Seafood markets in transition

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This special issue of Aquaculture Economics & Management features fives articles based on the 25 contributions presented at the International Association of Aquaculture Economics and Management (IAAEM) sponsored section on economics and marketing at the Aquaculture America conference in San Antonio, August 11-14, 2021. This was a very good turn-out for one of the first aquaculture conference following the Covid-19 pandemic. The contributions covered topics on different farmed species groups and with a global scope. The section provided an arena to discuss issues related to risk management, regulations, trade, seafood certification, consumers' preferences, market integration, product differentiation, mariculture tourism, food security, effects and contribution of aquaculture to the regional economy. The papers in this special issue reflect a variety of topics also seen in the section during the conference.

It has been clear for some time that there is a global seafood market with a common price determination process for most larger species groups, and independently of production technology (Tveteras et al., 2012; Anderson et al., 2018), although with most of the empirical evidence from trade data of imports to developed countries. However, there is a rapidly growing literature illustrating the reach of the global seafood market not only to developing countries, but even inland and to fresh water fisheries (e.g. Pincinato and Asche, 2018; Bronnmann et al., 2020; Hossain et al., 2021). Pincinato et al. (2022a) contribute to this literature by investigating common price determination processes across different types of fish (whitefish/pelagic/salmonids) and different sourcing (fishery/aquaculture) for the biggest seafood wholesale market in Brazil. Most of the seafood on this market in the last decades come from aquaculture production and imports – e.g., domestic tilapia and imported salmon (Garlock et al., 2022). Domestic wild fish also offers an important share of seafood to the market, but has limited expansion possibilities due to overexploitation of the local fish stocks (Pincinato and Gasalla 2019; Pincinato et al., 2022b). The results indicate that in the Brazilian seafood market farmed fish such as salmon and tilapia seem to not share a common pricing with each other or to the many domestic wild fish species in this market.

Aquaculture producers face a number of risks, from diseases and biophysical factors that influence growth and mortality to various forms of market risk, and there is a rich literature investigating various topics in relation to risk in aquaculture (e.g. Khan et al. 2021; Pincinato et al., 2021; Rahman et al., 2021; Moor et al., 2022a). Moor et al. (2022b) contributes to this literature by developing a model accounting for environmental, biophysical, production and market risk for mollusk, clams. Incorporating all risk sources are shown to be important, as they are correlated to varying degrees.

Prices of aquaculture products tend to be highly volatile, as do the prices for the main feed ingredients giving highly volatile costs (Dahl and Oglend, 2014; Asche et al., 2015). So far, the literature on price

volatility has primarily focused on salmon (e.g. Asche et al., 2017; 2019; Dahl et al., 2021; Ewald et al., 2022), with the investigation of catfish price volatility by Buguk et al., (2003) as a notable exception. While there is a large literature on price transmission in seafood supply chains (Landazuri-Tveteras et al. 2018), Asche and Oglend (2016) is one of few studies that investigate the impact of feed prices on the prices for an aquaculture species. Surathkal et al. (2022) investigate the dynamics of price volatility spillover in the U.S. catfish market adding significantly to our understanding of the risk optimization problem facing catfish farmers in particular as well as aquaculture producers in general. Of particular interest is that the use of local feed ingredients makes the volatility-spillover bi-directional between catfish and local feed ingredients.

It is well known that productivity growth increasing competitiveness is the main driver in the rapid growth of global aquaculture production (Asche, 2008; Kumar and Engle, 2016; Garlock et al., 2020). However, even though the U.S. catfish industry was an early harbinger of this development (Engle et al., 2022) and a number of studies investigating specific elements of technology adaption (e.g. Kumar et al. 2019; 2021), there has been no attempts at a classic productivity study of this industry, primarily due to lack of data. This is surprising given the prevalence of such studies for other species (Mitra et al., 2020; Ankamah-Yeboah et al., 2021). Using a unique recently collected data set, Hedge et al. (2022) corrects this and estimate production functions for the main production technologies in U.S. catfish aquaculture. The study shows the impact of different impact factors, and of particular interest, that the production technology varies significantly between intensively aerated and hybrid catfish farms.

Consumers' acceptance, preference for specific attributes and willingness to pay for the product to be sold are aspects that the producers must be aware of in order to be able to exploit the best opportunities in the market. Some product attributes may not be directly observable such as food safety, sustainability, country of origin, animal welfare, sustainability of production and labor conditions (Alfnes et al., 2006; Rickertsen et al., 2017; Uchida et al., 2017; Osmundsen et al., 2020; Weir et al. 2021; Sogn-Grundvåg et al., 2019; Fang and Asche, 2021). For instance, consumer concerns with environmental issues may provide incentives to farmers to address the industry negative externalities by their demand and wiliness-to-pay for products certified according to good environment and social practices (Roheim et al. 2012; Roheim et al., 2018; Ankamah-Yeboah et al. 2020; Asche et al., 2021; Bronnmann et al., 2021). Other attributes are observable by the consumer such as size, product form, flesh color, freshness, appearance, and convenience (Torrissen and Onozaka 2017; Adhikari et al., 2021). Gosh et al. (2022) show how such aspects influence consumer preferences, and accordingly can be used to target specific market segments. More specifically, the paper investigates preferences for five convenient catfish products.

To sum up, understanding farmer's decisions, and its consequences for their business, and the external economy is key to viable aquaculture industries. Studies addressing these aspects, such the ones in this issue, contribute to the general literature and to more informed decisions, not only made by the individual farm level, but also made by the other stakeholders in the aggregate level (e. g. regional economy).

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