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Welfare Impacts of Rice Tariffication

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Abstract

The Rice Liberalization Act (RA 11203), signed last February 2019, reverses decades-long placing quantitative restrictions on rice importation administered by the National Food Authority. The Act goes further by dismantling interventionist policy in the rice industry by divesting the Authority of its regulatory powers. The policy has been controversial, with some farmers and even lawmakers calling for a review and reversal of the law.

This study takes a long term perspective by conducting *ex ante* impact assessment based on a computable general equilibrium model with welfare effects disaggregated by income decile. Under liberalization, rice imports are far larger than under the interventionist policy. Farmgate and retail prices are significantly lower under liberalization. Hence, farmers are worse off under liberalization, while consumers are better off. On the side of farmers, the policy causes a fall in palay output as well as area harvested, relative to that under an interventionist policy.

Aggregating the peso value of benefits and costs, the study also finds that society as a whole is better off under liberalization. Benefits from liberalization are spread widely across the population, while the costs are concentrated among net rice producers. Disaggregating the welfare change across the income deciles (combining consumers and producers), we find that liberalization confers positive benefit for all the income deciles. In absolute terms the increase is larger for the higher income deciles. However, in proportion to the welfare level without liberalization, the relative gain of lower income deciles is larger than that of higher income deciles. Note that poverty incidence coincides closely with the bottom two deciles, hence liberalization is a pro-poor policy. Policy implications include: i) to continue enforcement of RA 11203; ii) to focus efforts on providing offsetting compensation for losers from the reform; and iii) investigate the state of competition in rice marketing and diligently enforce competition policy in the rice industry.

Keywords: Protection, liberalization, rice trade, welfare, distribution

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Welfare impacts of tariffication

Roehlano M. Briones*

1. Introduction

The Rice Liberalization Act (RA 11203), signed only last February 2019, reverses decades-long placing quantitative restrictions (QRs) on rice importation administered by the National Food Authority (NFA), which had aimed to shield the local rice industry from foreign competition. The Act goes further by dismantling the interventionist policy in the domestic rice industry by divesting NFA of its regulatory powers.

The sole non-tariff barrier permitted in rice importation is the application of sanitary and phytosanitary standards (SPS), which is the same import regime applied to all other agricultural among all World Trade Organisation (WTO) member states. There remains however a tariff barrier in the form of a customs duty of 35 percent or higher. The Act also provides a safety net for rice farmers using a Rice Competitiveness Enhancement Fund or Rice Fund, to be funded by in part by tariff escalation.

RA 11203 has already been blamed for adverse impacts on palay farmers owing to a decline in palay prices. Policymakers are keen to find out whether the policy has had unacceptably high cost, compared with offsetting benefits to consumers. Findings of the study will inform legislators in considering the merits of the law, as well as provide inputs for implementing safety net programs for affected farmers.

In evaluating the policy, a key consideration is the time horizon. The adverse impacts that have been observed are certainly of short-run character as the implementation of the law is very recent. Policy evaluation should also pay careful attention to the long run. This will require *ex ante* assessment of future impacts of rice industry liberalization.

The general aim of this paper is to provide these *ex ante* estimates of welfare impact and examine how this impact is distributed across household groups. Specifically, the study aims to:

1. Describe the implementation of RA 11203 thus far and its immediate aftermath;
2. Generate long term projections of the impact of rice industry liberalization on market outcomes, namely output, area harvested, and prices, especially at the farmgate and retail levels;
3. Provide *ex ante* estimates of the welfare and distributional impact of market outcomes, up to the level of the household per capita income decile.

Ex ante impact estimates will be generated from an extended version of the Agricultural Market Model for Policy Evaluation Computable General Equilibrium (AMPLE-CGE) Model, a public domain CGE model previously described by Briones (2018). The extension takes the form of disaggregation of the households in the model into income deciles, calibrated from the Family Income and Expenditures Survey (FIES) data.

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2. Implementation of RA 11203 and its immediate aftermath

Context

Prior to RA 11203, government had been intervening actively in the rice industry through the actions and restrictions imposed by the NFA. Founded in 1972 (then as the National Grains Authority), the agency had the following functions, among others:

- Controlling imports by a system of import licensing and QRs;
- Regulating and monitoring players in rice marketing and postharvest operations;
- Purchasing palay (and corn) grains and maintaining a buffer stock;
- Distributing milled rice to support government's calamity response as well as its poverty alleviation program.

On the other hand, government acceded to the WTO in 1995 and committed to opening up its agricultural trade. In particular, it enacted RA 8178, the Agricultural Tariffication Act, by which it officially abandoned quantitative restrictions, converting these into equivalent tariff protection – a process known as tariffication. The government agreed to place ceilings on tariffs; allow a minimum amount of imports per year at a lower tariff rate (the so-called "in-tariff quota"), known domestically as Minimum Access Volume (MAV);

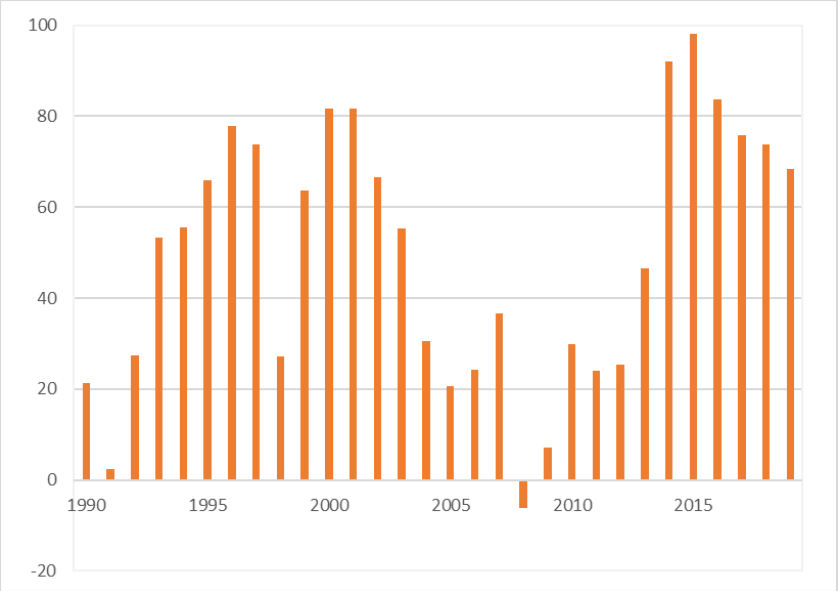
However, RA 8178 expressly provided an exception in the case of rice, which retained its *status quo* policy regime under NFA. The exception was provided a legal cover with respect to WTO by obtaining a "special treatment" for rice in relation to the WTO Agreement on Agriculture (AoA). Nonetheless a tariff rate quota was accepted for rice through a 50 percent binding (which was the actual rate applied both in-quota and out-quota), and a MAV of up to 238,940 tons by 2005. However the special treatment was approved by WTO for only ten years (up to 2005).

The government applied for an extension of the special treatment, citing lack of readiness of rice producers to face foreign competition, which was approved to 2012. Government needed to concede an increase in MAV to 350,000 tons at a tariff rate of 40 percent (without change in the original ceiling). In a separate negotiation, the government also conceded a special tariff treatment for ASEAN exporters of only 35 percent under the ASEAN Trade in Goods Agreement (ATIGA) of 2009 as part of its participation in the ASEAN Free Trade Area (subsequently subsumed into the ASEAN Economic Community).

Another extension was sought after 2012, which was approved as a waiver running through to 2017. The government needed to make further concessions, which for rice took the form an increase in another increase in the MAV to 805,200 tons, at the ATIGA rate of 35 percent. This access was to be allocated by agreement to various WTO members (the "country-specific quotas").

The protection rate conferred by a QR can be measured by the nominal protection rate (NPR). The NPR or "implicit tariff" can well exceed the protection given by the explicit tariff, depending on trends in domestic and world prices, and the tightness of import restrictions. Figure 1 shows the annual NPRs (the percentage excess of wholesale to border price). There were local peaks in mid-1990s, early 2000s, and 2013-15; the low point was in 2008 when NPR even turned negative owing to world rice price crisis. Since the mid-1990s, world prices have trended downward, but domestic prices were insulated from this reduction. After 2000, the NPR averaged around 90 percent level.

Figure 1: Nominal Protection Rate for rice (%)



Source of basic data: PSA (2019).

After expiration for the waiver for rice in 2017, government refrained from seeking another extension. At the time, other WTO members were poised to exact further concessions in agricultural trade policy; moreover, NFA had reached the nadir of its popularity as a manager of public stocks.

