Abstract. The purpose of this article is to highlight some of the stages of country’s export saga. The country is an island, Iceland, a remote island in the north. The export saga spans more than a thousand years, from Viking settlement to the present day. The introduction provides an overview, followed by a story about the generation born a few years before World War II and what life was like before and after the start of significant fish exports. Secondly, it discusses the evolution of exports from Iceland in terms of the goods that dominate exports. Thirdly, it analyses whether the nature of exports has changed in response to the significant export opportunities that have opened up to the US and, subsequently, to Europe with the formation of the EU, EFTA and NAFTA. For a long time, the export of goods in the form of fish has been important for Iceland. In this context, two export stories from Iceland can be told. The export of services in the form of tourism has become more important than the export of goods in recent years. This development is in line with the theory that the more a country develops, the more it shifts its exports from goods to services – which is visible in Iceland’s exports, as tourism is classified as a service export in the national accounts, the international standard. The country’s export story can be seen as a twilight saga in the stormy seas of international development. The methodology used is based on the popular business SWOT analysis, which allows to assess the benefits of exporting over time. This method helps to assess the following factors: Strengths, Weaknesses, Opportunities and Threats. The results of a SWOT analysis depend on the factor being assessed: Strengths, Weaknesses, Opportunities or Threats. The matrix approach to SWOT analysis has been structured to identify strengths, weaknesses, opportunities and threats. The method has been highly regarded by business researchers. There are several practical implications, and they relate to all dimensions of strengths, weaknesses, opportunities and threats. Last but not least, the study includes several factors related to value/originality in the industry, which implies issues that exporters should bear in mind and take into account if they start any international activity in the form of exporting fish cargo to other countries.

Key words: international trade, national culture, gravity model.

JEL Classification: F14, F23, M14, M21

1. Introduction

In the past, the Norse Vikings considered Iceland to be the land of the gods (World History Encyclopedia, 2023). Some Vikings considered Iceland to be a land of fire and ice when the Viking settlers arrived in Iceland, moving away from the incessant battles and limited land resources in Scandinavia. “Since Iceland’s landscape was marked by both ice and fire (in the form of volcanos), it was thought to either be – or at least resemble – the primordial realms from which all life emerged.” (World History Encyclopedia, 2023) What can Iceland, as a remote island in the Atlantic Ocean, potentially export? Fish has been one of the main export commodities since the beginning, with dried, salted and smoked fish (Statistics Iceland, 2023a). Iceland is known as the land of the Viking sagas (World Historical Encyclopedia, 2023), and Iceland’s export saga spans about 1000 years, from around 1000 to just over 2000. Iceland has been heavily dependent on fish and its export due to the rich fishing grounds around the country. When the author of this article, Olga Ágústsdóttir, was growing up in Iceland’s western fjords during World War II, it was common for the average family on the coast to have fish on the table five days a week. People in the interior, however, ate salted fish and meat, including cold-smoked sausage, less often, as access to the coast was often limited.

It has been said that in Iceland both fish export and tourism (Kristjánsson, Guðjónsson, Óskarsson,
are dependent on natural resources. This is because fish export is based on marine resources and the tourism industry is largely based on land resources in the sense that tourists visiting Iceland are attracted by the natural landscape with mountains, glaciers, waterfalls and hot springs. It is said that land and sea are sisters. One theory is that the Vikings settled in Iceland to gain access to natural resources. The Scandinavian saga tells of the ventures of their time, Vikings sailing between Scandinavia, Iceland, Britain and North America in search of opportunity. The saga of the Icelanders tells of the Viking period, both economically and genetically in terms of family relationships. Settlement in Iceland from Norway began in 874, and it is believed that the preservation of fish helped people survive the sea fare of the time. Seafarers brought dried fish, and the cod has been the export in Iceland for centuries, the export of salted, dried and fresh fish has helped to keep the generations active between 1900 to 2000.

The sagas of the Icelanders tell of the settlement of Iceland (World History Encyclopedia, 2023),
beginning with the Viking Hrafna-Flóki, who came up with the name Iceland while looking across a fjord in the west of Iceland – full of icebergs (World History Encyclopedia, 2023). The focus of this Icelandic saga is therefore twofold: First, the historical background of exports and living conditions in the fords of western Iceland. Second, how exports have shifted from being primarily based on fish to passengers. The story tells how the sailing routines of ancestors depended on the ability to catch cod, which made it possible to travel across the Atlantic in a way that depended on catching fish (Kurlansky, 1998).

