Environ Resource Econ
DOI 10.1007/s10640-012-9611-1

Global Ex-vessel Fish Price Database Revisited: A New Approach for Estimating 'Missing' Prices

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Accepted: 30 August 2012

Abstract The Global Ex-vessel Fish Price Database (Ex-vessel DB) reported in Sumaila et al. (J Bioecon 9(1):39–51, 2007) was the first comprehensive database that presents average annual ex-vessel prices for all commercially exploited marine fish stocks by nationality of the fishing fleet. It contained over 30,000 reported price items, covering the period from 1950 to the present, and supplemented missing prices with estimates based on prices from a different year, species group or fleet nationality. This paper describes a revised missing price estimation approach, 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. Our new approach should improve the estimates in regions where reported prices are scarce or non-existent by linking domestic prices to the trends in international prices. Our analysis, based on the revised ex-vessel price estimates (in real 2005 USD), shows that the global marine fisheries landings have generated total value of USD 4.2 trillion since 1950, including USD 100 billion in 2005.

Keywords Ex-vessel price · Landed value · Global marine fisheries

1 Introduction

The Global Ex-vessel Fish Price Database (Ex-vessel DB), described by Sumaila et al. (2007), was the first effort at creating a database that presented a complete list of type of fish and

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market specific annual average ex-vessel prices, i.e., the prices that fishers receive for their catch, or the price at which fish are sold when they first enter the seafood supply chain, for all commercially exploited marine fish stocks from 1950 to the present. Through their extensive search of publicly available, but widely scattered and incompatible, national and regional statistical reports and grey literature, Sumaila et al. (2007) accumulated over 30,000 records of reported ex-vessel prices in 35 countries and for 875 species groups.[1] However, despite the large number of records collected, catch records (i.e., year/country/taxa) with a matching price accounted for only 18 % of the total catch, and so the authors were compelled to devise a methodology for estimating ex-vessel prices for all unaccounted catches based on the available reported prices.

The database contains taxa-, country- and year-specific ex-vessel prices, and therefore, any estimation of missing prices, or 'filling the gap,' requires that prices from one taxon (or country or year) be transferred to another using various assumptions about how ex-vessel prices of fish relate across taxa, countries and years. When the database was designed, very little information was available as to the relationship of ex-vessel prices between taxa or between countries, particularly at the level applicable to the database. Consequently, reported prices within a country were selected to be most representative of the missing prices, and reported prices from the nearest year, or average prices from taxonomically related groups were used for estimating missing prices. While such an approach is quite sensible when dealing with small data gaps, it proved to be impractical in countries where reported prices were scarce. This is because under this approach, the majority of the estimated prices for such countries were anchored on a few data points from years that might not be representative of the market environment of the 'gap' years. As for countries for which no reported prices were available, the original Ex-vessel DB applied regional averages, and absent such averages being available, the global average was applied. Again, while the use of regional averages as a proxy for domestic prices is reasonable, the use of a broadly defined regional average (i.e., "Asia") or global average fails to account for relative price level differences that exist between countries. This limitation in the cross-country price estimation proved to be problematic, considering that the absence in the reported ex-vessel prices in many countries. While the ex-vessel price database of Sumaila et al. (2007) provided full coverage across the time period (i.e., at least one reported price for each of the years from 1950 to 2006 in the most updated version) and fairly adequate coverage across taxa (at least one reported price for 28 % of taxa recorded in the official marine fisheries catch, accounting for 71 % of the world's catch), the coverage across countries was limited (reported prices available for 16 % of the countries with reported marine fisheries catch, accounting for 43 % of the global total).

A database of this type, as rightly noted in Sumaila et al. (2007), requires updating and improving over time, both in terms of input data (i.e., by exploring additional sources and expanding the coverage of the recorded ex-vessel prices) and in terms of the price estimation methodologies (i.e., by modifying the underlying assumptions to address counter-intuitive results generated by the model). Over the past few years, the database has been utilized in various economic analyses of world's fisheries (e.g., Sumaila et al. 2010; Christensen et al. 2009; Sethi et al. 2010), and consequently many areas for improvements or amendments have been identified. This article, therefore, describes the second, updated, version of the Ex-vessel DB.

[1] It should be noted that *taxonomic group* refers to all levels of fish taxonomy, from species to order, including the ISSCAAP (International Standard Statistical Classification of Aquatic Animals and Plants) groups. This is because many fisheries statistics report catches as aggregated groups (e.g., flatfishes, sharks) and not necessarily at the species level.

Moreover, we combined the estimated ex-vessel prices with a geo-referenced marine fisheries catch database (Watson et al. 2004) to examine the spatial patterns of the marine fisheries values. Such analyses allowed us to identify regions of high commercial importance, as well as information on how the economic benefits derived from fisheries are distributed across countries, particularly in waters where domestic fishing fleets compete with foreign distant water fleets. Such analyses should, for instance, contribute to better understanding of the economic potentials of the world's coastal marine fisheries resources and assist coastal countries in improving their negotiating positions for granting fishing accesses to distant water foreign fleets.

