THE REGULATORY SYSTEM AND ITS RELEVANCE: THE CASE OF TRUCKING INDUSTRY

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Introduction

In my previous paper,[1] I discussed the framework of regulation in the transportation market in general, taking into consideration the characteristics of the transportation services which, taken as a whole, are not existent, or at least not so remarkable, in the markets of other kind of services. I also tried to point out some inevitable complications that will arise when we look into specific submarkets or specific modes of transportation. There it was emphasized that the consistency between goals and means or devices of regulation must be carefully evaluated because, in spite of an apparent uniformity, entirely different goals might be served by the same regulatory means for the different transportation modes and submarkets. The aim of this paper is to apply the argument to the trucking industry, with the main focus on the regular-route trucking firms.

The plan of the paper is as follows. In section 1, the present situation of the freight transportation by motor trucking as well as the market structure of the trucking industry of our country is briefly introduced. In section 2, the regulatory system for the industry is summarized. In sections 3 and 4, the financial performance of route trucking firms are analysed based on the available data, and they are evaluated with the existence of price and entry regulation in mind.

1. *Market Structure*

The motor trucking idustry is one of the typically labor-intensive[2] sector, and encompasses a very large number of firms.[3] The freight transportation by motor truck can be divided into professional trucking by the common carrier, that is, professional trucking, and trucking by the private carrier, that is, own-account trucking. The former is required to secure a certificate of public covenience and necessity, while the latter is not regulated and needs no lisence.

One of the remarkable feature of the freight transportation by the truck is that the proportion of the private carrier is very high. The recent tendency of the share between professional and own-account is shown in Table 1. In Figure 1, the share of various modes

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[1] "Regulation of the Transportation Industries—Towards a Systematic Appraisal—," *Business Review*, Vol. 23, No. 2.

[2] Capital intensity for the trucking industry is approximately one fourth of that for manufacturing industry. See [6].

[3] 28,632 firms at the end of 1975.

