Testing for the influence of global trade on local fish prices and food security in an African coral reef fishery

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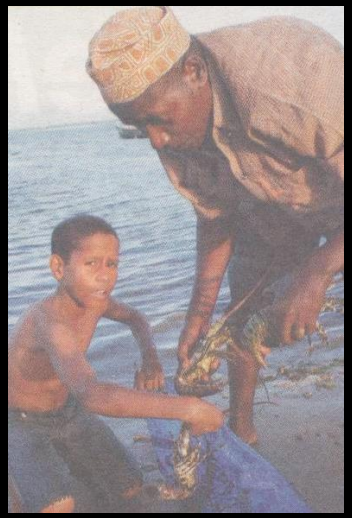


Introduction

Fish has been one of the highly traded commodities since the Bronze Age

Became globalized following improvements in processing, preservation, transport and communication.

The relationship between international trade in fish and food security and poverty is not well understood.

Explore the price and fishing effort interplay between three categories of marine fish types:
1)globally consumed fish (octopus),
2)nationally consumed (scavengers, parrotfish and rabbitfish), and
3)mixed (“bycatch” or fish mainly for local and home on one hand, and

Introduction

We ask the following key questions:

1) Do global markets create local inflation?

2) how does this influence prices relative to maize?

3) what are the fish types or markets through which the prices are influenced?

4) Is there any price transmission

5) what adaptations can fisher

6) what are the likely consequences of such adaptation to resource sustainability, food security, and poverty reduction?

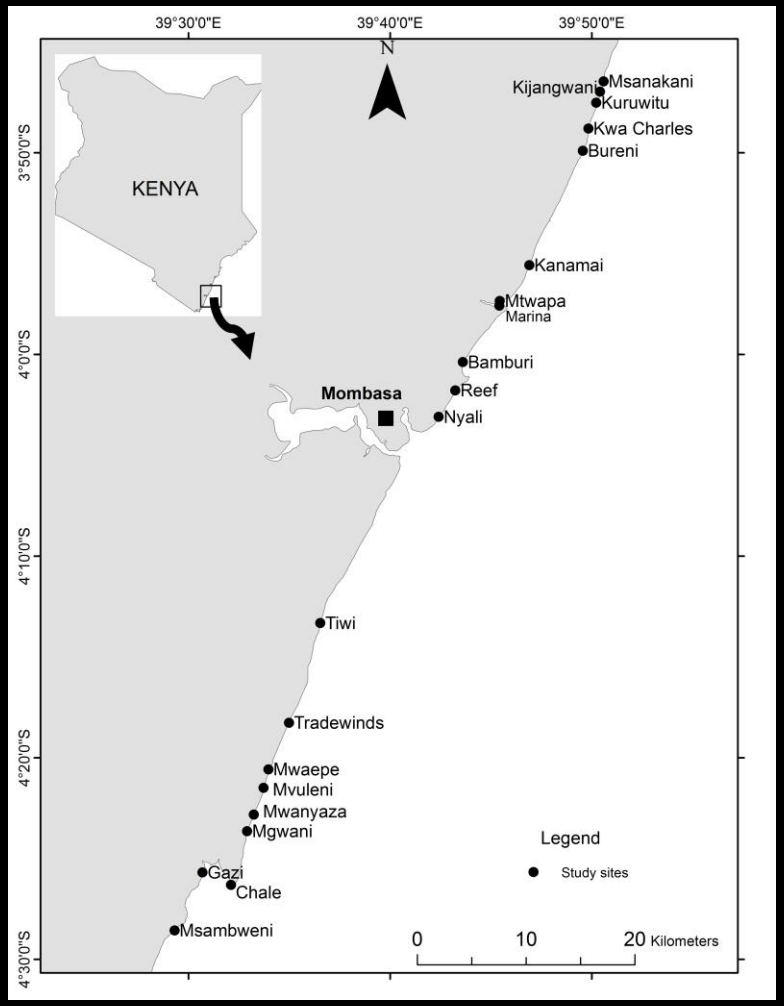
Methods

Data was collected between 1996 and 2011 at 22 landing sites

On each sampling day the number of fishers per gear at the landing site,

the entire catch per gear,

prices (monthly to annually), taxonomic group was recorded.