2 Theory and Methods

2.1 Price Estimation

The purpose of the Ex-vessel DB is to provide annual estimates of ex-vessel prices for all commercial fisheries landings between 1950 and the present, by species group and by country of origin of fishing fleets. As such, the price estimation model described in this paper is not intended for forecasting future seafood prices. Rather, it is designed strictly for the estimation of prices in regions (and for commodities) where reported prices do not exist. Thus, our model focuses on cross-commodity and cross-country price comparison. It is, therefore, not an inverse demand model that predicts price responses to changes in variables such as the supply level, consumer income or prices of substitutes and complements.[2]

Ex-vessel prices, for the purpose of our database, are determined based on three characteristics: nationality of the fleet (i), which serves as the proxy of where the catch is landed or the national market into which the catch enters the supply chain; taxonomy (j); and year (t). Price $p_{i,j,t}$ can be described in the following generalized function:

$$p_{i,j,t} = f(\alpha_i, \beta_j, \gamma_t) \tag{1}$$

where

$$\begin{aligned} \alpha_i &= \text{country effect on price} \\ \beta_j &= \text{taxa effect on price} \\ \gamma_t &= \text{time effect on price} \end{aligned}$$

It should be noted here that the use of the nationality of the fleet, defined as "flag country" or the country in which the vessel is registered (Edeson 1999), as the proxy of the ex-vessel market for a catch may be problematic in certain circumstances (e.g., at sea or in port transfers of the catch from one vessel to another vessel of a different flag, and the landing of the catch in a foreign port). Nevertheless, the "flag" of the fishing vessel is still considered to be the best available criterion for the assignment of nationality to catch (Edeson 1999) and of the ex-vessel market.

Equation (1) can be simplified further:

$$p_{i,j,t} = f(\alpha_{i,t}, \beta_{j,t}) \tag{2}$$

[2] For examples of seafood demand models, see Asche et al. (2007), Barten and Bettendorf (1989) and Ioannidis and Whitmarsh (1987).

Where

$$\alpha_{i,t} = \text{country effect on price in year } t$$
$$\beta_{j,t} = \text{commodity (taxa) effect on price in year } t$$

This simplified two-parameter model is similar to the Country Product Dummy (CPD) model, first proposed by Summers (1973) for the purpose of international price comparisons, which expresses commodity prices as follows:

$$p_{i,j} = a_i b_j u_{i,j} \quad (3)$$

Where

$$a_i = \text{country effect on price}$$
$$b_j = \text{taxa effect on price}$$
$$u_{i,j} = \text{random variable}$$

The parameter a_i is interpreted as the general price level in country i relative to prices in other countries. It is possible to express a_i relative to a reference country 1 (i.e., $a_1 = 1$), then a_i represents the purchasing power parity (PPP) of country i showing the numbers of units of country i's currency needed to buy, in country i, the same amount of goods (and services) as one unit of country 1's currency would buy in country 1.

Similarly, the parameter b_j is the relative values that purchasers in all countries put on the commodity j. Again, by expressing this parameter relative to a reference commodity 1 where b_1 equals one 'international currency' being equivalent to, say, one US dollar, we have a world-average price for commodity j. Such prices are usually called 'international price,' but are not to be confused with prices at which commodities actually trade in world markets.

Given a reported price of species group j in any country i and a dataset of PPPs for all i, it is then possible, using the Eq. 3, to estimate the international price for each species group and the domestic price of j in all countries. In our model, the international prices of a species group were estimated independently for each year using year-specific PPP data.

The next issue that needs to be addressed is: how to derive a price estimate for species group j for which no reported price is available in any country.

How prices of fish vary across species groups is a question that has so far not been explicitly addressed. Yet product differentiation based on taxonomy clearly exists, as evidenced by the range of prices commanded by different tuna (*Thunnus* spp.) species (McConnell and Strand 2000). For our model, we assumed that all commercially important species groups that command distinct ex-vessel prices would be identified by our source statistics and any taxa that are not explicitly recognized in the statistics (i.e., those belonging to 'misc.' categories) are simply substitutes of their related taxa. Thus, for species groups with reported catches but no corresponding ex-vessel price, we transposed reported prices of related species groups, first across genera and if none were available, across families. We limited the transposing of prices across the taxonomic categories using additional criteria such as relative size (e.g., small, medium and large) and habitat types (e.g., pelagic and demersal) so as to avoid applying prices of tunas (genus *Thunnus*) to mackerels (genus *Scomber*) even if they are of the same family (Family Scombridae). Once this process was completed, international prices ($b_{j,t}$) for all species groups j were computed using Eq. 3, with a $u_{i,j}$ of one. Wherever more than one price for j was reported, we took the weighted average based on the catch quantity.

