pp. 20-21)
Figure 1-6  Comparison of Fare Rates

Date: February 1987

Source: Sekiguchi, 1987, p. 69
developed quickly, due to Japan's economic development and urbanization.

Existing private railroads have an important role in Japanese passenger transportation. For instance, they carried 13 percent of the entire Japanese passenger traffic and 39 percent of the entire railroad passenger-km in 1990. In large urban areas, such as Tokyo and Osaka, their fare was lower than JNR's; still they are profitable. In rural areas, automobiles competed strongly, but many lines have survived; few of them receive subsidies for operating losses.

Many private railroads earn as much or more from their related business than from their railroad operation. Related businesses of private railroads were considered desirable, for they can take advantage of the positive externality of railroad service. For example, most of their department stores are located near their own stations, so they attract railroad passengers to their stores; they develop land along their lines, and they can make a large profit if they could buy the land before the construction of the lines.

1.4 The Process to the Proposal of the JNR Reform

In 1981, Rinji Gyousei Chousakai (Administrative Reform Meeting) was established to solve the government's deficit and raise administrative efficiency. The restructuring of JNR was also discussed there, for the nation would have to pay JNR's huge debt some day. In July 1982, the meeting issued reports which proposed

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3 See Rinji Gyousei Chousakai, Rinji Gyousei Chousakai Dai 4 Bukai Houkoku, 1982; Rinji Gyousei Chousakai, Rinji Gyousei Chousakai Kihon Toushin, 1982
to divide and privatize JNR within five years. The meeting listed four causes of JNR's financial failure, some of which have been already discussed in this thesis:

**1) Inadequate Response to the Change of the Transportation Market**

JNR had been losing its share in the transportation market in the competition with other modes (See Section 1.2). JNR should have specialized in the areas which were suitable for railroads, such as intercity passenger transportation, urban transit, and unit/intermodal freight trains. It should have retreated from the areas where railroads had lost their advantage, such as rural lines, and rationalize freight service. However, the goal of public interests was heavily emphasized, and JNR was very slow in adopting those countermeasures.

**2) Irresponsible Management**

Due to several causes, JNR failed to take advantage of being a corporation. First, the Diet and the government intervened in JNR's management excessively. Second, JNR was too large to control. Third, JNR also lacked the sense of being a corporation and the responsibility for management.

Consequently, huge unprofitable capital investment was made despite the financial crisis. Also fares were raised repeatedly to increase income, without sufficient improvements of productivity.
(3) Unstable Labor-Management Relationships

JNR's labor-management relationships were unstable and work discipline had deteriorated. Low labor productivity, which was the consequence, was a major cause of JNR's deficit.

(4) Other Features of JNR's Abnormal Financial Circumstance

(a) High Ratio of Personnel Expenses to Operating Revenue -- 82 percent in FY1980 (private railroads' ratio was 45 percent then); the personnel expenses and the operating revenue were 2.2 and 2.67 trillion respectively.

(b) The Burden of JNR's Pension and Retirement Allowance -- JNR's expense amounted to 0.7 trillion yen (32 percent to the total personnel expenses) in FY1980 and was increasing.

(c) Huge and Swelling Interest Payments for the Long-Term Liabilities -- 0.48 trillion yen in FY1980, anticipated to increase to 0.85 trillion in FY1982

To develop and execute the measures for reforming JNR, the JNR Reform Commission was inaugurated in the next year, as the Administrative Reform Meeting proposed in the July 1982 report. JNR's executives were split -- pro and con. The group which opposed "division and privatization" once had the control of JNR; in January 1985 it published its own reform proposal to reorganize it into a nationwide private company. The ruling group was not cooperative with the commission. In June 1985 Prime Minister Yasuhiro Nakasone had JNR's president resign along with other executives who
were against the commission. The new president and the supporters' group cooperated with the commission, and on July 26, 1985, the commission submitted the final proposal of the JNR Reform, or "Opinions in JNR Restructuring," which described a specific plan to establish new organizations and to deal with surplus employees and long-term debt.

1.5 The Objectives of the JNR Reform

The JNR Reform was aimed at realizing efficient operation and establishing sound management of JNR enterprises to have the railroad use its own capability appropriately.

First, the Reform was aimed at establishing sound management. "Sound management" implies many things such as financial condition and labor-management relationship. The Reform Commission claimed that JNR's organization itself -- a nationwide public corporation -- was the cause of its management failure, as this thesis describes later. The commission then proposed a substantial organizational change -- regionally divided, private firms. When operated efficiently, the railroad enterprises were considered to be profitable businesses. The "Opinions" proposal stated the following:

"Under efficient management, the railroad enterprises can make a profit if the demand is large enough, as in Japanese private railroads. While the average traffic density in European railroads is about 5,000 passengers per day, JNR has a considerably high density of about 25,000. Accordingly, we consider that JNR enterprises could be rehabilitated under an immediate substantial reform."
Second, the JNR Reform was also aimed at rescuing the national budget though efficient operation. The discussion of the JNR Reform initiated by the Administrative Reform Meeting to cut government expenses and reduce the government's domestic debt. The very beginning of the "Opinions" proposal is as follows:

"This Commission was founded for investigating how to establish efficient operation of JNR enterprises --- "

Efficiency did not only imply lowering costs by raising labor productivity and so on; it also included managerial aspects such as slashing unprofitable service and poorly conceived capital investment.

Third, the ultimate objective of the JNR Reform was to have the railroad use its own capability properly. The commission forecast that the market share of the railroad would keep declining, as in Table 1-2, but asserted that the railroad had the advantage over other modes in several market areas:

(1) Medium-Distance (300-750km) Intercity Passenger Transportation, Mainly by Shinkansen (Figure 1-7);

(2) Urban/Suburban Transit;

(3) Bulk Freight (Oil, Cement, etc.) and Long-Distance TOFC.

On the other hand, the commission encouraged the contraction in rural service and commodity-freight services, in which the railroad had no advantage.
<table>
<thead>
<tr>
<th></th>
<th>ACTUAL</th>
<th></th>
<th></th>
<th>FORECAST</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share</td>
<td>Share</td>
<td>Share</td>
<td>Share</td>
<td>Share</td>
<td>Share</td>
</tr>
<tr>
<td>Automobiles</td>
<td>360,868</td>
<td>464,162</td>
<td>554,737</td>
<td>609,800</td>
<td>50.8</td>
<td>56.5</td>
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<td>Air</td>
<td>19,148</td>
<td>30,627</td>
<td>43,557</td>
<td>54,307</td>
<td>2.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Ships</td>
<td>6,895</td>
<td>5,722</td>
<td>5,303</td>
<td>4,727</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Railroads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shinkansen</td>
<td>53,318</td>
<td>50,440</td>
<td>49,671</td>
<td>55,020</td>
<td>7.5</td>
<td>6.1</td>
</tr>
<tr>
<td>Other JNR</td>
<td>161,971</td>
<td>142,446</td>
<td>135,443</td>
<td>125,269</td>
<td>22.8</td>
<td>17.4</td>
</tr>
<tr>
<td>Total JNR</td>
<td>215,289</td>
<td>192,906</td>
<td>185,114</td>
<td>180,289</td>
<td>30.3</td>
<td>23.5</td>
</tr>
<tr>
<td>Private R.R.</td>
<td>108,511</td>
<td>128,546</td>
<td>132,719</td>
<td>128,565</td>
<td>15.3</td>
<td>15.6</td>
</tr>
<tr>
<td>Total R.R.</td>
<td>323,800</td>
<td>321,452</td>
<td>317,833</td>
<td>308,854</td>
<td>45.6</td>
<td>39.1</td>
</tr>
<tr>
<td>Total Traffic</td>
<td>710,711</td>
<td>821,963</td>
<td>921,430</td>
<td>977,688</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

unit of traffic: million passenger-km
unit of share: percent

Source: Kokutetsu Saiken Kanri Iinkai, 1985
Figure 1-7 Share by Distance

Source: Kokutetsu Saiken Kanri Iinkai, 1985
The commission argued that sound management would enable the railroad to accomplish its role in the future. Current poor management was considered a threat to this goal; the "Opinions" proposal asserted as follows:

"It is not possible to accumulate huge debt infinitely; some day financial crisis will come, and there may be difficulty even in continuing everyday operation."

"In addition, as there is no clear perspective on the future of JNR, its employees can not find any future hopes, and there is a decline of workers' morale, as current deteriorated work rules imply. --- If such situation is not changed, JNR will have a difficulty in maintaining its function in the near future ---."

1.6 Why Division and Privatization?

1.6.1 Necessity to Reorganize the Nationwide Public Corporation

The "Opinions" proposal discussed that JNR's organization -- a nationwide public corporation -- was the cause of its managerial failure, and hence it should be divided and privatized. The "Opinions" proposal said, "The primary cause of JNR's managerial failure is found in JNR's organization itself --- We consider that the revival of the JNR's businesses can be achieved only with substantially reforming the organization of the nationwide public corporation."
"JNR had been almost profitable with its monopolistic power. However, during Japan's high economic growth since the mid 1950's, the industrial structure changed, and the national income rose. Hence, competition with automobiles and aircraft got more severe, and JNR's strength over other modes was lost rapidly both in passenger and freight."

"Despite such changes of circumstances around railroads, JNR could not respond to them by modifying management or improving productivity adequately. This is the largest cause for JNR's failure."

"We concluded that the inadequate response to the market is due to the present organization, nationwide public corporation with nationwide mammoth organization."

According to the "Opinions," the public corporation had four inherent problems:

(1) **External Intervention**: The public corporation was subject to strong governmental control in budget, personnel affairs of executives, fares, major investments, and so on. Due to the citizens' excessive expectations for railroads, such external intervention often led to bad decisions outside free control of the JNR management. For example, fare increases were often postponed; very unprofitable lines were constructed.

(2) **Lacking Independence of Management and Its Consequence** -- **Unclear Responsibility for Management**: Top executives in JNR had limited power of decision. Their responsibility for management was
unclear. Hence, they lost the motivation for better management and failed to do what they can do. Consequently, JNR had a poor service level and low productivity compared to private railroads.

(3) Abnormal Labor-Management Relationships: JNR could not have normal labor-management negotiations because JNR's management did not have enough authority. For instance, JNR's wage was actually determined by other governmental organizations which dealt with the wages of governmental workers, while private companies could offer wage increase reflecting the companies' performance. At the same time, labor unions lacked the sense of productivity and cost; JNR would never go bankrupt, and JNR's management was affected by external intervention.

(4) Limitation on Related Business: JNR's related business was very limited legally due to its mission of public welfare. It could not take advantage of externalities related to railroad service, although private railroads did so successfully in retail, real estate, and others.

As for being a single nationwide organization, the problems are as follows:

(1) Exceeding the Limit of Manageable Scale: JNR was a mammoth organization with many employees and exceeded the limit of manageable scale;

(2) Standardized Management: The nationwide organization carried out standardized management and did not have enough consideration to local needs;
(3) **Irrational Dependence:** In a nationwide organization, regions and departments had unclear financial responsibility, were dependent on each other, and became inefficient;

(4) **Lack of the Sense of Competition:** As JNR had no similar enterprises which had nationwide railroad networks, it could not compare itself with similar companies. The privatized companies would feel competitive because they would be compared with each other, as electric power companies and existing private railroads were.

Referring to successful Japanese private railroads repeatedly, "Opinions" proposed to change the public corporation and the nationwide single organization at the same time.

1.6.2 **Division and Privatization will not Cause Any Disadvantages for Customers**

(1) **Maintaining Rural Lines**

One public concern was that the division and privatization would cause the abolishment of unprofitable rural lines. The "Opinions" proposal said that the division and privatization would not eliminate but rather activate rural lines which the privatized companies would take over.

"Some people argue that the division and privatization result in the abandonment of unprofitable lines. Some also say that few lines
will remain in the areas, such as Hokkaido, which have many rural lines, if the present organization is not continued.

However, as we stated before, it is clear that the current situation will get even worse through symptomatic treatments based on the present institutional framework, which was the fundamental cause of JNR's crisis. So long as the operation is standardized under a public corporation, it is impossible to expect active management based on specific affairs in the regions. Hence, most railroads may be abolished in some regions. If we perform a substantial reform of division and privatization, vitalized management which is close to the regions can be accomplished, and railroads can eventually be activated and survive as a basic transportation for residents."

(2) Eliminating Inconveniences Caused by Division

As for potential inconveniences caused by the division, "Opinions" listed eight major potential problems:

(a) Potential discontinuation of present long distance fare discounts
(b) Potential discontinuation of operations between the companies
(c) Adjustment of the train schedule among the companies
(d) Distribution of fares of passengers to the companies
(e) Potential decline in the efficiency of crews
(f) Special free-ride tickets whose areas cover more than one company
(g) Potential lack of the ability to catch up the train schedule
(h) Safety problems due to potential differences of operational rules among companies
The commission said that the eight problems would not occur under adequate agreements among the companies, for the customers' convenience should result in the companies' benefit.

(3) Safety

In the discussion of the JNR Reform, government officials said that safety will be maintained despite the labor cut, for private railroads were safe, while maintaining high labor productivity.

1.7 The Reform Plan

1.7.1 Key Issues

The reform plan in the "Opinions" proposal, which was issued in July 1985, consisted of the following key issues:

(a) Division and Privatization of JNR;

The "Opinions" proposal stated that JNR should be divided into six regional private passenger companies and one nationwide private freight company.

(b) Labor Cuts

To attain high labor productivity as in existing private railroads, the "Opinions" proposal requested extensive labor cuts;

(c) Financial Plans

The "Opinions" proposal estimated that the new companies could bear nearly 40 percent of "JNR's long-term liabilities," (which will be
defined in Section 1.7.4,) by becoming as efficient as existing private railroads. The government was expected to take steps to dispose of the remaining liabilities.

1.7.2 Organization

The proposed organizational change is shown in Figure 1-8. The "Opinions" proposal stated that:

(1) JNR's passenger service should be divided into six operators regionally, later named as follows (Figure 1-9);

**Three companies in Honshu Island** (main island)
--- East Japan Railway Company (JR East)
--- Central Japan Railway Company (JR Central)
--- West Japan Railway Company (JR West)

**Three companies in other three islands** (so-called Three Island Companies)
--- Hokkaido Railway Company (JR Hokkaido)
--- Shikoku Railway Company (JR Shikoku)
--- Kyushu Railway Company (JR Kyushu)

Their borders were decided so that the traffic that would cross the borders would be minimal, considering current train operation and the borders of JNR's branch offices. The three companies in Honshu Island were expected to operate the Shinkansen lines.

(2) JNR's freight service should be separated from the passenger companies and be a nationwide company, later named Japan Freight
Figure 1-8 New Form of Administrations Recommended by the JNR Reform Commission

Japanese National Railways

Transfer according to JNR restructuring

JNR Settlement Corporation

- Management of long-term liabilities
- Management and disposal of assets
- Measures for surplus personnel

Passenger Railway Companies

- Shinkansen Holding Corporation

- Japan Freight Railway Company

- Railway Telecommunication Co., Ltd.

- Railway Information Systems Co., Ltd.

- Railway Technical Research Institute

Figure 1-9  Division of Railway Lines and Regions

Source: East Japan Railway Company, Restructuring of the Japanese National Railways, 1988; Notes by the Author
Railway Company (JR Freight), for the railroad carried mainly long-distance freight. The company should have only trackage rights and pay avoidable costs for using tracks.  

(3) JNR's telecommunication and seat reservation system should be taken over by other new companies, for they served all the railroad companies. Their stocks should be shared by the railroad companies. 

(4) JNR's research organizations, Railway Technical Research Institute and Railway Labor Science Research Institute should be separated from the railroad operators and transformed into a non-profit institute, the Railway Technical Research Institute. Its cost would be shared by the railroad companies. 

(5) As the companies' long-term liabilities would be equal to the book values of their assets (Section 1.7.4), the profit (net income) of the passenger companies would differ greatly without any other financial countermeasures. Hence, the following countermeasures were proposed to establish financial viability of each company. 

First, the profit would differ greatly among the three companies which would operate Shinkansen, for the book value of each line did not reflect its revenue at all. The oldest Shinkansen line had been built in the busiest corridor, hence it had the largest revenue, while its book value was the smallest. Assigning debt based on present or forecasted financial condition as a financial countermeasure was

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4 The "Opinions" left the rules among the freight and passenger companies to the government's investigation. That rule of avoidable cost was proposed in December 1985.
considered risky because the actual revenue of the Shinkansen lines might be different from the forecast. For this purpose, the Shinkansen Holding Corporation would be established to take over Shinkansen's infrastructure and rent it to the three companies operating Shinkansen. The three companies would pay the leasing fee for using the infrastructure based on the Shinkansen traffic of each company. It was forecast that the three companies would make profits under this system, as indicated in Section 1.7.4.

Second, the Three Island Companies would take losses, for they would have few profitable lines and many rural lines. A financial countermeasure would be taken, as described in the next section.

(6) The new organizations would take over necessary assets and employees, and part of the liabilities from JNR. JNR would be transformed into the JNR Settlement Corporation (JNRSC), which would take over the remaining assets, employees, and liabilities. It would introduce new jobs ex-JNR workers who would lose their jobs until 1990 (Section 1.7.3); it would also return JNR's long-term liabilities, which the JR Companies would not take over, partly by selling JNR's land (which the JR Companies would not succeed) and partly by selling the JR Companies' stock.

(7) The nation should establish the companies. Their stocks would belong to JNRSC; when the new companies established their financial viability, the stocks would be sold to the public so that the companies would be purely private companies.
(8) The companies should have the independence and responsibility of the management as close to those of existing private railroads as possible; additional national regulations should be minimal. (Later the regulations were determined as in Table 1-3.) In particular, the freedom for related businesses should be openly permitted.

These additional national regulations would exist because the government would own the stocks. That is why listing was considered the step toward purely private companies. Nonetheless, the companies would be far more independent and responsible than JNR was; in addition to financial responsibilities, they would have no Diet interventions in their budget plans and fares.

(9) Employees should have basic labor rights, including legal strikes, as do the employees of existing private railroads.

(10) JNR's buses, ferry boats and related business should be divided and operated by the new companies.

1.7.3 Labor Force

The JNR Reform Commission proposed the labor force of the JR Companies to be 215,000, which is broken down as follows:

(a) Considering JNR's long-distance services, the passenger railroads' operation would need 158,000 workers to achieve the same level of productivity as existing private railroads;

(b) JNR's bus operation (which the passenger companies would take over) and the related business would need 10,000 employees;
<table>
<thead>
<tr>
<th>ITEM</th>
<th><strong>JNR</strong></th>
<th><strong>JR</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees' Position</td>
<td>Quasi-public officials</td>
<td>Private</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(But there is a regulation on bribery.)</td>
</tr>
<tr>
<td>Appointment/Discharge of the top management</td>
<td>General Manager: by the Cabinet</td>
<td>Same as other private enterprises</td>
</tr>
<tr>
<td></td>
<td>Other managers: by the General Manager (and subject to approval by the Minister of Transportation)</td>
<td>(Appointment or discharge of the Representative Director and Auditors are subject to authorization of the Minister of Transportation.)</td>
</tr>
<tr>
<td></td>
<td>Auditors: by the Minister of Transportation</td>
<td></td>
</tr>
<tr>
<td>Scope of Business</td>
<td>Designated by law</td>
<td>Designated by law</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(But the authorization of the Minister of Transportation is necessary for related business. The approval will be granted unless there is a big problem. There are Articles paying due regard for medium- and small-sized enterprises.)</td>
</tr>
<tr>
<td>Investment Restrictions</td>
<td>The scope is fixed by law. (regulated by the budget)</td>
<td>No restrictions</td>
</tr>
<tr>
<td>Fares and Charges</td>
<td>Resolution by the National Diet</td>
<td>Authorization of the Minister of Transportation</td>
</tr>
<tr>
<td>Disposal of properties</td>
<td>Loan, transfer and exchange of the operating lines are prohibited in principle. An authorization of the Minister of Transportation is needed for important assets.</td>
<td>An authorization of the Minister of Transportation is needed for important assets.</td>
</tr>
<tr>
<td>Budgetary Proceedings</td>
<td>Resolution by the National Diet</td>
<td>Same as other private enterprises</td>
</tr>
<tr>
<td>Fund Planning</td>
<td>Designated by law</td>
<td>Same as other private enterprises</td>
</tr>
<tr>
<td>Borrowing</td>
<td>Authorization of the Minister of Transportation (long-term and short-term liabilities)</td>
<td>Authorization of the Minister of Transportation (long-term liabilities)</td>
</tr>
<tr>
<td>Bond Flotation</td>
<td>Authorization of the Minister of Transportation (railway bond)</td>
<td>Authorization of the Minister of Transportation (flotation of corporation bond)</td>
</tr>
<tr>
<td>Ptoeration of New Shares</td>
<td></td>
<td>Authorization of the Minister of Transportation</td>
</tr>
<tr>
<td>Disposal of Surplus</td>
<td>Legal obligations (making up for deficits, reserving or going to national (treasury)</td>
<td>Authorization of the Minister of Transportation</td>
</tr>
<tr>
<td>Labor Rights</td>
<td>Rights of organization and collective bargaining (Strikes are prohibited.)</td>
<td>Same as other private enterprises (rights to form union, bargain collectively and stage strikes)</td>
</tr>
<tr>
<td>Wage</td>
<td>Statutory principles of wage determination Total wage system</td>
<td>Same as other private enterprises (through labor-management negotiations)</td>
</tr>
</tbody>
</table>

Source: Courtesy of JR East
(c) The passenger companies should take over surplus workers amounting to two-tenths of their adequate railroad work force. This surplus labor force was considered necessary; first, it would take time beyond the 1987 deadline to achieve the high productivity of existing private railroads; second, the number of workers who needed re-employment should be reduced as much as possible. The new companies were to make use of this surplus labor force by expanding related business;

Eventually the passenger companies would have 200,000 employees;

(d) The freight company and Railway Technology Research Institute would hire 15,000 employees.

