THE JAPANESE EXPERIENCE WITH URBAN PRIVATE RAIL COMPANIES: IDIOSYNCRATIC OR EXEMPLARY?

Ken'ichi Shoji,
School of Business Administration,
Kobe University,
Japan

ABSTRACT: In Japanese passenger transportation, 172 private rail companies (including 14 so-called "major" operators) play an important role, particularly in large metropolitan areas. Although it is well known that they are financially independent, it is an open question how they can manage. The main issues that we address in this paper, therefore are two-fold: how can these private railway companies manage their business without lump-sum subsidies, and are there lessons which may be transferable to other contexts? In order to address these issues, we deal with the following points; (1) the urban structure of the Keihanshin metropolitan area which is used as a case study in this paper, (2) the performance of private rail companies and their diversification strategies, (3) some misperceptions about Japanese private rail companies, and (4) possible lessons which might be transferable to other contexts. The paper concludes that the Japanese situation is not idiosyncratic and private rail companies have shown the ability and potential to provide public transportation services more efficiently and effectively. The most important lessons from urban private rail companies in Japan is that the key point is to establish the principle(s) and the conditions (and/or inducements) which can assure the autonomy of the organization in the (reasonably) long-run.

1. INTRODUCTION

In Japanese passenger transportation, 172 private rail companies (including 14 so-called "major" operators) play an important role, particularly in large metropolitan areas. In principle, there are no lump-sum subsidies available for these private railway companies since the national government still maintains a strict policy of self-sufficiency for local public transportation. This appears to be an exceptional case, because in most industrial countries, urban public transport services fail to cover even their avoidable costs from business revenue.

The main issues that we will address in this paper, therefore are two-fold: how can these private railway companies manage their business without subsidies and are there lessons which may be transferable to other contexts? In order to address these issues, we will deal with the following points; (1) the urban structure of the Keihanshin metropolitan area which will be used as a case study in this paper, (2) the performance of private rail companies and their diversification strategies, (3) some misperceptions about Japanese private rail companies, and (4) possible lessons which might be transferable to other contexts.

Before discussing these issues, we will demonstrate the significance of rail transportation in Japan.

2. IMPORTANCE OF RAIL

Table 1 shows the transportation mode shares in the major metropolitan areas. This table shows that rail is still dominant among public transport modes with a share similar to that of automobile(except Nagoya)

Table 1: Urban Transportation Weekday Mode[a] Shares (%)

		Year	Rail	Bus	Auto	Other[b]
KeiHanShin[c]	:	1980	19.0	4.4	19.2	57.4
	:	1970	19.5	6.7	15.5	58.3
Tokyo	:	1988	25.0	2.8	27.5	44.7
	:	1978	22.8	4.0	24.2	49.0
Nagoya	:	1980	9.7	3.0	39.6	47.7

Notes: a. If the trip-maker used more than two modes for a trip, one of these modes is defined as the "main transportation mode" of the trip. The main mode of transportation of a trip is determined in the priority order of Rail, Bus, Auto (Car & Taxi), Two-wheel vehicle, and Walking.
b. Other includes walking and two-wheel vehicle.
c. Kei-Han-Shin stands for Kyoto-Osaka-Kobe.

Source: Person-trip Surveys

From Table 2, among rail, we can observe the large contribution of the private rail category. To circumvent problems with the interpretation of data involving different size of areas and auto usage levels, Table 2 also shows the passenger trips per capita. As expected given Table 1, all usage rates are considerably lower for Nagoya than for the other areas. We can also calculate the following private rail shares of the total public transportation market: Keihanshin has 41% compared with 31% and 30% for Tokyo and Nagoya respectively. We will therefore, choose the Keihanshin area as a case study site, though sometimes we will also use national statistics.

Table 2: Passenger Volume (million person)

Fiscal Year 1988 from 1st April 1988 to 31st March 1989	Heavy Rail			Bus, Tram & Taxi	Public Transport Total	[Pop:million] (Density) (person/km^2)
	J R	Private	Subway			
Tokyo Trans. Area	4,783	4,657	2,628	3,118	15,187	[27.265]
trips per capita	175	176	96	115	557	(4,255)
Nagoya Trans. Area	226	489	330	568	1,612	[7.195]
trips per capita	31	68	46	79	224	(1,863)
Kei-Han-Shin T. A.	1,203	2,653	1,077	1,552	6,484	[15.378]
trips per capita	78	173	70	101	422	(2,867)

Note: The Transportation Area includes most administrative units (cities, towns and villages) lying within 50km (in the case of Nagoya: 40km) of the center of the each central city.
Source: Unyu Keizai Center, Toshi Kotsu Nenpo 1990

Table 3: Trip Purpose and Modal Split in Keihanshin (1980:weekday)

Purpose	Rail	Bus	Auto	2-Wheel	Walking	Volume
Work	38.5%	5.6%	28.0%	18.0%	9.8%	5.6 (mill./day)
Business	10.8%	2.8%	47.0%	15.1%	24.0%	6.05
School	16.9%	4.7%	1.4%	9.2%	67.8%	4.14
Private	9.8%	4.6%	13.1%	26.5%	46.0%	9.85

Note: 2-Wheel includes bicycle, moped, and motorcycle.
Source: 1980 Keihanshin Person-trip Survey

