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NAFC Marine Centre
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Whitefish Landings in Shetland and the impact of the electronic auction

Ian R. Napier

19th May 2017



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19th May 2017

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Summary

Whitefish landings in Shetland have exhibited large fluctuations over the last few decades, but have increased substantially – more than doubling in weight and quadrupling in value – since 2003, when the electronic auction was introduced. That reversed the general decline in whitefish landings seen before 2003. A number of other parameters relating to whitefish landings in Shetland, including Shetland's share of Scottish whitefish landings, and the quantity of whitefish landed in the islands by non-Shetland boats, have also increased markedly since 2003.

While it is not possible to prove a direct 'cause-and-effect' link, these results suggest that the introduction of the auction, and the associated efforts to promote Shetland's fish markets, have had a substantial positive effect on whitefish landings in the islands.

Introduction

An analysis of available data on whitefish landings in Shetland over the last few decades has been carried out at the request of the Shetland Fish Producer's Organisation (SFPO) and Shetland Seafood Auction Ltd. A particular aim of the analysis was to investigate what, if any, effects the introduction of the electronic auction for whitefish in Shetland had had on whitefish landings in the islands.

Data Sources

The analysis utilised data on the weight and value of whitefish landings from two main sources:

- ◆ data supplied by the Marine Analytical Unit of Marine Scotland Science, part of the Scottish Government's Marine Scotland department, and the published *Scottish Sea Fisheries Statistics*¹.
- ◆ data published by the UK Marine Management Organisation (MMO)².

These data include whitefish landed in Shetland from 1980 onwards. Not all whitefish landed in Shetland is sold through the local fish markets; some (perhaps up to 10 to 15% of the total) is shipped directly south to Mainland buyers or processors.

Some additional data for years prior to 1980 was obtained from *Shetland in Statistics*, published annually by the Shetland Islands Council since 1972.

¹ www.gov.scot/Topics/Statistics/Browse/Agriculture-Fisheries/PubFisheries

² www.gov.uk/government/collections/monthly-uk-sea-fisheries-statistics

The Electronic Auction

The 'electronic auction' is a computerised 'Dutch Auction' which is used to sell all whitefish landed for sale through Shetland's whitefish markets (in Scalloway and Lerwick).

The auction is operated by Shetland Seafood Auctions Ltd., which is a partnership of local organisations including the Shetland Fish Producer's Organisation, Lerwick Port Authority, and LHD Ltd. The electronic auction was introduced in August 2003, replacing the previous 'shout' auctions held on the market floors.

At the same time, significant efforts were made by various organisations, including Shetland Seafood Auctions Ltd., Lerwick Port Authority, and Shetland Islands Council to promote the Lerwick and Scalloway fish markets to fishing boats from other parts of Scotland and to fish buyers outside Shetland.

How the Auction Works³

Fishing boats intending to land their fish in Shetland's whitefish markets report their catches to fishing agents LHD Ltd. the day before they land. That information is posted on the auction's web page⁴, giving buyers up to 18 hours advance notice of what will be available on the following day's market.



Boats generally land their fish at the markets in Scalloway or Lerwick from early afternoon until just after midnight. Fish is also regularly landed at Cullivoe (Yell), and sometimes elsewhere, and transported to the Scalloway or Lerwick markets by road.

The fish are normally landed in boxes containing about 45 kg of fish, although for some species the quantity per box may be lower. The boxes are laid out on the floor of the markets organised by boat, species and size grade.

³ Modified from: www.shetlandauction.co.uk/The-Auction1. All pictures courtesy of Shetland Seafood Auctions Ltd.

⁴ www.shetlandauction.co.uk/Landings

Certain high-value species (such as monks and megrim) are graded by auction company staff to ensure that grades and box weights are accurate. As a regulatory measure the weights of a sample of boxes of all species are also checked. This work has to be finished by 6.00am.

Auctioneers then catalogue each boat's fish by inputting the details to a hand-held electronic device. These data are wirelessly transferred to the main database and used to generate a catalogue which buyers can print or view online from 7.00am.

Registered local buyers can view the fish available for sale from 6.00am each morning and make contact with over 200 companies in the UK, France and Spain to plan their purchasing. Buyers can also buy fish remotely, bidding online from their own offices (anywhere in the world).

The electronic auction begins at 8.00am every weekday and takes place in an auction room, situated above the Lerwick fish market which has seating for 23 buyers.

A large bidding "clock" displays a description of each lot on offer and a price per kilo which is initially set higher than the lot is expected to fetch. The price reduces in 1p per kg steps until a buyer stops the clock by pressing a button on their keypad.



the buyer's name appears on the clock to confirm the price and the quantity of the transaction.

The boxes of fish are then sorted by buyer and loaded into refrigerated trucks for onward transport to their destination. For remote buyers, transportation is arranged by the auction company.

Whitefish Landings in Shetland

Over the last 40 years the weight of whitefish landed in Shetland has fluctuated markedly (Figure 1). Landings generally increased to a peak in the mid-1980s, but then fell by almost two-thirds (63%) between 1987 and 2003.

Since 2003, the year that the electronic auction was introduced, landings have generally increased, more than doubling from 2003 to a new peak in 2016, only slightly below that seen in the mid-1980s.

Following a period of increase, the value of whitefish landings remained relatively unchanged from the late 1980s to the early 2000s, but sank to a low in 2003, the year that the electronic auction was introduced. The value of landings has increased rapidly since then, increasing almost five-fold to 2016.