The commission estimated that JNR's work force would be 276,000 at the time of the reform through regular retirement. In addition, it proposed that JNR should have voluntary retirement of 20,000 employees before the reform; then there would be 41,000 who had to seek for new jobs. Those ex-JNR employees were to belong to the JNRSC for three years to seek for jobs; the corporation was supposed to find them jobs and educate them with new skills. After three years the remaining employees were to be laid off.

The commission required that the government should take strong countermeasures for the re-employment of JNR's voluntary retirees and ex-JNR workers. It called for the understanding and cooperation
of the companies which serve JNR, public sectors, and private companies in employing JNR workers.

1.7.4 Disposition of JNR's Long-term Liabilities

The JNR Reform commission proposed that part of JNR's long-term liabilities would be taken over by the new companies and the Shinkansen Holding Corporation so that taxpayer's expense for repaying JNR's long-term liabilities would be minimum, while each company would make minimal profits under efficient operation as other existing private railroads.

In addition to the long-term debt, JNR had commitments for pension expenses and infrastructure leasing fees. Some expenses were also considered necessary to accomplish the JNR Reform. The commission proposed how to dispose of these liabilities (hereafter referred to as "the JNR liabilities"), which was estimated to be 37.2 trillion yen on March 31, 1987.

The estimated breakdown of the JNR liabilities on March 31, 1987 is as follows:

(1) 25.4 trillion yen: JNR's long-term debt;

(2) 4.9 trillion yen: Part of the pension expenses for JNR employees (The JR Companies were expected to pay the rest);

(3) 4.6 trillion yen: JNR's commitment to the Railway Construction Corporation as leasing fees for facilities which the corporation built for JNR;
(4) 0.6 trillion: JNR's commitment for the bridge between Honshu and Shikoku built by the Honshu-Shikoku Bridge Authority;

(5) 0.9 trillion: Expense for the Management Stabilization Fund, which will be described later in this section;

(6) 0.9 trillion: Expense of measures for surplus workers in JNRSC.

The "Opinions" proposal described the disposal plan of the JNR liabilities as follows (Figure 1-10 shows the detail of the disposition with actual amounts):

(1) JR East, Central, West, and Freight would take over 5.9 trillion yen of long-term debt from JNR in total. In addition, JR East, Central, West, operating the Shinkansen lines, would pay the Shinkansen leasing fees, whose total amount was 8.5 trillion yen, to the Shinkansen Holding Corporation over thirty years. The leasing fee would be distributed to each company based upon the traffic of the Shinkansen line which belonged to the company and revised every two years;

(2) The Three Island Companies would not take over any of the JNR liability. They would be given a one-time subsidy, or the Management Stabilization Fund, to make up for their operating losses with the interest of the fund;

5 This rule was determined after the "Opinions" proposal by a relevant law, but the author of the thesis has written it there for simplification.
Figure 1-10 JNR Liabilities and Their Disposition

Total Long-term Liabilities (¥7.5)
- Remainder (¥16.7)
- Equivalent to assets of passenger railways companies in Honshu and the Japan Freight Railway Company (¥4.7)
- Equivalent to Shinkansen assets at replacement cost (¥1.9)
- For conventional lines in Honshu (¥1.2)
- For Toetsu Shinkansen facilities (¥1.8)
- For Seikan Undersea Tunnel facilities (¥1.5)
- Pension obligation (¥5.0)
- Fund for passenger railway companies in smaller islands (¥1.3)
- Cost of measures for surplus personnel (¥1.3)
- Liabilities of Honshu Shikoku Bridge Authority (¥0.7)

Organizations Accepting Liabilities (¥7.5)
- JNR Settlement Corporation (¥25.9)
- Shinkansen Holding Corporation (¥5.7)
- Lease payments for Shinkansen (¥8.5)

Repayment of Liabilities (¥7.5)
- Income from sale of real estate (¥7.7)
- Operating profit (¥6.0)
- New enterprises (¥5.9)
- From sale of stock (¥0.21)
- People's burden (¥14.6)


unit: trillion yen
(3) The Shinkansen Holding Corporation would take over 5.7 trillion yen of long-term debt from JNR, and also owe the JNRSC 2.8 trillion yen in total. The corporation's total liabilities would be equal to the total leasing fees, which JR East, Central, and West would pay over thirty years. After that, the Shinkansen infrastructure would be sold to the three companies;

(4) The remaining 23.1 trillion yen of the JNR liabilities would be disposed of by JNRSC. JNR had vast unused land, mainly generated from the abolishment of freight facilities. The corporation would sell the land and the JR Companies' stocks to pay for the liabilities. The national government should pay for the rest of the JNR liabilities.

The JR Companies and the Shinkansen Holding Corporation were expected to be responsible for 14.2 trillion yen in total, about 40 percent of the JNR liabilities, which were estimated to be 37.3 trillion yen.

The disposition of the JNR liability was decided upon either the book values or current prices of the assets which relevant organizations were expected to take over. (The detail is out of the scope of the thesis.) The "Opinions" proposal demonstrated that this disposition plan would duly have each company make a minimal profit, as the thesis describes in Section 1.7.5.

1.7.5 Forecast of the JR Companies' Financial Conditions

The JNR Reform Commission forecasted passenger revenue, personnel expenses, capital investment corresponding to the
replacement of old assets, material cost based on that of private railroads, and other expenses. Combining these costs with the long-term debt distribution plan, the Management Stabilization Fund plan, and the estimate of the Shinkansen leasing fee, the commission showed that the six passenger companies would make minimal profits in FY1987, as shown in Table 1-4.

The "Opinions" proposal left the outline of the freight company to further investigation by the government. In December 1985, the Ministry of Transport issued "the Outline of the Freight Company," which included the forecast of traffic, revenue, and expense of the freight company. The ministry also referred to the estimate of the freight company's labor force and proposed the agreements, such as trackage rights fee, which the freight company should have with the passenger companies.

1.7.6 Capital Investment in New Lines

The commission emphasized the initiative of the new companies in the decisions to invest in new lines. The "Opinions" proposal stated this as follows:

"Future construction of new lines should be decided by the passenger companies' management, as in private railroads. Adequate countermeasures like the existing systems in the construction of private railroads' lines should be taken if necessary."

The government subsidized part of private railroads' infrastructure costs, as the thesis will review in Section 2.5.2.
Table 1-4  JNR Reform Commission’s Prediction of
Financial Conditions of the JR-Companies in FY1987

<table>
<thead>
<tr>
<th></th>
<th>Hokkaido</th>
<th>East</th>
<th>Central</th>
<th>West</th>
<th>Shikoku</th>
<th>Kyushu</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income and Revenue</td>
<td></td>
<td></td>
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<tr>
<td>Operating Revenues</td>
<td>86.8</td>
<td>1,384.9</td>
<td>779.5</td>
<td>705.3</td>
<td>30.8</td>
<td>108.1</td>
<td>3,095.4</td>
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<tr>
<td>Operating Expenses</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Personnel Expenses</td>
<td>76.3</td>
<td>447.9</td>
<td>132.4</td>
<td>275.5</td>
<td>25.2</td>
<td>79.9</td>
<td>1,037.2</td>
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<td>Material Expenses</td>
<td>35.2</td>
<td>506.5</td>
<td>545.0</td>
<td>277.2</td>
<td>11.5</td>
<td>35.3</td>
<td>1,410.7</td>
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<tr>
<td>[of which Leasing Fee]</td>
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<td>[197.9]</td>
<td>[405.6]</td>
<td>[103.2]</td>
<td>N.A.</td>
<td>N.A.</td>
<td>[706.7]</td>
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<td>Other Expenses</td>
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<td>209.7</td>
<td>56.3</td>
<td>81.0</td>
<td>6.0</td>
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<td>733.7</td>
<td>633.7</td>
<td>42.7</td>
<td>133.7</td>
<td>2,834.9</td>
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<tr>
<td>Operating Profits</td>
<td>-40.2</td>
<td>220.8</td>
<td>45.8</td>
<td>71.6</td>
<td>-11.9</td>
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<td>260.5</td>
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<td>N.A.</td>
<td>N.A.</td>
<td>12.2</td>
<td>14.4</td>
<td>75.5</td>
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<td>64.5</td>
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<td>N.A.</td>
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<td>7.8</td>
<td>7.1</td>
<td>0.3</td>
<td>1.1</td>
<td>26.5</td>
</tr>
<tr>
<td>Net Profit</td>
<td>0.9</td>
<td>13.8</td>
<td>7.8</td>
<td>7.1</td>
<td>0.3</td>
<td>1.1</td>
<td>31.0</td>
</tr>
<tr>
<td>Liability and Assets</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assets (04/01/87)</td>
<td>270.0</td>
<td>3,310.0</td>
<td>560.0</td>
<td>1,370.0</td>
<td>90.0</td>
<td>310.0</td>
<td>5,910.0</td>
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<td>Stabilization Fund</td>
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<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>170.0</td>
<td>360.0</td>
<td>1,020.0</td>
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<td>Liability (04/01/87)</td>
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<td>350.0</td>
<td>1,130.0</td>
<td>N.A.</td>
<td>N.A.</td>
<td>4,350.0</td>
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<td>Capital (04/01/87)</td>
<td>14.9</td>
<td>275.0</td>
<td>155.6</td>
<td>140.1</td>
<td>5.6</td>
<td>21.3</td>
<td>612.5</td>
</tr>
</tbody>
</table>

unit: billion yen

Note 1: JR-Hokkaido would receive special subsidy for its ferry line only in FY1987.
Note 2: Shinkansen Leasing Fee is part of the material expenses.

Source: Kokutetsu Saiken Kanri Iinkai, 1985
"Regional residents strongly yearn for the construction of Seibi Shinkansen (see Section 2.4.1) as a mode of high-speed transportation in the 21st century; however, the present plan necessitates huge investment and would have serious influences on the new companies' financial conditions. Hence, the following issues should be considered to make a deliberate decision:

(1) Balance between forecasted demand and the amount of investment;

(2) Influence upon the financial condition of the conventional lines whose express passengers would move to the Shinkansen;

(3) Funding;

(4) Possibility for cost reduction by technical development."

1.8 How Was the JNR Reform Accomplished?

1.8.1 Passage of the JNR Reform Act

After the final proposal of the JNR Reform was submitted in 1985, some of JNR's labor unions, the Socialist Party, and the Communist Party were opposed to the reform. However, in 1986 the Liberal Democratic Party (LDP), at the time the ruling conservative party, overwhelmingly won the elections of both the Lower and Upper Houses. Hence, the bill of the JNR Reform passed on November 28, 1986 without serious opposition. As the JNR Reform was a major issue in the election, this result indicated public support for the reform. Other bills related to the reform were passed one after
another. The Railway Construction Act, which designated the lines to be built, was also abolished. The act, which was enacted in 1922, had been repeatedly criticized that it was the basis for building rural lines, which was a cause of JNR's financial crisis.

1.8.2 JNR’s Prediction of Financial Conditions of the JR Companies

Based on updated traffic data and more detailed information, JNR developed a revised forecast of the passenger and freight companies' five-year financial condition. Table 1-5 shows the forecast of the total passenger traffic. Table 1-6 shows the forecast of passenger and freight traffic and revenue in each company. JNR assumed an annual increase of revenue per passenger-km and ton-km. That increase in the passenger companies was expected to be done by annual fare increases (Table 1-10). As for the freight company, the relative growth of intermodal traffic, which had higher fares, to bulk freight was expected to push up average revenue rates. Table 1-7 shows the predicted capital investments of the companies.

As shown in Table 1-8, JNR predicted the profitability of the JR Companies in FY1987. As JNR forecasted less revenue and more expenses for the Three Island Companies than the JNR Reform Commission did, the Management Stabilization Fund was increased. Table 1-9 shows a five-year-long forecast of the revenue and income of the JR Companies, which the "Opinions" proposal did not provide.

---

6 For example, see Matsuura, 1971, pp.79-105.
Table 1-5  JNR’s Prediction of Traffic Volume

<table>
<thead>
<tr>
<th></th>
<th>ACTUAL FY1985</th>
<th>SHARE(%)</th>
<th>FORECAST FY1990</th>
<th>SHARE(%)</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td>57</td>
<td>543,200</td>
<td>58.9</td>
</tr>
<tr>
<td>Automobiles</td>
<td>489,300</td>
<td>57</td>
<td>543,200</td>
<td>58.9</td>
</tr>
<tr>
<td>Air</td>
<td>33,100</td>
<td>3.9</td>
<td>43,000</td>
<td>4.7</td>
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<tr>
<td>Ships</td>
<td>5,700</td>
<td>0.7</td>
<td>5,400</td>
<td>0.6</td>
</tr>
<tr>
<td>Railroads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shinkansen</td>
<td>55,400</td>
<td>6.5</td>
<td>54,900</td>
<td>6</td>
</tr>
<tr>
<td>Other ex-JNR</td>
<td>142,100</td>
<td>16.5</td>
<td>142,800</td>
<td>15.1</td>
</tr>
<tr>
<td>Total ex-JNR</td>
<td>197,500</td>
<td>23</td>
<td>197,700</td>
<td>21.1</td>
</tr>
<tr>
<td>Private R.R.</td>
<td>132,600</td>
<td>15.5</td>
<td>135,300</td>
<td>14.7</td>
</tr>
<tr>
<td>Total R.R.</td>
<td>330,100</td>
<td>38.5</td>
<td>330,000</td>
<td>35.8</td>
</tr>
<tr>
<td>Total Traffic</td>
<td>858,200</td>
<td>100</td>
<td>921,600</td>
<td>100</td>
</tr>
</tbody>
</table>

unit of traffic: million passenger-km

Source: Nomiyama, 1986
Table 1-6  Predicted Traffic and RR Revenue of the JR-Companies

<table>
<thead>
<tr>
<th>FY</th>
<th>Hokkaido</th>
<th>East</th>
<th>Central</th>
<th>West</th>
<th>Shikoku</th>
<th>Kyushu</th>
<th>Subtotal</th>
<th>Freight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>Traffic</td>
<td>3.80</td>
<td>99.12</td>
<td>39.45</td>
<td>45.59</td>
<td>1.59</td>
<td>7.26</td>
<td>196.81</td>
<td>68.55</td>
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<tr>
<td></td>
<td>RR Revenue</td>
<td>60.5</td>
<td>1,261.0</td>
<td>768.0</td>
<td>659.3</td>
<td>22.8</td>
<td>97.5</td>
<td>2,869.1</td>
<td>179.2</td>
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<tr>
<td>1987</td>
<td>Traffic</td>
<td>3.61</td>
<td>99.41</td>
<td>38.50</td>
<td>45.42</td>
<td>1.52</td>
<td>6.94</td>
<td>195.40</td>
<td>57.77</td>
</tr>
<tr>
<td></td>
<td>RR Revenue</td>
<td>60.6</td>
<td>1,317.5</td>
<td>784.8</td>
<td>684.5</td>
<td>22.8</td>
<td>97.5</td>
<td>2,967.7</td>
<td>159.2</td>
</tr>
<tr>
<td>1988</td>
<td>Traffic</td>
<td>3.76</td>
<td>99.28</td>
<td>38.34</td>
<td>45.39</td>
<td>1.63</td>
<td>6.76</td>
<td>195.16</td>
<td>54.34</td>
</tr>
<tr>
<td></td>
<td>RR Revenue</td>
<td>66.8</td>
<td>1,344.9</td>
<td>803.6</td>
<td>707.6</td>
<td>26.1</td>
<td>100.0</td>
<td>3,049.0</td>
<td>165.9</td>
</tr>
<tr>
<td>1989</td>
<td>Traffic</td>
<td>3.63</td>
<td>99.69</td>
<td>38.24</td>
<td>45.38</td>
<td>1.58</td>
<td>6.59</td>
<td>195.11</td>
<td>51.70</td>
</tr>
<tr>
<td></td>
<td>RR Revenue</td>
<td>68.7</td>
<td>1,408.4</td>
<td>824.3</td>
<td>731.8</td>
<td>26.7</td>
<td>102.8</td>
<td>3,162.7</td>
<td>167.8</td>
</tr>
<tr>
<td>1990</td>
<td>Traffic</td>
<td>3.52</td>
<td>99.74</td>
<td>38.16</td>
<td>45.37</td>
<td>1.53</td>
<td>6.43</td>
<td>194.42</td>
<td>51.78</td>
</tr>
<tr>
<td></td>
<td>RR Revenue</td>
<td>70.6</td>
<td>1,438.4</td>
<td>846.4</td>
<td>758.0</td>
<td>27.4</td>
<td>105.8</td>
<td>3,246.6</td>
<td>172.2</td>
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<tr>
<td>1991</td>
<td>Traffic</td>
<td>3.40</td>
<td>99.58</td>
<td>38.06</td>
<td>45.36</td>
<td>1.48</td>
<td>6.27</td>
<td>194.15</td>
<td>52.09</td>
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<td></td>
<td>RR Revenue</td>
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<td>1,458.1</td>
<td>858.6</td>
<td>784.6</td>
<td>28.1</td>
<td>108.8</td>
<td>3,310.8</td>
<td>177.3</td>
</tr>
</tbody>
</table>

Note 1: Actual Data in FY1985
Note 2: The unit of railroad revenue is billion yen.
Note 3: As for passenger, the unit of traffic is million passeege-km.
Note 4: As for freight, the unit of traffic is millin ton-km.
Source: Nomiya, 1986; Tamura, 1986

Table 1-7  Predicted Investment of the JR-Companies

<table>
<thead>
<tr>
<th>FY</th>
<th>Hokkaido</th>
<th>East</th>
<th>Central</th>
<th>West</th>
<th>Shikoku</th>
<th>Kyushu</th>
<th>Subtotal</th>
<th>Freight</th>
<th>Total</th>
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<tr>
<td>1987</td>
<td>14.2</td>
<td>152.3</td>
<td>96.2</td>
<td>79.9</td>
<td>6.3</td>
<td>17.8</td>
<td>366.7</td>
<td>5.4</td>
<td>372.1</td>
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<td>1988</td>
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<td>146.0</td>
<td>97.7</td>
<td>85.1</td>
<td>4.8</td>
<td>18.3</td>
<td>364.9</td>
<td>7.6</td>
<td>372.5</td>
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<td>1989</td>
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<td>146.3</td>
<td>92.4</td>
<td>103.6</td>
<td>6.1</td>
<td>19.7</td>
<td>382.4</td>
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<td>391.2</td>
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<td>1990</td>
<td>14.8</td>
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<td>125.7</td>
<td>5.7</td>
<td>19.0</td>
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<td>486.9</td>
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<td>13.7</td>
<td>122.8</td>
<td>82.9</td>
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<td>8.6</td>
<td>20.4</td>
<td>353.1</td>
<td>14.0</td>
<td>515.9</td>
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unit: billion yen
Source: Nomiya, 1986; Tamura, 1986
Table 1-8  JNR’s Prediction of
Financial Conditions of the JR-Companies in FY1987

<table>
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<tr>
<th></th>
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<th>Tokai</th>
<th>West</th>
<th>Shikoku</th>
<th>Kyushu</th>
<th>Subtotal</th>
<th>Freight</th>
<th>Total</th>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Operating Revenues</td>
<td>83.1</td>
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<td>803.9</td>
<td>742.8</td>
<td>30.0</td>
<td>110.9</td>
<td>3,209.0</td>
<td>161.4</td>
<td>3,370.4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel Expenses</td>
<td>71.1</td>
<td>464.2</td>
<td>136.4</td>
<td>280.4</td>
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<td>75.9</td>
<td>1,052.4</td>
<td>67.2</td>
<td>1,119.6</td>
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<td>523.9</td>
<td>591.9</td>
<td>288.6</td>
<td>13.5</td>
<td>41.8</td>
<td>1,504.1</td>
<td>68.7</td>
<td>1,572.8</td>
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<td>Other Expenses</td>
<td>14.6</td>
<td>208.9</td>
<td>42.4</td>
<td>85.5</td>
<td>6.2</td>
<td>20.2</td>
<td>377.8</td>
<td>12.4</td>
<td>390.2</td>
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<td>654.5</td>
<td>44.1</td>
<td>137.9</td>
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<td>148.3</td>
<td>3,082.6</td>
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<td>88.3</td>
<td>-14.1</td>
<td>-27.0</td>
<td>274.7</td>
<td>13.1</td>
<td>287.8</td>
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<td>N.A.</td>
<td>N.A.</td>
<td>14.4</td>
<td>28.1</td>
<td>89.1</td>
<td>N.A.</td>
<td>89.1</td>
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<td>N.A.</td>
<td>N.A.</td>
<td>332.8</td>
<td>11.5</td>
<td>344.3</td>
</tr>
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<td>1.1</td>
<td>31.0</td>
<td>1.6</td>
<td>32.6</td>
</tr>
<tr>
<td>Net Profit</td>
<td>0.8</td>
<td>14.4</td>
<td>8.1</td>
<td>7.5</td>
<td>0.3</td>
<td>1.1</td>
<td>32.2</td>
<td>1.6</td>
<td>33.8</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assets(04/01/87)</td>
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<td>98.0</td>
<td>341.0</td>
<td>6,285.0</td>
<td>2.2</td>
<td>6,287.2</td>
</tr>
<tr>
<td>Stabilization Fund</td>
<td>620.0</td>
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<td>N.A.</td>
<td>N.A.</td>
<td>192.0</td>
<td>372.0</td>
<td>1,184.0</td>
<td>N.A.</td>
<td>1,184.0</td>
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<tr>
<td>Liability (04/01/87)</td>
<td>N.A.</td>
<td>3,160.0</td>
<td>320.0</td>
<td>1,140.0</td>
<td>N.A.</td>
<td>N.A.</td>
<td>4,610.0</td>
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<td>4,611.6</td>
</tr>
<tr>
<td>Capital (04/01/87)</td>
<td>14.6</td>
<td>287.7</td>
<td>160.8</td>
<td>148.6</td>
<td>5.5</td>
<td>22.2</td>
<td>639.4</td>
<td>0.3</td>
<td>639.7</td>
</tr>
<tr>
<td>Employees(04/01/87)</td>
<td>13,000</td>
<td>89,600</td>
<td>25,200</td>
<td>53,400</td>
<td>4,900</td>
<td>15,000</td>
<td>201,100</td>
<td>12,500</td>
<td>213,600</td>
</tr>
</tbody>
</table>

unit: billion yen

Note 1: JR-Hokkaido would receive special subsidy for its ferry line only in FY1987.
Note 2: Leasing Fee is part of the material expenses.

