Information Frictions in Trade (2014)

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Allen (2014) - Overview

Motivation

- It's costly to learn about market conditions especially in developing countries.
- Little variation in prices within market but high variation in prices across market.

Research Question

- How *information frictions* affect trade?

Allen (2014) - Overview (Cont.)

Methodologies

- **Empirical:** Using Philippines data to show five empirical facts that suggest the presence of information frictions.
- **Model:** Perfect competition trade model with information friction assuming costly sequential search process.

Findings:

- Roughly half of observed regional price dispersion is due to information friction.

Empirical Patterns

1. Transportation cost alone cannot explain why trade flows decline with distance.
2. Regions often simultaneously import and export the same commodity... *but are less likely to do so when there is access to mobile phones.*
3. The pass-through of price shocks is incomplete... *but is more complete when trading partners both have access to mobile phones.*
4. Larger farmers are more likely to trade... *but access to mobile phone disporportionately increases the probability that small farmers trade.*
5. The elasticity of trade to destination prices increases with the heterogeneity of producers in the origin – Large farmers are more responsive to destination prices than smaller farmers.

Allen (2014) - Trade Model with Information Frictions

Overview

- Each producer has to undergo a search process to learn what prices are in other destinations.
- When search is costly, larger producers will search more intensively and on average sell to destinations with higher prices.

Set up:

- A large number of regions, each inhabited by consumers and exogenous mass of farmers.
- *notation:* i refers to origin. j refer to destination. Each farmer produces a single commodity c and maximizes profits. Each commodity is produced and consumed in all regions.

Allen (2014) - Set up

Production

- Each commodity in each region is subject to idiosyncratic productivity shocks $A_{ic} \in (0, 1]$.
- If a farmer produces, she produces an amount equal to her landholding $\varphi \in [1, \infty)$ which heterogeneous across farmers and distributed according to Pareto distribution with shape parameter θ_{ic}.

Allen (2014) - Information Frictions

Random Search

- Farmers know their local price and true distribution of prices but must engage in a search process to learn the prices elsewhere.
- Fixed cos of search f_{ic}.
- Farmer draws a name of a single region which they learn the price. Farmer can sell to that destination or search again.
- Search probability $s_{ijc} > 0$. Assuming the set of search probability is constant throughout the search process.

Information Frictions

- Fixed cost of search f_{ic} - destination invariant.
- Search probability s_{ijc}-depends on origin-destination pairs.

Allen (2014) - Optimal Search Behavior

$$V_{ic}(p;\varphi) = \max\left\{\varphi p, \int_{p_{ic}^{min}}^{p_{ic}^{max}} V_{ic}(p';\varphi)\, dF_p^{ic}(p') - f_{ic}\right\}$$

where $F_p^{ic}(p)$ is the cumulative distribution function of prices.

Farmer's optimal strategy is to sell if and only if the price exceeds his/her reservation price $p \geq \bar{p}_{ic}(\varphi)$

$$f_{ic} = \varphi \int_{\bar{p}_{ic}(\varphi)}^{p_{ic}^{max}} (p' - \bar{p}_{ic}(\varphi))\, dF_p^{ic}(p')$$

If $f_{ic} > 0$, reservation price is strictly increasing in φ. Larger farmers have higher reservation prices, so they search more to sell. So, they search more intensively than small farmers.

Allen (2014) - Threshold landholding

$$\varphi^*_{ic}(p) \equiv \frac{f_{ic}}{K_{ic}(p)}$$

where

$$K_{ic}(p) \equiv \int_{p}^{p^{max}_{ic}} (p' - p)\, dF^{ic}_{p}(p')$$

- $\varphi^*_{ic}(p)$ indicate maximum land size such that farmer would be willing to sell to j rather than minimum productivity required to enter a market.
- This is due to farmers own a fixed amount of produce to sell. The decision to sell to one destination comes at the cost of selling elsewhere.
- So, this is more realistic in the setting where production cannot easily be scaled to respond to changes in the market demand.

Conclusion/Possible Extension

Conclusion:

- Large firms search more intensive.
- Price Pass-through is more complete with less friction.

Concerns:

- Identification of information frictions, search cost, spatial competition.
- Heterogeneity of productivity location, spatial development level and information frictions.

Possible Extensions:

- Intermediation and multilayer of intermediation.
- Risk preference of farmers.

Other Related Paper

Market Power and Spatial Competition in Rural India (Chatterjee, 2017)

- Role of spatial competition between intermediaries in determining the prices that farmer receive in india.
- Interaction between market integration and spatial competition
- Methodologies: Nash bargaining

Intermediated Trade (Antras and Costinot - QJE (2011))

- Role of intermediaries and gain from trade.
- Trade model with two islands, two type of agents (farmers and traders).
- The model without search frictions reduces to standard ricardian model of trade.
- Intermediation magnifies the gains from trade with Walrasian Market Integration.