Philippines had notified WTO in 2017 that it is no longer seeking an extension of its special treatment for rice; given unpopularity of NFA as administrator of the rice quota, and the demands from other WTO members for another round of trade concessions. To conform with tariffication though RA 8178 would have to be amended, which resulted in contentious debate in both Houses of Congress. Ultimately though even farmer groups joined a consensus on the need for a change in the *status quo* involving compliance with tariffication but with strong safety nets for rice farmers in view of the expected market adjustments.

The reform

Amendment was implemented with passage of RA 11203: Act Liberalizing the Importation, Exportation, and Trading of Rice, Lifting for the Purpose the Quantitative Import Restriction on Rice, and for Other Purposes, and its accompanying Implementing Rules and Regulations (IRR) issued on 5 March 2019. Together with repeal of QRs, all regulatory and monitoring functions of NFA were rescinded as well – to the chagrin of some farmer groups and rice industry players. Under the law, the sole function of NFA is to procure and manage a buffer stock for emergency purpose. The IRRs provide for the reorganisation of NFA in line with this change in mandate. Other provisions of the law include the following:

- Tariffs are set in tiers: 35 percent for imports from ASEAN; 40 percent for non-ASEAN countries (imports below 350,000 tons); and at least 180 percent for non-ASEAN countries (imports above 350,000).[1]

[1] The amount may be higher depending on the calculation of the tariff equivalent determined by the government based on the relevant formula in the AoA.

- The remaining legal non-tariff barrier for rice importation are sanitary and phytosanitary standards (SPS). SPS clearances are to be issued by Department of Agriculture's Bureau of Plant Industry of (DA-BPI). The law forbids assigning quantity restrictions on the amount of rice to be covered by SPS clearance.
- The special safeguards provision of earlier law (namely RA 8800, the Special Safeguards Act) remains intact, and may be invoked by DA as additional but temporary tariff protection for rice.
- At least Php 10 billion annually is allocated for a Rice Fund (Box 1).
- The DA is to lead an inter-agency initiative to prepare a Rice Industry Roadmap, which is the plan for restructuring delivery of support services for the agriculture rice sector.

Immediate aftermath of rice tariffication

From March to June 2019, rice importation amounted to 966,690 tons, a four-fold jump from imports during the same period in 2018 of only 185,100 tons. This translated to about Php 5.9 billion in customs revenue.[2] The import surge has had a favorable impact on retail prices, as seen in Table 1. Year-on-year, retail price of well-milled rice (WMR) has fallen by seven pesos per kg or about 15 percent in one year. The decline has had a salutary effect on the overall inflation rate: in October 2019, inflation eased to just 0.8 percent, continuing the trend since post-liberalization (September inflation was 0.9 percent). This contrasts sharply with the inflationary episode in late 2018 (October 2018 inflation was 6.7 percent). The downtrend in October 2019 was mainly due to the 0.9 percent decline in the food and non-alcoholic beverages index; the rice index alone declined by 9.7 percent.[3]

The Table also shows the changes in farmgate prices of palay. Palay prices have dropped from historic highs of Php 23 per kg the previous year down to around Php 16 per kg – a steep fall of about 30 percent per annum.

Table 1: Weekly prices of rice in Php per kg, September 2019

	Farmgate price, ordinary rice			Retail price, WMR		
	2019	2018	Change (%)	2019	2018	Change (%)
Week 1	16.28	23.10	-29.5	42.26	49.05	-13.8
Week 2	16.18	23.14	-30.1	42.22	49.27	-14.3
Week 3	15.94	22.84	-30.2	42.11	49.48	-14.9
Week 4	15.82	22.36	-29.2	42.03	49.41	-14.9

Source: PSA (2019).

[2] http://customs.gov.ph/boc-on-track-to-meet-the-p10-billion-rice-tariff-target/.

[3] https://psa.gov.ph/statistics/survey/price/summary-inflation-report-consumer-price-index-2012100-october-2019.

Box 1: The Rice Competitiveness Enhancement fund

The Rice Competitiveness Enhancement Fund or Rice Fund is equivalent to Php 10 billion per year, plus any "excess revenues", i.e. rice tariff collections in excess of Php 10 billion. Beneficiaries of the Fund are farmers, farmworkers, and their dependents listed in the Registry System for Basic Sectors in Agriculture (RSBSA) and DA-accredited rice cooperatives and associations. Preferential attention will be accorded to rice farmers, cooperatives, and associations adversely affected by tariffication.

The Php 10 billion component of the Fund will be allocated for the next six years as follows:

1) Php 5 billion for rice farm mechanization: The Philippine Center for Postharvest Development and Mechanization (PhilMech) will provide in-kind grants of rice farm machineries and equipment to eligible farmer associations, registered rice cooperatives, and local government units (LGUs). These machineries and equipment include tilers, tractors, seeders, threshers, planters, harvesters, irrigation pumps, small solar irrigation, reapers, driers, millers, and the like.
2) Php 3 billion for rice seed development, propagation, and promotion: the Philippine Rice Research Institute (PhilRice) will develop, propagate, and promote inbred rice seeds to rice farmers; as well as organize rice farmers into seed growers associations and/or cooperatives.
3) Php 1 billion for rice credit assistance: Land Bank of the Philippines (LBP) and Development Bank of the Philippines (DBP) shall each administer a Php 0.5 billion a credit facility for rice farmers and cooperatives, imposing minimal interest charges and collateral requirements.
4) Php 1 billion for rice extension, of which Php 700 million are allocated to the Technical Education and Skills Development Authority (TESDA), and Php 100 million each to Agricultural Training Institute (ATI) of DA, Philmech, and PhilRice, for teaching skills on rice crop production, modern rice farming techniques, etc. through farm schools.

Excess revenues may be allocated to the following uses:

- Rice farmer financial assistance – for rice farmers faring two hectares and below, regardless of whether they continue rice farming;
- Individual titling of agricultural rice lands distributed under the Comprehensive Agrarian Reform Program (CARP) and similar government programs;
- Expanded crop insurance program on rice
- Crop diversification program for erstwhile rice farmers.

The impact of the law therefore differs sharply between rice consumers and rice producers along the value chain. Availability of cheap imports will tend to pull down the retail price; this redounds to the benefit of *net rice consumers*, i.e. those whose consumption of rice exceeds their production (which for the vast majority of households is zero). [4] Beneficiaries includes most of the urban consumers (about half the population), as well as rural consumers not primarily producing rice, including producers of corn, coconut, sugarcane, and fisherfolk.

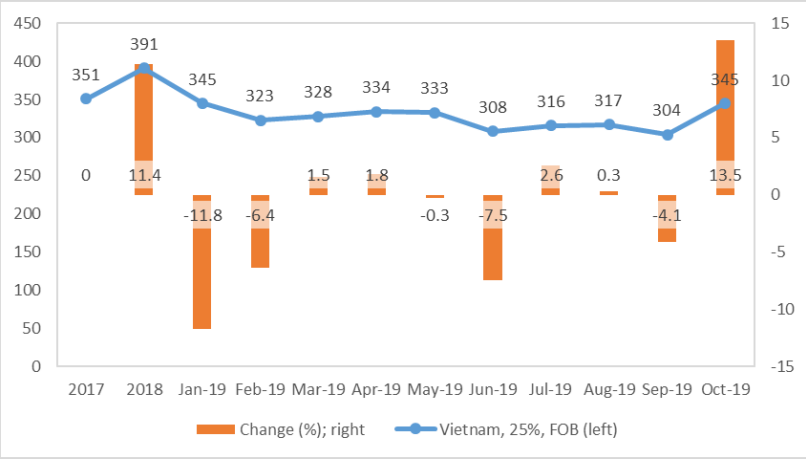
[4] The League of Cities of the Philippines, has acknowledged the huge benefit of the law to their respective constituencies, who now enjoy more affordable prices of rice. See: https://businessmirror.com.ph/2019/09/03/for-supporting-liberalization-of-rice-imports-dof-applauded-by-mayors/.

Poorer individuals who devote more of their household budget on rice will presumably receive a greater proportional benefit.

However, the same cheap imports allow traders to quote lower palay prices, likewise pulling down the farmgate price. Hence the reform has dealt a blow to *net rice producers* who produce more rice than they consume, e.g. rice farmers, who are located nationwide, but are concentrated most heavily in Regions II, III, VI, and XII.

In 2018, world price (proxied by Vietnam White 25% broken) was relatively elevated, approaching USD 400 per ton (Figure 2). In 2019 world price fell steeply; by September the world price was down to just USD 300 per ton, recovering somewhat to USD 345 in October. The latter translates to a border price of just Php 20 per kg milled rice. Hence it appears that the downward pressure on both retail and farmgate prices will continue, particularly given the large gross margin between wholesale price (about Php 38 per kg) and border price.