Source: Nomiya 1986, Tamura 1986
Table 1-9  Predicted Financial Conditions of the JR-Companies

<table>
<thead>
<tr>
<th>FY</th>
<th>Hokkaido</th>
<th>East</th>
<th>Central</th>
<th>West</th>
<th>Shikoku</th>
<th>Kyushu</th>
<th>Subtotal</th>
<th>Freight</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>1987</td>
<td>Operating Revenues</td>
<td>86.8</td>
<td>1,565.7</td>
<td>874.6</td>
<td>763.1</td>
<td>35.2</td>
<td>129.8</td>
<td>3,209.0</td>
<td>161.4</td>
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<tr>
<td></td>
<td>Operating Expenses</td>
<td>145.7</td>
<td>1,269.2</td>
<td>803.1</td>
<td>692.3</td>
<td>50.1</td>
<td>158.7</td>
<td>2,934.3</td>
<td>148.3</td>
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<tr>
<td></td>
<td>Ordinary Income</td>
<td>-2.2</td>
<td>76.6</td>
<td>60.7</td>
<td>8.0</td>
<td>1.0</td>
<td>1.5</td>
<td>32.2</td>
<td>1.6</td>
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<td>1988</td>
<td>Operating Revenues</td>
<td>94.0</td>
<td>1,663.5</td>
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<td>807.1</td>
<td>43.7</td>
<td>139.6</td>
<td>3,306.8</td>
<td>168.2</td>
</tr>
<tr>
<td></td>
<td>Operating Expenses</td>
<td>147.3</td>
<td>1,340.3</td>
<td>866.2</td>
<td>727.7</td>
<td>54.6</td>
<td>168.1</td>
<td>3,007.3</td>
<td>155.5</td>
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<td></td>
<td>Ordinary Income</td>
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<td>17.2</td>
<td>5.7</td>
<td>3.0</td>
<td>60.9</td>
<td>2.0</td>
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<tr>
<td>1989</td>
<td>Operating Revenues</td>
<td>99.8</td>
<td>1,735.5</td>
<td>1,003.1</td>
<td>834.3</td>
<td>43.9</td>
<td>143.9</td>
<td>3,449.9</td>
<td>170.1</td>
</tr>
<tr>
<td></td>
<td>Operating Expenses</td>
<td>152.5</td>
<td>1,454.4</td>
<td>889.4</td>
<td>743.3</td>
<td>55.5</td>
<td>172.7</td>
<td>3,141.2</td>
<td>158.2</td>
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<td>Ordinary Income</td>
<td>0.2</td>
<td>103.4</td>
<td>108.3</td>
<td>40.2</td>
<td>6.1</td>
<td>3.8</td>
<td>71.6</td>
<td>1.8</td>
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<tr>
<td>1990</td>
<td>Operating Revenues</td>
<td>105.0</td>
<td>1,851.6</td>
<td>1,101.3</td>
<td>892.3</td>
<td>48.0</td>
<td>150.7</td>
<td>3,565.8</td>
<td>174.6</td>
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<tr>
<td></td>
<td>Operating Expenses</td>
<td>154.1</td>
<td>1,559.4</td>
<td>889.4</td>
<td>743.3</td>
<td>56.7</td>
<td>179.4</td>
<td>3,259.8</td>
<td>162.5</td>
</tr>
<tr>
<td></td>
<td>Ordinary Income</td>
<td>1.6</td>
<td>149.6</td>
<td>108.3</td>
<td>40.2</td>
<td>8.4</td>
<td>3.9</td>
<td>75.0</td>
<td>1.9</td>
</tr>
<tr>
<td>1991</td>
<td>Operating Revenues</td>
<td>106.3</td>
<td>1,949.9</td>
<td>1,130.7</td>
<td>917.2</td>
<td>51.0</td>
<td>160.4</td>
<td>3,655.5</td>
<td>179.8</td>
</tr>
<tr>
<td></td>
<td>Operating Expenses</td>
<td>154.6</td>
<td>1,595.1</td>
<td>843.0</td>
<td>789.4</td>
<td>60.1</td>
<td>188.6</td>
<td>3,335.1</td>
<td>166.9</td>
</tr>
<tr>
<td></td>
<td>Ordinary Income</td>
<td>2.0</td>
<td>108.0</td>
<td>117.0</td>
<td>66.1</td>
<td>7.1</td>
<td>4.2</td>
<td>92.6</td>
<td>3.3</td>
</tr>
</tbody>
</table>

unit: billion yen

Source: Nomiya 1986, Tamura 1986
Table 1-10  Average Annual Increase of Fare Rate

<table>
<thead>
<tr>
<th>Companies</th>
<th>Annual Growth of Revenue per Passenger-km (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JR-Hokkaido</td>
<td>6</td>
</tr>
<tr>
<td>JR-East</td>
<td>3</td>
</tr>
<tr>
<td>JR-Central</td>
<td>3</td>
</tr>
<tr>
<td>JR-West</td>
<td>4</td>
</tr>
<tr>
<td>JR-Shikoku</td>
<td>6</td>
</tr>
<tr>
<td>JR-Kyushu</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Nomiya, 1986

Table 1-11  Comparison of Revenue and Cost

unit: billion yen

<table>
<thead>
<tr>
<th></th>
<th>JNR (FY1985)</th>
<th>New Companies Predicted by JNR (FY1987)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Revenues</td>
<td>3,310.5</td>
<td>3,370.4</td>
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<tr>
<td>Operating Expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leasing Fee</td>
<td>N.A.</td>
<td>712.4</td>
</tr>
<tr>
<td>Operating Expenses without</td>
<td>4,352.9</td>
<td>2,370.2</td>
</tr>
<tr>
<td>Leasing Fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[of which Personnel Expenses]</td>
<td>[2,302.4]</td>
<td>[1,109.6]</td>
</tr>
<tr>
<td>Total Operating Expenses</td>
<td>4,352.9</td>
<td>3,082.6</td>
</tr>
</tbody>
</table>

Note: Some of the personnel cost of JNR was not included in the item of "personnel expenses" due to JNR's accounting rule. For example, cost for employees engaged in car repair was included in "material expenses."
Table 1-11 shows how the new companies would cut expenses to make profits. Although some of JNR's personnel expenses were classified in other expenses due to JNR's accounting rule, it was true that the personnel expenses would be less than one half. Material expenses were also expected to be reduced\(^7\).

1.8.3 Transition

JNR's major labor unions had been strongly opposed to the Reform. In 1986, however, its unions reorganized themselves into smaller opposing unions and cooperative majority unions (the reason is described in Section 3.6.1). This reorganization eased streamlining labor force, morale reform, and the countermeasures for surplus workers.

It was announced that the new companies would select the JNR workers they would employ on the basis of JNR's evaluation (Saiyou no Kijun, 1987). This, combined with the reorganization of labor unions, improved the JNR workers' morale quickly.

As a countermeasure for the surplus labor force, many workers moved from Hokkaido and Kyushu, which had a large surplus labor force, to Tokyo and Osaka, which had less. Most of them were members of cooperative unions. The unions encouraged the workers to leave their home regions.

\(^7\) JR-Hokkaido's effort to implement such a slashed material expense was reported in Koike, 1992
JNR accomplished efficient operations which would be the prototype for the new companies. For instance, JNR had already revised the labor agreement so that drivers would work as long as the standard labor hours set by the labor agreement, while actual work hours had been below the standard labor hours (Section 1.2). Since JNR revised train schedule in November 1986, a freight train was operated by only one person.

The employees applied to the companies, for which they wanted to work. The companies, whose establishment committees started in December 1986, selected the workers they would employ based on JNR's personnel evaluation. Fortunately, the number of voluntary retirees amounted to 39,090, far more than the JNR Reform Commission expected. As many as 20,845 employees were accepted to governments, other public sectors, and private companies. Therefore, the companies, with the exception of JR Hokkaido and Kyushu, accepted almost all applicants. In the end, only 7,628 employees needed re-employment in JNRSC. On March 31, 1987, the 81-year-old history of the national railroad ended, leaving liabilities of 25.6 trillion yen.

In the next chapter, several events which took place after the reform are reviewed. In Chapter 3, JNR and the JR Companies are compared in various aspects to evaluate the overall impacts of the privatization and division of JNR. In Chapter 4, lessons of the JNR Reform are discussed. In Chapter 5, suggestions for other railroads thinking about privatization and the JR Companies are stated.
2. What Has Happened since the JNR Reform?

In this chapter, the author describes major events after the JNR Reform and describes the following:

(1) Key issues of the implementation of the JNR Reform after April 1, 1987 are discussed in Sections 2.1, 2.2, 2.3, and 2.10;

(2) The reorganized relationship between the government and the railroad are reviewed in Sections 2.4, 2.5, 2.7, 2.8, and 2.9, especially focusing on current plans and construction of new railroads;

(3) A problem accompanying the division of JNR is described in Section 2.6.

2.1 Performance of the JR Companies

2.1.1 Traffic and Service Level

During JNR's final years, passenger traffic was stagnant, and freight traffic was decreasing; since the reform both have increased. Figures 2-1 and 2-2 show changes in passenger and freight traffic volume, respectively. The average annual growth of the passenger-km was 0.6 percent in FY1982-1986 and 4.5 percent in FY1987-1991. In FY1988, passenger traffic exceeded the highest level achieved by JNR8. Freight volume declined by 9.5 percent annually.

---

8 The maximum annual passenger traffic was 215.6 billion passenger-km in FY1974 (Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992).
**Figure 2-1** Change of Passenger Traffic


**Figure 2-2** Change of Freight Traffic


Since the reform, the service has improved significantly in train frequency, the quality of cars, cleanliness, etc., as this thesis will describe in more detail in Section 3.4.

2.1.2 Financial Performance

Total and individual financial results of the JR Companies are shown in Tables 2-1 and 2-2, respectively. The total ordinary income of the seven JR Companies has been stable, above 200 billion yen, every year since FY1988.

Table 2-2 shows that all the companies except JR Hokkaido have been making profit in ordinary income since the reform; JR Hokkaido has been profitable since FY1989. Until FY1990, the ordinary incomes of the companies had been increasing year by year\textsuperscript{10}.

Table 2-3 shows that the JR Companies have reduced the long-term debt which they inherited. It fell from 4.7 trillion yen on April 1, 1987, to 3.4 trillion yen on March 31, 1991. The significant decline in the JR Companies' long-term debt demonstrates that the companies have improved their financial condition since the privatization.

\textsuperscript{9} Note that JNR abolished many inefficient freight services during this period.\textsuperscript{10} The only exception was that the JR Freight reduced ordinary income in FY1989.
Table 2-1 Financial Conditions of the JR-Companies

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Revenues</td>
<td>3,633.0</td>
<td>3,899.2</td>
<td>4,052.6</td>
<td>4,353.8</td>
<td>4,530.7</td>
<td>4,554.1</td>
<td>(--)</td>
</tr>
<tr>
<td></td>
<td>(--)</td>
<td>(7.3)</td>
<td>(3.9)</td>
<td>(7.4)</td>
<td>(4.1)</td>
<td>(0.5)</td>
<td>(4.6)</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>3,280.6</td>
<td>3,476.3</td>
<td>3,650.0</td>
<td>3,881.1</td>
<td>3,839.3</td>
<td>3,646.0</td>
<td>(--)</td>
</tr>
<tr>
<td></td>
<td>(--)</td>
<td>(6.0)</td>
<td>(5.0)</td>
<td>(6.3)</td>
<td>(-1.1)</td>
<td>(-5.0)</td>
<td>(2.2)</td>
</tr>
<tr>
<td>Operating Profits</td>
<td>352.3</td>
<td>422.8</td>
<td>402.5</td>
<td>472.7</td>
<td>691.4</td>
<td>908.1</td>
<td>(--)</td>
</tr>
<tr>
<td></td>
<td>(--)</td>
<td>(20.0)</td>
<td>(-4.8)</td>
<td>(17.4)</td>
<td>(46.3)</td>
<td>(31.3)</td>
<td>(22.0)</td>
</tr>
<tr>
<td>Ordinary Income</td>
<td>151.5</td>
<td>211.8</td>
<td>268.4</td>
<td>387.6</td>
<td>306.3</td>
<td>233.3</td>
<td>(--)</td>
</tr>
<tr>
<td></td>
<td>(--)</td>
<td>(39.8)</td>
<td>(26.7)</td>
<td>(44.4)</td>
<td>(-21.0)</td>
<td>(-23.8)</td>
<td>(13.2)</td>
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<td>Profit after Taxes</td>
<td>50.0</td>
<td>88.9</td>
<td>160.1</td>
<td>148.0</td>
<td>156.5</td>
<td>130.3</td>
<td>(--)</td>
</tr>
<tr>
<td></td>
<td>(--)</td>
<td>(77.8)</td>
<td>(80.1)</td>
<td>(-7.6)</td>
<td>(5.7)</td>
<td>(-16.7)</td>
<td>(27.9)</td>
</tr>
</tbody>
</table>

Note 1: These figures show the sum of the JR-Companies’ income statements.
Note 2: The figures in parentheses show the growth of the previous year (in percentage).

Source: Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992
Table 2-2 Financial Conditions of the Individual JR-Companies

<table>
<thead>
<tr>
<th>FY</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Ordinary Income</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Ordinary Income</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Ordinary Income</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Ordinary Income</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Ordinary Income</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Ordinary Income</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Ordinary Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>86.8</td>
<td>1,565.7</td>
<td>874.6</td>
<td>763.1</td>
<td>35.2</td>
<td>129.8</td>
<td>3,460.3</td>
<td>172.7</td>
<td>3,633.0</td>
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</tr>
<tr>
<td>1988</td>
<td>145.7</td>
<td>1,269.2</td>
<td>803.1</td>
<td>692.3</td>
<td>50.1</td>
<td>158.7</td>
<td>3,119.1</td>
<td>161.5</td>
<td>3,280.6</td>
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<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>1989</td>
<td>(2.2)</td>
<td>76.6</td>
<td>60.7</td>
<td>8.0</td>
<td>1.0</td>
<td>1.5</td>
<td>145.6</td>
<td>5.9</td>
<td>151.5</td>
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<tr>
<td>1991</td>
<td>147.3</td>
<td>1,340.3</td>
<td>866.2</td>
<td>727.7</td>
<td>54.6</td>
<td>168.1</td>
<td>3,304.2</td>
<td>172.1</td>
<td>3,476.3</td>
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<tr>
<td>1992</td>
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<td>94.9</td>
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<td>3.0</td>
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</table>

unit: billion yen

Source: Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992
### Table 2-3 Change of the Long-Term Liability of JNR

<table>
<thead>
<tr>
<th></th>
<th>04/01/87</th>
<th>04/02/88</th>
<th>04/01/89</th>
<th>04/01/90</th>
<th>04/01/91</th>
<th>04/01/92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum</td>
<td>37.1</td>
<td>37.3</td>
<td>37.5</td>
<td>38</td>
<td>37</td>
<td>37.1</td>
</tr>
<tr>
<td>JR's Own Long-term Liability</td>
<td>4.7</td>
<td>4.4</td>
<td>3.9</td>
<td>3.7</td>
<td>3.5</td>
<td>3.4</td>
</tr>
<tr>
<td>JR's Liability for Railway Construction Corp.</td>
<td>1.2</td>
<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Shinkansen Holding Corp.</td>
<td>5.7</td>
<td>5.6</td>
<td>5.5</td>
<td>6.2</td>
<td>6.2</td>
<td>6.1</td>
</tr>
<tr>
<td>JNR Settlement Corp.</td>
<td>25.5</td>
<td>26.1</td>
<td>26.9</td>
<td>27.1</td>
<td>26.2</td>
<td>26.4</td>
</tr>
</tbody>
</table>

unit: trillion yen

Note: 1) The Shinkansen Holding Corporation was reorganized to the Railway Development Fund as of October 1, 1991.
2) Besides this table, the JR-Companies owe liability of 9.1 trillion yen to the Railway Construction Fund as of April 1, 1992 for Shinkansen's infrastructure.
3) "JNR’s Liability" includes both JNR’s own liability and other organizations’ liability for which JNR was responsible, such as the construction expense of the Japan Railway Construction Corporation and the pension for JNR employees.

Source: The Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992
These figures show that the JR Companies have been performing well financially. The companies' performance has been better than expected. For example, the total ordinary income was forecast to be 94.3 billion yen in FY1990 by the government; actually it was 387.6 billion.

The good financial performance of the JR Companies is accounted for by increased traffic, increased productivity, and abated long-term debt, as discussed in Section 3.2.

2.2 Re-employment Of Surplus Workers

Figure 2-3 shows the re-employment of surplus workers. The number of JNR employees who retired was far more than expected; 45,390 workers retired during FY1986; 7,320 workers went to other public sectors; 13,525 went to JNRSC to wait for later employment which was promised to them; 7,628 workers moved to JNRSC to seek new jobs. During the three years which were allowed the ex-JNR workers to find employment, 6,581 got new jobs. About 2,300 of those employees were employed by JR East, Central, and West, which had fewer employees than planned. Finally, 1,047 workers were dismissed on March 31, 1990 (Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992).

The Ministry of Transport asserts that the dismissed workers were themselves responsible for their unemployment, since they were not interested in the jobs which JNRSC listed. The ministry asserted that the dismissed workers insisted on re-employment by
Figure 2-3  Re-Employment of ex-JNR Workers

JNR Employees: 277,020 - As of April 1, 1986

- JR-Companies
  200,650 as of April 1, 1987
  - Voluntary Retirement
    39,090
  - Retirement until March 31, 1987: 52,710
    - Public Sectors
      7,320
    - Others: 6,300

- JNR Settlement Corporation
  23,660 as of April 1, 1987
  - Returning Long-term Debt: 2,507
  - Guaranteed Employment Elsewhere
    13,525
  - Re-employed by March 31, 1990: 6,581
    (including by the JR-Companies)
  - Without Job: 7,628
    - Dismissed as of March 31, 1990: 1,047

Source: Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992
JR Hokkaido and Kyushu, which had no room for extra workers (Kurono, 1993).

2.3 Failure of the Long-Term Liabilities Return Plan

After 1987, Japan's economy recovered and overheated. It was the time of the so-called "bubble economy," when land was the object of speculation. The government had JNRSC suspend selling the land so that the speculation of land would not be stimulated. Hence, the plan for paying JNRSC's share of JNR's long-term liabilities, which amounted to 23 trillion yen (Figure 1-10), failed.

After the end of the bubble economy, the government unfroze the selling of JNRSC land in FY1992, but by then the demand for land had fallen due to the recession. Annual revenue from the land now just covers the annual interest payment of JNRSC (Nishimura, 1993).

Other sources for paying JNRSC's liabilities were the stock of the JR Companies. However, due to the declining stock market, the public offering of the stock was suspended until October 1993.

Hence, the national budget will have to cover most of JNRSC's liabilities. Budgetary countermeasures for the liabilities remain a future problem.

2.4 New Shinkansen\textsuperscript{11}

The JNR Reform has brought about the drastic change of national railroad policies. The most significant example was the extension of

\textsuperscript{11} See \textit{Seibi Shinansen 15 Nen Buri no Chakkou}, 1989
Shinkansen, which has been disputed for nearly three decades as a political issue. Two key issues are observed in the resolution of the problem after the reform. First, the financial viability of the JR Companies has been prioritized by the government. Second, the government began to take a leadership in public railroad investment policies as well in other transportation modes; such leadership was never seen in the JNR era.