The International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) developed by the International Food Policy Research Institute also bases its estimation of domestic commodity prices on international prices (Rosegrant et al. 2008). However, unlike the CPD model, IMPACT accounts for the cross-country price differences via factors such as 'producer subsidy equivalents (PSEs)' and 'market margins'. The former measures the level of taxation or subsidy borne by producers relative to world prices, while the latter reflect factors such as transportation cost, jointly accounting for the wedge between domestic and world price. For the purpose of our database, we chose the PPP-based model, partially due to data limitations associated with estimations of country- and taxa-specific PSEs and market margins for all countries engaged in marine fisheries, but more importantly to better capture the variations in the relative price differentials over time.

2.2 Data

The previous version of the global ex-vessel price database contained over 31,000 records of reported prices from 35 countries and 875 species groups covering the period from 1950 to 2001. These reported prices were obtained from various sources, with fisheries statistics (landings and values) from national and inter-governmental agencies comprising the majority of the records. Prior to our re-estimation of 'missing' prices, we revisited our sources to update our records, expanding the coverage to 2010. Moreover, the proliferation of online governmental databases and publications over the past several years has led to improvements in both the quantity and the quality of datasets, with several new landings/landed value time series becoming available from countries for which no data was found in our previous search (e.g., Malta). These new datasets were checked to ensure relative consistency in their trends over time, with any abrupt increase or decrease (defined as a single year where the price is five times higher or lower than previous and succeeding years) in reported prices highlighted and carefully examined. Additionally, efforts were made to include only the prices specifically identified as 'ex-vessel' (or words to similar effect) or those computed from landed value records. As noted, all datasets were defined by the fishing fleet nationality, species group and year. All reported prices were recorded as nominal prices in local currencies.

Historical PPP and the market (or official) exchange rates were obtained from the Penn World Table (http://pwt.econ.upenn.edu/; Heston et al. 2011), which covers 190 countries from 1950 to 2009. For years where no purchasing power parity estimates were available, we used the price level index (expressed as PPP divided by market exchange rate, equivalent to real exchange rate) of the nearest year. For countries with no data for any year, regional averages[3] of the price level index, estimated from the available datasets, were applied. All reported and estimated prices were re-expressed in US dollars based on market exchange rates and converted to real 2005 US dollars using the historical US Consumer Price Index from the US Bureau of Labor Statistics (http://www.bls.gov/cpi/) to allow comparison across countries and over time. Note that market exchange rates, rather than PPP were used for conversion of domestic prices into US dollars. This is done simply to facilitate comparison across currencies, not to compare the 'real' value of ex-vessel prices (which, based on our underlying model, would be equal to their 'international' price).

[3] Averages of reported PPP from Cambodia, Indonesia, Malaysia, Thailand and Vietnam were used for Myanmar and China, Taiwan and South Korea for North Korea.

2.3 Mapping Landed Value

One of the key advantages of the ex-vessel price database is that it is compatibility with the *Sea Around Us* Catch Database (www.seaaroundus.org, Watson et al. 2004) and enables landed values to be expressed in terms of geographical origins from which the catches were taken.

The *Sea Around Us* Catch Database is composed of various world fisheries catch statistics that have been disaggregated into a spatial grid system that breaks down the world's oceans into 180,000 1/2 degree latitude by 1/2 degree longitude cells using ancillary data such as geographical distribution of commercially exploited fish taxa and fishing agreements that regulate foreign access to the Exclusive Economic Zones (EEZs) of maritime countries as proxies for locations of reported catches. The compatibility between this catch database and the ex-vessel price database thus enables the landed values of marine fisheries catches to be expressed in the same geographical resolution as the catches. Moreover, the ocean grid system allows landed values to be summarized by various spatial entities, e.g., geopolitical (e.g., EEZ) or ecological (e.g., Large Marine Ecosystems). Considering that landed values are generally expressed based on fishing entities (i.e., fleet, port, country that landed the catch), this geo-referencing of landed values greatly enhances our understanding of the role of fisheries resources in spatial context, particularly for many coastal developing countries that accommodate foreign distant water fishing fleets within their EEZs.

3 Results and Discussion

3.1 Ex-vessel Prices

Based over 41,800 records of ex-vessel prices, our model estimated prices for 260,000 records of reported marine commercial fisheries catches from 1950 to 2006, across 193 countries and entities and 1,452 species groups.

Figure 1 plots the average ex-vessel values (in 2005 real USD per tonne) of the global marine fisheries catches over time (in blue). The figure shows that unlike the trends observed in the previous model (in green, from Sumaila et al. 2007 with values re-estimated using the updated dataset) which displayed a decline in the average ex-vessel value of marine fish over the time period particularly since the late 1970s, the real ex-vessel value of the marine fisheries catch has remained relatively stable, i.e., fluctuating between USD 1,200 and 1,400, except for a period of high values in the 1970s and the early 1980s. Moreover, the ex-vessel values estimated by our model are, on average, about 20 % lower than the values computed by Sumaila et al. (2007), although the differences between the two sets of estimates narrows in the last 15 years. Our estimates also differ from the values reported by the Food and Agriculture Organization of the United Nations (FAO 2008), with our model calculating average values that are around 30 % higher. These differences between our figures and those reported by FAO may be due to the fact that our model does not distinguish between fish for food consumption and for industrial (i.e., aquaculture and agriculture) consumption, thus we may be overestimating the average value of the low trophic, small pelagic fishes, many of which are landed for low value fishmeal production.