2. Two Export Sagas from Iceland

I. Fish Exports to Europe – Saga

World War I changed the world, including Iceland. Fish exports increased after the war as Iceland acquired fishing vessels from the North Sea area near the Scandinavian countries. This led to an industrial revolution in Iceland as rowing boats were replaced by trawlers. The story begins next to the open sea, in Ísafjörður (Ice Fjord) in Iceland. Where the valley is so narrow that there is no sun for most of the year. With limited fishing grounds, fishing has been the main means of survival for centuries. During the harsh winters, people survived by eating dried or salted fish.

In the West Fjord in the 1940s, “Dísirnar” fishing boats went fishing in Ísafjörður (the so-called Ice Fjord) (Ágústsdóttir, 2023). Æðey is an island in the western fjords of Iceland. Ólga Ágústsdóttir, one of the authors of this article, was sent to the island with her siblings as a child. The island of Æðey, although surrounded by excellent fishing grounds, had no opportunity to exploit its fishing potential due to the...
limited number of boats and the British fishing close to the Icelandic coast, when Iceland’s Exclusive Economic Zone (EEZ) was only 3 nautical miles. Later, in 1952, Iceland unilaterally claimed a 4 nautical mile Exclusive Economic Zone (EEZ), and with further extensions, the fishing zone became 200 nautical miles in 1976. British fishermen had fished extensively in Icelandic waters, close to the coast, using bottom trawling, a type of net that also catches small fish, limiting the fish available to the island’s boats. Fish for export was therefore a limited option at the time, but eiderdown from eider ducks was sold domestically at the time, and later abroad, to pay for the supplies needed on the island. Lamb was also sold abroad.

The children spent the summer with their relatives on the island of Æðey (the island of the eider ducks), descendants of the Arnardalur family (Arnardalsætt). The people of Æðey (Æðeyjarætt) lived a good life on Æðey. There were many resources on the island. The women on the island were in charge and led the people in the daily work in the house and the men in the outdoor activities, except for Sundays (Ágústsdóttir, 2023). Ágúst, Olga’s father, grew up on the island with his relatives, his grandparents and his father’s siblings. Ágúst lost his mother Rannveig and his father Elías at a young age. His father was the boatman on a rowing boat and died of pneumonia after being overcooled on one of his fishing trips. His grandparents on the island of Æðey raised and favoured Ágúst, sending him to teacher training college in Reykjavik and later to business school in Copenhagen, Denmark. Ágúst wanted his children to know their relatives and the way of life on the island. Therefore, after marrying his wife Valgerður at the age of 26 and having a large family of his own, he sent his children to the island for the summer. It was customary in Iceland to send the children of this generation to the country for the summer, where they could stay for free in return for some simple work.

Ágúst’s children, in a group of eight, were well looked after by the three adult siblings who lived on the island with their mother; the island siblings had no spouses or children of their own. They fostered many children on the island throughout their lives. Olga, the author of this article, was sent to the island nine summers in a row from the age of four until she was thirteen. In return for their stay, the children helped collect eiderdown, the down of the eider duck. Eiderdown was a valuable export from Iceland. Eiderdown was, and still is, one of the most valuable exports from the Icelandic countryside. The oldest of the brothers on the island was Ásgeir.

Ásgeir grew up reading the sagas of the Icelanders and was the leader of the local community, on the executive committee of the larger society and a veterinarian, which meant he was often away from home. His brother Halldór ran the farm on the island and Sigríður ran the household. Their parents were Guðrún Jónsdóttir from the family of Arnardalur, near Isafjörður, and Guðmundur Rósinkarsson from the island of Eider, called ‘Æðey’ (Ágústsdóttir, 2023).

Sigríður Guðmundsdóttir worked hard on the island of Æðey, insisting on regularity and proper housekeeping, and always had a woman in the kitchen to help her. There was no electricity or water supply on the island. There was no running water in the house, so water had to be carried from the well in the garden. It was traditional for people to carry a yoke on their shoulders with two buckets of water for the house, where it was poured into a barrel outside. There were two terraces in the house, one at the front facing the harbour and another at the back next to a small shed. The kitchen had a large coal stove that also burned turf to heat the house. Meals were always served at the correct time, exactly at twelve o’clock. Coffee was served at 3.30pm and dinner at 8pm. Sometimes people took turns rowing the boat, going fishing, and fish was often served with potatoes, and traditional Icelandic tallow from the West Fjord was also served with the meal, which is a traditional Icelandic cuisine. Dinner was served with boiled eider eggs, rye bread and butter and oatmeal. Then people read books or went straight to bed to sleep (Ágústsdóttir, 2023).

