

Section 6

The global ex-vessel fish price database

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The database described here provides the ex-vessel price, and when combined with the spatially allocated catches, the landed values of fish caught, by major groupings of species. Besides being economic indicators in their own right, the ex-vessel price and landed value of fish are essential pieces of information needed to help manage fishery resources sustainably to achieve long-term economic and social benefits without depleting the resource base. This is because the financial gains from catch when it is landed is one of the primary motivators for fishers to go fishing. Until the development of the current database, there was no single database available publicly where interested members of the public, researchers and managers can easily find landed values of the world's major commercial fish catches. The Food and Agriculture Organization of the United Nations (FAO) compiles product and processed fish prices, but not ex-vessel prices, from which landed values are calculated.

Data collection and compilation

Ex-vessel price data for the world's commercial species were compiled from published sources, and the database was first described by Sumaila *et al.* (2007), and updated by Swartz *et al.* (2013). The aim was to add value by taking the data already available but widely scattered to a higher level, one that will permit more policy-relevant ecological and economic analysis of fisheries. We concentrated, in the first instance, on data for the major fishing countries on each continent. In this way, we collected data that covered the major fisheries of the world, while putting in place a database structure that allows continuous inclusion of data for more countries over time.

The database runs from 1950 to the year most recently represented by FAO marine fisheries catches, i.e., from the year the FAO started collecting and compiling global fish catch data. It is worth noting that many analyses of global fisheries begin from this year.

We searched all available sources of ex-vessel price data, including the FAO, the statistics office of the OECD, the European Commission, Fisheries and Oceans Canada, the US National Marine Fisheries Service, Statistics Norway, Southeast Asia Fisheries Development Centre (SEAFDEC) and FAO-Globefish, plus libraries, the web and the published literature. We also worked through our partners from all over the world to help us search for data through on-the-ground data collection efforts.

Filling the data gaps

As would be expected, a substantial portion of the data matrix could not be completed with available data. Therefore, we developed an assignment procedure to help fill the gaps.

As described in Sumaila *et al.* (2007), the collected data from published sources were used with an interpolation process to ensure that all catch records from our global catch database, regardless of taxon, country, region and year, would have assigned prices. Given that prices for most of the world's catches were available directly from the price database described above, it was possible to use a structured interpolation process to fill in missing cases using data from similar species, similar countries, etc. The general process of interpolation was one of replacing general prices with more specific ones where they were available. This process assumed that the type of animal (i.e., taxon) was the primary determinant of the price. Following this, in order of importance, were the country fishing and the year when the catches were reported. At each step in the interpolation process, the level of specificity in the documentation was recorded. If a more specific price for a catch record occurred in a subsequent step in the process, then the old price, and its record of specificity, was overwritten with the new price. In this way, all catch records recorded in the global database were matched with the most specific and relevant price recorded in the price database, or weighted averages of these (weighted by their individual specificity) when several prices were available. The original interpolation approach was improved by Swartz *et al.* (2012), which focused on the computation of annual average international prices for each species group, adjusted to domestic prices using the real exchange rate based on national purchasing power parity. Key advantages of the new approach are that it allows a larger number of reported prices to be used in the price estimation, and accounts for relative price level differences that exist between countries. A measure of the price specificity/applicability is computed for each taxon for which a landed value is presented. These measures are used to guide the priorities in further price data collection efforts.

The database

The primary data in the database are nominal ex-vessel prices as obtained, in most cases by dividing officially reported landed values by landings. Ex-vessel prices and landed values are presented in US\$ to allow a uniform basis for comparison. However, the starting point for the data is always local ex-vessel prices in local currency, which are converted into US\$ equivalents.

There are two parallel parts to the database, namely, 'nominal' and 'real' ex-vessel prices and landed values. The 'real' numbers were determined by using local consumer price indices (CPI, obtained from the World Bank) to convert local 'nominal' ex-vessel prices into 'real' ex-vessel prices using the year 2005 as basis. These are then converted into year 2005 US\$ equivalents.

References

- Sumaila UR, Marsden AD, Watson R and Pauly D (2007) A global ex-vessel fish price database: construction and applications. *Journal of Bioeconomics* 9: 39-51.
- Swartz W, Sumaila UR and Watson R (2013) Global ex-vessel fish price database revisited: A new approach for estimating 'missing' prices. *Environmental Resource Economics* 56: 467-480.