2.4.1 Nationwide Shinkansen Construction Plan

Due to the enthusiastic public reception of the Tokaido Shinkansen, JNR's first Shinkansen connecting Tokyo and Osaka, which was completed in 1964, there had been strong demand for additional Shinkansen lines. In 1970, "Zenkoku Shinkansen Tetsudou Seibi Hou" (the Shinkansen Construction Act), the master plan for a nationwide Shinkansen network (Figure 2-4), was passed.

The nationwide Shinkansen network was also part of Japan's national economic development policy\(^\text{12}\), which was aimed at correcting excessive concentration in huge metropolitan areas.

In addition to the lines which were already operated or being built\(^\text{13}\), the construction of five new Shinkansen lines called Seibi Shinkansen (Figure 2-4) was decided in 1973. However, due to inflation after the oil crisis of that year, the construction of Seibi Shinkansen was suspended. The government was discouraged at the

\(^{12}\) The master plans of Japan's national development policy have been revised three times: "Zen-Sou" (1962), "Shin Zen-Sou" (1969), "San Zen-Sou" (1978), "Yon Zen-Sou" (1986)

\(^{13}\) Those lines form current Shinkansen lines.
Figure 2-4  Nationwide Shinkansen Network

Legend
- In Operation
- Under Construction (currently suspended)
- Seibi Shinkansen
- Master Plan

Source: Mitsubishi Sougou Kenkyuujo Jigyou Senryaku Kenkyuuushitsu, 1987, p. 2
high cost of construction; it considered deleting the construction of Seibi Shinkansen from the national economic development policy, but eventually could not, due to strong political pressure (Homma, 1978, pp.166-167).

In September 1982, the cabinet decided to freeze the construction of Seibi Shinkansen, since the JNR Reform Commission had proposed to do so in the previous month as an urgent countermeasure to help restructure JNR. The JNR Reform Commission requested that construction should not affect the JR Companies' financial condition (Section 1.7.6).

In January 1987, the cabinet decided to resume construction of Seibi Shinkansen. However, funding was a problem. The construction cost was estimated to be five trillion yen. The Ministry of Finance did not agree to use funds from the national budget for the construction because of huge governmental debt.

2.4.2 Authorization of "Seibi Shinkansen" Construction

In August 1988, the Ministry of Transport proposed its own plan to build Seibi Shinkansen much more cheaply\(^\text{14}\). The so-called "basic scheme" plan is to build three of the five Seibi Shinkansen lines and to build the Shinkansen right-of-way in some parts (The differences between Shinkansen and conventional lines are shown in Table 2-4.) and use the right-of-way of conventional lines elsewhere (Figure 2-5). The plan is shown in Figure 2-6. Total expenditure was

\(^{14}\) See Takiguchi and Kawai, 1988; Miura, 1989, pp.171-174
Table 2-4  Comparison of Shinkansen and Conventional Lines

<table>
<thead>
<tr>
<th>Items</th>
<th>Shinkansen</th>
<th>Conventional Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge</td>
<td>1435mm (Standard Gauge)</td>
<td>1067mm (Narrow Gauge)</td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>275km/h</td>
<td>130km/h*</td>
</tr>
<tr>
<td>Maximum Width of Car Bodies</td>
<td>3380mm</td>
<td>about 2900mm</td>
</tr>
<tr>
<td>Maximum Length of Car Bodies</td>
<td>24500mm</td>
<td>20800mm</td>
</tr>
<tr>
<td>Minimum Radius of Curves in Main Track</td>
<td>2500m (Tokaido)</td>
<td>800m**</td>
</tr>
<tr>
<td>Grade Crossings</td>
<td>Do not exist</td>
<td>Exist</td>
</tr>
</tbody>
</table>

Figure 2-5  Alternative Plans of Shinkansen

"Mini Shinkansen"  
Standard-gauged tracks replace narrow-gauged tracks in the right-of-way of existing conventional lines***. The cars have the same body as conventional lines with wheels for the standard gauge. The maximum speed is 130km/h or so.

"Super Limited Express"  
Narrow-gauged tracks are laid in the new right-of-way which is built under the Shinkansen standards for potential future use as Shinkansen tracks. The cars are those of conventional lines, allowing the maximum speed 160-200km/h.

Source: Ministry of Transport, Un'yu Hakusho Heisei 4 Nen Ban, 1992, p. 159

* The speed of 140 km/h is permitted in Seikan Undersea Tunnel as an exception.
** This standard is applied in "Class 1 lines", which are the most important lines; conventional lines are classified into Class 1 to 4. This standard is applied for new lines only.
*** The new tracks may have three or four rails to pass both narrow-gauged and standard-gauged trains.
Figure 2-6 "Basic Scheme" Plan for Shinkansen

Tohoku Shinkansen
(JR-East)
Aomori
Morioka

Hokuriku Shinkansen
(JR-East)
(Hokkaido Shinkansen (Construction Suspended)
Hokuetsu-Hokusen (Under Construction)
Nagano
Takasaki

Kyushu Shinkansen
(JR-Kyushu)
Fukuoka (Hakata Station)
This route suspended
Nagasaki
Kagoshima

Legend

Shinkansen Tracks
Mini-Shinkansen (Conventional R.O.W., Standard Gauge)
Super Limited Express (Shinkansen R.O.W., Narrow Gauge)

Source: Ministry of Transport, Un'yu Hakusho Heisei 4 Nen Ban, 1992, p. 159
estimated to be 1,380 billion yen, much cheaper than the original plan, which was expected to cost 2,920 trillion to build the three lines, although the train speed is slower than in the original plan.

In January 1989, it was agreed that the JR Companies would bear 50 percent, and that the national and local governments would pay the other 50 percent of the construction cost. To retain the financial viability of the JR Companies which operate those Shinkansen lines, the Shinkansen leasing system was modified. (This issue is outside the scope of the thesis\textsuperscript{15}.) In June 1989, the national government's funding was authorized by a law (Takeda, 1989). The construction began in the same year.

When the ministry announced the "basic scheme" in 1988, it was agreed that the Seibi Shinkansen plan would be discussed again for potential revision five years later. Five years have passed, and local people who are not satisfied with the "basic scheme" strongly request the construction of Seibi Shinkansen as originally planned.

It should be noted that the financial viability of the JR Companies has been repeatedly emphasized throughout the discussion of Seibi Shinkansen (\textit{Seibi Shinkansen Kensetsuhi ni Hatsu no Zatiou}, 1993)

2.5 Public Subsidy for Infrastructure

2.5.1 Financial Relations between JNR and the Government

The JNR budget was one of the separate accounts\textsuperscript{16} of the national budget. JNR could plan deficit financing and accumulate the debt only if the government and the Diet approved its budget plan. To get the approval, however, JNR needed the help of politicians, making JNR susceptible to political intervention.

The national subsidies for JNR, which meant the financial help from the general account to the JNR special account, had existed when JNR was profitable to aid construction of new lines. After JNR began to run a deficit, the government subsidized part of the interest expenses, part of the loss from rural lines, and other losses (Section 3.2.1). In FY1985, the JNR special account received 600.1 billion yen as subsidies, of which 150.4 billion was for its infrastructure (Nihon Kokuyu Tetsudou Kansa Iinkai, 1986).

2.5.2 Existing Public Aid for Railroad Construction by the Private Railroads

Existing private railroads provide important services in metropolitan areas. There have been many systems of subsidies for constructing infrastructure\textsuperscript{17} by private railroads\textsuperscript{18}, including\textsuperscript{19}:

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\textsuperscript{16} Other separated accounts include the national forestry account and the Food Stuff (rice) Control Special Account.
\textsuperscript{17} There are also subsidies for operating losses, but that system is applied to only rural railroads.
(1) Subsidy of two-thirds of the total cost of subway construction;

(2) Subsidy of a portion of the interest expense generated by construction of new lines;

(3) Subsidy of a portion of the construction cost of new lines built to "New Towns," or satellite cities;

(4) Provision of low-interest loans (5-6 percent a year) which cover part of the cost (30-50 percent) of improving safety, raising capacity, and upgrading service (air-conditioning in trains, for example) by the Japan Development Bank.

In addition, several private railroads were permitted to raise fares before they finish building new tracks. The extra revenue is reserved for amortization.

2.5.3 Subsidy for the JR Companies' Infrastructure

As JR East, Central, and West performed well financially, the listing of the stock of these companies was just around the corner. However, the prices of the Shinkansen infrastructure, which the three companies were expected to buy from the Shinkansen Holding Corporation when the lease terminated in 2017 (Section 1.7.4), had not been decided. This uncertainty in the future financial condition

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18 In this section, the author includes local governments' rapid transit in private railroads. Local governments' railroads are legally treated as private railroads.

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of the three companies was a problem in evaluating if their stock was eligible for listing. Hence, they wanted to own the infrastructure of Shinkansen rather than pay the leasing fees to Shinkansen Holding Corporation until 2017.

On October 1, 1991, the Shinkansen Holding Corporation sold the infrastructure to JR East, Central, and West for 9.2 trillion yen, and was reorganized into the Railway Development Fund. The price was 1.1 trillion yen higher than the total amount of the leasing commitments which the three companies had owed to the Shinkansen Holding Corporation. The three companies owe 9.2 trillion as liabilities to the fund and pay 8.1 trillion yen over 25.5 years and 1.1 trillion over 60 years. The 1.1 trillion is used as part of the government's expense for Seibi Shinkansen, and the 8.1 trillion is used for paying the fund's own debt and liabilities to JNRSC (Tatezawa, 1992).

The fund has several functions; first, it collects the infrastructure fees from JR East, Central, and West and pays the fees for paying its long-term debt and to JNRSC. Second, it deals with several kinds of public subsidies for railroad construction, including the construction of Seibi Shinkansen, with the 1.1 trillion yen. Third, it deals with some subsidies which already existed. The Ministry of Transport is expanding public subsidies for railroad infrastructures, and the role of the fund will therefore become more important.
2.5.4 Public Aid by Local Governments

After the JNR Reform, the JR Companies had financial limitations to fulfill local needs. Hence, local governments began to subsidize railroads for speed-up and increasing capacity in two ways. First, the local governments subsidize the railroads directly. Second, quasi-public corporations are established to own the right-of-way and tracks, and the local governments invest in and subsidize the corporations\textsuperscript{20}. Sometimes a railroad gives the right-of-way of a line to such a quasi-public corporation which upgrades the line, and pay the leasing fees to the corporation. Private companies along the lines sometimes join the investors.

2.6 JR Companies' Reluctance in Capital Investment\textsuperscript{21}

In 1989, the national government began to enforce the law that enabled local governments to direct construction of railroads jointly with land development for houses. The land for the right-of-way becomes available through the readjustment of town lots which local governments carry out. The New Joban Line, planned as a new commuter line in Tokyo, was the system's application. A quasi-public corporation, named "Shutoken Shin-Toshi Tetsudo Co. Ltd." was established by local governments to build the line.

\textsuperscript{20} For detail, see Un'yu Chousa Kyoku, undated
\textsuperscript{21} Miura, 1989, pp. 182-186; Sumita, 1992, pp. 83-84
It was originally expected that JR East would also be one of the investors in the quasi-public corporation\textsuperscript{22}. However, JR East refused the investment because it feared that the levels of expense might go up so high that its financial stability would be threatened. JR East anticipated that the quasi-public corporation would take the annual loss of 100 billion yen, which was equivalent to JR East's annual net income.

Eventually, other companies such as real estate businesses and private railroads which adjoined with the line, invested and the quasi-public corporation was established in March 1991. JR East faced public criticism that it did not care about the public interests partly because the line was expected to reduce the congestion of the parallel Joban Line (Tatezawa, 1992, p. 63).

This episode has illustrated the following two issues which indicate the relationships between the public and railroads after the privatization of JNR. First, social expectations for better railroad service are sometimes not fulfilled because of the JR Companies' limitations in capital investment. Second, the JR Companies can refuse to fulfill some social expectations to maintain their financial viability without any obvious sanctions.

\textsuperscript{22} JR East was expected to invest 25 percent of the stocks, while local governments and other private companies had the shares of 50 and 25 percent respectively.
2.7 Relationships among the JR Companies

Previous concerns about division have not materialized. Through trains among the JR Companies continue to operate, and JNR's fare rules have been maintained. Nevertheless, the relationships among the JR Companies were sometimes questioned as "The New Shinagawa Station Problem".

Due to the rapid passenger increase since the reform, JR Central faced a shortage of track capacity on the Tokaido Shinkansen, which belongs to JR Central (Figure 2-7). In May 1990, JR Central announced that it wanted to build a new Shinkansen station at Shinagawa (7 km from Tokyo Station, the terminal) to raise the capacity of JR Central's Shinkansen. Although JNR had predicted that the traffic of the Shinkansen would decline gradually, the number of passengers rose since the reform; the number of trains reached the capacity limit at Tokyo Station; many passengers could not be seated. Tokyo station handled 11 departing and 11 arriving trains of JR Central's Shinkansen per hour. The New Shinagawa Station would allow 15 trains per hour per direction. As JR Central did not have land for the station, it proposed that JR East sell a piece of land from a depot adjacent to the JR Central line at book value, which was much cheaper than the real value. JR Central said that the division of JNR should be revised because the reform was planned when Tokaido

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Figure 2-7  Increase of Traffic in Tokaido Shinkansen

Passengers (Million)
Capacity (Million)

Source: Kojima, 1990
Shinkansen traffic was declining. JNR had had the same plan, but the plan had not been carried out because of the traffic decrease.

JR East asserted that the division of JNR should not be changed; any change would give rise to innumerable complaints from the JR Companies, leading to the collapse of the agreements between the JR Companies. JR East was also critical of the fact that JR Central contacted the Ministry of Transport before JR East, undermining the independence from governmental intervention. JR Central countered that the way of dividing JNR was in question, and had thus contacted the ministry first. Ultimately, JR Central agreed with JR East to use other land.

Such a conflict between the companies would not have happened if JNR had not been divided.

2.8 The Construction of MAGLEV Test Line (Kojima, 1990)

Soon after the reform, JR Central began to suggest strongly the necessity for building MAGLEV (magnetic levitated trains) between Tokyo and Osaka. There are two reasons for JR Central's view. First, the traffic on the Tokaido Shinkansen reached its track capacity (Section 2.7). JR Central stated that the New Shinagawa Station could only solve the immediate congestion problem and that a new right-of-way would be necessary to deal with further traffic growth. Second, JR Central realized that the infrastructure of Tokaido Shinkansen faced deterioration and needed replacement within a couple of decades, which would require a long halt of the train operation. JR Central launched a campaign to build MAGLEV, which
would cut the travel time between the two cities to one hour, one-third that of the Shinkansen. JR Central estimated the total cost to be 3 trillion yen and called for a public expense of 1 trillion²⁴.

JNR began to develop MAGLEV in 1962. JNR had an experimental facility of 7 km for model trains and succeeded in a test run at 517 km/h in 1979 (High Mobility Networlk Kenkyuukai, 1991). However, the facility was too small and short to test potential situations which would happen in actual operation. The Railway Technology Research Institute, which took over the development of MAGLEV from JNR, and JR Central are now building a full-scale 42.8 km test track, which will be part of the actual MAGLEV line (Figure 2-8). JR Central pays two-thirds of the construction cost for the test track, and the institute pays the rest.

However, MAGLEV is a very challenging technology; for example, the superconductors used in MAGLEV sometimes lose their superconductivity²⁵. JR Central states that it will convert the MAGLEV right-of-way to a Shinkansen line that will allow a maximum speed of 350 km/h if the result of the full scale test is unsatisfactory.

It is noted that the inauguration of the full-scale MAGLEV experimental project became possible after the reform, for JR Central can now act very aggressively on its own local needs. Thus, the

²⁴ Some have estimated higher costs. For example, the Ministry of Finance estimated the cost to be 5-6 trillion yen. See Kojima, 1990, p. 50.
Figure 2-8  Planned MAGLEV Line

Note: Three alternative lines are indicated by numbers.

Source: Kojima, 1990, pages 21, 23
MAGLEV case is a good example how the division of JNR was effective in responding to local needs.

2.9 New Transportation Policies

After the JNR Reform, the government began to be active in public railroad investment policies as well in other transportation modes. When the Ministry of Transport announced its plan of Seibi Shinkansen, it enthusiastically stated, "This plan is the milestone which symbolizes the change from a regulatory ministry to a policy ministry, or 'the New Ministry of Transport.'" (Miura, 1989, p. 171)

2.9.1 Master Plan of Future Railroads

As the railroad's performance after the reform had been expressed as "the rehabilitation of the railroads" (Kakumoto, 1992), the Ministry of Transport felt the social need to upgrade railroad service. The ministry had "Un'yu Seisaku Shingikai" propose the basic strategies for the capital investment in railroads. After a one-year-long discussion, the commission submitted the report "21 Seiki ni Mukete no Chuu Chouki no Tetsudou Seibi ni Kansuru Kihonteki Kangaekata ni Tsuite" in June 1992. The main issues of the report are as follows:

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26 It can be translated as "Transportation Policy Commission"
27 The proposal can be translated as "Basic Concepts for Middle and Long Term Capital Investments in Railroads for the 21st Century."
28 The text of the report was quoted from the Ministry of Transport, 21 Seiki ni Mukete no Chuu Chouki no Tetsudou Seibi ni Kansuru Kihonteki Kangaekata ni Tsuite o Yomu, 1992, and translated by the author of this thesis.
"(1) Current Circumstances relating to Railroads

The transportation infrastructure needs investment for national economic development without regional inequality and a society where people can feel affluence. The public expectation upon railroads is growing because of their advantages in terms of the global environment, energy consumption, space limitation in urban areas, and the labor shortage in Japan. After the JNR Reform, capital investment in railroad infrastructure has been led mostly by private companies29. Hence, the basic directions of the investment should be established.

(2) Major Goals

a) Intercity Transportation: Raise the average speed of intercity services, which is currently less than 100 km/h, to 120 km/h in the long run. There are several options to do that: Seibi Shinkansen, the speed-up of conventional lines, and so on.

b) Commuter Transportation: Reduce congestion in metropolitan areas, especially in Tokyo. The number of rail commuters flowing into Tokyo has been increasing (Figure 2-9), but the rise in capacity has not been satisfactory (Figure 2-10)30. The countermeasures

29 The Seibi Shinkansen plan was led by congressmen and the Ministry of Transport, but this report calls for additional public aid for other investments in speeding-up of conventional lines, increasing capacity of commuter lines, and raising competitiveness of freight service.

30 When the ratio of the number of passengers to rail capacity is 200 percent, the passengers are pressed against one another and feel considerably uncomfortable. The ministry aims at reducing the ratio to 180 percent in ten years; the passengers would still touch one another, but be able to read newspapers in the trains.
Figure 2-9  Number of Commuters into Tokyo Prefecture

Number of Commuters into Tokyo Prefecture
□ Population in Tokyo Area
△ Population of Japan

10000 Commuters

Index (100% in 1980)

1980 1985 1990

Note: Tokyo Area consists of Tokyo, Kanagawa, and Saitama Prefectures.


Figure 2-10  Congestion, Capacity, and Traffic of Commuting in Tokyo Area

Passengers/Capacity

Number of Passengers
Capacity


Note: Capacity and the number of passengers are indicated by indices (100% in FY1975)
Note: Capacity means the total number of seats, straps, and bars to grip in cars.

include not only building tracks or increasing the number of the cars in a train, but also having office employees avoid rush hours and introducing peak-load pricing.

c) Freight: Have more freight carried by the railroad rather than by trucks (so-called "Modal Shift"). The measures are described in the next section.

(3) Funding

a) The nation should aid the investment by extending the Railway Development Fund's functions, exempting taxes, etc.

b) Local communities should aid the investment more.

c) Passengers should accept fare increases for better service."

Based on this proposal, the ministry is working on various policies. For example, it has provided interest-free loans (which cover only certain portions of the whole costs) for the New Shinagawa Station, speed-up in conventional lines, the investments for "Modal Shift," etc.

2.9.2 "Modal Shift"

The cause of the traffic increase in railroad freight was not only due to the good economy and JR Freight's effort, but also the shortage of truck drivers and road congestion. In addition, air pollution from trucks was a problem. Hence, attracting freight traffic from roads to rail was considered a social need. The government has taken the following steps (Kandatsu, 1992).
(1) Partial subsidy to raise the capacity of the busiest line by raising the maximum weight of a train to 1600 metric tons from current 1300 tons. The investment consisted of the extension of sidings and the reinforcement of existing electric power stations.

(2) Encourage investment in equipment for intermodal transportation by reducing the taxes for the equipment.

2.10 Public Offering of the JR Companies' Stock

The public offering and listing of the JR Companies' stock is a goal of the JNR Reform, for it makes the companies purely private. The listing was an urgent issue because JNRSC needed the revenue from selling the stock as soon as possible. The JR Companies also wished their stock to be listed as soon as possible.