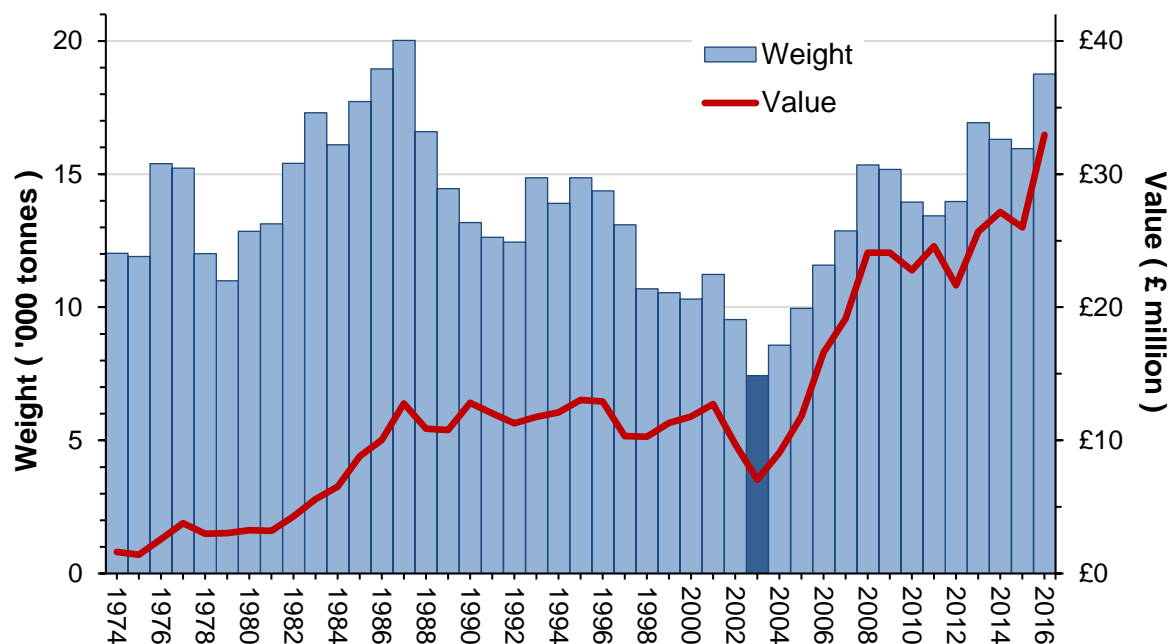


Figure 1 The weight (bars) and value (line) of whitefish landed in Shetland annually from 1974 to 2016. The year of introduction of the electronic auction (2003) is highlighted. (Live weight landed by UK fishing boats pre-1990; by all boats post-1990.)

Average Unit Price of Whitefish

The average unit price of whitefish landed in Shetland (price per kg) has increased from about 12p per kg (live weight) in the early 1970s to more than £1.50 per kg over the last decade, a more than 12-fold increase (Figure 2).

The average unit price increased fairly steadily through the 1970s and 1980s, reaching almost £1.00 per kg by 1990. However, the price stagnated through the 1990s and the average price in 2003, the year the electronic auction was introduced, was less than it had been in 1990. The average price increased relatively rapidly after 2003, reaching a peak of £1.83 per kg in 2011. The average price dipped for a few years thereafter but has increased again over the last few years, reaching its second highest ever level in 2016.

The average unit price of whitefish landed in Shetland increased by almost two-thirds (63%) in the decade after the introduction of the electronic auction, compared to only a 9% increase in the decade before.

(It should be noted that the average unit price of whitefish reflects the species composition of the landings as well as the unit prices of individual species. An increase in the proportion of a more valuable species in the landings will result in an increase in the average whitefish price, even if the prices of the individual species do not change.)

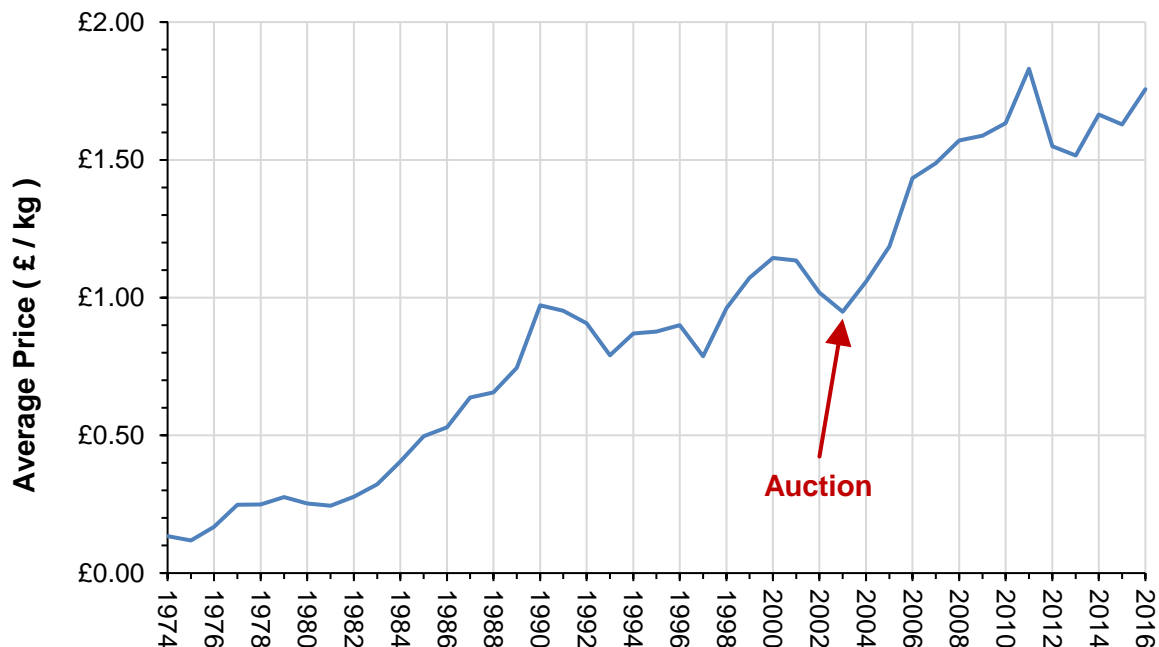


Figure 2 The annual average price (£ / kg live weight) of whitefish landed in Shetland from 1974 to 2016. The year of introduction of the electronic auction (2003) is indicated. (Live weight landed by UK fishing boats pre-1990; by all boats post-1990.)

Composition of Landings

Whitefish landings in Shetland have become much more diverse over the last 35 years. In the early 1980s landings were dominated by haddock and whiting, which together accounted for more than 80% of the total value of landings (Figure 3, Figure 4, Figure 5).