FIG. 1. SHARE OF DOMESTIC FREIGHT TRANSPORTATION BY MODE

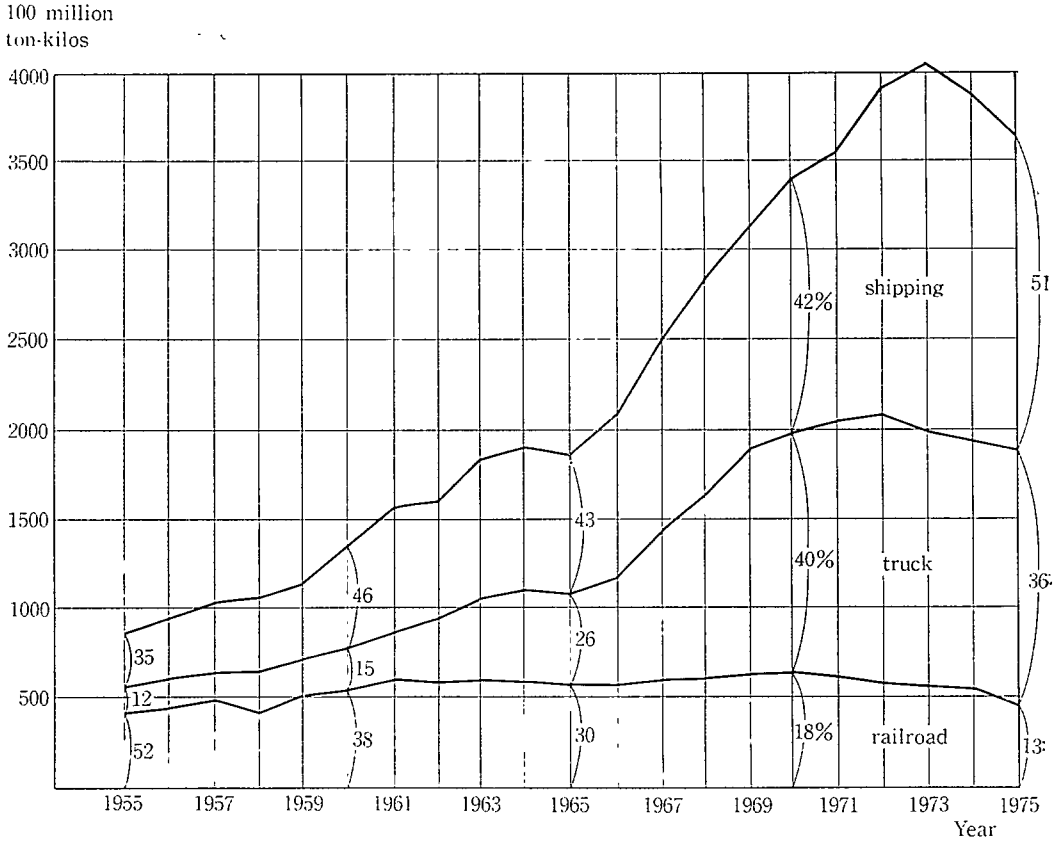


TABLE 1. TONS AND TON-KILOS CARRIED BY PROFESSIONAL AND OWN-ACCOUNT 1960–1975

(percentage)

	1960	1964	1965	1967	1969	1971	1973	1975
Tons								
professional	33	28	26	26	25	25	27	29
own-account	67	72	74	74	75	75	73	71
Ton-kilometers								
professional	46	43	46	46	49	51	52	53
own-account	54	57	54	54	51	49	48	47

Source: [10]

of transport in domestic goods transport in ton-kilometers is shown. As to the tonnage carried, professional trucking has kept constant share of approximately twenty-five percent. On the other hand, the ton-kilometers carried by the professional truckers came to exceed fifty percent after 1971. In consequence, the average distance per ton carried by professional trucks is about three times as long as that of own-account trucks for these years.

The Road Traffic Act (Douro Unso Hou, 1952), which governs road haulage in our country today, established two basic kinds of professional trucking licenses; regular-route trucking and area trucking (or, irregular route trucking). Area trucking is the biggest branch of the industry and includes more than ninety percent of the professional tonnage carried. An area trucking license specifies the area, and it permits the holder to carry any goods with the origin or destination in that area. However, goods for no more than two shippers can be carried within the same truck at the same time.

Route truckers are licensed to carry goods only between specific points and are often limited in their authority to pick up goods at intermediate points. These firms must offer, in principle, regularly scheduled service, the frequency of which are specified in their license.

The present number of firms of these types of carriers and their trends are shown in Table 2. It can be seen that route truckers has shown gradual decrease in its number for

TABLE. 2. THE NUMBER OF TRUCKING FIRMS

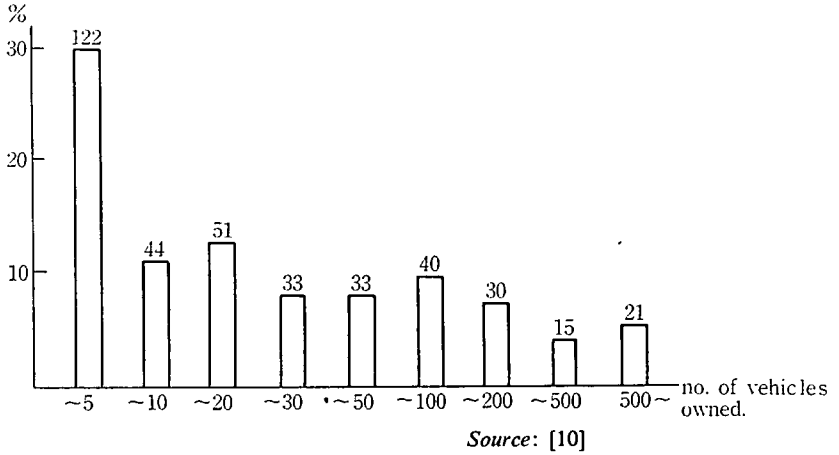
	1955	1960	1965	1967	1969	1971	1973	1975
route trucking								
no. of firms	528	533	489	470	439	400	388	379
average distance per ton (km)	331	356	507	560	632	704	758	850
area trucking	4,280	6,533	10,725	12,318	12,833	23,769	27,018	28,253
others	4,043	6,484	8,643	8,372	8,405			

Source: [10]

these twenty years, while the number of area trucking firms is now still growing. Part of the reason for the decrease in the former are mergers and consolidations among firms that began to take place frequently since around 1960, coupled with the favourable policy taken by the Ministry of Transport.

