Renewable resource market responses to rights-based management: market linkages in southern US fisheries.

Jordan Moor
Food and Resource Economics
Email: JordanMoor@ufl.edu

UF UNIVERSITY of FLORIDA
The Foundation for The Gator Nation

BACKGROUND

- **Property rights are foundational to economic and ecologic efficiency.**
- **Recently, there has been increased awareness of the consequences of common pool or open access management of renewable natural resources.**
- **This has led to the expansion of rights-based management for resources such as timber, water, and fisheries.**
- **The Gulf of Mexico implemented individual fishing quotas, IFQ, in 2007.**

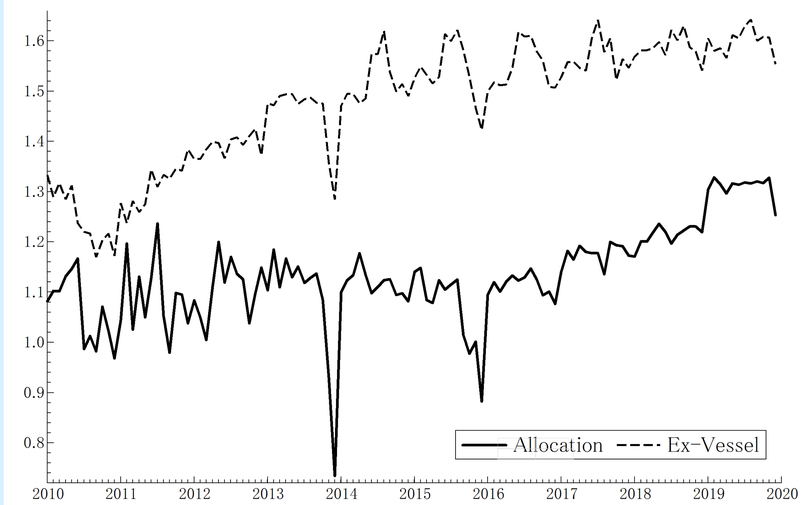
OBJECTIVES

- **To our knowledge, no one has used market integration analysis as a tool to determine the efficiency of natural resource-leasing markets.**
- **Our objective is to show the effectiveness of this tool on the United States Gulf of Mexico (GOM) individual transferable quota market for snapper and grouper species.**

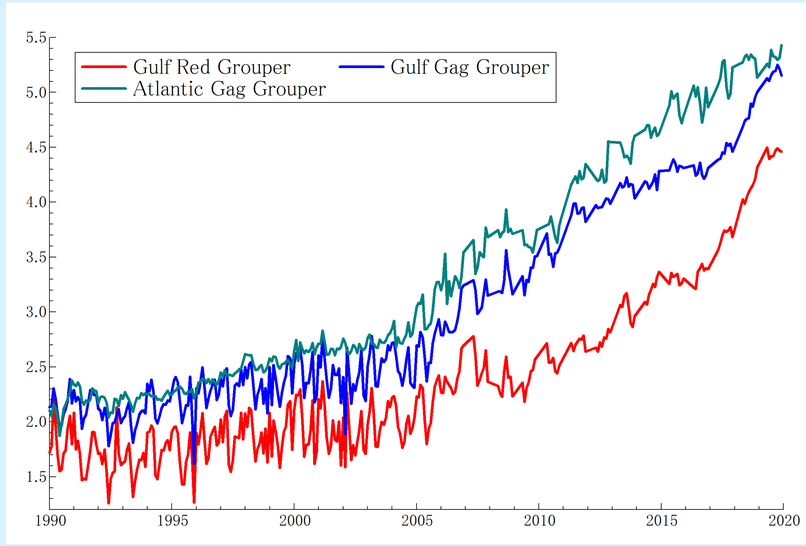
METHODS

- **For our cointegration analysis of the GOM fishery, we used the Johansen test.**
- **This method allows for hypothesis testing and, therefore, law of one price (LOP) and exogeneity testing.**

1. PRICE OF RED SNAPPER (IN LOGS)



2. GROUPER EX-VESSEL PRICES



ANALYSIS

Variables	Time Period	Lags	Cointegration	Exogenaity	LOP
Red Grouper Allocation	2011 - 2019	1	✓		✓
Red Grouper Ex Vessel			✓	✓	✓
Gag Grouper Allocation	2011 - 2019	2	✓		
Gag Grouper Ex Vessel			✓	✓	
Red Snapper Allocation	2011 - 2019	2	✓		
Red Snapper Ex Vessel			✓	✓	
Red Grouper Ex Vessel	2010 - 2019	2	✓		
Gag Grouper Ex Vessel			✓	✓	
Red Grouper Ex Vessel	2000 - 2009	1	✓		
Gag Grouper Ex Vessel			✓		
Red Grouper Ex Vessel	2010-2019	2	✓	✓	✓
Gag Grouper Ex Vessel			✓		✓

INITIAL FINDINGS

- **Fishery ex-vessel and allocation (lease) prices are cointegrated, which is evidence of an efficient market. A visual example of a cointegrated market can be seen in figure 1.**
- **Ex vessel LOP only holds after IFQ implementation, suggesting the management system may have caused a shift in the grouper market.**
- **Ex vessel/Allocation LOP holds in select cases, with the only difference in price being transportation or harvest costs.**
- **Ex-vessel prices appear to be exogenous. That is, they determine allocation prices. This supports previous literature.**
- **Time series show the success of the IFQ system in increasing product value and decreasing price volatility, as seen in figure 2.**