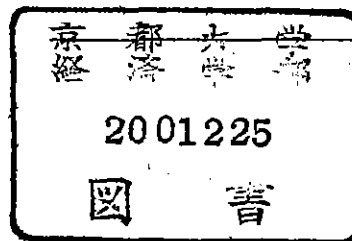


# Kyoto University Economic Review

MEMOIRS OF  
THE DEPARTMENT OF ECONOMICS  
IN  
THE IMPERIAL UNIVERSITY OF KYOTO

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JULY 1926

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SHIPPING COMBINATIONS AS SEEN  
FROM THE VIEWPOINT OF  
FREIGHT THEORY<sup>1)</sup>

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1. FALL OF FREIGHT RATES UNDER  
COMPETITION.

The shipping enterprise is comparatively easy to be undertaken chiefly because of the following two reasons: in the first place, its field of business is the sea which is free from natural obstacles and legal interference; and secondly, much smaller capital is needed as compared with other enterprises, railway enterprise, for example. In time of business prosperity, therefore, new shipping enterprises are easily undertaken, while existing enterprises are also expanded, the amount of shipping tonnage thereby being increased.

The capital invested in a shipping enterprise is fixed in the form of vessels, and cannot, in ordinary circumstances, be transformed. However, since a vessel is a commodity in the international market, a shipping *entrepreneur* can sell whatever vessel he owns if he so desires, and thus withdraw his investment. But even then the vessel itself remains *in esse* as a vessel, unless it is dismantled. Thus, once the capital of a society is invested in a shipping enterprise, it is not likely to be transferred to any other industry.

Let us see what all this means under competition. In the first place, a competition is easily commenced, because, as has been already pointed out, anyone can start this enterprise, thereby causing a new competition. He can also

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<sup>1)</sup> By "Freight theory" I mean the theory of freight charges and the phrase is used in this sense all through.

intensify the existing competition by participating in it. In the second place, since the capital invested in the shipping enterprise is fixed in the form of vessels, it is rather difficult for those who have once entered into the competition to get out of it, contrary to the ease of entering it. Moreover even though the ownership of a vessel should change, the vessel itself remains only to earn freight charges. These undoubtedly indicate that the enterprise lacks the flexibility which enables an industry automatically to alleviate competition. Thus, the competition in the shipping industry is a free competition only in reference to its commencement, or to the participation of shipowners in it; it is a restricted form of competition so far as the freedom of withdrawal therefrom is concerned.

Another restriction on competition in the shipping industry is found in the fact that a considerable expenditure is needed for the maintenance of the business capital, the vessels, even during the cessation of operations. Even when vessels are laid up in harbour instead of being used in active service, owners must pay out considerable sums merely for maintenance. Such expenses mean only loss for the owners. When, therefore, the owners of vessels lose because of keen competition, if that loss is less than the cost of laying-up the vessels, the owners will choose to continue the active operation of their bottoms.

They will withdraw their vessels from a market only after the market freight rate falls below a point at which the loss from competitive navigation and the cost of laying-up that vessel fairly balance each other. Such a point of freight rate I call the "laying-up point," because when the market freight rate falls below it the vessel is, to speak logically, laid up.

As the "laying-up point" has an important meaning for the freight theory, I shall take this opportunity to elucidate it. Suppose  $x$  represents the market freight rate per ton, for instance, for a given trip,  $c$  represents the cost of the marine service of a vessel for a transportation unit

(one ton for instance), and  $l$  represents the laying-up cost of that vessel for the same unit, then the laying-up point of that vessel is the  $x$  which stands in the following equation:—

$$c-x=l$$

Thus, even when the supply of tonnage greatly exceeds demand and the freight rate is below the cost of the marine service, unless the laying-up point is reached, the owners will continue to operate their vessels under the strained competition; and it is only after the laying-up point has been reached that the vessels will be withdrawn from the field.

Looked at from the standpoint of freight theory, we should clearly distinguish the three meanings of the "excess of tonnage-supply." The first meaning indicates a case where the supply of tonnage exceeds the demand at a given freight rate. This is the usual meaning of excess of tonnage-supply. Secondly, when supply exceeds demand, supposing all vessels demand a freight rate which is over and above the cost of the marine service. Thirdly, when supply exceeds demand, supposing all vessels demand a freight rate which is over and above the laying-up points. The second and third meanings are extraordinary developments of the first.