The dominance of haddock and whiting declined rapidly through the 1980s and from 1990 onwards these species accounted for about one-third of landings (Figure 3, Figure 4). Monks and megrim, in contrast, increased from only a few per cent of landings in the early 1980s and have also averaged about one-third of the total since the early 1990s.

These changes were associated with changes in the Shetland whitefish fleet during the 1980s, including the entry to the fleet of new, larger and more powerful trawlers, capable of working over rougher sea-beds and into deeper water where a wider variety of species are likely to be caught. Prior to the 1980s the fleet had been dominated by boats using seine nets or light trawls, which were much more limited in where they could fish.

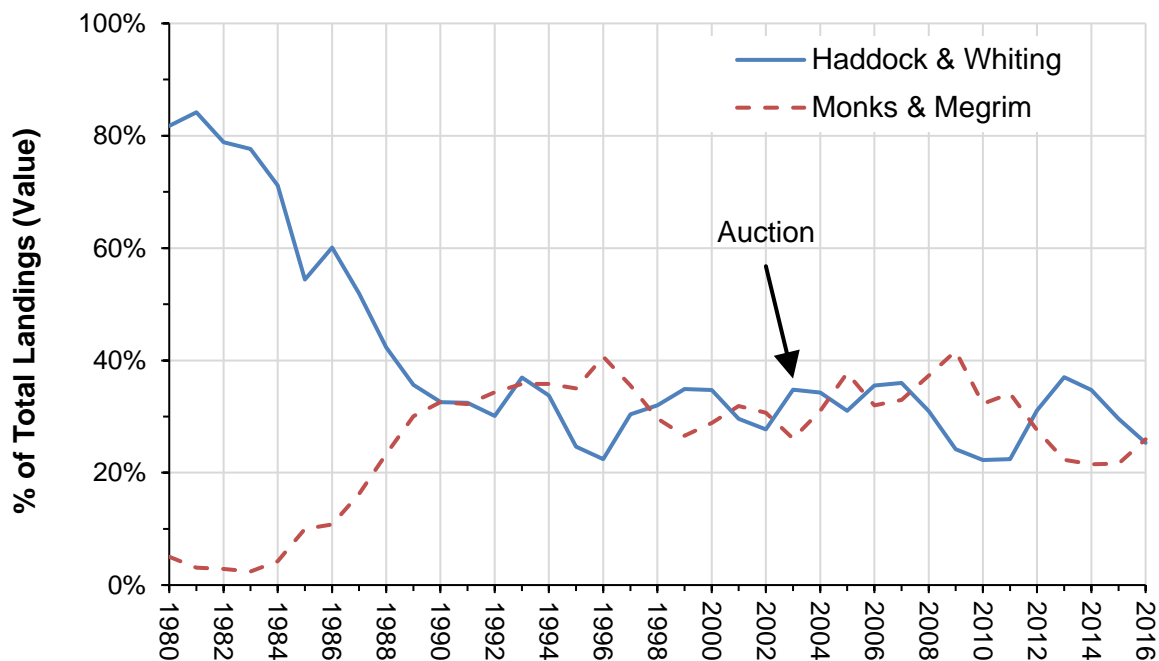


Figure 3 The value of landings of haddock and whiting, and of monks and megrim, as proportions of total value of all whitefish landed in Shetland from 1980 to 2016. The year of introduction of the electronic auction (2003) is indicated. (Landings by UK fishing boats pre-1990; by all boats post-1990.)

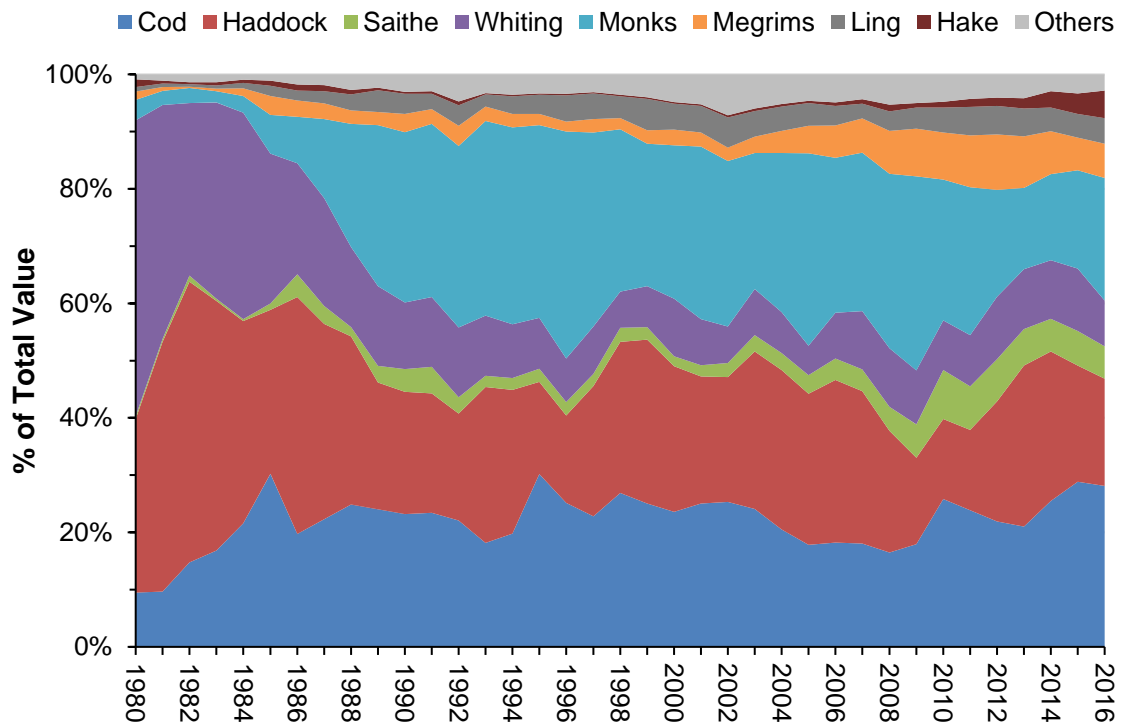


Figure 4 Changes in the composition of whitefish landings in Shetland from 1980 to 2016. (Values of principal species as % of total value of all whitefish landed.)