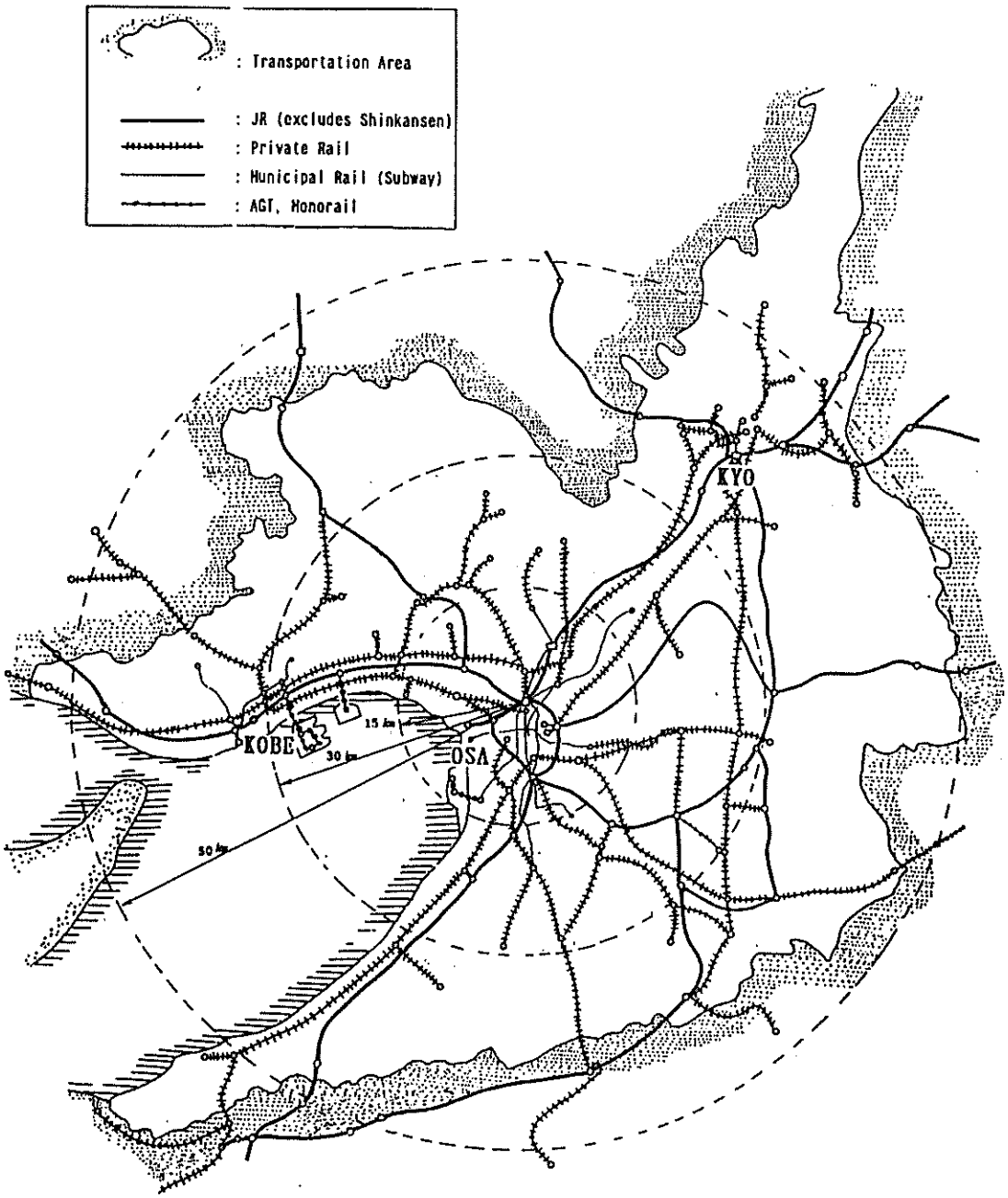
Table 3 shows the trip purpose and modal split in the Keihanshin area. For work trips rail transportation was the dominant mode, capturing almost 40% of all commuter trips. On the other hand, for business trips, auto was the dominant mode.

3. URBAN SPATIAL STRUCTURE IN KEIHANSHIN

Urban spatial structure greatly affects the transportation system and its performance and is in turn affected by it. Residential and workplace location might be especially important factors in understanding the market structure for transportation. In this section, we will describe the urban structure of Keihanshin.

Keihanshin is the second largest metropolitan area in Japan in terms of population and economic base. Though there are several definitions of the Keihanshin metropolitan area, it includes the three major cities of Kyoto ("KEI"), Osaka ("HAN") and Kobe ("SHIN") [Figure 1].

Table 4 shows population, population density and car ownership levels of the Keihanshin area. The "modified metropolitan area(MMA)" of each city is composed of a central city and its commuting area. This definition is used to identify zones which contain one or more administrative units (wards, cities, towns and/or villages) lying within the commuting range of the core area of the central city and thus qualifying for incorporation into the metropolitan ring. The criterion used is that the proportion of the work-trips generated in each zone commuting to the core area zone must be greater than five per cent based on the 1980 Person Trip Survey. Given the fact that there is some difference of the definition of each "core area" zone, we should be careful in interpreting data from this table.



Note: The map dose not show all of the Osaka Municipal Rail's routes.

Figure 1. Rail Routes of Keihanshin Transportation Area (March 1990)
(Source: Unyu Keizai Center, *Toshi Kotsu Nenpo 1990*)

Table 4: Population and Car Ownership in Each Urban Unit (1988)

	Kyoto			Osaka			Kobe			Trans.	Total
	Core	City	MMA	Core	City	MMA	Core	City	MMA	Area	MMA[a]
Area(km^2)	29	611	2,001	14	213	3,809	37	546	1,353	5,364	6,916
Pop. (*10^3)	315	1,475	2,753	103	2,645	12,071	243	1,448	2,786	15,378	16,538
Density[c]	110	24	14	71	124	32	63	27	21	29	24
Car (*10^3)	126	310	612	92[b]	1,023	2,325	106	255	541	N.A.	3,273
Per House	.473	.577	.666	.660[b]	.423	.557	.391	.482	. 564	N.A.	.578

Notes: a. excludes double counts, b. Osaka CBD, c. (person/hectare)
Sources: National Census, 1980 Keihanshin Person-trip Survey, and Toyo-keizai, *Toyokeizai Data Bank 1990.*

From the table we can see that the Osaka metropolitan area is much larger than the Kyoto and Kobe areas, which have similar populations. If we consider the different size of each core area zone which is the "attraction zone" of metropolitan area, we could say that Osaka is dominant in the Keihanshin area. In fact, when we define the metropolitan area of Kobe using the Central Business District (CBD: 24km^2) which have roughly same size of the core of Kyoto as the attraction zone, the population decreases to three quarters. The table also shows that the Transportation area is a fairly good proxy for the Keihanshin metropolitan area.

Table 5: Trend of Night-time Population and Day Time Population (thousands)

Place (Area:km^2)	1960	1965	1970	1975	1980	1985	
Osaka CBD (24)	353	312	250	207	206	212:	Nighttime
	871	988	1,013	1,075	1,060	1,147:	Daytime
OsakaCity (212)	3,012	3,156	2,980	2,779	2,648	2,636:	Nighttime
	3,495	3,862	3,854	3,774	3,651	3,714:	Daytime
	NA	2,290	NA	2,323	2,267	2,332:	
Employment							
3 CBDs Total(68)	990	911	769	661	613	603:	Nighttime
Osaka+Kobe+Kyoto	1,703	1,830	1,794	1,856	1,813	1,889:	Daytime
Cities Total = A	5,410	5,738	5,688	5,601	5,488	5,526:	Nighttime
(A / B)	54.7%	49.3%	43.1%	38.9%	36.8%	35.9%	
	5,927	6,511	6,682	6,757	6,676	6,797:	Daytime
K-H-S. TA = B	9,892	11,642	13,211	14,415	14,928	15,377:	Nighttime
B / National Pop.	10.5%	11.3%	12.6%	12.9%	12.8%	12.7%	

Source: National Census

Table 5 shows the trend of nighttime population and daytime population of the Keihanshin area. Nighttime population is the population by usual place of residence, while daytime population is the population by place of work or schooling, and is one index of urban activity. As an analytical unit of this table, we introduce the CBD of each central city whichcover similar areas.

