In 1911, in the Journal of the Danish Economic Association, I published a seven-page article titled “On Rent of Fishing Grounds.” The paper was written from theoretical considerations, that is, it was a by-product of a book titled Wage and Interest, the writing of which led me to consider various examples of how wages are determined, including those in fisheries. I did not know that the problem that I dealt with had such close links to a present-day practical political issue. The issue is the abandonment of the right to eel weir, which is currently being discussed in commissions, in parliament, and in the general fishermen assembly. Neither did I know that a well-known Georgist author, the late S. Berthelsen, had suggested that some fishing grounds should be suitable for demarcation, measurement, and valuation as a basis for a governmental fee.

The recognition my previous paper received in the fishermen’s newspaper and comments from hydrographical scientists indicate that my theories have practical relevance. When I read in the papers in June 1930

The translator thanks the Nationaløkonomisk tidsskrift for permission to publish this translation.

2. Georgism, after Henry George (1839–1897). [Translator’s note.]
3. Sophus Berthelsen (1864–1930, Bachelor of Laws, Manor House steward, political organizer of small holders, writer, editor, publisher) was a pioneer in the Danish movement inspired by Henry George promoting taxation of land holdings and free trade. [Translator’s note.]

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that the general assembly of Danish fishermen unanimously had accepted a resolution demanding that the right to eel weir be abolished, I had to rethink the problem and clarify to myself that this would be detrimental from an economic point of view, as the right of eel weir leads to a regulation that prevents waste of labor.

The right to eel weir makes an exception to the fact that marine fisheries are generally free and open to any and all fishermen. There is a rule in the 1931 fisheries act that no one can be excluded from a properly visited and marked fishing ground, and once a fishing ground has been staked out, rights to the ground cannot be transferred to other fishermen. To this comes the exception that a coastal owner has the exclusive right to fish for eel in the waters that extend from his land; a separate panel of lay assessors regulates the demarcation between the coastal owner’s right and the fishermen’s right. This right to eel weir is very old, but was rather extended by parliament during the course of developing the 1888 fisheries act (see Vinding Kruses’s book *Property Law* and its references). The right to eel weir implies that the owner can charge a fee for setting up eel traps, which in many places generates substantial amounts, while in other instances, the amounts are so negligible that the owner offers free access. According to the commission report on ending the right to eel weir in 1919, the right and a few other rights generated 900,000 Danish kroner annually in prewar prices.

It comes as no surprise that fishermen have a hard time understanding this difference, that out at sea they have full freedom as long as they do not disturb each other while near the coast they have to ask a non-fisherman for permission and possibly pay him for it. The latter arrangement in principle is the right one and the fact that this principle is not applied on the high seas for practical reasons, that is, calculating the fee and monitoring it would be most difficult, has not been explained to them. The previously mentioned commission has, despite some disagreement regarding minor issues, unanimously suggested that the fishermen’s request to phase out the right be fully accepted. The suggestion has not so far been realized and the blame is put on the government, which according to some should reimburse the owners of the coast land the fees they could no longer charge if the right to eel weir were abolished. Following a majority suggestion the reimbursement is expected to be Danish kroner (DKK) 11–12 mil-

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lion, while a minority estimate it at DKK 5 million, as reimbursement will only be paid to some owners. It is obvious that the minister of finance is not enthusiastic about these suggestions. As such reimbursement would be a waste of money, one can only support the minister in his refusal. At today's price level it is likely that more than DKK 15 million will be thrown into the sea.

No fisherman will become richer if the government sacrifices these millions in order to relieve him from the current fees he owes the owners. In the long run there has to be a natural relationship between revenues from fishing, farming, industry, etc. If an industry due to any reason experiences higher revenues than other sectors, entry into the industry will be encouraged, lowering the revenues either due to lower returns per man when more are competing for the same number of customers or amount of business or due to lower prices paid for the good, or to some other reason. The fishermen now paying fees will conclude that it was a questionable advantage being relieved from the fees, as what they will lose if the right to eel weir is abolished is a regulatory mechanism that kept a given fishing ground from being exploited by too many fishermen. If the reason for the increased entry is progress in productivity, such progress is beneficial and the benefits will even out and be distributed all over society. But abolishing the right to eel weir is not progress. On the contrary, fishermen who will enter can make a living and earn a general income only because the catch is supplemented with the relief of fees to the former owners. What they really produce is not enough and they could produce more in another sector. If the average annual gross revenue per fisherman is 2,000 kroner (where expenditures for boat, gear, fuel, etc. are deducted), we can assume as an example that newly entered fishermen increase their catch to a value of 1,000 kroner, but the government subsidizes up to the corresponding 2,000 kroner. Such great expenditures are usually not incurred to provide labor opportunities, and they cannot be recommended if incurred in such a manner; see below.