It should be cautioned that the ex-vessel values presented in the two figures are of highly aggregated groups of species with a range of ex-vessel prices from less than USD 100 per tonne (e.g., sardinella in Ghana) to over USD 60,000 per tonne (e.g., giant abalone in Japan). The trends observed in the average value may, therefore, be caused by changes in the

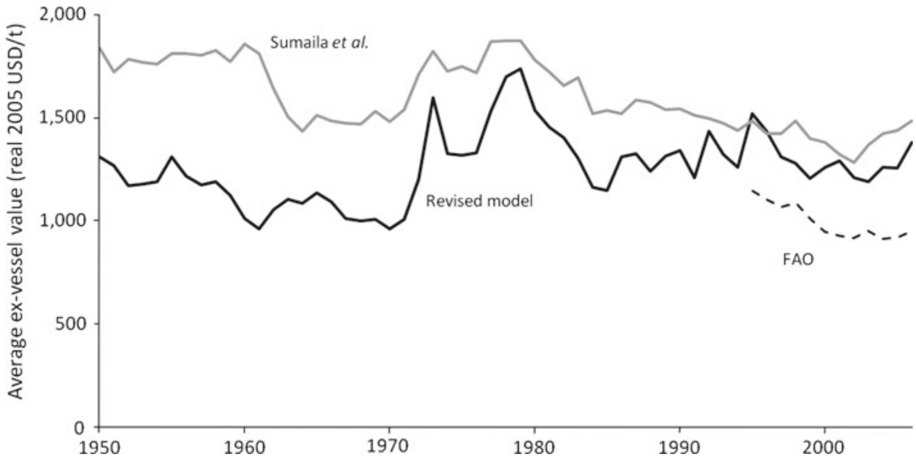

Fig. 1 Average ex-vessel values of marine fisheries landing: 1950–2006, comparing the values estimated by our model (*black solid*) with those estimated by Sumaila et al. (*grey solid*) and those reported by FAO (*black dashed*)

compositions of the catch as well as the variations in ex-vessel prices. The decrease in average value in the early 1960s, for example, is likely caused by the increased share of low-value anchoveta in the marine fisheries catch.

Nonetheless, the high average ex-vessel value observed in the late 1970s is likely reflective of a general increase in the ex-vessel prices as the late 1970s was the period in which the major fishing nations such as Japan experienced a dramatic spike in the cost of fishing due to a rise in fuel costs linked with the oil shocks of 1973 and 1979, and the emergence of the extended maritime jurisdictions (e.g., the establishment of the 200 nautical mile EEZs by major coastal countries such as the United States, Canada and the Soviet Union in 1977), which greatly restricted the areas of operation in the high seas and distant water (Iwasaki 1997). Such an increase in the cost of operation would have resulted, at least partly, in the observed increased price for the catch.

Figure 2, which presents the time series of average ex-vessel values for five major taxa, supports the assertion that the drop in the average values observed in the 1960s is due to the spike in the catches of small pelagic species rather than from declining ex-vessel prices as the ex-vessel values of other taxa groups show increases over this period. The figure also shows increases in the prices of high-value species (crustaceans and large pelagic fishes) in the 1970s followed by their decline in the past 25 years. Such trends indicate that the second, less significant, period of high prices in the early 1990s may have been driven by the changes in the value of large pelagic species such as tunas, which decreased in value by a third from around USD 3,000 to less than USD 2,000 in the mid 1990s following a brief spike in the early 1990s. Such a decrease may have been caused by the downturn in the Japanese economy during this period, following the period of the economic 'bubble' of the 1980s. Japan is a major market for large pelagic species, most notably the prized bluefin tunas, and the data from the Fisheries Agency of Japan shows there were significant drops in the prices of tuna during this period. The reported ex-vessel prices of the Atlantic bluefin tuna in Japan, for example, halved from USD 29,900 per tonne in 1989 to USD 14,000 in 1999.

The correlation between the volume of the catch and the ex-vessel prices (in real value) was tested by computing the correlation coefficient for 6193 'fisheries' defined as unique

