Mediterranean moments in the North Sea herring industry

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Introduction

This paper proposes that two different Mediterranean moments existed in the North Sea herring industry during the period c. 1600-1850.1

In the 17th century, when The Dutch Republic was at its height in terms of economic and political influence in Northern Europe, the Dutch herring fisheries was one of the most important economic sectors and the envy of other nations. Roughly eighty percent of all

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salted herring consumed in Europe was caught by Dutch herring fishermen in this period, thus creating a centennial ‘moment,’ or phase of dominance in the Northern Mediterranean. During the course of the 18th century the Dutch dominance dwindled, and other competing fisheries took over the European herring market. However, from the 1720s and for the rest of the century, a second Mediterranean moment occurred in the European herring industry, since in this period virtually all states bordering the North Sea tried to set up Dutch style fishing industries. This ‘moment’ however, consisted not of one country’s dominance; but was made up by the wide spread diffusion of Dutch fishing technology, know-how and practice.

This paper will argue though, that the downfall of the Dutch herring industry was not caused by the competition from these ‘copy-cats’. Explanation for this shall be found in competition from the shore based herring fisheries of Scotland, Sweden and Norway. None of these shore based herring fisheries flourished for more than 50-60 years at a time, but the combined effect was complete change of the European herring industry during the 18th and 19th centuries.

**Total production of herring**
The total production of salted herring in the North Sea area is illustrated by figure 1. In the early 1600s the annual total production was c. 60,000-80,000 metric tonnes, declining towards 50,000 tonnes in the middle of the century. Then a more drastic decline set in during the 1650s and 1660s, and in 1666 a lowpoint of less than 14,000 metric tonnes was reached. With the exception of a few good years, the production in Northern Europe remained around 25,000-35,000 tonnes until c. 1710, when the production increased again. With a rising trend in between 40,000-60,000 tonnes of salted herring was produced in the years 1710-1780. During the last two decades of the 18th century the total production reached 70,000-80,000 tonnes per year, or the same level as in the first decades of the 17th century. Then in the first decade of the 1800s a temporary decline set in, and in 1809-1811 production touched just below 40,000 tonnes. A rapid increase in production though followed and in the following 40 years covered by this analysis production rose to unprecedented heights reaching 200,000 tonnes in 1849. Over all, the development from 1600-1850 represented a phase of decline in the years c. 1600-1700.
followed by a steady increase in the rest of the 18th century. After a short set back in the early 1800s, production grew at a previously unmatched rate.

The Dutch Republic stands out as the dominant producer of herring in the whole of the 17th century. In this period the Dutch herring industry answered for 75 % of the total North Sea production, however gradually losing their share of the total North Sea supply during the 1600s. The Dutch production was in full decline by the turn of the century, and less than 10,000 tonnes was produced in the years 1703-1708. They recovered though, and in the first half of the 18th century the Dutch production was much lower than in the 17th century, but they were still the prime producer of herring in northern Europe. This ended in the 1740s did when the Norwegian production of salted herring rose to more than 20,000 barrels annually for two decades until c. 1760. If the period until c. 1740 could be termed as the age of Dutch dominance, the years 1740-1760 was the Norwegian moment in the history of the northern European herring production. The Norwegians lost out in the 1760s to the Swedish Bohuslen fishery, which became all dominant from 1762-1807, after which the Bohuslen herring disappeared. The relative dominance over time of the different herring fisheries is illustrated by figure 2.

![Production of salted herring, Northern Europe, 1600-1850](image-url)
The Swedish and Scottish herring fisheries were the only major fisheries, which do not seem to have suffered greatly from the era of Napoleon, c. 1798-1813, when the North Sea and the surrounding nations became engulfed in warfare and blockades of trade. In any case the Scottish herring fisheries emerged as the dominant producer of salted herring after 1807, and although, the Norwegian herring production also grew rapidly in the first half of the 19th century the Scottish production was slightly larger than the Norwegian and the largest in Europe for most of this period. In the 1830s and 1840s the Scottish and the Norwegian herring industry both reached the same production level for salted herring as the Dutch had had more than 200 years before.