Analysis

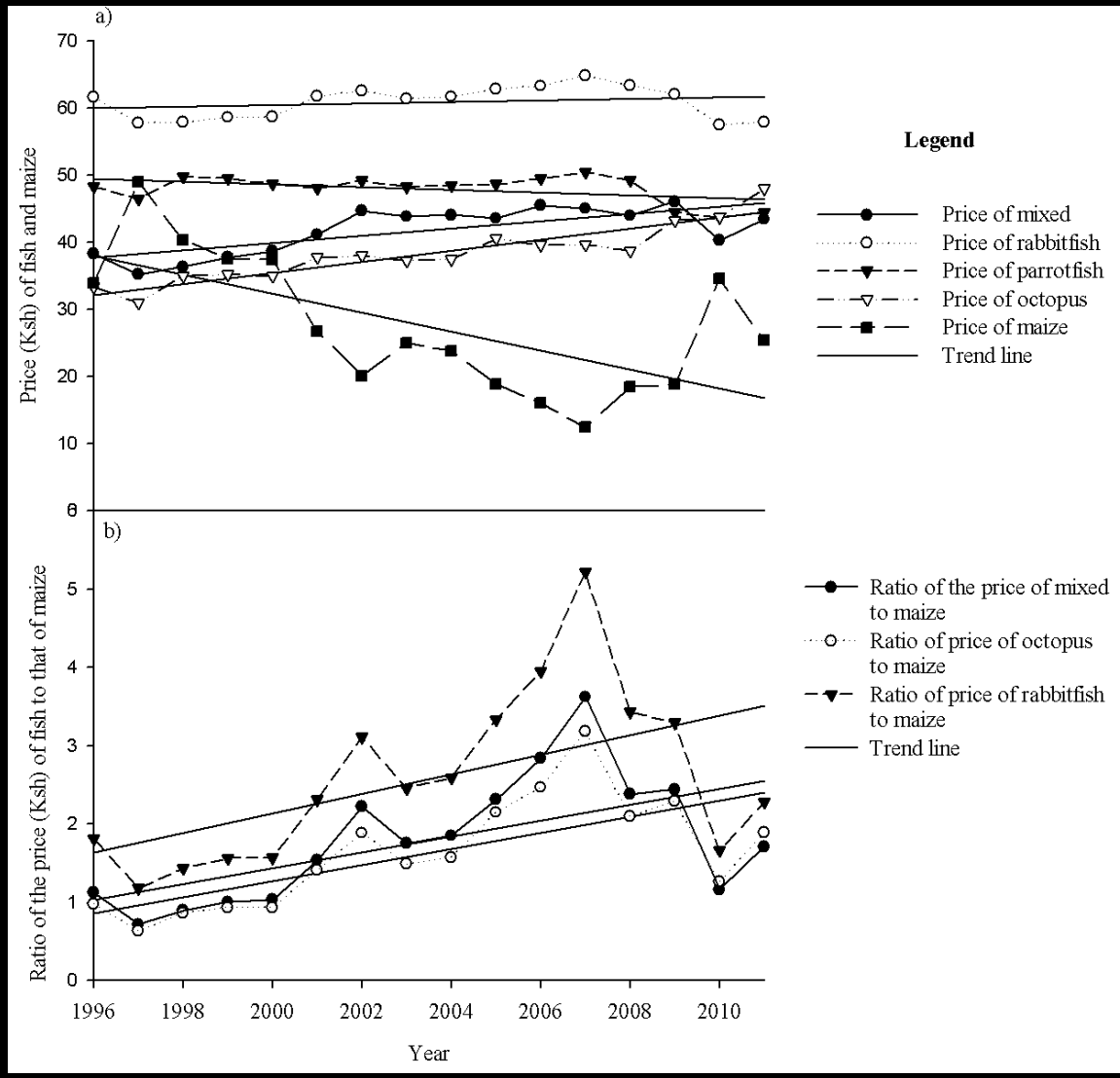
- We used cointegration (where we also tested for weak exogeneity) and
- stepwise regression
- This followed inflation adjustment and unit root tests

Results

Price trends

Fish becoming more valuable than maize

While maize prices generally declined, prices of mixed fish, octopus and rabbitfish increased.