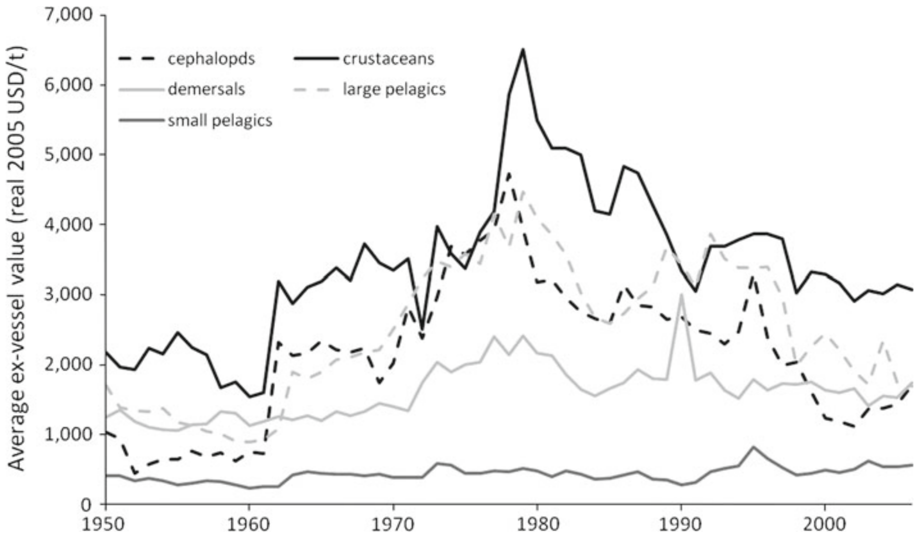

Fig. 2 Average ex-vessel values of selected species groups: 1950–2006

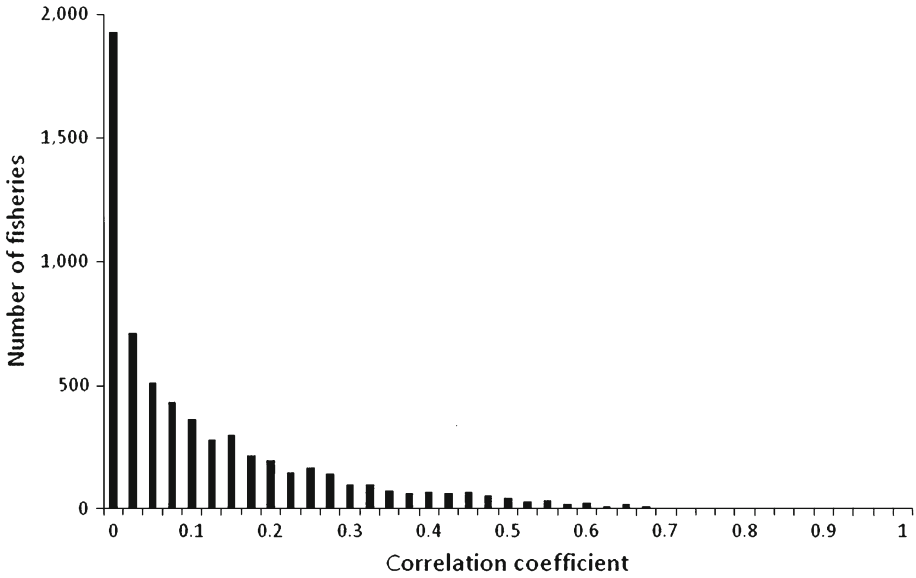

Fig. 3 Frequency distribution of correlation coefficients computed for world's fisheries, defined by their country-taxa combinations (with over 10 years of reported catch, n = 6193)

combinations of country and taxa with over 10 years of reported commercial catch. The result shows that at for the majority of fisheries, the correlation between the volume of the catch and the price is weak, with over 50 % of the fisheries (3,948) having a correlation coefficient less than 0.1 while less than 5 % of the fisheries (212) had a correlation coefficient over 0.5 (Fig. 3). Our results, though a crude measurement of price elasticity, indicate that ex-vessel prices are relatively inelastic to supply and *vice versa*.

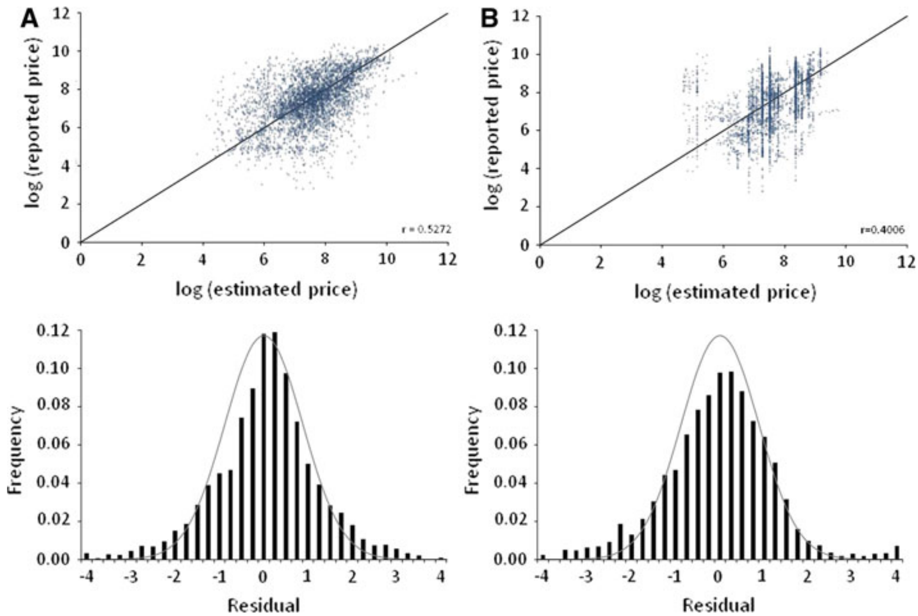

Fig. 4 Plots of estimated verses reported prices (*top*) and the distributions of residuals (*bottom*) by our model (**a**) and Sumaila et al. (**b**). The dataset represents estimations across countries with records from 15 randomly selected countries removed and estimated from the remaining subset of reported ex-vessel prices denoting 75 % of the data. The plots show that the ex-vessel prices estimated by our model have a significantly higher correlation to the reported prices than the prices estimated by Sumaila et al ($Z = 7.3908$) while the histograms demonstrate that both sets of estimations are relatively unbiased (the *grey line* represents normal distribution around a mean of zero)