When the weather was good on Æðey, people went to the sea to swim and splash about. There were three colourful rowboats on Æðey, the smallest was called “Sofían” (e. Sophie), a red boat, then the “Sæfuglinn” (e. Seabird) with an outboard motor, which was blue and most often used. The biggest boat was called “Cod”. It was white and anchored in the

Figure 5. Ásgeir Guðmundsson (1887–1976) in Æðey, awarded the Knight’s Cross (Riddarakross) the Order of the Falcon, by the president of Iceland in 1964. He and his family collected 210 kg of eiderdown in the year 1926 (Morgunblaðið, 1959)
The eider colonies were quite large, with huge eiderdown gathering potential on the island, and well looked after. Residents had spent decades training and caring for the needs of the eiders, understanding the birds’ habits and returning to the same breeding sites year after year. Icelandic eiderdown farming has been practised in Iceland for centuries and originates from the fact that the female eider removes feathers from her breast when building the nest and to provide sufficient warmth for the eggs when they hatch. Egg picking was done at the beginning of the nesting season when the ducks were laying their eggs. The islanders were skilled at observing the eggs, using a “see-through” method to determine if the egg was fertilised by lifting it towards the sun; if the sunlight shone straight through the egg, it was considered infertile and could be taken from the nest and used for cooking. Eiderdown is a very valuable product that has been practised in Iceland for centuries and originates from the fact that the female eider removes feathers from her breast when building the nest and to provide sufficient warmth for the eggs when they hatch. Egg picking was done at the beginning of the nesting season when the ducks were laying their eggs. The islanders were skilled at observing the eggs, using a “see-through” method to determine if the egg was fertilised by lifting it towards the sun; if the sunlight shone straight through the egg, it was considered infertile and could be taken from the nest and used for cooking. Eiderdown is a very valuable product and after cleaning it can be used to make eider quilts or eider pillows (Ágústsdóttir, 2023).

The temperature of the weather was regularly measured in degrees Celsius and sent to the mainland by Halldór Guðmundsson. Olga, the author of this article, who was five years old at the time, was sent to Halldór where he was sitting in the hayfield with paper and pencil. He would look wisely at the sky and, with a pale face, write some numbers on the paper. The weather forecasts were always written and read in numbers. The weather report was sent from the island by phone in the morning and at 5 pm in the afternoon (Ágústsdóttir, 2023).

When Olga was a teenager, her father Ágúst Elíasson was the Head Manager for North-East Iceland when it came to evaluating fish for export from Akureyri (he had previously been the Head Manager for Western Iceland, based in Ísafjörður). His job was to visit the ships at the harbour after their fishing trips, when they were full of fish. He would then discuss the catch, its size and quality with the captain. How the crew arranged the cargo to be properly preserved for a long voyage when exported to other countries. Quality had to be ensured so that the cargo could be sold at a fair price in foreign ports. And everything had to be properly documented. Olga’s father, Ágúst Elíasson, would go to the harbour and talk to the captain and the crew. He looked at the export documents and then examined the fish cargo. He would even take samples of the fish to ensure that the correct quality measures had been taken. Olga sometimes had the opportunity to accompany her father on these port trips. Among the countries her father oversaw at the time were Italy, Spain and Portugal, these countries were buying salted cod for the Catholic Lent. In the beginning, Iceland mainly exported fish to Europe.

II. Fish Exports to the USA – Saga

Guðríður Jónsdóttir was born in 1938 in the town of Siglufjörður. This was during the so-called herring era in Iceland. Siglufjörður is the centre of the herring industry. It had a significant weight in the total export in Iceland at that time. The export from Siglufjörður was so important and weighty in Iceland’s total export that there are stories that the country’s exchange rate was set depending on the fish export from Siglufjörður (Jónsdóttir, 2023).

Guðríður lived with her parents and one brother in Siglufjörður as a young child. Her father Jón Gunnarsson was the managing director of the herring factories (Jónsdóttir, 2023). Exports to the United States of America were growing. There was a potential market there and in 1945 the Icelandic Freezing Plants Corporation opened a sales office in New York City. Jón Gunnarsson was given the opportunity to run the New York sales office, called Coldwater Seafood.

