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Analysing the restructuring of the Dutch fishing fleet under the BAR scheme, update 2022

Hans van Oostenbrugge, Marcel van Asseldonk, Arie Klok, Friso Roos and Arie Mol

1. Introduction

1.1 Background

During the Brexit negotiations on the conditions under which the United Kingdom (UK) could leave the European Union (EU) at the end of 2020, it was agreed that the UK would be allocated a larger share of the Total Allowable Catch (TAC) of a large number of shared fish stocks than was the case at the time of the UK's EU membership. As a result, the Dutch share of the TACs involved will gradually decrease during the adjustment period that lasts until 30 June 2026. The percentage of TAC share lost by the Dutch fishing industry varies by species. What will happen after the adjustment period is still uncertain. During the negotiations, the UK pleaded for a larger transfer of quotas from the EU to the UK, so there is a possibility of further decreasing shares of the TACs for the Dutch fishing fleet.

A permanent cessation of a part of the fleet mitigates the risk of shortage of fishing opportunities due to the Trade and Cooperation Agreement (TCA) with the UK, helping to ensure a balance between the fishing opportunities and capacity in the long run. That balance is of major importance for the Dutch fleet to remain economically viable. In order to mitigate the consequences of the outcome of the Brexit negotiations, a fund has been created by the European Commission, the so-called Brexit Adjustment Reserve (BAR). The Dutch government intends to allocate funds from this BAR to restore the ratio of fishing capacity to available quotas to the same level as before the Brexit by restructuring the sector. More specifically, the Ministry of Agriculture, Nature and Food Quality (LNV) intends to provide vessel owners that are directly hit by the quota reductions as a consequence of Brexit the possibility to permanently cease their fishing activities. The aid will be given in case the fishermen will sell the vessel for scrapping. Both the fishing licence, the authorisations and the ITQs of the quota species will be revoked. In preparation of this cessation scheme, the ministry is in need of a methodology to estimate the value of the authorisations and vessels that will qualify for cessation.

1.2 Research objectives and limitation

The Dutch Ministry of LNV has commissioned Wageningen Economic Research to outline and quantify the proposed methodology for determining the cessation value of operational fishing units (vessels) and their components (i.e., licences, authorisations, individual transferable quotas (ITQs) and physical vessel) that will qualify for cessation. In this respect it is important that only vessels which have a minimum of 90 calendar days at sea in two subsequent years in the period 2018-2021 and were affected by the reduction of the quota due to the Brexit qualify for state aid. This last condition has been operationalised by introducing another criteria for qualification: vessels should have had at least 20% of their landings volume or landings value from stocks listed in Annexes 35 and 36 of the TCA.

In view of the preceding information, this study will cover active fishing vessels with a minimum of 90 days at sea and at least 20% of their landings value or volume from fish (which are mainly species with quota restrictions). Vessels that have been targeting shrimp and/or shellfish (>80% of value and volume) have been excluded from the analyses. This involves mainly the smaller shrimp cutters. Because of the above-mentioned limitation of minimal fishing effort, this group coincides to a large extent with the so-called active cutter fleet, the population of vessels with an annual turnover exceeding 50,000 euros, using active fishing gears from which Wageningen Economic Research collects detailed economic information. In addition, the large pelagic trawlers qualify for state aid and three vessels from the so-called other coastal fishing vessels.

The fleet concerned is very heterogeneous: the vessels differ in type, size, engine power and metier and as a result also have quite different cost structures. Because of this, the Ministry indicated that we should use the following (common) subdivision in groups in this study:

- Smaller cutters:
  - Vessels with engine powers up to 221 kW and lengths generally below 24 metres. All vessels have a size of less than 179 GT (2019).
  - Vessels targeting a variety of fish and shrimps using various active gears.
- Larger cutters:
  - Vessels with engine powers between 221 and 1,471 kW and lengths between 24 and 46 metres. All but three of these vessels have a size of more than 179-573 GT (2019).
  - Vessels targeting mainly plaice and sole (using beam trawl, sumwing or multi rig).
- Flyshoot cutters:
  - Vessels fishing for e.g. squid, red gurnard and mullet using Scottish seines.
  - Vessels with size ranges from 140-497 GT (2019), some vessels also use other fishing techniques.
- Pelagic freezer trawlers:
  - Large vessels with engine powers over 3,500 kW and lengths over 59 meters. Vessels with size ranges from 3,181-9,494 GT (2019).
  - Vessels targeting pelagic species: e.g. herring, mackerel, blue whiting.