The fact is that the fee system, generated by the right to eel weir, acts as a regulating effect that corresponds to the property right of land. This arrangement prevents excess fishermen from entering and dissipating the rent, which is earned when the correct amount of fishermen is exploiting a fishing ground. This rent corresponds to the land rent, which should accrue to society but is earned by the private owner who has bought and paid for the ownership. Even if the government expropriates the value, it would still be correct to keep the fee system (as a land value tax), as the value
would otherwise be dissipated, benefiting no one and lowering the general living standard.

My point of departure is the law of diminishing returns, which applies inter alia to agriculture and also in this case. Given that the minimum required labor force to run a profitable farm is employed, an additional employee will lead to an increase in total output, but the increase will be less than that brought about by the previous employee who was hired. The same applies to additional manure, additional irrigation, etc. I assume a similar condition for fisheries. Adding one fisherman to a fishing ground may increase the yield, given that the fishermen already fishing there are few in number, but sooner or later additional fishermen will lead to diminishing returns. I will now illustrate my point with a simple numerical example that disregards this initial stage (of increasing returns) and in which returns are regularly diminishing. Later I will add figures that will allow us to examine the subject further.

Let the catch along a given section of the coast be worth 100 kroner per week when fished by a single fisherman, which increases to 190 kroner for two fishermen. The second fisherman, assumed equal to the first, is only adding 90 but earns 95 as he reduces the catch for number one by 5. Fisherman number three adds 80 but earns 90 by taking 5 from each of the other two. New entrants will add 70, 60, 50, 40, etc. Let us now assume that the fishery must yield 65 kroner in gross earnings per fisherman to yield the same return as in other sectors (the wage rate corresponds to what economic theory calls marginal productivity). Given these conditions, four fishermen is the optimal number for exploiting this part of the coast. Number four adds more than necessary, while number five adds less than what he would contribute in other sectors. Without regulation it is inevitable that more fishermen will enter than the optimal number. The first four will catch a total value of 340 kroner, that is, average 85, which exceeds the normal 65 so much that numbers five through eight can make a living by appropriating this surplus. The total catch of eight fishermen is 520 kroner, on average 65 each, which implies balance. If a ninth fisherman enters, the average is down to 60, which means that he has to exit so that the remaining eight fishermen can again achieve balance.

If the coastline owner understands his own best interest, he will demand a rental fee of 20 kroner from each fisherman for the right to fish in his water. This implies that for the optimal number of fishermen, the average catch is worth 85 and each fisherman earns a normal income of 65. If the owner charges this price for a fishing license it is not necessary (but may
be beneficial) to also limit the number of licenses he issues. Precisely four fishermen will lead to equilibrium; three fishermen would make 90 – 20 = 70, which exceeds 65 by an amount sufficient to attract new entrants; five, on the other hand, would make 80 – 20 = 60, which is too little. A price of 20 kroner for a fishing license will lead to both the optimal number of fishermen and the maximum profit for the owner, which is 4 x 20 = 80. If he charged 25 per license, only three fishermen would enter and make 90 – 25 = 65, which is enough for them, and his profit would decrease to 75. If he charged 15, five fishermen would enter, giving him 75.

Hence, we find that there is full harmony between the private economy and the social economy; with the right to eel weir in effect, an owner will, in order to maximize his profit, cut off the number of fishermen at the point that gives society the highest yield. There are other numerical examples in my earlier paper in the *Journal of the Danish Economic Association* (1911) and in my book *Denmark’s Economic and Social Life*, but I will now further illustrate the issue with some figures. We continue to exclude the stage with increasing returns, but denote the diminishing returns by a curve: In the numerical example, returns were reduced by 10 for each additional fisherman, which corresponds to a straight line. The curve in the figure indicates that if the first reduction in additional returns is 10, the next one is less than 10, the one after the next is still less, and so on.