Figure 2: Annual and monthly price of Vietnam White Rice, in USD per ton, 2017 - 2019



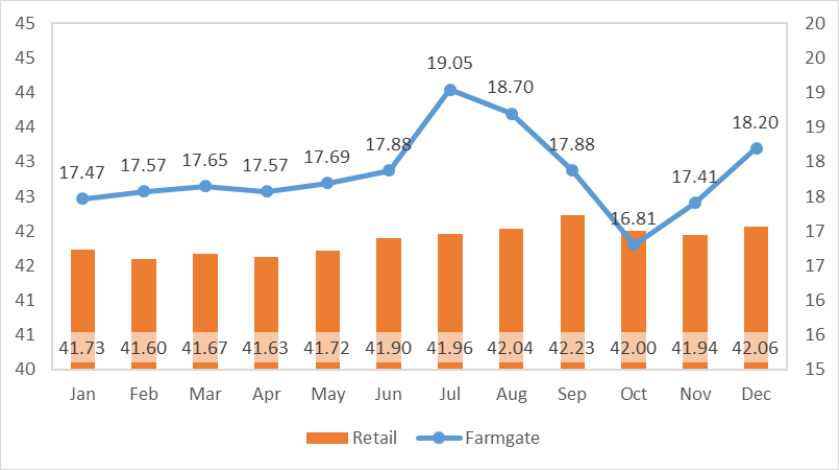
Source: FAO (2019). http://www.fao.org/economic/est/publications/rice-publications/the-fao-rice-price-update/en/.

Understanding the movements of rice prices *after* the reform requires a comparison with the **temporal and spatial** behavior of farmgate and retail prices of rice *before* the reform. Two key stylized facts are as follows:

1) Farmgate prices exhibit marked seasonality whereas retail prices follow a much more stable pattern year-round.
2) Prices across regions are highly dispersed with the typical range of about 3 to 7 pesos difference between highest and lowest prices in a given month in the case of farmgate price, and 4 to 14 pesos in the case of retail price.

To confirm the first point, consider Figures 3 and 4. Note that the January figure refers to the average January price in 2016 and 2017, and so on. Farmgate price is lowest during wet season harvest at around September – November with the bottom at around October. Price are also relatively low during the dry season harvest at around March to April. The price then peaks at the lean season beginning July.

Figure 3: Two-year, same-month average of monthly prices, Philippines, 2016-2017, Php per kg

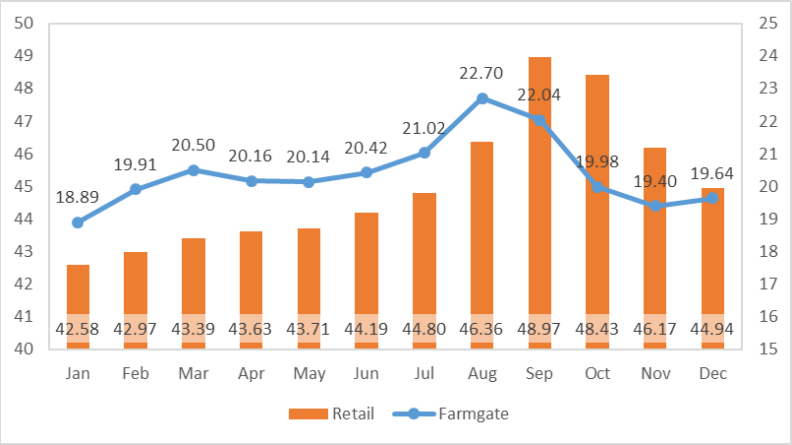


Source: PSA (2019).

Meanwhile retail prices (placed on the same five-peso interval along the axes as farmgate prices) vary far less within the year, and have a different seasonal pattern. Prices do not peak in July but rather continue to rise until around September before declining, rising again – this time in sync with farmgate prices from December. The price range is only 1.5 percent of the average monthly price, whereas for farmgate prices, the price range is 12.5 percent of average monthly price. The distinction between farmgate and retail price behavior is consistent with the model of competitive storage applying at the marketing level, but with no storage (or rather no commercial storage) at the production level.

Figure 4 presents the monthly price data for 2018 only. The seasonal variation of **both** farmgate and retail prices widened that year; the range (as a percentage of average price) reached 18.7 percent for farmgate price, and 14.2 percent for retail price; compare this with the average ratio of 12.3 percent and 1.5 percent for the two types of prices, respectively, in 2017-2018. The July farmgate price and the September retail price are their respective historic highs. The price escalation in 2018 helps explain the sharp correction of both farmgate and retail prices in 2019. However, the correction of farmgate prices are proportionately much greater than that of retail prices.

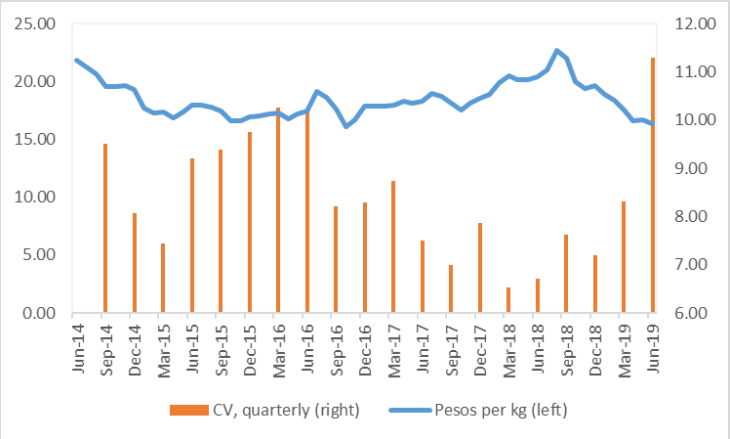
Figure 4: Monthly rice prices, 2018, in Php per kg



Source: PSA (2019).

Regarding the second point, consider a longer time series of farmgate and retail prices together with measures of dispersion across regions (Figures 5 and 6). The upper figure corresponds to farmgate price. The highest levels of farmgate price prior to 2018 were in mid-2014. In 2014-15 the coefficient of variation (quarterly average) was in the range of 8-10 percent of the mean.

Figure 5: Indicators for monthly farmgate price, June 2014 – June 2015

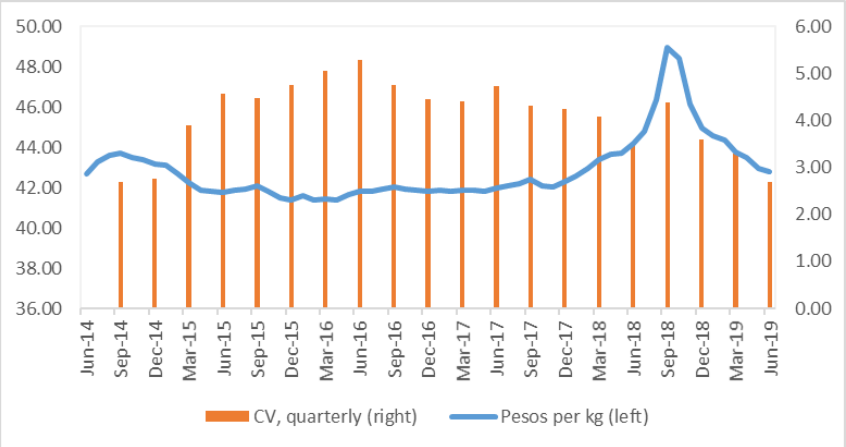


Source: PSA (2019).

The coefficient increased in 2015 before dropping off again in 2017; throughout 2018, when farmgate prices soared, regional dispersion of monthly price varied by only 6-8 percent. Starting 2019 however the variation across space started to increase breaching 11 percent by June 2019.

The lower figure corresponds to retail price. Coefficient of variation for retail price across regions is much smaller than that of farmgate price. The movement over time of the coefficient tracks that of farmgate price, but not as erratically. Most important, the dispersion of regional prices *declines* from final quarter of 2018 onward, the exact opposite of the direction of change for farmgate price.

Figure 6: Monthly retail price, level and coefficient of variation (three-month average), June 2014 – June 2015



Source: PSA (2019).

The foregoing discussion shows how difficult it is to pin down the impact of a policy in the very short-term (month-to-month, quarter-to-quarter), against the background noise from natural market variation and intermittent shocks (e.g. due to climate). Within this horizon, it is difficult to distinguish **transition to equilibrium** from **change in equilibrium,** as both manifest as changes in price. Projections of long term adjustment in price are better able to capture changes in equilibrium, which tend to be obscured by short-term volatility.