It is clear then that the freight rate is lowest when the supply of tonnage exceeds the demand in the third meaning. In that case, as the supply of tonnage exceeds the demand should all the vessels demand freight rates which are higher than their respective laying-up points, those vessels the laying-up points of which are comparatively high will be eliminated from the field of competition; they will be driven out of the business by those other vessels the laying-up points of which are comparatively low. In consequence, the market freight rate will be determined at the laying-up point of the vessel which is at the margin of actual tonnage-supply, *viz.*, it will be determined at the highest laying-up point of a vessel remaining in actual

service. In the tramp business this is the general limit of the freight rate reduced by competition.

If we should take individual vessels under any freight rate, we shall find that that freight rate is for some vessel higher than the cost of its marine service; while for others it is lower than that; and again among those for whom that freight rate is lower than the cost of their respective marine services, it is for some vessels higher than their laying-up point, and for others lower than that. For the last-mentioned vessels transportation of freight at that rate means a greater loss than being laid-up, and they will withdraw from the field of supply. But in the case of a vessel the cost of marine service of which is higher, and the laying-up point is lower, than that freight rate, its loss from remaining in active marine service is a smaller loss than it would incur by laying-up in harbour; and as a result it is likely to continue in operation although that also means a loss. Such being the case, in a marine market, where the excess of tonnage-supply in the third meaning already mentioned occurs, the market freight rate, *viz.*, the freight rate at which the surplus tonnage is eliminated and thereby the tonnage-supply becomes equated to the demand, is nothing more or less than the laying-up point of a vessel which is just at the margin of actual supply in that case.

On next page I use a figure to show what I have already pointed out. On that figure, prices, *i. e.*, freight rates, are measured along the perpendicular axis O Y; quantities, *i. e.*, tonnages, are measured on the horizontal axis O X, as in the usual illustration of the value theory. Let it be supposed that the length of O e on the horizontal line represents the amount of vessels' tonnage in a given shipping market, and the lengths of lines parallel to it represent the amounts of tonnage demanded or supplied at various freight rates. Then we can take the curve D D' as a demand curve which shows a series of tonnage demanded at various freight rates. The curve C C' represents a series of the costs of marine service for a transportation unit (*one ton*

for instance) of various vessels which stand in order on the line O X. The curve R R' represents a series of freight rates at the *laying-up points* for a transportation unit of those vessels. If shipowners do not consent to transport at

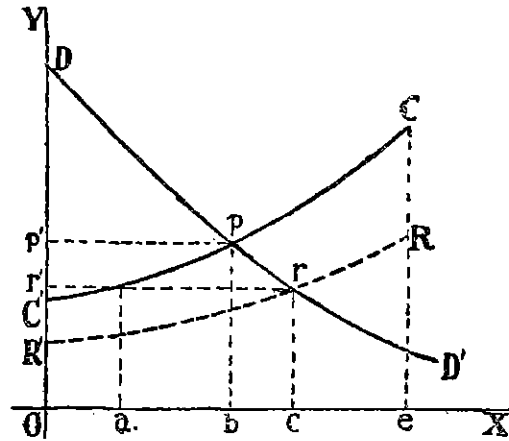


Fig. 1

a rate cheaper than the cost of marine service, the supply curve in case of the over-supply of tonnage should be the curve C C'. However, as has been already stated, shipowners, in case of over-supply, rather willingly transport even if the rate is lower than the cost of marine service,

provided it is not below the laying-up point of their vessels. For this reason, in case of the over-supply of tonnage in the third meaning already stated, the supply curve is not C C' but R R'; and in consequence, the curve R R' in such a case represents a series of laying-up points as well as that of freight rates at which the shipowners are willing to transport.