From this table, characteristic points are summarized as follows: (1) Although Keihanshin is still growing, since 1975 the population growth rate is fairly small and similar to the National rate. (2) The nighttime population of CBDs is decreasing and the ratio of central cities population to the Keihanshin transportation area also shows a continuous decrease, though it seems that the rate of decrease slowed in 1980s. (3) In the Osaka CBD, even though the nighttime population has decreased, the daytime population shows slow growth. (4) The daytime population and the employment of Osaka city shows a mixed pattern. (5) The difference between the daytime population and the nighttime population shows continuous growth.

From these findings, it is clear that there is suburbanization of residences in the Keihanshin area, and though we do not have any explicit evidence about suburbanization of workplaces, it is probably true that the importance of the CBDs as a workplace is still high and commuting flows to central areas are still growing. The possible interpretation of the somewhat inconsistent facts between the trend in CBD and in central cities is that

the changes in industry have different effects according to the area. The decline in traditional industries (especially basic industries such as steel and chemicals) has hit the old cities. On the other hand, the CBD features growth industries such as the service, information and communication industries for which the CBD might have a competitive edge.

There are eighteen rail routes which serve the huge traffic flow into and out of Osaka City. In a peak hour, they carried about 680,000 people into the city and for the full day 2.3 million (in 1985).

4. PERFORMANCE OF PRIVATE RAIL COMPANIES

4.1. Rail Division

Among all transportation modes in the Keihanshin area, we could say that rail is the most convenient and widely used. It is also clear that rail is particularly important for journeys to and from the central areas such as CBD and for the commuter market. In fact, when we look at the rail share of the commuting market to each central city; Osaka has 82.2% , Kobe 74.9% and Kyoto 70% based on the 1980 Keihanshin person trip survey. These numbers are understandable given the fact that rail has a built-in competitive advantage in the urban market, because severe traffic congestion and parking difficulty help sustain patronage, at least for the present and in the foreseeable future.

Although there are a little less than twenty private rail companies serving the Keihanshin area, the five private rail companies which are categorized as major rail companies, are dominant, carrying 2,444 million passengers in FY1988. The remaining twelve private rail companies carried only 439 million passengers in the same fiscal year. As you can see in Figure 1, the main function of private rail companies is regional service. All have their terminals located at or very close to the center of Osaka and the other central cities.

In FY1960, the five private rail companies carried 1,282 million passengers, of which roughly two thirds were season pass holders. By FY1975 the number traveling had increased by 1,000 million passengers, but the following ten years saw much more modest increases in passengers: 2,378 million people traveled in FY1985 and 1,498 million were season pass holders.

So, the passenger volumes of private rail companies have shown continuous growth, though the rate of growth has flagged since the mid 1970s. This result might be explained in part by fairly small growth rate in total population, but the main causes are likely to be changes in urban structure and major competition from private cars.

Table 6 shows some key financial performance indices for the rail divisions of the five major private rail companies in the Keihanshin area from FY1984 to FY1989. Revenue from operations consists of fare revenues and miscellaneous revenues such as rents receivable and commercial advertisements. The total revenue is the sum of the revenue from operation and the other income such as allocated financial returns (interest and dividend income, and foreign currency exchange gain) and gain on sales of rail related property and equipment, etc. Net revenue before the corporate income tax is equal to total revenue minus total cost which is the sum of the cost of operations and other expenses. More than ninety per cent of these other expenses is interest expense.

Although private rail companies are privately owned and operated, they are not allowed to change fares freely. By law, private rail fares are subject to the approval of the central government, namely the Ministry of Transportation (MoT). Even in the case of fare diversification such as discount tickets, private rail companies must submit changes to MoT and these must be approved before implementation. Because fares are set so as to allow rail companies to cover expected total costs for rail operation and yield a reasonable profit from providing rail services, we may say that the total revenue is strongly controlled by MoT. To date MoT has given permission to raise fares every three years, so the profitability of the rail business shows a periodic pattern with three year cycle.

Table 6: Profitability of Five Major Private Rail: Rail Division

Fiscal Year	Fare Revenue Total (billion Yen)	Net Revenue from Operation (bil. Yen)	Net Rev before Corporate Income Tax (bil. Yen)	Allocated Income Tax + Dividend Required (bil. Yen)	Revenue from Ope. / Cost of O without Depreciat.	Revenue from Ope. / Cost of O.include Depreciat	Total Revenue / Total Cost
FY1984:	*295.0*	*57.6*	*21.5*	*15.2*	*1.40*	*1.21*	*1.07*
FY1985:	297.1	49.5	14.4	15.1	1.36	1.17	1.04
FY1986:	301.8	43.0	6.1	16.4	1.34	1.14	1.02
FY1987:	*324.6*	*58.4*	*21.8*	*18.1*	*1.41*	*1.19*	*1.06*
FY1988:	339.2	60.5	24.8	18.5	1.41	1.19	1.07
FY1989:	340.6	50.9	18.8	21.4	1.38	1.15	1.05

Note: Numbers in Italics show the year which had (or had effected) the fare hike. During the period, we had three fare hikes: 17 Jan 1984, 16 May 1987 and 1st April 1989. However, because the last hike was the result of introducing the general consumption tax (3%) by the government, we did not show it in Italics.

Source: Federation of Private Rail Companies, Mintetsu News, No.64 (1985), 69 (1986), 72 (1987), 85 (1988), 96 (1989) and 107 (1990).

To circumvent problems with interpretation of data involving this periodic pattern, we should look at sets of comparable years, such as FY1985 and FY1988, and FY1986 and FY1989. In both cases, net revenue before corporate income tax increased by about twelve billion yen and total cost recovery ratio (total revenue divided by total cost) also increased. From these findings, we can say that their business and profitability generally show steady growth.

When we look at the growth rates of revenue from operation and some cost items between FY 1984 and FY1989, revenue increased by 17%, labor cost 15%, and interest -5%. So it is clear that the improvement in labor efficiency and the reduction of interest charges contribute to the recent growth of the profitability. Moreover, it is remarkable that interest charges have been decreasing, in spite of the rapid growth of depreciation (49% in the same period) which is the result of high levels of investments.