3. Related Studies on Tariffication

Briones (2018) discusses scenarios for Philippine agriculture related to tariffication from 2015 to 2030. The study finds, unsurprisingly, that tariffication is disadvantageous to the palay sub-sector in terms of area harvested, yield, and production. The reduced protection of rice adversely affects even the agricultural sector as a whole, with sector growth slowing down further with tariffication (compared to growth under *status quo*). However, import growth accelerates with tariffication, together with consumer demand for rice, consistent with more affordable retail price of the commodity. The study however does not provide a measure of welfare impact.

Cororaton and Yu (2019) draw out the distributional implications implement a CGE model with poverty microsimulation. They find that tariffication, supposing tariff revenues were allocated as cash transfers, improves income distribution and reduces poverty. Note however that RA 11203 was passed after their study was completed; in fact, the law provides only a minor role for cash transfers in the tariff revenue utilization scheme.

Perez and Pradesha (2019) apply the International Food Policy Research Institute (IFPRI) model called IMPACT, together with a CGE model of the Philippines. The simulations incorporate the future impact of climate change in global and Philippine agriculture. The results of their simulations are summarized as follows:

- World prices of rice follow an increasing trajectory, from USD 362 per ton in 2015 to USD 474 per ton in 2040.
- Rice imports increase to 3.97 million tons by 2025, exceeding the QR level by 2.34 million tons.
- Consumer and producer prices of rice are lower by 26 percent in 2025, while world prices are minimally higher by 0.64 percent.
- Domestic rice production is lower by as much as 9.7 percent (1.3 million tons); likewise area harvested is lower by 7.2 percent (342,000 hectares).
- Rice consumption per capita is higher by 6.3 percent.
- Tariff revenue from rice imports can exceed the PhP10 billion annual allocation for RCEF.

The study however does not examine the distributional aspect of these effects, nor impact on poverty; it does project that, by 2025, there will be 2.1 million less hungry people and malnourished children in the country.

The foregoing studies all use CGE models which are intended to track changes in equilibrium based on changing supply and demand conditions, in conjunction with a competitive market structure. However, when market structure is not competitive, the models may mistake the nature of equilibrium entirely. If there are a few dominant market players in rice trading who collude by restricting sales in order to keep price higher than otherwise, then a partial or general equilibrium model may well overestimate the reduction in price due to market

reform. The disproportionate decline in farmgate price compared to retail price has been regarded as symptomatic of a collusion among rice importers in controlling the release of rice stocks. In popular parlance a "rice cartel" is said to be at work.[5] Furthermore, the retail price of Php 40 per kg, corresponding to a Php 38 per kg wholesale price, is nearly double the border price – an enormous rent that has yet to be arbitraged away.

Briones (2019) examines the rice market in detail to ascertain the degree of competition among its players. Within the domestic market, retail rice prices are found to be integrated in the long run at the regional level. However, adjustment to long run equililibrium is a protracted and unpredictable process. There is no dominant player or set of players at the extreme ends of the value chain, i.e. farmers and retailers; however, at the wholesale/miller level, the presence of dominant players cannot be ruled out. Vertical price transmission along the marketi ng chain of rice is found to be asymmetric, suggesting short-term deviation from competitive behavior when palay supplies run low. There are clearly troubling signs of departure from competitive markets, warranting further investigation.

4. Methodology

AMPLE-CGE Base model

Ex ante impact assessment of rice liberalization is limited to long term adjustment of the rice market. The base model for the assessment is AMPLE-CGE, a standard Walrasian CGE model. The main model equations are identical to those stated in Briones (2018). Key features of the model are as follows:

- Consumers maximize Stone-Geary utility subject to given income and prices, this results in consumer demand functions in the form of the linear expenditure system (LES).
- Income is obtained from sales of labor (divided into agricultural and non-agricultural employment); earnings from capital and land; and transfers from government and from abroad.
- Other components of final demand are: investment, determined by available savings; government consumption, determined exogenously; and imports, based on the Armington approach. Intermediate demand is determined by fixed coefficients Leontief technology.
- Household savings is a fixed ratio of household income. Tax revenue is obtained from income taxes (fixed share of household income), the value added tax, and customs duties (ad valorem tax on import price). Government savings is the net of tax revenue, expenditures, and household transfers.
- Domestic supply (in terms of value added) is derived from profit maximization using constant elasticity production functions, for labor and capital input. Supply for abroad is based on an Armington analogue on the export side.
- In the case of crop production, area harvested derived from land allocation model based on nested constant elasticity functions for the various crops. The model calculates a shadow value of for land which is benefit to crop farmers from an increase in agricultural area at the margin.

[5] https://www.philstar.com/business/2019/11/06/1966263/rice-cartel.

- A flexible exchange rate clears the current account at exogenous level of capital inflow. Equilibrium holds at simultaneous market clearing.

Extensions to the AMPLE-CGE

The base data of the model is organized as a social accounting matrix (SAM) compiled for 2016. To extend the AMPLE-CGE set of households *H* is modified from elements corresponding to rural and urban households, to elements corresponding to the ten household per capita income deciles. Hence, the household accounts will be disaggregated into the per capita income deciles, using shares from the 2015 FIES.

FIES data is also used to compute food demand system elasticities for calibration into the parameters of the LES. To review, LES is expressed in AMPLE-CGE with the following equation

$$QC_{G,H} = qcmn_{G,H} + \frac{\beta_{G,H}}{PD_G} \cdot \left(XPD_H - \sum_G PD_G \cdot qcmn_{G,H} \right) \quad (1)$$

The variables and parameters of (1) are defined as follows:

H	Household
G	Food types
$QC_{G,H}$	Per capita consumption
PD_G	Retail price
XPD_H	Per capita expenditure
$qcmn_{G,H}$	Minimum household consumption per capita of G (subsistence)
$\beta_{G,H}$	Coefficient term in LES

Let $sh_{G,H}$ denote expenditure shares. Note that (1) collapses to the Cobb-Douglas fixed expenditure shares system in the special case that $qcmn_{G,H} = 0$ with $\beta_{G,H}$ as the fixed shares. This reflects a homothetic demand structure which is a special case of LES. When $qcmn_{G,H} > 0$ then we have (1) as a general case. The more general formulation is desirable when preference is known to be nonhomothetic, i.e. in the case of food, Engel's Law has been found as an empirical regularity (food staples that loom large in the food basket of the lower income group must decline as expenditure level increases.) Equation (1), which can be rearranged as follows:

$$PD_{G,H} \cdot QC_{G,H} = PD_{G,H} \cdot qcmn_{G,H} + \beta_{G,H} \cdot \left(XPD_H - \sum_G PD_G \cdot qcmn_{G,H} \right) \quad (1')$$

Refer to the bracketed term in (1') as *supernumerary expenditure,* i.e. the expenditure level in excess of the value of minimum purchases of the household. Then expenditure is a linear function of supernumerary expenditure rather than actual expenditure, as in the case of homothetic preference. However, as expenditures keep rising then supernumerary and total expenditure converge, and demand behavior converges to the case of homothetic preference.

Expenditure and own-price elasticities, respectively denoted $\eta_{G,H}$ and $\varepsilon_{G,H}$ are computed based on the following formulas (Annabi et al, 2006):

$$\eta_{G,H} = \frac{\beta_{G,H}}{sh_{G,H}} \ ; \tag{2}$$

$$\varepsilon_{G,H} = \frac{\left(1-\beta_{G,H}\right).qcmn_{G,H}}{QD_{G,H}} - 1 \ . \tag{3}$$

Parameter to be estimated are $\beta_{G,H}$ and $qcmn_{G,H}$. To estimate these, we first organize FIES as follows:

- Identify the FIES food types that approximately match the AMPLE-CGE food types. Expenditure items are then aggregated for the purpose of estimation. The food types for estimation are: Corn, Coconut, Banana, Mango, Other fruit, Rootcrop, Vegetables, Poultry, Capture Fisheries, Aquaculture, Rice, Processed Fish, Sugar, Meat products.
- Retail prices of the matching FIES food types are then assembled by region; each household is assumed to face the same set of retail prices.
- Total and item-specific expenditure of the foregoing food types is assembled from the FIES to estimate Equation (1). Estimation adopts the nonlinear seemingly unrelated regression method; in Stata this is implemented by the command *nlsur*.
- Using the parameter estimates, elasticities given in (2) and (3) are then evaluated at the sample means disaggregated by per capita income decile. (Parameters that result in counter-intuitive elasticities are replaced by imputed value). The elasticities based on estimation are then used to inform the LES elasticities used in the AMPLE-CGE.