The East Anglian herring industry was consistently present during the whole period, and at times in the latter half of the 1600s seems to have been the second largest producer. However, since most of the English herring was processed and marketed as ‘red’ herring, they may partly have catered for a market different from the other producers of ‘white’ herring. In the early 1700s and early 1800s the Danish Limfjord fishery was of noteworthy size, also by European standards.

For the period after c. 1750 the number of countries with large herring industries seems to have grown. More data are available for the latter half of the period 1600-1850, and for the French herring production lack of data, unfortunately does not allow for an assessment of the size of the French herring fishery prior to c. 1750.

**Shore based and high sea fisheries**

The above analyses of the different producers of salted herring in Northern Europe however, also make it possible to present an overview and generalisation of the technology and organisation of the various herring fisheries. Roughly speaking mainly two types of herring fisheries co existed.

Most pre-modern herring fisheries in the North Sea region were carried out as basically shore based operations. In the Bohuslen fisheries on the Swedish west coast, the fishermen mainly fished with beach seines and standing gillnets, operating within the
archipelago, a technique also used in the Norwegian fiords. In western Norway, the fishermen would also row out in the open sea to fish with long gillnets. This practice was common throughout the North Sea area, both along the Scottish east coast, the Yorkshire and East Anglian coast and off the Dutch coastline. Finally, the Danish herring fishery in the Limfjord aligning the North Sea was primarily carried out with pound nets, as well as gillnets and beach seines. These fisheries seem geographically dispersed and technologically different from one another, but they all have one important thing in common, which is that the herring, once it was caught was transported to shore for processing, as salted or smoked herring, or to be cooked for train oil production. Since the herring decay rather rapidly, the fishermen have to go ashore within a couple of days from catching the live fish, and this limits the area of operation of these fisheries.

This geographical restraint is one thing, which separated the Dutch North Sea herring fisheries from all other pre-modern fisheries. Some time in the latter half of the 14th century Dutch and Flemish fishermen started to process the herring aboard their fishing vessels. The technique itself was well known in Europe before 1300 for instance in the Danish province of Scania. But bringing the technique aboard a cargo ship made the Dutch herring fisheries virtually independent of geography. They would bring along salt, and barrels, so the herring could be cured and salted immediately after being caught, which created a high quality product. This was also about the time, when the herring buss was introduced as a fishing vessel with large storage capacity. So, provided the fishermen had enough provision aboard, they could focus on following the herring round the North Sea rather than waiting for it near the shores of the continent. This extended the fishing season compared to the other herring fisheries in Northern Europe. Over the course of the 15th and 16th centuries this Dutch model of production developed into a major enterprise, with large investments, not only in shipbuilding and fishing but also in

5 Unger, Richard, (1997), (reprinted from Viator vol. 9, pp. 335-356.)
developing a widespread distribution network for the finished product of salted herring throughout Europe.

**Imitating the Dutch way**

Being the envy of the other nations of northern Europe with potential access to the richness of the herring resources, several attempts with varying degrees of success were made at copying the Dutch model of success during the 17th and 18th centuries. This has been seen as one explanation for the large overall decline of the Dutch herring industry in this period.

According to historian Unger, then ‘over time, Dutch technical superiority was eroded as competitors developed the same skills. As alternate sources of supply emerged, the Dutch chose to limit production in order to maintain the premium prices their herring commanded.’

With regards to Emden, the herring company based there in the early 17th century faded away during the first half of the 17th century, but little is known about what actually happened.

In England and Scotland all attempts to establish large fishing companies failed until the establishment of the bounty system from the 1750s favouring large vessels, which continued all through the 1700s. The data for the East Anglian herring fisheries suggest that a number of their herring vessels were of more or less the same size and thereby cost as the vessels use in the Dutch enterprise, but the available data does not allow for a quantitative assessment of their importance for the over all East Anglian herring industry.

In the Flanders the privately funded *Compagnie van Visch-Vaert* founded in 1727 was short lived and went bankrupt in 1737. Likewise in Bohuslen the two small fishing companies, *Arfwedsonska Fiskeribolaget* founded in 1745 and *Fiskeribolaget i Göteborg* from 1752 were both short lived enterprises, due to financial problems and possible to emergence of the cheap shore based opportunities in Bohuslen from the late 1750s.