My Research: Introduction

- Passthrough literature mainly discusses about how shock propagate to import prices.
- My research instead focuses on how international price shock propagate from export prices to input prices.
- This mechanism is interesting in the context of developing countries that mainly export commodities and go limited capabilities to pass-through the price to trading partners. The firm survey in Thailand indicates that firms will adjust by reducing input prices.
- However, the input price adjustment depends on the intermediaries in the market.

Overview

Motivation

- We talk a lot about the passthrough to export price but also there is a propagation of shock to the domestic price as well
- This is true for developing country that experience external shock from export prices and when they cannot control the price of goods like commodity.
- The price of producers and buyers are determined by intermediaries due to market power or information frictions.

Research Question

- How do intermediaries impact shock propagation from exogenous international price shock to domestic price and wages.
  - Distributional outcome: farmers vs intermediaries vs exporters
  - Role of intermediaries as a shock absorber?

Overview – Why is this important

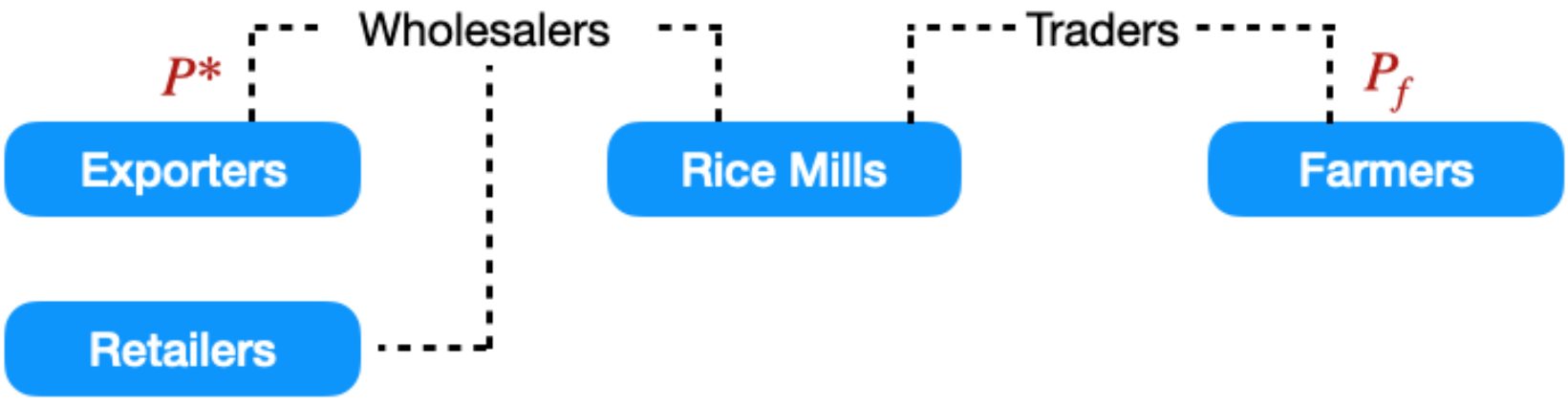
Why is this important?

- Understand the transmission of international price shock to domestic prices/wages that is important for real adjustment mechanism.
- Developing countries and commodity exporters are prone to international price shocks.
  - Understand the propagation of international shocks to domestic price (recent appreciation in USD).
  - Understand the distributional impact of exchange rate intervention to support export competition.
- Layer of intermediaries (double marginalization problem) vs contract pricing

Plan

- Focus on rice market in Thailand
  - main agricultural products.
  - All the intermediaries are required to register with the government.

Industry – Rice in Thailand



Farm Prices and Export Prices

- White rice - mainly export to African countries
- Jasmine Rice - mainly export to America and Europe
- Glutinous - small export share

(THB/Tonne)	White Rice		Jasmine		Glutinous	
	Farm Price	Export Price	Farm Price	Export Price	Farm Price	Export Price
Mean	8,314	14,897	12,478	30,132	10,814	2,4871
s.d.	1,330	3,252	2,631	6,950	2,635	6,226