Prices and expenditure shares are shown in Table 2. Note that the shares are computed in terms of the limited food types on the first column. Hence, rice expenditure share starts out at 41 percent for the lowest decile; the share declines as the income decile rises, as expected from Engel's law. However, the decline is gradual; at the top income decile the rice expenditure share is still 38 percent. For the other food types, the shares remain similar across deciles, or decline gradually as income group increases, with the exception of meat products where the expenditure shares clearly rise with income.

Table 2: Prices (Php per unit) and expenditure shares by decile, Philippines, 2015

	Prices	Expenditure shares (%)									
		1	2	3	4	5	6	7	8	9	10
Corn	25.04	3.9	2.6	3.6	3.5	3.4	3.3	3.1	3.0	2.9	2.7
Coconut	20.87	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Banana	49.79	1.9	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Mango	80.94	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Other fruit	36.68	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Rootcrop	32.26	0.7	0.5	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5
Vegetables	59.58	10.5	9.9	10.4	10.3	10.3	10.2	10.1	10.0	10.0	9.9
Poultry	137.50	6.3	7.5	6.6	6.6	6.8	6.9	7.0	7.1	7.2	7.3
Capture Fisheries	178.04	5.6	6.0	5.7	5.7	5.8	5.8	5.9	5.9	6.0	6.0
Aquaculture	117.58	5.5	6.4	5.7	5.8	5.9	6.0	6.1	6.1	6.2	6.3
Rice	42.04	40.5	37.9	39.9	39.8	39.5	39.2	38.9	38.7	38.5	38.2
Processed Fish	86.96	4.2	3.6	4.1	4.1	4.0	3.9	3.8	3.8	3.7	3.7
Sugar	45.96	2.3	1.8	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9
Meat products	235.78	16.6	20.0	17.4	17.5	17.9	18.3	18.8	19.0	19.3	19.6

Source: PSA (2018).

The elasticities resulting from the estimation process are shown in Tables 3 and 4. Based on the structure of the LES the expenditure elasticities follow the pattern of the expenditure shares. Moreover, most of the own-price elasticities are below unity in absolute value (i.e. demand tends to be inelastic across most comodities). For rice in particular, expenditure elasticity ranges from 0.81 and 0.96 while own-price elasticity ranges from -0.72 to -0.75.

Table 3: Prices (Php per unit) and expenditure elasticities by decile, Philippines, 2015

	1	2	3	4	56	7	8	9	10
Corn	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04
Coconut	0.58	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67
Banana	1.16	1.15	1.15	1.14	1.13	1.12	1.12	1.11	1.11
Mango	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00
Other fruit	0.81	0.82	0.82	0.83	0.84	0.84	0.85	0.85	0.86
Rootcrop	0.22	0.24	0.24	0.25	0.25	0.27	0.27	0.28	0.29
Vegetables	0.82	0.83	0.83	0.84	0.84	0.85	0.85	0.86	0.86
Poultry	1.54	1.47	1.46	1.44	1.41	1.38	1.36	1.34	1.32
Capture Fisheries	1.22	1.20	1.20	1.19	1.18	1.17	1.16	1.15	1.15
Aquaculture	1.45	1.40	1.39	1.37	1.35	1.32	1.31	1.29	1.28
Rice	0.81	0.82	0.83	0.83	0.84	0.85	0.85	0.85	0.86
Processed Fish	0.54	0.56	0.56	0.57	0.58	0.60	0.60	0.61	0.62
Sugar	0.44	0.46	0.46	0.47	0.48	0.50	0.51	0.52	0.53
Meat products	1.60	1.53	1.52	1.49	1.46	1.42	1.40	1.38	1.36

Source: PSA (2018).

Table 4: Prices (Php per unit) and own-price elasticities by per capita income decile, Philippines, 2015

	1	2	3	4	56	7	8	9	10
Corn	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	-0.03
Coconut	-0.44	-0.37	-0.40	-0.40	-0.42	-0.43	-0.45	-0.47	-0.48
Banana	-0.79	-0.73	-0.76	-0.76	-0.77	-0.78	-0.80	-0.81	-0.81
Mango	-0.70	-0.63	-0.66	-0.67	-0.68	-0.69	-0.71	-0.72	-0.73
Other fruit	-0.59	-0.51	-0.54	-0.54	-0.56	-0.57	-0.60	-0.61	-0.62
Rootcrop	-0.18	-0.14	-0.16	-0.16	-0.17	-0.18	-0.19	-0.20	-0.20
Vegetables	-0.63	-0.55	-0.58	-0.59	-0.60	-0.61	-0.63	-0.64	-0.66
Poultry	-0.97	-0.96	-0.97	-0.97	-0.97	-0.97	-0.97	-0.98	-0.98
Capture Fisheries	-0.83	-0.78	-0.80	-0.80	-0.81	-0.82	-0.83	-0.84	-0.85
Aquaculture	-0.94	-0.91	-0.92	-0.92	-0.93	-0.93	-0.94	-0.94	-0.94
Rice	-0.72	-0.67	-0.69	-0.69	-0.70	-0.71	-0.73	-0.74	-0.75
Processed Fish	-0.43	-0.35	-0.38	-0.38	-0.40	-0.41	-0.43	-0.45	-0.46
Sugar	-0.35	-0.28	-0.31	-0.31	-0.33	-0.34	-0.36	-0.37	-0.38
Meat products	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00

Source: PSA (2018).

Welfare estimation

On the consumption side, welfare impacts are computed in terms of *equivalent variation* (EV) by income decile. The computation relies on expenditure and indirect utility functions, which for the LES are given by, respectively:

$$E\left(PD_{G,H},u\right)=\sum_{G}PD_{G,H}\cdot qcmn_{G,H}+u\prod_{G}\left(\frac{PD_{G,H}}{\beta_{G,H}}\right)^{\beta_{G,H}}; \quad (4)$$

$$V(PD_{G,H},XPD_{H})=\prod_{G}\left(\frac{\beta_{G,H}}{PD_{G,H}}\right)^{\beta_{G,H}}. \quad (5)$$

Here *u* denotes a given utility level. Given two sets of prices, $PD^{0}_{G,H}$, $PD^{1}_{G,H}$, with corresponding (maximum) utility levels u^{0}, and u^{1}, the general formula for *EV* is:

$$EV=E\left(PD^{0}_{G,H},u^{1}\right)-E(PD^{0}_{G,H},u^{0}). \quad (6)$$

Utility is evaluated using (5), while *E* is evaluated using (4). Of course, total welfare of the households is obtained by multiplying *EV* with the respective population.

In addition to consumer welfare through changes in price, welfare also adjusts on the producer side through changes in income. Strictly speaking the AMPLE-CGE adopts constant returns technology hence equilibrium implies zero profits. In the model, value added is paid out as rental income to capital, wage income to labor, and the residual as returns to deploying land. The last therefore is our measure of palay farmers' welfare *PW*.

Note that the residual character of returns to land is still valid even if a component of it were allocated as fixed rental for landowners. The sole exception would be share tenancy, which is illegal under Philippine law; in 2002, only 7.2. percent of palay farm area was sharecropped (Ballesteros, 2006). Since then, government land reform has progressed to break up large estates and suppress share tenancy.

Let *NREV* denote net income per ha and *HC* the total area harvested for palay; subscripts 1 and 0 denote alternative and reference scenarios, respectively. A simple calculation of change in palay farmers' income as a group is therefore the following:

$$\Delta PW=PW^{1}-PW^{0}=NREV^{1}\cdot HC^{1}-NREV^{0}\cdot HC^{0}. \quad (7)$$

However, the aforementioned formula does not fix the cropped area of palay farmers at the baseline, though presumably the same farmers are able to realize some returns from deploying their land to another crop. To account for this the income of palay farmers under the alternative scenario is computed as follows:

$$PW^{1}=NREV^{1}\cdot HC^{1}+\lambda\cdot\left(HC^{0}-HC^{1}\right). \quad (8)$$

Here λ denotes the shadow price of land. The first term denotes the return from the current cropped area for palay; the second term is the shift out of palay into other crops, whose return is valued at the shadow price. We therefore calculate ΔPW^{1} using (8). Both producer income change and consumer welfare change over time expressed in net present value using a social discount rate (assumed equal to 5 percent).

Set-up of scenarios

The reference scenario (**without**) corresponds to the *status quo* without tariffication. The AMPLE-CGE contains an expression for non-tariff barrier *ntb*, expressed as an *ad valorem* implicit tariff which for rice is calibrated at the base data set at *ntb* = 0.74. Scenarios are solved from 2016 (the base year of the SAM) every year to 2030.

