Evolution of Arkansas rice model, initial and current objectives and structure of the model?

RICEFLOW started as a spatial optimization model of the Takayama-Judge type, and then evolved into a spatial accounting model with first-order solutions as equations defining the behavior of consumers, producers, and traders. Most of the evolution in later years has been on the database. The latest version of the RICEFLOW database depicts the market situation as of 2013, includes 73 countries/regions, 9 rice commodities, and incorporates numerous policy variables to account for public intervention on production, consumption, and trade

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What are comparative advantages of Arkansas rice model in examining TPP impacts compared to the USDA-ERS study of last year using GTAP model?

ERS-USDA used the GTAP CGE model for this assessment. CGE modeling has the advantage of endogenously accounting for the economy-wide spillover effects of a policy change such as TPP on the rice sector. In RICEFLOW we can introduce the economy-wide effects of TPP on the rice sector by incorporating CGE findings (e.g., GDP, factor prices, price of substitutes in final consumption) through exogenous shocks only since they are not endogenously estimated in a partial equilibrium setting.

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What are comparative advantages of Arkansas rice model in examining TPP impacts compared to the USDA-ERS study of last year using GTAP model?

For an assessment of the impact of TPP on rice, RICEFLOW has the advantage of a much more detailed specification of the rice sector. For instance, rice in GTAP is represented by two commodities, paddy and milled rice. This means that differences in policies between medium/short grain and long grain rice cannot be disentangled in GTAP while they can be specifically modelled in RICEFLOW. This is a major advantage given the heterogeneity of these rice subsectors in terms of public intervention, production costs and returns, and consumer preferences.

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What is benefit of the use of Leontief technologies for production functions?

The Leontief assumption is easy to implement (elasticities of substitution equal zero) and can be appropriate for short-term analysis. The main disadvantage is its inflexibility, which makes it a poor choice for long-term analysis. But the main reason we assume Leontief technology at the highest level of the production function is for simplicity and lack of estimates. If we were to have a set of elasticity estimates we would rather use them.

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You assumed that imported rice and domestic rice were inputs to the production of a composite commodity subject to milling. How does this work in terms of the structure of the model?

Basically this is part of the Armington specification, where imports and domestic goods are inputs in the production of a composite according to a CES production function. This substitution between imports and domestic goods happens at each level in the supply chain (paddy, brown, and milled). So take for instance Mexico. They import roughly 80% of their total paddy demand, which gets comingled with domestically-produced paddy rice and enters the milling sector as an intermediate input. imported and domestically-produced paddy rice lose their identity and are treated as a composite paddy. The same logic applies at higher levels in the supply chain.

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How did you estimate Armington elasticity of substitution of 4.98 for Philippines? You estimated the same elasticity for Indonesia as 4.13.

These were estimated using a very simple time-series model of volume of imports as a function of total demand (imports + domestic production), and average price of imports and domestic rice.

What is the source of information for Armington elasticity of substitution of 0.25 for Japan and South Korea?

There is no source, this value was selected ad-hoc to represent the strong consumer preference for domestic rice relative to imports.

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For policy simulations, you have a scenario with a one-time removal of import barriers among TPP countries and a long-run assumption about the substitution of domestic for imported rice in Japan, namely that the Armington elasticity in Japan reaches the levels observed in the reference country Philippines.

In the 2012 paper, we have not assessed the scenario of a dynamic increase in the Armington elasticities, what we have done is to run two scenarios with different Armington elasticities. We can expect that consumers in Japan might start changing their preferences towards imported rice as this becomes available to consumers. Right now only a small portion of imports gets to the final consumer.

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Do you think that Armington elasticity of substitution becomes larger even in Japan and South Korea once consumers start seeing imported products as a result of trade liberalization?

YES. This is a plausible hypothesis.

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Have you seen any papers looking into the changes in consumer preferences on domestic and imported agricultural products?

No. This is a good topic for graduate research.

Do your think institutions to promote/differentiate domestic agricultural products from imported products with the geographical indication (GI) and country of origin labels slow the process of increase in Armington elasticity of substitution for rice or other agricultural products?

Yes, at least Europeans think so. Much depends on how exporter promotes imports and the intrinsic & perceived quality differences of domestic and imports.

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How were own price demand elasticity and income demand elasticity estimated for TPP countries?

These are taken from AGRM, and countries not listed in AGRM we make assumptions, applying elasticities from countries with similar profiles.

In Japan, there exists clear preference on short grain rice to medium grain rice. Is it feasible for the RICEFLOW model to consider medium grain and short grain separately?

Yes. The only limitation to modeling this is data availability. We can collaborate on the database and model to achieve that relatively easily. This goes back to the earlier part of the discussion on the importance of the data availability.

