

# INTERNATIONAL FISHERIES ACCESS AGREEMENTS AND TRADE

Tatyana Chesnokova and Stephanie F. McWhinnie

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# MOTIVATION

- Fishermen fishing outside of their nation's territorial waters has occurred throughout history
- Challenge for fish-rich countries is how to best provide these to consumers elsewhere
- One option: use or develop own fishing industry and engage in trade
- Alternative: undertake an access agreement to allow fishermen from elsewhere to harvest directly



# MOTIVATION

- Popular image of distant water fishing fleets is that once their own waters are overexploited they turn their boats to remaining areas of relative abundance (The Cove, Greenpeace)
- Fisheries agreement case studies have looked at the impact of particular agreements on stock status and costs and benefits to home and host countries (Bonfil et al. 1998, Le Manach et al. 2013, Mallory 2013)
- World Bank (2014) examines foreign fishing arrangements as a type of trade in services and stresses the importance of comparative advantage and bargaining power
- International trade in fish has been considered from the perspective of food security (Asche et al. 2015, Watson et al. 2017) and the impact upon stocks (Erhardt 2016)
- No prior work that is able to systematically distinguish the characteristics of countries that sign fisheries access agreements and compare these to countries that choose trade



# OUR PAPER

We empirically examine which countries have international fisheries access agreements by:

- Generating a unique dataset of agreements, trade and country-pair characteristics
- Examining the importance of comparative advantage in fishing and gravity factors
- Comparing this to who trades in final fish products



# CONCEPTUAL FRAMEWORK

- Access agreements and trade are essentially two alternative pathways to provide consumers in a *destination country* ( $d$ ) with fish from the waters of a *source country* ( $s$ )
- Two key motives:
  - Comparative advantage in fishing: depends on both fish abundance and fishing industry capacity
  - Gravity factors: size and distance matter but depends on impact on each pathway



# INTERNATIONAL ACCESS AGREEMENTS & TRADE

- Access agreements. Typically bilateral and bargaining strength, compensation and enforcement varies. Sea Around Us (2015):

$$A_{sdt} = \begin{cases} 1, & \text{if an agreement between countries } s \text{ and } d \text{ in year } t \\ 0, & \text{otherwise.} \end{cases}$$

- Fish product trade SITC 03 code. Feenstra et al (2004):

$$T_{sdt} = \begin{cases} 1, & \text{if fish exports from country } s \text{ to } d \text{ in year } t \\ 0, & \text{otherwise.} \end{cases}$$



# FISHING ADVANTAGE & GRAVITY CHARACTERISTICS

- Fish Stock Status measured by Mean Trophic Level. Sea Around Us (2015): 
$$MTL\ t = \frac{\sum_k TL_k Y_{kt}}{\sum_k Y_{kt}}$$
- Fishing Capacity measured by historical catch. Sea Around Us (2015): *Total Tonnes Caught*<sub>it-10</sub>
- Gravity characteristics of Economic Size, Physical Distance and Cultural Closeness. Head et al (2010), Sea Around Us (2015) & Flanders Marine Institute (2014): *GDP/cap., population, distance, land border, maritime border, free trade area, currency, prior colony, same colonist, legal origin, language, religion*



# THE DATASET

- 256,163 country-pair-year combinations in 1962-2000
- Each country must have had at least one agreement and at least one export
- 5.7% of all the possible country-pair-year combos had an agreement and 20.1% had exports



# EMPIRICAL SPECIFICATION

- Goal: to test the Empirical Predictions by estimating the importance of comparative advantage ( $F_{sdt}$ ) and gravity motives ( $G_{sdt}$ ) for agreements ( $A_{sdt}$ ) and trade ( $T_{sdt}$ )
- Estimating equation for  $X_{sdt} = A_{sdt}$  or  $T_{sdt}$  is:

$$\begin{aligned} Pr(X_{sdt} = 1) = & \alpha_0 + \beta'F_{sdt} + \gamma'G_{sdt} \\ & + \alpha_s I_s + \alpha_d I_d + \alpha_t I_t + \varepsilon_{sdt} \end{aligned}$$

- Control for multilateral resistance by including a full set of fixed effects for source and destination countries,  $I_s$  and  $I_d$ , and include year fixed effects,  $I_t$ , and cluster the error term at the country-pair level



# INTERNATIONAL FISHERIES ACCESS AGREEMENTS

- Source country fish stock and destination country fishing capacity are positively associated with agreements
- Economically larger source and destination countries are more likely to have agreements
- Maritime and consumption closeness (distance, maritime border, legal origin, religion, colonial ties) are positively associated with agreements but terrestrial and economic closeness (land border, language, currency) are not



# INTERNATIONAL FISHERIES ACCESS AGREEMENTS

- EU, South Pacific nations, Distant Water Fishing Nations are not the sole drivers
- Having an agreement prior to UN Law of the Sea helps, but doesn't overturn other results
- Reciprocal v. Non-reciprocal agreements have different motivations: non-reciprocal agreements are mostly driven by fishing advantage; reciprocal are signed between terrestrially contiguous and economically similar countries



# INTERNATIONAL FISHERIES TRADE

- Source country fish stock and fishing capacity are positively associated with trade
- Destination country fish stock and fishing capacity are negatively associated with trade
- Economically larger source and destination countries are more likely to have trade
- Consumption closeness (legal origin, religion, colonial ties) and shorter distance are positively associated with trade but now terrestrial (rather than maritime) and economic closeness matter



# INTERNATIONAL FISHERIES TRADE

- Both trade and agreements seem to be operating as alternative pathways since the enclosure of the oceans by UNCLOS
- Reciprocal v. Non-reciprocal agreements have different motivations: only non-reciprocal agreements are driven by fishing advantage; whereas closeness affects both types of trade



# CONCLUDING REMARKS

- We build a unique dataset of agreements and trade to examine the characteristics of pairs of countries with international fisheries access agreements
- Distinguish between contribution of fishing advantage and gravity factors
- Find that the usual suspects from a popular perspective do play a role in characterizing which countries make agreements with each other, but that they form only part of the story
  - Resource abundance influences both agreements and trade
  - Capacity operates differently on these alternate pathways
  - Costs along each pathway are different



THANK YOU

