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The unfinished agenda of trade liberalization in Philippine agriculture: Assessing the impact of reducing tariff and nontariff barriers

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The Unfinished Agenda of Trade Liberalization in Philippine Agriculture: Assessing the Impact of Reducing Tariff and Nontariff Barriers

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Abstract

Much progress has been made in pursuing liberalization of agricultural trade in the Philippines. However, some significant tariff and non-tariff barriers remain. This study evaluates the economic impacts of completing the agenda of policy reform by removal of these remaining trade barriers. Scenario analysis using computable general equilibrium modeling finds that trade liberalization is associated with a more rapid expansion in imports and a wider agricultural trade deficit; slower growth of agricultural GDP and wages; higher overall GDP and higher industry- fiscal position and national savings. Liberalization radically accelerates growth of imports for Hogs, and Sugar, while slowing down export contraction of Coconut, Banana, Mango, and most other exports. It slows down output growth of most import substituting goods, while accelerating output growth of export-oriented sectors. Trade liberalization also accelerates growth in per capita consumption, as well as total per capita expenditure. Lastly, it increases social welfare, though the gain is small in relation to base year expenditure.

Keywords: Tariffs, non-tariff barriers, trade liberalization, agriculture, computable general equilibrium modeling

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The Unfinished Agenda of Trade Liberalization in Philippine Agriculture: Assessing the Impact of Reducing Tariff and Nontariff Barriers

Roehlano M. Briones[1]

1. Aims and scope

The recent liberalization of the rice industry under Republic Act (RA) 11203 is part of an on-going policy of market reform and trade liberalization in Philippine agriculture. The clearest statement of policy in this regard is the Agriculture and Fisheries Modernization Act of 1997: "The State shall adopt the market approach in assisting the agriculture and fisheries sectors while recognizing the contribution of the said sector to food security, environmental protection, and balanced urban and rural development, without neglecting the welfare of consumers, especially the lower income groups. The state shall promote market-oriented policies in agricultural production to encourage farmers to shift to more profitable crops."

This policy in turn is part of an economywide program of trade liberalization, pursued gradually from the 1970s onwards, though with occasional reversals. By 1990, tariffs on agricultural products, based on Most Favored Nation (MFN) rates, averaged 22.8 percent (Cororaton and Cockburn, 2007). In 1995, the Philippines acceded to the WTO Agreements, and passed the Agricultural Tariffication Act (RA 8178), reinforcing the reform impetus. By 1999, average tariffs on agricultural products were down to 16.3 percent; by 2019, average tariffs on agricultural products fell further to 11.5 percent (Tariff Commission, 2020).

Nonetheless agriculture remains the basic sector with the most resistance to tariff reduction; Tariff Commission (2020) estimates the overall average tariff rate at 7.7 percent in 2019, ranging from 4.33 percent for Chemicals, to 9.36 percent for Textile, Paper, Wood, Leather. This discrepancy had been in place since the 1990s: in 1999, the overall tariff rate was already at 10.0 percent, with manufacturing already down to 9.0 percent (Tariff Commission, 2020). Agricultural products deemed "sensitive" are levied the highest statutory rates (20 to 65 percent), as of 2015 (Tariff Commission, 2020). In 2015 about 66 percent of Philippine agricultural output by value is shielded by foreign competition by MFN tariffs of forty percent or more (Briones, 2015). In addition to tariff barriers, non-tariff barriers are also rampant in the sector, as non-tariff measures have in the past been wielded to keep imports in check, rather than as measures to achieve other goals such as environmental safety. Moreover, various agricultural producer organizations have recently expressed strong opposition to imports in mass media; in addition to that of rice (already discussed extensively in Briones, 2020), poultry producers have recently appealed for a suspension of chicken imports. Likewise, corn farmers have opposed the importation of feed wheat, a key substitute corn as a feed input.[2]

The reason for the persistence of trade barriers in agriculture is plainly put, the protection producers in the agricultural value chain (e.g. farmers and processors relying on domestically-sourced raw materials) from the economic harm. This harm must be contrasted to the potential benefits from dismantling these remaining barriers. Questions for policy include:

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[2] https://business.inquirer.net/301930/suspend-poultry-imports-raisers-appeal-to-da-2.; https://www.philstar.com/business/2020/08/31/2038924/corn-farmers-buck-feed-wheat-imports.

- How significant are the costs, compared with the potential benefits, from trade liberalization?
- How much adjustment is expected among import substituting sectors? Among export-oriented sectors?
- What are the impacts on macroeconomic outcomes, e.g. aggregate output, agricultural and industrial wages, and government fiscal position?
- How should policy proceed in terms of liberalization and post-liberalization adjustment for the rest of agriculture? What lessons have we learned from past reforms?

This study will address these questions using a computable general equilibrium model of the Philippines. The Agricultural Model for Policy Evaluation (AMPLE) CGE model is an in-house, public domain CGE model of PIDS intended for agricultural policy evaluation (Briones, 2018). This study implements an update to 2018 data, and runs scenarios to assess the impact of trade liberalization reform.

In the past three decades, tariff reduction has been most actively pursued as a consequence of entry into various regional trade agreements (RTAs) or bilateral trade agreements. Such agreements typically address preferential tariff rates, rather than global or MFN rates. Such rates are contingent on either future negotiation rounds of the World Trade Organisation (WTO), or as unilateral initiatives of the Philippine government. This study conducts scenario analysis only for MFN rates, though preferential agreements are discussed in the literature review.

The rest of this paper is organized as follows: Section 2 discusses the methodology for the study. Section 3 presents the recent history of trends and policies in Philippine agricultural trade, including policy indicators. Section 4 presents the results of the scenario analysis. Section 5 concludes.

2. Methodology

Revealed comparative advantage

One measure of how competitive a product is in the world market is *revealed comparative advantage* (RCA), computed for sector *i* as follows:

$$RCA_i = \frac{ExpPH_i / ExPH}{ExW_i / ExW}$$

Here *ExPH* is total exports of Philippines, while $ExpPH_i$ are exports of sector *i*; *ExW* is total world exports, while ExW_i is total world exports of sector *i*. To interpret this indicator: note that the denominator is the average of export shares of all exporters of *i* (weighted by market shares of each exporting country in world exports). The numerator is the export share of the Philippines in its total exports. If $RCA_i > 1$, then the Philippines is **more specialized** compared to the average country exporting *i*; if $RCA_i < 1$ then the Philippines is **less specialized** compared to the average country exporting *i*.

Policy indicators

Various policy indicators are widely used in the literature to estimate the extent to which trade policy measures introduce distortions, i.e. a market outcome that differs than a counterfactual outcome in the absence of the policy.

Tariffs

Tariffs are duties levied on imports *qua* imports, i.e. over and above relevant indirect taxes levied on the product *qua* product. The Philippines typically states tariffs in *ad valorem* terms, as a percentage of cost, insurance and freight (CIF). Tariffs are charged by tariff line (which depends on the import product classification) and country of origin. The general default rate regardless of origin is referred to as the "most favored nation" (MFN) rate. As WTO signatory, the Philippines guarantees that tariff concessions given to any WTO member is extended to all, with the exception of officially-recognized trade agreements. Note however that, with justification, the Philippines may levy a discriminatory tariff against another state (Box 1). In the case of a recognized trade agreement: when a tariff rates is set lower than the MFN rate, the resulting tariff is termed a *preferential rate.*

The actual applied tariffs *tar* is computed for tariff line *i,* over a given reference period, with the formula:

tar_i = (Customs duties collected for line *i*)/(Iimport value of *i*).

Nominal protection rate

For an imported product, a direct measure of protection is the Nominal Protection Rate (NPR), equal to the gap between domestic price and corresponding border price, expressed as a percent of border price. More precisely: for good *i,* the *border price* BP_i is the export price free-on-board (FOB), i.e. in the origin country, adjusted for cost, insurance, and freight (CIF), and related handling costs, converted to local currency at the prevailing exchange rate. Domestic price is typically proxied by average wholesale price (or alternatively, wholesale price in the local market nearest the entry port of the import), denoted WP_i. The formula is therefore:

$$NPR_i = WP_i / BP_i - 1.$$

Box 1: Countervailing, anti-dumping, and safeguards duties

Occasionally a higher-than-MFN tariff is levied, in accordance with RA 8751 (Countervailing Measures Act), RA 8752 (Anti-Dumping Act), or RA 8800 (Safeguards Act). These laws authorize increases in customs duties when a domestic industry has suffered or in danger of suffering material injury from imports. When injury is associated with a government subsidy of the exporting country, the corrective tariff is a *countervailing duty*; when imports are shown to be imported at a price below its equivalent normal value in the exporting country's domestic market, the corrective tariff is an *anti-dumping duty*. The most flexible additional tariff is the *safeguard duty* applied when an import surge exceeds a trigger volume, or an import price falls below a trigger price. However, these duties are all time-bound: countervailing and anti-dumping duties are imposed only for as long as injurious subsidies or dumping prevail; the safeguards measure can be imposed up to four years (extendable to ten years).