In a shipping market where the relation between supply and demand is as shown in the above figure, the market freight rate is fixed at r. Of O e, representing the total existing tonnage in that market, the vessels represented by O c are employed in the marine service, while the vessels represented by c e are laid up and are thus thrown out of the field of actual supply. Of the vessels represented by O c, which means the actual supply in this case, the vessels represented by O a are operated for a rate over and above the cost of operation and thus get a profit; while the vessels represented by a c are used for a rate cheaper

than the cost of operation and thus result in a loss. On the other hand, let us suppose that the amount of vessels' tonnage in the given market were  $O b$  instead of  $O e$ , then the freight rate would be fixed at  $p$  showing a balance between supply and demand, and thus would correspond to the cost of the marine service of a vessel which stands at the margin of actual supply. In consequence, the vessels represented by  $a b$  should not have to be operated at a rate cheaper than the cost of operation, and all vessels except that which is at  $b$ , the margin of supply, would derive some profit. Not only that, but the vessels represented by  $O a$  ought to derive a greater profit than that which they would have derived had  $O e$  been the total tonnage. In our case, however, since the total amount of tonnage is  $O e$ , instead of  $O b$ , the following things will happen: the vessels represented by  $O b$  being exposed to the competition of the vessels represented by  $b e$ , the freight rate finds itself at  $r$ , and only those vessels represented by  $c e$  are laid up, the vessels represented by  $b c$  are exempt from laying-up and are operated at a rate cheaper than the cost; but those represented by  $a b$  are operated in this case at a loss, and the profit of the vessels represented by  $O a$  will be reduced.

Thus, under the foregoing circumstances, the market freight rate will be fixed at  $r$ ; and, so long as the demand for marine service does not increase, or, in other words, so long as cargoes do not increase, the rate in question will not rise above the point  $r$ . In consequence, should the condition of the demand remain unimproved, the loss from the operation of the vessels represented by  $a c$  is increased with the lapse of time, while the cost of laying-up of the vessels represented by  $c e$  is also increased. Hence, some of the owners of those vessels—both  $a c$  and  $c e$ —may have to dismantle their vessels because of the lack of the financial power to carry on. When dismantled vessels are less than  $c e$ , the freight rate will not rise above the point  $r$ ; it is only after they become more than  $c e$ , that is, the total amount of tonnage in the market becomes less than  $O c$ ,



that the freight rate rises above the point  $r$ ; and if dismantled vessels are still on the increase, their number becoming  $b e$ , thereby making the total tonnage in the market  $O b$ , the freight rate will become the same as the cost of the marine service of the vessels at the point of marginal supply, and thus reaches the profit-yielding point again. All this shows that in the shipping industry, if a business depression continues to exist, the freight rate at the end will be restored to the profit-yielding point, through the automatic reduction of supply, even though the circumstances controlling demand are not improved, because shipping *entrepreneurs* like any other *entrepreneurs* will not continue business at a loss for an unlimited length of time.

However, there is a tendency in the shipping industry to check this automatic reduction of supply. In this industry it is very difficult to forecast its future business condition, as this is often changed by unexpected or suddenly happening events. This difficulty further makes it almost impossible to tell which of the following losses will be greater:

1. Loss from immediate sale or dismantling of vessels.
2. Loss from continuing the operation of vessels until business improves, when the continuation of operation incurs a loss less than the cost of laying them up.
3. Loss from continuing the laying-up of vessels until business picks up again, when laying-up incurs a loss less than the operating cost.

Because of this difficulty, shipowners continue to operate their vessels as long as their capital permits, anticipating future prosperity, and thus the recovering tendency of the freight rate through the automatic limitation upon the amount of supply in the shipping market being checked. Moreover, as those vessels, which are laid up as the result of the fall of the freight rate, are out of the field of supply only so far as their relation to the freight rate is concerned, they constitute the potential supply existing behind the shipping market; and, as soon as the freight rate is raised

above their laying-up points, they return to the field of actual supply, thereby preventing a rise in the rate.