Jón was trained as an engineer in Norway and later earned a master’s degree at MIT in Boston. He analysed the market opportunities in Europe and the US and found the best opportunities in the US. Guðríður therefore experienced the export opportunities first hand. Her father travelled a lot and worked long hours. He built up a network of salesmen, agents and brokers throughout the USA and gained their trust. The sales organisation that Jón built up is said to have become the model for the Norwegian sales organisation, which is still successful today. Iceland still benefits from the quality standards set during Jón Gunnarsson’s time in the USA (Jónsdóttir, 2023).

3. Export Evolution in Recent Years

In recent years, tourism in Iceland has been taking over part of the export revenue. One of the trends in recent years has been an increase in the export of
chilled cod, and it is interesting to consider the additional effects on passengers on commercial airliner flights. Fish has been an export item in Iceland for centuries, with seafarers bringing in dried fish, exporting salted, dried and fresh cod to the generations living between 1900 to 2000. Then, the generations living after 2000, and especially in recent years, have felt the impact of tourism in terms of export earnings. Finally, current trends also include the significant growth of fisheries in Iceland.

3.a. Fish Farming – Growing Industry
The development of fish farms in Iceland is significant and it is a growing industry. The traditional method of fishing with trollers and ice freezing has limited potential due to the limitations of the quota system. The quota system is designed to preserve the fish population, maintain its numbers and prevent overfishing. Therefore, in recent years, fisheries have been developing rapidly in all parts of Iceland. In the western fjords, fjord fish farming, traditional fish farming with fish reared in nets in the fjords, is developing. The eastern fjords of Iceland have seen a similar development in recent years as traditional fish farming has grown. In fact, fish farming can provide growth opportunities for the Icelandic economy. Keflavík International Airport is located in the southwest of Iceland, and there have been some interesting developments in the communities surrounding this international airport. The location of the airport seems to have caught the eye of local and foreign investors who are investing in fish farming near Keflavík International Airport. This is primarily a somewhat unconventional fish farm, as it is based on using the geothermal water available in the area for fish farms on land rather than at sea. One of the ways of operating this type of fish farming is to use geothermal water when heating some sea water to
create favourable conditions for fish growth, somewhat based on the same idea as geothermal production and the Blue Lagoon in Iceland. The proximity to the airport offers great opportunities for exporting fresh fish, chilled in boxes and of very high quality, directly to the market in Europe and the USA, for example. Foreign direct investment, mainly from Norway, in fish farming in Iceland has been visible in recent years.

3.b. Iceland’s Connection to the EU and US Markets

After World War II, before the American trade bloc NAFTA and the European trade blocs EU and EFTA, Europe was in ruins after the war and therefore the US had more purchasing power. Therefore, it was easier for Iceland to export fish to the US than to Europe. However, this has changed and currently Icelandic exports to Europe exceed exports to the USA. The EU (European Union) is the leading trading bloc in Europe. However, there is another trading bloc in Europe, the EFTA. EFTA is the European Free Trade Association and its members are Iceland, Liechtenstein, Norway and Switzerland.

4. Theory and International Trade

Theory as explained the benefits of international trade between countries over time (Bergstrand, 1985; Markusen, 2004; Kristjánsdóttir, Guðjónsson, Óskarsson, 2022). The effect of culture on international trade has been extensively analysed, as has the effect of distance on trade, with similar cultures generally found to help trade between countries, and greater distance found to negatively affect trade. Several papers have attempted to determine the relationship between countries’ trade and geographical distance as well as cultures, and some also consider economic and market size, as well as membership in free trade agreements (FTAs) (Óskarsson and Kristjánsdóttir, 2021).

Under conditions of imperfect competition, which implies increasing returns (Helpman and Krugman, 1989). Both periods of recession (Hjálmarsdóttir et al., forthcoming) and growth have been included in these measures.

The gravity model, as well as the following Bergstrand (1985) specification, is well known in the literature:

\[ PX_y = \beta_0 (Y_i)^{\theta_1} (Y_j)^{\theta_2} (D_y)^{\theta_3} (A_y)^{\theta_4} \epsilon_{ij} \] (1)

In equation (1), PX is the dependent variable, which represents exports from country i imported into country j. The dependent variable Yi represents the gross domestic product, which is the GDP in country i, and the variable Yj accounts for the gross domestic product in country j. In addition, A is a variable called a dummy variable that takes the value 0 or 1. In addition, u in the equation is the so-called error term. After logarithmisation, the equation looks like equation (2). EXP is the dependent variable exports, which represents exports between country i and country j during time t.

\[ EXP_{ij} = e^{\alpha_1 (Y_i)^{\gamma_1} (Y_j)^{\gamma_2} (D_y)^{\gamma_3} (A_y)^{\gamma_4} \epsilon_{ij}} \] (2)

A version of the Bergstrand gravity model (1985) can also be written as equation (3), with equation (3) including GDP and market size represented as population, in which case distance can be replaced by DIS.