Table 1: Farm Prices and Export Prices

Farm Prices and Export Prices

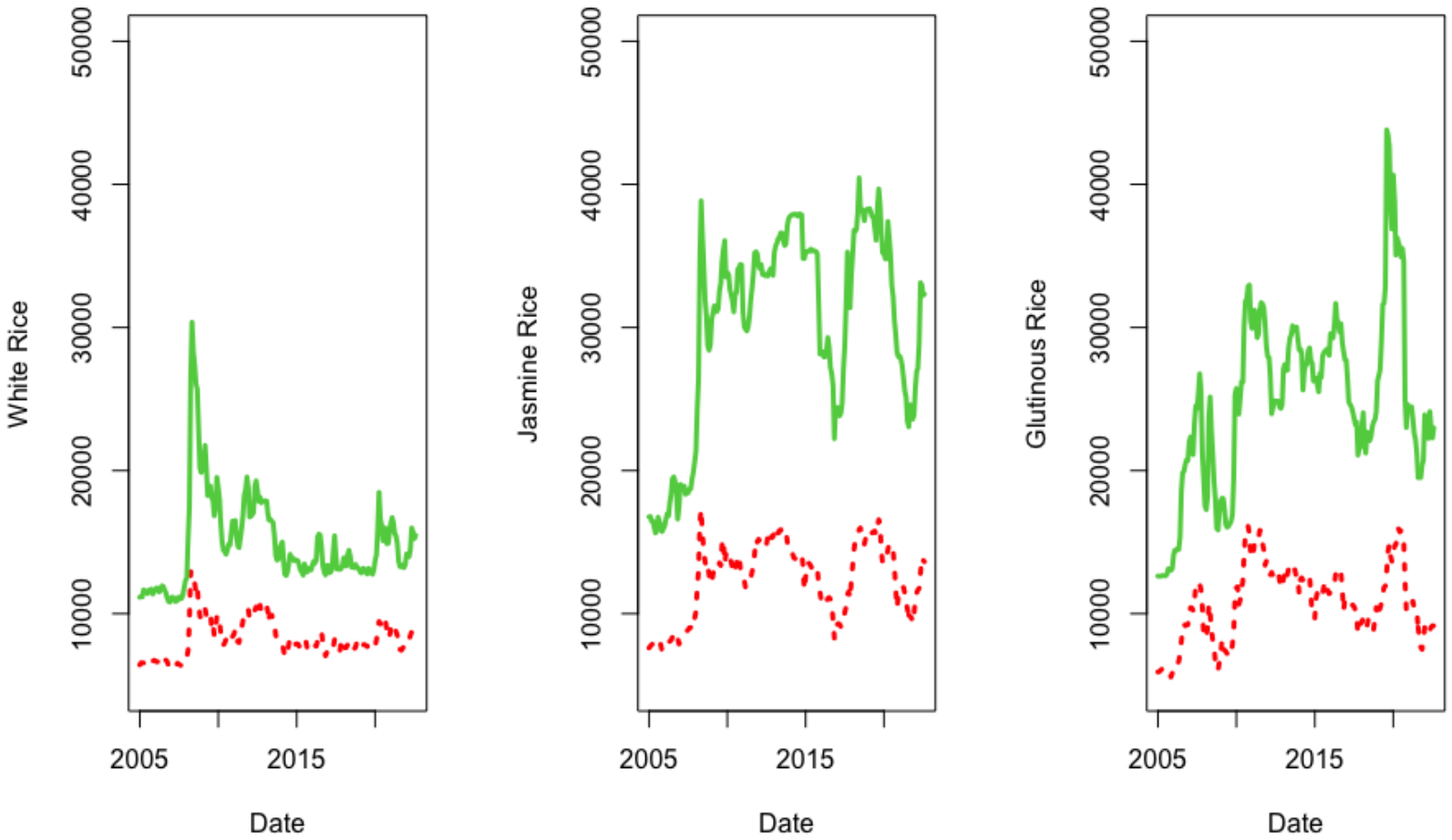


Figure 1: Farm Price (Red) and Export Price (Green)

Change in Prices

- Volatility of percentage change in farm prices is about the same as volatility of percentage change in export prices for Jasmine and Glutinous rice.
- The percentage change in prices is negatively correlated with percentage change in exchange rate.

(THB/Tonne)	White Rice		Jasmine		Glutinous	
	Farm Price	Export Price	Farm Price	Export Price	Farm Price	Export Price
Mean	3.1%	4.5%	4.7%	5.4%	6.3%	7.2%
s.d.	0.21	0.31	0.23	0.23	0.31	0.30
cor(Δner)	-0.08	-0.05	-0.29	-0.23	-0.49	-0.43