The curve shows the diminishing returns; the number of fishermen is plotted on the x-axis. The line PD is drawn at the height where it shows normal income, including expenditures. The number of fishermen should then be OA, which means that the latest fisherman’s product AB (the marginal product) corresponds to the normal income. Altogether, the fishermen earn OABP, while PBQ is the resource rent, but if there is full freedom and the resource rent is not collected, the small number of fishermen OA will earn AT, which is the average height of OABQ (given that RSQ = SBT). Such a high income will attract more fishermen and there will be an equilibrium at the number OC, given that PBQ = BED. At this level the total catch exactly covers a normal income to old and newly entered fishermen. However, the newly entered fishermen only produce ACEB and

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5. *Danmarks erhvervs- og samfundsliv: En lærebog i Danmarks statistik* [Denmark’s Economic and Social Life: A Textbook on Danish Statistics], 1929. [Translator’s note.]

6. An additional fisherman would produce less than the normal income, but stopping before A implies that an additional fisherman would generate a surplus. Hence, the optimal number of fishermen is OA. A private employer would have the same limit; a farmer hires laborers until the last one generates a product equal to his salary.
could potentially produce more in another sector, and they achieve a normal income just because their output is supplemented by PBQ, which is the now dissipated resource rent.

If there is a single owner who can regulate the entry, the resource rent will be saved; the owner would demand BT as a fee from each fisherman. This will lead to the optimal number, OA, as the fishermen pay PBTR in fees and keep OABP, which corresponds to the normal income. The owner earns PBTR, which equals PBQ, that is, the resource rent. If he tried for a higher fee than BT per fisherman, the number of fishermen would decline and give him a lower income, which is illustrated by the dotted lines. For example, if he charges HK, there would be OG fishermen and the income for the owner would be lowered to HBI. The fishermen require OGHP as normal income, and the total catch yields PHIQ to the owner (= PHKI, which corresponds to the number OG times the fee HK, given that MIK = JMQ). If the owner charges less than BT, his total income would also be lower, as some of his resource rent would be used to supplement superfluous fishermen’s income.

Figure 1 The correct number of fishermen (OA) with a single owner of the rights to a fishing ground, compared to the number (OC) with no owner at all (full freedom)
You can complain about the fact that this value created by society, similarly as in the case of a land rent that accrues to the landowner, slips out of the hands of society. You have the same right to tax the value increase and maybe the value itself, just as you tax the land. Still, it is better that the value accrues to a private holder instead of being wasted, which follows if the fishing is free. You can also appreciate that this value can be saved by a minimum of administration, which is a consequence of the coast owner’s demanding the fee (see below about the case of a potential alternative administration).

Out at sea the corresponding value is also lost for those fishing grounds that could have yielded a surplus, given that the number of fishermen exploiting the grounds was subject to the condition that the last fisherman added to the catch an amount corresponding to his labor value. Instead, the surplus attracts superfluous fishermen. The difference between the freedom out at sea and the regulation along the coast, which fishermen are now complaining about, should rather be eliminated and we should have regulation everywhere instead of freedom everywhere. The option of regulation out at sea has so far been excluded, and it is quite likely that the costs would outweigh the benefits from enforcing and monitoring the regulation. Yet, I can imagine that there are fjords with narrow mouths where monitoring can be carried out relatively cheaply.

I will now explain another figure in which a new element, overexploitation, is considered. The first figure was drawn in such a way that all superfluous fishermen produced too little but did contribute. However, if you draw the curve indicating normal income per fisherman at a lower level (either the absolute salary plus expenditures is lower, or it is relatively lower due to higher returns), full freedom will lead to entry where fishermen reduce the total catch, as they have a negative marginal product. I assume that the revenue curve intersects the x-axis and continues below, indicating that too many fishermen catch too many small (that is, not fully grown) fish, implying too few are left to grow and use the available feed. The limit for fish depending on food availability or predators is thus not achieved.