The size of the countervailing duty is calibrated to the size of the subsidy; that of the anti-dumping duty is calibrated to the margin of dumping; and size of the countervailing duty depends on whether the safeguard is found under a volume test or a price test. If a volume test, the maximum safeguard duty is one-third of the out-quota tariff. If the price test, the safeguards duty is based on the difference with the trigger price.

Sources:

Congress of the Republic of the Philippines. Republic Act 8751. https://tariffcommission.gov.ph/ra-8751. Accessed 30 June 2020.

Congress of the Republic of the Philippines. Republic Act 8752. https://tariffcommission.gov.ph/ra-8752. Accessed 30 June 2020.

Congress of the Republic of the Philippines. Republic Act 8800. https://tariffcommission.gov.ph/ra-8800. Accessed 30 June 2020.

The NPR is simply a measure of the price wedge between border and domestic price. Supposedly, if the product is identical regardless of origin, and all costs related to importation are accounted for, then such a wedge is persists only because of a policy-related distortion. One such distortion is tariffs; another set of distortions are referred to as *non-tariff measures*, denoting policy measures other than ordinary customs duties that affect international trade in goods at the border by changing quantities trade, prices, or both (Bachetta et al, 2012). A *non-tariff barrier* is a subset of NTMs where the intent is to primarily to restrict trade (e.g. to limit economic harm to a domestic industry). An example of an NTM which is not necessarily an NTB is a mandatory pesticide treatment to prevent certain pests endemic to an exporting country from entering the territory of the importing country. However, an NTM applied in excess of what is needed to accomplish a non-trade objective may be already be regarded as an NTB.

For sector *i*, suppose it has been determined that the NTM is actually a non-tariff barrier. Define ntb_i as follows:

$$ntb_i = NPR_i - tar_i,\ tar_i < NPR_i.$$

That is, ntb_i is the remaining gap between NPR_i and tar_i; ntb_i is positive only if the tariff rate is unable to fully account for the NPR. In general, if the NTB takes the form of a product standard which incurs cost of compliance, i.e. a trade cost (Clarete, 2017). In this case the trade cost shall be charged on top of the tariff. However, if the NTB is a mere import quota, then two cases arise in the case of a homogenous product: we have $tar_i < NPR_i$, and the quota is the binding policy distortion. The tariff merely serves to transfer some of the rent of the quota holder to the government. On the other hand, we may have $tar_i = NPR_i$; in this case it is the tariff which is the binding policy distortion, and the quota a superfluity.

Modeling approach

The aforementioned direct measures are at best partial equilibrium estimates of the impact of trade policy for a small open economy. A general equilibrium approach introduces these direct measures as policy experiments into a CGE model, allowing for a full range of intersectoral effects to determine the new market equilibrium. The modeling approach is implemented in this study using AMPLE - CGE, a Walrasian applied general equilibrium model of the Philippine with explicit disaggregation of agro-industrial sectors; a set of land use allocation equations for crops; disaggregation of agricultural and non-agricultural labor, and corresponding wages.

The AMPLE CGE is calibrated to a 2018 Social Accounting Matrix (SAM), in turn based on the 2006 input-output table, updated using the 2018 National Income Accounts, and the 2018 Consolidated Income and Outlay Accounts.[3] Disaggregated customs data is obtained by the publicly downloaded data of the Bureau of Customs.[4] In case the estimated NPR (see Section 3) exceeds the applied tariff rate, the residual is adopted as the NTB estimate.

The computable version of the model is implemented in GAMS, a commercial software of the GAMS Corporation. Scenario analysis is presented as annual equilibrium solutions of model variables 2018 -2030; scenarios include a reference case with no policy reform; alternative scenarios involve policy experiments for trade liberalization, represented by reductions in tariffs and NTBs on agricultural imports.

3. Philippine agricultural trade: policies and trends

Historical overview

Agricultural policy has evolved gradually towards a more open trading regime, albeit punctuated by policy reversals and protection enclaves.

David, Intal, and Balisacan (2009) summarize the history of agricultural trade policy up to 2005. Following independence in 1946, the Philippines maintained a fixed exchange rate policy in pursuit of import substitution industrialization (ISI). Following a severe balance of payments crisis in the late 1940s, the country applied "essentiality" criteria in rationing foreign exchange and import licenses during the 1950s to promote production of manufactured consumer goods, even as the fixed exchange rate maintained an overvalued peso. Agriculture was then a net exporter, accounting for two-thirds of the country's exports

[3] The author attempted to base the SAM on the 2012 input-output table; however, the model runs proved highly unsatisfactory, hence the AMPLE CGE used here is still based on the 2006 IO table.
[4] http://customs.gov.ph/import-reports/.

in the 1960s. The ISI regime essentially penalized exportables and agriculture to support domestic manufacturing.

In 1957 the policy shifted to "decontrol" with tariffs being deployed as a substitute form of protection. Despite the ostensible shift to export orientation in the 1970s, tariff protection was intensified, as the Philippines imposed the highest average tariffs in Southeast Asia; quantitative restrictions (QRs) were also rampant; by 1980, 52 percent of imported products were subject to QRs. A coinciding world commodity price boom boosted agricultural exports and established into new export products (bananas, pineapples, and fisheries). Benefits from this boom were siphoned off from agricultural by various policy distortions, namely by overvaluation of the currency; reducing relative domestic price of agricultural products; and even explicit export taxes (Power and Intal, 1990).

Structural adjustment commenced in the 1980s as government undertook a Tariff Reform and Import Liberalization Program. However, these were quickly reversed during the financial crisis of 1983. The reform initiative resumed under a new administration in 1986; export taxes were repealed (except on logs); export monopolies were abolished; importation was liberalized for fertilizer and other agricultural products. President Aquino's EO 470 implemented a second phase of the Tariff Reform Program. President Ramos' EO 8 provided for conversion of remaining QRs into equivalent tariffs, consistent with the country's commitments to the General Agreement on Tariffs and Trade (Garcia et al 2013). However, these reforms ground to a halt upon passage of the Magna Carta of Small Farmers (RA of 1992. The law imposed a blanket prohibition on imports, for agricultural products were domestically produced in "sufficient quantity."

The policy seesaw continued, when the Philippines acceded to the World Trade Organisation (WT) in 1995, and passed the Agricultural Tariffication Act (RA 8178). The Act converted QRs into tariffs, except for rice. It also reversed the import prohibitions under the Magna Carta. However, the equivalent tariffs were set at high bound rates, often in excess of the actual protection being conferred by the erstwhile QRs (David, 1995) – informally referred to as "dirty tariffication". Nonetheless, the scheduled reduction under the Uruguay Round did lead to lower tariff rates for agriculture by 2005.

The country has also engaged in various regional trade agreements, which included preferential tariffs for agricultural products, most notable of which is the ASEAN Trade in Goods Agreement (ATIGA), a continuation of the ASEAN Free Trade Area (AFTA). Under AFTA, the country is engaged in regional agreements with Australia and New Zealand, China, India, Japan, and Republic of Korea. The country has also entered a regional agreement with some European nations under the European Free Trade Area (EFTA), and a bilateral agreement with Japan under the Philippines – Japan Economic Partnership Agreement (PJEPA). A few other bilateral agreements are in discussion, e.g. with Republic of Korea, United States of America, and European Union. Lastly the ASEAN serves as a hub for a Regional Comprehensive Economic Partnership (RCEP) including China, Japan, Republic of Korea, Australia, and New Zealand.[5]