Table 7 shows the situation of each rail company in the Keihanshin area. We can see that all companies are profitable, even though there are fairly sizable differences among companies in terms of both size and market. We can also observe, however, that the ratios of labor cost and capital cost to the total cost are rather high. Because these costs are "fixed" in the "short- run", this means that the companies must deal with a lack of flexibility in its cost structure.

Table 7: The Individual Performance of Rail Companies (FY88): Rail Division

	Route -km (km)	Passenger Traffic (million person)	Net R before Tax (*10^3)	Revenue per Veh-km (Yen)	Cost per Veh-km (Yen)	Labor Cost /Fare Rev.	Capital Cost[b] /Fare Rev.	Traffic Density (/day)[c] (*10^3)	Vehicle -kms /Staff[d] (*10^3)
Kintetsu[a]	592	765.7	25,583	577	487	.39	.25	67	26.6
Hankyu	147	799.0	12,536	585	504	.40	.27	208	32.9
Nankai	166	302.2	11,654	697	544	.40	.30	80	24.4
Keihan	89	394.5	7,218	584	498	.43	.20	157	28.1
Hanshin	45	247.1	2,595	725	652	.38	.18	141	24.2
OsakaCity	106	967.7	20,441	1395	1173	.47	NA	144	11.7
JR-West[a]	5207	1566.3	78,605	740	667	NA	NA	25	22.3

Notes: a. Their service area exceeds the Keihanshin area.
b. Capital cost is the sum of depreciation and interest.
c. Traffic density calculated by the following formula; Traffic density = (Annual Passenger kilometer) /(Route kilometer) / 365

d. The number of staff includes the number of allocated employees to the rail division who belong to the central administrative department of the company.

Source: Institute of Urban Transport Studies(1989), Osaka Toshi Kotsu Yoran 1989.

4.2. Diversification Strategy

Probably the most significant finding to come from any study of the private rail companies in Japan is their diversification strategy, though, as private entities, it is clearly rational and understandable "corporate" behavior, given the somewhat steady but fairly low profitability of the rail business and its "vulnerability" to political intervention. Moreover, they might have additional incentives to diversify, because their dominant business is regulated in many respects and the rail lines produce "externalities" along the lines. In fact, the diversified businesses such as a real estate, retailing at the terminal, and recreation and attractions have a possibility that these businesses could contribute to an increase in rail ridership indirectly and to reducing the difference in demand for rail between peak and off-peak periods. Similar to other industries, there are three motivations of diversification strategy for private rail companies: (1) economies of growth, (2) economies of scope, and (3) risk dispersion.

The following list presents the kinds of business activities which private rail companies are also involved in; (1) transportation (bus, taxi, boat, car rentals, trucking, and forwarders), (2) real estate (estate agency, land development, space leasing, and maintenance), (3) retailing (department stores, supermarkets, and boutiques), (4) recreation business (travel agencies, hotels, amusement parks, entertainments, sports clubs and stadiums, food service, and cultural activities), (5) manufacturing and construction (rolling stock, engineering, and construction), (6) information and communication, and other services (cable television, computer services, advertisements, and insurance agency). Figure 2 gives a chronological overview of diversification of five rail companies.

Table 8 shows the extent of in-house diversification Åbusinesses within the rail company. Because the private rail companies will prefer to show stable profitability growth for the whole company, we cannot deny the possibility that they might control the scale of diversified business according to the profitability of rail division. So, if we see the data from the year just before the fare hike, the share of the diversified business could be high. To circumvent this problem we showed the average of FY1984, FY1985 and FY1986, which represent one complete fare cycle.

Table 8: The Share of Operating Revenue and Net Operating Revenue of Each Business to Company Total Revenue (FY84-86 average: %)

	Share of Operating Revenue				Share of Net Operating Revenue	
Company	Rail	Bus	Subtotal	Other	Rail & Bus	Other
Kintetsu	79	6	85	15	59	41
Hankyu[a]	66	—	66	34	54	46
Nankai	61	14	75	25	64	36
Keihan[a]	54	—	54	46	58	42
Hanshin	52	9	61	39	42	58
14 majors Average	53	15b	68	32	55	45

Notes a: The bus business is provided by their subsidiaries
b: This number is the average of 11 companies.

Source: Kanaya(1987b), pp.45-46.

The share of operating revenue from other business shows the scale of in-house diversification. From the table the scale of other business is roughly one third, though there is considerable variation among companies. The table also shows the share of the net operating revenue which represents the "quality" of diversified business. Because we are more interested in diversification to non-transportation areas, we categorized areas as by transportation (rail and bus) and other. About 45% of the net operating revenue is earned by non-transportation business.

In comparison, in FY1960, the share of the operating revenue of other business in fourteen major private