In spite of the continued movement of mergers and consolidations, however, the most of the firms in the industry are still small-sized and typically labor-intensive. The size distribution of the firms is given in Figure 2. There are several alternative variables that

FIG. 2. DISTRIBUTION OF THE FIRM SIZE FOR 1975



Source: [10]

might be used to represent the firm size; the amount of capital, the number of employees, and the number of vehicles, for example. For the trucking business, the number of vehicles seems to be most frequently adopted.

To summarize the profile of the route trucking industry, it is pointed out that (i) the number of the carrier is decreasing with the movement of mergers and consolidations, and that (ii) the size distribution is L-shaped, small-sized carrier with less than five vehicles and less than ten employees being typical.

2. *Regulation and its Rationale*

There are several types of regulation and many uses and definitions of the term. Following Davis, Folder, and Holden [2], there are three facets of the regulatory system; economic regulation, regulation of the physical aspects of transportation, and regulation by social policy. Economic regulation of transportation generally refers to the control or regulation of price, entry of new firms, and economic expansion or contraction of existing firms and control of services from an economic viewpoint. The regulation of the physical aspects of transportation refers to control over the conditions of transportation for the purpose of safety and reliability of the services. Regulation by social policy refers to the positive and negative results of aiding and supporting one means of transportation over another, or transportation as a function as compared to another economic function; the ownership patterns allowed; and environmental restraints.

Regulations can also be classified as direct or indirect. Thus, the economic regulation of transportation is all direct since it is directly on the firms supplying the transportation service. Social regulation is all indirect since it affects the economic climate within which transportation operates and the financial conditions under which transportation takes place. The regulation of the physical aspects of transportation is a mixture of direct and indirect. Sometimes it is direct when such things as safety rules are imposed on carriers and private operations. Sometimes it is indirect when it involves rule-of-the-road and standard operating procedures.

In what follows, however, we should not be too concerned about this kind of classification. While this paper concentrates upon the category of economic regulation in the classification above, our ultimate concern is not on the effects of "economic regulation", but on the "economic effects" of regulation. Traditional economic analysis of regulation have focused largely on quantity and price of a service, mainly because of its analytical convenience. It is widely recognized now, however, that quality in addition to quantity should be taken into account as an integral part of an economic problem.[4] It means that any kind of regulation would be called economic regulation only if its effect could be identified and analyzed from an economic viewpoint.

Before examining the regulatory system in trucking industry, we should attempt to examine very briefly the general goals of regulation, which are the protection of the public or the shipper and the promotion of the best possible system of transportation.[5]

[4] See [1].

[5] In "the best possible system of transportation", multiple criteria such as safety and reliability as well as economic efficiency are involved.

While it is easy to state these general goals, their implementation is considerably difficult, since they contain some inherent conflicts. In other words, some of the means employed for the promotion of the first goal may have some adverse effects for the second. To attain the best possible system of transportation, for example, the carrier must be strong financially and economically. An financially weak and economically marginal carrier cannot be expected to produce the best possible services. On the other hand, the public or shipper must not be exploited in price or quality. Thus conflict will arise. So too with safety and environmental protection. The public or the shipper demands that its interests be taken into consideration. But cosiderable cost would be incurred to the carriers by safety and environmental control, which may weaken their financial health. Here again, the inherent conflict of the two goals is evident. The existence of these conflicts should always be borne in mind, since the evaluation of the regulatory devices would be influenced to a great extent by our trade-off between two goals.

The economic aspect of the regulation for the trucking industry encompasses two major devices of control; price or rate regulation, and entry regulation, both based upon more basic concept of regulation, that is, common carrier obligation. Before evaluating the effects of the regulation in the trucking industry in the following sections, a general survey of these devices and concepts may be helpful.