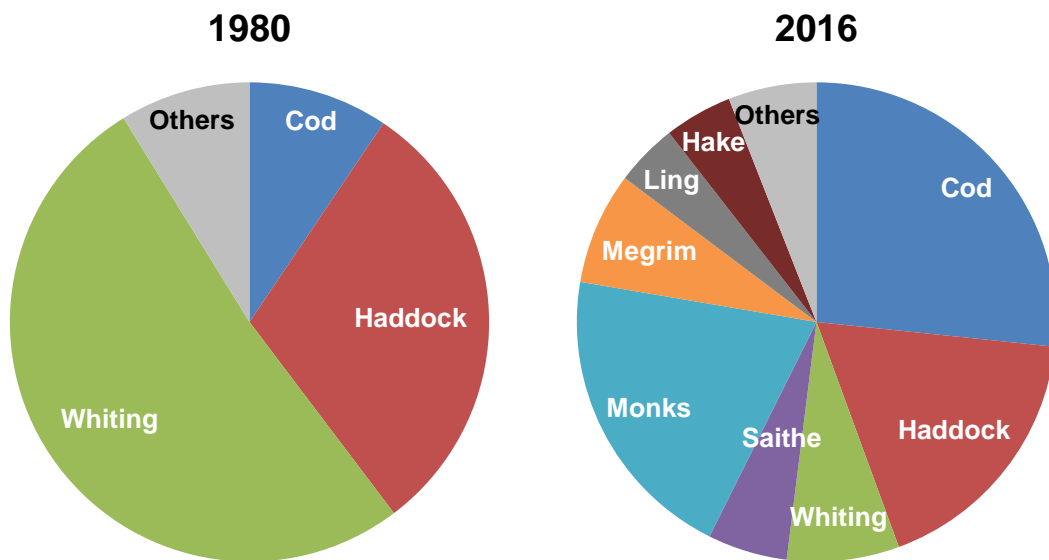


Figure 5 The composition of whitefish landed in Shetland in 1980 (left) and 2016 (right). (Values of principal species as % of total value of all whitefish landed.)

Proportion of Scottish Landings in Shetland

During the 1980s and 1990s, and up until about 2003, about 6% (by weight and value) of all the whitefish landed in Scotland were landed in Shetland (Figure 6).

The proportion landed in Shetland increased rapidly after the introduction of the electronic auction in 2003, with the shares of the weight doubling and the share of the value tripling in the five years between 2003 and 2008 (Figure 6).

As a result, the average proportion of Scottish whitefish landings made in Shetland over the last decade (14% by weight) was more than double that in the decade prior to the introduction of the electronic auction (6%) (Figure 7). Peterhead's share of Scottish whitefish landings also increased over this period, but by a much smaller amount (less than one-third).

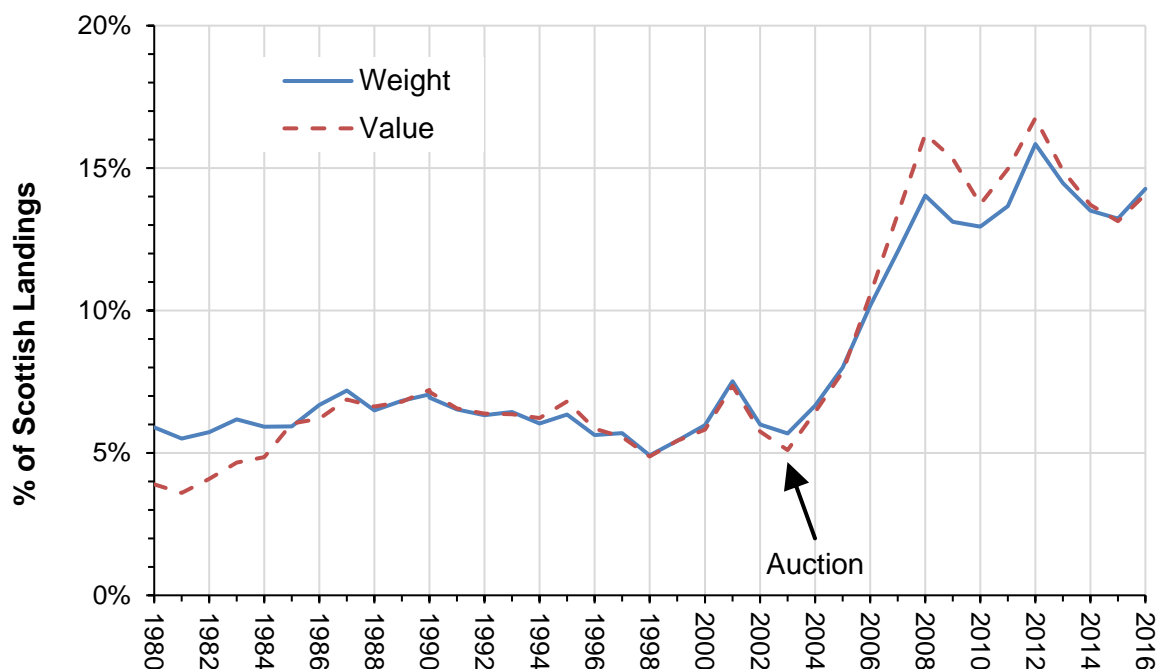


Figure 6 The weight (solid line) and value (dashed line) of whitefish landed in Shetland annually from 1980 to 2016 as proportions (%) of the total landings in Scotland. The date of introduction of the electronic auction (2003) is indicated. (Live weight landed by UK fishing boats pre-1990; by all boats post-1990.)