As I have already pointed out, although the freight rate tends to recover, through the automatic reduction in supply, to a point equal to the cost of marine service when it is long under that point; this recovery in actuality comes only after many shipping concerns have been driven out of the business, and after those who persist in remaining in the shipping world have suffered greatly. For this reason, shipping men cannot long engage in business under unrestricted competition when the supply in the shipping market greatly exceeds the demand; and they attempt to meet the situation by an artificial control of the freight rate for the purpose of protecting their business as well as their capital. This necessity has given rise among tramp-owners to combinations for the purpose of laying-up vessels, and among liner companies combinations for the purpose of monopolizing a trade route, and these latter are usually referred to as shipping "conferences."

## 2. COMBINATIONS OF TRAMP-OWNERS FOR THE PURPOSE OF LAYING UP VESSELS.

Owners of tramps make a combination in case of over-supply in the shipping world. The object of this combination is to lay up vessels at the expense of the combination, for the purpose of raising the freight rate to the profit-yielding point by limiting tonnage and maintaining the newly reached rate. For this reason, the possibility of the organization of such a combination depends upon whether or not the profit from raising the rate will pay the expense of laying up vessels, an expense which is to be borne by the combination.

I shall explain the functions of this combination by figure 2 which is drawn up with the same conditions as in figure 1. When in a given shipping market, over-supply has caused the freight rate to go down to the

laying-up point of a vessel which is at the margin of supply, —that laying-up point is represented in the figure by  $r$ —, tramp-owners combine for the purpose of raising the freight rate to the profit-yielding point  $p$ , by laying up the vessels represented by  $b c$  and  $c d$ , thereby reducing the amount of supply of tonnage to  $O b$ . (The vessels represented by

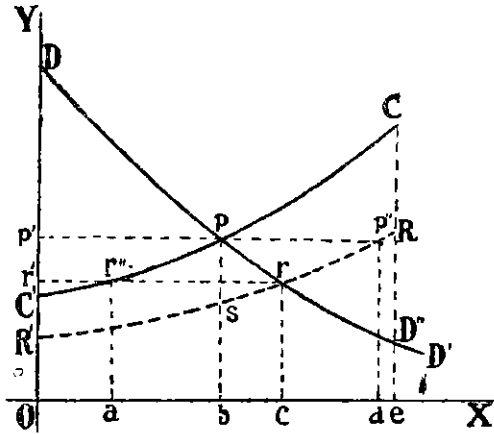


Fig. 2

$c d$  are laid up voluntarily by their owners when the freight rate is at the point  $r$ , but reappear as competitors in the market as soon as the rate is raised to the point  $p$ ). The vessels laid up ( $b c + c d$ ) are to be given an allowance represented by  $p s r p'$  out of the total profit of

$p p' r' r''$  which is derived by the operation of the vessels represented by  $O b$ . Thus, the tonnage represented by  $O b$  derives a net profit which is equal to  $p p' r' r''$  minus  $p s r p'$  on the one hand, and enables the shipowners of the vessels represented by  $b c$  and  $c d$ , on the other hand, to lay up these vessels by giving them a subsidy the amount of which is determined by the difference between the  $p$  freight rate and the laying-up points of the freight rates of the respective vessels, the average quantity of cargo carriage of each vessel in ordinary times being taken in consideration.

The vessel at the point  $b$  receives the entire allowance for laying up, so that neither gain nor loss will be incurred whether that vessel is laid up or operated in actual service. Those vessels between  $b$  and  $d$  receive a part of the laying-up expense as subsidies, so that the loss from their operation will be equal to the loss from their being laid up.

(The vessels between d and e are not entitled to be competitors even when the freight rate is raised to the point p, because it is still below the laying-up point of those vessels; and, in consequence, are naturally excluded from the organization of the combination.) If the owners of the vessels between b c and c d should refuse to participate in a combination, and continue to operate their vessels under unrestricted competition, the market freight rate would be by circumstance fixed at the point r, and the vessels between c d would be laid up bearing the entire expense by themselves; and the vessels between b c would be operated at a loss equal to the difference between the lines C C' and r r''. But by the organization of the combination, the laying-up expense of vessels between c d will be reduced by the difference between the lines p'' p and R R', while the loss of the owners of the vessels between b c will also be reduced by the difference between the lines p'' p and r r''; and thus they are much better off than under unrestricted competition. The vessels between a b, which under competition must operate with a loss equivalent to the difference C C' and r r'', will be enabled to derive, by constituting the combination, a profit equal to the difference between p p' and C C'. The vessels between O a get under competition only a profit which is equal to the difference between r'' r' and C C'; but after a combination has been formed, their profit will be increased by an amount equal to the difference between p p' and r'' r'. Thus the combination is in the situation to require the owners of the vessels represented by O a and a b to pay a part of the profit which they derive from participating in the combination (the total amount being expressed by p p' r r'') as laying-up fund (the entire amount being expressed by p s r p'') for the owners of the vessels represented by b c and c d. In this way, the combination can restrict the amount of supply in the shipping market to O b, and maintain the freight rate at the profit-yielding point p.