The general increase in historical source material data and historical research does not justify the apparent rise in the number of private fishing companies in the 1760s and

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1770s, often backed by government subsidies. Fishing companies were established in Emden in 1769, and within the realm of the Danish king, in Altona in 1767, and a gradual build up in Farsund during the 1760s. Neither the Altona Company nor the Farsund Company survived the Napoleonic Era, partly because of pre war financial problems partly as a direct consequence of political events. So, could it be said that they might have continued their existence, had the wars not erupted in Danish-Norwegian territory in 1801? The answer to this might come from a comparison with the Emden herring company.

In spite of economic problems and several reconstructions of the company, the Dutch model of producing salted herring based in Emden did survive the Napoleonic times, but the first half of the 19th century was one long decline for the Emdener based herring fisheries. The annual catch per buss became less than 50% of what it had been in the pre-war period, which is likely to have been a main causes of financial problems and eventual end of the Dutch style herring fisheries in the area. So, if the Danish and Norwegian enterprises continued after 1814 they probably would have encountered the same trouble.

Der Bremer Heringsfischerei Compagnie, set up in the German free state of Bremen in 1806 suffered a similar fate. In any case the Norwegian upsurge in herring production from 1814 was founded on the fisheries based on shore and from near the coast, where as the Danish interests shifted away from the high seas fishery towards the Limfjord.

Finally, the Dutch themselves left what has been termed here as ‘the Dutch model’ of fishing, when during the 1850s the College van de Grote Visserij was dissolved, the fishing laws liberalised and new types of fishing vessels, were introduced in the herring fisheries. Thus, it can be said, that the various attempts at copying the Dutch Grote Visserij were not successful, so even if the Dutch herring industry contracted, this was not because of emerging ‘copy cats.’ Rather the main threat on the supply of herring came from the cheaper and less sophisticated shore based fisheries.

But, what can be said about the reasons for the shift from the moment of Dutch dominance, towards the moment of Dutch imitation?
But what were the dynamics behind this development? The downfall of the great Dutch herring fishery has attracted the attention of a number of historians in the last one hundred years. Until now, five types of main hypotheses for the causes of decline have been put forward.

**War and piracy**

The North Sea was a frequent theatre of war in the Early Modern period. The possible negative impact on the Dutch herring industry has been a topic for debate, at least since the late 19th century, when Dutch historian Beaujon published a political history of Dutch fisheries. Beaujon found that by the time of Peace in Utrecht in 1713, which was the starting point of more peaceful times in the North Sea area, the Dutch herring fisheries had been hampered and broken down by the combined effects of a century long series of war and piracy. Canadian historian, Unger also proposed that the wars of the 17th century dealt decisive blows to the Dutch herring industry. Recent historical research have tried to quantify the effects of piracy, and especially Dutch historian, Adriaan van Vliet has investigated the piracy from Dunkerque, in present day northern France, and its impact on the Dutch herring fisheries during the 80 years War, (1568-1648).

The combination of the total production figures established in combination with quantifications of the number of vessels lost because of violence and warfare, makes it possible to give some indications on the scale of impact of war and piracy on North Sea herring exploitation.

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Dutch North Sea herring production, fresh weight 1600-1892

Sources: Bochove(2004), Hoogendijk(1894), Vermaas & Sigal(1922), NA.CGV.inv.no.396, GA. Schiedam, Gerechten van Schiedam, inv. 614-622

Figure 3.

In 2002 van Vliet calculated the annual number of vessels lost due to piracy in a number of years from 1625-1645. The greatest losses came in 1625 when 85 vessels were lost off Scotland, and again in 1635 when 124 vessels were taken by privateers. These losses represent roughly 10% and 15% of the total fleet respectively. The heavy losses in 1625 coincide with a huge drop in total catch from c. 50,000 tonnes in 1625 to just 22,000 in 1626. With regard to the even bigger loss in 1635, there does not seem to have been the same immediate effect on total catch, since the total catch rose from 32,000 in 1635 to 45,000 tonnes the following year. Thus, the absolute loss in terms of number of vessels was not necessarily obvious from the total production figures.