Another 3 vessels belong to the group of other coastal fishing vessels. This group is a mixed group of smaller vessels (mostly < 12 metres) that fish with passive gears or have an overall landings value of less than 50,000 euros per year.

Most of these vessels only fish part of the year. Three vessels of the small coastal fisheries group meet the criteria. Because there is no economic data available from these vessels to calculate the profit and wages of the sailing owners of these vessels, these vessels are not taken into account in the calculations. This is discussed in Chapter 5.

2 Approach

2.1 Methodology

In line with Quirijns et al. (2019), we use a Net Present Value of foreseen future profits, based on historical values. The Dutch Ministry of LNV requested to estimate the loss of future profits for a period of 5-10 years.

The proposed basis for compensation is the foreseen future loss of profit (including paid wage for the owner of the vessel, if he is part of the crew). Subsequently, possible alternative income will be accounted for (Quirijns et al., 2019). The profit is based on the average economic performance in the last 5 years where data are available: 2015-2019.

In order to estimate the Net Present Value of foreseen future profits, a discount factor is used, based on the financial structure of the fishing companies and the interest rates for the various financial components (debt and own capital). This is further detailed below.

Beneficiaries under the scheme will have to relinquish all their authorisations permanently in order to receive payment under the foreseen scheme including the ITQ. Also, the hardware (i.e., vessel) will be scrapped.

2.2 Data used

For the calculation of the cessation values, we use data from various sources:

- Data on technical vessel characteristics and authorisations from the Dutch Register of Fishing Vessels (NRV)
- Official logbook information (VIRIS)
- Price information from sales notes and
- Economic and financial data from the Dutch Farm Accountancy Data Network (FADN) of Wageningen Economic Research.

The most recent economic data covers the period 2015-2019 (2020 data are not available yet). The data comprise the relevant segments of the cutter and pelagic fleet.

2.3 Quantification of cessation value

To estimate the economic performance of the various groups of vessels, the cost structures estimated in the national data collection program were used. In this program, the economic performance of the cutter fleet is estimated per engine power class and fishery. The groups of cutters in this study do not coincide completely with the groups in the data collection program. This is because part of the active cutters (mainly shrimpers) does not qualify for cessation and because flyshoot cutters also use fishing techniques used by large and small cutters. Because of this, the total costs and earnings of each of the combination of engine power class and fishery were divided over the various groups. The division was based on the relative contribution of each group to the total fishing activities in the combination of engine power class and fishery. For example, if 60% of the effort in the specific engine power class and fishery was carried out by the vessels in the flyshoot segment, then 60% of all costs that could be attributed to fishing effort were classified as costs for this segment. Costs were related to either effort, landings volume or landings value, based on a regression analysis. For the group of small cutters this method was not deemed correct, because the technical characteristics of the vessels and their cost structures were too different from the overall average in the panel. Therefore, the values for this group were estimated from the averages of a subsample of the FADN vessels from which economic information was available that belonged to that specific group of vessels. These FADN vessels from which economic information was available represented 20-25% of all vessels in the group of small cutters. For the years 2018 and 2019, the cost structure of each of the vessels in the cutter fleet has been estimated so the costs per segment were the total of the costs of the vessels involved.

To calculate the Net Present Value (NPV) of the future profits we use the Weighted Average Cost of Capital (WACC). The WACC represents a firm's cost of capital, in which each category of capital is proportionately weighted. The Dutch fishing fleet is generating capital from a combination of debt and equity (own capital) financing. In order to express the overall cost of capital (i.e., weighted average discount rate), one has to weigh its cost of debt and cost of equity proportionally based on how much financing is acquired through each source (SEO, 2021).