The reference scenario adopts exogenous variable projections for population growth, technological change, and world price, as reported by Briones (2018) but with *ntb* held at the base value. The alternative scenario (**with**) meanwhile has identical exogenous variables but with *ntb* shrunk to 99 percent of its base value in one year (representing residual non-tariff barriers in the rice sub-sector).

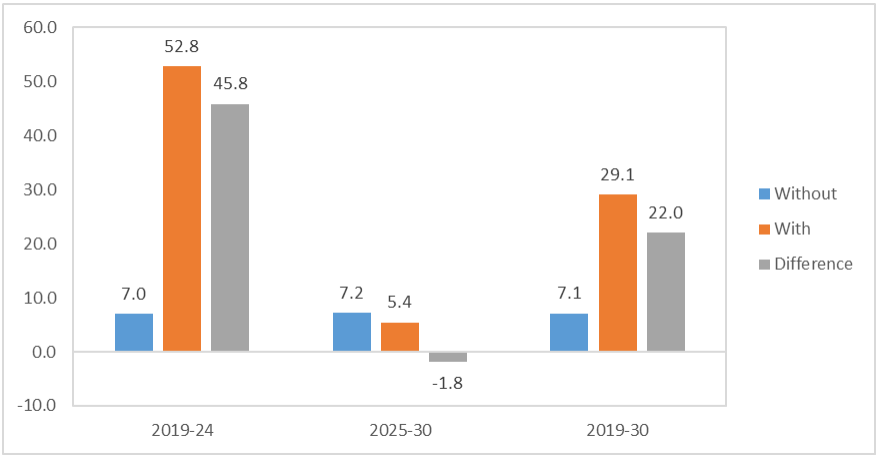
5. Results

The following shows simulation results for the rice sub-sector divided into five-year intervals (2019-2024 and 2025-2030); simulations for 2016-2018 are omitted as these are identical between reference and alternative scenarios.

Imports

Growth of rice imports with and without liberalization is shown in Figure 7. In the reference case, imports are projected to grow initially by only 7 percent per year, accelerating mildly to 7.23 percent by 2025-30. In contrast, average annual growth of imports in 2019-24 is 53 percent per year, decelerating to 5 percent in 2025-30, for an average growth of 29.1 percent over the period. The net change is 22 percentage points for import growth owing to liberalization.

Figure 7: Rice import growth projections by scenario, 2019 – 2030 (%)



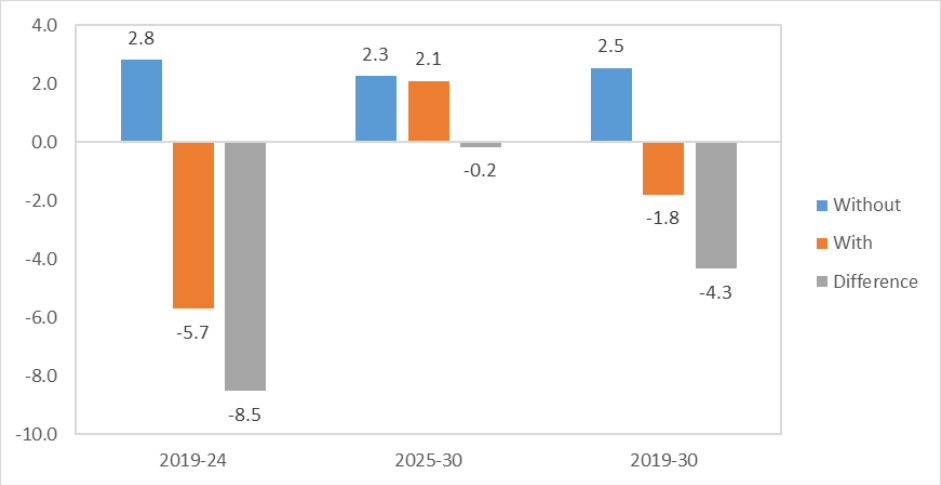
Source: Author's calculation.

Palay production and area harvested

Production of palay is projected to grow initially at 2.8 percent per year in the absence of tariffication, decelerating gently to 2.3 percent. With tariffication, palay production contracts initially averaging -5.7 percent decline up to 2024, but posting positive growth on average from 2025 onward. The net difference is an 8.5 percentage point reduction up to 2024 and a 0.2 percentage point reduction up to 2030.

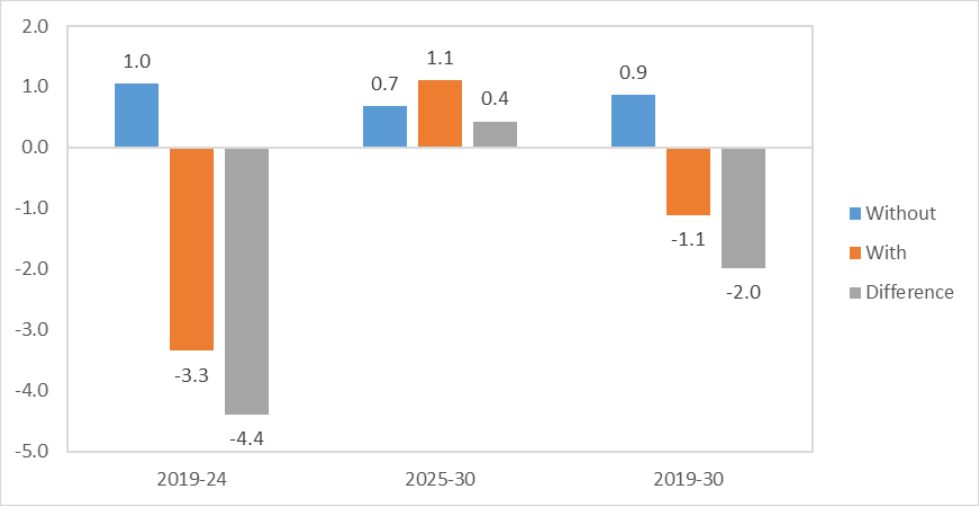
Without liberalization, area harvested for palay is projected to grow, by 1 percent per year to 2024, then 0.7 percent p.a. to 2030 (Figure 9). With liberalization, area harvested will contract by 3.3 percent p.a., reversing to an expansion by 0.4 percent per year to 2030. The difference is a total of -4.4 percent point change to 2024, or -2.0 percentage points for the whole projection period.

Figure 8: Rice production growth projections, by scenario, 2019 – 2030 (%)



Source: Author's calculation.

Figure 9: Rice area harvested growth projections, by scenario, 2019 – 2030 (%)



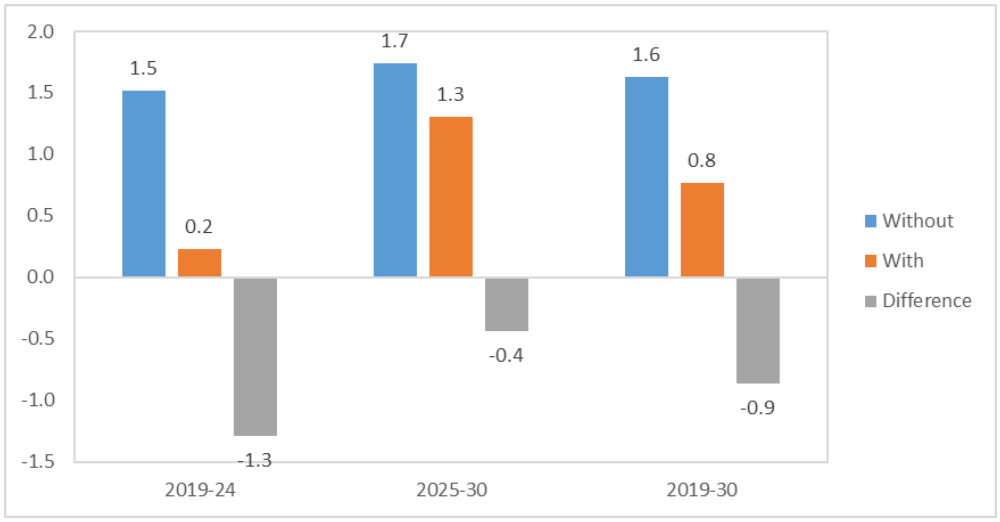
Source: Author's calculation.

Farmgate and retail price

Without liberalization, farmgate price of palay is projected to increase by 1.5 percent per year, accelerating slightly to 1.7 percent to 2030. With liberalization, farmgate price will still increase, but by only 0.2 percent per year. In fact the actual contraction of farmgate price only occurs in 2019 itself but then averages out to positive growth over the whole 2019-2024 interval. Farmgate price growth then accelerates to 1.3 percent to 2030. Overall, liberalization has led to a 0.9 percentage point reduction per year in the farmgate price of palay.

