

The impact of changing domestic demand on Chinese aquaculture

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Motivation

- Increase economic growth in rural China
- Improve wellbeing of rural Chinese
- Improve efficiency of Chinese Aquaculture

Hypothesis and Objectives

Hypothesis

Null Hypothesis: Chinese aquaculture supply adequately responds to market demand.

Alternative Hypothesis: Market failures inhibit Chinese aquaculture supply response to changing demand.

Objectives

- Determine whether Chinese producers can adequately respond to changing aquaculture demand.
- Develop institutional policy recommendations to enhance supply response.

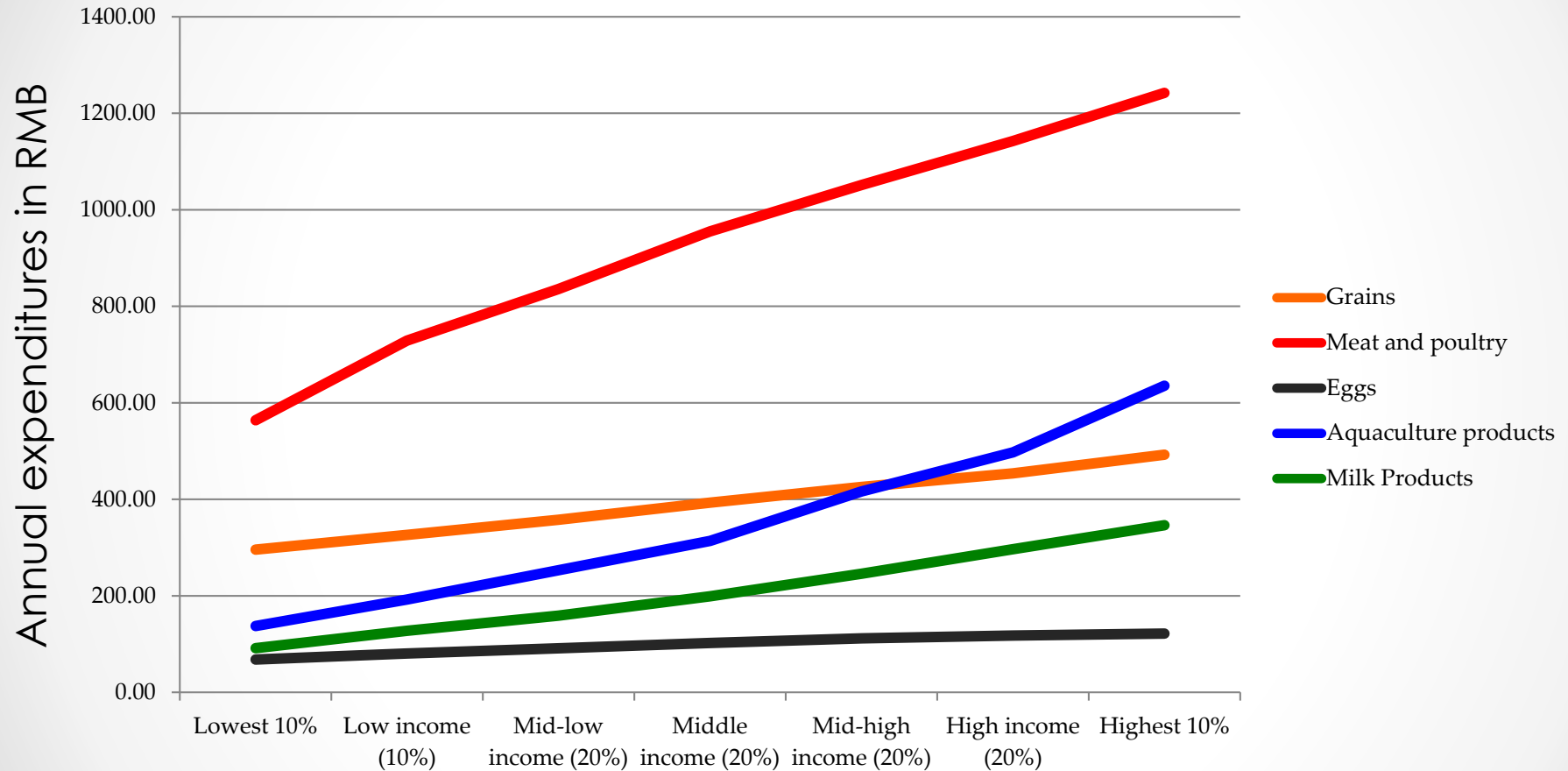


Fish Consumption in China

	World	Asia	China
Per capita consumption	16.5 kg	18.1 kg	25.8 kg
Fish as a percentage of animal protein in diet	15.5%	22%	18.9%