In the current analysis the average proportion per source of finance is derived from FADN making a distinction between debt and equity per relevant segment. Also the average interest rate for debt is based on FADN per relevant segment. The cost of equity is less straightforward to establish because a concrete price that the company must pay to its owner(s) is lacking. In the current analysis we resort to a standard nominal discount rate of 3.75% as a proxy for equity financing (based on a real discount rate of 2.25% and expected inflation rate of 1.5%) as described in a recent factsheet of SEO (2021) to be used for business cases if discount rates are not available. For the pelagic trawlers no information on debt and equity was available from the companies. As information on the financial status of these companies is lacking, a range of outcomes is provided. This range is based on the cost of debt of the large cutters (assuming 100% debt) to the standard nominal discount rate (3.75%, assuming 100% equity).

3 Description of the selected fishing vessels

To keep fish stocks healthy, for numerous stocks a maximum amount that may be fished and or landed is determined annually: Total Allowable Catch (TAC). Also annually, the TACs for all stocks are divided into quotas for the member states of the EU, Norway and the UK according to fixed percentages.

As mentioned earlier in this report, in the Brexit negotiations it was agreed that the UK would get larger shares of the TACs for specific fish stocks. This implies that the remaining EU fleet will get a smaller share and that national quotas of the stocks concerned will be lower than the quotas would be without Brexit. As we explained before, only vessels that target those stocks suffer from these reductions. As the restructuring scheme is developed to mitigate the adverse consequences for vessels landing the species of quotas concerned, we only focus on the vessels that made at least 90 calendar days and had at least 20% of fish in their landings volume or value.

The group of vessels that made at least 90 calendar days and caught at least 20% of fish, was more or less stable during the period 2016-2018, but increased to 162 vessels in 2019 (Table 1). The majority of the vessels are large cutters (approximately 50% in 2019) and this number increased slightly over the years. The number of small cutters meeting the criteria decreased until 2018 and increased in 2019.

Table 1 *Number of vessels per group of the Dutch fishing fleet, 2015-2019*

	2015	2016	2017	2018	2019
Segment					
Smaller cutters	48	41	36	29	52
Larger cutters	73	75	80	83	84
Flyshoot cutters	14	15	15	18	19
Pelagic freezer trawlers	8	7	8	8	7
Total	143	138	139	138	162

Source: Wageningen Economic Research.

4 Results

Based on economic analysis the average annual profit per vessel in the period 2015-2019 differs substantially between segments of the Dutch fishing fleet under study (Table 2). For example, the average annual profit estimated for smaller cutters amounts to 133,000 euros per vessel. Highest average annual profits were generated by flyshoot cutters (419,000 euros per vessel).

Moreover, average annual profits are very volatile within each segment in the period 2015-2019. For example, pelagic freezer trawlers were confronted with an average loss exceeding 1.5 million euros per vessel in 2015. This extreme loss affected overall average annual profits in the period 2015-2019 (97,000 euros per vessel).

Table 2 *Average annual profit (x 1,000 euros) per vessel for each group of the Dutch fishing fleet, 2015-2019*

	2015	2016	2017	2018	2019	Average 2015-2019
Segment						
Smaller cutters	113	277	139	144	-4	133
Larger cutters	405	439	487	389	176	379
Flyshoot cutters	444	886	489	174	103	419
Pelagic freezer trawlers	-1,554	163	261	923	694	97

Source: Wageningen Economic Research.

The average annual wage per vessel owner (for this study: only if they are part of the crew) differs less between segments of the Dutch fishing fleet and is also less volatile in the period 2015-2019 in comparison to profits (Table 3). The average annual wage for cutter owners that are part of the crew ranges between per 56,000 euros and 73,000 euros per vessel. For pelagic freezer trawlers the owner is not part of the fishing crew and as such wage for the owner is not accounted for in FADN.

Table 3 *Average annual wage (x 1,000 euros) per vessel owner for each group of the Dutch fishing fleet, 2015-2019*

	2015	2016	2017	2018	2019	Average 2015-2019
Segment						
Smaller cutters	73	89	70	80	54	73
Larger cutters	62	67	82	76	59	69
Flyshoot cutters	62	86	57	39	37	56
Pelagic freezer trawlers	0	0	0	0	0	0

Source: Wageningen Economic Research.