The advantages of the listing for the JR Companies are as follows (Tatezawa, 1992, p.42):

(1) The companies will be free from the special regulations inherent to the JR Companies, such as on the personnel affairs of top executives and annual business plans. Thus they will have the same freedom of management as existing private railroads;

(2) The companies will be able to get loans at low interest rates. After all of their stock is listed, the government will allow the
companies to do "equity financing\(^{31}\)," whose annual interest rates will be 1 percent (Miura, 1989, p. 83);

(3) The morale of the employees will be raised for two reasons: first, the listing will be the symbol of the employees' efforts since the reform; second, the employees will be proud that the companies are one of the major companies in Japan.

The major conditions of the listing are set by the Tokyo Stock Exchange as follows (Miyamoto, 1993, pp. 228-229):

(1) The shareholders' equity\(^{32}\) should be more than double of the capital;

(2) Stable Profit -- The operating incomes and the incomes before taxes should be more than three-tenths of the capital during the three years before the listing and more than four-tenths of the capital in previous year to the listing.

Although JR East, Central, and West fulfilled the conditions to be listed\(^{33}\), the listing was postponed due to recent decline of the stock market. On the other hand, the listing was expected to stimulate Japan's stock market.

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31 Equity financing is a measure of funding that is followed by the increase of capital.
32 The shareholder's equity is the sum of the common stock, additional paid-in capital, legal reserve, and retained earnings.
33 According to Tatezawa, 1992, p. 42, JR East's and Central's financial conditions in FY1990 showed that they were eligible for listing in the next fiscal year. According to Miyamoto, 1993, p. 229, JR West's financial conditions in FY1991 showed its eligibility to be listed in FY1992.
On October 26, 1993, the stock of JR East were listed. JNRSC sold 2.5 million stock, while JR East had 4 million stock in total. JNRSC got the revenue of 1.07 trillion yens (Koutsuu Shimbun, October 30, 1993). The procedure for the listing was as follows (Koutsuu Shimbun, September 1, 1993):

(1) August 6-11, 1993: 600,000 stock were sold in open bids.

(2) August 30, 1993: Based on the average bidding price, the value of a stock was determined 380,000 yen, while the face value was 50,000 yen.

(3) September 1993- October 1993: JNRSC received applications for 327,307 stock at the unit price of 380,000 yen. So far, the stock to be sold amounted to half of JR East's total stock.

(4) October 26, 1993: JR East's stock were listed. Because of the overheated demand for the stock, JNRSC sold 572,693 stock at the unit price of 600,000 yen, which was close to the market price.

The Ministry of Transport has not decided when to list the stock of JR Central and West and the remaining stock of JR East. JR Central requested that the complete listing of the three companies should be made at the same time (Koutsuu Shimbun, October 27, 1993); the statement would indicate the competitive environment among the JR Companies. However, Japan's stock market is getting worse. So, the listing of the remaining stock can not be scheduled. Another problem is that the Three Island Companies and JR Freight do not fulfill the criteria for the listing.
2.11 Summary

(1) The JR Companies have performed well in terms of traffic, service level, and their financial conditions.

(2) New railroad policies have been decided and implemented. The Ministry of Transport has been leading new private-public partnership for building future railroads. The railroads' financial viability has been prioritized by the government.

(3) Conflicts among the JR Companies have already occurred, despite the few years since the reform.

(4) The public offering of the JR Companies' stock, which is a goal of the reform and will benefit the companies in many ways, has just begun. The whole listing will be accomplished in the distant future.

In the next chapter, the author discusses if the objectives of the JNR Reform were really achieved by carrying out before-and-after analysis.
3. Has the JNR Reform Been Successful?

3.1 The Dimensions of Evaluating the JNR Reform

The dimensions of evaluating the JNR Reform is as follows:

(1) Financial Improvement
(2) Railroad Functions by the Share of Traffic Volume
(3) Service Improvement
(4) Management
(5) Labor-management Relationships
(6) Political Issues

As the objective of the JNR Reform was to establish efficient operation to help trim the domestic debt, financial improvement as a result of the reform is discussed in Section 3.2. First, the profits and losses of JNR and the JR Companies are compared by eliminating the contribution of the interest expenses and the Shinkansen leasing fees. Next, the total income statements of the JR Companies, JNRSC, the Shinkansen Holing Corporation and the Railway Development Fund are compared with JNR's income statements. Then the causes of the improved efficiency, such as increased labor productivity, and traffic growth are investigated. Finally, the JR Companies' future financial viability is discussed.

In Section 3.3, the appropriate use railroad's capability (Section 1.5) is examined. In addition to meeting their financial goals, the JNR Reform Commission expected that JR Companies would play important roles in certain transportation markets where railroads
have the advantage. The railroad's share of traffic volume will be examined as an indicator of the appropriate use of railroad's capability.

In Section 3.4, service improvement is discussed. First, the thesis determines if the JR Companies have improved their responses to demand, which JNR did not perform very well. Second, various aspects of service improvements are examined. Third, the thesis determines if any decline in the service level, such as safety, or service in rural areas\(^{34}\), has occurred. Finally, the thesis discusses if any inconveniences resulting from the division of JNR took place.

The thesis discusses management in Section 3.5. Most of the criticisms of the "Opinions" proposal against being a nationwide public corporation were of management. The quality of the management includes many things such as the response to the demand, investment policy, and technology.

In Section 3.6, changes of union policies, labor-management agreements, and work morale are reviewed.

Finally, the effect of the JNR Reform upon political issues which were not central to the reform is examined in Section 3.7.

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\(^{34}\) That statement excluded the rural lines whose abolishment had been already decided by "Nihon Kokyu Tetsudou Keiei Saiken Sokushin Tokubetsu Sochi Hou" (Act of Special Countermeasures for Promoting JNR Restructuring), which was enforced in 1985. The abolishment, which included the takeover by other sectors and replacement by private buses, was completed by 1990, and the JR Companies operated some lines until then.
This thesis limits the scope of the evaluation to the JR Companies. However, it should be emphasized that the JNR Reform has left serious problems, such as re-employment of ex-JNR workers and repayment of the JNR liabilities to the JNR Settlement Corporation, as the author discussed in Sections 2.2 and 2.3. Although this thesis shows that the reform was effective for railroad operation in many aspects, it could be argued that the JNR Reform was not successful in total because of these two problems.

3.2 Financial Conditions and Viability

3.2.1 Financial Improvement of the JNR Reform

In this section, the author determines whether or not the JNR Reform actually resulted in financial improvement. Due to the complicated disposition of the JNR liabilities, it is misleading to compare simply JNR and the JR Companies in profitability and financial condition.

An initial review examined the change in profits and losses due to the elimination of the contribution of the interest expenses. JNR took a net loss (excluding interest) of 35.7 billion yen in FY1986 because the net loss and the interest expense were 1,361.0 and 1,325.3 billion yen respectively (Table 1-1). In contrast, the JR Companies made a net profit (excluding interest) of 759.8 billion yen in FY1987 because the net profit and the Shinkansen leasing fee were 50.0 (Table 2-1) and 709.835 billion yen respectively. This

rough comparison suggests that the JR Companies made significant financial improvements apart from the disposition of the JNR liabilities. However between FY1986 and FY1987 the following changes occurred. First, the JNR Settlement Corporation took over part of the pension expense. Second, there are some transactions among the JR Companies. Third, the accounting rules have changed between JNR and the JR Companies. Hence, the exact evaluation needs the following clarification.

The Ministry of Transport calculated the sum of the income statements of the corporations which took over the JNR liabilities (the JNR Settlement Corporation, Shinkansen Holding Corporation, and the Railway Development Fund) and the JR Companies, as is shown in Table 3-1 (Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992). Any transactions among those organizations, such as the Shinkansen leasing fees and the trackage rights fees have been offset. JNR's income statements have been reorganized into the format of the JR Companies'.

The annual operating income\textsuperscript{36} has turned profitable since the reform. Note that the operating income is smaller than in Table 2-1 because of the offset of the transactions. Consequently, the annual ordinary loss has fallen from 1.9-2.6 trillion yen (FY1982-FY1986) to 1.0-1.3 trillion (FY1987-FY1991). The net loss has also declined.

\textsuperscript{36} The definitions of the operating income, the ordinary loss, and the net loss are described in Appendix 2 (the JR Companies).
Table 3-1  JNR Income Statements (FY1982-86)  
and Sum of the JR Companies, the JNR Settlement Corporation,  
and the Shinkansen Holding Corporation Income Statements (FY1987-91)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Revenues [Growth Rate to the Previous Year (%)]</td>
<td>2,949.3</td>
<td>2,960.6</td>
<td>3,102.7</td>
<td>3,310.5</td>
<td>3,416.8</td>
<td>3,532.9</td>
<td>3,800.9</td>
<td>3,949.8</td>
<td>4,244.7</td>
<td>4,415.4</td>
</tr>
<tr>
<td>Operating Expenses [of which Personnel Expenses]</td>
<td>3,877.4</td>
<td>4,037.1</td>
<td>3,996.3</td>
<td>4,226.2</td>
<td>3,772.8</td>
<td>3,276.2</td>
<td>3,378.1</td>
<td>3,541.5</td>
<td>3,638.5</td>
<td>3,896.0</td>
</tr>
<tr>
<td>Operating Profit</td>
<td>(928.1)</td>
<td>(1,076.5)</td>
<td>(893.7)</td>
<td>(915.6)</td>
<td>(356.1)</td>
<td>256.7</td>
<td>422.8</td>
<td>408.3</td>
<td>606.2</td>
<td>519.4</td>
</tr>
<tr>
<td>Ordinary Income</td>
<td>(2,140.7)</td>
<td>(2,489.6)</td>
<td>(2,427.2)</td>
<td>(2,584.9)</td>
<td>(1,970.6)</td>
<td>(1,325.7)</td>
<td>(1,308.0)</td>
<td>(1,286.6)</td>
<td>(1,044.4)</td>
<td>(1,127.3)</td>
</tr>
<tr>
<td>Non-Operating Profit [Revenue from Selling Fixed Property]</td>
<td>796.7</td>
<td>870.0</td>
<td>808.4</td>
<td>767.8</td>
<td>711.4</td>
<td>375.2</td>
<td>509.8</td>
<td>999.1</td>
<td>1,941.0</td>
<td>1,060.4</td>
</tr>
<tr>
<td>Non-Operating Loss</td>
<td>33.8</td>
<td>40.8</td>
<td>31.6</td>
<td>30.7</td>
<td>101.9</td>
<td>64.9</td>
<td>114.2</td>
<td>136.2</td>
<td>213.4</td>
<td>231.8</td>
</tr>
<tr>
<td>Net Income</td>
<td>(1,377.8)</td>
<td>(1,660.4)</td>
<td>(1,650.4)</td>
<td>(1,847.8)</td>
<td>(1,361.0)</td>
<td>(1,015.4)</td>
<td>(912.4)</td>
<td>(431.7)</td>
<td>683.2</td>
<td>(298.7)</td>
</tr>
</tbody>
</table>

unit: billion yen  
That summed income statement is still an insufficient comparison, because JNR, the JR Companies, and the corporations have received subsidies and paid taxes as shown Table 3-2. In addition to the subsidy for infrastructures (Section 2.5.1), the government supplied the interest expense for 5.8 trillion yen of JNR's debt, as the JNR restructuring plans enforced. After the reform, the JR Companies paid fixed property taxes and income taxes, while JNR paid a special charge for local governments. The government subsidies have been reduced. Consequently, JNR received more public money than it paid, and the new organizations have paid more than they have received\(^{37}\). The efficiency effect of the JNR Reform becomes greater when taxpayers' expenses are considered.

Table 3-1 shows that both an increase in revenue and a decline in costs of the JR Companies have contributed to the financial improvement. The traffic increase was the cause of the railroad revenue increase, for there have been no fare increases since the reform (see Figure 3-1). The cause of the increased traffic is discussed in the next section. The increased labor productivity contributed to the cost reduction. Figure 3-2 shows that the JR Companies have maintained their small labor force. The labor productivity in the passenger railroad operation began to rise rapidly in the final years of JNR and has continued to increase after the reform, as Figure 3-3 shows.

\(^{37}\) FY1989 is considered an exception, for the government subsidized the JNR Settlement Corporation largely to deal with the increase of the corporation's long-term liability. Data are not available after FY1991.
### Table 3-2  Taxpayers' Expenses

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Tax etc.</th>
<th>Subsidy</th>
<th>Tax - Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Investment</td>
<td>Loss etc.</td>
</tr>
<tr>
<td>1982</td>
<td>35.2</td>
<td>729.4</td>
<td>183.4</td>
</tr>
<tr>
<td>1983</td>
<td>38.3</td>
<td>701.8</td>
<td>188.1</td>
</tr>
<tr>
<td>1984</td>
<td>46.3</td>
<td>647.4</td>
<td>174.6</td>
</tr>
<tr>
<td>1985</td>
<td>47.8</td>
<td>600.1</td>
<td>150.4</td>
</tr>
<tr>
<td>1986</td>
<td>50.1</td>
<td>377.6</td>
<td>N.A.</td>
</tr>
<tr>
<td>1987</td>
<td>220.7</td>
<td>193.7</td>
<td>N.A.</td>
</tr>
<tr>
<td>1988</td>
<td>245.7</td>
<td>211</td>
<td>N.A.</td>
</tr>
<tr>
<td>1989</td>
<td>230.1</td>
<td>633.1</td>
<td>N.A.</td>
</tr>
<tr>
<td>1990</td>
<td>299.4</td>
<td>157.1</td>
<td>N.A.</td>
</tr>
<tr>
<td>1991</td>
<td>444.3</td>
<td>108.2</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

unit: 1 billion yen

Source: Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992; Nihon Kokuyu Tetsudou Kansa Iinkai, 1986
Figure 3-1  Change in Passenger Revenue

Source: East Japan Railway Company, "Basic Frame for Division and Privatization"
Figure 3-2 Number of Staff Members

Source: East Japan Railway Company, "Basic Frame for Division and Privatization"
Figure 3-3 Increasing Efficiency

Source: East Japan Railway Company, "Basic Frame for Division and Privatization"
There are two reasons for the increased labor productivity. First, as the traffic volume rose, labor intensity went up. For example, a station employee who worked alone could deal with more passengers than before. Second, labor conditions have been revised after the reform, as discussed in Section 3.6.3.

The revenue from related businesses, such as retail, real estate, and restaurants, has also increased, although their contribution to total revenue is still not large. The JR Companies' revenue from related business was 1.5 billion yen in FY987 and 2.7 billion yen in FY1991. Its ratio to the total revenue was 4 percent in FY1987 and 6 percent in FY1991.

Table 3-1 shows that other operating expenses have not significantly reduced. Although the companies paid lower prices for purchasing goods (Section 3.5.2), at the same time they increased repair expenses strategically. For example, JR East spent three times as much as in the JNR era for maintenance (Sumita, 1992, p. 170). Some special expenses for better service, such as the refurbishment of stations and restrooms, caused the increase of the expense. In addition, operating expense was increased for stabilizing their financial conditions. For example, JR East repurchased their bonds to return their long-term debt (Section 2.1.2), and the difference between the actual prices and the book values of the bonds was classified as operating expense (Miura, 1989, pp.71-72).
Capital investment was reduced by one half compared to JNR, and this also contributed to the JR Companies' good financial performance (Section 3.5.2).

3.2.2 Financial Viability

The cause of the good financial performance of the JR Companies is examined first. Section 3.2.1 demonstrated that the traffic increase and raised efficiency were the major causes.

The following factors led to the growth of passenger traffic:

(1) Japan's good economy, which recovered from recession in 1986 (Sumita, 1992, pp. 8-9; Koike, 1992, pp. 8-9).

(2) The JR Companies' improved service level: more frequent service, faster speeds, improved interior and exterior design of cars and stations (Section 3.4)

(3) The JR Companies' steady fare levels since the reform (Section 3.2.1). During the same post-reform period, each existing private company raised fare twice (Nonaka, 1992, pp. 72-75).

(4) The JR Companies' sales effort

(5) Increasing population concentration in urban areas, especially Tokyo (Figure 2-9)

Thus, the contribution of each factor is hard to evaluate. Some say that the JR Companies' performance is simply the result of a good economy; others say that the companies could not have captured
benefits provided by the good economy if JNR had not been reformed. Shoji Sumita, chairman of JR East, stated (Sumita, 1992, pp. 17-19):

"Some critics say that the JR Companies' good performance is due to the good economy and have nothing to do with the management. JNR's performance shows that the criticism is wrong. The passenger traffic during the JNR era was at its peak in 1974. After that the traffic declined every year; in 1982 it fell to 88 percent to that of 1974. Meanwhile, GNP and the consumers expense rose up to 145 and 135 percent respectively; the traffic of private railroads also rose by 17 percent. These figures show that the good economy would not increase passengers if the railroad were operated by the national railroad."

The increase in freight traffic is attributed to having no strikes (Section 3.4.4, 3.6.1), JR Freight's sales effort, worsened road congestion, and a shortage of truck drivers.

The JR Companies' financial viability seems to depend on the companies' ability to improve service levels and sales efforts. As this thesis discusses in Section 3.4, these factors were brought about by the JR Companies' effective and efficient management and labor-management cooperation. Hence, maintaining managerial quality and labor-management relationship will be vital for the JR Companies' financial viability in the future.

The JR Companies' financial viability will also depend on whether they can increase revenue by raising fares. In many cases, urban
transit lines of the JR Companies are monopolistic, and the Shinkansen lines have fairly competitive power, so those lines will make additional revenue by fare increases. In contrast, on other lines, fare increases may result in the loss of passengers to other modes. However, each line of the JR Companies has different power to compete with other modes. Hence, each company's financial viability really depends on the lines which the company has and the strength of competitors.

3.3 Retaining the Functions of the Railroad

The JNR Reform Commission expected that the railroad would maintain its important role in certain markets where railroads could take advantage of their characteristics. The performance is measured by the railroad's share of traffic. The JR Companies' shares in passenger-km and ton-km were shown in Figures 1-1 and 1-2 respectively. As for the passenger traffic, the "Opinions" proposal forecast that the railroad's share would decline gradually, down to 20.1 percent in FY1990 (see Table 1-2); actually it was 21 percent, better than the forecast³⁸. The "Opinions" proposal expected the freight railroad to survive by specializing in the markets where the railroad could compete, such as bulk freight and intermodal services. After the reform, the freight railroad increased its share in ton-kms

³⁸ JNR forecast the share to be 21.1 percent (Table 1-5) in FY1990, but that seems to be too optimistic; it forecast the private railroads' share to be 14.7 percent, while it actually was 13.2 percent. The "Opinions" proposal was more realistic, for its forecast of existing private railroads' share in FY1990 was 14.4 percent.

Hence, it can be said that railroads have remained an important mode of transportation.

3.4 Service Quality

3.4.1 Effective Response to Demand

Several examples show how the JR Companies have more effectively planned services in response to demand than JNR did.

(1) After the reform, train schedulers could respond to demand more effectively as follows:

(a) In the JNR era, basic train schedules were renewed every two years. This has now been modified to once or twice a year (Ressha Daiya to Tetsudou Keiei, 1992).

(b) Before the reform, it sometimes took a few months to run extra freight trains. JR Freight now does it in 3-7 days (JR Freight, 1987).

(c) Since the reform, train dispatchers can add cars to passenger trains in response to demand. In the JNR era, such changes needed to be scheduled previously (Ressha Daiya to Tetsudou Keiei, 1992)\(^{39}\).

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\(^{39}\) Stated by JR Central's employee. It is not stated when the changes were to be scheduled in JNR.
The following causes were considered to have improved the effective response of train schedule to demand.

(a) Managerial changes (Section 3.5.5)

(b) Labor union policy became cooperative with companies and enabled quick decisions (Section 3.6.4).

(c) Managers began to consider customer benefit and revenue increase seriously.

(d) Tactical timeliness in defeating competitors. For example, a speed-up was scheduled just before the parallel highways were opened because it was hard to recover once customers moved to other modes (Koike, 1992).

(2) Although discounting in the competitive market had been commonplace in the JNR era, the JR Companies were more flexible. For example, the discount round-trip tickets between Tokyo and Kofu⁴₀ for limited express trains, which are even cheaper than the basic fare for local trains, were sold after the reform⁴¹. There was a convenient highway bus service which took passengers away from the railroad but the existing discount rate was not enough to win them back.

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⁴₀ 100 km west of Tokyo
⁴¹ The round-trip fare for the bus, the discount ticket, regular fare for local trains and limited expresses are 3,500, 4,100, 4,320, and 6,800 yens respectively.
(3) The JR Companies have operated luxury trains, which gained much popularity and drew public appreciation\(^{42}\). This policy adequately captured the recent preference of some Japanese travelers who enjoy more luxury trips for more time and expense. That public appreciation may have improved impressions of the railroads.

(4) The JR Companies succeeded in building up new demand. For example (Yamamoto, 1990, pp. 192-207), JR West began night trains for skiers to Nagano Prefecture. JNR had night trains from JR West's region to Nagano carrying only a small portion of passengers -- 40 thousand passengers in FY1986, while the total exceeded one million. JR West began trains with better accommodations, closer destination stations to the ski slopes and advertised so intensively that their directors even delivered leaflets to ski-bus passengers. When the book (Yamamoto, 1990) was written, JR West expected more than 400 thousand such passengers in FY1989. Through the advertisement, JR West's staffs learned from potential customers how these trains should be scheduled to meet current customers' ways of enjoying life in ski areas; for example, trains should have been scheduled before winter vacations\(^{43}\) so that passengers could enjoy Christmas Eve there.