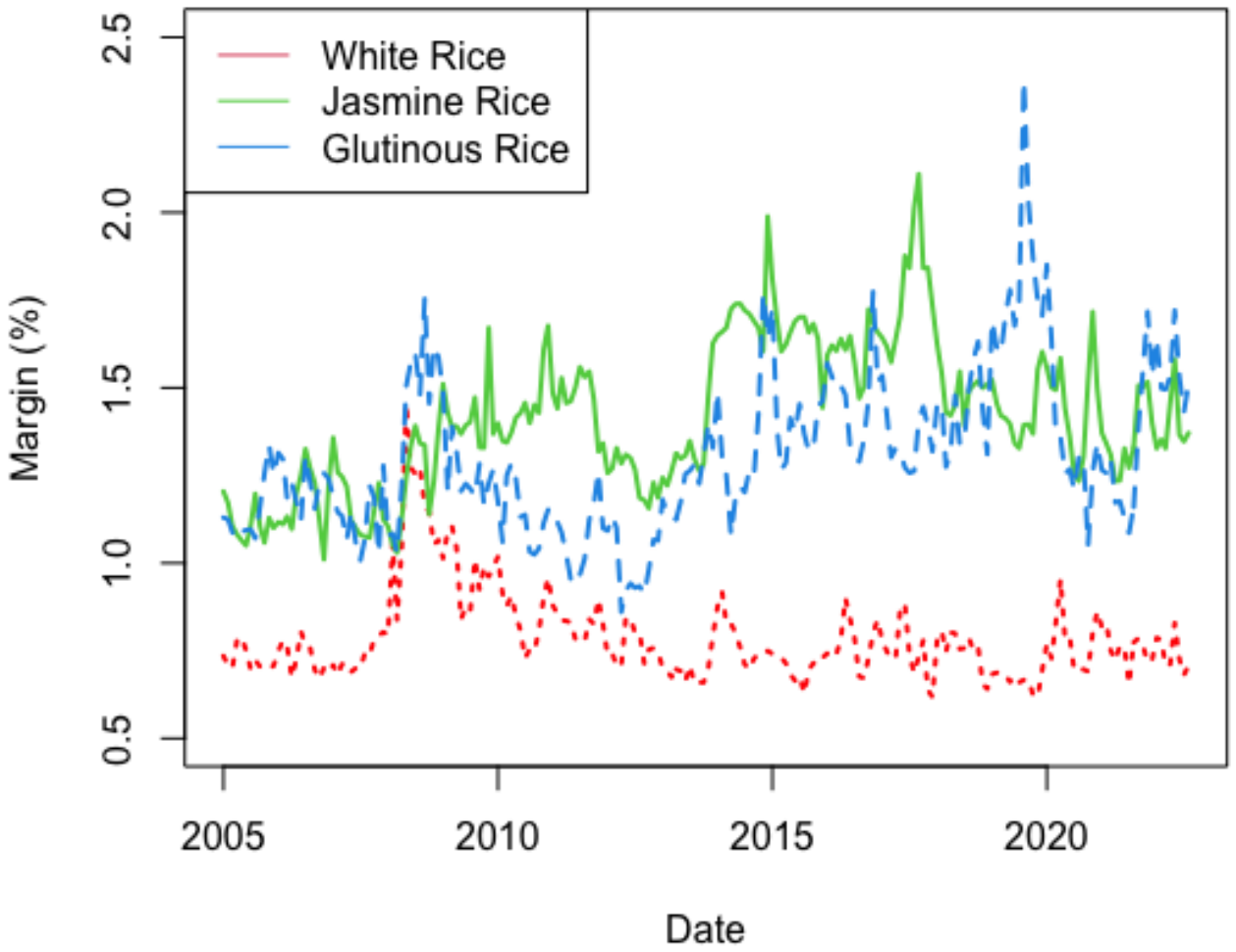
Export Margins

- Percentage change in margin is more volatile for white rice.
- Percentage change in exchange rate is positively correlated with percentage change in margin.

$$margin = \frac{ExportPrice - FarmPrice}{FarmPrice}$$

%	White Rice	Jasmine	Glutinous	ner
mean(margin)	0.78	1.31	1.42	
mean(Δ ln margin)	3.0%	3.7%	2.5%	-0.8%
sd(Δ ln margin)	0.30	0.20	0.15	0.06
cor(%Δmargin, %Δner)	0.19	0.25	0.17	

Export Margins



Data

1. Price Data
   1.1 Monthly Producer Prices (LCU) from 2010
   1.2 Monthly Wholesale Price
   1.3 Monthly Export Price
2. Rice Mill Balance Sheet, location and year of establishment from 2013
3. Export and Import Data from 2000
   - Quantities and values by Destination country.
   - Annual Agricultural Household survey
4. Number of retailers wholesalers and intermediaries and exporters by location

Testable Hypothesis

Empirical predictions

- Is the pass-through incomplete?
  - Is the price pass-through is more complete with higher competition in intermediaries?
  - Is the price pass-through is more complete with large farmers.

Identification Strategies

- Exogenous exchange rate shock that specific to Thailand
- Period of Oct 2011 - Oct 2013, government acted as an intermediaries buying rice directly from farmers at the price higher than the market value.

Conclusion

- Using Thai rice data, my research focuses on how intermediaries affect the export price propagation into domestic farm price and wholesale price.
- I aim to test the prediction whether (a) large farmers search for higher prices and (b) more competition in an intermediary market lead to higher farm price.
- Then, I plan to develop a trade model with informational friction and analyze the impact of development policy including (a) vertical integration and (b) income insurance.