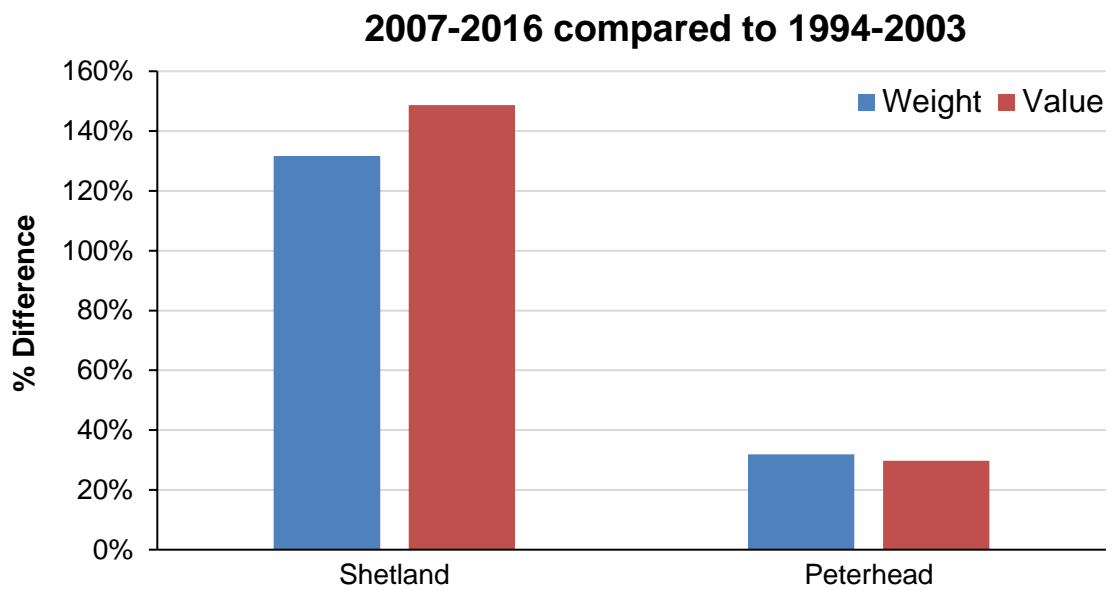


Figure 7 The differences in Shetland's and Peterhead's average shares of the weight and value of whitefish landed in Scotland over the decade prior to the introduction of the electronic auction (1994 to 2003) and the last decade (2007 to 2016).

Trends in Landings

The weight of whitefish landed in Scotland has generally declined over the last 30 years (Figure 8). Since 2010 the weight of landings has been less than half (42%) of what it was in the 1980s.

Until 2003, the weights of whitefish landed in Shetland and in Peterhead followed the same general trend as the landings in the whole of Scotland, declining by more than half from a peak in the mid-1980s (Figure 8).

Since 2003 (the year that the electronic auction was introduced) the weight of whitefish landed in Shetland has increased substantially (Figure 8), more than doubling between 2003 and 2008. As a result the weight of whitefish landed in Shetland annually over the last decade was only slightly less than in the 1980s (by about 6%).

In contrast, the weights of whitefish landed in Peterhead and in the whole of Scotland over the last decade have remained less than half of what they were in the 1980s. Also notable is the demise of Aberdeen as a whitefish landing port.

The contrast is even greater in relation to the value of landings (Figure 8): Since 2003 the value of whitefish landed in Shetland has increased almost five-fold, and the annual value of landings over the last decade was more than three times greater than in the 1980s.

In contrast, although they have also increased since 2003, the values of whitefish landed in Peterhead and in the whole of Scotland annually over the last decade were only slightly greater than in the 1980s (by 16% and 27%, respectively).

What this shows is that Shetland has done much better, relatively, as a whitefish landing port than other Scottish ports.

This is highlighted by comparing the average weights and values of whitefish landed annually over the last decade with those in the decade prior to the introduction of the electronic auction (Figure 9). While the average weights of landings in Peterhead and the whole of Scotland over the last decade were less than in the decade prior to the introduction of the electronic auction (by 28% and 43%, respectively), the average weight of landings in Shetland was higher (by 32%).

And while the average value of landings in Peterhead and the whole of Scotland had changed by only small amounts (a 15% increase and a 10% decrease respectively), that in Shetland had more than doubled (Figure 9).