---

\(^{42}\) For example, sleeper trains "Hokutosei" have been running since March 1988 from Tokyo (Ueno Sta.) to Sapporo. They had coaches with luxury accommodation and dining cars with premium dinner. Luxury cars are so popular that they get soon sold out. The trains take 16 hours, so there is no other attractiveness other than enjoying the trip.

\(^{43}\) There are enough reasons for JR West staff to think that the ski demand emerges after Christmas. Japan has no Christmas vacation; the winter
3.4.2 Intercity Service

Maximum train speed has risen in both the conventional and Shinkansen lines, as seen in Figures 3-4 and 3-5. Those figures also show how speed-up was stagnant in the JNR era. In conventional lines, new tilting trains raised the speed at curves, and new powerful railcars ran faster at slopes. The private companies' potential for such technical innovations will be reviewed in Section 3.5.7.

Speed-up resulted in a shortening of travel time. For example, the maximum speed of Tokaido Shinkansen between Tokyo and Shin-Osaka was raised from 220km/h to 275km/h in March 1992, reducing travelling time from two hours and 52 minutes to two hours and 30 minutes. Table 3-3 shows the speeding up (in average speed) of limited express trains in conventional lines, as well as the frequency improvement. Figure 3-6 shows how JR Kyushu has upgraded one half of its lines (Aoki, 1993) since the reform, indicating speed-up has been an important policy (Section 3.5.2).

It has been observed that speed-up has certainly contributed to the increase of traffic. Figures 3-7 and 3-8 suggest that the decrease in travelling time and the increase in traffic happen at the same time.

Many cars with sophisticated designs and good accommodations have been introduced and gained much popularity. The JR
Change of Maximum Train Speed

Figure 3-4 Conventional Lines

Figure 3-5 Shinkansen
Table 3-3  Frequency and Speed of Limited Express Trains

<table>
<thead>
<tr>
<th>Company</th>
<th>From</th>
<th>To</th>
<th>April 01, 1987 Daily #</th>
<th>1987 Speed</th>
<th>April 01, 1992 Daily #</th>
<th>1992 Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hokkaido</td>
<td>Sapporo</td>
<td>Higashi-Muroran</td>
<td>14</td>
<td>88.0</td>
<td>15</td>
<td>95.7</td>
</tr>
<tr>
<td></td>
<td>Sapporo</td>
<td>Asahikawa</td>
<td>23</td>
<td>92.2</td>
<td>32</td>
<td>102.6</td>
</tr>
<tr>
<td>East</td>
<td>Ueno</td>
<td>Mito</td>
<td>26</td>
<td>99.5</td>
<td>32</td>
<td>111.8</td>
</tr>
<tr>
<td></td>
<td>Shinjuku</td>
<td>Matsumoto</td>
<td>16</td>
<td>79.9</td>
<td>32</td>
<td>84.9</td>
</tr>
<tr>
<td>Central</td>
<td>Nagoya</td>
<td>Nagano</td>
<td>8</td>
<td>79.8</td>
<td>13</td>
<td>87.0</td>
</tr>
<tr>
<td></td>
<td>Nagoya</td>
<td>Takayama</td>
<td>7</td>
<td>58.8</td>
<td>8</td>
<td>77.5</td>
</tr>
<tr>
<td>West</td>
<td>Osaka</td>
<td>Kanazawa</td>
<td>18</td>
<td>93.9</td>
<td>24</td>
<td>102.3</td>
</tr>
<tr>
<td></td>
<td>Tennoji</td>
<td>Shingu</td>
<td>7</td>
<td>72.4</td>
<td>10</td>
<td>72.4</td>
</tr>
<tr>
<td>Kyushu</td>
<td>Hakata</td>
<td>Kumamoto</td>
<td>25</td>
<td>83.6</td>
<td>31</td>
<td>94.7</td>
</tr>
<tr>
<td></td>
<td>Kokura</td>
<td>Oita</td>
<td>17</td>
<td>82.2</td>
<td>28</td>
<td>83.9</td>
</tr>
</tbody>
</table>

Note: 1. Only Regular Trains
2. Speed of the Fastest Trains
3. Include Express Trains, Excludes night trains

Source: Sone, 1992

Table 3-4  Frequency Improvement in Commuting Lines

<table>
<thead>
<tr>
<th>Company</th>
<th>From</th>
<th>To</th>
<th>April 01, 1987 Stopping</th>
<th>1987 Rapid</th>
<th>April 01, 1992 Stopping</th>
<th>1992 Rapid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hokkaido</td>
<td>Teine</td>
<td>Sapporo</td>
<td>5</td>
<td>0</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Tokai</td>
<td>Okazaki</td>
<td>Nagoya</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Kyushu</td>
<td>Tougou</td>
<td>Hakata</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Sone, 1992
Figure 3-6 Speed-Up after Privatization (JR-Kyushu, in July 1992)

Speed is indicated by km/h. Speed in a curve "+X" means that the speed is greater than the standard one by X km/h.

Source: Aoki, 1993
Figure 3-7 Minimum Travel Time by Trains and Traffic Volume Between Tokyo (Ueno Sta.) and Kanazawa

Source: Courtesy of JR East
Figure 3-8 Minimum Travel Time by Trains and Traffic Volume Between Tokyo (Ueno Sta.) and Mito

Source: Courtesy of JR East
Companies invested intensively in cars (Section 3.5.2). Some cars were designed especially for the lines where they were in operation. JNR insisted on standardized, businesslike designs for operational conveniences. The JR Companies prioritized passengers' comfort and pleasure, so they chose ambitious design policies.

### 3.4.3 Urban/Suburban Transit

Urban/suburban transit has been improved in terms of frequency, rapid trains\(^4^4\), and rolling stock. Table 3-4 (East Japan Railway Company, "Basic Frame for Division and Privatization") shows examples of improved suburban lines.

Various cars with good accommodation were introduced to many lines; in JNR's years most lines, with the exception of those in metropolitan areas, were assigned old cars which had been used in metropolitan areas (Ressha Daiya to Tetsudou Keiei, 1992). Similar to the intercity services (Section 3.4.2), the design of commuter cars has now become ambitious; double-decker cars with many seats and 6-door (per one side) cars with no seats in rush hours were newly developed for specific needs.

Although JNR offered frequent service in the Shuto (Tokyo metropolitan) and Kansai (Osaka metropolitan) areas, it only offered infrequent service in other cities until 1982. Even in the Kansai area, where severe competition has existed among parallel JNR lines and private railroads, JNR lost markets. There are two reasons why

\(^{44}\) Express trains without extra charges.
transit service used to be ineffective. First, JNR's very strong headquarters were unfamiliar to local demands (Yamamoto, 1990, pp. 136-138, 152). Second, JNR was so inefficient that transit service did not pay. JNR began to provide frequent transit service in 1982 and succeeded in attracting passengers. The JNR Reform Commission acknowledged that the transit service is one of the business areas in which the railroad has advantages (Section 1.5). The JR Companies developed this business area still further. For example, JR West, whose main area is Kansai, increased the number of passengers by 40.3 percent from FY1989 to FY1990. The traffic growth owed much to the increase of short-distance passengers because the growth in passenger-km was only 6.5 percent during that period (Sone, 1992).

3.4.4 Other Service Improvements

Since the reform, employees' greetings and attitudes toward passengers have been improved (Tateyama, 1989, pp. 29-38). The government reported that the percentage of people having "good impression" of the JR Companies' service increased significantly. Between the 1986 and 1988 polls, the percentage rose from 50.3 to 67.3. The increased rate of 17 percent was the second highest in the 17 organizations which were compared. In 1988, the JR Companies' services attained the fifth highest appreciation in the 30 governmental corporations (General Affairs Agency, 1989). Two issues account for that improvement; first, the employees see passengers as customers, whereas JNR's officials used to think, "I let you take a train" (Sone 1992). Second, the managers can now discipline the employees (Miyamoto, 1993, p. 20); in JNR, such
discipline was impossible because they did not control the workplaces due to strong and leftist unions (Section 3.6).

There are many service improvements which could be done without huge expenses. The managers' active and progressive attitudes were observed (Section 3.5.4) (Arashiyama, 1989, pp. 15-19). For example, stations, especially their restrooms, have been cleaned and refurbished. JNR's station restrooms were criticized as being dark, dirty, and smelly; the JR Companies accomplished this improvement soon after the reform45.

As for reliability, there have not been any complaints that train delay has increased.

The JR Companies agreed with their majority unions on the declaration of suspending strikes (Section 3.6.1), which had significant meaning for reliability in freight service, for repeated strikes deprived JNR of freight traffic (JR-Freight, 1987). Confrontational unions had strikes recently, but the effect was minimal.

3.4.5 Safety

As is shown in Figure 3-9, the total number of accidents has been decreasing since the reform. In FY1987, the first year of private companies, the JR Companies had 927 accidents per year and less

Figure 3-9  Promotion of Safety

Note: Train Operation Accidents include the following:
1) Collision of Trains
2) Derailment of Trains
3) Fire of Trains
4) Grade Crossings Accidents: Collision or Touch of Trains or Cars* in Grade Crossings with People or Vehicles
5) Human Injury or Death caused by the Operation of Trains or Cars
6) Property Damage whose Loss is Equal to or Greater than 5 million Yen caused by the Operation of Trains or Cars

Source: Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992

* A Train means a composition of car(s) which are composed for operating outside stations. A car in this page means a rolling stock which does not consist a train.
than in any year from FY1982 to FY1986. In FY1991 the number declined to 760. Grade crossings accidents have also been declining.

Although the total number has decreased, serious accidents, such as collision and derailment, have happened. Since the JNR Reform, one passenger has been killed by an accident.\(^\text{46}\) However, more lives might have been lost in other accidents because many of those accidents occurred on freight trains, which means that there is less potential for loss of life. The Ministry of Transport sometimes warned the companies to take stronger countermeasures. Some have questioned whether the JR Companies management has emphasized operation\(^\text{47}\) and efficiency at the expense of safety.

The JR Companies have taken many countermeasures. For example, they have been investing in automatic train protection, car detector in grade crossings, and so on. JR East has encouraged what it calls "Challenge Safety Activity," meetings of workers to identify and eliminate any potential causes of accidents (Iwai, 1991). Such an activity became possible because of the increased morale and unions cooperation. Nonetheless, serious accidents do occur.

Hence, it is concluded that safety issues need further investigation.

\(^{46}\) Besides there have been victims such as drivers killed by the malfunction of the warning signs of grade crossing.

\(^{47}\) For example, too much emphasis on operation might lead to hesitation to stop the train when there is a fear of natural disaster.
3.4.6 Maintaining Rural Lines

The JR Companies have not abandoned any rural lines\(^{48}\) which they were supposed to operate\(^{49}\).

As for train frequency in rural lines, it was observed that train frequency has been maintained since the reform in nine rural lines which were chosen as examples (Sone, 1992).

3.4.7 Eliminating Any Inconveniences from Division

To insure smooth service between the JR Companies, a vast number of agreements between them were made. They included the nationwide fare rules such as long-distance discounts, rules enabling through operation, and mutual dealing of tickets with some handling fee.

So far, customers have had no clear inconveniences from division; the agreements have worked well as intended. Through trains among the companies are running. Even new through services have been started\(^{50}\). The companies seem to have a common interest in having convenient train schedules. JNR's fare rules have never been changed, so no fare increase resulting from divided calculation

\(^{48}\) One exception exists in the transfer of the 48.4 km-line between Wakura-Onsen and Wajima in Ishikawa Prefecture (JR West) to Noto Tetsudou, a third-sector railroad.
\(^{49}\) The JR Companies did abandon some rural lines whose discontinuation had been decided in 1980.
\(^{50}\) JR West's ski trains, which were introduced in Section 3.4.3, are the examples, for their destination areas belong to JR East.
occurred; for example, JNR's long distance discount has been maintained for through tickets between the JR Companies.

3.5 Management

3.5.1 Independence and Responsibility of Management

One of the major issues of the JNR Reform was the elimination of political interventions in the railroad and the establishment of managerial responsibility. The JR Companies' have never suffered from political intervention, as shown by the following events:

(1) JR East could decline to participate in investing in the New Joban Line, although the national government asked the company to invest in the line (Section 2.6). JR East had no obligation for the investment, and no sanction has been reported.

(2) No conflicts between the JR Companies and the government have been reported in deciding the companies' expense for building Seibi Shinkansen. (Section 2.4.2).

(3) The JR Companies' executives are now free from frequent attendance at the Diet, which the JNR presidents had (Sumita, 1992, pp. 17-19), and devote themselves to matters of management.

(4) Shoji Sumita, chairman of JR East, stated that he never had unreasonable requests which ignored the company's financial condition (Sumita, 1992, p. 156).

However, sometimes government involvement did take place. The first type of involvement is inherent to the JR Companies and
will never happen after the companies' stocks are listed. For example, three of the JR Companies bought the Shinkansen infrastructure from the Shinkansen Holding Corporation on October 1, 1991 (Section 2.5.3). There was an administrative decision in determining the price (Tatezawa, 1992, pp. 80-88). The selection of future executives, which necessitates the ministers' permission, can also be a political matter.51

The second type of government interventions are related to regulations and other administrative issues, which also exist for private railroads in terms of fare increases, subsidies, other permissions, etc. Using the power of these interventions, the government would be able to control the JR Companies in various ways.

3.5.2 Pursuit of Efficiency

The JR Companies have had much stronger motivation for pursuing efficiency than JNR did.

(1) JNR had excessive inventory of materials and equipments, such as rails. Its managers in the field wanted to have as much inventory as possible. The JR Companies cut back on inventory. For example, it is reported that JR West halved its inventories in the year ending March 1989 (Yamamoto, 1990, pp. 78-82)52.

51 Tatezawa, 1992, pp. 143-151; Irie, 1993
52 As for JR East, see Katayama, 1989, page 44.
(2) The JR Companies also cut the price of the goods they bought. It is reported that JR East cut the cost by 5-6 percent in average, 10-20 percent in some materials, and 50 percent in extraordinary cases (Katayama, 1989, pp. 41-44). JNR's expensive purchases were partly due to its original standards (Japanese National Railways Standards, or JRS), which were enacted when Japanese products were of low quality just after World War Two. JNR had standards for fluorescent lights, which were of different sizes from those in common use, and continued to purchase more expensive ones. The JR Companies, however, abolished the JNR standards and started buying some materials through open bids. They began to purchase foreign products, while JNR bought only some machines for track maintenance from foreign sources. Pandrol's rail fasteners and Cummins' diesel engines (both from the United Kingdom) are examples of this.

The independence of management contributed to such changes in procurement, for the companies that did business with JNR had political influence, which JNR needed.

(3) The JR Companies' capital investment policy has been changed. In the JNR era, the dominant purpose was to increase capacity. The JR Companies invested mainly in rolling stock and minor improvements of tracks (Figure 3-10). The effect of the investments, such as in speed-up and more comfortable trips, has already been discussed in Section 3.4.
Figure 3-10  Capital Investments in Railroads

unit: 100 million yen

Source: Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992
The JR Companies' investment policy have been effective in stabilizing financial condition because there has been minimal investment in rights-of-way, which do not generally provide a return, because the traffic does not increased to cover the construction cost.

However, the investment policy will weaken the railroad's capability to compete in the long-run, for highways and airports are currently being built. Even with the state-of-the-art upgrading, single-tracked right-of-way with sharp curves still has limitations in competing with highway buses\(^{53}\).

In addition, the investment policy will not fulfill social needs, such as reducing congestion in rush hours. The JR Companies have limitations in investment and sometimes disappointed customers(Section 2.6). So, the government began to aid such capital investment to fulfill public needs (Section 2.9). For example, with interest-free loans from the Railway Development Fund and/or subsidies from local governments, JR Hokkaido, East, and West began construction of additional tracks to their commuter lines\(^{54}\).

\(^{53}\) For example, As of July 1, 1993, JR Shikoku's state-of-the-art diesel railcars run from Takamatsu to Kochi (159.6 km apart; single-tracked sections amount to approximately 130 km.) in 2 hours and 14 minutes. Expressway buses connect the cities in 1 hour and 55 minutes.

\(^{54}\) Koutsuu Shimbun, December 8, 1993; Yamamoto, 1993; Deguchi, 1993
3.5.3 Organizational Reform and Decentralization

The JR Companies simplified and integrated organizations, contributing to effective and timely decisions (Section 3.5.5) as well as efficiency.

First, factionalism prevailed in the JNR era; departments were not cooperating with one another. The JR Companies integrated departments both in headquarters and in branch offices. For example, operational and marketing departments (passenger, freight) were involved in organizing train schedules and negotiations between the two departments took a long time. Now a single section deals with train schedule. JNR's two departments dealing with permanent way and electric equipments were also integrated55 for better communication.

Second, the JR Companies introduced integrated organizations which take some of the power from the central organizations. For example, a "Regional Stationmaster" (in JR East) is the chief of a major station and has some budget and authority to cover various organizations such as stations and depots in its area. An "Operation Department" (in all passenger companies except JR Shikoku) is like an independent railroad, containing stations and depots as a single organization and can sometimes decide local train schedules.

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55 There are exceptions, such as JR East's branch office of Tokyo.
The JR Companies also reduced the number of managers\textsuperscript{56} from which a proposal must receive approvals. For example, the number became ten in JR East, while it was more than one hundred in JNR\textsuperscript{57}. The period for approval was greatly shortened, and enabled quick responses to demand (Section 3.5.5).

The JR Companies decentralized power. The author has just stated that integrated organizations, such as "Regional Stationmaster" and "Operation Department," got more authority. In addition, the JR Companies expanded the authority of branch offices, stationmasters, the chiefs of maintenance depots, etc., to respond to local needs more flexibly and more quickly.

Besides these examples, the JR Companies have changed their organizations in pursuit of better ways of decision.

3.5.4 Morale Reform of Managers

After the reform, the JR Companies have had an atmosphere that emphasizes challenge and practice. Executives tried to overcome JNR's conservativeness (Takarabe 1993, pp. 168-169); JNR was labeled as giving negative lessons (Sumita, 1992, p. 69). Managers are encouraged to come up with many new ideas; for example,

\footnote{56 A proposal must get approvals from all the sections which are affected by the passage of the proposal. For example, to run trains, approvals from a rolling stock department are necessary as well as from managers in an operation department.}

\footnote{57 Those figures are based on Arashiyama, 1989, p.150. As explained in the previous footnote, those figures do not indicate the number of layers in hierarchies. Other articles list different figures (Katayama, 1989, p.198, etc.). As for JR Central, see Kojima, 1990, p.157.}
Shuichiro Yamanouchi, then-vice president of JR East, said, "Propose everything that you could not do in JNR's ages (Iwai, 1989, p. 95)."

During the JNR era they were evaluated by demerits (Takarabe, 1993, p. 163). An advisor who was sent to JR East stated that they had been using all of their potential and critical minds which had been buried under JNR's various constraints (Iwai, 1989, p. 214). JR Central's staffs were reported to begin feeling a progressive atmosphere (Kojima, 1990, p. 157).

Several causes account for the change in attitudes. First, management has been freed from the burden of government control and political intervention. Second, many problems in JNR had been criticized outside and inside JNR, and top managers knew what to correct. Third, they do not have to spare as much time for labor negotiations (Iwai, 1989, p. 95-96) and political affairs any more.

Chairmen were invited from private companies to work for the JR Companies and taught the employees what private business was like\textsuperscript{58}.

Nonetheless, it is often pointed out that middle managers still remain bureaucratic and conservative (Yamamoto, 1990, pp. 307-309).

\textsuperscript{58} Several episodes telling the role of the then-chairman of JR West are introduced in Yamamoto, 1990.
3.5.5 Adequate and Timely Decision

After the reform, decisions have been more timely. In this section, the author discusses the causes of the change, focusing on train schedules (Yamamoto, 1990, pp. 136-157; Ressha Daiya to Tetsudou Keiei, 1992).

Adequate marketing was brought about by the division of JNR, decentralization, and the integration of organization. As for train schedules, for example, JNR's operating department in the headquarters had so centralized power that it controlled the use of tracks and cars and determined train-kms for each branch. JNR tended to emphasize long-distance trains, especially those connecting to Tokyo, over local trains. The operation department did not adequately consider demand, which was dealt with by the marketing departments. Branch offices did not control their operating and marketing departments, for the departments instead were controlled by the relevant departments from headquarters. After the reform, the divided headquarters could understand local affairs, branch offices were given more authority, such as deciding their own train-km, and relevant sections have been integrated.

Timely decisions were accomplished by the integration of organization, the change of labor unions, and the simplification of procedures to get an approval. Regarding train schedules, for example, negotiations among the operation and marketing departments in the centralized headquarters were very time-consuming. Labor unions were very tough negotiators in changing
train schedules (Section 3.6.3). The approval procedure was very complicated. Since the reform, relevant organizations were integrated, labor unions took a more cooperative stand, and the approval procedure was simplified, facilitating the timely scheduling of trains.

3.5.6 Personnel Policy

Personnel policy has been changed to motivate employees.

