

Firms and Markdown adjustment

Intermediaries and price passthrough

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Overview

Overview – Motivation

- Literature about exchange rate passthrough mainly discusses how international shock propagate to import prices.
- However, the mechanism on how international price shock propagate to input prices is important especially in the context of developing countries.
- Developing countries export large proportion of commodities which make them vulnerable to high volatility of export price shock.
- Given limited capabilities to passthrough the prices to trading partners in developing countries, firms alternatively adjust local input prices.
- The process of price adjustment depends on the market conduct, intermediaries in the market and frictions in the market.

Research Question

How do intermediaries affect a propagation from exogenous international price shock to local input prices.

- **Surplus Splitting** – How does the international price shock is distributed between exporters, intermediaries and farmers?
- **Risk Sharing** – Does an intermediary play a role as shock absorber in the economy?

Overview - Why is this important?

Why is this important

- Understand the transmission of international price shocks to domestic prices is important to understand the real adjustment mechanism.
- Developing countries and commodity exporters are prone to international price shocks.
 - Recent USD appreciation.
 - Distributional impact of exchange rate intervention to support international trade competition.
- Understand the impact of layers of intermediaries vs. contract pricing on the impact of aggregate shock.

1. → Collect Data and Generate Stylized Facts

- Thai rice market data
- Generate stylized facts about different surplus for different farmers and rice mill characteristics

2. Empirical analysis to establish empirical facts that explain the mechanism.
3. Develop a model to study the mechanism.
4. Counterfactual analysis

Literature Review

1. **Risk sharing and Development – structural model of insurance**
Townsend (1994)
2. **Terms of trade shock and passthrough**
Atkenson and Burstein (2008); Amiti, Itskhoki and Konings (2019)
3. **Monopsony and Markdowns**
Burdett and Mortesen (1998); Manning (2003); Berger, Herkenhoff and Mongey (2022)
4. **Intermediate Trading**
Treb Allen (2014); Antràs and Constinot (2010); Chatterjee (2017)

Industry Overview

Thai Rice Industry Overview

Rice and Thai Economy

- 46% of total harvest area in Thailand.
- 40% of household are in agricultural sector and 60.5% of agricultural household are rice farmers.

International Rice Market

- 9.7% of total global rice production is for export
- Thailand is the 6th in terms of production (3.7% of total production), after China (29.3%), India (24.1%), Indonesia (7.0%) , Bangladesh (6.8%), and Vietnam (5.4%).
- Thailand is the 3rd in terms of export (11.9%); after India (38.9%) and Vietnam (12.9%)

Rice Industry - Overview

1. **White Rice** (55-60% of Rice Globally Traded)

- 39% of Thai rice export.
- Export to African countries and Asians.
- The quality depends on percentage of broken rice.
- High competition with India and other Southeast Asian due to lower cost of production.

2. **Parboiled Rice** (14-28 % of Rice Globally Traded)

- 23-28% of Thai rice export.
- Export to African countries and Middle Eastern Countries (Benin, South Africa, Yemen and Cameroon)

3. **Jasmine Rice** (12-14% of Rice Globally Traded)

- 11-15% of Thai rice export.
- Mainly export to the USA (33%), China and Hong Kong

4. **Glutinous Rice**

- 2.5 % of total Thai rice export
- Mainly to China, US and Japan.

Rice Supply Chain

Average annual production 31-33 m. tons, 20-22 tons after milled.

Domestic consumption around 11 mil tons.

1. Farmers (Upstream)

- 85% of output is from annual crop in central and northern area.
- no storage technology.
- Mainly sell to the nearby mills or to the central market or local collector as transportation cost is expensive.

