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Import Protections in China's Grain Markets: An Empirical Assessment

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Background

- In December 2016, the U.S. government sent a dispute request to the WTO, claiming that China inhibits the filling of Tariff Rate Quotas (TRQ) in grain markets through inappropriate TRQ administration.
- USDA estimated that China would have imported 3.5 billion dollars in addition (to 3.7 billion dollars) in 2015 if the quotas were fully utilized.
- China has become the predominant market for U.S. exports of bulk agricultural commodities since 2012 (Hansen et al., 2017). China takes 34% of U.S. export shares in 2016 (USDA, 2017).
- The dispute is considered a major agricultural trade policy issue concerning the U.S. 115th congress.

Research Objectives

- To understand the mechanism of TRQ administration in China's grain markets;
- To quantify the effects of TRQ administration on China's grain imports.

Related Studies

(1) Studies on the economic impacts of China's agricultural policies.

- China experienced an “U” turn in the degree of agricultural distortions:
 - Continuous reductions in agricultural tax before early 2000s (Huang et al., 2004);
 - Gradual increases in agricultural supports through subsidy and price support programs after 2004 (e.g. Gale, 2013; Orden et al., 2017).
- Economic effects of agricultural support policies:
 - Promoted domestic food production and farmers' income (e.g. Yan, 2016).
 - Lower production efficiency in the long run (Anderson and Strutt, 2014).

Related Studies

(2) Studies on the economics of TRQ and TRQ administration.

- Theoretical analysis: Abbott and Paarlberg (1998), Boughner et al. (2000), Abbott and Morse (2000), and Skully (2001).
- State trading and market access:
 - TRQ administration matters to quota underfill (Mönnich, 2003).
 - State trading does not hinder market access (Skully, 2001; Abbott, 2002).
 - State trading is potentially distortative depending on its objective (McCorriston and Maclaren, 2002)
- TRQ liberalization: tariff reduction or quota expansion?
 - Building TRQs into analytic models without much focus on the cost of TRQ administration. (Scoppola, 2010; Grant et al., 2009; Chen et al., 2011).

Policy Background

- Price intervention program:
 - The State Trading Enterprises (STEs) purchase wheat, rice and maize at floor prices since mid 2000s.
 - The policy objectives are to increase farmers' income and encourage grain production.
 - Massive storage and price gaps reflect policy challenges.
- TRQ policy:
 - Quota level: 9.6 million tonnes for wheat, 7.2 million tonnes for maize, 5.3 million tonnes for rice.
 - Tariff rates: 1% in quota, 65% out of quota.
 - Quotas are allocated between STEs and private firms.
 - Reallocation process: unused quotas must be returned before mid-September.

Quota Fill Rates

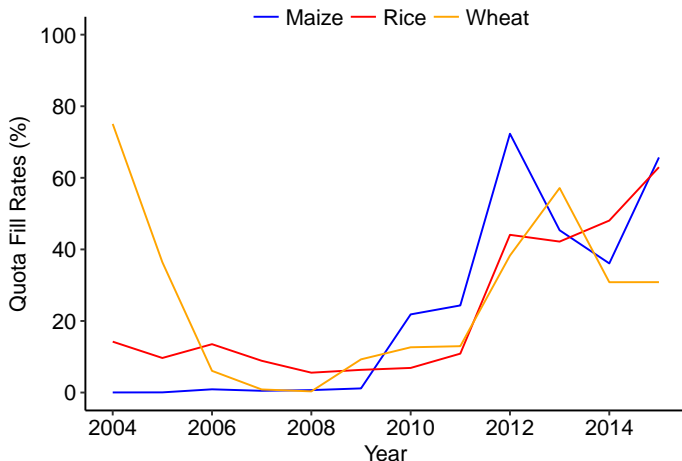


Figure 1. Quota fill rates in China's grain markets during 2004-2015.
Data source: UN Comtrade.

Theoretical Framework

- Previous studies consider TRQ administration with state trading as import tariff or subsidy with fixed rates (Abbott, 2002; McCorriston and Maclaren, 2002).
- Abbott and Morse (2000) argues that, “in most developing countries, tariffs are bound at high levels not to raise applied tariffs, but rather to maintain flexibility in trade regimes. Tariffs can be and are adjusted as world price changes, much like what is accomplished under a variable levy.”
- We assume that the objectives of STEs are to protect domestic agricultural production from foreign competition, and to stabilize domestic prices.
- Henceforth, the restriction of TRQ administration is characterized by an import tariff that contains a fixed and a variable component.

Theoretical Framework

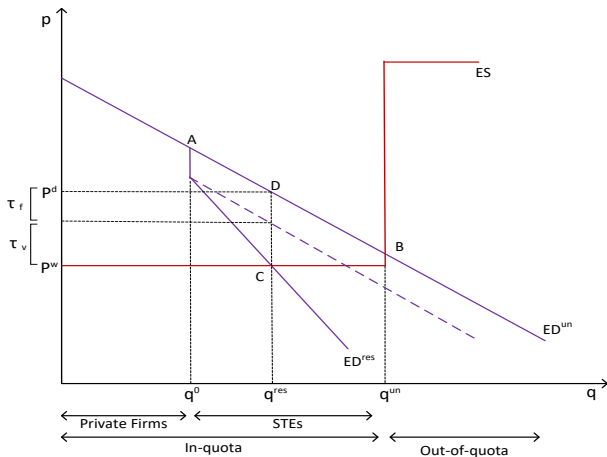


Figure 2. Graphical illustration of the economic model with TRQ administration.
Source: Authors' own work.