Information from *Aquaculture in China and Asia* (FAO, 2007)

Food consumption by income level



Data from 2011 *China Statistical Yearbook*

Income elasticities in 2003 of food types for urban households categorized by income

Food Category	2,500 RMB	7,500 RMB	10,000 RMB	22,000 RMB
Grains	0.11	0.15	0.15	0.15
Eggs	0.53	0.17	0.27	0.19
Meat	0.70	0.32	0.09	0.03
Dairy Products	1.63	0.79	0.68	0.51
Poultry	0.96	0.55	0.50	0.42
Aquaculture	1.06	0.92	0.90	0.87

Data taken from *Demand for Food Quantity and Quality* (Gale and Huang, 2007)

Income elasticities for quantity and quality in food types for urban households categorized by income

Food Category	2,500 RMB		7,500 RMB		10,000 RMB		22,000 RMB	
	Quality	Quantity	Quality	Quantity	Quality	Quantity	Quality	Quantity
Grains	0.11	0.00	0.23	-0.09	0.25	-0.10	0.27	-0.11
Eggs	0.03	0.50	0.07	0.10	0.07	0.50	0.08	-0.03
Meat	0.12	0.59	0.14	0.18	0.14	0.13	0.14	0.05
Dairy Products	-0.11	1.74	0.15	0.64	0.18	0.50	0.23	0.28
Poultry	0.18	0.78	0.17	0.38	0.17	0.33	0.17	0.25
Aquaculture	0.34	0.72	0.40	0.52	0.41	0.49	0.42	0.45

Quality elasticities = expenditure elasticity – quantity elasticity

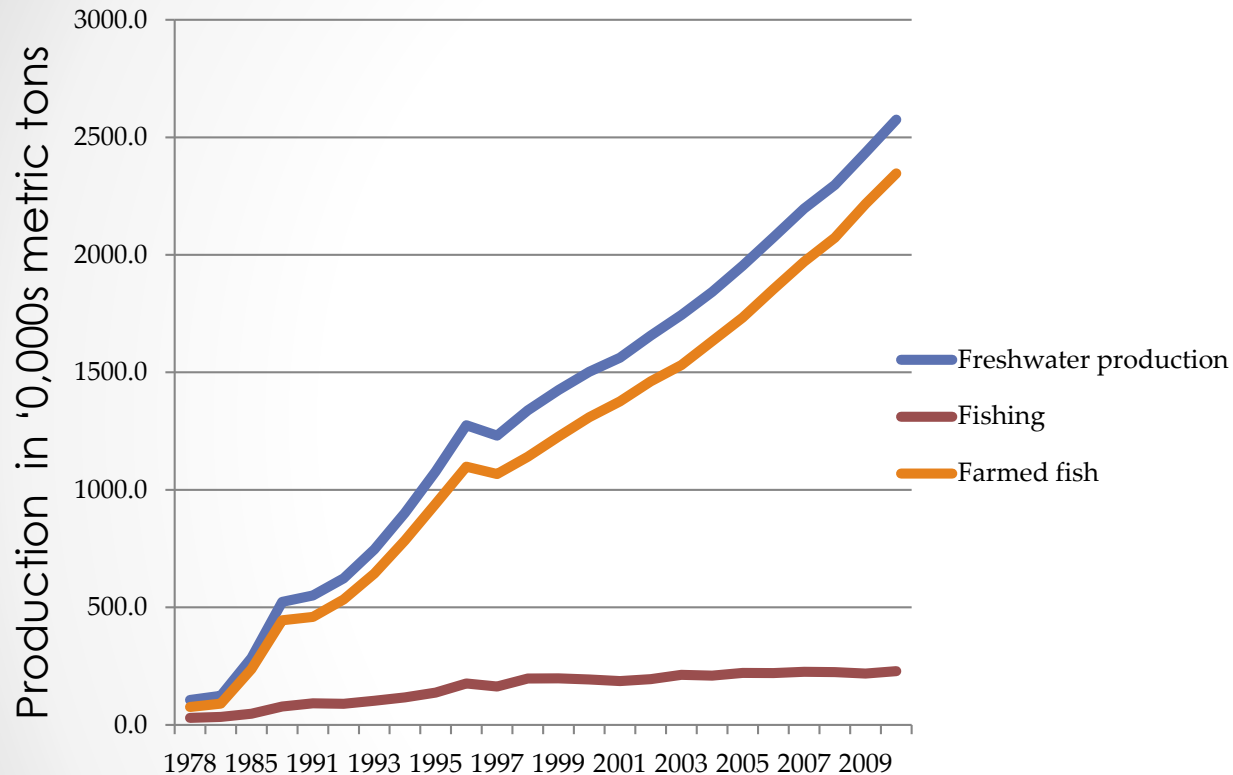
Data taken from *Demand for Food Quantity and Quality* (Gale and Huang, 2007)