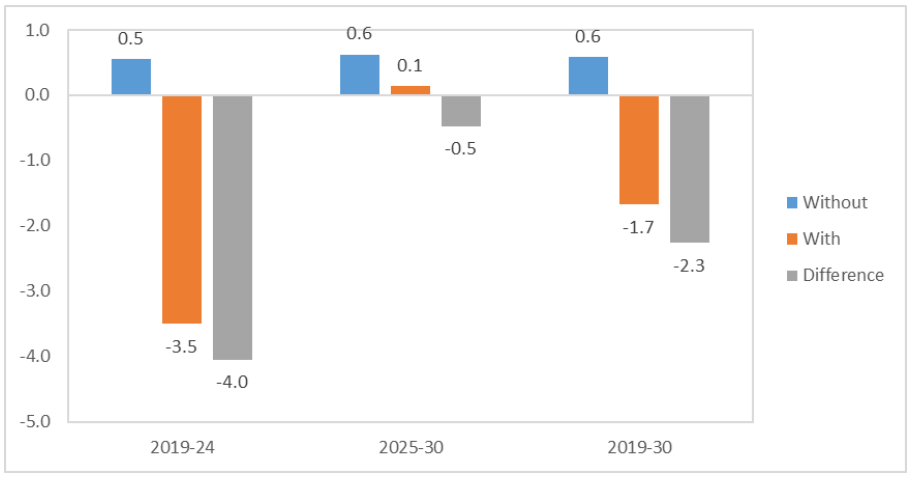
Without liberalization, the retail price of rice is projected to increase by 0.5 percent per year, or 0.6 percent over the entire period. With liberalization, the retail price of rice, the 2019-2024 interval is marked by a reduction in the retail price (in contrast with the farmgate price), by -3.5 percent per year. For the entire period the retail price is contracting by 1.7 percent per year relative to the base value. Overall liberalization causes a retail price decline of 2.3 percentage points.

Figure 10: Growth projections for rice farmgate price, by scenario, 2019 – 2030 (%)



Source: Author's calculation.

Figure 11: Growth projections for rice retail price, by scenario, 2019 – 2030 (%)



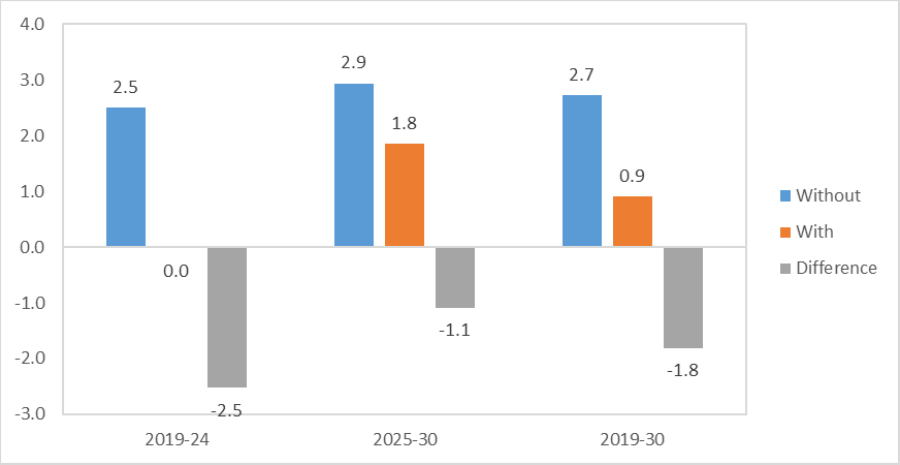
Source: Author's calculation.

We may contrast the percentage difference between alternative and reference scenarios for 2025 of our projections with those of Perez and Pradesha (2019). For imports, our figure is much higher (229 percent versus 143 percent); our decline in production is much greater (42.5 percent versus 9.7 percent), as well as the decline in area harvested (22 percent versus 7.2 percent). However, our projected decline in farmgate and retail price is lower (6.5 percent versus 26 percent, and 20 percent versus 26 percent, respectively).

Welfare

Based on net returns to land, palay farmers' income is projected to grow by 2.5 percent per year to 2024, accelerating to 2.9 percent per year to 2030 (Figure 12). However, farmers' income is flat initially after liberalization, accelerating to 1.8 percent per year to 2030. Overall liberalization leads to a 1.8 percentage point reduction in rice farmers' income.

Figure 12: Growth projections for rice farmers' income, by scenario, 2019 – 2030 (%)



Source: Author's calculation.

The first column of Table 5 shows the allocation of the net income from land across the deciles using income shares, assumed to be fixed throughout the projection period. The shares were calculated as follows:

- The 2015 FIES were merged with the 2015 Labor Force Survey (October round). Palay farming households are distinguished in the sample by i) identifying households whose heads have palay farming as their primary occupation; and ii) among these households, identifying those whose net crop income exceeds their expenditure on rice (i.e. the net rice producers).
- For palay farming households, the entire net crop income from farming are used to compute shares by decile (using per capita income decile indicator in the merged data set); this assumes that palay farming income is distributed the same way net crop income, at least for palay farming households.

Table 5: Impact on rice farmers' income by decile, 2019 – 2030 (Php millions, fixed 2016 prices)

	Shares in palay farmers household income (%)	2019-24	2025-30	2019-30
H1	13.5	-905	-1,507	-1,206
H2	14.2	-1,038	-1,728	-1,383
H3	12.3	-945	-1,573	-1,259
H4	13.1	-985	-1,639	-1,312
H5	10.0	-751	-1,251	-1,001
H6	8.7	-688	-1,146	-917
H7	9.2	-694	-1,156	-925
H8	7.3	-583	-971	-777
H9	6.8	-568	-946	-757
H10	5.0	-403	-672	-537
Total	**100.0**	**-7,560**	**-12,589**	**-10,075**

Source: Author's calculation.

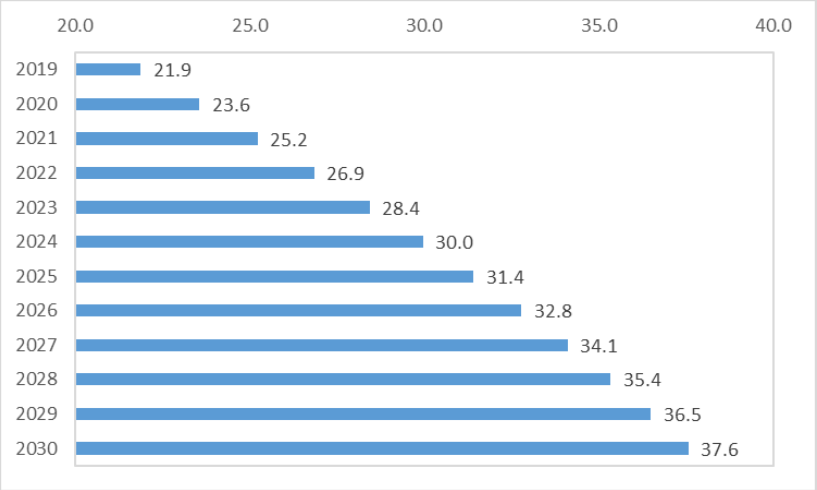
Note that the largest shares in palay farmers' income are clearly in the lowest deciles. However, the share remains significant even as the income deciles go up; the top decile accounts for 5.3 percent of palay farmers' income. Note that poverty incidence in 2015 was

21.6 percent, hence poverty mostly overlaps with the first two deciles; these two deciles account for just 25.7 percent of palay farmers' income.

Based on these shares, the change in palay farmers' income is allocated to the deciles as shown in the next three columns of Table 5. The largest impact of course is on the second decile (given it has the largest share), followed by the first fourth, third, and first (poorest) deciles. The negative impact in producers' welfare worsens over time. Loss in rice farmers' income is up to Php 7.6 billion per year in 2016 prices to 2024, rising to Php 12.6 billion per year to 2030, for an average reduction of about Php 10 billion per year. The amount is auspiciously close to the minimum allocation for the Rice Fund.

The figures behind Table 5 are converted to percentages (with farmers' income in the reference scenario as denominator) in Figure 13. Percentage differences are identical across deciles; this is consistent with the same price drop affecting all farmers, and all farmers making the same land use adjustments given this price drop. The percentage difference is sizable, beginning from 22 percent of farm income, rising to nearly 40 percent by 2030.

Figure 13: Decline in farmers' income due to liberalization as a percentage of reference income, 2019-2030



Source: Author's calculation.