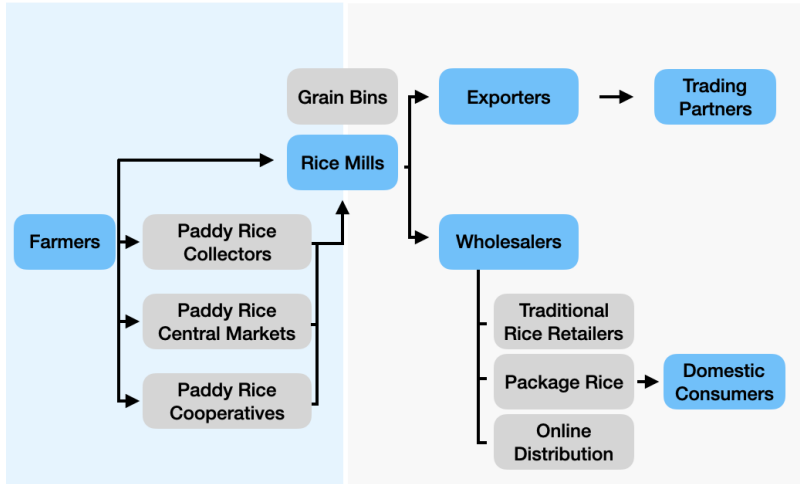
2. Rice Mill (Middle stream)

- 1 kg of rice would get 0.6-0.7 kg of milled rice – depends on the type of rice and harvesting time.

3. Retailers/Exporters (Downstream)

- Approximately 50% of rice production is for domestic consumption and 50% of rice production is for export.
- 60-70% Consumption (50% of package rice, 48% of traditional retailer and 2% online)
- 30-40% – Flour, snack, ethanol, animal foods, electricity.

Rice Industry in Thailand



Rice Industry in Thailand



1. International trader/brokers represents buyers in the market.
2. They determine the price by taking into account (i) output projection (ii) estimated demand and (iii) rice stock . Then, they make an offer to exporters.
3. Exporters take the price and search for domestic input.

Data and Stylized Facts

1. Cross Sectional Annual Household Survey Data by province

- Household's balance sheet: assets and liabilities
- Financial constraints - ability to borrow money for farm business, outstanding debts and sources of debts.
- Farm income ($P \times Q$) and other sources of income
- Farm size and input cost

2. Rice mill and Rice exporters Location

3. Aggregate prices and quantities data

- export prices, Retail prices, and Provincial farm price (excl. transportation cost)

4. Firm Survey: Value added and cost for Rice Mill

5. Agricultural survey: Land area by type of rice and quantities produced.

→ Ideally, linking mill and farmer data by making assumptions about distances.

Aggregate Farm Price and Export Price

Fact 1 – Export prices are more than twice as volatile as domestic prices.

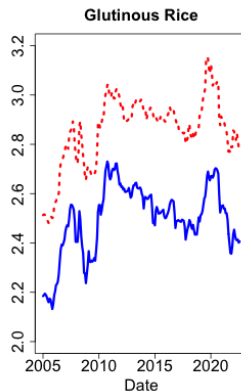
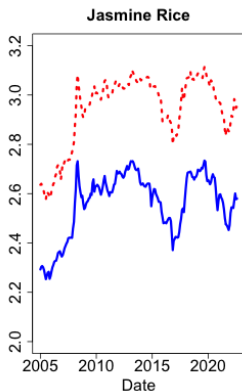
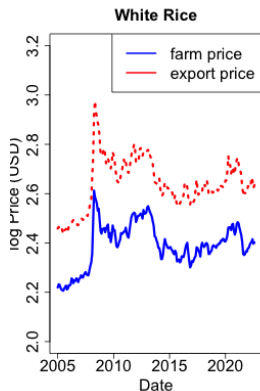
usd	White Rice		Jasmine Rice		Glutinous Rice	
	Farm	Export	Farm	Export	Farm	Export
mean	251.38	451.25	378.60	918.82	329.90	758.44
s.d.	50.53	111.8	98.34	250.39	96.64	223.82

Table 1: Farm prices and export prices in (USD/ton)

Export and Farm Prices (log USD)

Fact 2

- Export margins are higher for premium product.
- However, the prices are more volatile.