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A Result of Impact Assessment: TPP negotiations on Rice

- Analysis of TPP without Japan
- Analysis of TPP with Japan

  Low Substitution of Imported Rice for Domestic Rice

  High Substitution of Imported Rice for Domestic Rice
- Updated analysis
- Conclusions

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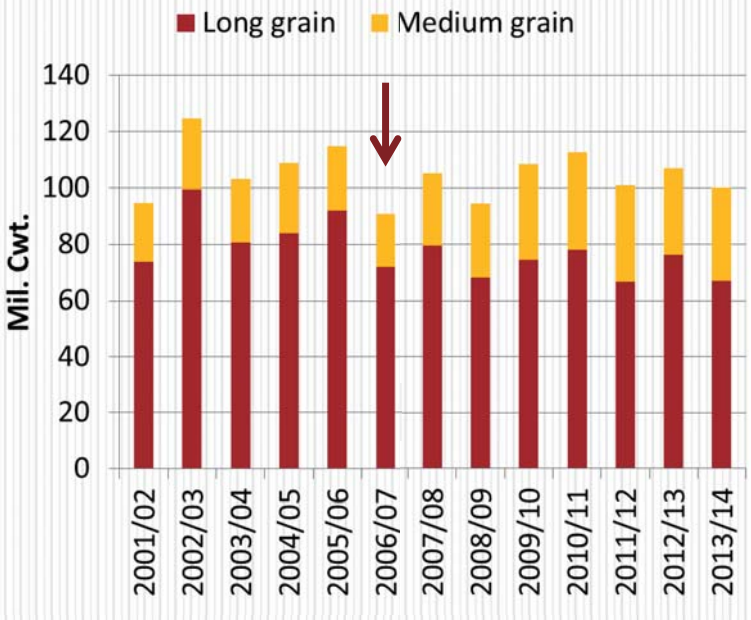
U.S. Rice Exports, 2001/02 -2013/14

World's 5th largest exporter

Export value in 2013 – $2.05 Billion

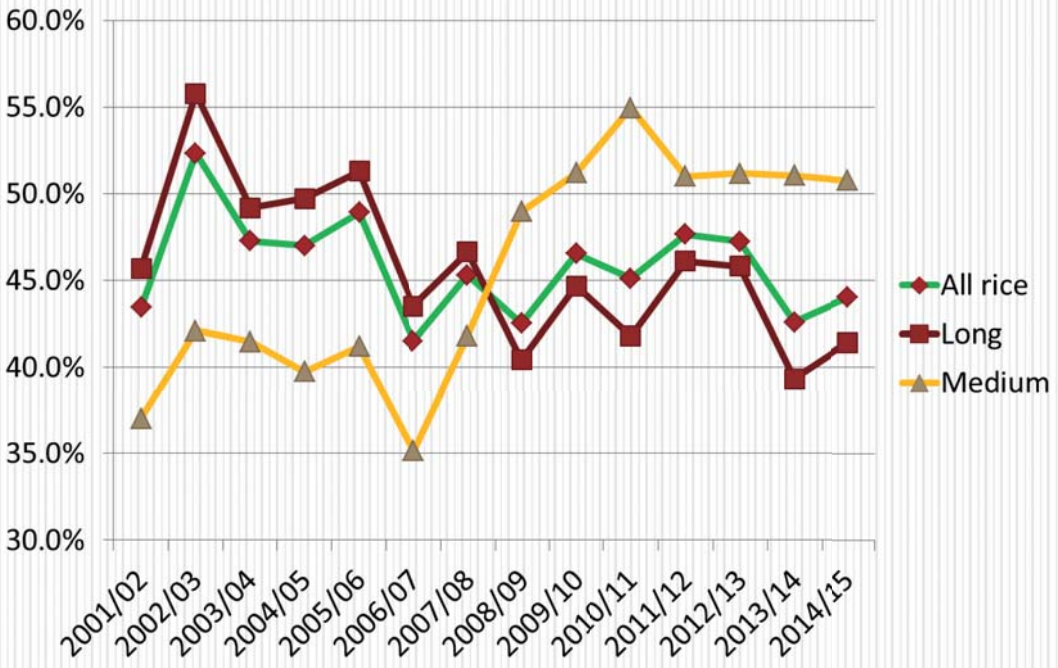
Rice ranks 13th among top 25 farm commodities exported

GMO contamination in 2006 resulted in complete loss of the EU long grain market, which has only partially recovered since.