The price estimation capability of the model was compared with that of Sumaila et al. (2007) by removing a sub-sample of the recorded prices and testing how well the models predicted these 'missing' prices. We tested the model for its estimation across countries and across taxa by generating two subsets of the reported ex-vessel prices, with each subset missing reported prices of 15 randomly selected countries and 506 randomly selected taxa groups (both subsets representing 75 % of the total dataset). Figures 4 and 5 depict the results from the two models. Comparison of the correlation coefficients between the two sets of estimated prices with the reported prices show that our model significantly improves the estimation of prices across countries compared to Sumaila et al. ($Z = 7.3908$), while the two models show no significant differences in their estimation across taxa ($Z = 0.4871$), although the analysis of the residuals indicates that the price estimation across taxa by Sumaila et al. may be biased upwards.

3.2 Landed values

Globally, marine fisheries catches, as reported by countries to the FAO, increased from less than 20 million t·year-1 in the early 1950s to a peak around 85 million t·year-1 in the mid 1990s (Fig. 6). The total marine fisheries landing in 2005 was estimated at 80.5 million tonnes, with marine fish species comprising about 86 % of the total landings, while crustaceans and molluscs made up 6 and 8 %, respectively. The estimated landed value of marine fisheries in 2005 was USD 100 billion, a four and a half-fold increase from the USD 22 billion

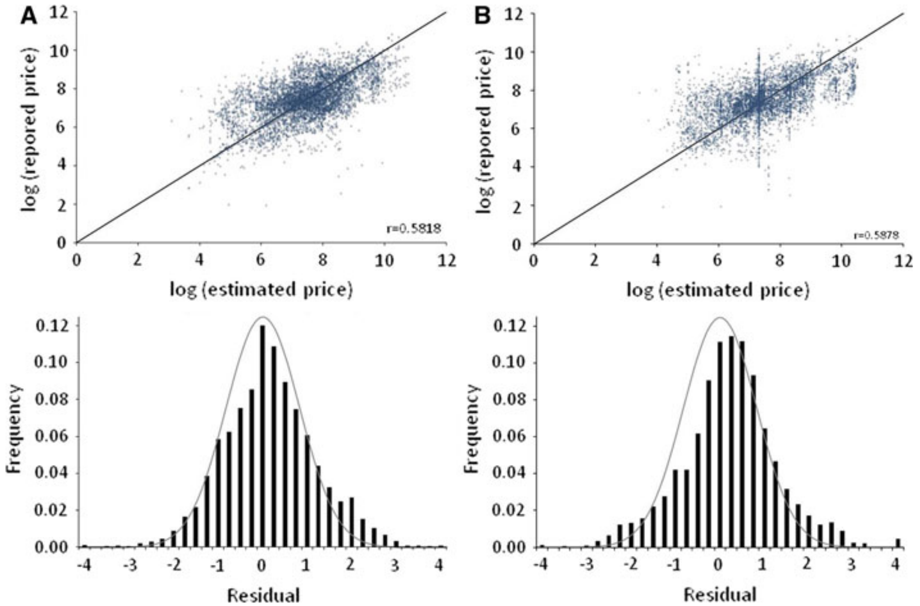

Fig. 5 Plots of estimated versus reported prices (*top*) and the distributions of residuals (*bottom*) by our model (**a**) and Sumaila et al. (**b**). The dataset represents estimations across taxa with records from 506 randomly selected taxa groups removed and estimated from the remaining subset of reported ex-vessel prices denoting 75 % of the data. While the plots show no significant differences in the correlations between two models' estimated prices with the reported prices, the residual distribution of the estimates from Sumaila et al. suggests a slight upward bias in the estimations (the *grey line* represents normal distribution around a mean of zero)