Common carrier obligation is a part of, and is interrelated with, price and entry regulation. Specifically, in exchange for the right to operate exclusively, the regulated firms assume four duties; to serve, to deliver, to avoid discrimination, and to charge only reasonable prices.

The duty to serve means that the regulated firm must serve all comers. It may not limit its public or shipper except for due cause and except for the physically limited situation. Likewise, once given the right to serve a route or area, a carrier may not abandon its service without permission. The duty to deliver concerns immediate delivery to consignees, in the same physical condition as originally tendered to the carrier.

The duty to avoid discrimination and the duty to charge reasonable prices have been formalized in rate control. Discrimination here refers to both price and quality discrimination between points to be served and between classes of freight. On the other hand, reasonableness here means that a carrier may not exploit its monopoly or oligopoly privilege. As we will see later, in the trucking industry, it is not clear whether "reasonableness" requirement is really needed in the sense noted here.

Based on, and interrelated with, these common carrier obligation, two major devices of control, rate and entry regulation, come into the picture. Although professional trucking has been subject to a considerable amount of competition, the administrative authorities have nevertheless been concerned with the general level of rates, and have imposed restrictions on it by refusing from time to time to grant carriers requests for rate increase. In imposing the restriction on the level of rates, the adequacy of the rate level has been judged mainly by the operating ratio of the carriers instead of the rule of fair return on fair value. The operating ratio has been adopted as the standard because the investment of the carrier in this industry is so small that a slight miscalculation of probable revenues or expenses might leave the carrier with operating revenues insufficient to pay operating expenses.

The broad objective of the second device, entry control, is to assure adequate, safe, and efficient transportation services. This objective can be accomplished by entry regulation

in many ways. Firstly, the monopoly or limited competition resulting from closed entry is said to encourage adequate investment and modernization by assuring profitable returns and by lessening market risks. Secondly, standard of services can be improved by encouragement of able and responsible carriers. Thirdly, transportation can be more efficient because duplicating fixed investment can be avoided and excess capacity can be reduced. Finally, economy in transportation can be gained through coordination between agencies of transportation.

As previously noted, route trucking firms as well as other common carriers must secure a certificate of public convenience and necessity before undertaking to supply transportation service or before extendig operation over other routes. To secure certificate, an applicant must prove to the satisfaction of the authorities that it is fit, willing, and able to perform the service it proposes to offer, that such service is required by present and future public convenience and necessity, and that such service cannot be supplied by the existing carriers.[6] The certificate must indicate the service to be rendered and the route to be covered. It may be suspended, changed, or revoked for willful failure to comply with the law.

It should be recognized that, as Philips [16] points out,[7] entry control can be a two-edged sword. Instead of promoting efficiency, it may be used to protect inefficiency. Especially is this likely from operating authority restrictions, that is, specifications of the exact route each carrier may serve. Further, entry control and information management of every route is a detailed work which increases the workload of the administrative agency. On balance, it must always be questioned whether the cost of entry control are not greater than its benefits.

With the foregoing survey, it is fairly obvious that these regulation devices explained so far are a whole package or system of interrelated controls. It is sometimes difficult to practice one without the other. A cut in rates may mean a cut in frequency of service or other quality of services; a rise in rates to meet a desired level of revenue may cause discrimination among the shipper. In view of such complications, it is not surprising that regulation are often inconsistent and overlapping, and that a carrier is subject to many regulations by many agencies. This is part of what is meant by regulatory system. In this situation, it is all the more important to pay constant attention on whether the regulatory system as a whole are being successful at any rate in attaining its goals.