Before the reform, employees who graduated from colleges and universities were classified into two ranks by their schools. Employees of the upper rank were promoted to certain levels in the hierarchy regardless of their ability and performance. Employees of the lower group were discriminated against in the speed of promotion and the final posts they could reach. This elite system, which had already been criticized (Yayama, 1987, pp. 171-175), was abandoned, and a single promotion system for all college graduates has been adopted (Iwai, 1989, pp. 214-221; Katayama, 1989, p. 280). Some college graduates of the former lower rank, and even high school graduates, have been promoted to directors.

The JR Companies began to employ female college graduates, while JNR never did.\(^{59}\)

The companies began to reward and penalize employees with promotion, allowances, and so on. The companies can discourage

absenteeism and promote worker's flexibility for unscheduled extra jobs. During the JNR era, the unions were so strong that any system of rewards and penalties were impossible, for the unions wanted to protect rebellious members and discourage sincere workers.

Transfer of employees from one office to another has been possible since JNR's final years; the companies could then allocate workers flexibly. This was also made possible due to the change to unions' cooperative spirit and the power balance between labor and management.

3.5.7 Research, Development and Innovation

After the JNR Reform the JR Companies were eager for technical progress. The companies admitted that JNR's technology had been stagnant since the 1970's due to worsening labor-management relations, financial condition, and bureaucratic inertia (Katayama, 1989, pp. 92-94); labor unions used to oppose full-scale tests and any kind of innovation which might lead to labor cuts.

As was already discussed, train speed has been raised both in Shinkansen and conventional lines after the reform. Figures 3-4 and 3-5 show the history of speed-up and how train speeds were stagnant in the JNR era. Although most technology was developed in the JNR era, JNR did not use it. However, the JR Companies implemented it.

For example, JNR had already finished the essential developments of JR Central's 275 km/h cars, which was introduced in 1992. JNR
also developed improved tilt trains, which was introduced by JR Shikoku in 1989. One of the innovations which the JR Companies achieved is the use of new powerful diesel engines, including British ones, enabling much higher acceleration than previous diesel railcars. They got those engines through open purchase of materials (Section 3.5.2). Figure 3-11 illustrates the history of JNR and existing private railroads in adopting innovations of electric railcars, showing JNR's backwardness in technology.

In the field of track maintenance work, JNR's conventional lines used only multiple-tie-tampers as mechanization tools. The JR Companies have been trying to replace most manual labor with machines, introducing ballast replacing machines, ballast regulators, and so on. 90 percent of ballast change is carried out by machines in conventional lines, while 100 percent was done by hand during the JNR age. For this purpose they have bought many machines from abroad.

JNR's information system was also backward over a few decades; they introduced only MARS, a seat reservation system, and COMTRAK, a Shinkansen traffic control system. Now the JR Companies are developing various systems like train schedule communication systems and point-of-sales systems. Before the systems were introduced, relevant workplaces, such as stations and maintenance depots, had to read the documents showing train

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60 This subsystem carries branch offices' operation plans to terminals, stations, and relevant maintenance sections.
Figure 3-11  Major Technical Innovations of Electric Railcars: Comparison With Private Railroads

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<td><em>VVVF</em></td>
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schedules; it took a couple of months to aggregate the company's whole revenue.

Some companies\textsuperscript{61} introduced automatic ticket gates in urban areas; employees previously had to examine tickets everywhere.

The JR Companies are introducing advanced automatic train protection (so-called ATS-P) which could eliminate the serious results of potential human errors. JNR's automatic train protection was technologically backward because potential human error might lead to a collision.

As for freight, the company introduced low-floored flatcars which could load ocean intermodal containers (8ft. 6in. ISO Standard) and high-powered engines which would pull heavier trains (Kandatsu, 1992).

The organization of research and development also has been reformed. JNR had its research laboratory, which had developed Shinkansen and MAGLEV. The laboratory was separated from operation and became Railway Technology Research Institute. It is supported by all of the JR Companies. The current budget surpasses that during the JNR era (Figure 3-12). In addition, some JR Companies established their own research and development organization for the fields more closely related to applications. JNR's research laboratory had been criticized as an ivory tower, so this movement was welcomed for reinforcing applications.

\textsuperscript{61} JR East and Central
Figure 3-12  Expense for R&D

JNR's Final Five Years  JR's First Five Years

(Railway Technology Research Laboratory)  (Railway Technology Research Institute)

unit: 100 million yen  Excluding Cost for MAGLEV

Source: Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992
Improved labor-management relationships further contributed to research and development and innovation. Cooperative labor unions support mechanization, for it will eliminate inhumane physical labor (Matsuzaki, 1992, pp.210-211).

3.5.8 International Cooperation

The JR Companies began to do business with foreign enterprises. As mentioned before, they began to buy more equipment from abroad. JR East endowed a professorship at MIT and is communicating with many scholars there (Sumita, 1992, pp. 108-110). JR East also established an agreement with the German Federal Railway for exchanging information (Kouutsuu Shimbun, June 14, 1993). In addition to JNR's offices in New York and Paris, which the JR Companies inherited, JR Central opened its own offices in Los Angeles, London, and Sydney, to collect information (Kojima, 1990, pp. 166-169).

There are several reasons for the companies' international activities. First, the value of the yen rose, so foreign materials and equipment became cheaper. Second, the JR Companies were freed from politically strong domestic manufacturing companies, which JNR had needed for lobbying to pass its budget and fare increases. Third, there was strong leadership by some executives. Finally, the companies thought much of improving their public reputation.

On the other hand, however, the capability to aid foreign railroads technically has declined, for the JR Companies do not have many
specialized staff due to labor cuts (Ministry of Transport, Kokutetsu Kaikaku Go 5 Nenkan no Seika to Kadai, 1992).

3.6 Labor-Management Relations

3.6.1 Emerging Cooperation between Labor and Management

JNR had several labor unions based on their political stands and occupational categories. Most of the JNR employees belonged to left-leaning unions influenced by communist ideology. The unions lacked a full sense of the corporation's financial performance, held repeated strikes, which were illegal in JNR, opposed raising labor productivity, and sometimes had the members disobey work rules. Some smaller unions had a labor-management cooperation policy, the basic idea of which was that the survival and proliferation of companies would benefit union members. In JNR's final years, the left-leaning unions either changed their policy or lost members, and cooperative unions became a majority. After the reform, unions were reorganized based on their political creed (Table 3-5).

The change of labor unions has resulted in many other changes, as discussed in Sections 3.6.2, 3.6.3, and 3.6.4.

The following causes explain why the radical policies in JNR's unions during the JNR era could so heavily influence the labor movements:

62 Those unions were composed of only the JNR employees. Such organizational characteristics of labor unions are common in Japan.

63 Drivers, track maintenance, etc.
### Table 3-5  Worker Numbers Transition of Labor Unions

#### Labor Unions in the JNR Era (January 1, 1985)

<table>
<thead>
<tr>
<th>Union</th>
<th>Members</th>
<th>%</th>
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<tbody>
<tr>
<td>National Railway Workers Union (KOKURO) [L]</td>
<td>207,000</td>
<td>(72%)</td>
</tr>
<tr>
<td>Nihon National Railway Motive Power Workers Union (DORO) [L]→[C]</td>
<td>38,000</td>
<td>(13%)</td>
</tr>
<tr>
<td>Japan Railway Workers Union (TETSURO) [C]</td>
<td>35,000</td>
<td>(12%)</td>
</tr>
<tr>
<td>Others</td>
<td>6,200</td>
<td>(3%)</td>
</tr>
<tr>
<td>Total Union Members</td>
<td>286,200</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

#### Labor Unions of the JR Companies (December 1, 1989)

<table>
<thead>
<tr>
<th>Union</th>
<th>Members</th>
<th>%</th>
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<tbody>
<tr>
<td>Japan Confederation of Railway Workers Union [C]</td>
<td>131,300</td>
<td>(70%)</td>
</tr>
<tr>
<td>General Federation Japan Railway Industry Workers Union [C]</td>
<td>21,800</td>
<td>(12%)</td>
</tr>
<tr>
<td>National Railway Workers Union (KOKURO) [L]</td>
<td>32,500</td>
<td>(17%)</td>
</tr>
<tr>
<td>Others</td>
<td>2,200</td>
<td>(11%)</td>
</tr>
<tr>
<td>Total Union Members</td>
<td>187,800</td>
<td>(100%)</td>
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[L]: Left Leaned; [C]: Cooperative with Management; [L]→[C]: Changing Union Policy

Source: Tanahashi, 1992 ([L], [C] are noted by the author)
(1) JNR lacked accountability for its financial condition. Repeated political interventions increased JNR's losses (Section 1.2). These two interrelated problems deprived the JNR workers of the motivation to increase revenue and reduce cost. Hence, the employees accepted the unions' communist ideology that workers were exploited.

(2) Due to the lack of accountability for JNR's financial conditions, JNR's top managers suspended resolute penalties against illegal labor movements for successful collective bargaining (Sankei Shimbun Kokutetsu Shuzaihan, 1987, p. 137) and avoided further labor disputes (Ohno, 1986, pp. 240, 284). Such policies meant the triumph of the left unions' policy to break company work rules.

(3) JNR was very susceptible to political pressures. The unions had strong political power and had parties pressure JNR not to take resolute labor and personnel policies (Ohno, 1986, p. 279; Matsuzaki, 1992, p. 172). Hence, such radical unions were influential upon the government and the JNR management.

(4) JNR discriminated in the promotion of employees on the basis of their academic history. Hence, many workers felt sympathy with union leaders rather than managers.

The different attitudes of the unions toward the reform were as follows:

(1) The cooperative unions supported the JNR Reform, stating that it was the only way to save the railroad from ruin (Matsuzaki, 1992, p. 14). The leftist unions were against the reform, saying that the
reform would sacrifice public interests (Roppongi, 1988, pp. 36, 46, 47).

(2) Some members of the cooperative unions agreed with several countermeasures for surplus workers, including working for other companies temporarily, and moving from areas where the labor force was redundant to the areas where the labor force was not as redundant (Matsuzaki, pp. 52-154). Leftist unions told their members not to agree with the countermeasures.

(3) In January 1986, JNR management and the cooperative unions announced a declaration whose main issues were as follows (Ogino, 1986; Matsuzaki, 1992, p. 92):

(a) Obey work rules (including having no strikes);
(b) Cooperate in improving labor productivity;
(c) Cooperate in the countermeasures for surplus workers.

Leftist unions did not join this declaration although their right faction wanted to do so (Roppongi, 1988, pp. 42, 50).

The fact that the right faction of the left-leaned unions quit the unions means that they preferred the cooperative unions.

Some of the JR Companies have had new potential problems. After 1991, the cooperative unions in some companies have been reorganized again. In those companies, some unions are no longer so cooperative; they have had strikes against productivity.
improvement. The difference is due to the power balance between the labor factions in each company\textsuperscript{64}.

3.6.2 Reconstruction of Work Discipline

JNR's leftist unions intended to do union activities in workplaces to strengthen their organizations. In July 1968, in return for productivity improvement, the unions had the management begin collective bargaining over some issues in workplaces. Much of the work hours was spent in the bargaining. Under the unions' leadership, workers refused to do extra work, and absenteeism prevailed. Managers were harassed every day. Workers wore unions slogans corresponding with each campaign over an issue. They worked only several hours a day. Managers were forced to provide workers unauthorized allowances to have them work.

In 1982, low labor productivity and those unauthorized allowances were revealed to the public, and a drunk engineman crashed into a train with his locomotive. The mass media reported the deteriorated work discipline sensationally. JNR took strict countermeasures for reconstructing work discipline. In the same year, JNR abolished any collective bargaining in workplaces.

Although leftist unions insisted that the old rules were the rights which the workers had obtained, work discipline returned by the end of JNR's days, due to the reorganization of unions and the threats of losing employment. Today only a limited number of union

\textsuperscript{64} Tatezawa, 1992, pp. 132-154; Irie, 1993
activists stick to the poor work rules which were commonplace in JNR.

3.6.3 Change of Labor Agreements

While reducing basic labor hours, labor conditions have been changed so that the labor productivity has been improving since JNR's final years.

(1) The efficiency of crews rose due to the elimination of many restrictions. For example, weekly work hours used to be within basic hours that were agreed on between labor and management; since 1985, weekly hours could exceed basic hours, and crews were paid allowance for extra work. As crews had been paid overtime allowances based on how much they traveled, they did not lose because they got more for longer and more intensive work.

(2) Job shifts were adjusted to the work load. In stations, employees had 24-hour-shifts (with a few hours to sleep) and regular 8-hour-shifts. However, the shifts were not adequate to cover morning and evening rush hours. Hence, they also adopted new day shifts; for example, a stationmaster can require employees to be at the station by 7 a.m. and leave after 9 p.m.65.

(3) Midnight jobs for maintenance staff began to be dealt with by extra work. In JNR's age, workers had a day-off the next day for many kinds of night maintenance work, such as rail replacement and

65 Such a shift does not necessarily continue each day for a given worker. The next day, the worker will have a late shift or a day off.
ballast tamping. The rule had been justified because such jobs were hard physical labor. However, as those jobs moved to outsourcing and railroad employees specialized in supervising, that justification lost meaning. After the reform, managers can make night jobs extra work, pay employees special allowances, and have them at work on the next day.

It is cheaper to pay special allowances for night work than to hire more workers because the companies can save other labor expenses; for example, bonuses, which are regularly given twice a year, and health and pension benefits.

(4) One employee does a greater variety of jobs. For example, in some rural lines, track maintenance staff work at stations in morning rush hours before they begin maintenance jobs. In addition, one-man train operation, or the elimination of conductors, began in some lines. Like buses, drivers collect fare.

These changes in labor agreements have been possible because labor unions are cooperative and do not oppose productivity improvement. In the JNR era, labor unions strongly resisted work force reduction. However, employment was not the unions' true objective, for JNR had never laid off its employees since the 1950's. As the unions could not win higher wages (see Section 1.6.1), they had to fight for lighter work loads. Another true objective was to retain their power, which was based on the number of their

66 In track maintenance, for example, JNR's/JR's employees only operated multiple-tie-tampers and inspected turnouts (occasionally they changed ties, rails, and so on.).
members. After the reform, the cooperative unions understood that productivity improvement can benefit their members.

The cooperative attitude eased the modification of basic train schedule. JNR needed two years to change train schedule partly because of the negotiation with labor unions. In organizing the October 1978 schedule, for example, JNR planned to cut the train-km of the freight service for the first time and had frequent discussion with labor unions about JNR's future plan of the freight service for two years (Kitsutaka, 1979). After the reform, train schedule is revised once a year at least.

The labor-management cooperation also contributed to research and development and innovation, for the cooperative unions do not oppose introducing new technology or operating experimental trains, while JNR's unions did.

3.6.4 Work Morale

As the power of the leftists declined, and the JR Companies retained a good relationship with majority cooperative unions, work morale improved.

In the JNR era, leftist union members tended to take a resistant attitude against joining quality control (QC) circles, issuing "improvement proposals," with which employees are supposed to write about their jobs. After the reform, QC circles have been widespread within the JR Companies (Yamamoto, 1990, pp. 82-87). Employees have been writing more "improvement proposals"; for
example, as is seen in Table 3-6, the average number of such proposals in JR East was 8.7 per employee in FY1990, while it was only 2.7 in FY1985 (East Japan Railway Company, "Basic Frame for Division and Privatization").

There is regional imbalance of labor supply and demand: in rural areas employees are redundant; in urban areas there are many jobs in related business such as retail. Employees in rural areas come to the urban area for a couple of years, leaving their family at home. In the JNR era, employees could stay in their home regions (Iwai, 1989, pp. 75-82)

The division of JNR also contributed to improved work morale. For example, the employees of the Three Island Companies have been especially motivated because they can not count on profitable lines such as Shinkansen any more (Koike, 1992, p. 10).

3.7 Political Issues

As the author discussed in Chapter 2, the construction of Shinkansen and new commuter tracks was investigated while the JNR Reform went on. The JNR Reform had the goals of cutting the national budget and retaining railroads' importance through sound management. Providing new high-speed service and reducing the rush-hour congestion can be considered other national goals.

Although the "Opinions" proposal charged the past investment with lacking consideration of JNR's budget, it also called for public subsidy which was appropriate for aiding private railroads. Hence,
Table 3-6  Morale Reform of Employees
-- QC Circles and Improvement Proposals --

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>QC Circles</td>
<td>Number of Circles</td>
<td>7,292</td>
<td>8,371</td>
<td>8,490</td>
<td>8,800</td>
</tr>
<tr>
<td></td>
<td>Participants</td>
<td>49,891</td>
<td>54,179</td>
<td>52,143</td>
<td>50,400</td>
</tr>
<tr>
<td></td>
<td>Participation Rate (%)</td>
<td>62</td>
<td>68</td>
<td>68</td>
<td>70</td>
</tr>
<tr>
<td>Improvement</td>
<td>Number of Proposals</td>
<td>750,000</td>
<td>459,000</td>
<td>618,000</td>
<td>705,000</td>
</tr>
<tr>
<td></td>
<td>Number per Person</td>
<td>2.7</td>
<td>5.8</td>
<td>7.8</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>Participation Rate (%)</td>
<td>44</td>
<td>77</td>
<td>81</td>
<td>78</td>
</tr>
</tbody>
</table>

Note: The figures in 1985 show the number in the whole JR.

Source: East Japan Railway Company, "Basic Frame for Division and Privatization"
the recent subsidy systems after the reform are the necessitated policies which was expected to follow the JNR Reform.

The policies are now done under clear financial responsibilities of the JR Companies, while JNR's responsibility was unclear.

3.8 Summary

The JNR Reform's effects are summarized as follows:

(1) The reform gave the companies independence from political affairs and the responsibility to live on themselves;

(2) The reform was effective as a management incentive;

(2-1) The personnel policy became fair;

(2-2) The JR Companies cut the prices in contracts and the amount of inventories;

(2-3) The investment policy became more effective;

(2-4) The companies became more innovative;

(2-5) The companies adopted decentralized management, facilitating adequate and timely responses to local demand;

(3) Labor-management relationships became cooperative. Labor agreements were revised to be more efficient. The employees got more flexibility for unscheduled jobs.

(4) The relationship between the government and the railroad changed. The railroad is regulated in terms of fares, technical issues,
and so on, as are existing private railroads, and have special
regulations in personnel matters, etc. Nonetheless, the management
became far more independent. To fulfill public interests, the national
and local governments partially subsidize capital investments in
infrastructures.

The causes and effects of the policies and changes within the JR
Companies are shown in Figure 3-13. Those complex relationships
are also expressed in Tables 3-7 and 3-8. Table 3-7 demonstrates
how individual policies which were developed by JNR or the JR
Companies had effects on the changes. Table 3-8 shows how the
changes within the JR Companies caused other changes and enabled
policies.

In the next chapter, the author discusses the lessons of the JNR
Reform.
Figure 3-13 Causes and Effects of the Changes in the JR Companies
Table 3-7 Effects of Policies during and after the JNR Reform on the Changes within the JR-Companies

<table>
<thead>
<tr>
<th>Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Independence from Politics</td>
</tr>
<tr>
<td>- Morale Reform of Managers</td>
</tr>
<tr>
<td>- Work Morale</td>
</tr>
<tr>
<td>- Labor-Management Cooperation</td>
</tr>
<tr>
<td>- Effective Response to Demand</td>
</tr>
<tr>
<td>- Service Improvement</td>
</tr>
<tr>
<td>- Good Financial Condition</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JNR Reform Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Privatization</td>
</tr>
<tr>
<td>- Division</td>
</tr>
<tr>
<td>- Financial Restructuring &amp; Labor Cuts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JNR/JR-Company Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Acquiring Spirit to Challenge</td>
</tr>
<tr>
<td>- Organizational Reforms</td>
</tr>
<tr>
<td>- Cutting Prices and Inventory</td>
</tr>
<tr>
<td>- Capital Investment Policy</td>
</tr>
<tr>
<td>- Improve Labor Productivity</td>
</tr>
<tr>
<td>- Fair Personnel Policy</td>
</tr>
<tr>
<td>- Educate &amp; Discipline Employees</td>
</tr>
</tbody>
</table>

Note: The "Capital Investment Policy" includes capital investment in rolling stock, stations, and speeding-up, less capital investment in right-of-way.
Table 3-8  Causes and Effects of the Changes within the JR-Companies

<table>
<thead>
<tr>
<th>Causes</th>
<th>Independence from Politics</th>
<th>Morale Reform of Managers</th>
<th>Improved Morale of Workers</th>
<th>Labor-Management Cooperation</th>
<th>Effective Reponse to Demand</th>
<th>Service Improvement</th>
<th>Good Financial Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence from Politics</td>
<td></td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morale Reform of Managers</td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved Morale of Workers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Labor-Management Cooperation</td>
<td></td>
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<tr>
<td>Effective Reponse to Demand</td>
<td></td>
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<tr>
<td>Service Improvement</td>
<td></td>
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<tr>
<td>Good Financial Condition</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Enabling Policies by the JR-Companies</td>
<td>× (Esp. Price cuts of Materials)</td>
<td></td>
<td>× (Esp. Labor Productivity)</td>
<td></td>
<td>×(Esp. Labor Productivity)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Lessons of the JNR Reform

In this chapter, the author focuses on general lessons of the JNR Reform. The effects of the individual policies taken during and after the JNR Reform are important lessons for other railroads considering privatization; those effects will be described in Section 5.1.1.