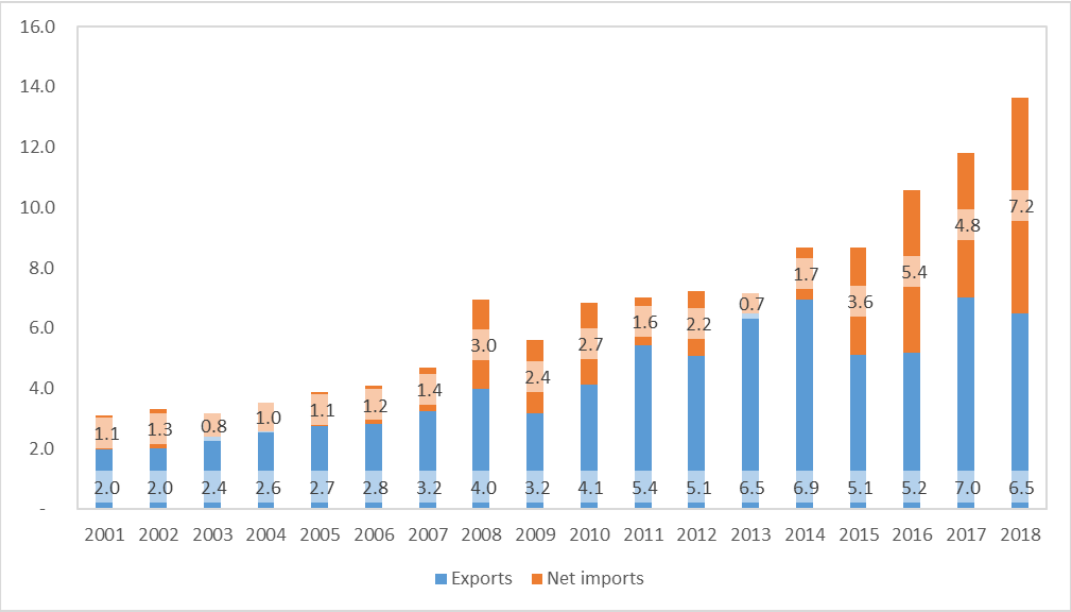
[5] https://www.pna.gov.ph/articles/1092309; https://manilastandard.net/mobile/article/332798; https://asean.org/storage/2020/06/Joint-Statement-of-10th-RCEP-ISSL-MM.pdf.

Trends in agricultural trade

Long a net agricultural importer, the agricultural trade deficit widened markedly in the 2000s.

Figure 1 shows agricultural exports and net imports; the height of the bar is total agricultural imports. Agricultural imports grew from USD 3.1 billion in 2001 to USD 13.7 in 2018; back in 2001, net agricultural imports were already USD 1.1 billion; owing to relatively slow growth of exports of 3.6 percent annually, net agricultural imports rose nearly sevenfold to USD 7.2 billion in 2018.

Figure 1: Agro-industrial exports and net imports, 2001 – 2018 (USD billions)



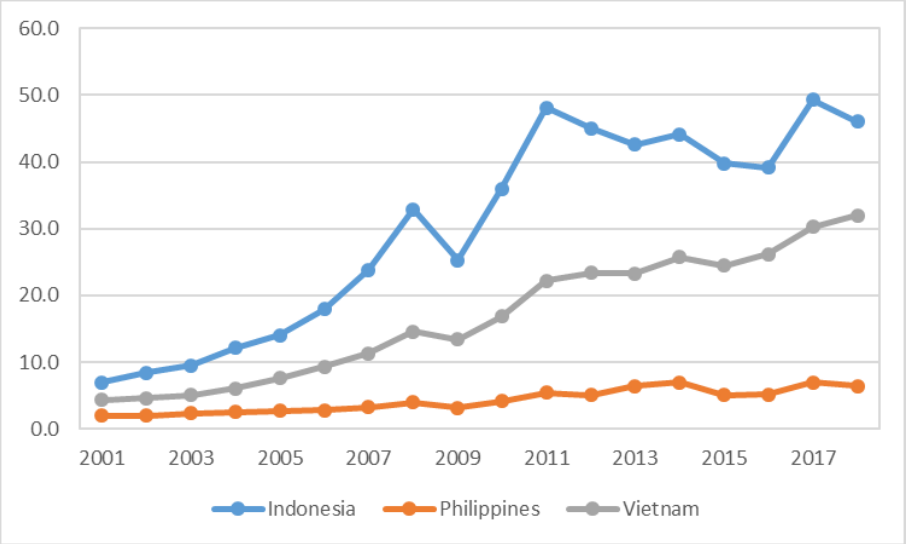
Note: Based on imports and exports for HS01 to HS24.

Source: WTO (2020).

Key agricultural exports of the country are highly competitive but growth has been inadequate to power overall export expansion.

Export growth has been slow not only relative to imports, but also relative to export earnings of neighboring countries, such as Indonesia and Vietnam (Figure 2). In 2001, Indonesia was already exporting 3.6 times more than the Philippines, while Vietnam was selling 2.2 times more; by 2018, Indonesia was selling seven times more, and Vietnam nearly five times more.

Figure 2: Exports of processed food and agro-based products, USD billions, 2001 – 19



Source: ITC (2020).

Growth of exports is relatively weak, despite high level of competitiveness of key agricultural exports, based on RCA (Table 1). The RCA ranges from a low of 1.6 (bread, pastries, biscuits, etc.) up to 150.5 for Crude coconut oil; despite high RCA, the latter export growth is only 3 percent per year (as the Philippines has been a top exporter of this product for decades); fast-growing exports, namely Mucilage and thickeners (mainly seaweed), Pineapples, and Cigarettes, also have high levels of RCA. However, growth has not been fast enough, nor the range of competitive exports diverse enough, to power overall growth of agricultural exports.

Table 1: RCA for key agricultural products, 2019

	2001	2005	2010	2015	2019	Export growth rate (%)
Export-oriented goods:						
Mucilage and thickeners	17.7	18.9	38.5	49.8	46.2	9.6
Desiccated coconuts	87.0	122.8	120.8	56.9	105.5	7.9
Bananas	-	-	-	-	35.1	-
Pineapples	7.7	7.4	5.7	12.8	32.6	14.7
Crude coconut oil	117.5	132.8	186.2	134.3	150.5	3.0
Tunas	6.4	4.7	13.1	10.1	11.0	8.9
Coconut oil	73.6	87.1	84.1	81.6	60.7	7.7
Cigarettes	0.2	1.6	1.5	1.3	2.9	17.4
Preserved pineapples	30.6	31.1	34.7	75.3	50.0	3.9
Bread, pastries	0.3	0.8	0.8	0.9	1.6	16.9
Import substitute goods:						
Beef	0.000	0.000	0.000	0.000	0.000	-
Pork	0.000	0.000	0.000	0.000	0.000	-
Chicken	0.001	0.146	0.314	0.186	0.046	30.2
Maize	0.007	0.000	0.000	0.000	0.000	-16.0

	2001	2005	2010	2015	2019	Export growth rate (%)
Rice	0.001	0.001	0.000	0.003	0.005	21.5
Sugar	0.747	2.198	0.595	12.337	0.000	-

Source of basic data: ITC (2020).

Also shown are RCAs of the import substitutes; note that the indicator cannot be computed for items with zero exports, i.e. Beef and Pork. (Export growth indicators are also not available for sugar as the 2019 value is zero.)

Where the indicator is available the RCA is below unity, except for a few years for Sugar. However, sugar exports are by no means a free market export, but rather a result of a preferential quota agreement between United States and selected developing countries (including Philippines).

Agricultural imports continue to expand rapidly despite high protection provided to key import substitutes.

Table 2 breaks down the overall imports into its major components (up to the 4-digit HS level). The top import category in 2019 was wheat products; import value exceeded even that of rice, the second largest import. At distant third are fats and oils, followed closely by milk and cream products. Rounding up the list of the top ten are fish, beef meat and offal, chicken, temperate climate fruits, and butter. Except for milk and cream, most of these products have experienced growth rates faster than overall agricultural imports, meaning import shares of these products have been growing over time. Other major imports include swine and maize, which have also grown very rapidly in the 2000s.

Table 2: Top 20 primary and semi-processed agricultural imports (based on 4-digit HS codes), USD millions, 2001 - 2019

	Code	2001	2005	2010	2015	2019	Import Growth rate (%)
Wheat and meslin	1001	485	377	547	982	1716	7
Rice	1006	153	550	1653	465	1010	11
Fats and oils	1518	1	1	91	336	594	44
Milk and cream	402	304	264	432	345	525	3
Frozen fish	303	29	56	103	270	446	16
Frozen meat, bovine animals	202	91	114	191	329	403	9
Poultry meat and offal	207	10	20	71	176	315	21
Offal of bovine animals	206	8	14	52	178	261	22
Apples, pears, quinces	808	13	16	48	103	207	17
Butter	405	12	26	94	82	190	17
Sugars (non-sucrose)	1702	26	31	130	216	174	11
Meat of swine	203	10	7	47	112	165	17
Maize	1005	29	27	77	178	146	9
Cheese and curd	406	37	33	51	91	137	8
Citrus fruit	805	11	8	31	48	125	15

	Code	2001	2005	2010	2015	2019	Import Growth rate (%)
Molasses	1703	2	0	25	17	123	25
Grapes	806	5	7	18	42	116	20
Starches	1108	24	24	40	58	113	9
Sugar	1701	49	16	186	19	112	5
Buttermilk	403	40	34	56	81	111	6

Source of basic data: ITC (2020).