3. *Intramodal Competition*

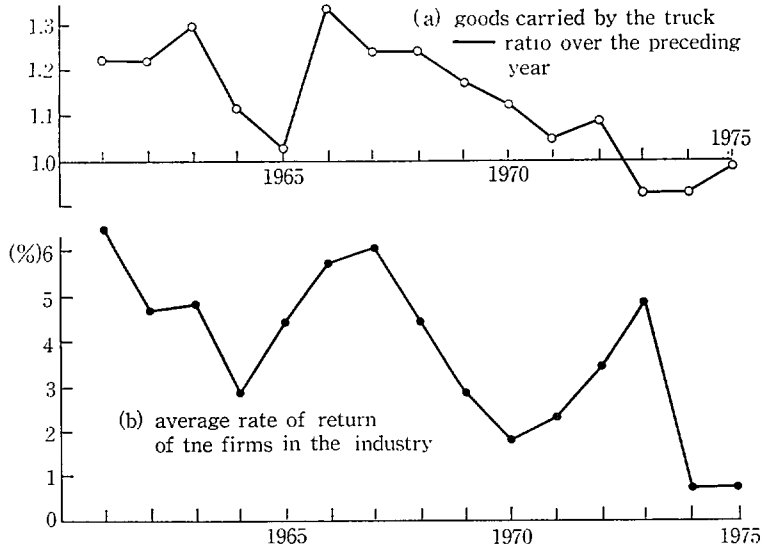
As previously explained, there is a distinction between route truckers and area truckers. The actual public control for the entry has been somewhat strict for the former and very loose for the latter. As a result, there has been no entry of a new route trucking firm since 1958, but only addition or extention of routes by the existing firms. Area truckers, however, have been virtually in the purely competitive market, and have shown considerable number of new entries and exits every year.

Generally speaking, the immediate purpose of entry regulation is supposed to be the stabilization of markets, while the ultimate goal is, as stated in the previous section, to assure

[6] Another important condition or criterion for the entry approval prescribed in the Road Traffic Act is the prevention of the excessive competition on each route. These conditions as a whole have an essential nature to protect the existing carriers. See [13].

[7] In [16], pp. 507-508.

FIG. 3. AVERAGE RATE OF RETURN AND THE LEVEL OF GENERAL ECONOMIC ACTIVITY



Source: [10]

reliable and efficient transportation services. Stabilzation of the market, or aversion of the excessive competition, is an objective which is stipulated in the Road Traffic Act. It is not clear, however, to what extent our regulatory system has been effective for that purpose. As is shown in Figure 3(b), the average rate of return of route trucking firms, for example, has been constantly positive, with the floor of around one percent and the ceiling of around six percent.

However, it is obviously difficult to find any clear relationship between the performance and the entry control, since the number of firms has shown constant decrease. Rather, the level of general economic activity seems to have a dominant influence on the financial performance, as suggested from Figure 3.

With regard to the individual routes, of course, the entry barrier provided by the regulation may have been effective to protect the advantageous position of the existing firms. But, unfortunately, the data showing the number of the firms competing on the individual routes is not available. The only information that happens to be available is the data concerning the number of firms on each route more than five hundred kilometers, which is shown as Table 3.[8]

It is quite clear that we should not consider the number of firms on each route shown in Table 3 as the direct measure for the extent of competition, because any one city-pair that constitutes a route can be a part of other routes. For example, the city-pair of Nagoya-Tokyo constitutes a route, and at the same time, it is a part of the Osaka-Tokyo route.

In Murao [12], an interesting data is presented as to the state of competition of each firm, by size and by region. Although it is not completely reliable because those data were obtained from the limited number of samples, it gives us a supplemental information and

[8] In [6], p. 68.

TABLE 3. NUMBER OF CARRIERS ON EACH ROUTE

Route	No. of carriers serving the route
Tokyo–Nagoya–Osaka	28
Tokyo–Nagoya–Kobe	10
Hiroshima–Osaka–Nagoya	7
Tokyo–Nagoya–Kyoto Osaka–Hiroshima–Hukuoka	5
Yokohama–Nagoya–Osaka Kadoma–Nagoya–Tokyo	4
other 4 routes	3
other 6 routes	2
other 61 routes	1

Source: [6]

TABLE 4. NUMBER OF FIRMS MONOPOLIZING AT LEAST ONE ROUTE
(based on the responses to the questionaire: 1972)