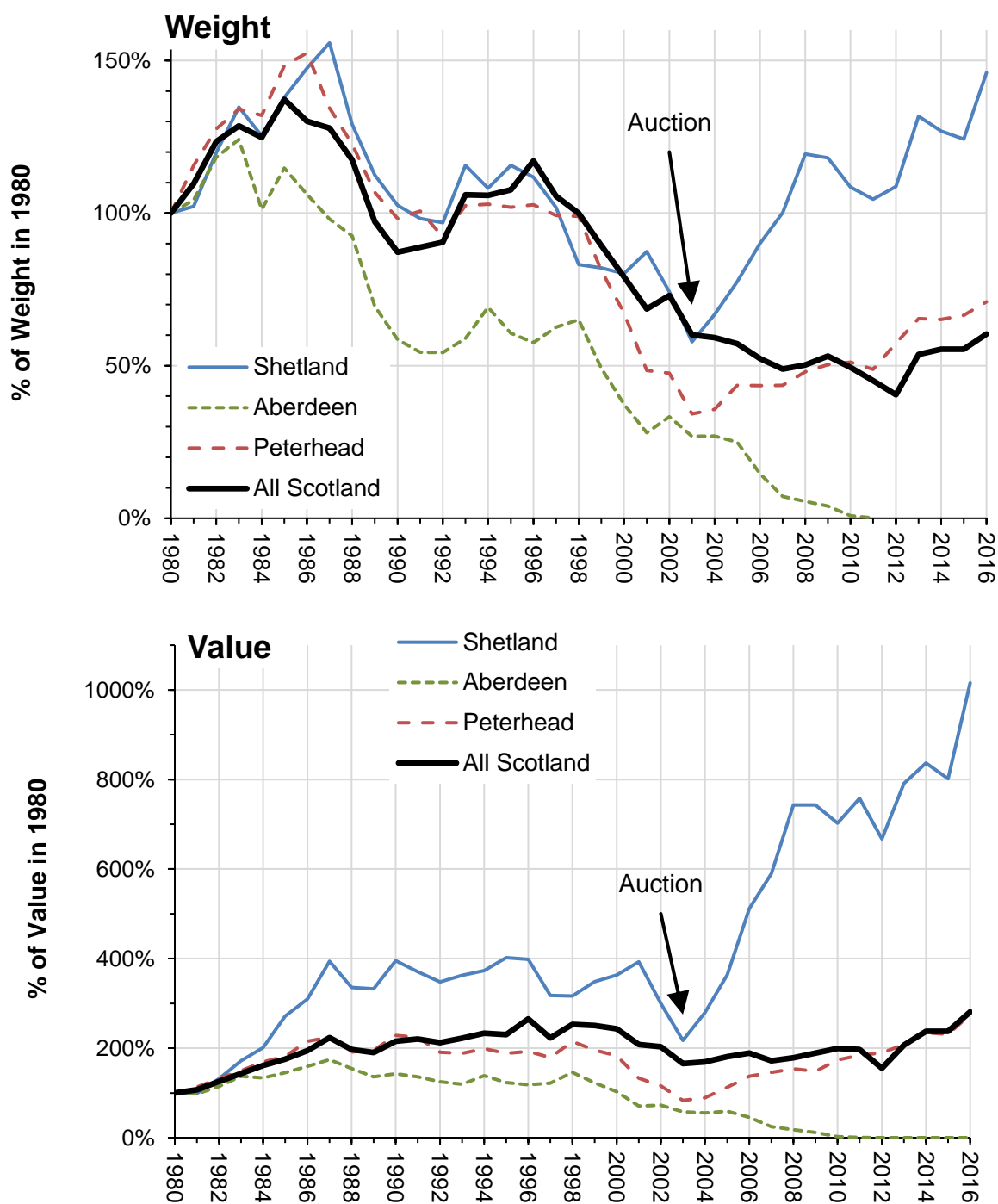


Figure 8 The weights (top) and values (bottom) of whitefish landed annually in Shetland, Aberdeen, Peterhead and all Scotland from 1980 to 2016 as proportions (%) of the weight or value in 1980. The date of introduction of the electronic auction (2003) is indicated. (Landings by UK fishing boats pre-1990; by all boats post-1990.)

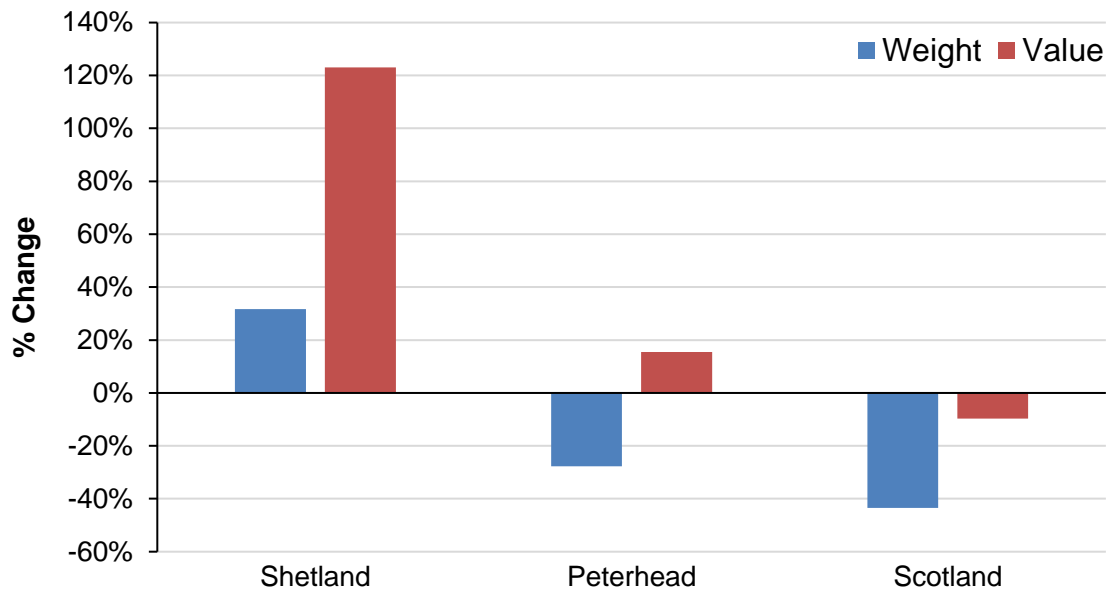


Figure 9 The differences in the average weights and values of whitefish landed annually in Shetland, Peterhead and all of Scotland over the last decade (2007-2016) compared to the decade prior to the introduction of the electronic auction (1994-2003). (Difference in average weight / value as % of averages in 1994-2003. A negative % value indicates that the weight / value in 2007-16 was less than in 1994-2003).

Average Price of Whitefish Landed in Shetland Compared to Rest of Scotland and Peterhead

In the early 1980s average whitefish prices in Shetland were well below those in the Rest of Scotland and in Peterhead (Figure 10). During the later 1980s and early 1990s whitefish prices in Shetland were generally similar to those in the rest of Scotland and somewhat higher than those in Peterhead. From the mid-1990s onwards, however, the price differential eroded and by 2003 the average price of whitefish landed in Shetland was well below that in the rest of Scotland and slightly below that in Peterhead.

The price differential grew markedly following the introduction of the electronic auction (Aug' 2003) although it has eroded again since 2009.

(It should be noted that differences in the average prices of whitefish reflect not just differences in the value of individual species but also differences in the species composition of landings.)