Source: USDA, ERS, *Rice Yearbook*

U.S. Rice Export Share to Total Use



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Source: USDA, ERS, *Rice Yearbooks and Rice Outlooks*

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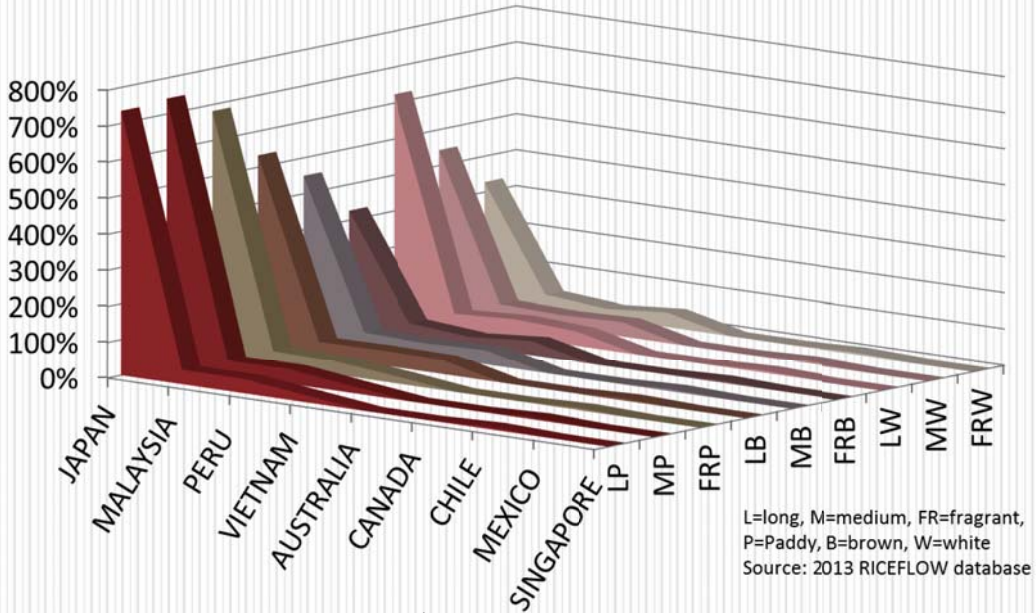
MFN AVE Tariffs by Rice Type For Selected TPP Countries



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Japan's fixed over quota tariff of ¥ 341/Kg (US$ 3410/ton in 2013). The AVE is estimated taking the average global cif price for each rice type and milling degree. Mexico currently bans rice imports from Pakistan due to phytosanitary reasons (presence of Khapra beetle). Peru administers a price band system taking Thai price as reference. The AVE is estimated using the average global cif price for each rice type and milling degree.

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Key Assumptions for TPP analysis 2013

1. Rice production, consumption and trade are differentiated by type and degree of milling.
2. Assumed Armington elasticities allow for high levels of substitution by origin.
3. Land is sluggish but not limited, water for irrigation is not constrained.

These assumptions imply long-run adjustments where substantial long grain production areas in the southern US are able to convert to medium japonica production.

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TPP Impact on US 2013

	LP	MP	LB	MB	LW	MW	FRW
Production							
Benchmark volume TMT	6245	2806	3862	2281	3344	1803	5
% Change	-60.7%	247.9%	-57.1%	244.8%	-54.7%	280.3%	1.5%
Price % Change	63.9%	112.3%	61.5%	110.7%	47.7%	106.8%	1.5%
Benchmark value M$	2,073	1,049	1,626	1,080	1,672	1,006	7
Change M%	-738	6,702	-489	6,770	-464	6,935	0
Demand[1]							
Benchmark volume TMT	4827	2851	3822	2061	2192	1101	511
% Change	-57.1%	244.8%	-54.7%	280.3%	-0.2%	-0.6%	0.3%
Price % Change	61.5%	110.7%	47.7%	106.8%	47.7%	106.8%	1.5%
Benchmark value M$	1,603	1,066	1,616	976	4,604	2,908	1,462
Change M$	-478	6,722	-435	6,838	2,183	3,068	25
Trade							
Benchmark exports TMT	1520	0	51	220	1239	703	0
% Change	-67.9%	0.0%	-84.1%	-83.6%	-93.4%	723.1%	0.0%
Post exports TMT	488	0	8	36	82	5,786	0
Benchmark exports to Japan	0	0	0	1	3	278	0
% Change	0.0%	0.0%	0.0%	-11.6%	-90.9%	1937.8%	0.0%
Post exports to Japan TMT	0	0	0	1	0	5,665	0
Benchmark Imports TMT	0	0	11	0	87	1	507
% Change	0.0%	0.0%	315.6%	0.0%	547.2%	3084.6%	0.2%
Post imports TMT	0	0	46	0	563	32	508

1 Intermediate demand for paddy and brown rice, final demand for milled rice.
LP=Long paddy, MP=Med. Paddy, LB=Long Brown, LW=Long white, MW=Med. White, FRW=Fragrant White