The letters have the same meaning as before. When the normal income is AB, there should be OA fishermen, but then the resource rent, PBQ, is so big that under unregulated conditions new fishermen will enter until F, where a newly entered fisherman adds zero, and even to C, where the last entering fisherman is harmful, valued to CE. Not until E is reached does the area BED outweigh the original large surplus PBQ, leading to a
normal income AB for all fishermen. There are three groups of fishermen: OA, which produces more than normal income; AF, which produces less than normal income but still contributes; and FC, which is harmful. Still, no single fisherman belongs to a particular group, and all fishermen work and earn the same amount.

I assume this is a common situation in real-world fisheries, especially on the best fishing grounds, based on the many rules restricting fisheries. These rules have not been introduced to stop the low-income fishermen (AF) but to halt the harmful ones (FC). If this goal is achieved, regulators will be happy while the existence of the middle group is accepted, and the regulation is just aimed at the harmful group. *Natura non facit saltum* (Nature does not leap): you do not go straight from the fishermen with production above AB to fishermen with negative production.

It has to be admitted that protective regulation will not have the same effect as rules that restrict the number of fishermen. A minimum landing size regulation or banning fishing by river mouths will prohibit the catch of fish today because the present value of the fish that are caught is too low compared to their future value, but the total number of fishermen will not be fewer due to such regulation. Regulating the number of fishermen on the other hand would likely make some of the current protective regulations...
superfluous, and thus government monitoring could be reduced. A smaller number of fishermen would lead to greater care for the undersized (not fully grown) fish, not only for certain groups of them. Further, the number of fishermen most likely influences the shape of the curve, leading to a perturbation of the mathematical link between the number of fishermen and the size of the catch. The figure is intended to show the size of the catch when there are a constant number of fishermen, which is denoted on the x-axis. If the number of fishermen is increased from the equilibrium at N, it is likely that catches would be larger, as indicated by the dotted curve. The not completely insignificant number of fishermen, which can be defended in all respects, will in the long run lead to a weaker fish stock rather than a pristine stock without human interference (I do not assume that we have a similar relationship as in the case with forests, where the logging of old trees improves growing conditions for the other trees and hence improves overall growth; see A. H. Grön: *The General Theory of Forestry Economics*, pp. 316ff). 7

In the previously mentioned commission, a minority (Godskesen8 and three more) made a suggestion in the right direction. They agreed with the others that the right to eel weir should be abolished, with reimbursements paid to the owners. However, the right to fish should not be free but be distributed by the government. The right to fish should be well defined; such a demarcation could be at a depth of six meters with an addition of ten meters (horizontally). The majority claimed that current conflicts (today handled by the eel weir arbitration board) would remain and nothing would have been achieved. I suppose that these conflicts cannot outweigh the great economic benefits from regulation.

Also in Sweden (where former Danish rules are still in place in those parts that belonged to Denmark until 1658) takeover with leasing has been discussed. They refer to American role models and the Danish oyster rights (distributed by the king or the government). When considering which species of fish (and lobster) are suitable for such regulation, the choice is between migrating and stationary fish.

A great advantage with such centralization would be both protection from exhaustion and labor waste, and improved conditions for hatchery, combating harmful species, etc., after an owner or a tenant covers the


8. Marius Godskesen (1861–1937) earned a law degree in 1889. When Fredriksberg became a town with township rights, Godskesen was elected its first mayor and held that office until 1936. [Translator’s note.]
expenditures and reaps the benefits, compared with the oyster rights. It will also require that greater water areas are run together, either as a cooperative formed by previous owners or by the government. It is likely to raise the administrative costs to a point higher than they would be under single owners, but it may have big productive advantages.

Overall there are several ideas about regulation in the fisheries literature (albeit I admit that I have limited knowledge about it), which likely reflects the need for a substitute to the ownership that the landlord has of land.

Around 1920, when leaders in many industries were giving thought to socialism, the idea of having government-owned fisheries was considered. An idea in a similar spirit being discussed today (apart from the right to eel weir) is that of letting local fishery associations run fisheries. However, if that is done without charging the associations a fee, there will be a lot of envy and complaints. In the Swedish debate it has been suggested that full freedom will not only be taken advantage of by fishermen but also by the owners of capital.

