Can the poor benefit from the removal of QR on rice?

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R ice is the staple food of about 80 percent of Filipinos and is a major item in the consumption basket of consumers. It is the single most important agricultural crop in the Philippines and a major source of income for millions of Filipino farmers.

In 1995, the Philippines, along with Japan and South Korea, was granted exemption from the removal of the quantitative restriction (QR) on rice under Annex 5 of the World Trade Organization (WTO) agreement. The QR puts a limit to the volume of rice imports that may enter the country and is meant to protect the local rice sector from the inflow of various imported rice varieties. The exemption on the removal of QRs on rice in the Philippines is supposed to expire on December 31, 2004. If the removal of the exemption is lifted by then and unrestricted rice imports will be allowed to enter the country, what will the effects be on the local rice industry? How about on the poverty situation in the Philippines? On income distribution? And on prices?

This *Policy Notes* presents a summary of the key simulation results done by this author on an analysis of the consequences of this forthcoming expiration.

Rice policy

Because of the political significance of rice, the government is heavily involved both in its supply and distribution aspects to assure consumers of a sufficient and stable supply of rice at low prices and to maintain a reasonable return to rice farmers through adequate price incentives. The present pricing policy of the government involves the setting and defense of a price floor and ceiling. The policy also seeks to minimize seasonal price variations in the various regions. Furthermore, the government monopolizes the importation and exportation of rice through its various procurement and disbursement operations in order to influence domestic price levels. Currently, government interventions are implemented through the National Food Authority (NFA), an attached agency of the Department of Agriculture (DA).

Data would indicate, though, that on the procurement side, NFA's intervention has declined through time, from

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7.2 percent of total production in 1980 to 0.6 percent in 1994 and to 0.1 percent in 1995 (Table 1). It slightly recovered to 1.1 percent in 1996 but declined again to 0.9 percent in 1997. This is largely due to NFA's budgetary problems.[1] On the other hand, NFA's rice injection into the system is relatively significant. In 1996, NFA's injection of rice into the market was 9.2 percent of the overall supply. It slightly dropped to 8.2 percent in 1997.

Figure 1, meanwhile, compares the retail price of ordinary rice and the world price of rice for the 35 percent broken type. These two types are comparable in terms of quality. The gap in the prices has widened from 20 percent in 1989 to 130 percent in 2001. A major factor for this growing gap is the import control on rice through the QR.

Table 1. National Food Authority's palay procurement and rice injection

	Palay (' 000 mt)			Rice (' 000 mt)		
	Procurement (a)	Production (b)	(a)/(b), %	Injection (c)	Supply (d)	(c)/(d), %
1975	233	6,381	3.7	227	4,262	5.3
1980	551	7,646	7.2	280	4,945	5.7
1985	401	8,806	4.6	365	5,693	6.4
1990	572	9,319	6.1	667	6,095	10.9
1991	555	9,673	5.7	158	6,196	2.6
1992	420	9,129	4.6	521	4,965	10.5
1993	155	9,434	1.6	489	5,357	9.1
1994	61	10,538	0.6	112	6,284	1.8
1995	8	10,541	0.1	257	7,182	3.6
1996	124	11,284	1.1	733	7,975	9.2
1997	101	11,269	0.9	623	7,625	8.2

Source: Rice Statistics Handbook, PhilRice - Bureau of Agricultural Statistics, Department of Agriculture

Figure 1. Retail and world price of rice
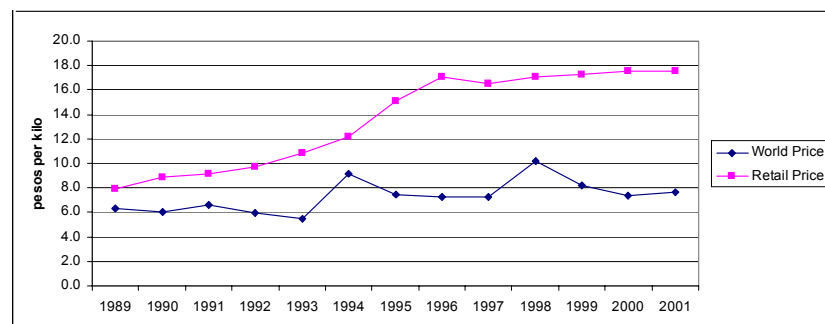
Food and poverty

Recent statistics indicate that about half of the rural households in the Philippines live below poverty line while one-fifth of the urban households fall below the poverty threshold (Table 2). For the rural poor households, more than 60 percent of their expenditure go to food, half of which are spent on cereals consisting of rice and corn (rice has a much larger share). An almost similar structure is observed in the expenditure pattern of the urban poor households.

In addition, grains production utilizes most of the agricultural resources. In particular, about 5 million hectares of arable land are devoted to rice and corn production, two-thirds of which are under palay. Majority of the rural population—about 1.8 million people—likewise depend on the grains sector. This implies that if the government fails to intervene because of budgetary and other administrative problems, causing farm palay prices to fall below the support price, the impact on farm incomes could be substantial.

Sectoral results

Now what would happen if the present policy of QR on rice will terminate as provided in the WTO article?