According to van Vliet, this especially affected the southern part of the Dutch Republic and besides the direct loss of vessels, an increase in protection costs made the fisheries too costly. However, in a recent analysis of the fisheries in the Zeeland province, van Vliet found the fisheries to have been more resilient to the violent perils of the sea. In any case, privateering in the first half of the 17th century must only have been harmful to the herring industry.

The three Anglo-Dutch Wars in 1652-54, 1665-67 and in 1672-74 seem to have caused bigger problems, judging from the lack of ability to regain lost ground in more peaceful years immediately thereafter. The direct loss of ships has not been assessed in the same way for this period, but there are strong analogies between drastically declining catches and wartimes.

In 1652, 1670 and 1676 the landings for the first trip of the season were extremely bad due to the Anglo-Dutch War and Dunkerque privateers, respectively. In some years the fisheries came to a complete halt, which was the case in 1666 and 1672 when only one and two herring vessels landed their catch in Schiedam. In the 1690s, the Dunkerque privateers were at their peak, and for the entire spring of 1691 the Dutch government forbade fishing in the open sea. Again, total production declined drastically.

After a peaceful interlude, war broke out again in 1702-1708, with the War of the Spanish Succession, which greatly impacted the Dutch herring fisheries. In 1703, allegedly around 100 herring busses fishing off the Shetlands were caught by a fleet of French warships, burned and sank. The rest of the 1700s were relatively a peaceful period in the North Sea. Then again, after the outbreak of the revolutionary wars in the early 1780s between England, France and The United States, the herring fisheries in The Netherlands were seriously affected.

There are striking parallels between the outbreak of war and heavy privateering and the periods of strong decline in the total catch of the Dutch herring industry. This is mainly the periods c. 1600-1708 and 1780-1813. However, the Dutch herring industry exhibited a greater overall resilience to these problems in the first half of the 17th century than in the rest of the period.

**Institutional and technological inertia**

As a second explanation, Canadian historian Richard Unger has analysed the position of the Dutch on the North European herring market. He sees the rise of Dutch herring because of superior technology, organisation and institutional framework in the 16th
century, but in the following century fisheries declined, when the organisation was struck by inertia and failed to develop.\textsuperscript{15}

In terms of technological innovation though, historian de Vries did not find this of importance, since the Dutch remained leaders in terms of fishing technology throughout the period.\textsuperscript{16} The findings on producers and production support this, since all the major producers of herring who successfully competed with the Dutch, did so with inexpensive shore based technology. Meanwhile virtually all attempts at competing with a sophisticated Dutch style of production failed. The only exception to this rule was the herring companies in Emden in the late 18\textsuperscript{th} and early 19\textsuperscript{th} century, which operated for more than two generations.

Moreover, the analyses of the highly sophisticated fishing strategies both in terms of searching for the fish, and in terms of fishing together as a larger group, have highlighted aspects of the organisation of the Dutch herring fisheries, which has previously been overlooked.

On the positive side, a limited entry system ensured a monopolistic status for insiders, the Dutch fishermen, who gained from extensive mutual trust when fishing together. Strict quality control ensured that the Dutch salted herring was reckoned to be the best in Europe. The know how of rational fishing strategies and skills developed through generations is likely to have given the Dutch fishermen an advantage, which was not easily copied when foreign nations set up Dutch style herring fisheries. Thus, even though the technological hardware was copied in several competing fishing industries, none did it with longstanding success. This means that technological innovation in the North Sea fishing industries was not a major force of change in this period. The issue was to adopt the technology most suited to benefit from the relative spatial potential of the herring resources.

On the negative side, the monopolistic structure of the Dutch industry discouraged internal competition and innovation in the Dutch fishing sector. The relatively free movement of the Dutch fishing vessels enabled the fishermen to shift their operation with the success of the fisheries, but it came at a high cost of investment. As previous analyses

\textsuperscript{15} Unger, Richard W., (1980).
have shown, the Dutch herring industry as a whole had a deficit in c. 8 of 10 years during the time span of 1600-1850, which gave the sector every reason to gradually contract.17 More in depth research on the issue of institutional development and possible inertia could be done. What could have been, for instance, the effect of the highly monopolistic nature of the College van de Grote Visserij on the innovation of new types of vessels and gears? New light could also be shed on the whole question of vertical integration in investment, production, sales and distribution of the salted Dutch herring. These topics though, have all fallen outside possible inclusion in this study.

