Trade Policies and Sustainability of Russian Fisheries

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1 Introduction

According to FAO, since 1960 world seafood consumption increased from 9.9 kilos per capita up to 19.7 kilos per capita in 2014. At the same time, it is getting harder to satisfy customers demand because harvesting of fishery products is subject to certain biological constraints (diseases, mortality, spawning rates, etc.). As a result, 89% of fish stocks are either fully fished (58%) or overfished (31%) nowadays.

Trade in fisheries has also undergone considerable changes. Total export volumes almost tripled during last several decades due to globalization, technological advancements, and operational excellence. Fish and fishery products represent one of the most traded segments of the world food sector, with about 78% of seafood products estimated to be exposed to international trade competition (FAO, 2016).

Russia recently introduced restrictive policies with respect to fish and fish products originating from several countries (e.g. Norway). Further, new subsidies were established to facilitate investments in new fleet by fishermen. All that may have a significant impact on prices in retail markets, profit margins, and overall welfare. Therefore, it becomes more and more acute to investigate mechanisms influencing sustainability of Russian fisheries through trade policy measures.

2 Model

The study relies on the modification of the Brander and Taylor (1997) baseline model. The setup includes one renewable resource under open access and one manufacture good. Individuals are both consumers and producers. The net biological growth relationship is set as follows:

$$S_{t+1} - S_t = G(S) - H = rS\left(1 - \frac{S}{K}\right) - aSL_H,$$

Where S_t is the amount of stock in the time period t, H accounts for the harvest function, r reflects intrinsic growth rate, K is the carrying capacity of the stock, a is the scaling parameter, L_H is the amount of labor devoted to harvesting.

A representative consumer is endowed with one unit of labor, wage is normalized to one, receives utility $u = h^{\beta} m^{1-\beta}$ subject to $ph + m = Income = 1$.

Individual demand curves: $h = \frac{\beta}{p}$; $m = (1 - \beta)$.

Total population equals to L, therefore, aggregate demand is as follows:

$$H^D = \frac{\beta L}{p};\ \ M^D = (1-\beta)L.$$

In the steady state, harvest rate H^S equals resource growth (aggregate supply): $H^S = rS\left(1-\frac{S}{K}\right)$.

Labor used in harvesting: $L_H = \frac{H^S}{aS} = \frac{r}{a}\left(1-\frac{S}{K}\right)$.

Aggregate supply of manufactures: $M^S = L_M = L - \frac{r}{a}\left(1-\frac{S}{K}\right)$.

Jointly with the open access condition, we get equilibrium stock level: $S^* = K\left(1 - a\beta\frac{L}{r}\right)$.

According to the model, opening to trade affects resource prices, individuals accordingly allocate labor between harvesting and manufacturing sectors while steady state stock levels begin to adjust. Thus, there is a clear connection between trade regime and sustainability of fisheries. One of the major hypotheses is that gain from trade will be dependent on the relation between world and adjusted domestic prices. Namely, either very low or very high world prices will only be beneficial in the long run for a country opening to trade.

3 Methodology

To illustrate, we model trade in fresh salmon between Russia and Norway and trade in shrimps between US and Vietnam. It is shown that sanctions applied during different time periods were quite similar. Data is obtained from the United States Agency for International Development, International Trade Centre, International Council for the Exploration of the Sea, Russian Federal State Statistics Service.

Further, we test the hypothesis of identical prices (Russian market vs world market) with the use of difference-in-differences technique. It allows us to estimate the effect of Norwegian salmon imports ban. In case of competitive trade, it should not be highly significant. Otherwise, it provides an evidence of non-competitive trade, i.e. under existence of non-tariff barriers.

Finally, we investigate non-tariff restrictions relevant to the Russian trade in seafood products. These include but not limited to the following: the role of fishery subsidies, eco-labels and sanitary measures. Information is collected from juridical databases, WTO notifications and dispute settlement databases.

4 Major findings

First and foremost, results of the study show that the impact of the Norwegian fresh salmon import ban was highly fragmented. This is due to substitution effect and relevant immaturity of the Russian market. Prices demonstrate cross-elasticity effects, implying that customers are not loyal to Norwegian products, in particular.

Next, it is evident, however, that no other country was able to supply fresh salmon to Russia. The product was substituted by other species of fish. Therefore, despite common belief, Russia was unable to address the issue of exclusiveness of Norwegian suppliers.

Non-tariff barriers represent the most controversial issue in the whole research. For Russia the major concern relates to activities of the Marine Stewardship Council (MSC) responsible for eco-labeling of fish products. Most of the surveyed fishermen determine this as the major obstacle when entering foreign markets. Namely, seafood without MSC labels has very low chances to stay on shelves of largest retail chains.

5 Conclusion

The fisheries sector plays a significant role in the socioeconomic growth and development. Thorough investigation of regulatory approaches is required both to improve food security and accumulate gains for trade. Russian fisheries are in the state when different paths could be chosen leading to further prosperity on foreign markets. Hence, results of the current research should be actively applied by businesses, governmental bodies and scholars.

6 References

The State of World Fisheries and Aquaculture. WTO, 2016.

Brander, James A., and M. Scott Taylor. “International Trade and Open-Access Renewable Resources: The Small Open Economy Case.” Canadian Journal of Economics (1997): 526-552.