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Can US Import Regulations Reduce IUU Fishing and Improve Production Practices in Aquaculture?

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IUU fishing

Introduction

US is the world's largest seafood importer and a global leader in sustainable seafood. To combat illegal, unreported or unregulated (IUU) fishing and seafood fraud (also related to aquaculture), US implemented the Seafood Import Monitoring Program (SIMP) by requiring a chain-of-custody documentation which provides a complete production record of the seafood imported to the US and demonstrates that the fish is legally caught or produced, and that it is from sustainably managed fisheries or aquaculture (Roheim and Sutinen, 2006; NOAA, 2018).

The efficiency of SIMP in reducing IUU fishing and improve the production practices in aquaculture depends on the extent to which the US as an importer has oligopsony power relatively to the exporting countries.

NO MARKET POWER	HAS MARKET POWER
The cost associated with the SIMP will just lead exporters to ship the quantities to other countries	Exporters that lose access to the US market will observe that their price is reduced
RESULT: The only effect will be higher prices for US consumers	RESULT: Importers get incentives to comply with the SIMP and reduce IUU fishing and improve aquaculture practices

In this paper, a residual supply approach will be used to investigate whether the U.S. has buyer power for the three most important species included in the SIMP by value: shrimp, crab and tuna.

SHRIMP

KING CRAB

TUNAS

- The methodological approach is based on the residual demand model of Baker and Breshnahan (1988)
- This was adopted to a residual supply setting by Durham and Sexton (1993)
- Golberg and Knetter adopted the residual demand model to a international trade setting
- We do a similar adoption of the residual supply model

Results

VARIABLES (log form)	Frozen shrimp				King crab	Tuna		
	Thailand	Ecuador	Indonesia	India	Russia	Thailand	Ecuador	Vietnam
Residual supply	0.636*** (0.0952)	0.0522 (0.0448)	0.736*** (0.254)	0.679*** (0.166)	0.915*** (0.0971)	0.912*** (0.100)	-0.379 (0.547)	0.847*** (0.228)
...	...	...	...	...	...	...	...	...
Hansen J (p-value)	0.546	0.177	0.430	0.076	0.100	0.102	0.565	0.067
R ²	0.968	0.946	0.803	0.970	0.939	0.968	0.474	0.924

- The key parameter of interest is the inverse residual supply elasticity

$$\frac{\partial \ln P}{\partial \ln Q^{im}} = \beta_1$$

- The residual supply elasticity will be zero if the residual supply schedule is flat, and the U.S. has no buyer power.
- A statistically significant residual supply elasticity is evidence of buyer power.

- There is a high degree of buyer power for the US in the shrimp exporting countries, such as Thailand, Indonesia, and India. However, US has insignificant buyer power for frozen shrimp imported from Ecuador.
- US has a high degree of buyer power for crab imports from Russia, and other alternative markets of the US have significant estimates for the Russian king crab exports.
- US has a high degree of buyer power for tuna imported from Thailand and Vietnam, but the estimates on Ecuador is not significant.

Residual Supply Method

- The residual supply equation to be estimated is given as:

$$\ln P_t = \beta_0 + \beta_1 \ln Q_t + \beta_2 \ln S_t + \beta_3 \ln D_t + \varepsilon_t$$

- S_t : Export supply shifters are fuel price, fish catch, and wages in exporting country
- D_t : Demand shifters for alternative market to the US. This will be represented by the exchange rate between the exporting country and the alternative importing country
- Instrument variables: US retail price, exchange rate between US and exporting country and wages in the US in addition to lagged dependent variable
- Seasonal Dummies

Conclusions

- It is likely that the SIMP requirements will influence the management practices in most of the countries importing seafood to the U.S. Whether the incentives is strong enough to cover the cost remain to be seen.
- Trade measures can be an effective tool in combating IUU fishing and improve aquaculture production, but it is a challenge for poor countries with no fisheries management system.
- Unilateral actions from the U.S. may improve global governance for IUU fishing and aquaculture production at least for some species.
- If the US can cooperate with other large importing countries, and particularly the EU, trade measures can be an even more effective tool in combating IUU fishing.

References

- [1] Baker, J. B., & Bresnahan, T. F. 1988. Estimating the residual demand curve facing a single firm. *International Journal of Industrial Organization*.
- [2] Durham, C. A., Sexton, R. J. 1992. Oligopsony Potential in Agriculture: Residual Supply Estimation in California's Processing Tomato Market. *American Journal of Agricultural Economics*, 74(4), 962.
- [3] Goldberg, P. K., Knetter, M. M. 1999. Measuring the intensity of competition in export markets. *Journal of International Economics*, 47(1), 27–60.
- [4] NOAA. 2018. FinalRuleTraceability. Retrieved January 13, 2018, from <http://www.iuufishing.noaa.gov/RecommendationsandActions/RECOMMENDATION1415/FinalRuleTraceability.aspx>.
- [5] Roheim, C., Sutinen, J. 2006. *Trade and Marketplace Measures to Promote Sustainable Fishing Practices*. International Centre for Trade and Sustainable Development, Paris, France.