**Foreign competition**

From British and Dutch commentators, competition from Scotland has been suggested as a third important factor in the decline of the Dutch herring fisheries.18 The relative high prices on prime quality Dutch herring were potentially bad for competition, and equally bad was a possible lack of demand on the home market due to changes in diet. Moreover, trading policies of the North European states added to this, by way of levying high taxes on imported goods as well as promotion of local industries. The rise in the number of private fishing companies in the 1760s and 1770s was often backed by government subsidies. In this period, known in the economic history as the ‘age of mercantilism,’ the herring fisheries was no exception from a pattern where governments sought to promote the industries of their own country. None of them though, survived for long, so copying of Dutch mode of producing herring did not put down the Dutch production. Overall, when looking at the production figures for salted herring, the most drastic phase of decline of Dutch herring industry, the latter half of the 17th century, preceded the rise of large competing fisheries by three to four decades. Not until the beginning of the 18th century did the Scottish export increase, and it was not before the 1730s and 1740s that the Norwegian herring became the largest European producer. Hereafter, Bohuslen, Scotland and Norway remained the main producers throughout the period of investigation. Statistics of herring imports analysed from Stettin and Hamburg, demonstrate the gradual loss of the Dutch foothold in European markets.

However, when looking at foreign competition as a factor in the Dutch decline, it appears that this was not a decisive issue until several decades after the decline began. Foreign competition in itself was hardly the prime mover. Falling demand is a more likely candidate.

**Falling demand**

Within a neo-classical approach the explanation has been proposed that more lucrative ways of investments in other sectors made the investors loose interest in the fisheries. The high prices on the prime quality Dutch herring were bad for competition, and a possible lack of demand on the home market perhaps due to changes in the diet. Mercantilist trading policies of the North European states added to this, by way of levying high taxes on imported goods as well as promotion of local industries.\(^ {19}\)

With the German States and The Baltic area being the principal market for European herring in the 17-19\(^ {\text{th}} \) century, it is of interest to investigate the demand of herring in those areas. When looking at the total production of salted herring in the North Sea, the real expulsion towards 20\(^ {\text{th}} \) century heights occurred during the first half of the 19\(^ {\text{th}} \) century.

With the establishment of the total production of salted herring in the wider North Sea area, it is possible to compare the supply of herring in Europe with the development of the total human population of Europe. This is shown on figure 4.\(^ {20}\) The population of Europe was rising at a gradually higher and higher rate throughout this period, so that the amount of salted herring per capita dropped significantly. In order to put numbers to this argument, we can assume that all Europeans ate an equal amount of salted herring each year. Then the average of the annual production in the years 1600-1605 is divided with the estimated population around 1600. This gives a figure of 0.9 kg of salted herring per capita. Comparing production in the years 1696-1705 with the population around 1700, gives an average of 0.4 kg of salted herring per capita. Finally, around 1820, the ratio between European population and production of herring was 0.5 kg per capita. Thus, during the course the 17\(^ {\text{th}} \) century, average European consumption decreased by 50%.

\(^ {19}\) De Vries, Jan and Ad van der Woude, (1997).

while it seemingly stabilised during the following period of c. 120 years. Therefore, the European demand for herring must have had a highly significant impact on the transformation of the herring industry in this period.

![Production of herring and population of Europe, 1600-1850](image)

**Figure 4.**

The population of Northern Europe however, rose greatly in the period from c. 1600-1850, preceding the increase in production of herring. This seems to indicate that herring gradually lost its presence in the staple diet for most people. But is it possible to document a change in diet? Further, what may have caused the demand of herring to fall? There are two ways of investigating whether a fall in demand took place. First of all, the comparing of herring prices to grain prices gives an indication of the buying power of the average consumer. When demand fall the relative price of herring will fall. As we saw herring prices in all of Germany rose in the 17th century, but in fact, when seen over the whole period 1600-1850, fell relative to grain prices.²¹ But what if it is a surge in production, rather than a fall in demand, that causes prices to decrease?