	(1) no. of firms	(2) no. of total respondent firms	(3) $\frac{(1)}{(2)} \times 100$ (%)
Size of the firm (no. of vehicles owned)			
less than 20	8	13	62
21 — 100	12	27	44
101 — 500	6	16	38
501 —1000	2	16	13
over 1000	6	45	13
unidentified	1	1	—
total	35	118	
Location of firms			
Keihin area	4	15	27
Chukyo area	1	6	17
Hanshin area	1	9	11
other (local)	29	88	33
total	35	118	

Source: [12]

good insight into the realistic situation. According to these data shown in Table 4, coupled with the data in Table 3, it can be seen that the proportion of the small-sized firms that are enjoying the monopolistic (or, near monopolistic) situation is significantly higher than that of the large-sized firms. Also it can be safely said that the small-sized firms are mainly operating on local routes other than the metropolitan area. It is not clear, however, how we should interpret our observation. We might be able to say that the route truck carriers are highly protected. Also we might conclude to the contrary, emphasizing the other side of the coin.

To sum up, it may be concluded that the entry regulation has had an equalizing effect for the financial performances of the carriers in a sense that weaker carriers has been allowed to operate exclusively while stronger carriers has been exposed to the competition among them. If this is exactly what has been intented by the regulatory agency, its entry

control has been quite effective.

4. *Financial Aspects and Scale Economy*

While some transportation firms as well as public utilities are regulated through their rates of return, the variable which is often directly controled in these industries is price. In this section, we examine the validity of such direct price regulation with special attention on its relation to the entry control.

The data concerning the validity of price regulation in the route trucking market are not available, but again the data reported in the study done by Murao [12] give us a suggestive information. In Table 5, the average proportion of the amount of actual receipt to the amount to be received at the regulated price is shown.

TABLE 5. AMOUNT OF ACTUAL RECEIPT—AVERAGE PERCENTAGE
(based on the responses to the questionaire: 1972)

	way forth		way back		average
route characteristic	average	no. of firms	average	no. of firms	
1. metropolis—metropolis	78 %	12	73 %	10	75 %
2. metropolis—local city	90	5	59	5	74
3. local city—metropolis	87	39	86	34	86
4. local city—local city	92	25	71	18	83
5. unidentified	94	5	73	4	84
total	86	86	77	71	83
size of the firms (no. of vehicles owned)					
less than 10	90	1	100	1	95 %
11 — 20	93	6	68	5	82
21 — 50	111	8	95	7	103
51 — 100	80	11	79	8	80
101 — 200	104	7	84	7	94
201 — 500	78	6	87	6	83
501 —1000	80	11	97	7	80
over 1000	85	35	70	29	78
unidentified	80	1	50	1	65
total	88	86		71	83

Source: [12]

The data tell us that in almost all routes the substantial deviation of the actual price paid from the regulated price can be found. On the average, the actual revenue shows the downward deviation from the due amount, being 88 percent on the way forth, 77 percent on the way back, and 83 percent in total. It might be interesting that the deviation is relatively small for the small-sized firms and relatively big for the large-sized firms, though there are some exceptions. But if we take into account that the smaller firms are likely to be operating on relatively short local routes, and that there are few competing carriers on those routes, the result is not surprising because it simply reflects the extent of competition on major and minor routes.

The major reason for the price regulation of the trucking industry is supposed to be

the stabilization of the market. While its basic aim is generally to prevent the unduly high prices to be charged, the situation is somewhat different in this market. Here it is used, at least partially, to protect the carrriers position by minimum price fixing. Then we should examine to what extent this goal has been attained. According to the profit data already given in Figure 3, it looks as if the regulation has been successful at any rate. However, closer examination gives us considerably different picture as to the profitability situation of the firms in the industry, as in Table 6.

TABLE 6. RATE OF RETURN ON CAPITAL BY SIZE OF THE FIRM

Size of the firm (no. of vehicles owned)	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
1 — 20	3.23	2.54	1.20	△0.87	0.61	2.09	4.60	3.21	0.25	0.11
21 — 50	3.90	2.30	0.76	2.47	3.03	2.18	4.07	3.63	△2.98	1.04
51 —100	2.19	3.43	2.01	1.76	1.43	1.27	3.69	1.99	△5.58	△0.65
101 —300	1.75	2.30	1.85	0.61	△0.22	1.36	2.84	△4.02	△2.20	0.55
over 300	8.28	8.39	5.91	5.32	4.27	4.67	6.47	6.68	2.84	4.34

Souse: [9]

Brief inspection will reveal two things. (i) The large-sized firm has shown more or less stable profitability, and (ii) the performance of the smaller firms has been fluctuating mainly according to the rise and fall of the general economic activity, and the tendency is more apparent in the medium-sized firm than in the smallest group.