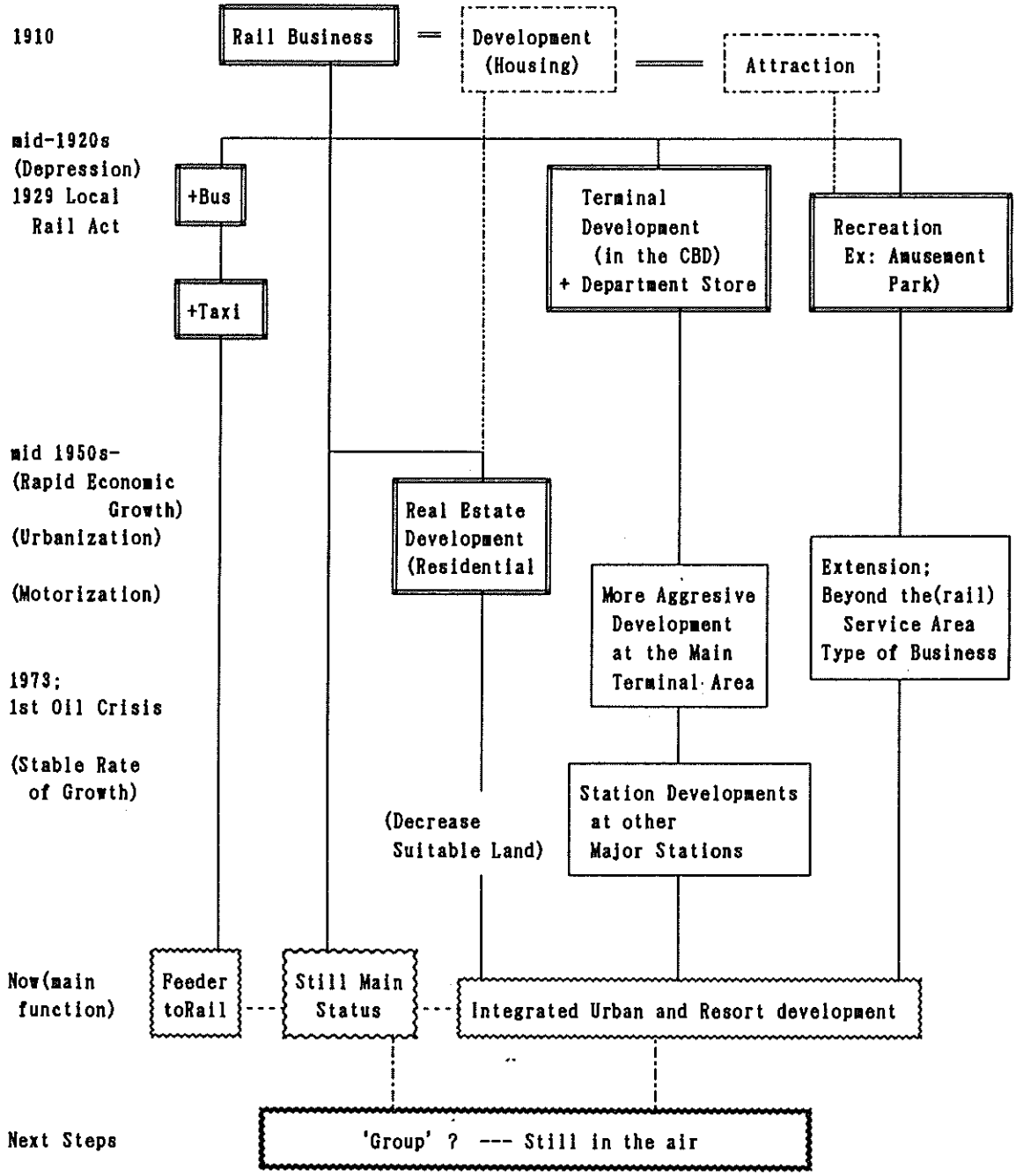


Figure 2. A Chronological Sketch of Diversification

rail companies was just 12% compared with a rail share of 67% and bus share of 21%. The share of other business grew to 22% in FY 1965 and to 41% in FY1970. Because the main business included in the "other" category is real estate, this growth might reflect the urbanization in the metropolitan areas. Moreover we can say that thereal estate business (especially residential developments) has been a driving force for the private rail companies, particularly in times of outstanding economic growth and rapid urbanization.

However this aspect of diversification shows only a part of the full range of their diversified businesses. Private rail companies also diversify outside the company, and, as a whole, they form a multi-product association called "group." In fact, the private rail companies always point out enthusiastically how they should be viewed and analyzed as just one of these associated companies. For example, the Corporate Brochure 1989 of Hankyu on the cover starts following sentences:

> HANKYU — the name that symbolizes 82 years of services as one of Japan's leading railway companies. Hankyu is also the name that represents a conglomerate of 305 companies and bodies.

Moreover, the Brochure ends with following sentences;

> The Group provides a comprehensive lineup of services tailored to the needs of everyday life, ranging from transportation, urban development and resort development to distribution, leisure, culture and communications. As the leader of the Group, the
> Hankyu is contributing steadily to requirements of the 21st century.

Table 9 shows a summary of Kintetsu group. Similar lists could be presented for other private rail companies.

Except for one case, the flagship company of all major-rail groups is still the private rail company. The members of the each group are bound together by cross-ownership and other financial ties, interlocking directorates, long-term business relationships, and social and historical links, though many companies are fairly independent entities. They form an organizational network albeit with somewhat "weak" ties between firms, and companies together straddle the entire "food chain" Åto the full range of lifestyle service needs.

Table 9: Profile of Kintetsu Group (March 1989)

Type of Business	Number of Companies	Gross Sales	Number of Employees
Rail	1	225.1 (9%)	11,710 (15%)
Trucking & Air Cargo forwarders	4	246.7 (10%)	18,640 (23%)
Other Transport:Bus, Taxi, Boat, etc.	47	133.0 (5%)	14,630 (18%)
Real Estate	12	132.9 (5%)	1,600 (2%)
Retailing (Department Stores, Car sales etc.)	20	520.7 (21%)	10,140 (13%)
Travel Agencies	5	570.1 (23%)	5,570 (7%)
Hotels & Inns	26	84.1 (3%)	5,300 (7%)
Food Services	9	54.9 (2%)	2,810 (4%)
Recreation and Entertainment	13	22.9 (1%)	1,580 (2%)
Manufacturing (Rolling stocks), Engineering, Construction, and other Businesses	18	473.0 (19%)	8,110 (10%)
Total	155	2463.4 (100%) billion Yen	80,090 (100%) Person

Source: Corporate Brochure of Kintetsu

5. SOME POSSIBLE MISPERCEPTIONS ABOUT JAPANESE PRIVATE RAIL COMPANIES

So far, we have seen the present conditions of urban structure and private rail companies in the Keihanshin area. This section compares some perceptions against reality, focussing on the profitability of the private rail companies, their management skills, and the government policy towards private rail companies.

Perception: There are subsidies for urban private rail companies.

Reality: Although governments provide some subsidies for the construction of new lines in urban areas, private rail companies are not eligible for subsidies except for nominal and indirect subsidy such as receiving money for interest repayment over a certain (5%) interest rate.

To receive this interest repayment support, a private rail company has to contract out its construction to

the Agency of Railway Construction which is a public corporation founded by the central government and is the sole organization eligible to receive subsidy for partial interest repayment. The agency funds the construction and after construction sells the new rail line to rail companies over a long time period. Private rail companies pay back its total cost to the Agency in 15 or 25 years using a straight-line method. We should stress that this subsidy is rather nominal, given the huge cost of construction. Moreover, in a recent twelve year period (from FY1977 to FY1988), only 8% of the total private rail investments used this method which started in FY 1972.

Moreover there is no subsidy system for urban private rails' operating expenses, though private rail companies do get somewhat favored treatment for real estate and utility consumption tax, and depreciation. They can also borrow the money for certain types of investment from the Japan Development Bank (public corporation) at somewhat below market rates (5.1% or 6% in September 1989). However, the impact of these treatments is again rather small, and the ratio of the funds borrowed from the Japan Development Bank to the total investments by the private rail companies has been decreasing (in FY1988 the ratio was 24% compared with 40% in FY1983).