Thus, the *raison d'être* of the above-stated combination

consists in the possibility of limiting the tonnage-supply by using a part of the profit of some of its members to compensate the laying-up expenses of other members, and in that of maintaining the freight rate at the profit-yielding point, thereby enabling the vessels operated to derive some profit, on the one hand, and reducing the loss of laying-up vessels on the other. Viewed from the standpoint of a freight theory, the formation and existence of such a combination is possible only when the amount of profits ( $p p' r' r''$ ) of the vessels operating is greater than the amount of the subsidies ( $p s r p''$ ) for the laid-up vessels. If it is necessary to lay up a greater number of vessels, to maintain the freight rate at the profit-yielding point, and consequently the amount of subsidies for the laid-up vessels ( $p s r p''$ ) grows larger than the total amount of the profits ( $p p' r' r''$ ) of the vessels in operation, there is no possibility of the existence of such a trampowners' combination.

The foregoing combination is by far the most logical as well the most rational of such measures. The vessels included in the combination are lined up in order of their laying-up points, those having the greatest laying-up points being first laid up. This enables the combination to give the least possible subsidies as a whole, for laying-up vessels, and the vessels operated to yield the maximum profit. Of this scheme, therefore, we can see the greatest possibility of the formation and of the continued existence of such a combination; for unless the vessels are laid up according to their laying-up points, the greatest being first laid up, and so on in order, the laying-up subsidies of the combination will be greater and the profit of the vessels in operation will be less. If so, even though a combination be formed, the possibility of its continued existence becomes logically, so to say, smaller.

However, in actual practice, other considerations play an important role in determining the system of a combination. As I have already stated, the laying-up point being the freight rate at which, the loss from operation is just

the same as the laying-up expense, it differs with every vessel. The laying-up point of a vessel is, therefore, related both to the cost of its marine service and its laying-up expense. But, as a matter of fact, shipping companies want to conceal both the costs of the marine service and the laying-up expenses of their own vessels, because if these are known to their competitors they would be in a disadvantageous position. As the combination of the sort above mentioned is usually established in urgent need at the time of a great business depression when there is an over-supply of tonnage even at the laying-up freight rate, the combination is dissolved when the business gets a little lively and the freight rate becomes greater than the laying-up point even though it be below the cost of the marine service. When, therefore, shipping concerns put an end to competition by means of such a combination, they consider their own positions in the shipping market when it has been improved, and the combination has been dissolved, and refuse to notify the costs of the marine services and the laying-up expenses of their own vessels to the combination. If such a notification is insisted upon, for the purpose of establishing an effective combination logically devised as above stated, the opposition of shipowners will not allow its establishment.

In actual practice, the combination lays up vessels of the members at a certain percentage, instead of following the logical method just referred to. For this reason, some of the vessels laid up have lower laying-up points than those which are operated. The consequence of this has been already pointed out.

A combination for the purpose of suspending the operation of vessels in turn with the vessels of different companies for a certain period of time, involves a greater expense than a percentage laying-up combination, and, in consequence, the possibility of its continuous existence is less than that of the latter system.

But aside from the theoretical difficulty I have already

pointed out, there is another practical difficulty which we must not overlook. This difficulty is bound up with the very nature of the tramp shipping enterprise. As tramp vessels do not operate in one trade route alone but go wherever a good freight rate can be obtained, those which are operating in unprofitable conditions go to any shipping market where a better rate is maintained through the establishment of a combination, and thus become new competitors against the members of the combination. This results in making the combination ineffective in limiting the supply of tonnage, bringing about a lowering of the freight rate below the profit-yielding point, and a reduction in the amount of freight profit of the members ( $p' r' r''$ ), so that the combination will be unable to afford the laying-up subsidies ( $p s r p''$ ). This difficulty can never be avoided in actual practice.