Obviously farmers are made worse off by liberalization; on the other hand, consumers gain from the decline in retail price (Table 6). In 2019-24 the increment is smallest for the lowest income groups, consistent with lower purchasing power for all commodities including rice; moreover, we had shown earlier that the rice expenditure share changes only gradually as income increases.

The increase in consumer welfare rises over time. Total consumer welfare gain is equivalent to almost Php 200 billion per year to 2024, rising to Php 280 billion per year to 2030, for an average of Php 238.5 billion per year. In percentage terms however, it is the lowest deciles that gain the most; the first two deciles gain by 2.7 percent initially, decelerating slightly to 2.4 percent to 2030. This far exceeds the average gain of 1.9 percent over the entire period.

Table 6: Equivalent variation by decile, 2019 – 2030 (Php millions, fixed 2016 prices)

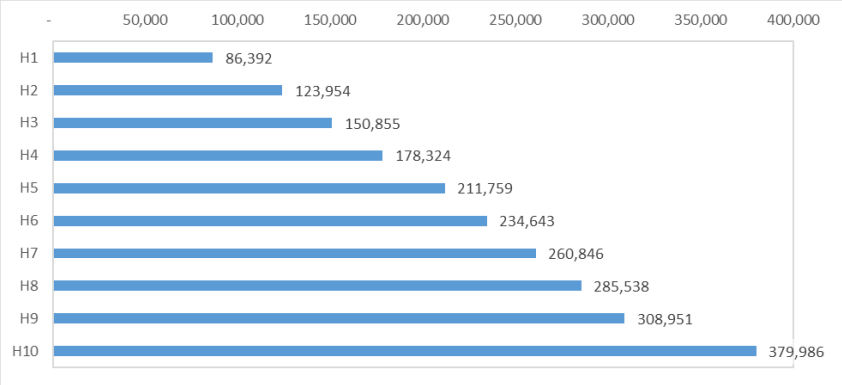
	EV	Change from reference scenario expenditure (%)

	2019-24	2025-30	2019-30	2019-24	2025-30	2019-30
H1	9,403	10,361	9,882	2.7	2.3	2.5
H2	12,604	15,292	13,948	2.7	2.5	2.6
H3	14,462	18,850	16,656	2.7	2.6	2.7
H4	16,605	22,557	19,581	2.6	2.6	2.6
H5	18,927	26,604	22,765	2.5	2.6	2.5
H6	20,615	29,531	25,073	2.2	2.4	2.3
H7	22,599	33,051	27,825	2.1	2.3	2.2
H8	24,390	36,120	30,255	1.9	2.0	1.9
H9	26,204	39,148	32,676	1.5	1.7	1.6
H10	31,657	48,037	39,847	1.1	1.2	1.1
Total	**197,467**	**279,550**	**238,509**	**1.8**	**1.9**	**1.9**

Source: Author's calculation.

It is obvious that, decile by decile, the gain to consumers far exceeds the loss to producers. Figure 14 condenses the year-by-year welfare changes, aggregating for both producers and consumers, and expressing these in present value. The gains are smallest for the lowest decile, amounting to just Php 86.4 billion; the gains are largest for the top decile at Php 380 billion. However from Table 6, these absolute changes translate to larger percentage changes for the lower income groups. The total increase in social welfare discounting to present value is Php 2.21 trillion in 2016 prices, over the period 2019 – 2030.

Figure 14: Present value of social welfare increase from liberalization, by decile, 2019 – 2030 (Php millions in 2016 prices)



Source: Author's calculation.

6. Conclusion

Summary of results

The findings of this study make clear that under liberalization, rice imports are far larger than under the interventionist policy. Farmgate and retail prices are significantly lower under liberalization. Hence, farmers are worse off under liberalization, while consumers are better

off. On the side of farmers, the policy causes a fall in palay output as well as area harvested, relative to that under an interventionist policy.

This study measures the *ex ante* benefits in peso value to the consumers and producers and evaluates net benefit to both society and to the various household per capita income deciles. Society as a whole is better off under liberalization. Benefits from liberalization are spread widely across the population, while the costs are concentrated among net rice producers.

Disaggregating the welfare change across the income deciles (combining consumers and producers), we find that liberalization confers positive benefit for all the income deciles. In absolute terms the increase is larger for the higher income deciles. However, in proportion to the welfare level without liberalization, the relative gain of lower income deciles is larger than that of higher income deciles. Note that poverty incidence coincides closely with the bottom two deciles, hence liberalization is a pro-poor policy.

Limitations of the analysis

The disaggregation of welfare impact by income group is highly informative about the distributional aspects of the policy change. It falls short however of an exact calculation of changes in welfare and income distribution. A shorthand way of estimating these changes is to assume a distribution function for household incomes and infer changes in the function based on decile averages. However, the literature tends to favor an approach where household-level information is incorporated in the scenario analysis, either as a direct part of the model, or as a household module linked to the CGE. This approach, called *microsimulation*, is a further extension of the AMPLE-CGE and will be a future phase in model development.

As mentioned earlier, this analysis of welfare impact is based on long term adjustment of a market to equilibrium. Price volatility merely obscures the path to equilibrium and is suppressed in the analysis. However, in the practical world, short-term price volatility is a key driver of policy debate.

Implications

To realize the aforementioned positive benefits for society as a whole, government should continue to enforce RA 11203. Calls to review and reverse liberalization are premature. Enforcement should follow the letter of the law and its IRRs, which leave little room to maneuver for re-imposing QRs. BPI is directly instructed to impose no quantity limits in its issuance of SPS clearance. NFA is explicitly restrained from imposing requirements on rice importers. Even the Bureau of Customs is ordered to refrain from imposing excessive requirements on rice importation, other than the SPS clearance and the payment of customs duties.

The invocation of special safeguards so as to raise the tariff on rice imports temporarily was proposed by some farmer groups, with DA briefly studying the matter. The economic cluster has resisted the idea, fearing the inflationary impact of the additional levy. The idea has since been dropped, though strong lobbying may yet revive it. The prospect of a special safeguard only sows further uncertainty in the business climate of rice trade, at precisely the time when the state should encourage new entries. The safeguard may even play into the hands of the "rice cartel" (see below).

Focus efforts on providing offsetting compensation for losers from the reform. The analysis makes explicit the harsh realities of competition, of which palay farmers are taking the brunt.

The safety net provision of RA 11203 precisely anticipated this prospect and provides for assistance to rice farmers. However, utilization of RCEF has lagged in comparison with market movements. Agencies with hitherto no implementation function (PhilMech, PhilRice, etc.) were suddenly mandated to administer large-scale production support programs. The provisions of the law explicitly require procurement of various goods and services (machineries, seeds, etc.), a process that is perennially prone to delay within the bureaucracy (Navarro and Tanghal, 2017).

To forestall further adverse impacts on rice farmers, it seems fitting to accelerate safety net programs for this sub-sector, such provision of targeted cash transfers (conditional only on being a small rice farmer in areas suffering from the biggest drops in palay price). Moreover, beyond production support, DA and related agencies should innovate by investing heavily in participatory value chain programs to encourage rice farmer cooperatives and associations to engage in wholesale or retail trade of rice, to be milled through facilitated toll processing.

Investigate the state of competition in rice marketing and diligently enforce competition policy in the rice industry. Consumers have thus far reaped early gains from liberalization; indeed, inflation has fallen to near zero in recent months, in part owing to continued decline in the consumer price of rice.

Moreover, the drop in farmgate prices have appeared to be all out of proportion to the decline in retail prices. This is cited by critics of liberalization as a symptom of "failure" of the law. Note however that the liberalization came as a massive, one-time shock to the rice market which had already experienced considerable volatility going in to the reform. In the aftermath of the shock, we observed a sharp correction to the past escalation of farmgate prices; an increase in dispersion of farmgate prices across regions as markets adjust differentially to the shock. These considerations suggest that price will eventually normalize after the initial shock plays out.

On the other hand, a large margin persists between border price and wholesale price, which in turn props up the retail price. Moreover, there was a **decrease** in the regional dispersion of retail prices. It is not a farfetched notion to see possible coordination among early adopters of open access to foreign rice. Competition from later entrants should in principle neutralize this coordination, but it seems to be long in coming. Uncertainty in the business climate owing to potential policy reversal (such as special safeguards) does nothing to help encourage new entrants and thereby healthier competition in rice trading.

To maximize benefits to rice consumers, competition policy should be invoked to investigate thoroughly the nature of pricing in the rice market. If pricing at the wholesale and retail level are subject to significant adjustment delays and persistently high rents, then government intervention may be warranted in terms of enforcing competitive outcomes. This may include penalties on hoarding and massive releases from the buffer stock. The aforementioned program on participatory value chains will also support widening competition in rice marketing.

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