Some key imported products are subject to high tariff rates.

Table 3 lists top imported products, based on import penetration ratio (IPR), among the top-ranked products by value of agricultural production. Rice, maize, beef, chicken, pork, and sugar, are also among the top-ranked products with IPRs of 5 percent and above.

Table 3: Indicators for key imported agricultural commodities, 1990 – 2019

	Import dependency ratio (%)				Production		MFN tariff
	1990	2000	2010	2019	Rank	Share (%)	(%)
Rice	9.0	7.3	18.7	20.2	1	17.8	50 (40)
Pork	0.1	2.6	8.5	12.9	2	14.4	40 (30)
Chicken	0.1	3.1	10.2	6.0	4	10.1	40
Maize	6.7	9.0	1.4	5.4	5	6.1	50 (35)
Milkfish	-	-	0.0	0.1	10	2.6	0
Sugarcane	-	-	-	13.3	11	2.5	65 (50)
Beef	8.5	18.8	20.5	40.3	12	2.0	40 (30)
Tuna	6.7	0.9	4.0	27.9	10	2.6	5
Cassava	-	-	-	-	18	1.3	40
Round scad			0.1	21.9	20	0.7	5
Onion	0.3	11.1	7.8	9.6	26	0.3	40
Potato		1.0	4.8	18.1	30	0.2	40
Coffee		10.6	45.3	67.6	33	0.2	40

Note:

1. Figures in parenthesis denote in-quota tariff (in case in-quota rate differs from out-quota rate).
2. For sugarcane, import dependency ratio is based on SRA data on sugar production, and Trademap data on imports of sugar.

Sources: PSA Openstat (www.openstat.psa.gov.ph); Tarifff Commission (2020); ITC (2020).

The import penetration ratio (IPR) has reached as much as two-fifth in the case of beef, understandable given the lack of pastureland in the country; however, despite rice being the top ranked agricultural product, IPR is as high as one-fifth. For these products the import penetration ratio has been rising over time. Relatively lower ratios of import penetration are observed for pork, poultry, and maize, although the IPR has also been increasing for these products (except maize). For these products, high MFN out-quota tariffs continue to be imposed, at least 40 percent; this tariff level is also slapped on imports of cassava, onion,

potato, and coffee, which together account for 2 percent of agricultural output value. Also indicated in the parentheses are in-quota (MAV) tariffs which are set 10-15 percentage points lower, in the case of rice, pork, maize, sugarcane, and beef. 55 percent value of production under an MFN out-quota cover of at least 40 percent

It should be noted though that for rice, sugar, and maize, preferential tariffs within ASEAN are even lower (respectively 35, 5, and 5 percent); ASEAN countries have naturally been the key source of imports for these products.

Table 4 shows estimates of NPR for aforementioned sensitive agricultural products. For rice, the domestic price is based on wholesale price, while world price is obtained from World Bank (2020). Note that for 2018, the NPR estimate is 76 percent. For raw sugar, domestic price is average mill site price, while world price is also from World Bank (2020); in 2018 the NPR estimate was 100 percent. For the rest of the products, the NPR is estimated by the ratio of reference prices in OECD (2017). For maize, beef and poultry, NPR is lower than the MFN out-quota tariff rate in Table 3, likely owing to application of preferential rates. For rice and sugar though in 2018, the NPRs far exceed the MFN rates, as these are the only two products for which laws provide an exception to the general principle of tariffs-only protection of RA 8178. The law for rice is RA 8178 itself; for sugar the applicable law is EO 18 of 1986, which assigns the Sugar Regulatory Administration (SRA) the power to limit imports in order to regulate supply and demand in the domestic sugar market.

Table 4: NPR estimates, 2001 – 2017 (%)

	2001	2005	2009	2013	2017
Maize	93	-29	33	20	40
Rice*	91	18	4	39	70
Raw sugar*	-	-	-	48	42
Beef	10	10	10	10	10
Pig meat	45	35	40	40	40
Poultry meat	50	40	31	33	33

Note:

1. For rice, NPR using wholesale price of milled rice as domestic price.
2. * denotes NPR in excess of the tariff rate.

Sources: PSA (2020); World Bank (2020); SRA (2020);

Impact of trade liberalization in agriculture: previous studies

Decades of CGE-based analysis has quantified the re-allocation of resources accompanying unilateral or trade liberalization or preferential trade agreements; where available, household welfare change is usually positive, though the distribution of benefits are uneven.

Policy research in the Philippines was very active in evaluating impact of various trade policy reforms on the Philippine economy, including Philippine agriculture. Coinciding with the unilateral trade liberalization initiatives of the country in the latter half of the 1980s was the contemporaneous Uruguay Round (UR) of negotiations of the General Agreement on Tariffs

and Trade (GATT).[6] Early attempts at analyzing tariff reform impacts include Medalla (1986) which uses an input-output approach; other approaches include multi-market partial equilibrium models, e.g. de Dios (1997), and Garcia et al (2013).[7] This review focuses however on quantitative assessment using CGE models. It is limited to assessment of broad agricultural trade policy reform, rather than commodity-specific reforms (e.g. Cororaton and Cockburn, 2006 for rice, and subsequent studies also on rice and sugar). It does however consider both tariff reductions on both MFN and preferential basis.

MFN tariff reductions

Clarete (1989) is apparently the first published paper examining trade liberalization impacts on Philippine agriculture using a CGE model. Scenarios include: uniform tariff rates, higher agricultural tariffs, and lower industrial tariffs. Implications of the UR impacts on Philippine agriculture has been examined using an Agricultural Policy Experiments (APEX) – type CGE model, described in Clarete and Warr (1992), in turn based on a 1990 SAM. Results of the UR-inspired scenarios using APEX have been reported in Warr (1997) and Sarris (1998). In the former, the policy experiment takes the form of a 24% tariff cut across the board, consistent with the UR round of commitments of developing countries (the paper expressly ignores "dirty tariffication" where sensitive agricultural products receive high tariff rates.) This results in a small increase in real GDP (0.002 percent), as well as a miniscule increase in real consumption (0.003 percent). Meanwhile, the latter study examines a much larger tariff reduction, leading to a uniform tariff of 5%; the increase in real GDP is 7.68 percent. The latter study also disaggregates households into a poor, middle, and rich income class: household welfare under this scenario rises by 5.99 percent for the poor, 9.91 percent for the middle class, and 11.82 percent for the rich class. Growth and welfare impacts are attenuated when the tariff cut allows a 30% tariff on agricultural products.

Following the UR, the next round of negotiations, known as the Doha Round (DR), begun in 2001 and as yet in progress. For agriculture, the DR broadly aims to further reduce trade distortions due to remaining high tariffs, export subsidies, and other forms of domestic subsidy, while considering political sensitivities in the sector.[8] Cororaton et al (2006) adopt a global CGE model, with scenarios analyzed including: a DR scenario; and a total elimination of tariffs. Tariff reduction is accompanied by compensating indirect domestic taxes so as to maintain revenue neutrality. For the DR scenario, output of Philippines increases by 0.02 percent; however, poverty incidence rises for both urban and rural areas, by 0.02 and 0.05 percent, respectively. On the other hand, full tariff elimination leads to a slightly higher output increase (0.04 percent), and a higher increase in rural poverty incidence (0.20 percent), though urban poverty incidence decreases (-0.46 percent).

[6] https://www.wto.org/english/thewto_e/minist_e/min98_e/slide_e/slide003.htm.

[7] Within the Department of Agriculture, under the Agribusiness Systems Assistance Project, a Country Projections and Policy Analysis Model was used to assess the impact of the UR commitments on 33 products. The analysis finds that products put at risk are corn, sugar, garlic, onion, pork, and poultry; meanwhile products favored by the commitments (through market access to importing countries) are coconut, seaweed, prawn, tuna, pineapple, mangoes, cashew, cutflowers, asparagus, papaya, banana, durian, and pili. Of neutral effect are rice, cabbage, potato, coffee, beef, dairy, cotton, cassava, black pepper, pomelo, maguey, abaca, salago, and tobacco.

[8] https://www.wto.org/english/tratop_e/dda_e/status_e/agric_e.htm.

Preferential tariff reductions

This section is largely based on Briones (2015). CGE-based analysis of preferential trade agreements of the Philippines was apparently first applied to the PJEPA (Cororaton, 2004). The scenario finds a reduction in agricultural output, mainly owing to peso appreciation. Poverty falls, owing to declining relative prices and higher factor incomes. However, households in rural areas benefit least, while urban households benefit more, and households in the national capital benefit most. The benefit incidence does seem especially biased against the poor, as the magnitude of poverty is greatest among rural households and least among national capital households. The differences in the incidence of benefits are driven by the contraction of agriculture and expansion of industry.