4.1 The Importance of Management and Labor Incentive

The revitalization of Japanese railroads after the JNR Reform shows how the efficiency and effectiveness of railroads can be influenced by management and labor incentives, incentives that privatization would bring about.

4.2 Clarified Financial Responsibility of the Public

If there are strong political interventions in railroad operators, they may be forced to fulfill public demands, such as building new lines and keeping low fare rates, without enough financial countermeasures taken by the public, and to accumulate huge long-term debt.

If railroad operators are independent, the public is financially responsible for the pursuit of these public interests operators can not accomplish. Therefore, the governments have to subsidize railroad operators for accomplishing such public interests.
4.3 Inseparability of JNR Reform Policies

One may ask if privatization, division, financial countermeasures (liability disposition and labor cuts), and operators' self-help policies can be done separately.

In general, separate policies might be effective to some degree, depending on specific railroads. In the case of the JNR Reform, the effects would have been very limited. The JNR Reform policies and the self-help policies combined to be effective in changing the railroad because the drastic reform was in itself a motivation for challenges and changes.

4.4 The Importance of the Performance of Railroads before Privatization

The performance of privatized companies will depend on that of national railroads before privatization. Although the JNR management was inefficient and ineffective, its good aspects have contributed to the positive performance of the JR Companies as follows:

First, the JNR employees had high morale and concern for safety and punctuality (Sumita, 1992, pp.9-10). Because of this morale, the JR Companies have not had many accidents, despite a much higher work load.

Second, due to repeated attempts to restructure JNR in the years since 1969, conscientious employees had been aware of the need for
reconstruction and had already acquired many ideas of what to correct.

Third, the JR Companies' performance owes much to the infrastructure in which JNR had invested. JNR invested in right-of-way to increase the number of tracks, which have been important for urban/suburban and intercity service. JNR investments, such as centralized traffic control (CTC) systems, enabled the labor cuts during the reform, although the effect of the investment could not be utilized in the JNR era due to its strong labor unions.

Fourth, JNR had realized in 1982 that urban transit was, and would be, a good market. This area became an important source of the JR Companies' revenue.

Fifth, JNR was already aware of its technical backwardness and was trying to recover. In 1986, the JNR engineers were shocked to observe their own backwardness as compared to TGV's high speed operations and efficient designs. JNR promoted research and development, especially the speed-up of the Shinkansen and conventional lines. Those techniques are now fully used by the JR Companies.

4.5 Limitations of Privatization

Privatization has limitations, and some problems may occur, as observed in the JNR Reform case.
4.5.1 Unfinished Managerial Reform

Privatization is a fundamental organizational change. It takes time to solve management problems, as is shown in the case of the JNR Reform: it is an impossibility for the JR Companies to have eliminated bad aspects of bureaucracies in only seven years.

It is doubtful the companies have really learned adequate management in marketing, service, train scheduling, inventory control, etc. (Sone, 1992; Konno, 1992). Although many successes have been reported, many mistakes must have existed.

The JR Companies have not experienced a serious decrease of revenue, in which the management quality of the JR Companies would be tested. For example, the labor-management negotiations over wages would be severe. Since total expenses have to be slashed, each department and workplace would struggle to retain enough of a budget.

The railroad is still monopolistic in many market areas. Although the JR Companies have survived, they may not have experienced severe marketing and sales effort.

Although the JR Companies are expected to develop their related businesses, these businesses earn only six percent of the total revenue (Section 3.2.1).
4.5.2 Service Quality

Despite many service improvements, some services that are incompatible with efficiency may be sacrificed. In Japan, for example, ticket barriers have been mechanized, annoying many people who are not used to the system. In some lines, congestion became worse as the number of cars per train was reduced\textsuperscript{67}.

4.5.3 Potential Political Interventions in Public Subsidy

Privatization can keep political interventions away from the decisions made by railroad management. However, politicians may influence decisions on public subsidies and reduce the effectiveness of these subsidies.

Privatization can not solve problems in politics. These problems should be solved separately from privatization in order to make public subsidies effective.

4.6 Problems of Division

Even if the agreements among divided companies have been successful in continuing through service and fare system, some unexpected problems may occur, as follows:

The first example is the conflicts among the JR Companies, as the author reviewed in Section 2-7.

\textsuperscript{67} For example, commuter trains were replaced by rapid transit in the Akita area in December 1993, reducing seating capacity.
Second, the negative effects of dividing JNR have appeared in the area of technology. In rolling stock manufacturing, there is little opportunity to communicate and share technical knowledge among the JR Companies, threatening the long-term potential of the industry\(^6\)\(^8\).

In the future, the JR Companies may be entirely separate companies similar to existing private railroads, and the present nationwide fare system may not continue\(^6\)\(^9\).

4.7 Adaptation to Socio-Economic Changes

The following examples show how the privatization of JNR enabled the railroad to adapt themselves to socio-economic changes.

(1) Affluent Society

As the national income rose, the preferences of passengers became diverse. For example, some preferred high quality service, while others liked cheap service. On the other hand, transportation modes also became diverse. However, JNR kept on providing standardized services and lost markets. The JR Companies have responded to customer needs. For example, they run luxury trains for the passengers who wanted to enjoy riding trains.

\(^6\)\(^8\) Audiences' response in the lecture of Kurono, 1993, pages 24-25.
\(^6\)\(^9\) Wataru Yamada, former director of JR East, predicted that the current agreement among the JR Companies would dissolve in the 21st century in Kakumoto et. al., 1990.
(2) Labor-Management Cooperation

Japanese labor-management relationships have been cooperative for four decades in private companies, including private railroads, because they thought that employment can not be retained without the success of the company.

Since the wages of the JNR workers did not depend on JNR's financial performance, they tended to fight for higher wages and lower work loads rather than to work hard, hence obsolete radical ideologists could lead JNR unions. After the reform, cooperative unions became majorities.

(3) Change of Labor Preference

As the Japanese economy developed, young workers began to dislike dirty physical labor. Although railroads were full of such jobs, JNR's labor unions focused on abating work intensity, not on mechanizing the jobs, for the sake of job protection. The JR Companies are eager to mechanize their physical labor. The unions are in favor of the mechanization because it may eliminate physical labor.

(4) Global Economy

JNR's purchase from abroad was very limited due to the political power of domestic supplies. The JR Companies purchase many foreign products, have many chances for international communication, and seek technology abroad.
4.8 Summary

(1) Independence and responsibility of railroad operators, which privatization of government railroads is aimed, give management and labor incentive. Privatization also helps restructure the relationships between railroad and government.

(2) Privatization clarifies the principle that the pursuit of the public interests, which railroad operators can not accomplish is the governments' responsibility.

(3) The performance of privatized companies depends on that of old government corporations.

(4) Although the organization can be privatized in a day, it is a long-term process to change the ways of management into those of private companies.

(5) Due to the flexibility of management, privatization of railroads will enable the adaptation to socio-economic changes.

In the next chapter, the author discusses suggestions for other railroad considering privatization and the JR Companies.
5. Conclusions

In this chapter, the author first discusses the effectiveness and limitations of policies taken during and after the JNR Reform and uses them as suggestions for other railroads considering privatization. Next, from the analysis of the JNR Reform presented in Chapter 3, the author draws suggestions for the JR Companies.

5.1 Suggestions for Foreign Railroads

5.1.1 Usefulness of Policies During and After the JNR Reform

(1) Privatization encourages managers to improve their manner of management and to be innovative. Privatization will also be a labor incentive and may bring about labor-management cooperation. Operators may be freed from political interventions and be able to devote themselves to effective and efficient management.

(2) Division of railroads may enable more effective responses to local need. Division of railroads may also be a management incentive and a labor incentive. However, the effects of division depend on specific circumstances of the railroad which is considering reform. Potential operational problems resulting from division can be avoided by agreements among divided companies (Section 3.4.7), but some companies may be dissatisfied (Section 2.7).

(3) Financial countermeasures, such as disposition of long-term debt and labor cuts, for the financial viability of privatized railroads
are necessary to make privatization effective in motivating better performance from management and labor.

(4) Privatization and/or division is a good opportunity to challenge many policies and solve many issues; without such changes, privatization will not succeed. JNR and the JR Companies changed the ways of management and re-vitalized the morale of managers and employees.

(5) One-time subsidies, such as the Management Stabilization Fund (Section 1.7.4), insures the financial independence and responsibility of the companies subsidized because the companies can not negotiate the amount of subsidies once the one-time subsidies are given. On the other hand, the subsidized companies' financial conditions will be subject to interest rate fluctuations, which do not reflect efforts of the companies.

(6) When adopting an infrastructure leasing system (Section 1.7.2), uncertain future leasing conditions deprive railroad operators of management incentives, as the dissolution of the Shinkansen Holding Corporation has shown (Section 2.5.3).

(7) Partial subsidies which help railroad companies (including existing private railroads) to invest in infrastructure (Section 2.5) is a way to meet public demand which private operators can not afford to do. Since railroad companies have to pay a certain portion of the cost, they will carefully investigate the feasibility of capital investments.
(8) The Merger of organizations and simplification of approval procedure will enable timely and effective response to needs (Sections 3.5.3, 3.5.5).

(9) Decentralization of authority will enable timely and effective response to local needs (Sections 3.5.3, 3.5.5). If local traffic is dominant, this policy is recommended. In introducing these policies, railroad operators should consider the effectiveness of such decentralization, including the possibility that local authorities may spend too much for responding to specific demands. Such disadvantages could be eliminated by skillful management.

(10) Related business by railroad operators is recommended because they can take advantage of externality of railroad service. In fact, related businesses may be incentives for improving railroad service.

5.1.2 Characteristics of Japanese Privatization Policy

In some European countries, such as Sweden, Britain, and Germany, operation of national railroads have been or are being separated from infrastructure construction and maintenance and sometimes privatized. They are expected to maintain and construct infrastructure. Such policy was based on the concept of equal footing. Equal footing is the idea that railroads should not pay infrastructure cost to fairly compete with automobiles, which do not
pay infrastructure cost. The JNR Reform did not adopt such policies.

The Japanese system, in which railroad operators are responsible for maintaining and building permanent way, has several advantages over separation of permanent way. First, track maintenance would be improved by privatization (Section 3.5.7). Second, train operators and track maintenance staff can communicate more easily. Third, employees can be used more efficiently; that is, an employee can work on operations and maintenance jobs the same day (Section 3-6-3). Fourth, a railroad can invest in infrastructure based on their own judgment.

On the other hand, the concept of equal footing will not be accomplished under the Japanese system, which could cause a suboptimal distribution of traffic and market share.

5.1.3 Special Nature of Japanese Railroads

The effects of the JNR Reform method on reforming other national railroads depend on whether special circumstances in Japan apply to other countries.

First, the JR Companies, with the exception of the Three Island Companies, were expected to make a profit under efficient operation. For countries in which railroads are not expected to make a profit under efficient operation, a different method of privatization, such as

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70 The Shinkansen Holding Corporation had the Shinkansen infrastructures, but the JR-Companies paid infrastructure costs to the corporation.
separation and privatization of train operation (Section 5.1.1), may be adopted.

Second, in Japan, there is an incentive for carrying more passengers by providing better service. Increasing passengers by providing good service, rather than cutting service quality, pays because of many possible reasons as high fare rates\(^{71}\), no freedom to quit rural services\(^{72}\), no freedom to lay off employees\(^{73}\), and so on. In many other countries, fares in the urban transit are set low to attract passengers from automobiles. When privatizing transit operation in those countries, the amount of subsidies needs to be deliberately decided so that transit operators are motivated to provide good service.

Third, JNR's employees had high morale for safety and punctuality, although the work discipline was decayed (Section 4.3). In other railroads whose workers has low morale, the pursuit of profit may cause serious accidents.

Fourth, JNR's railroad traffic pattern was suitable for the division. Most passenger traffic was within individual companies.

\(^{71}\) Figure 1-6 shows that the fare of the JR-Companies is more than twice as that of the subways in New York for a trip longer than 15 km (1 dollars and 25 cents = 140 yen).

\(^{72}\) Abandoning rural lines needs the permission of the Minister of Transport. In addition, railroads would be exposed to strong public criticism if they abandon rural lines.

\(^{73}\) Due to Japanese social custom, a company never lay off its employees if it is in good financial condition.
5.2 Suggestions for the JR Companies

This thesis has discussed how the JNR Reform established efficient railroad operation with effective responses to demand. However, there are many issues which the reform has not solved as goals of the reform. Taking limitations of the reform into consideration, as well as its effectiveness, suggestions for the JR Companies are made in this section.

5.2.1 Suggestions for More Efficient and Effective Operation

(1) Managerial Reform

The JNR Reform has provided strong incentives for incentive. However, such an incentive does not bring about overall managerial improvements. The JR Companies' management techniques and corporate culture may still be backward in some areas. The management incentive may be a temporary one, and the companies may become dominated by bureaucratic inertia again.

To get on with further changes in management, the JR Companies should learn from other private companies about management techniques and corporate culture. The JR Companies should also monitor themselves continuously to examine if they have been successful. To achieve improvements, the organizations within the JR Companies should be kept active and innovative, free from bureaucratic inertia.
(2) Labor-Management Relationships

Labor-management relationships improved drastically since the reform. However, current labor-management relationships and work morale may be a temporary one. Employees have been motivated by the uncertain financial viability of the JR Companies. Once the JR Companies' financial condition stabilizes, such a sense of crisis will not continue forever. In addition, both labor and management lack experiences in private companies' labor.

The JR Companies have to learn labor-management negotiations from other private companies, especially from existing private railroads. They also must learn how to deal with employees' complaints, which is an important part of labor-management relationships (Kamei, 1986).

JNR's labor-management relationships provide valuable lessons. The JR Companies managers should learn past experiences.

(3) Surviving the Current Decrease of Traffic

As the Japanese economy is in recession, the JR Companies face decreased traffic. Their quality of management is tested because limited total expenses must be distributed fairly. The labor and management have to learn to negotiate under severe financial conditions.
(4) Preparing for Social Change in the Next Decade

Adapting to changes in society is the key for survival of companies. The JR Companies have adapted better to social changes than JNR. They should be prepared for changes in the next decade.

First, the society will be more aged. Consequently, further labor shortage will occur, and the JR Companies will have to cut back on labor force and eliminate more physical labor. They should also make railroad facilities more accessible to elderly people. The JR Companies can improve accessibility (General Affairs Agency, 1992).

Second, customer needs will be more diverse and will include luxury trains, cheap tickets, accommodation for group tour, and so on.

Third, energy savings and global environment will be more serious problems than they are now. Railroads have advantages in energy savings, less air pollution, and less emission of carbon dioxide. Railroads should provide better service to attract automobile traffic from roads.

Fourth, international communication will increase. The JR Companies should learn how to deal with foreign business, how to cooperate with foreign researchers. They should also communicate information, such as the lessons of the JNR Reform, with other railroads.
5.2.2 Railroad Relationships With the Government and the Public

(1) Independence of Management

One objective of the JNR Reform is to prevent political interventions in the JR Companies (Section 1.6). After the reform, political influences upon the railroad reduced drastically, and the executives of the JR Companies could make decisions independently (Section 3.5.1).

There are still strong political and administrative pressures which require the JR Companies to do something for the public interest (Sections 2.4, 2.6). Second, the JR Companies may sometimes need politicians' help.\textsuperscript{74}

The JR Companies should keep the following in mind. First, if the government wants the JR Companies to do anything that may threaten their financial condition, they should explain how their financial conditions will be affected. Second, the JR Companies should avoid excessive support from politicians. Third, the JR Companies should learn from the existing private railroads and other companies about how to deal with politicians. Finally, the JR Companies should make the public understand the importance of their financial viability, as the author discusses next.

\textsuperscript{74} See Tatezawa, 1992, pp. 105, 109, 145-151
(2) Obtaining Public Understanding and Support

The JR Companies have financial limitations on service improvement. However, the public tends to expect too much of them. The JR Companies will have stronger public expectation than existing private railroads for the following reasons. First, there are expectations of completing JNR's unfinished projects, such as Seibi Shinkansen and the New Joban Line (Miura, 1989, pp. 150-161). Second, some people think that the JR Companies have special obligation for public interests because they took over JNR's assets, which had belonged to the public (Tatezawa, 1992, p. 63; Sumita, 1992, p. 161). Third, repaying JNR liabilities will need huge public expenses. The public will expect something in return.

The JR Companies should tell the public why they can not provide certain services because of potential financial problems. They should say that excessive pursuit of certain public demands may threaten other services. Also, the JR Companies should do their best to fulfill needs and demonstrate that they can not afford to fulfill expectations which are incompatible with their financial viability.

(3) Relationships with Subsidies

Because of high expectations for more and better railroad service, the government will provide more subsidies to the JR Companies. It is the JR Companies' duty to clarify potential social benefit which public subsidies on railroads would produce. JNR failed to use the national budget efficiently and effectively. Although the Ministry of
Transport became more active after the reform, the JR Companies know the transportation market better than the ministry. The JR Companies are responsible for efficient and effective use of national and local budgets for railroads.

It is also a duty of the JR Companies to justify the government subsidy. Their efforts to make a profit by providing good service will be effective for this purpose.

5.2.3 Eliminating the Disadvantage of the Division

Before the JNR Reform was enforced, people were concerned that the division of the JNR would cause inconveniences. There have been few inconveniences resulting from the division of JNR. However, sometimes the JR Companies are not cooperative and conflict with one another (Sections 2.7, 4.4.5), which may result in other problems in the future.

Although the JR Companies will not agree always, the executives of the JR Companies must prioritize customer benefit to keep the promise that the division of JNR would not cause any inconveniences to customers. The executives should also maintain and encourage cooperation in operation, sales, and technology, remembering that cooperation will result in scale economy.

5.3 Summary

(1) The JNR Reform clarified responsibilities of the railroads and the governments, giving incentives to management, and establishing labor-management cooperation. However, the effects of
such policies would differ depending on railroads considering privatization.

(2) The JR Companies should improve their way of management by studying other companies' techniques, monitoring their own performance, and using JNR experiences. They should be aggressive in developing public understanding of the need for their financial viability. They should also be prepared to cope with the social changes of the next decade.

5.4 Suggestions for Further Study

(1) For further studies of the changes during and after the JNR Reform, more precise comparison using more documents is recommended.

(2) To evaluate the impact of policies taken by the JR Companies, the causes of traffic increase should be evaluated, and the effectiveness of train schedule, fare rules, and capital investment should be examined.

(3) As for railroad policies after the reform, the functions of recent pubic subsidy systems, such as interest-free loans, should be studied.

(4) The incentive effects of current regulations on private railroads, such as fare regulations, should be examined.

5.5 Final Statements

Railroads have played a vital role in Japan. The JNR Reform, which was aimed at establishing efficient and effective management
by the division and privatization of JNR, was a complex process which proceeds even now. The management should not relax but maintain their efforts in improving their ways of doing business. The JNR privatization also separated private and public responsibilities to accomplish good railroad service. The railroad management and the public should cooperate to build the future railroad system.
Appendix 1

Definitions of Terms Used in the Thesis*

(Existing) Private Railroads [SHITETSU]: This thesis refers to the railroads which are not JNR or the JR-Companies as "(existing) private railroads" unless specially noted. "Private railroads" are owned and operated by private companies, local governments' railroads, and quasi-public corporations.

JNR Liabilities, the [KOKUTETSU CHOUKI SAIMU TOU]: JNR's long-term debt and other commitments to be disposed of as part of the JNR Reform.

* Original Japanese Words are indicated with underlines in brackets.
Appendix 2

Accounting Rules

**JNR Accounting Rule**

*Operating Revenues* consist of passenger revenues, freight revenues, miscellaneous (including related business) revenue, and subsidies except for capital investment).

*Operating Expenses* consist of personnel expenses, material expenses, taxes, interest and bond handling expenses, and depreciation.

*Operating Profit or Loss* equals to operating revenues minus operating expenses.

*Non-Operating Revenues*: Includes revenue for selling assets

*Non-Operating Expenses* includes "miscellaneous losses"

*Non-Operating Profit or Loss* is non-operating Revenues minus Non-Operating Expenses

*Net Profit or Loss* equals to operating profit/loss plus non-operating revenues minus non-operating expenses.

**JR Accounting Rule**

*Operating Revenue* consists of passenger/freight and related business revenues.
Operating Expenses consists of personnel, material, which includes Shikansen leasing fee, and depreciation cost.

Operating Profit or Loss is equal to operating revenue minus operating expenses.

Non-Operating Revenues includes public subsidy (except for capital investment). This kind of subsidy was temporarily done for some ferry services and rural lines to be abolished.

Non-Operating Expenses includes interest.

Non-Operating Profit or Loss Non-operating Revenues minus Non-Operating Expenses.

Ordinary Income equals to operating profit/loss minus interest expenses.

Non-Operating Revenues includes public subsidy (except for capital investment). This kind of subsidy was temporarily done for some ferry services and rural lines to be abolished.

Net Income or Loss (JR-Companies) Ordinary Income or Loss plus Non-Operating Revenues.

Terminology in This Thesis

Profit/Deficit Unless especially noted, "Profit"/"Deficit" means annual net income/loss (after subsidy).
Appendix 3 Abbreviations

JNR: Japanese National Railways, the

JNRSC: Japanese National Railways Settlement Corporation, the

MAGLEV: Magnetic Levitated Trains
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