Table 3 shows the results of this author's simulation (SIM_1) involving total elimination of QR. The results indicate that the import price of 'rice and corn milling' in local currency (δpm_i) drops significantly by −54.4 percent (Table 3). This translates to a surge in rice imports (dmi) by 1,567 percent.[2] On the other hand, the consumer

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[1] To date, NFA is saddled with huge financial losses.

[2] Although the increase is large, the share of rice imports remains relatively small compared to the share of domestic rice.

Table 2. Food and poverty

	Rural				Urban			
Poverty Incidence	**1997**	50.7%			**1997**	21.6%		
	2000	48.8%			**2000**	18.6%		
	Poor		**Nonpoor**		**Poor**		**Nonpoor**	
Consumption	1997	2000	1997	2000	1997	2000	1997	2000
Food Consumption*	63.6%	63.6%	47.6%	47.6%	61.4%	60.8%	38.8%	38.7%
Cereals*	29.5%	28.8%	15.4%	14.6%	24.5%	23.0%	8.6%	8.2%

*Percent of Total
Source: 1997 and 2000 Family Income and Expenditure

Table 3. Effects on prices and volume (SIM_1)

Sectors	Price Changes (%)					Volume Changes (%)				
	δpm_i	δpc_i	δpd_i	δpl_i	δpx_i	δm_i	δd_i	δq_i	δe_i	δx_i
Irrigated Palay	0.00	-2.69	-2.69	-2.72	-2.72	-10.6	-0.93	-0.93	0.00	-0.93
Non_Irrigated Palay		-1.94	-1.94	-1.96	-1.96	0.00	-0.74	-0.74	0.00	-0.74
Corn	0.00	-1.07	-1.08	-1.09	-1.09	-4.28	-0.29	-0.51	0.09	-0.29
Sugarcane		-0.68	-0.68	-0.70	-0.70	0.00	0.07	0.07	0.00	0.07
Livestock	0.00	-0.49	-0.49	-0.50	-0.50	-0.59	0.11	0.10	0.41	0.14
Other Agriculture	0.00	-0.58	-0.68	-0.70	-0.60	-0.63	0.08	0.07	1.06	0.19
AGRICULTURE	**0.00**	**-0.82**	**-0.86**	**-0.87**	**-0.82**	**-1.15**	**-0.06**	**-0.08**	**0.72**	**0.00**
Food Processing	0.00	-0.19	-0.29	-0.20	-0.20	-0.21	0.05	0.03	0.00	0.09
Rice & Corn Milling /a/	-54.40	-2.78	-2.23	-2.15	-2.15	1,567	-0.98	1.02	0.00	-0.98
Sugar Milling	0.00	-0.29	-0.30	-0.30	-0.30	-1.04	0.17	0.07	0.00	0.22
Fertilizer	0.00	0.00	0.00	-0.10	0.00	-0.10	-0.05	-0.08	0.00	-0.01
Other manufacturing	0.00	-0.09	-0.10	-0.10	-0.10	-0.03	0.03	0.00	0.00	0.09
Other industry	0.00	-0.09	-0.10	-0.10	0.00	-0.10	-0.05	-0.06	0.00	-0.05
INDUSTRY	**-0.17**	**-0.31**	**-0.35**	**-0.33**	**-0.26**	**0.26**	**-0.09**	**0.07**	**0.00**	**-0.02**
Transportation	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01
Other Services	0.00	0.10	0.10	0.10	0.10	0.09	0.07	0.07	-0.05	0.05
Government Services					0.10	0.00	0.00	0.00	0.00	-0.06
SERVICES	**0.00**	**0.08**	**0.08**	**0.09**	**0.09**	**0.09**	**0.06**	**0.06**	**-0.04**	**0.03**
TOTAL	**-0.16**	**-0.26**	**-0.28**	**-0.27**	**-0.21**	**0.22**	**-0.03**	**0.05**	**0.03**	**0.00**

where

	x_i : total output	px_i : output prices
m_i : imports	q_i : composite commodity	pq_i : composite commodity prices
e_i : exports	pd_i : domestic prices	pm_i : import (local) prices
d_i : domestic sales	pl_i : local prices	

prices (δpc_i) for irrigated palay, nonirrigated palay, and 'rice and corn milling' decline by –2.7 percent, –1.9 percent, and –2.2 percent, respectively. Domestic demand (δd_i) in these sectors also decline.

As expected, the general equilibrium impact of this policy change is negative on agriculture, particularly irrigated and nonirrigated palay in terms of price and volume effects. The output price (δpx_i) of irrigated palay, nonirrigated palay and 'rice and corn milling' drops by –2.7 percent, –2 percent, and –2.2 percent, respectively, while the volume of output (δx_i) declines by –0.9 percent, –0.7 percent, and –1 percent, respectively.

Alternately, of course, these results can also be reversed to argue that the distortive effects of the QR on rice imports attract resources into palay production and away from other agricultural crops. This movement of resources creates inefficiency in resource allocation within the agriculture sector as well as in the rest of the economy.