Perception: Although the private rail companies make profit, the rail division of each companies lose money.

Perception: They disguise the true accounting numbers by arbitrary cost- and revenue-allocation processes.

Reality: There is an explicit rule to prevent cross-subsidy between rail and other business. According to the Rail Business Act (Sec. 20), all rail operators have to adopt the accounting rules which are established and published by the Ministry of Transportation. The rail business accounting ordinance includes provisions which prescribe the principle for the allocation of revenues, common fixed assets, and common costs such as administration costs. Tables also explicitly prescribe the allocation method for common costs and revenues. In fact, all numbers shown in this paper, unless otherwise noted, come from published sources and include only the results of "rail division."

Private rail companies cannot, therefore, change their allocation methods arbitrarily. We do not deny the possibility that the company's other division act as a "shock absorber" in times of low(or even un-) profitability in a rail division. Particularly, a private rail company's real estate division can sell more land if the need arises. It seems, however, that this strategy is not unreasonable and is a rational way of risk dispersion. Moreover, we should stress that the revenue from those businesses does not make any direct contribution to the profitability of the rail division and the probability which the company would be able to sell the land is not assured.

Perception: The fares of private rail companies are rather high.

Perception: Because the fares are regulated using the full-cost based formula, the profitability of rail businesses is guaranteed by the government.

Reality: As we already noted, the fare levels are set by the government using the fair rate of return plus full-cost formula, so private rail companies can not set their fares freely. In this context, the fare level should be fair, because it is regulated. In fact, the Real fares level which is deflated by the consumer price indexes have been fairly stable. If we take the FY1934 as the base year (=100), in FY1966 the number was 41, in FY1976=40, in FY1986 =42, and in FY1988=44.

Moreover, when comparing their fare levels to the municipal railways and JR, we see fairly low fare levels for the private rail companies. This is supported by table 10 which shows the average fares per passenger kilometer for each company. Because each organization has its own fare structure, we adopt the average fare as the measure of interest.

Table 10: Average Fare Revenue per Passenger Kilometer (FY88, Unit: Yen)

	Private Rails					Municipal Rails			West
	Kintetsu	Hankyu	Nankai	Keihan	Hanshin	Osaka	Kobe	Kyoto	J R
Season Pass Holders	5.99	5.00	7.21	6.11	7.12	15.55	12.86	23.52	6.46
Other Passengers	18.85	12.86	17.69	15.24	14.68	33.74	26.75	45.38	19.96

Note: These numbers are calculated by total fares revenue divided by the total passenger kilometers carried by the company.

Source: Institute of Urban Transport Studies(1989), Osaka Toshi Kotsu Yoran 1989.

Although fare levels are set by the government, it does not mean that the profitability of rail businesses is guaranteed. At any time there is a lag between the companies' official fare hike application to the MoT and its implementation (on an average of just over 4 months for four recent fare hikes), and the increases sought have been curtailed (from one-seventh to one-fifth for the same hikes). During the early 70s when the government wanted to control hyper- inflation and postponed increases in price over which it had control, the rail divisions produced deficits. It is hard to raise fares faster than the inflation rate. It might be better to understand that the fare regulation is in practice a "price-cap" regulation using the consumer price index.

Perception: Private rail companies have not made sizable investments and use facilities which are fully depreciated.

Perception: The service level of private rail companies is relative low.

Reality: As we noted in earlier, they have made substantial investments which have created some problems with their cost structure. It might be true that their attitude to new rail line investments has been rather conservative than subways (municipal railways and Eidan Åcorporation) and most of their investments are focussed on increasing the capacity of the existed lines. In fact, the total route kilometers of subways increased from 117km in 1965 to 512km in 1989, compared with only a slight increase in total route kilometers of private rail companies in the major urban arcas — from 3031km to 3049km. However, as a private company, this is understandable and probably rational behavior, given the huge investments required for new lines and the uncertainty of their expected profitability.

It is rather difficult to judge whether the service level of a company is high or low, since there are many exogenous variables and perceptional factors which have relation to the service level. But there are some pieces of evidence suggested that the perception is not true.

The most convincing is their efforts to increase the capacity and to decrease the peak load rate. In fact, if we take the peak capacity (in term of vehicle-kilometers) of private rails in the FY1966 as the base year (=100), in FY 1976 the index grew to 138, and in FY1988=176. The average peak load ratio of major private rails is decreased by 28% in the same period, namely 231 (in FY1966) to 180 (in FY1988). On the contrary, the average peak load ratio of JR's equivalent lines is decreased only by 18% (from 253 to 215) in the same period.

Perception: Because of the diversified businesses such as a real estate, retailing at the terminal and attractions, the peak ratio of private rail companies is low.

Reality: There were no substantial differences in the peak ratio between JNR and private rail companies. In 1985, the weighted average of the peak ratio (the ratio of the passenger carried in a super-peak hour in one direction to the total passenger of the whole day in same direction) of thirteen private rail lines which serve Osaka city is .30, ranging from .22 to .39. compared with the JNR lines average ratio of average .30, ranging from .26 to .37. From this fact, we can not say that private rail companies have succeeded in decreasing the daily temporal variation.

Moreover, in 1975, the average peak ratio of the private rail companies lines was .29, while that of the JNR lines was .27. So the private rail companies' ratio had been slightly lower than JNR. A possible reason for this is that the residential development along the private rail lines was somewhat faster than along the JNR line areas, and this might be affected in part by the private rail company's diversified businesses.

When looking at the ratio of weekend traffic to weekday traffic, we can present a slightly different story. Although three major private rail companies have a rather similar ratio to the JRs, the other two companies show a fairly small drop in weekend. In the case of the former group, the Saturday traffic decreases by about 15% from the weekday traffic and the Sunday traffic decreased by about 30%. In the case of two companies, however, the weekend (either Saturday or Sunday) traffic decreases by only 10%.

Perception: Strong support by the government contributes to the results of the private rail companies.

Reality: From the previous discussion on the subsidy system for private rail companies in Japan, it is hard to believe that there is strong support by governments for rail. Whereas some people argue that there are strong government policies to restrict car ownership and use, and to induce high density urban development, we can not find any strong supporting evidence. In contrast, there are some cases which might show the failure of "de-hyperurbanization" policies.

It is true that many companies provide commuting expenses and these are generally used for public transport. We should stress, however, that there is no direction by the government and that in most cases car is more expensive for both the society and the employer (so, probably also the employee) than public transport, given the scarcity of land and congested roads in urban areas.