For decommissioning of the hardware (i.e., vessel and engine), the age of the hardware is relevant. The average age of a Dutch vessel ranges from 25 years for flyshoot cutters up to 32 years for smaller cutters (Table 4). Although engines may have been replaced over time, their average age is relatively high as well.

Table 4 *Average age vessel and engine (year) for each group of the Dutch fishing fleet, 2019*

	Average age engine	Average age vessel
Segment		
Smaller cutters	15	32
Larger cutters	21	26
Flyshoot cutters	15	25
Pelagic freezer trawlers	22	27

Source: Wageningen Economic Research.

Based on the average annual profit per vessel (Table 2) and the average annual wage per vessel owner, as part of the crew (Table 3), the total annual loss in profits can be determined (Table 5). We assume that after cessation of his vessel, the owner will generate an alternative income (Quirijns et al., 2019). This alternative income is set at the average annual income (CPB, 2021). For pelagic freezer trawlers the owner is not part of the fishing crew, so no alternative income is considered.

The actual market value of these relatively old vessels and engines is, as they must be scrapped, equal to the scrap value. On average, the vessels are depreciated, with a negligible asset value. However, if relatively new vessels are required to be decommissioned, there will be an asset loss because of lost opportunities (since a fishing vessel receiving cessation aid cannot be sold and used as active fishing vessel). Moreover, in the cessation scheme it is foreseen that the net scrapping value of the vessel will be deducted from the state aid.

Table 5 *Average total annual loss in profits (x 1,000 euros) per vessel for each group of the Dutch fishing fleet*

	Smaller cutters	Larger cutters	Flyshoot cutters	Pelagic freezer trawlers
Profit (A)	133	379	419	97
Wage vessel owner (B)	73	69	56	0
Profit + wage vessel owner (A+B)	207	449	476	97
Alternative income owner a) (C)	37	37	37	0
Loss profit and potential wage (A+B-C)	170	412	439	97
Vessel asset loss (D)	0	0	0	0

a) Average annual income in the Netherlands in 2018-2021 (CPB, 2021).

Source: Wageningen Economic Research.

Based on FADN analysis the discount factor is determined per segment of the Dutch fishing fleet (Table 6). Note that the interest rate of equity exceeds the interest rate for debt as it is a reward for taking risks by the owner(s) (i.e., risk-bearing capital).

Table 6 *Average financial structure and Weighted Average Cost of Capital per vessel for each group of the Dutch fishing fleet*

	Smaller cutters	Larger cutters	Flyshoot cutters
Proportion of bank loans in the total assets (A1)	54%	71%	33%
Interest rate (B1)	3.10%	1.80%	2.10%
Contribution to weighted average cost of capital (C1=A1*B1)	1.73%	1.28%	0.69%
Proportion of equity in the total assets (A2)	46%	29%	67%
Interest rate (B2)	3.75%	3.75%	3.75%
Contribution to weighted average cost of capital (C2=A2*B2)	1.73%	1.09%	2.51%
Discount factor Weighted Average Cost of Capital (D=C1+C2))	3.45%	2.37%	3.21%

Source: Wageningen Economic Research.

The Net Present Values of foreseen future profits are derived by combining historical profits (Table 5) and the discount factor (Table 5) and are calculated for *a period of 5-10 years (Table 7).*

Table 7 *Net Present Value of average cessation value (x 1,000 euros) per vessel for each group of the Dutch fishing fleet*

	Smaller cutters	Larger cutters	Flyshoot cutters	Pelagic freezer trawlers a)	
				Low rate	High rate
Annual compensation value (*1,000 euros)	170	412	439	97	97
Discount factor Weighted Average Cost of Capital	3.45%	2.37%	3.21%	1.80%	3.75%
Net Present Value					
5 years	793	1,965	2,059	468	450
6 years	936	2,330	2,432	556	530
7 years	1,074	2,687	2,793	643	607
8 years	1,207	3,036	3,142	729	681
9 years	1,335	3,376	3,481	813	753
10 years	1,459	3,708	3,808	895	822

a) For the pelagic freezer trawlers a range of outcomes is presented. This range is based on the cost of debt of the large cutters (1.80%) to the standard nominal discount rate (3.75%).