Wet markets and supermarkets

- Wet markets generally have more lax standards on food safety
- Wet markets are still preferred for fresh goods
- Supermarkets are gaining ground in the cities and higher income brackets

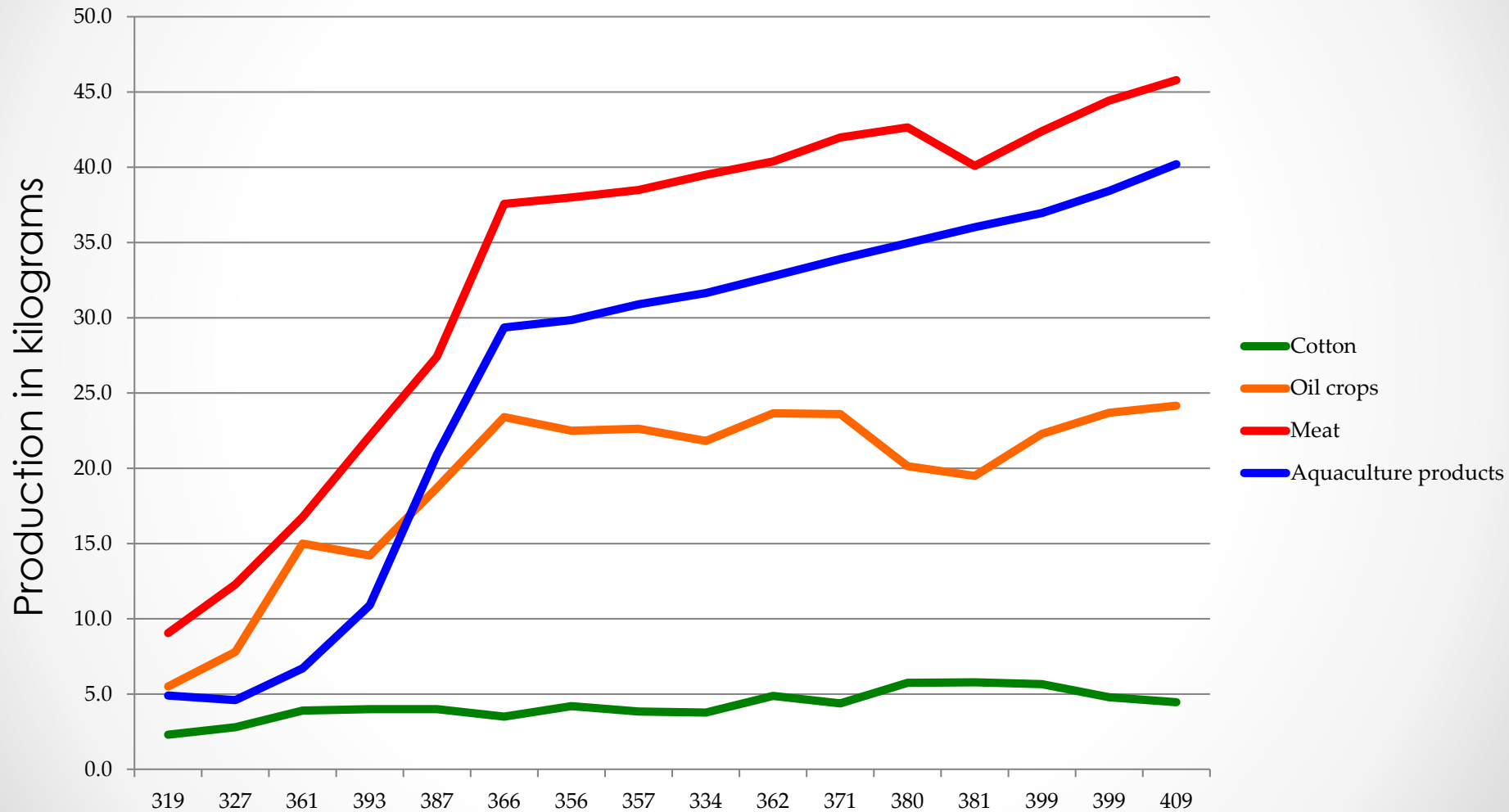
Industry growth



- Production rose on average 18% annually from 1978-2007
- Responsible for 67% of world aquaculture production
- Employs more than 10.3 million