![Figure 8. Exported marine products by product category, tonnes](Source: Statistics Iceland (2023c))
The log-linear format of the equation can be represented by taking the logarithm of the equation. The gravity model is widely used in the study of international trade, as shown in equation (4):

\[
\ln \text{EXP}_{ijt} = \theta_0 + \theta_1 \ln \text{GDP}_{jt} + \theta_2 \ln \text{POP}_{jt} + \theta_3 \ln \text{DIS}_{jt} + \psi_{ij} + \epsilon_{ijt} \quad (4)
\]

The international trade blocs of EFTA and the EU differ in that EFTA countries do not have common tariffs on imported products from third countries, as EU countries do (Europe, 2023; European Free Trade Association, 2023). EFTA members may conclude free trade agreements with countries outside EFTA on an individual basis. The EFTA countries Switzerland and Iceland have a free trade agreement with China, which entered into force in 2014.

5. SWOT Analysis of Cargo Flight Export

The main results of the SWOT analysis are presented in Table 1 above and can be summarised as follows: Strengths include the good natural conditions for fishing and fish farming in Iceland. Strengths also point to the value of being able to supply the highest quality seafood when transported as cargo. In addition, the high price that can be obtained for fresh and chilled seafood. Furthermore, it is a fast way of doing business that strengthens international business. In addition, the distance does not matter much when the transport takes only a few hours of flight. Weaknesses include dependence on flight conditions. High risk factor when transporting fresh seafood. Fresh seafood is also a very sensitive commodity for trade. Reliability can be easily lost. Uncertainty in the quota system, and limited shelf life (Elíasson et al., 2023). Opportunities related to increasing demand and potential supply in fish farming (aquaculture) in Iceland. Opportunities also include the fact that chilled fresh fish can be easily transported over long distances by air. In addition, the potential for supply using geothermal water is growing. Distant markets are becoming more accessible through air travel, as well as the potential to reach upscale customers in upmarket restaurants. New markets are accessible due to good quality. Flexibility to easily enter new markets. Threats include issues such as competition from fish farms around the world. For example, competition from Norway. It dries up when interest rates rise. The market is sensitive because fresh seafood is sensitive.

6. Conclusions

This paper is about the evolution of exports from a remote island in the Atlantic Ocean. The island is Iceland. Fish exports have played an important role in the country’s economic growth and have been the main export industry for many years. Iceland has gone from a developing country to a developed country and now has some of the best living conditions in the world. This article gives an insight into the lives and thoughts of the pioneers in the country after World War II. The generations after the war experienced significant economic growth. In particular, an overview of the evolution of exports and the current development of fisheries as a growing industry in Iceland, both on land and at sea, was made.

Looking at the future of fish catching and fish farming with export potential via air cargo, using a SWOT analysis, it can be summarised as follows: strengths include good natural conditions, high quality, high price and speed in international business. Weaknesses include dependence on flight conditions and uncertainty in the quota system. Opportunities include growing demand and increasing potential supply in the fish farming industry. Finally, the threats include issues such as competition from fish farms

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<td>Good natural conditions for fishing and fish farming</td>
<td>Depends on flight conditions</td>
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<td>High quality</td>
<td>Risk factor with fresh seafood</td>
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<td>High price</td>
<td>Fresh seafood is a very sensitive commodity for trade</td>
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<td>Fast way of doing business</td>
<td>Reliability can be easily lost</td>
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<td>Strengthens international business</td>
<td>Uncertainty in the quota system</td>
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<td>Distance is less important</td>
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<td>Growing demand</td>
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<td>Chilled fresh fish over longer distances</td>
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<td>Potential to reach high-end customers in upmarket restaurants</td>
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<td>Increased supply potential using geothermal water</td>
<td>High cost of production</td>
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Table 1

SWOT analysis of the potential for exporting fresh seafood from Iceland by cargo flights
around the world, and the fact that the market is sensitive because fresh seafood is sensitive. There are sagas in history about the Vikings who sailed across the Atlantic Ocean from Europe to America with a stopover in Iceland, which is reminiscent of airline passengers who also have a stopover in Iceland in modern times. Is history repeating itself in some ways? It is therefore interesting to explore the further development of exports, the interaction between fish exports and tourism exports, and whether fish exports can replace or complement passenger transport in the future.

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