Multi-country preferential agreement has been explored for ACFTA (Park et al, 2009). Entry into ACFTA leads to a slight output decline for Philippines, though agricultural production rises (by an average of 5 percent); the increase in imports is more than offset by a massive expansion of exports. Welfare of households increase.

Another (proposed) bilateral preferential arrangement has been explored for Philippines and United States (Rodriguez and Cabanilla (2006). Their analysis finds that the preferential agreement does lead to higher output and welfare; however when agricultural products and food processing are exempted from reduction, output increase is lower. Welfare increase of the lower income group is however higher as many of these households draw income from agriculture.

Additional studies of regional FTAs were Clarete and Villamil (2015) and Cororaton (2016). The former study examines tariff elimination within the ASEAN Economic Community using a global CGE model. It finds a large expansion of other crops (15.13 percent), followed by beverages and tobacco (4.62 percent). Minor increases in output are projected for dairy, cattle, other animal products, and meat preparations. On the other hand, rice, sugar, cereals, and oils and seeds are expected to decline.

The latter examines the impact of the RCEP, also using a global CGE model. The scenario involves, among RCEP countries, an 80 percent tariff reduction, together with 10 percent decline in NTBs, over a period of ten years. Exports of Philippines are expected to increase; entry of cheaper rice in the Philippines benefits lower income households. GDP of Philippines rises by 3 percent, and household welfare by USD 2 billion; poverty declines from 24.9 percent to 23.3 percent.

4. Scenario analysis

Set-up of scenarios

There are only two scenarios analyzed here, namely a **Reference scenario** which embodies the *status quo* in terms of trade policy; and a **Reform scenario** in which tariffs on maize, hog, pork, poultry, rice, beef, and sugar, are reduced to near-zero; and the non-tariff barrier on sugar imports are effectively repealed. The policy adjustments are all implemented in 2021. Otherwise, exogenous variable trends are identical in both scenario, such that the analysis is equivalent to a policy experiment implemented via CGE simulation. The common trends are as follows:

- Population growth (based on projections from PSA)

- Technical progress (incorporates a negative shock to represent the current economic crisis)
- Capital stock updating (based on current investments, net of depreciation)

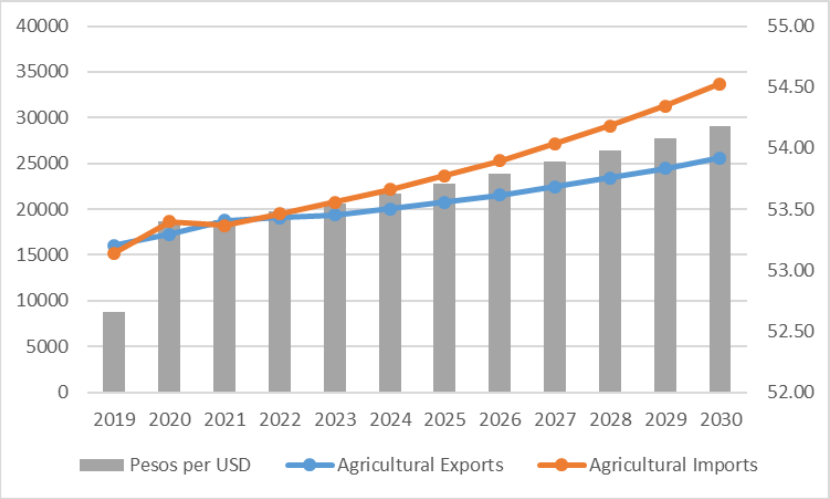
Note that other exogenous variables are assumed to be unchanged; in particular, world prices are held constant at their baseline values.

Reference scenario

Under the *status quo*, agricultural trade deficit will persist and even widen, despite mild depreciation of the peso.

At the base year, specific agro-industrial sectors in the country actually start out with a small trade surplus (Figure 3). This however turns into a deficit by 2022. The deficit widens over time, owing to a relatively slow growth of exports, incrementing at 4.0 percent per year, compared to 6.8 percent annual increase in imports. Also shown in the chart is the exchange rate, which implies a long-term depreciation of the peso up to 2030.

Figure 3: Projections for growth of agricultural exports and imports (%), and the peso/dollar exchange rate, reference scenario, 2019 - 2020



Source: Author's calculation.

Growth of agricultural output and wages gradually accelerate, but structural transformation continues as industry and services grow faster than agriculture.

Table 5 shows two different ways of present real values; in the top three four there is the base price method which replicates the official method of valuing real output in terms of base year prices (coincidentally, the PSA has recently rebased prices to 2018 levels, the same as the base year of the SAM). The middle four rows use equilibrium prices internal to the model, which effectively also resolves peso values in real terms as the model solution involves an unchanging value of CPI.[9] The difference though is that real values account for changes in relative price, whereas base price method rules it out by definition. Lastly, the bottom two rows are projected changes in real wages for in agriculture and industry-service sectors.

[9] This permits a model solution despite Walras' Law.

Base price GDP gradually accelerates to an average 6 – 6.2 percent annual growth by end of the decade. The basic sectors showing fastest growth is industry, followed by services. Agriculture, already accounting for less than one-tenth of GDP in 2018, continues to falter with a growth rate of about 3 percent in the mid-2020s, rising gradually to 3.5 percent by 2030.

Table 5: Growth rates of selected macro indicators, Reference scenario (%)

		Base value (Php millions)	2019-21	2022-24	2025-27	2028-30
At base prices	GDP	19,148,123	3.4	6.2	7.0	8.9
	Agriculture GVA	1,964,535	1.9	3.5	4.3	5.5
	Industry GVA	6,040,362	4.2	7.2	8.0	10.1
	Services GVA	11,143,227	3.3	6.0	6.8	8.7
At real values	GDP	19,148,123	3.8	6.1	6.9	8.9
	Agriculture GVA	1,964,535	3.2	6.6	7.1	8.6
	Industry GVA	6,040,362	4.4	7.3	8.0	10.0
	Services GVA	11,143,227	3.5	5.4	6.3	8.2
Wages	Agriculture	1.00	0.8	3.7	4.1	5.1
	Industry-services	1.94	0.7	3.5	4.0	5.0

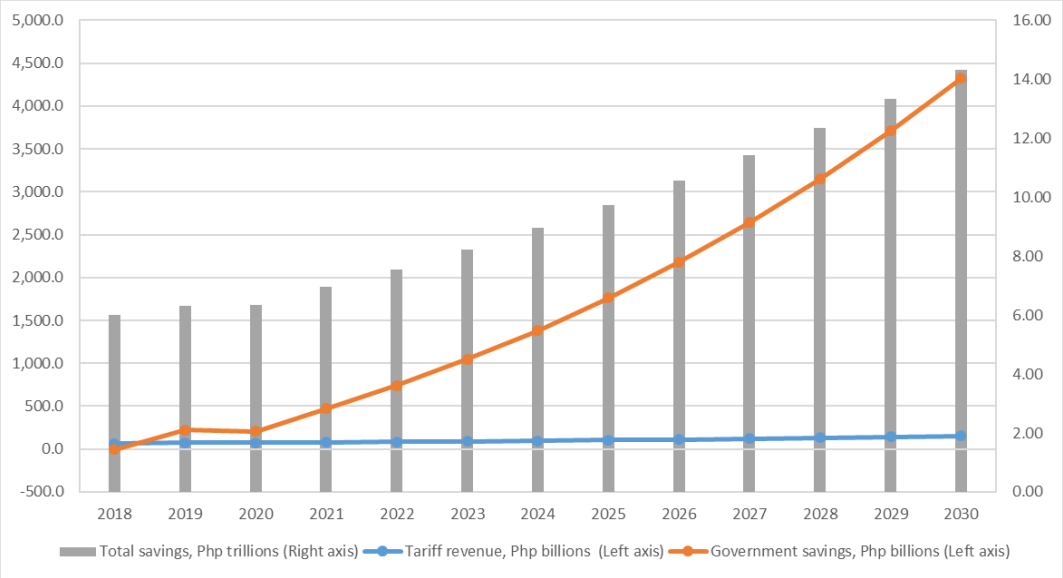
Source: Author's calculation.

Government fiscal position remains in a healthy position throughout the projection period.

Tariff revenues at the base year (Php 62.4 billion) are already only a small portion of overall government revenues (Figure 4).[10] Tariff collections double over this period, but this revenue source plays only a small part of the government's overall fiscal position. At the base year the government runs a small deficit on current spending and collections. However, owing to rapid economic growth, this turns into a surplus, reaching as high as Php 4.3 trillion by 2030. Similarly, total savings is also increasingly rapidly, reaching Php 14.3 trillion by 2030.