Source: Wageningen Economic Research

5 Conclusion and discussion

This study estimates the cessation value for four types of fishing vessels which qualify for state aid for cessation of their fishing activities, based on the economic performance of the past five years. Based on the calculations and assumptions described above the compensation values per vessels of smaller cutters, larger cutters, flyshoot cutters and pelagic freezer trawlers are between 0.793-1.459 million euros; 1.965-3.708 million euros; 2.059 and 3.808 million euros, 0.450 and 0.895 million euros, depending on the time interval chosen.

The values have been based on the average economic returns over the last five years (as prescribed in the commission guidelines). For most groups, using the Olympic average (average of the five-year period, leaving out the highest and lowest value) would result in similar values (<10% difference). Only in the case of the pelagic trawlers, this method would result in a value which is

almost 4 times higher, because of the highly negative economic performance of the pelagic sector in the first year.

These values are the result of a combination of various sources of information and estimation procedures, each with their own uncertainty. Uncertainty in the classification of the vessels is negligible, as this is based on fishing activities in the logbooks which are available for all vessels and trips. As far as the economic data are concerned, the results of the flyshoot, large and small cutters have been based on the FADN panel which covers around 20-45% of the vessels of the various segments. This results in standard errors between 5-15% for the estimated costs and earnings. As the net profit is the difference between revenues and costs, the uncertainty in this estimate might be higher, but this is still according to best practice in fisheries data collection. For the last two years (2018-2019), costs have been estimated per vessel using regression analysis. Due to this procedure, the estimates are more precise; standard errors of most cost items have been reduced by 50% or more. For the large pelagic vessels, the economic data cover all vessels, so the figures presented here are absolute values without statistical uncertainty. As the fish is sold internally within the integrated companies, the prices used for income calculation have been based on the internal prices used for the payment of the crew. This is assumed to be the best estimate of the price of the fish.

The four segments of vessels that are most affected by the outcome of the Brexit negotiations and the associated quota reductions were taken as the subject of this study. When the actual cessation takes place, it is advised to investigate which segment of vessels will then contribute most to restoring the balance between the quota and the fishing capacity in the Dutch fleet.

The compensation value of the vessels from the small coastal fisheries group that meet the requirements for the cessation could not be estimated because of lack of data and privacy issues. As the value of landings for all vessels is available for the ministry, it might be considered by the ministry to apply the ratio 'value of the landings <-> compensation value of the small cutter fleet' to the small coastal fisheries to determine the compensation value of these vessels.

The current valuation of the fishing activities includes the value of ITQs as these will also be included in the cessation scheme. It is assumed however that the current value of the ITQs of the various fish species is negligible. A recent study on the valuation of fishing rights presented a concept framework for the valuation of fishing rights (Döring, 2019). The study concluded that in case of a working market of rights, market prices were potentially the best estimates of the economic value. If such a market does not exist (or in case not enough transactions are available as is the case in the Netherlands for all quota during the latter years) the value could be estimated from the contribution to the economic outcomes of the sector. However, it was also observed that distinguishing between individual types of rights (e.g. ITQs and permits) was complex and further methodological development is needed to come to a common methodology to approach this issue (Döring, 2019, PGECON, 2020). In the absence of further guidance from the commission on this, and considering the current context of the Dutch fisheries, this assumption was deemed acceptable.

For fishermen deciding to abandon fishing activities, complementing policy instruments should be made available to smoothen the transition to other activities. This also holds for the fishing crew and other actors in the fishing value chain. For example, opportunities for generating other sources of income are less likely for older owners of vessels and crew.

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More information
Hans van Oostenbrugge
T +31 (0)70 335 82 39
E hans.vanoostenbrugge@wur.nl
www.wur.nl/economic-research

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