Perception: Private rail companies have too much market power in the "railway commuter towns."

Reality: If the people feel that they are captive and that the private rail company or the group has too much market power in the area, it is a failure of the company's business strategy. As private companies, any negative reputation for the brand or the company name will be very damaging. This negative reputation may trigger changes from rail-oriented to car-oriented in land-use pattern and life-styles.

On the contrary, private rail companies and their groups ought to design their whole corporate strategy to contribute to good, close relations with the local communities, since as the going concern entities, private rails should pay attention to the profitability and the growth in the long run.

6. POSSIBLE LESSONS

So far we have addressed the first issue of how private railway companies can manage without subsidies. In this last section we will ask whether there are lessons which may be transferable to other contexts? From our earlier discussion, it seems that the answer to this question would be yes. We will present, therefore, the possible lessons which might be transferable. Probably, the determinants of whether private rail companies can be financially independent fall into two categories; (1) environments — market conditions and the legislation governing the private rail companies, (2) management skills.

The market conditions for Japanese private rail companies in the metropolitan areas might be somewhat idiosyncratic in terms of traffic volume, though private rail companies have taken some initiatives in prompting systematic regional development in the areas which their networks have served ever since their establishment.

Most private rail lines dose not face direct competitions from other rail company's line extend over whole sections. Viewed in this context, we might be able to claim that rail transit is the "natural monopolies." Because all major private rail companies have their lines in the densely populated areas, they might have a buit-in competitive advantage. However, we should remember that there are profound competitions from other modes especially private cars and there are pressures from risk of changing land-use pattern and life-styles —from rail-oriented to car-oriented— in the long run, though the market is not considered to be inherently highly contestable.

It is also true that Japanese private rail companies have closed unremunerative lines (in most case, replacing them with their own bus services) and reduced freight sections in response to competition from automobiles (in fact, total route kilometers of "minor" private rail companies decreased from 2657km in 1965 to 1936km in 1985). But there are still many companies which provide rail services outside the urban areas. Table 11 shows the number of "minor" private rail companies classified by their passenger volume and profitability. As an index of profitability, we adopt the ratio of the cost of operation (including depreciation) to the revenue from operation. From the table, we can observe that many companies which do not have high demand are also profitable. We should not, therefore, underestimate the performance of private rail companies.

Table 11: Profitability of "Minora" Private Rail Companies (FY1983)

Cost / Revenue	10^3 Passenger km per route-km per day (Traffic density)					
	>10.0	6.0-10.0	4.0-6.0	2.0-4.0	1.0-2.0	<1.0
less than 1.00	5 [5]	7 [5]	2 [1]	1[b] [1]	1[b] [0]	- [-]
1.00 — 1.10	- [-]	2[b] [1]	4 [1]	4 [4]	4 [1]	- [-]
more than 1.10	- [-]	- [-]	1 [0]	5 [2]	6 [3]	11 [4]

Note: The numbers in the [ ] show the number of the companies with positive company net revenue. Company net revenue was equal to the sum of net revenue from rail operation and net revenue from other in-house diversified business operation.

a. "Minor" companies are the private rail companies which do not have rail lines in the major urban areas.

b. These three companies also carried more than 500 ton of goods per day.

Source: Saito (1985), p.182.

It might be "conventional wisdom" that it is impossible to introduce Japanese style private rail concepts in other countries. Before the deregulation of the stage bus service in U.K., however, many people 'believed' that it was inevitable to follow strict entry regulation in stage bus industry. Although there have been some problems

with this deregulation, it is widely credited with many positive impacts on public transportation, and our traditional "conventional wisdom" could be wrong in some sense. Therefore, we should not cease the discussion with the rather easy conclusion that the Japanese case is just idiosyncratic.

From our findings, it seems that private rail companies have shown the ability and potential to provide public transportation services more efficiently and effectively. We should respect thier management skills in both rail and diversified businesses.

Private rail companies have the reputation that they have made vigorous efforts to increase passengers, expand automation in the rail business, and introduce other efficiency measures. For example, the average annual vehicle kilometers per staff member for fourteen major private rail companies have shown continuous growth over a recent twenty years period. If we take the FY1960 as the base year (=100), in FY1989 the number grew to 335 (40,293 vehicle-kilometer per staff). As we saw in table 7, their productivity performance is well above that of both the municipal railway and JR.

In fact, the prolonged steady financial decline of the Japan National Railways ("public corporation") eventually led government officials and politicians to point out to JNR the success of their major private rivals, and to encourage the former to try to learn from the latter (roughly speaking since the end of 1970s). In 1978 the diversification restriction for JNR was relaxed, the green paper which suggested the "corporatization" and privatization of JNR was published in 1982, and on Ist April, 1987, the rail activities of JNR were re-organized with a view to their privatization.

When discussing how to improve the efficiency and effectiveness of public transportation service provision, some people argue that the point is competition from other companies which provide or may provide same services and the other issues such as the form of ownership (public vs private) are only secondary. We cannot completely agree with this assertion.

First, as we already noted, although we agree the importance of competition, we claim that we should put a broad definition on competitor.

Private rail companies are restricted in many respects by the central government (MoT) with the restrictions including; fares, expanding or abolishing lines or services, basic specifications of the service, financing, accounting methods, industrial relations and maintenance policy. However, private rail companies are financially independent, though they are regulated organizations. We must keep in mind even they are regulated in many respects, they still have full responsibility for their decisions. In short, they are autonomous commercial entities. For example, as we described earlier, they have last to say that new rail line investment. Moreover, they have to be sensitive to the "market," because their services should be provided on normal commercial criteria.

Although we do not say that the commercial principle is the unique answer for effective public transportation, we find that it has good attributes and shows strong performance. The following check list gives some idea of the reason; (1) the rule(s) and objective(s) are of an unambiguous, non-conflicting, quantifiable, objectively measurable and "open-ended" form, (2) should be relevant, understandable and acceptable by managers, employee, politicians and interest groups, and (3) applicable (or common) to the other business domains.

The legislation for the private rail companies has been well organized to deal with diversification. It gives a clear distinction between rail and other diversified businesses which prevents "cross-subsidy."

It is true that there are certain kinds of goods or services which can be produced at no, or only nominal, incremental costs with rail operation. The legislation distinguished many of these businesses as the "FUTAI JIGYOU (in Japanese)—auxiliary business" from other diversified business such as real estate and bus. It, then, includes the income from "joint production" type businesses to the rail division, as miscellaneous revenue of rail operation or other income in the rail division. It contributes to stabilized fares (in FY1988, the weighted average ratios of miscellaneous revenue and other income to total fare revenue of five private rail companies were 1:8 and 1:99 respectively).