It is clear then that the establishment of a combination among tramp-owners is possible only when a certain shipping market is totally isolated from the other shipping markets of the world, or is intended only for so brief a period as no new competitor enters that market. A general and lasting combination will be impossible unless all the tramp-owners of the world join in and establish a single combination.

### 3. COMBINATIONS OF LINER COMPANIES FOR THE PURPOSE OF MONOPOLIZING A TRADE ROUTE,—“SHIPPING CONFERENCES.”

We have seen that, viewed from the standpoint of a freight theory, the possibility of organizing a combination of tramp-owners for the purpose of laying-up vessels is greatly limited; and that, therefore, it is very difficult for tramp-owners to control the freight rate by artificial means in times of business depression. However, it is only seldom that a great depression in the shipping world continues for a very long period of time, and, as a corollary, it is also seldom that tramp-owners are long in a situation which

compels the establishment of a combination for the purpose of laying-up vessels. Moreover, in the tramp business there are frequent changes in the tone of the market even during a time of depression, and also seasonal fluctuations, due chiefly to the transportation of agricultural and forestry products. For this reason tramp-owners very seldom feel the necessity of stopping their business for a long time, though they may have to lay up their vessels temporarily. In the majority of cases, the laying-up of vessels in tramp shipping is at most a temporary convenience and does not mean for a minute a business collapse.

But all this is totally different in the case of the liner business, in which, not only a general business depression resulting in a great decrease in the demand for shipping stimulates a sharp competition for the securing of cargoes, but also the appearance of new competitors at any time results in a struggle for the securing of trade routes. In either of the two cases, it is impossible for liner companies, by the very nature of their business, to withdraw their vessels from the line and lay them up, for the purpose of a temporary discontinuance of business, even though the freight rate should drop below the laying-up point. For, as the liner company has its business field in a certain trade route, if vessels are withdrawn from that route, the patronage which the company has secured through its efforts extending for many years, will be snatched away by some rival, resulting in the total loss of its investment; and double the capital and the most strenuous efforts may not avail to drive out the rival from the field in the future.

Thus, in the liner business, investment is made rather upon the trade route than upon vessels, consequently, even when it is better for a company to lay up vessels than run them, it cannot do so even for a temporary purpose because of the fear of losing that trade route. Liner-companies are thus not free to fix their loss at a certain point as in the case of tramp-owners by laying up their vessels, and be exempt from a greater loss under competition. As a result,



the laying-up point in the freight rate has no significance for liners so far as their mutual competition is concerned. But since the laying-up point is the minimum freight rate for tramps, it can be regarded as the minimum rate for cargoes which are the object of both tramps and liners. In the competition for liner-cargoes, no matter how keen it may be, the liner companies must stay in that competition so long as their capital will allow them. This is why the freight rate of a liner sometimes drops to a ridiculously low point.

It is only natural then that, under unrestricted competition, liner companies' losses accumulate faster than in the case of tramp-owners and bankruptcy appears more speedily on the horizon. The risk of the enterprise is greater in the liner business than in the tramp business. Liner companies with small capital are either forced out of the shipping world or compelled to amalgamate with a bigger company. Even companies with big capital seek a method of limiting reckless competition because of their fear of its dreadful consequences. In the liner enterprise competition naturally results in a mutual compromise and a consequent establishment of combinations.

There are two main reasons for the establishment of combinations in the case of liners. In the first place, natural competition must be regulated; and secondly, companies must be prepared for losses in times of business depression when the freight rate is liable to go down even below the laying-up point. Even when there is no competition among liner companies necessitating the lowering of rates, they should provide for a general business depression accompanying a wholesale reduction in the amount of cargoes; and, as has been already said, the liner companies cannot lay up their vessels even in such a time. The loss of the liner companies sustained during general business depression should be, as in all other industries, retrieved by the profit made during a subsequent prosperous period. But this will be difficult for liner companies, be-

cause they should expect the appearance of new competitors who will disturb the peace of the shipping world. If, therefore, the liner companies wish to make up the loss referred to, they should successfully prevent the entry of new competitors into their field.