[10] Note that this is not equal to customs collections, as the latter as reported by Department of Finance includes value added taxes and excise taxes on imported goods, which are applied equally to domestic products.

Figure 4: Projections for savings and tariff revenue, Reference scenario (%)



Source: Author's calculation.

Key imports continue to show faster-than average growth throughout the projection period; however, exports falter, except for Beverages and Other food manufacturing.

Import and export projections are shown in Tables 6 and 7, respectively. The top imported products at the base, namely Rice, Meat, Other crops, Other food manufacturing, and Beverages, exhibit above-average growth for the remainder the projection period. Rice in particular experiences import growth of 61 percent in 2019 – 21. In contrast, exports of Banana, Other fruits, and Other crops are expected to shrink. Export prospects of Other food manufacturing and Beverages remain favorable though under the Reference scenario.

Table 6: Projections for annual growth of imports, agro-industrial sectors, Reference scenario (%)

	Base value (Php millions)	2019-21	2022-24	2025-27	2028-30
Palay	399	-3.5	9.7	10.0	10.6
Maize	10,076	4.0	11.7	12.5	13.2
Coconut	941	8.5	16.1	17.2	18.1
Sugarcane	0	6.6	11.1	11.2	11.6
Banana	1	6.7	16.0	15.2	14.7
Mango	226	6.6	12.3	11.5	11.4
Other fruit	7,877	6.1	11.6	10.9	11.1
Other crops	47,304	6.0	12.0	11.6	11.5
Root crops	1	6.3	12.5	12.2	12.7
Vegetables	41	6.6	11.3	10.5	10.7
Hogs	2,986	4.8	11.0	10.6	10.5
Other livestock	2,013	5.7	12.4	11.5	11.0
Agricultural services	2,765	4.7	11.0	10.6	10.6
Forestry	0	2.7	10.8	11.1	11.5

	Base value (Php millions)	2019-21	2022-24	2025-27	2028-30
Poultry	1,308	6.9	11.9	12.2	14.7
Capture fisheries	649	5.9	11.2	10.8	10.9
Aquaculture	1,889	5.6	10.5	10.0	10.1
Rice	140,478	61.4	5.0	5.2	5.6
Meat	46,830	2.1	6.4	6.6	7.1
Sugar	15,546	3.7	9.1	9.5	9.7
Other food manufacturing	439,132	2.4	6.9	7.4	7.6
Beverage	133,648	2.4	5.4	6.1	6.5
Feeds	17,190	3.7	8.6	9.2	9.5

Source: Author's calculation.

Table 7: Projections for annual growth of exports, agro-industrial sectors, reference scenario (%)

	Base value (Php millions)	2019-21	2022-24	2025-27	2028-30
Palay	21	-5.1	-5.4	-5.1	-5.5
Maize	83	1.8	-3.4	-3.0	-3.4
Coconut	75	1.0	-6.0	-5.6	-5.9
Sugarcane	1	3.9	-1.3	-0.3	-0.5
Banana	89,294	1.0	-5.7	-4.2	-4.3
Mango	1,775	0.8	-1.9	0.2	0.4
Other fruit	7,945	0.7	-3.8	-1.1	-0.6
Other crops	36,335	0.6	-9.6	-7.8	-7.6
Root crops	77	1.4	-3.6	-1.7	-1.4
Vegetables	1,229	1.9	-1.2	1.0	1.5
Hogs	19,018	1.8	-1.3	-0.2	-0.2
Other livestock	11,070	2.2	-0.2	1.0	0.6
Poultry	19,180	2.3	-1.2	-0.1	-0.1
Agricultural services	0	-	-	-	-
Forestry	20	1.3	-0.7	3.1	5.9
Capture fisheries	0	-	-	-	-
Aquaculture	13,917	1.8	-0.5	1.5	2.0
Rice	50	-4.5	-2.0	-1.9	-2.1
Meat	4,936	3.0	-0.3	0.7	1.1
Sugar	35,185	6.2	2.0	2.6	2.5
Other food manufacturing	560,171	7.6	4.6	5.4	5.6
Beverage	45,143	6.8	5.9	6.9	7.6
Feeds	500	2.9	0.0	0.3	-0.2

Source: Author's calculation.

Output and yield continue to rise, both for import substitutes and export-oriented sector; however, land use shifts from temporary to permanent crops.

Table 8 presents projected output trends to 2030, while Table 9 and Table 10 presents yield and area harvested for temporary and permanent crops, respectively. Despite import growth, Palay, Maize, Sugarcane, Hogs, Poultry, Meat, post growth, with only Palay suffering some initial contraction (owing to removal of the NTB). Moreover, despite weak export trends, Banana and Other crops also post output increases, owing to a strong domestic market.

Table 8: Projections for annual growth of output, Reference scenario (%)

	Base value (Php millions)	2019-21	2022-24	2025-27	2028-30
Palay	288,007	-4.5	1.9	2.2	2.2
Maize	95,852	2.7	3.9	4.4	4.6
Coconut	92,382	4.5	4.5	5.2	5.4
Sugarcane	34,447	5.2	4.7	5.3	5.4
Banana	195,870	2.5	1.7	3.1	3.4
Mango	43,507	3.4	4.7	5.6	5.7
Other fruit	32,507	2.7	2.5	4.1	4.6
Other crops	51,839	1.9	-2.6	-0.7	0.0
Root crops	27,736	3.6	4.1	5.0	5.4
Vegetables	15,739	3.9	4.5	5.5	5.8
Hogs	227,881	3.1	4.4	4.9	4.8
Other livestock	60,890	3.7	5.4	5.8	5.4
Agricultural services	189,434	3.3	4.4	5.0	5.0
Forestry	125,790	1.2	3.4	4.2	4.4
Poultry	3,217	3.9	5.4	7.5	10.2
Capture fisheries	106,996	3.7	4.7	5.6	5.9
Aquaculture	153,911	3.5	4.6	5.5	5.9
Rice	225,220	-5.5	1.4	1.6	1.7
Meat	138,855	2.5	3.0	3.6	4.0
Sugar	55,086	5.2	4.7	5.3	5.4
Other food manufacturing	685,985	5.6	5.4	6.1	6.3
Beverage	148,719	4.7	5.7	6.5	7.1
Feeds	18,900	3.3	4.2	4.7	4.5

Source: Author's calculation.

Across crops, output per ha tends to rise, as does area harvested. The exception is Palay, which tends to suffer declining yield and diminution of area harvested. The latter drags down overall area of temporary crops. On the contrary, the area of permanent crops expands, led by the continued expansion of coconut growing area.

Table 9: Annual growth in yield and area harvested (ha), temporary crops, Reference scenario (%)

	Base value	2019-21	2022-24	2025-27	2028-30
Yield					
Palay	61	-1.4	2.6	3.1	3.3
Maize	37	0.3	3.1	3.7	3.9
Sugarcane	79	0.7	3.5	4.3	4.5
Root crops	89	0.3	3.5	4.5	4.8
Vegetables	117	0.3	3.9	5.0	5.5
Area harvested					
Palay	4,725	-3.3	-0.7	-0.9	-1.0
Maize	2,590	2.6	0.7	0.7	0.7
Sugarcane	434	4.6	1.2	1.0	0.8
Root crops	312	3.5	0.6	0.5	0.5
Vegetables	134	3.9	0.7	0.4	0.4
TOTAL	8,195	-1.5	-0.2	-0.4	-0.4

Note: base values of yield in Php thousands per ha; base value of area harvested in ha.

Source: Author's calculation.

Table 10: Annual growth in yield and area harvested, permanent crops, Reference scenario (%)

	Base value	2019-21	2022-24	2025-27	2028-30
Yield:					
Coconut	26	2.4	3.3	4.1	4.3
Banana	438	1.8	2.5	3.7	4.0
Mango	231	2.0	4.2	5.3	5.7
Other fruit	403	1.8	3.2	4.7	5.2
Other crops	150	1.5	0.6	2.0	2.5
Area harvested:					
Coconut	3,542	2.1	1.1	1.1	1.1
Banana	448	0.7	-0.8	-0.6	-0.6
Mango	188	1.4	0.5	0.2	0.0
Other fruit	81	0.9	-0.7	-0.6	-0.6
Other crops	346	0.3	-3.2	-2.6	-2.4
TOTAL	4,605	1.4	0.1	0.3	0.3

Note: base values of yield in Php thousands per ha; base value of area harvested in ha.

Source: Author's calculation.