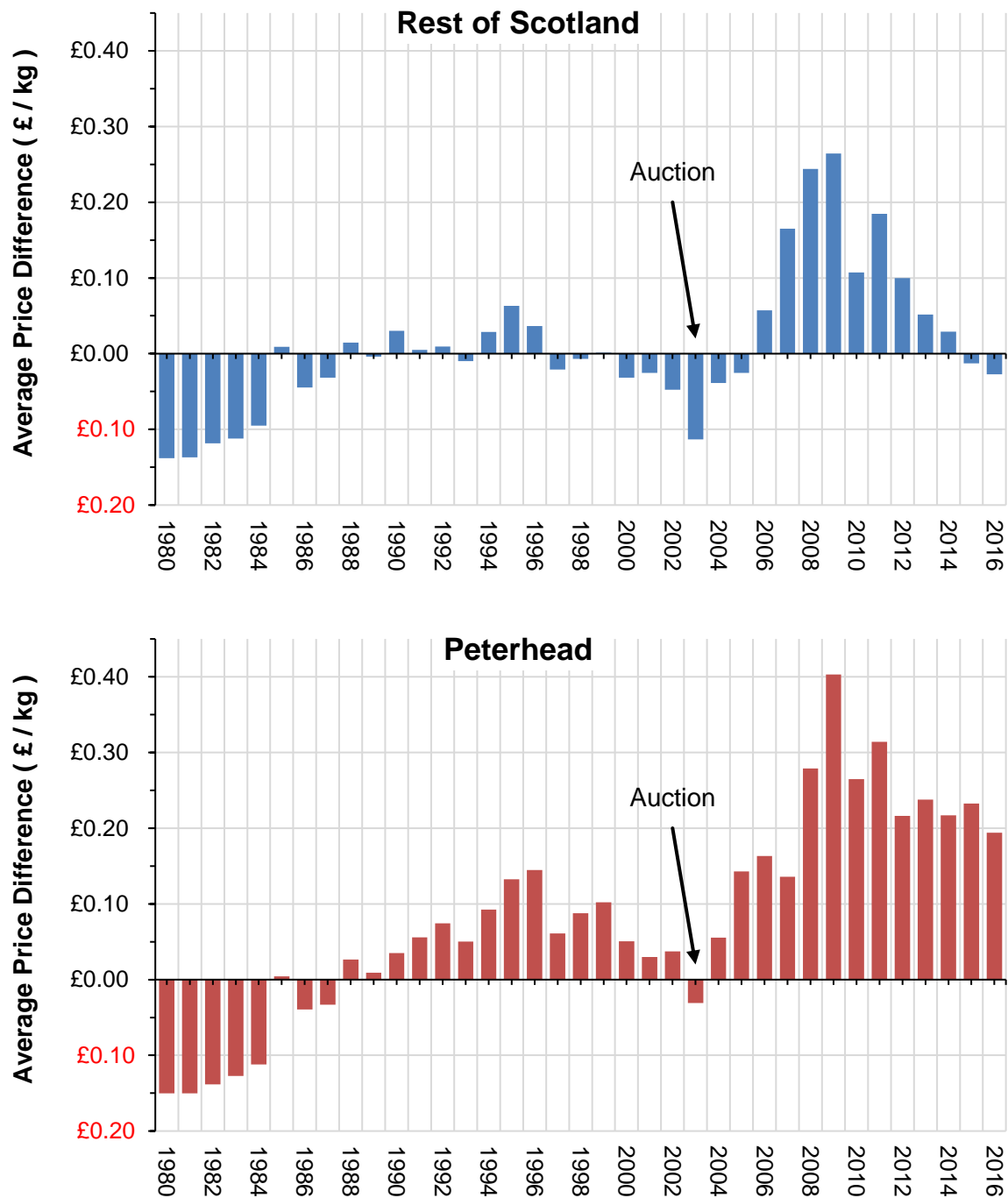


Figure 10 Differences between the annual average prices (£ / kg live weight) of whitefish landed in Shetland and those in the Rest of Scotland (top) and Peterhead (bottom). The date of introduction of the electronic auction (2003) is indicated. (Landings by all fishing boats. Average price in Shetland minus the average price elsewhere; a value greater than zero indicates that the price in Shetland was higher. 'Rest of Scotland' includes Peterhead.)

Whitefish Landings by Shetland Boats

During the 1970s and 1980s 'tripping' by Shetland boats to land at mainland Scottish ports including Aberdeen and Peterhead was common (because prices were believed to be better at those markets than in Shetland). Although the proportion of the Shetland whitefish fleet's landings made outside Shetland was low in 1990 (the first year these data are available) it increased to as much as a third (by weight) in the late 1990s and early 2000s.

After the introduction of the electronic auction (in 2003) the proportion of the Shetland whitefish fleet's landings made outside Shetland fell sharply to almost zero in 2008. Although Shetland boats continue to land a small proportion of their catch outside Shetland (about 10% by weight) this now reflects local boats fishing further afield, for example off North-East England and in the English Channel, and landing at ports in those areas. The practice of 'tripping' from Shetland to land in mainland Scottish ports no longer takes place.

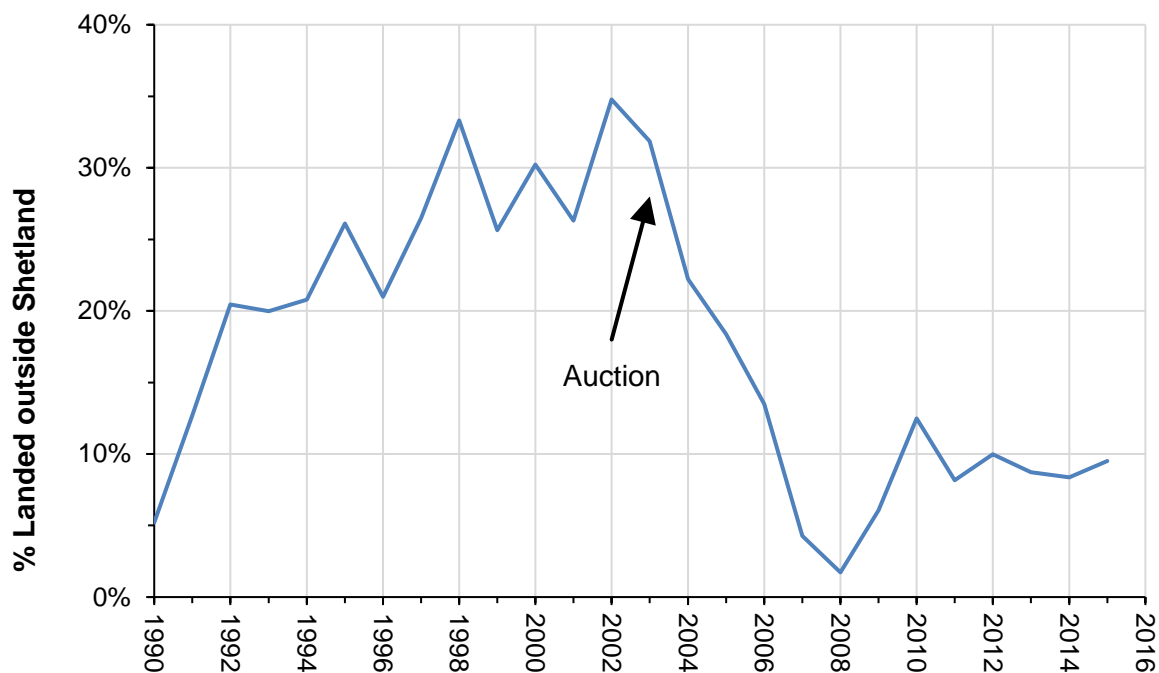


Figure 11 The proportion (% live weight) of the whitefish landings by Shetland fishing boats made outside Shetland annually from 1990 to 2015. The date of introduction of the electronic auction (2003) is indicated. (Live weight landed.)