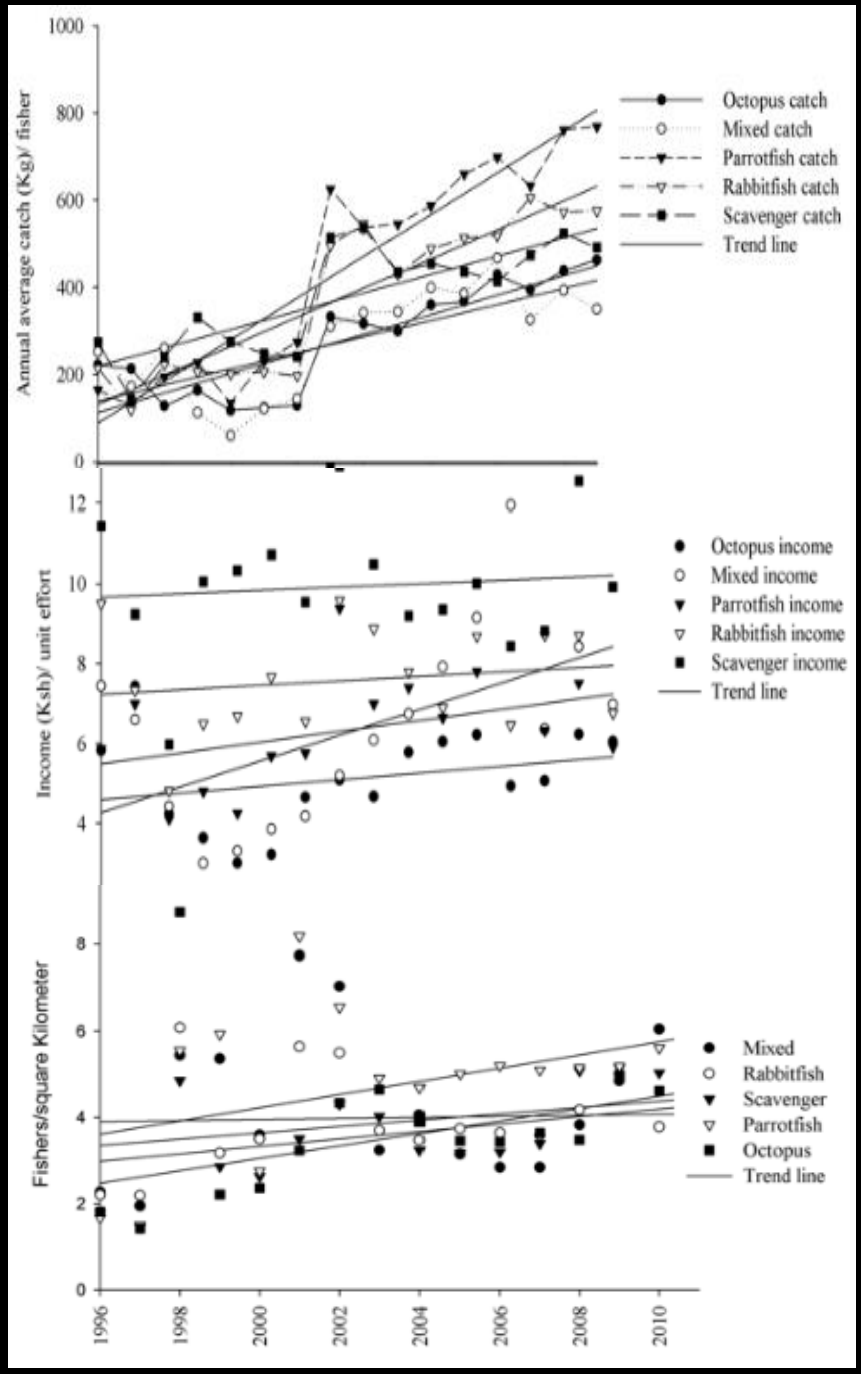
Results

Fish catch volume (kg) showed a positive trend.

Income to fishers from locally consumed fish increased as exported fish became more expensive.

Number of fishers increased.

Indication of the possibility of positive association between international fish trade and livelihoods of the poor.



Results

Tests of cointegration

No cointegration between octopus price and the CPUE/area of the other fish.

No cointegration between octopus price with that of maize nor mixed fish.

Cointegration between the price of mixed and that of maize

Cointegration between the price of maize and the CPUE/area of mixed

Cointegration series	Null hypothesis	J_{trace}	J_{max}
Octopus CPUE/area and octopus price	$r = 0$ *	18.11 (0.02)	16.29 (0.02)
	$r = 1$	1.82 (0.18)	1.82 (0.18)
Price of maize and mixed CPUE/area	$r = 0$*	30.83 (0.00)	22.48 (0.00)
	$r = 1$*	8.35 (0.04)	8.35 (0.04)
Price of maize and price of mixed	$r = 0$*	22.47 (0.00)	16.81 (0.02)
	$r = 1$*	5.66 (0.02)	5.66 (0.02)
Octopus CPUE/area and price of maize	$r = 0$ *	15.49 (0.01)	4.14 (0.04)
	$r = 1$*	16.14 (0.03)	4.14 (0.04)

Results

Tests of cointegration

The lack of cointegration suggests that

1) changes in prices of octopus did not influence demand of locally consumed fish and the starch staple,
and

2) rising prices of the octopus were not directly transmitted.

Results

Test of exogeneity

Unidirectional and positive causality relationship between octopus CPUE/area and octopus price

Unidirectional and positive causality relationship between the price of maize and mixed CPUE/area.

Octopus fishers may respond to prices without a strong decline in the resource

Results

Stepwise regression

The price of octopus did not predict the prices of other fish types or maize.

Further evidence that global seafood markets did not create local fish-price increases.

Conclusions

Global fish trader does not create local inflation of fish prices

Changes in price of octopus did not affect price of maize or price of mixed fish.

Octopus CPUE/area was influenced by octopus price

Thus fishers may focus on octopus without causing increases in the price of other fish on the short term.

Conclusions

There was no evidence of price transmission from export to non-export fish products.

Implication:

Octopus fishers could track prices and change fishing pressure to ensure resources are accessed quickly when prices are high.

Fishers can reduce fishing effort when the price of their staple is low to increase the resource for when the staple price is high.

However adjusting the effort and replenishment of resources to maximize profits will require coordination of the fishing community

Implications cont…

These results suggest that even for similar nearshore fisheries, market scales, consumer preferences, and dynamics and resultant implications are varied.

Increasing the abundance of fish through improved management can still provide high prices and direct economic gains to producers and sellers .

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