The white paper for the 1929 Local Rail Act asserted that the most suitable decision maker on the question of whether the diversified business are developed in-house or outside was the company itself. The law assured autonomy for the company's diversification strategy.

By the systematic diversification strategy, the private rail company (and the group) could achieve more efficient and effective use of the corporate resources, such as (1) human resources, (2) physical assets (facilities, spaces, and distributional and procuremental channels), (3) capital, (4) information (know-how, technologies and skills), (5) good will (brand name, corporate image and consumer trust), and (6) patronage. The company could also improve its cost structure and enhance employee morale. Through these efforts, private rail companies would get a good reputation based on strong performance.

Because, in principle, so far the central government has consistently followed a strict policy of self-

sufficiency for local public transportation, there have been few changes in the rules of the games. Therefore, private rail companies can pursue their long-range strategy with broad aims. We might conclude that establishment of the autonomy and the commercial principle are also the key points in the success of private rail companies in Japan.

We should not think of "privatization" as a panacea. There is no necessary presumption for the superiority of the private sector over the public sector. It might not be difficult to find a good case for saying that in many contexts public management would do a better job than private management. Indeed, there are public sector activities for which most people respect their efficiency, for example the City of Kobe.

However, it is true that private rail companies have shown the high performance. Therefore, one of the important lessons which might transferable in other context is necessity and importance to produce autonomous organizations which will have full responsibility to provide public transportation service to the public. In other words, the point is to establish the principle and the conditions (or inducements) which can assure the reasonable autonomy of the organization in the reasonably long-run, because it will establish managerial accountability. Private rails might have incentives (other than reputation and patriotism) to act in the public interest.

A final point which we should make is that while there is a clear potential for the autonomous entity, a well designed and carefully implemented institutional framework is necessary to achieve this potential.

Acknowledgements:

The author is very grateful to Prof. Nigel H.M. Wilson, Department of Civil Engineering, Massachusetts Institute of Technology, for his especially helpful comments on earlier drafts. Prof. Wilson kindly read through the drafts and corrected my English. Also the author would like to thank Mr. Fumitoshi Mizutani, Mr. Eugine Yegin Chen, Prof. Moshe Ben-Akiva, Mr. Gerald J. McCullough, Mr. Peter A. Duerr, Prof. Katsunao Kondo, Dr. Takayuki Morikawa, Mr. Satoru Kajioka, and Prof. Takahiko Saito for their useful suggestions and materials. The author is responsible for all opinions expressed in this paper and any errors it may contain.

This material is based upon work when the author was a visiting scientist at the Transportation Systems Division, MIT. Financial support from the Rokkodai Foundation, Kobe University is gratefully acknowledged.

Note:

1. If a route runs through the city, it counts twice. We excludes the subway (Osaka municipal rail) from this count. It has two routes (three lines) which extend beyond the city jurisdiction and provides similar services.

References

1. K. Akiyama, "Economics of Transport Infrastructure," Unyu to Keizai (Journal of Transportation and Economics) 39 (4), 8-15 (1979).
2. Y. Fujii, "Fares and Subsidies," Mita Shogaku Kenkyu (Mita Journal of Economics and Business Administration) 25 (6), 41-73 (1983).
3. Y. Fujii et.al., Shitetsu-Gyoukai (Private Rail Industry), Kyoiku-sha, Tokyo 1989.
4. K.M. Gwilliam and D.M. van de Velde, "The Potential for Regulatory Change in European Bus Markets", Journal of Transport Economics and Policy 24 (3), 333-350 (1990).
5. D.A. Hensher ed., "Competition and Ownership of Bus and Coach Services," Transportation Planning and Technology (special issue) 15 (2/4) 1991.
6. N. Iguchi, "Diversification Strategy in Public Utility Industries and Institutional Framework for Them," Koeki-jigyou Kenkyu (Journal of Public Utilities) 40 (1), 29-66 (1988).
7. H. Itami, Mobilizing Invisible Assets, Harvard University Press, Cambridge 1987.
8. H. Itami and T. Kagono, Keieigaku Nyumon (Fundamentals of Strategic Management), Nihon-keizai Shinbun, Tokyo, 1989.
9. R. Kakumoto, Toshi Kotsu (Urban Transportation), Koyo Shobou, Tokyo, 1987.
10. T. Kanaya, "Diversification Strategies of Private Rail Companies, Part 1 History," Unyu to Keizai (Journal of Transportation and Economics) 47 (9), (1987a).
11. T. Kanaya, "Diversification Strategies of Private Rail Companies, Part 2 Next Stage," Unyu to Keizai (Journal of Transportation and Economics) 47(10), 43-53 (1987b).
12. K. Kondo, K. Akiyama and K. Shoji, "Recent Advances in Travel Behavior Analysis: Its Implication for the Market Strategy of Urban Rail Companies," Research Report 29, Toshi-kotsu Kenkyusho (Institute for Urban Transport Studies), Osaka, forthcoming.
13. M. Koshi, M. et al., "Japanese National Policy towards the Automobile," Transport Reviews, 3 (1), 1-33 (1983).

14. M. Jones ed., "Passenger Transport Planning, Management and Policy in Japan," proceeding of the same name conference, Oxford, June 1983, Working Paper 75, Department of Town Planning, Oxford Polytechnic, 1984.
15. F. Mizutani, "Analysis of Rail Transportation and Management Strategy in Tokyo," mimeo, 1990.
16. T. Saito, "Private Rail and Bus Transport in Japan," in K. Nakanishi et al, Gendai no Kotsu-Mondai (Contemporary Transport Problems), Mineruva-shobo, Kyoto, 169-214 (1987).
17. T. Saito, "Transport Coordination Debate and the Japanese National Railways Problems in Postwar Japan," Transportation Research 23A (1), 13-18 (1989).
18. M. Sekiguchi, Shitetsu (Private Railway Companies), Nihon-Keizai Shinbun, Tokyo, 1987.
19. K. Shoji, "Decision Making Criteria for Urban Public Transport, the London Method," Annals of the School of Business Administration, Kobe University 31, 85-108 (1987).
20. M. Tamura, Gendai no Shijou-Senryaku (Corporate Strategy Breakthroughs: Changing the Rules of the Game), Nihon-keizai Shinbun, Tokyo, 1989.
21. N.H.M. Wilson and J.P. Panayotidis, "Monitoring the Performance of Private Contractors," US-DOT Report, forthcoming.