Consumer demand per capita for agricultural products grows more slowly than growth in expenditure per capita, but is fast enough to drive increases in output.

Table 11 shows projections for growth in per capita consumption; overall expenditure growth is shown in the last row. Not surprisingly, for most agricultural products, growth in per capita expenditure outpaces that of per capita consumption on individual items; the reason is that the Engel relation has been explicitly incorporated in the consumer's preference structure (i.e. expenditure elasticities of below unity for agricultural products). The exceptions are Other food manufacturing and Beverages, which are not included in the Engel relation. Nonetheless, growth in per capita consumption, combined with growth of population, is sufficient to drive the output and trade trends shown in the preceding discussion.

Table 11: Annual growth in per capita consumption, Reference scenario (%)

	Base value (Php millions)	2019-21	2022-24	2025-27	2028-30
Palay	0	-	-	-	-
Maize	268	0.8	1.2	2.0	2.6
Coconut	226	0.0	0.2	0.9	1.3
Sugarcane	1	0.7	1.5	2.5	3.1
Banana	189	0.3	0.2	1.3	2.0
Mango	157	0.3	1.3	2.5	3.2
Other fruit	179	0.5	1.5	2.8	3.5
Other crops	61	0.6	1.6	2.8	3.6
Root crops	123	0.4	1.0	2.1	2.8
Vegetables	44	0.4	1.5	2.8	3.5
Hogs	0	-	-	-	-
Other livestock	0	-	-	-	-
Agricultural services	399	0.4	0.9	1.5	2.0
Forestry	0	0.7	1.2	2.2	2.8
Poultry	2	0.5	1.9	3.2	4.0
Capture fisheries	640	0.5	1.5	2.7	3.4
Aquaculture	898	0.3	1.0	1.7	2.2
Rice	7,538	0.5	0.3	0.5	0.6
Meat	6,016	0.7	1.3	1.9	2.4
Sugar	200	1.4	2.4	3.3	4.0
Other food manufacturing	8,134	1.9	3.4	4.4	5.1
Beverage	3,187	1.8	3.8	4.7	5.5
Feeds	59	1.0	2.2	3.0	3.6
Total expenditure	120,735	1.5	3.6	4.4	5.2

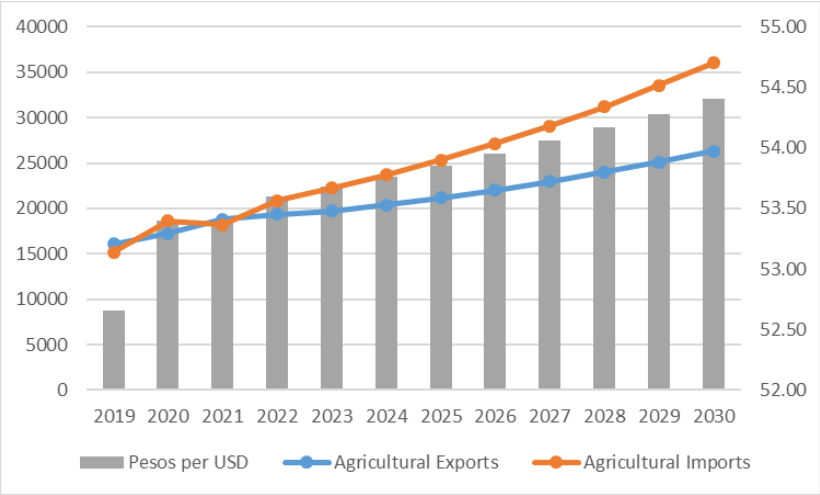
Source: Author's calculation.

Policy experiment

Trade liberalization is associated with a more rapid expansion in imports and a wider trade deficit.

Overall agro-industrial imports rise faster under a more open trading regime; the difference is as much as 40 percent by 2030 (Figure 5). The projected trend for aggregate agro-industrial exports is similar to that of the Reference scenario, hence trade liberalization leads to a much wider agro-industrial trade deficit.

Figure 5: Projections for growth of agricultural exports and imports (%), and the peso/dollar exchange rate, Reform scenario, 2019 - 2020



Source: Author's calculation.

Trade liberalization slows down growth of agricultural GDP and wages, but leads to higher overall GDP and higher industry-service wages.

Reduction of agricultural tariffs and NTBs shaves off 0.16 percentage points off agricultural GDP growth, on average (Table 12). This implies agricultural GDP about 2 percent lower by 2030 compared with the Reference scenario. However, trade liberalization reallocates resources towards Industry and Services, such that growth is higher by 0.04 and 0.03 percentage points in these basic sectors, respectively. As agriculture accounts for less than 10 percent of GDP at baseline, overall GDP rises with trade liberalization (ending up 0.2 percent higher by 2030). Similar patterns emerge GDP is valued in real terms.

Table 12: Average growth rates of selected macro indicators, 2019-30, by scenario (%)

		Reference	Reform
Base	GDP	6.02	6.04
prices	Agriculture GVA	3.56	3.40
	Industry GVA	6.95	6.99
	Services GVA	5.88	5.91
Real	GDP	6.07	6.11
values	Agriculture GVA	6.05	5.90

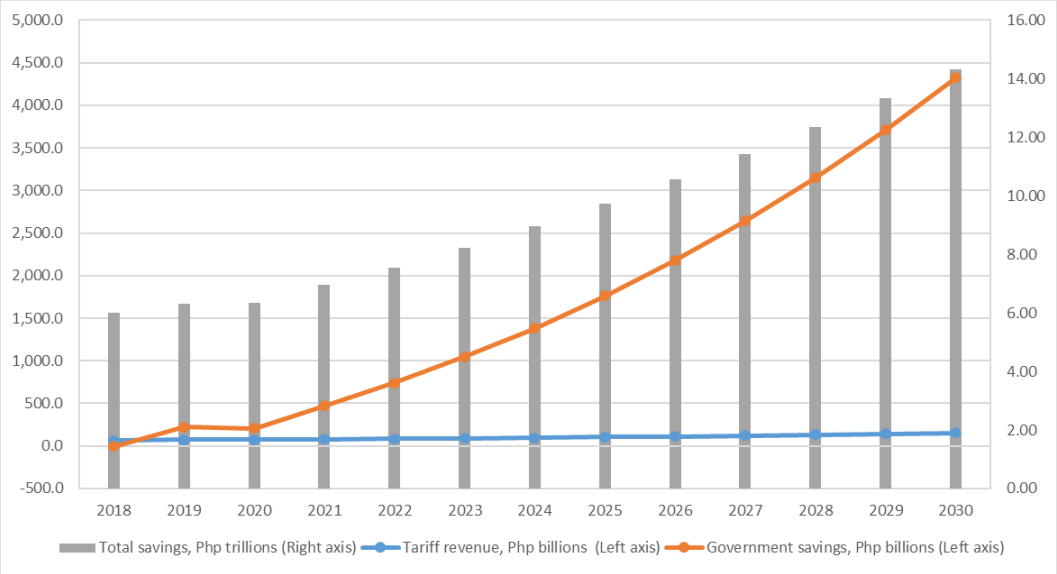
		Reference	Reform
	Industry GVA	7.01	7.07
	Services GVA	5.53	5.59
Wages	Agriculture	3.25	3.24
	Industry-services	3.13	3.15

Source: Author's calculation.

Trade liberalization reduces tariff collections but makes little impact on government's fiscal position and national savings.

Not surprisingly, driving tariff rates for key agro-industrial imports down to near zero levels causes total tariff collections to fall compared to the Reference scenario; on average, tariff revenues are 15 percent lower under the Reform scenario. However, as tariffs comprise only a miniscule portion of government income, government savings and total savings remain virtually unchanged under the Reform scenario.

Figure 6: Projections for savings and tariff revenue, Reform scenario (%)



Source: Author's calculation.

Trade liberalization radically accelerates growth of imports for Hogs, and Sugar, while slowing down export contraction of Coconut, Banana, Mango, and most other exports.

Given the high initial tariff rates for Hogs and Sugar (together with high NTBs for the latter), trade liberalization understandably causes a sharp increase in imports for these products. Likewise low initial applied tariffs for Maize and Rice cause lower import expansion relative to the Reference scenario; however, despite high initial tariffs for Poultry, the import response is for some reason subdued.