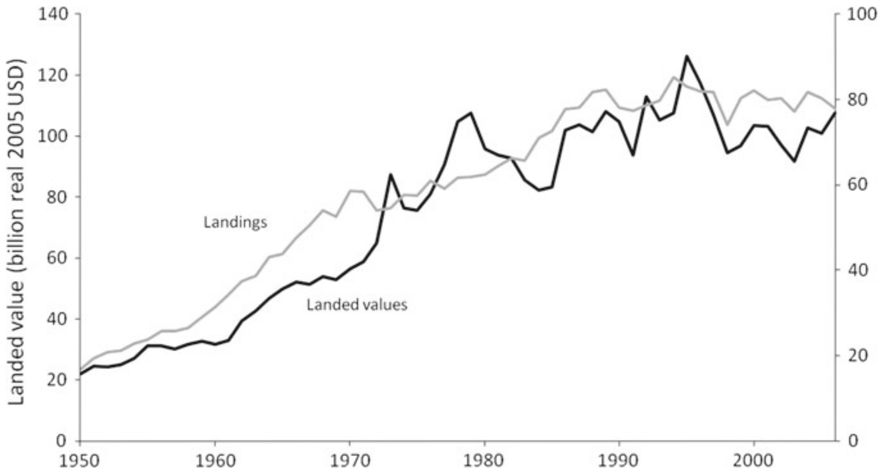

Fig. 6 Total marine fisheries landings (*black*) and landed value (*gray*): 1950–2006

estimated in 1950 (Fig. 6). The total landed value underwent a steady increase through 1950s to the 1970s, exceeding USD 100 billion in 1978 and 1979 before decreasing to about USD 85 billion in the early 1980s despite a further increase in landings. Since the late 1980s, the

Table 1 Top ten marine fishing countries by landed values and their global shares

Country	Landed value (billion USD)	% total	Landing (million t)	% total
China	13.09	13	9.78	12
Japan	9.24	9	4.03	5
USA	8.00	8	4.78	6
Peru	6.10	6	9.34	12
Indonesia	5.03	5	4.39	5
Chile	3.27	3	4.33	5
Thailand	3.14	3	2.58	3
India	2.75	3	3.34	4
Korea, Republic	2.71	3	1.63	2
Spain	2.37	2	0.85	1

landed value of the global marine fisheries has fluctuated around USD 100 billion, with an exception of a sharp increase in 1995 when it is estimated to have reached USD 126 billion.

About 55 % of total landed values were accounted for by 10 countries in 2005 (Table 1). China was the top fishing country, both in terms of landings (9.8 million tonnes, 12 % of the global total) and landed value (USD 13 billion, 13 % of the global total), while Japan and the USA recorded the second and third highest landed value (USD 9.2 billion and 8 billion or 9 and 8 % of the global total, respectively) despite accounting for only 6 and 5 % of the global total in landings, respectively. Cumulatively, over the 57 year period (1950–2006), marine fisheries catches generated total landed value of USD 4.2 trillion. Japan accounted for 17 % of the total landed value in this period, followed by USA (10 %) and China (8 %). Through the 1970s and 1980s, Japan accounted for over 20 % of the total landed value globally.

Figure 7 presents geo-referenced distributions of landed values, each representing the decadal averages of annual landed values of the world's fisheries. In all six maps, concentrations in landed value can be seen in the productive and heavily exploited coastal waters of Europe and Asia as well as along areas of major upwelling such as the western coast of South America. Figure 7 also highlights the southward and offshore expansion of the fishing grounds over time, particularly since the 1970s, with the growth of distant water fishing fleets (Swartz et al. 2010a; Berkes et al. 2006).

Despite the offshore expansion of marine fisheries, the Exclusive Economic Zones of coastal, particularly developing, countries still account for over 80 % of the total landed values. Yet, it is not necessarily the case that the coastal countries derive the majority of the economic benefits from their marine resources. The prominence of distant water fishing fleets in many coastal waters means that in some regions, a large proportion of the value of marine fisheries is captured by foreign countries, particularly, if the distant water fishing fleets are targeting high value species such as large pelagic species, while the domestic fishing fleet targets low value species. Figure 8 presents the distribution of the landed value of the coastal fisheries resources between domestic and foreign fleets. The figure displays high levels of domestic capture of landed value in North America, South America, Australia and Asia, while in regions with active large distant water fishing, particularly for tunas, the share of landed value captured by domestic fisheries is considerably smaller. Some notable exceptions are the Northeast Atlantic, where the EU jointly manages the fisheries of their member states and where several reciprocal fishing access agreements exist in order for coastal countries to