Theoretical Framework

Theoretical implications:

- In an importing tariff rate quota regime, the TRQ administration that acts as import tariffs leads to declines in the imports and creates price gaps;
- Further, the import demand becomes more inelastic if the TRQ administration acts as an variable import levy.

Empirical Strategy

- The key task is to identify import demand elasticities.
- Regressions on partitioned data to identify restricted and unrestricted import demand:
 - Data with positive price gaps to identify restricted import demand;
 - Data with non-positive price gaps to identify unrestricted import demand;
 - Estimation method: maximum likelihood estimation with a demand system with three equations (ALDS model).
- Z-test for hypothesis testing;
- Estimate the effects of TRQ administration on grain imports through counterfactual analysis with price gaps and import demand elasticities.

Data

- Trade data: China's grain imports at monthly basis from January 2009 to July 2016. Source: Ministry of Commerce of China;
- Price data: domestic and world price at the border at monthly basis from January 2009 to December 2016. Source: Ministry of Agriculture of China.

The Price Gap

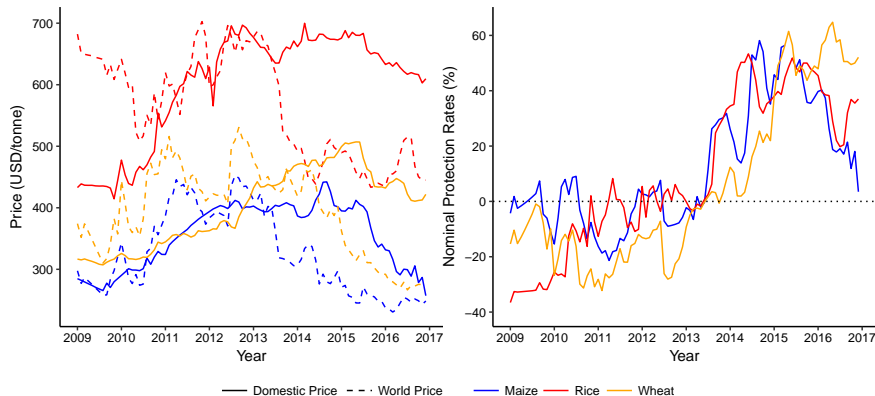


Figure 3. Monthly prices and nominal protection ratios of grain commodities in China during 01/2009-12/2016. Data source: Ministry of Agriculture of China, IMF

Estimates of Import Demand Elasticities

Table: Estimates of import demand elasticities for grain commodities in China

	Unrestricted			Restricted		
	Maize	Rice	Wheat	Maize	Rice	Wheat
Maize	-1.8*** (0.2)	1.2** (0.4)	0.3 (0.5)	-3.8*** (0.8)	1.8 (1.1)	4.6*** (1.3)
Rice	0.5* (0.3)	-1.7*** (0.4)	1.4** (0.6)	0.7 (0.4)	-0.3 (0.5)	-0.6 (0.8)
Wheat	0.4*** (0.1)	-0.6 (0.5)	-2.8*** (0.5)	0.4* (0.2)	-0.9*** (0.3)	-1.9*** (0.4)

Notes: The import demand elasticities are estimated by Almost Ideal Demand System. Data from 01/2009 to 12/2012 are used to estimate unrestricted import demand system. Data from 01/2013 to 06/2016 are used to estimate unrestricted import demand system. Numbers in parenthesis are standard errors. The base prices and base shares are monthly averages of import unit values and expenditure shares during 2015. $p < 0.01^{***}$, $p < 0.05^{**}$, $p < 0.1^*$.

Counterfactual Analysis

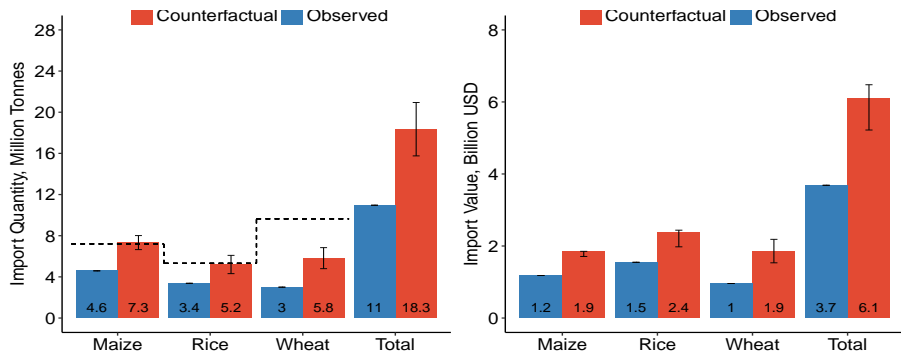


Figure 4. China's grain imports in 2015 without restrictive TRQ administration.

→ The U.S. would have exported **additionally** 187 million dollars of wheat and 80 million dollars of maize to China in 2015.

Implications

- The import protections by the restrictive TRQ administration in China's grain markets leads to significant losses in the export revenues of its trading partners.
- The influx of grain imports will drive down the domestic market prices.
 - Consumers will benefit;
 - Rice and wheat producers remain protected, while maize producers will loss;
 - Soaring storage cost drives up fiscal burden of the government.
- Future research: how much to pay? who pays? when to pay?

Thank you for your attention!

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