Table 13: Average growth of imports, agro-industrial sectors, 2019 – 30, by scenario (%)

	Reference	Reform
Palay	6.70	6.28
Maize	10.34	12.20
Coconut	14.98	15.04
Sugarcane	10.14	6.79
Banana	13.16	13.02
Mango	10.45	10.43
Other fruit	9.93	9.94
Other crops	10.26	10.29
Root crops	10.92	10.85
Vegetables	9.80	9.78
Hogs	9.20	65.81
Other livestock	10.15	10.03
Agricultural services	9.22	30.44
Forestry	9.04	8.66
Poultry	11.42	11.69
Capture fisheries	9.71	9.68
Aquaculture	9.05	9.02
Rice	19.31	20.00
Meat	5.52	5.59
Sugar	8.01	45.76
Other food manufacturing	6.08	5.93
Beverage	5.09	4.96
Feeds	7.77	7.50

Source: Author's calculation.

Trade liberalization not only boosts imports; it also indirectly affects exports (which shows up as a higher exchange rate, i.e. a more depreciated peso). The export boost is however diffused across all export commodities, hence the impact on agro-industrial exports is muted. Export contraction for Coconut, Banana, Mango, Other fruit, and Other crops, is vitiated somewhat under the Reform scenario.

Table 14: Average growth of exports, agro-industrial sectors, by scenario (%)

	Reference	Reform
Palay	-5.25	-5.32
Maize	-2.00	-1.98
Coconut	-4.11	-3.90
Sugarcane	0.46	-2.04
Banana	-3.30	-3.22
Mango	-0.14	-0.05
Other fruit	-1.20	-1.07
Other crops	-6.08	-5.88

	Reference	Reform
Root crops	-1.34	-1.17
Vegetables	0.79	0.91
Hogs	0.03	-0.18
Other livestock	0.91	0.97
Agricultural services	0.23	0.21
Forestry	-	-
Poultry	2.38	2.72
Capture fisheries	-	-
Aquaculture	1.20	1.28
Rice	-2.62	-2.77
Meat	1.13	1.39
Sugar	3.33	0.64
Other food manufacturing	5.80	6.20
Beverage	6.81	7.23
Feeds	0.74	0.77

Source: Author's calculation.

Trade liberalization slows down output growth of most import substituting goods, while accelerating output growth of export-oriented sectors.

The decline in output growth is most evident for Palay/Rice, Maize, Hogs, Other livestock; it is especially prominent for Sugarcane/Sugar. Meanwhile, the policy reform boosts output growth of some export-oriented products namely Coconut, Mango, Other fruit, Other food manufacturing, and Beverage manufacturing. Trade liberalization slows down growth of yield of Palay, Maize, Sugarcane; reduces Area harvested of sugarcane; and further shrinks overall area harvested. For permanent crops, trade liberalization leads to greater area harvested, but with mixed impacts on yield.

Table 15: Average growth of output, by scenario (%)

	Reference	Reform
Palay	0.47	0.23
Maize	3.90	3.79
Coconut	4.89	5.03
Sugarcane	5.14	2.24
Banana	2.68	2.68
Mango	4.84	4.88
Other fruit	3.46	3.53
Other crops	-0.34	-0.21
Root crops	4.53	4.59
Vegetables	4.95	5.02
Hogs	4.32	4.01
Other livestock	5.10	5.07
Agricultural services	4.42	4.31
Forestry	3.30	3.04

	Reference	Reform
Poultry	6.74	7.05
Capture fisheries	5.01	5.04
Aquaculture	4.84	4.87
Rice	-0.20	-0.47
Meat	3.26	3.30
Sugar	5.15	2.23
Other food manufacturing	5.88	6.08
Beverage	6.00	6.16
Feeds	4.16	4.05

Source: Author's calculation.

Table 16: Average growth in yield and area harvested, temporary crops, by scenario (%)

	Reference	Reform
Yield		
Palay	1.89	1.64
Maize	2.75	2.51
Sugarcane	3.23	2.29
Root crops	3.26	3.05
Vegetables	3.66	3.44
Area harvested		
Palay	-1.48	-1.46
Maize	1.17	1.30
Sugarcane	1.92	-0.15
Root crops	1.30	1.56
Vegetables	1.32	1.60
TOTAL	-0.64	-0.79

Source: Author's calculation.

Table 17: Average growth in yield and area harvested, permanent crops, by scenario (%)

	Reference	Reform
Yield		
Coconut	3.51	3.52
Banana	3.01	2.95
Mango	4.30	4.25
Other fruit	3.74	3.71
Other crops	1.65	1.66
Area harvested		
Coconut	1.34	1.48
Banana	-0.32	-0.26
Mango	0.53	0.62

	Reference	Reform
Other fruit	-0.26	-0.15
Other crops	-1.97	-1.84
TOTAL	0.55	0.65

Source: Author's calculation.

Trade liberalization accelerates growth in per capita consumption, as well as total per capita expenditure.

Even as it reduces income of productive factors in import substituting sectors, trade liberalization provides consumers with greater access to more affordable products. The net effect is higher overall consumption per capita, which enables consumers to also realize higher per capita consumption for the various agro-industrial commodities. The largest growth difference is projected for Sugar, Maize, and Beverage manufacturing.

Table 18: Average growth in per capita consumption, by scenario (%)

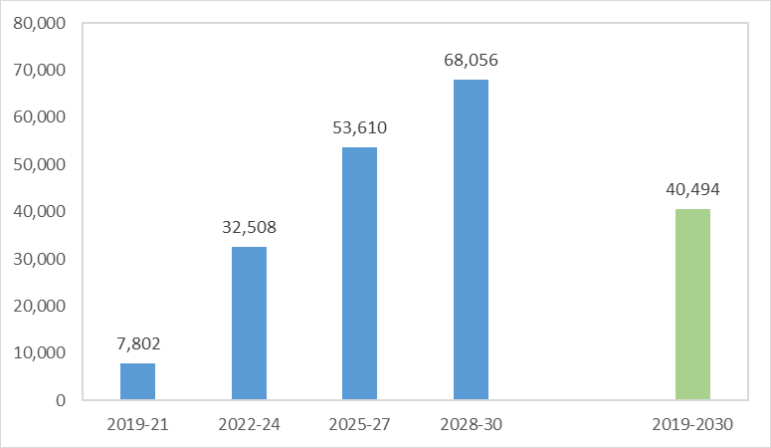
	Reference	Reform
Palay	-	-
Maize	1.67	1.75
Coconut	0.60	0.63
Sugarcane	1.95	2.03
Banana	0.95	0.98
Mango	1.83	1.85
Other fruit	2.07	2.08
Other crops	2.16	2.18
Root crops	1.56	1.60
Vegetables	2.06	2.08
Hogs	-	-
Other livestock	-	-
Agricultural services	1.20	1.25
Forestry	1.72	1.75
Poultry	2.39	2.40
Capture fisheries	2.05	2.07
Aquaculture	1.31	1.32
Rice	0.46	0.48
Meat	1.57	1.61
Sugar	2.79	4.15
Other food manufacturing	3.69	3.76
Beverage	3.97	4.04
Feeds	2.48	2.52
Expenditures	3.66	3.69

Source: Author's calculation.

Trade liberalization increases social welfare, though proportional gain is small in relation to base year expenditure.

Figure 7 presents the estimated change in *equivalent variation* (EV), a common measure of household welfare among CGE models. This welfare measure values the additional income needed to bring the household to the same utility level achieved with the policy reform, supposing prices remained unchanged at base year levels. The differences in the trajectory of equivalent variation are summarized in the Figure. The differences start out small in 2019 – 2021 (note that the reform kicks in only in 2021); annual difference rises to Php 32.5 billion per year in 2022 – 24, rising to Php 68 billion per year by the end of the decade. The average difference is Php 40.5 billion per year. While this seems quantitatively large, it only amounts to 0.3 percent of household expenditure at the baseline.

Figure 7: Difference in equivalent variation per year, Reference and Reform scenarios, in Php millions



Source: Author's calculation.

5. Concluding remarks

There remains a significant unfinished agenda for trade policy reform in Philippine agriculture, most evident in high tariffs for sensitive products, and the NTB for sugar imports. Relative to the status quo, further trade liberalization does indeed induce a sharp increase in imports; output of these products tends to decline, though the sharpest output reduction is expected for sugarcane. For agriculture as a whole, total output is expected to suffer a slight contraction relative to the status quo; this is more than made up for by expansion in sectors outside agriculture. Overall welfare also increases, in the order of about Php 41 billion per year in 2018 prices.

The economy will perform more efficiently, and society as a whole be better off, when agricultural tariffs and QRs are completely repealed. However, there are painful adjustments in store especially for import substitute sectors, which are not necessarily compensated by the gainers from the reform (mainly consumers). The benefits of the last stage of trade policy reform, while significant, are likely not as huge as the gains from the initial phases, though political resistance is likely to be the most intense. Policymakers and the constituency for reform will do well to review carefully the merit of overcoming this steep resistance in view of the size of expected gains.

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