The one effective method which is often resorted to by liner companies is to tie customers, that is, shippers, to their business, and the typical example of this method is what is known as the deferred rebate system. But if this method is to be effective in excluding others, all liner companies engaged in the same trade route should adopt it conjointly. If this is not done, not only will the companies be unable to prevent the entry of new companies into their sphere of influence, so to say, but the competition still alive between those who have and those who have not adopted the method above mentioned, will work infinite harm to both sides, and none of them will be able to make up for their losses. Thus liner companies are under the necessity of establishing combinations also because of the need of adopting conjointly some method of tying up the customers to their business to make up in time of prosperity the losses incurred during the depression.

Because of those two reasons, the liner companies on the same trade route establish a combination, that is, a cartel generally known in the shipping world as a "conference."

When a conference has been established, the liner companies participating in it regulate their mutual competition, and thereby will be in a position where their freight-charging-policy will not be affected in a competitive way by other companies so far as the liner-cargoes are concerned, because they can successfully prevent competitors from entering into their own sphere of influence. In consequence, the freight rates are determined according to "what the traffic will bear," and some of the cargoes which cannot bear a heavy rate are carried at a rate even lower than the cost of the marine service, while others are transported at a rate higher than that cost, the whole

purpose being to carry as much cargo as possible and to derive as much profit as possible. Thus even during a business depression, as cargoes are carried at rates which are determined according to what shippers are willing to pay, all conference-vessels are operated as advantageously as possible in the circumstances.

I shall explain what happens under this combination by means of a figure, which is similar to the foregoing two figures.  $Oe$  on the line  $OX$  represents the entire tonnage under a conference, while the curve  $DD'$  represents a series of co-relationships between the quantities of various cargoes on the route and their freight-charge-bearing capacities, *i. e.*, "what the traffic will bear." The members of a conference

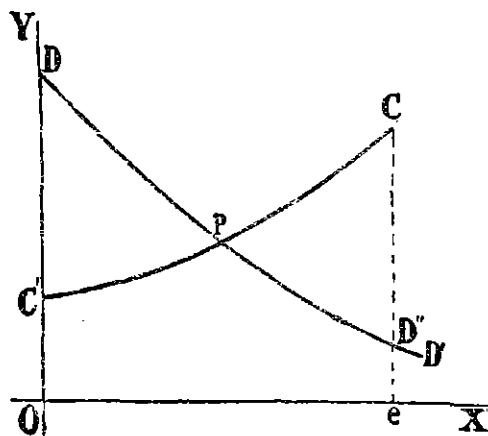


Fig. 3

through mutual agreement fix the freight rates of cargoes by considering "what the traffic will bear." Or, in other words, the members demand as rates what is represented by the curve  $DD'$ . Thus all of the vessels of the conference, the tonnage of which is represented by  $Oe$ , are supplied for the demand of transportation so that there shall be no excess vessels. The total loss borne by the entire members ( $CpD'$ ) is retrieved by the profit of the entire members ( $DpC'$ ).

There is no doubt that the shape of the curve  $DD'$  in times of business prosperity is greatly different from that of a similar curve in times of depression.  $Dp$  in the curve  $DD'$  in times of depression will be much shorter than the corresponding part of the same curve in times of prosperity. Moreover, as there is a possibility of competition from

tramps depriving the liners of some part of the cargoes represented by this  $Dp$ , a sudden drop near the point  $p$  may occur, the consequence being that  $DpC'$  becomes smaller than  $CpD''$  and the total profit cannot make good the loss. In such a case every member of the combination engages in business at a loss.

On the other hand, during a period of prosperity the curve  $DD'$  becomes less concave and the length of that part of the line which  $DD'$  projects out of the perpendicular line  $Ce$  also becomes greater; the part  $Dp$  extends downward less concavely;  $DpC'$  is greatly enlarged and can easily make up  $CpD''$  in that case; and its surplus ( $DpC'$  minus  $CpD''$ ) can make up the loss ( $CpD''$  minus  $DpC'$ ), which has been sustained during the former business depression or would be sustained in a future depression. Thus the members of a combination after all derive a benefit from the organization.