While the economic conditions between small-sized and large-sized carriers are equalized in the sense stated previously—monopoly or oligopoly of the small-sized firm on minor routes, and, many carriers on the major routes—, signficant gap of the financial performance between them can be observed. Then the next task that should be done is to examine the possible reason for it. This leads us to turn our attention to the issue of the scale economy in the production of transportation service.

Although returns to scale are strictly defined in terms of the production, the conventional substitute is to examine the cost-output relationship faced by a firm in a given industry.[9] If input prices are assumed to be constant at all times, then increasing returns to scale can be expected to result in declining average costs. This assumption is generally justifiable since the range of a production of a single firm is generally insufficient to affect the market price of inputs. In the case of motor trucking industry, this assumption is further supported by the fact that a merger within the industry is unlikely to affect significantly the total industry demand for a factor, and hence its price.

Output is difficult to identify simply because it consists of many different components. In general, however, previous research has adopted total kilometers hauled loaded with revenue freight or ton-kilometers of revenue freight as the best measure. In the following discussion, the cost-output relation will be examined in terms of the former.

It is widely accepted that economies of scale[10] manifest themselves to a much smaller extent in motor transport than they do in rail. That is to say, generally speaking, economies of scale available to trucking carriers are such that opportunity to expand under the expectation of lowering the costs of production are less important than in the case of rail trans-

[9] See [7], chapter 31.

[10] Distinction should be made between scale economy of plant size and that of a firm size. The latter should be meant here.

port industry. For the trucking firm, the technical operating units are relatively small. At least they may be small. Operations may be started with a very small investment, and expansion can be attempted with very small increments of investment in order to respond to growing demand. Most of the facilities are not rigidly committed to a particular geograhpical area and to a particular freight, and they can readily be shifted to any other market. Physically, the highways or routes are available to all who wish to use them, and no carrier is committed to the investment in them. Motor carriers do invest in terminal facilities, but the amount of investment is relatively small. Under these conditions, expansion will not result in an appreciable reduction of the average total unit cost of output, because the additional output comes in response to the incurrence of added costs that are largely proportional to output.

Or stated differently, since the technical operation of a trucking firm is relatively simple, highly sophisticated know-how is not required. And for that reason, there seems to be no large technological gap among carriers. Vehicles are more or less the same for all carriers, and the labor is also homogeneous. Moreover, in order to increase the output, the number of equipments—that is, trucks—must be increased. But with the new equipment, the labor must also be increased. Thus the marginal costs tends to be roughly equal for all carriers without regard to their size.

In spite of the argument above, however, it seems that economies of scale do exist to some extent in the route-trucking business, judging from the available data. Table 7 shows

TABLE 7. THE AVERAGE UNIT COST PER KILOMETER——BY SIZE OF THE CARRIER

(yen)

Size (No. of vehicles)	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
1 — 20	114.97	114.97	138.76	143.55	153.50	209.72	217.60	267.57	280.29	300.15
21 — 50	122.54	136.36	149.88	160.89	176.72	156.07	182.58	227.87	268.84	273.72
51 —100	89.65	93.02	94.69	105.35	119.88	149.02	195.74	225.23	267.75	314.62
101 —300	100.70	106.01	114.08	129.97	137.94	148.36	191.18	188.05	257.17	275.92
over 300	97.58	101.09	109.82	118.85	132.33	140.84	159.91	201.45	224.19	257.55