²¹ Hitzbleck, Herbert, (1971), p. 228-244.
As a means to check this, the consumption pattern in the principal markets can be looked at. Through a series of snapshots from different countries a picture emerge that salted herring played waning role in the diets of people in the North Sea and Baltic areas during the period 1600-1800. Consistent long time series however, could be drawn upon only for a hospital in mid Sweden.

The hypothesis of falling demand is supported by evidence for a fall in production per capita, in consumption per capita and in the price differentials between herring and grain.

**Declining catch rates**

Declining catch rates have previously been a dark horse in historians’ explanations of the downfall of the great Dutch herring industry. This explanation was first suggested by Dutch historian, Kranenburg more than half a century ago, and a number of subsequent authors have commented on environmental changes.22

High resolution of data into catch per day per boat for each of normally three potential annual trips has enabled the reconstruction of time series showing large fluctuations over the 250 years. However, the catch rates for trip 1 compared to trip 2 and 3 seem to have fluctuated in cycles countering each other in a way that the combined annual catch rates per day at sea were remarkably stable from c. 1600-1800. The total annual catch per boat decreased a little in the latter half of the 18th century, and quite drastically in the entire first half of the 19th century, when it remained at a level less than half the CPUE of the previous two hundred years.

What seems to have caused a fall in average annual catch from c. 1750 and for the rest of that century is a gradual shortening of the herring season. Until c. 1750 the herring season normally extended into the months of November and January, which overlapped with the normal fishing season for North Sea cod starting in the winter. It is plausible that the fisheries for cod became relatively more attractive for the Dutch fishermen from this period onwards. More knowledge of the Dutch cod fishery is needed in order to draw conclusions on this hypothesis, but the introduction of the Hoekerbuis, a vessel type

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suited for both herring and cod fisheries is a supportive indicator for this hypothesis. The results indicated a clear linear relationship between the number of days at sea and the number of days fishing. Moreover, the area covered per day of sailing was negatively correlated with the rate of success in fishing; the better the fishing, the less movement. The CPUE fluctuations for each of the normal one two or three trips during one season therefore seems to be a credible index of the available abundance of herring within a large portion of the North Sea.

In the above section the likely loss of relative spatial advantage in the 19th century is a testimony of this. This means that although the catch rates were more or less stable in the 17th and 18th centuries, the chances are that similar spatial changes in the available abundance of herring can have changed the spatial potential of Dutch model of fisheries relative to spatially confined shore based fisheries.

Concluding on the hypothesis of declining catch rates it is fair to assume that the drastic decline in catch per day at sea in the first half of the 19th century had a large negative impact on the development of the Dutch herring industry. During the preceding two hundred years the annual catch rates seem to have been quite stable and not in themselves providing a significant contribution of this hypothesis of decline. However, possible past episode of changes in relative spatial potential can have had a negative effect on the Dutch fisheries, and the relative changes in abundance of cod and herring can have influenced the decision on shortening the herring season from the late 18th century onwards.

Thus, changes in the natural circumstance surrounding the fisheries definitely had a large impact on the downfall of the Dutch herring fisheries, but apart from the period 1814-1850 it was in a more indirect way than through diminishing CPUE as such.