In a time like ours with so much unemployment, I have to defend myself against the potential objection that if superfluous fishermen become unemployed, it would be better if they were catching some fish instead of none at all. I have in other cases argued that instead of paying unemployment support, it is preferable to support unprofitable work to make it privately profitable. That means that for instance it is better to pay a general wage of 10 kronor per hour for work that is worth 8 kronor, instead of paying 2 kronor for no work. The costs are equal for the government (given that the money can be taken from the operating budget), while the unemployed person is better off (he is getting the extra 8 kronor produced).

Still, we have to distinguish between whether the laborer is stuck in an unprofitable job or if he at short notice can get a more profitable one. In the case of the latter it is unconditionally preferable, but if he is stuck in an unprofitable job it will lower the general level of wealth. The boom, when it finally arrives, should have full freedom to raise the level of wealth, which by doing so will also raise the level of wealth in the following recession. During the boom, society’s economic framework is extended, and that determines the future wealth level. In case of a recession that lowers the wealth level by, say, 10 percent, it is still better to keep 90 percent of a big number than 90 percent of a small number. If the boom is robust, there is no reason to believe that the reaction to a large expansion would be more vigorous than that to a small expansion, so that society would end up on a lower level after the large expansion. Is it not unsound to have full
employment if the price we pay is having a large number of the unemployed stuck in unprofitable work during recessions? Maybe we can sacrifice some of the benefits during the years of greatest growth in order to make the years of no or negative growth a little less difficult, that is, when the marginal utility of revenue growth is higher in the poor years than in the richest ones. If an annual expenditure of DKK 1 million to increase employment opportunities leads to a DKK 2 million reduction in wealth for many years, that is too high a price.

Let us from this perspective look at a few examples and then the fishery. It is common knowledge that “recession jobs,” paying reduced wages, should be organized in a way that makes it easy to eliminate them when other work is available that would benefit either the workers or the government. General construction work, which is started during depressions to raise employment, cannot be eliminated in the proposed manner but will reach a natural end and release the workers for other purposes. As economic recovery does not come suddenly at full speed, it is enough to let the construction work that has already started be gradually completed. In the case of the cultivation of unexploited land, planting, marling, trenching, etc. can be pushed forward in gloomy times and will slow down by itself in good times. This may be profitable for society although such work does not pay a full salary or rent, as otherwise idle workers and capital are used. Yet, if workers are tied up in an unprofitable sector, it will prevent them from moving to more profitable sectors (cultivation of unexploited land may possibly be advocated on other grounds; see Denmark’s Economic and Social Life). Also, public agricultural farms and those who work on them may deserve government support, given that the support is confined to the poor years, although they cannot afford normal wages on their own. When the tobacco tariff was further increased in 1908, domestic growing (on West Funen) was expanding until it was halted by a national fee. The fee led to protests; the protestors argued that many who owned and worked small holdings could get work and provision by this intensive growing. However, such a generous regulation would be active through all stages of a business cycle, and this offer by the government through lower taxes for domestically produced tobacco meant that people would have been kept employed although it was unprofitable to do so, which would only occur as a result of favoritism. Maintaining tariff increases to provide work opportunities during a recession will tie laborers to an unprofitable activity. It is something different in cases of transitional movements due to rearrangement of production following a new tariff.
If a tariff change is motivated on other grounds, and even if the change is an increase, it is good to promote such changes during recessions so that the transition is carried out while a lot of workers are available. The military employs many thousands of men, but not because it provides labor opportunities. Since these people are employed through all stages of the business cycle, those that are hired in good times are then prevented from other employment that would keep them employed even during a recession.

Hence, there are occasions when it is actually possible to create more work artificially and there are other occasions when it only seems possible but in fact is not. Fisheries belong to the latter; it is hard to vary the fishery regulation to follow the business cycle, and it is hard to vary the number of fishermen. To maintain fishermen in such a way that they do not cause a growth in production, but only make a normal income at the expense of others, will prevent the next economic upsurge from creating a full level of wealth.