

Economic Interventions Designed to Eliminate the Harvesting of Fin Whales in Iceland

I. Background

Whaling. Over the past thousand years, humans have hunted whales for food, fuel, and clothing. Throughout much of the 20th century, modern industrial whaling fleets, which allow the crew to harvest and process their catch, almost wiped out global populations of blue whales, right whales, and fin whales. However, after the International Whaling Commission's 1986 moratorium on whaling, rates of commercial whaling significantly decreased and whale populations are rebounding¹. However, three nations continue to commercially harvest whales: Japan, Norway, and Iceland.

Whaling vs. Whale-Watching in Iceland. Nowhere is the difference between a tradition of harvesting whales and a modern culture of appreciation for marine mammals more apparent than Iceland. Iceland has a small fleet of commercial whalers primarily hunting abundant minke and vulnerable fin whales out of Reykjavik Harbor, Iceland's capital and most populous city, while in recent years, tourism in Iceland has significantly increased. One of the more popular activities in Reykjavik has been whale watching tours, which depart from the same harbor as commercial whaling boats and often require passengers to pass by small kiosks selling whale sushi². This creates a situation where two industries are competing to provide the same good, however, the whale watching industry values fin whales *alive* and the whaling industry values fin whales *dead*.

II. The Environmental Problem

The Icelandic whaling industry seeks to meet consumer demand for fin whale meat, while the whale-watching industry seeks to meet consumer demand to observe, learn about, and photograph fin whales. Whale watching excursions facilitate life-changing wildlife encounters for the general public, providing a significant environmental benefit by recruiting these passengers as potential environmental activists. The presence of whaling operations and the knowledge that these same whales that passengers are paying to see are being hunted devalues the whale-watching experience and reduces the possibility of these passengers increasing their environmental activism. Therefore, the existence of Iceland's commercial whaling industry and its close proximity to whale-watching excursions is an environmental problem that requires an intervention.

III. Whaling: market demand for whale meat

To better understand the market value of a whale, either alive or dead, it's worth briefly examining the market history of whaling. In the 19th century there was thriving market demand for all kinds of whale parts: the spermaceti in sperm whales was used as lamp oil; the baleen in humpback whales was used to make women's skirts; and the blubber from right whales was used as fuel³. Meeting the market demand for these products greatly reduced the supply of whales, though the whaling market largely collapsed because these products were easily substitutable; the demand for whale

fuel dropped precipitously once kerosene was discovered as a cheaper, cleaner, and safer alternative fuel source⁴.

Market demand for whale meat skyrocketed in Japan after World War II when Japan's supply chains were decimated and they needed an abundant source of protein. Whale meat provided an easy solution, and to this day, Japan remains the primary global market for whale meat. This market demand is largely supplied by commercial whaling ships from Japan and Iceland, which often harvest fin whales⁵. Therefore, there is a market demand for fin whales supplied by Icelandic whalers, which generates environmental harm.

IV. Whale-watching: non-market use value of fin whales

The Icelandic government is in the best position to implement an intervention to eliminate the commercial harvesting of fin whales. While they could easily pass a law banning whaling, it is more sensible to first assess the non-market use value of a fin whale.

Tourists are not paying whale-watching operators to provide them with the body part of a whale; they are paying for the experience of observing whales in their natural habitat. In this case, fin whales are a valuable commodity, though this value cannot be directly measured within a market (since consumer demand is for an experience, not a whale). Therefore, there is a non-market use demand for fin whales supplied by Icelandic whale-watching excursions, which can be obtained using one of two different methods: stated preference and revealed preference.

Stated preference method. The stated preference method would entail surveying whale watching operators and/or their passengers to identify how much they value the existence of a single fin whale. However, few individuals have a reference point for placing a dollar value on a fin whale.

Revealed preference method. The revealed preference method entails analyzing the market for whale watching excursions, and is the better method. The revealed preference value of a single fin whale can be obtained by performing the following steps (*note that these figures are theoretical*):

- i. Analyzing the price of a single ticket for each whale watching excursion, and the average number of passengers and trips to estimate the total income of the whale watching industry. Let's assume that this figure is \$10 million.