Data from 2011 *China Statistical Yearbook*

Per capita rural production in kilograms



Data from 2011 *China Statistical Yearbook*



Two-pond fish farm near Xiaokunshan, Songjiang

- Short-term lease (3-5 years)
- Covers less than two acres
- Raise bream, several types of carp, eel
- Poor water filtration

Major issues faced by small producers

- Water pollution and poor water filtration system
- Little access to credit
- Often lack long-term land security

Result: No access to international markets, and limited access to higher quality markets

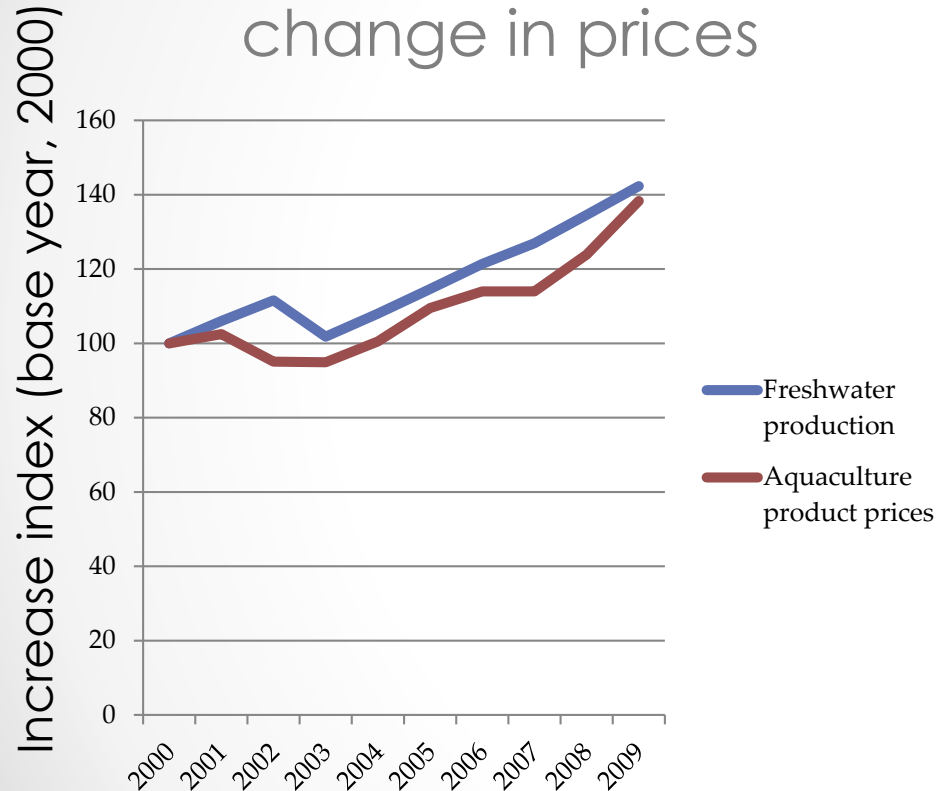
Method to Test Hypothesis

Examine :

- Correlation between increases in prices of aquaculture products over ten years and following next year production
- Correlation between expenditures on food and next year production from 1990-2000
- Correlation between production and sales

Responsiveness to demand

Responsiveness of freshwater production to change in prices



Correlation between production and prices: 0.94

- Correlation between Saltwater production and food prices: 0.65
- between production and average expenditures on food: 0.98
- between production and sales: .97



养殖池塘效果图

中国水产科学研究院渔业机械仪器研究所设计

ZHONGGUOSHUICHANKEXUEYANJIUYUANYUYEJIXIEYIQIYANJIUSUOSHEJ

Qianteng Modern Fish Farm in Kunshan, Jiangxi

- Designed by the Chinese Academy of Fishery Sciences in Shanghai
- Set to cover 461.5 acres
- Water purification system
- Raises crab, eel, sea cucumber, freshwater shrimp

Conclusions and recommendations

Accept null hypothesis:

Chinese aquaculture supply adequately responds to market demand.

Caveat:

Large producers are taking advantage of changes in the market, while small producers may fall behind

Recommendations:

- Help small producers address quality issues.
- Reform and improve land rights
- Help small producers access credit

Questions

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