Farm income for rice farmers

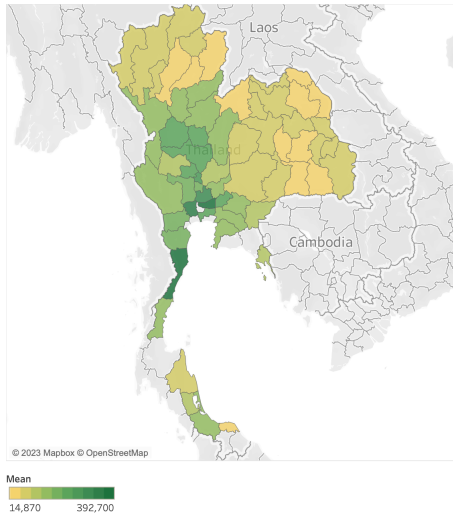


Figure 1: Average annual value of harvest crop per household

Farm income per area

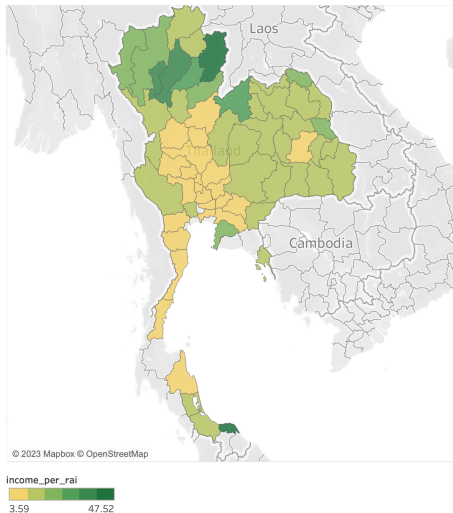
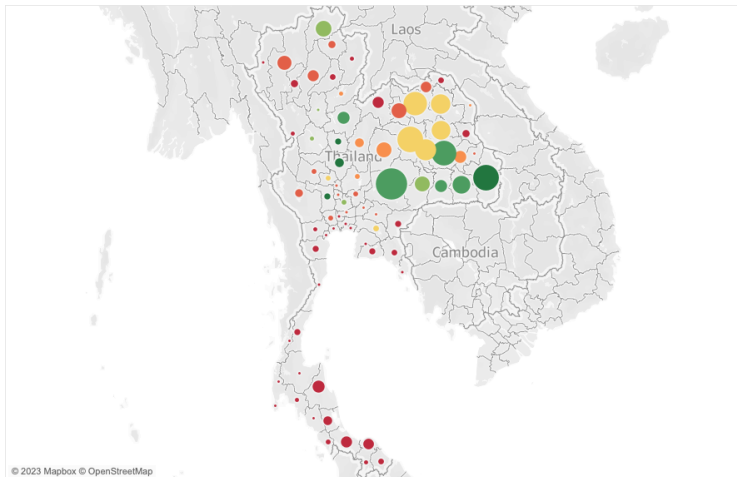
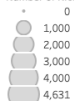


Figure 2: Average annual value of harvest crop/area (annual per area)

Concentration of the rice mills



Number of Rice Mill



Land Area (Rai)



Empirical Facts

Aggregate Impact: Price Passthrough

Question

How aggregate surplus is split between farmers, rice mill and exporters?

- Asymmetry between positive and negative international price shock?
- Heterogeneity in provincial level characteristics of farmers and rice mills?

Identification Strategy

- Use the episode of exchange rate shock that is driven by financial market (instead of demand shock) as an exogenous source of international price shock.
- Use the period where government act as an intermediary by setting the price above the market price.

Testable Hypothesis: How surplus are splitting between exporters, rice mills and farmers

1. Do small farmers get lower price but more insurance (less fluctuation in prices)?
 - Would this lead to a better outcome when farmers are financially constraint?
 - Calculate the surplus including the opportunity cost of the farmers and rice mills.
2. Does (i) higher competition among intermediaries (rice mills) or (ii) larger input producers (in this case, farmers) would generate a result that is closer to a complete passthrough case where exporters could fully propagate the shock to local farmers?

Next Step

Research Plan

1. → Collect Data and Generate Stylized Facts

- Thai rice market data
- Generate stylized facts about different surplus for different farmers and rice mill characteristics

2. Empirical analysis to establish empirical facts that explain the mechanism.

- Utilize variation in market structure and exogenous shocks.

3. Develop a model to study the mechanism.

- Trade model with intermediaries and information frictions.
- During the positive shock, intermediaries don't want the farmer to observe the export price while during the negative shock intermediaries want farmer to learn about the export price.

4. Counterfactual analysis

- 4.1 there is no intermediaries in the market.
- 4.2 when a country employs exchange rate policy to gain competitive advantages.

Research Question

- How international shocks impact domestic prices.
- Mechanism: Firms adjust input prices (random search). However, the ability to adjust the prices depends on market power.

Next Step

- Summarise the stylized facts and empirical facts.
- Develop a model that generate the mechanism.
- Do counterfactual exercise.