- ii. Quantify how many trips the industry operates in a single year. Let's assume that this figure is 3000 (5 companies operating 2 trips/day for 300 days/year), then each trip brings in \$3,333. Assuming each trip sees an average of 3 whales, the value of seeing one whale on a trip is \$1,111.

- iii. Assuming that some of these whales are especially charismatic and are observed at least once a week, a single whale could be worth over \$50,000 annually. Given that fin whales reach physical maturity at approximately 25 years of age⁶, a single fin whale could generate over \$1.25 million over the course of its life.

This would provide the government political cover for any subsequent intervention designed to reduce whale harvestings. If the market value of a fin whale is approximately \$100,000, the government could argue that fin whales are worth 10x more alive than dead.

Armed with the approximate non-market use value of a fin whale, the Icelandic government can now implement one of three economic interventions designed to reduce the environmental harms caused by Iceland's commercial harvesting of fin whales.

V. Interventions

Intervention I: Tax on fin whales (attack the supply curve). If the government study finds that fin whales are worth \$50,000 annually, they can use this figure to propose a tax on harvesting fin whales to increase the price of supplying harvested fin whales. The government could implement a tax that results in an equivalent valuation of the fin whale (i.e. if the non-market use value of a fin whale is \$50,000 and the market value of a fin whale is \$15,000, then the government should institute a \$35,000 tax to properly value the fin whale in market). This \$35,000 could prove prohibitive to whalers, who would quickly exit the market to avoid bankruptcy. Should some whalers choose to pay the tax and continue whaling, the \$35,000 per whale should be reinvested in a capital stock to ensure that the value obtained from the non-renewable resource (since fin whales take so long to reproduce) is not spent, and, rather is invested such that the value obtained from harvesting non-renewable resources is passed down to future generations.

Intervention II: Tariffs on fin whales (attack the demand curve). The second intervention implements a tariff on the export of fin whales. While a tax would collect a fee for each fin whale *harvested*, a tariff would collect a fee for each fin whale *exported*. Since the demand for fin whales almost exclusively comes from Japan, the government could enact a \$35,000 tariff on each fin whale exported to the Japanese market. While this could increase domestic demand for fin whale meat since there would be a glut of supply, it's unlikely that a market for fin whales would suddenly take off, even if it were dirt-cheap.

This tariff would not be paid by the commercial whaling companies, rather, it would be paid directly to the Icelandic government by the organizations importing the whale meat to Japan. This would significantly increase the price of whale meat in Japan since the importers would have to recoup their costs, these increased prices would reduce the demand for whale meat. As the demand for whale meat decreases, so will its supply—reducing the number of fin whales harvested.

Intervention III: Fin whale permits. A third option to reduce fin whaling in Iceland is to target the permitting system. Iceland issues special permits to whales each year, and it is currently unclear whether the market for these permits is open or not. The government could open up the market for permits to include entities other than commercial whaling companies to bid: in these cases, environmental non-governmental organizations could enter the market for permits and place a bid for some or all of the permits.

This could have two effects: first, the ENGOs could purchase all of the permits and drive the whalers out of the market, eliminating the harvest of fin whales. Second, the ENGOs could drive up the price of obtaining a permit. This would increase the market value of a fin whale, increase the

value of the funds collected from the harvest of each fin whale, and make it more expensive for fin whale suppliers to operate. All of these effects would reduce the equilibrium quantity of fin whales demanded. All of the profits reaped from these permits should be funneled into capital resources to ensure that the market for fin whales, a non-renewable resource, is sustainable.

IV. Conclusion

Iceland is a unique place where the market demand and non-market demand for fin whales intersect. The market demand for fin whale meat negatively affects the non-market demand for observing fin whales, which is a significant environmental problem. The Icelandic government is well-positioned to implement three different economic interventions to reduce or eliminate the commercial harvesting of fin whales: taxing the suppliers of fin whales, implementing tariffs on fin whales exported to Japan, and opening up the permitting system for harvesting fin whales to environmental NGOs. All three of these interventions would reduce or eliminate the commercial harvesting of fin whales, which would increase the environmental benefits derived from an Icelandic whale watching excursion.

References

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