**Concluding on Mediterranean moments in the fishing industry.**

**Events and conjunctures**

The historical system of herring exploitation consists of interactions between a very dynamic natural system and a highly dynamic anthropogenic system. One of the most stable trends is the steady long term decline of the Dutch North Sea herring fisheries,
which has been addressed in much previous historical research. This, the first marine
environmental assessment, presents a new interpretation of the historical development of
the Dutch herring fisheries in light of the proposed system of exploitation, c. 1600-1860.
For the sake of highlighting the main dynamics the entire period of investigation has been
roughly divided into segments of c. 50 years.
In the period c. 1600-1650 The Dutch herring industries were at their prime, dominating
European herring production and trade. Privateering and warfare were the major
obstacles in this period.
Subsequently, during the phase c. 1650-1710 the Dutch industry suffered major blows,
primarily due to the Anglo-Dutch wars and the War of Spanish Succession.
In the next period c. 1710-1760 the North Sea become a peaceful sea, but now different
challenges prevented the Dutch from full post-war recovery. The gradual implementation
of high tariffs on the import of salted herring in European states affected this export
oriented industry. The growth of the Norwegian and Scottish herring industries were both
filling gaps in the market, especially in the Baltic market after the contraction of the
Dutch industry. A likely dynamic for this change is an environmental shift in relative
spatial potential to the benefit of the shore based herring industries.
Dutch decline only continued in the following period of 1760-1814. The spatial
distribution of available abundance of the North Sea herring shifted further away from
the Dutch interest, with the rise of the great Bohuslen herring period, 1756-1808. On the
political scene the revolutionary wars and the Napoleonic period frequently kept Dutch
herring vessels from engaging in high sea herring fisheries during the periods 1780-81
and 1795-1813. Meanwhile, mercantilist policies continued to impede the export oriented
herring producers, and several competing herring companies were established in the
states around the North Sea in attempt to subsidise the home industries.
1815-1850 was an absolute low point in the history of the Dutch herring fisheries. The
catch rates were less than half of what they had been in the preceding two centuries, and
Scottish as well as Norwegian herring fisheries gained a comparative spatial advantage
from shifts in the spatial distribution of herring. In this period it can be said that the
environmental side of the system had its most negative impact on the Dutch herring
fisheries.
Structural changes

Structurally, the demand for salted herring declined from c. 1650 and this structural development lasted at least until the end of the Napoleonic wars. In the first half of the 19th century, society also changed rapidly following the industrial revolution. Possibly the opening of new overseas markets and improved inland transportation via railroads and canals stabilised the per capita consumption of salted herring, but this last issue would require further analysis.

From the point of view of fishing strategy, the shortening of the herring season from c. 1750 onwards, coinciding with the introduction of the hoekerbuis had a negative impact on the annual Dutch catches of herring.

The tight organisation and stable institutional framework, hardly changed during the investigated period, and are found to have positive as well as negative effects on the industry.

Successes and failures

From the perspective of human society over the time frame of 250 years, the above analysis has showed how the Dutch herring industry in one way ended up as the great loser. In the year 1600 they were the paramount producers of salted herring in Europe, and by 1850 the accounted for just 5% of the total amount of herring in Europe.

But on the other hand, as the analysis of the different types of organisation and technology in the various herring fisheries has showed, the Dutch high seas herring fishery remained the only enduring success of what can be termed ‘the Dutch model’ of producing herring. None of the multitude of competitors in Northern Europe succeeded in building a similar fleet. Rather the various dominant industries from the 1740s onwards were all based on more flexible locally based herring fisheries, requiring less capital investments. Economically this flexibility caused periods of economic boom and bust.
Unsolved business

This study has focused mainly on the interplay between production and resource availability, in the fisheries internal part of the exploitation system established above. In economic terms this covers well the supply side of the economy but the results are limited in their explanatory power on the demand side of the European fisheries sector. A similar study of the demand side would require a whole different set of hypotheses and datasets. The early modern distribution networks of fish products needs further investigation, and so does the impact of transaction costs, impact of infrastructure development, and the role merchants’ organisation. Within these transport and trade oriented factors the parallel decline of many other sectors of the early modern Dutch economy, including the loss of supremacy in the Baltic grain trade, also needs to be asserted.23 Much more research is needed to shed light on this issue.

Within a neo-classical approach the explanation has been proposed that more lucrative ways of investments arose in other sectors such as the whaling industry, which diverted interests away from the herring fisheries.24 Similarly, the dynamics of the labour market with special reference to the level of payment in the fishing sector is worthy of more research. Historian van Vliet has proposed that the relative level of salaries in the fishing sector rose in the latter 17th and 18th centuries contributing to the decline of interest.25 However, in a forthcoming article van Bochove is considered to be of little cause for change, since the salaries in the Dutch herring industry made up more or less the same percentage of the total cost of fitting out a vessel throughout the 17th and 18th centuries.26

23 Overall performance of the Dutch economy is discussed most recently by de Vries, Jan and Woude, Ad van der, (1997) and Ormrod, David, (2003). The loss of the grain trade is recently analysed by Tielhof, Milja van, (2002).
26 Bochove, Christiaan van, (forthcoming).