Landings in Shetland by Non-Shetland Boats

Prior to the introduction of the electronic auction (in Aug' 2003) non-Shetland fishing boats landed about 2,000 tonnes of whitefish in Shetland each year, on average (about 17% of the total), although there had been a slight general decline since 1990.

After the introduction of the electronic auction (in 2003) the weight landed by non-Shetland boats increased substantially, more than tripling to 2009 when it accounted for one-third of the total (34%). Although the weight landed by non-Shetland boats has decreased since then, it remains more than double that prior to 2003.

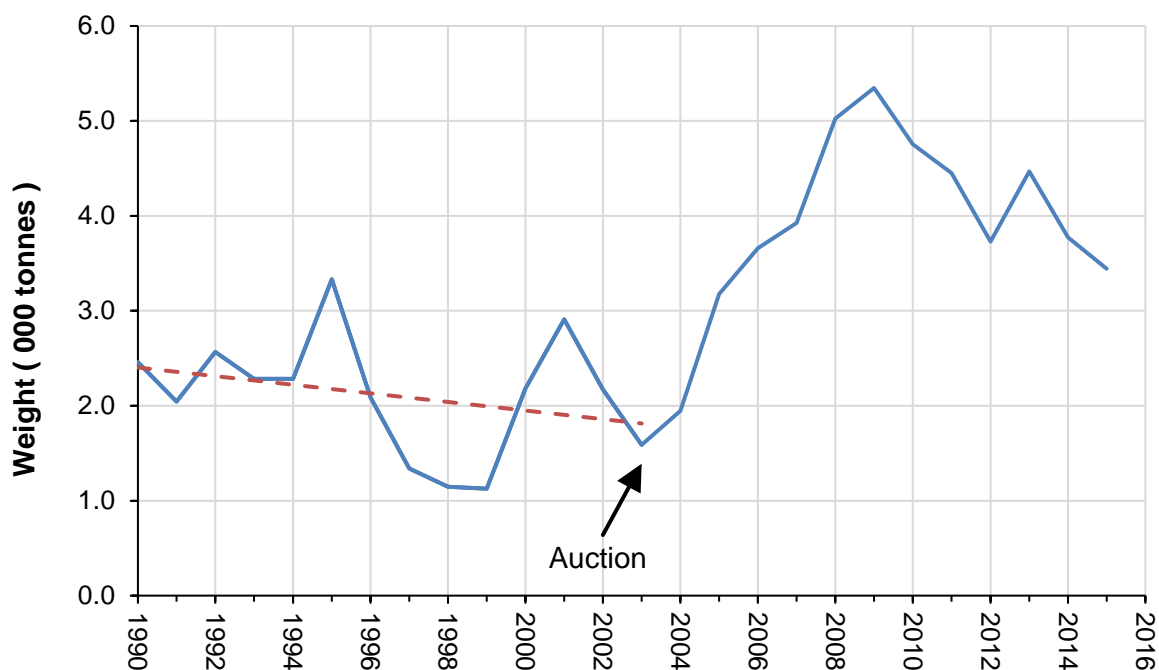


Figure 12 The weight of whitefish landed in Shetland by non-Shetland boats annually from 1990 to 2015. The date of introduction of the electronic auction (2003) is indicated. (Live weight landed. Includes fish landed in Shetland but not sold through the local markets. A straight trend line is fitted through the years from 1990 to 2003.)

Conclusions

The volume of whitefish landed in Shetland, and other associated parameters, have exhibited large fluctuations over the last few decades. However, a number of general trends are apparent:

- ◆ Whitefish landings fell by two-thirds between the mid-1980s and 2003, but have increased substantially since then, more than doubling in weight and quadrupling in value.
- ◆ The average unit-price of whitefish landed in Shetland changed little throughout the 1990s, but increased by almost two-thirds in the decade after 2003.
- ◆ During the 1980s and 1990s about 6% of the whitefish landed in Scotland (by weight and value) was landed in Shetland. After 2003 these proportions increased rapidly, with Shetland's share of the weight doubling and the share of the value tripling. The increases in the weight and value of whitefish landed in Shetland after 2003 substantially exceeded those seen in Peterhead.
- ◆ The general decline in whitefish landings in Shetland after the mid-1980s mirrored similar trends in landings in Peterhead and in the rest of Scotland. But while landings in Shetland increased substantially after 2003, similar recoveries were not seen in Peterhead or in the rest of Scotland.
- ◆ Since 2003 the differences between the average prices of whitefish landed in Shetland and those in the Rest of Scotland and Peterhead increased substantially in Shetland's favour.
- ◆ By the late 1990s and early 2000s the Shetland whitefish fleet was landings as much as one-third of its catch outside Shetland through the practice of 'tripping' to Mainland Scottish ports. After 2003 this proportion fell sharply to almost zero and the practice of 'tripping' to land in Mainland ports came to an end.
- ◆ During the 1990s non-Shetland boats landed about 2,000 tonnes of whitefish per year in Shetland. After 2003 this weight more than tripled.

It is clear from the above that many previously negative trends in whitefish landings in Shetland (such as falling landings) reversed after 2003 and have improved substantially since then. While it is not possible to prove a direct 'cause-and-effect' link, the coincidence of this with the introduction of the electronic auction in 2003 suggests that the introduction of the auction, and the associated efforts to promote Shetland's fish markets, have had a substantial positive effect on whitefish landings in the islands.