Whether a combination secures a profit or otherwise, the profit or loss of each member of the combination will be proportional either to the profit or to the loss, because of the fact that a liner on the one and the same trip carries various kinds of cargoes each of which has a different capacity to bear freight charges, and therefore pays a different rate of freight. This proportional sharing of the profit or loss of a combination nears perfection when a pool is adopted by that combination.

#### 4. COMBINATIONS OF TRAMP-OWNERS FOR THE PURPOSE OF MONOPOLIZING A FREIGHT MARKET.

The freight rates in the case of tramp shipping also vary with various kinds of cargoes, but this difference has no direct bearing upon the freight-charge-bearing capacities of every cargo; it is rather due to the differences in the extra costs of the respective marine services. Tramps usually carry one kind of cargo from one port to another and do

not carry many different kinds of cargo on one trip. Consequently, that part of the cost of the marine service which remains after the extra cost above mentioned is subtracted—the basic cost, as it might be called—is practically the same for all cargoes; and the basic freight charge, which corresponds to the basic cost, is also practically the same for all cargoes, being regulated only by the law of supply and demand. For this reason it is impossible for one trampowner under competition to demand a higher freight rate for some kind of goods than others because of its high freight-charge-bearing capacity.

The basic freight rate of tramp shipping is, therefore, usually fixed at a certain point, at the point *p* or *r*, for instance, at a certain time in a given shipping market, and goods which have smaller freight-charge-bearing capacity than that fixed rate will not be transported, while those which have larger bearing-capacity than that rate are carried with “consumers’ surplus”; the word “consumers” means here “shippers.” But in the case of liners, the freight rate is fixed according to the capacity of each goods to bear freight charges, and for this reason, on the one hand, even those goods which have smaller bearing-capacity than the cost of the marine service are carried at the expense of those which have larger bearing-capacity than the cost of the service, while, on the other hand, even those cargoes later mentioned are carried with not so much “consumers’ surplus” as in the case of tramp shipping.

In tramp shipping, though the vessels some times carry mixed freights, they usually carry one kind of commodity alone on one trip and the basic freight rate is only one for a single case. For this reason, in times of depression in the shipping world, those tramp-vessels whose laying-up points are higher than the freight rate are eventually forced to be laid up, as long as the circumstances of shippers remain unimproved. This is why the formation of a cartel which regulates freight rates by means of a combination is impossible in the case of tramp-shipping. Suppose a group

of tramp-owners makes a freight-rate agreement and attempts to maintain it. It will be found in times of depression, that if the freight rate is to be maintained, the amount of tonnage-supply will have to be restricted. Thus such a cartel after all amounts to nothing more than a combination for the purpose of laying-up vessels, a topic which I have already taken up in this article, the result being that the number of laid-up vessels will be larger than the number when no check at all is placed on competition. I shall refer to Figure 2 again. Whereas, the number of laid-up vessels under unrestricted competition is  $c e$ , it becomes  $b e$  which shows an increase of laid-up vessels by  $b c$ , if an attempt is made to raise the freight rate by an artificial means. This gives rise to the following phenomena. In the first place, the combination will have to put aside a large sum for subsidies for the laying-up of vessels. When, as a result of laying-up more vessels, the freight rate has risen to the profit-yielding point, tramp vessels owned by non-members of the combination will enter into competition, and this will surely endanger the safety of the combination itself. It is clear then that a combination of tramp-owners for the purpose of monopolizing a freight market becomes in times of continued business depression a combination for laying-up vessels; and an increase in the laying-up subsidies and the entry of out-siders into the field as competitors will tend to break up the combination. Thus, viewed from the standpoint of a freight theory, it is clear that, for tramp-owners, the formation of a cartel for the purpose of monopolizing a freight market is practically impossible, human nature being what it at present is! This is the reason why "conferences" hold good only in the liner business, and not in the tramp business.

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