Source: [9]

the average unit cost per kilometer hauled by firm size through 1966-1975. Roughly speaking, according to the data, the average cost per kilometer hauled is low for the large-sized carrier. The smallest group almost always shows the highest cost, while the largest group constantly shows the lowest cost after 1971. Several factors should be mentioned as the plausible reasons that may cause the situation observed above. First, the cost of general administration per unit of output naturally decline as the size of the carrier—consequently, the total amount of output—increase. Second, the firm with higher activity level may enjoy the advantageous position in buying the fuel, the tires, and other materials and supplies. Third, and most inportant, the larger carriers are likely to have wider network of business,[11] which may allow them to realize the more efficient operation. In fact, the data shown in Table 8 support this conjecture. In the case of trucking business, efficiency in operation is usually expressed by (i) rate of operation—the proportion of the number of total vehicles operated to the number of total vehicles owned, and (ii) rate of effective haul-

[11] The network of business roughly means the route structure of and the network of branch offices of a carrier.

TABLE 8. EFFICIENCY IN OPERATION

(%)

firm size (no. of vehicles)			1970	1971	1972	1973	1974	1975
1 — 20	rate of operation	(i)	76.63	67.61	74.34	75.75	72.53	72.57
	rate of effective haulage	(ii)	90.90	91.03	90.16	85.90	86.79	88.06
21 — 50		(i)	83.37	82.63	82.27	81.15	79.40	79.09
		(ii)	91.02	91.67	91.21	90.21	89.99	89.54
51 —100		(i)	83.93	83.58	86.81	87.74	82.49	84.55
		(ii)	94.81	94.38	89.61	94.10	93.35	94.54
101—300		(i)	81.11	83.64	84.49	82.65	80.37	79.34
		(ii)	93.97	92.73	93.92	94.61	95.14	94.75
over 300		(i)	84.88	84.71	84.01	81.05	78.69	80.02
		(ii)	97.93	96.79	95.89	96.19	95.93	96.03

Source: [9]

age—the proportion of total kilometers of haulage loaded with revenue freight to total kilometers hauled. It is observed that the both indices tend to be high for the large-sized carriers. The higher rate of effective haulage and the lower cost per kilometer of haulage for the large-sized firm, in combination, reflect still the lower unit cost per kilometer of effective haulage, thus showing the strong possibility of scale economy. The higher efficiency for the large-sized carrier is perhaps because they are more successfull than the smaller carriers in reducing the fluctuations of the demands for their services, especially in securing the freight for the backhaul, taking advantage of their operation network. Table 9 shows the data reported in Murao [12], which is a good support for this reasoning.

TABLE 9. AVERAGE PROPORTION OF BACKHAUL VOLUME*
(based on the responses to the questionaire: 1972)

Size of the firm (No. of vehicles owned)	no. of respondent firms	average proportion (%)
less than 10	5	68.4
11 — 20	10	21.1
21 — 50	22	123.6
51 —100	27	85.6
101—200	19	81.3
201—500	21	103.8
501—1000	35	96.6
over 1000	103	95.3
unidentified	1	90.0
	243	93.3

Source: [12]

* $\frac{\text{volume of backhaul freight}}{\text{volume of forward-haul freight}} \times 100$

We may conclude the argument of this section as follows. In spite of the rate regulation, the prices that are actually paid by the shippers are, on the average, considerably less than the regulated level. On the other hand, some carriers on local routes seems to be enjoying the price above the regulated level for their services. Considering that there tend to be

limited number of carriers on local routes, it can be argued that the actual prices paid are largely determined by the forces of competition. From the financial data, however, the large-sized carriers have generally shown superior performance, independently from the competitive conditions. A possible factor that explain this situation is the scale economy of a firm size realized by the large-sized carriers.

Concluding Remarks

The present regulatory system for the regular-route truking firm seems to be lacking in the due cooperation between entry control and price regulation. While the entry regulation has been playing an important role in forming the present market structure, and even in determining the actual price level prevailing in the markets, the rate regulation seems to have no substantial effect.

To define a desirable way of interlocking two devices of regulation is a complicated problem, and it is beyond the framework of this paper. Before doing so, many studies must be done. Above all, a theoretical model that incorporates the quality of service must be developed, the reliable data concerning the competitive situation between route truckers and area truckers should become available, and the effect of regulation on the rivalry between professional and own-account trucking must be examined.

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