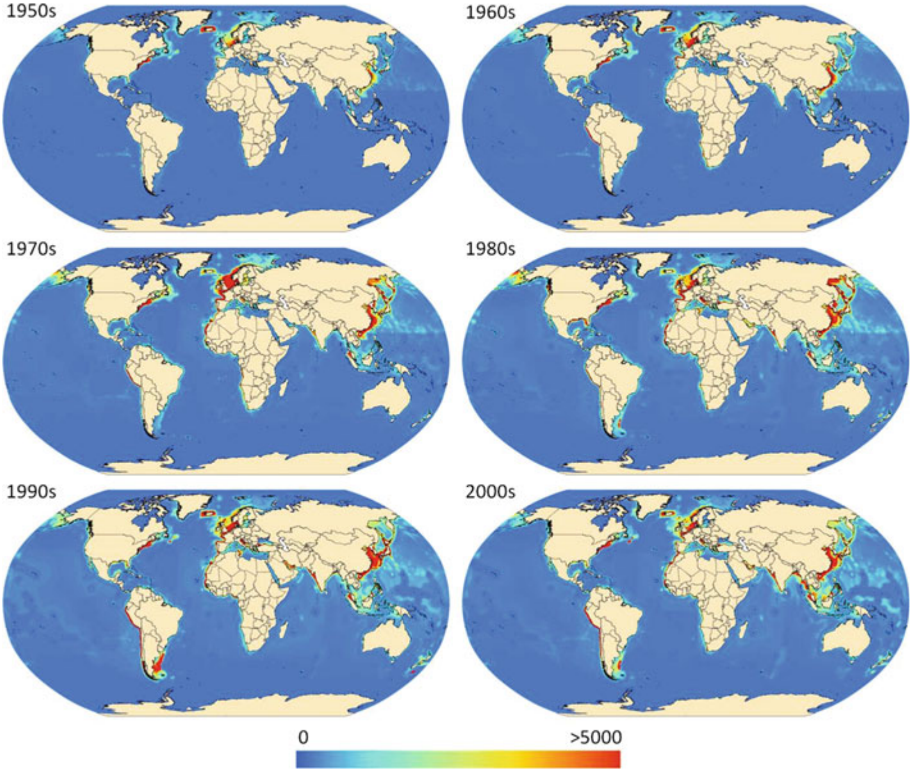

Fig. 7 Spatial distribution of average annual landed values (2005 USD per km^{2}per year) by decade. (Color figure online)

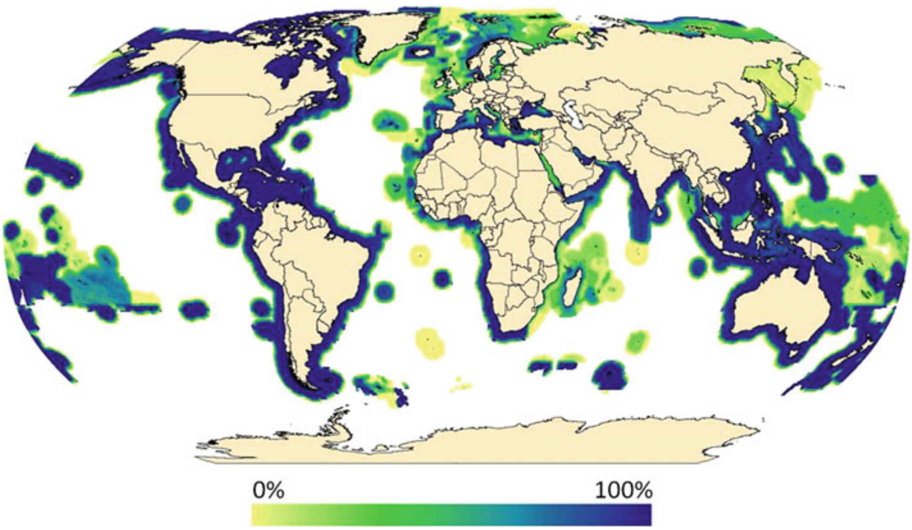

Fig. 8 Proportion of marine fisheries landed values captured by domestic fisheries. (Color figure online)

retain fishing access to the traditional fishing grounds that were open to them prior to the 200 nautical mile extensions of marine jurisdictions. The low level of domestic capture of landed value within the Russian EEZ in the Sea of Okhotsk may be due to the large discrepancies in the ex-vessel prices received in Russia and in Japan, whose fleets operates in the region under several reciprocal fishing arrangements.

We must note, however, that the distribution of landed values alone does not present a full picture of how the economic benefits are shared between various countries. For example, in many developing countries, the policies of fleet domestications were pursued via the encouragement of joint ventures between domestic and foreign operators. In some extreme cases, it may be possible that the benefits derived by joint venture fleets may contribute little to the local economy despite being officially recognized as 'domestic' catch. Conversely, recent improvements in the terms of foreign fishing access arrangements have meant that coastal countries are capturing a greater share of the economic benefits from distant water fishing via conditionalities such as quotas for local employment and requirements to land the catch in domestic ports. Moreover, the high level of international trade of marine fish and fish products (Swartz et al. 2010b) implies that domestic catch may not necessarily enter the local markets. Further, more comprehensive analyses are, therefore, needed to address the distributional issues of marine fisheries.

Understanding the size of landed value derived from global marine fisheries is an important step in enhancing our awareness of the significant contributions made by marine fisheries resources, and analysing the effectiveness of various fisheries policy options in achieving ecological and economic sustainability. Sumaila et al. (2007) was the first attempt at constructing a comprehensive database of marine fisheries ex-vessel prices and this contribution further advances our ability to examine the economic contributions of marine fisheries to the global and national economies.

Acknowledgments We thank Andrew Dyck and other members of the Fisheries Economics Research Unit for their invaluable comments in designing the methodology. This is a product of the *Global Ocean Economics Project* and the *Sea Around Us Project* at the UBC Fisheries Centre, funded by the Pew Charitable Trusts of Philadelphia, USA

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