One result that ought to be highlighted is the overall decline in consumer prices (δpc_i) by –0.3 percent. This should be favorable to all consumers in two ways: it increases real consumption and it reduces the nominal value of the poverty threshold as discussed earlier.

The effects on the factors of production are critical in completing the analysis of the impact on poverty and distribution. Because of the drop in output and price of palay and rice, the demand for factors and the factor prices drop as well. For example, the return to capital used in palay production and in 'rice and corn milling' drops significantly relative to the other sectors (Table 4). The demand for labor also drops in those sectors. All wages drop, except for wages of unskilled production workers. Put together, the effects on value added are unfavorable to the palay rice sector in general.

Poverty and distributional effects

In terms of the distributional implications, the simulation study divided the household sector into 12 socioeconomic groups (Table 5). There are six urban household groups and six rural household groups, with each category broken down according to the type of occupation and level of education of the head of the family.

Table 6 presents some of the characteristics of the household groups. Among urban household groups, urb1 has the lowest per capita income, followed by urb4. While both groups have a low level of education, the former is employed while the latter is self-employed. Households in the informal urban sector and unemployed are included in the latter. The highest poverty indicators (head-count,

gap, and severity)[3] among urban households are found in these two groups.

The effects on income, weighted consumer prices, poverty and distribution across household groups are summarized in Table 7. Largely because of the drop in factor prices, overall household income declines as QR is removed. Because this drop is mainly caused by the surge in rice imports, this may be considered as the displacement effect. The largest drop is observed in households in rur1 (–0.9 percent), followed by rur4 and ur1 (–0.6 percent). These households are highly dependent on factor incomes derived from agriculture. Furthermore, these household groups have the lowest per capita income. Thus, the impact worsens the income inequality problem as indicated by the increase of 0.16 percent in the Gini coefficient.

The drop in consumer prices faced by the various household groups mitigated the negative effects on income as indicated by the overall drop in the headcount index of –0.02 percent. How-

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[3] The headcount index is the common index of poverty, which measures the proportion of the population whose income (or consumption) falls below the poverty threshold. The poverty gap, however, measures the depth of poverty in the sense that it indicates how far below on average the poor are from the poverty threshold. The poverty severity index is sensitive to the distribution among the poor as more weight is given to the poorest below the poverty threshold. This is because this index corresponds to the squared average distance of income of the poor from the poverty line.

Table 4. Effects on factors, in percent (SIM_1)

Sectors	Value Added Changes (%) δpvai	Value Added Changes (%) δvai	Return to Capital (%) δri	Labor Demand (%) L1*	Labor Demand (%) L2*	Labor Demand (%) L3*	Labor Demand (%) L4*
Irrigated Palay	-3.29	-0.93	-4.40	-2.76	-2.76	-3.29	-3.16
Non_Irrigated Palay	-2.34	-0.74	-3.19	-1.82	-1.82	-2.35	-2.22
Corn	-1.28	-0.29	-1.57	-0.54	-0.54	-1.08	-0.95
Sugarcane	-0.89	0.07	-0.79	0.13	0.13	-0.41	-0.28
Livestock	-0.60	0.14	-0.40	0.41	0.41	-0.14	0.00
Other Agriculture	-0.70	0.19	-0.40	0.41	0.41	-0.14	-0.01
AGRICULTURE	**-1.02**	**-0.01**	**-0.94**	**0.00**	**0.00**	**-0.26**	**-0.11**
Food Processing	0.10	0.09	0.20			0.23	0.31
Rice and Corn Milling	-3.01	-0.98	-3.85			-4.22	-4.15
Sugar Milling	0.20	0.22	0.40			0.41	0.55
Fertilizer	-0.10	-0.01	-0.10			-0.08	0.03
Other manufacturing	0.10	0.09	0.20			0.16	0.27
Other industry	-0.10	-0.05	-0.10			-0.16	-0.08
INDUSTRY	**-0.20**	**-0.03**	**-0.30**			**-0.11**	**-0.04**
Transportation	0.00	0.01	0.00			-0.01	0.07
Other Services	0.10	0.05	0.20			0.15	0.21
Government Services	0.10	-0.06				-0.06	
SERVICES	**0.09**	**0.03**	**0.19**			**0.06**	**0.13**
TOTAL	**-0.22**	**0.00**	**-0.18**			**0.00**	**0.00**
Average wage -->				-0.99	-0.99	0.10	-0.20

where　　　　　　　　　　pvai : value added prices　　　　ri : return to capital
vai : value added　　　　　*L1, L2, L3, & L4: Labor type 1, 2, 3, & 4

Table 5. Definition of household groups

Urban	urb1	worked for private household and private establishment; zero education up to third year high school
	urb2	worked for private household and private establishment; high school graduate and up
	urb3	worked for government/government corporation
	urb4	self-employed without employee; zero education up to third year high school; including unemployed during 1994 survey.
	urb5	self-employed without employee; high school graduate and up; including unemployed during 1994 survey.
	urb6	employed in own family-operated farm or business; worked with pay in own family-operated farm or business; and worked without pay in own family-operated farm or business
Rural	rur1	worked for private household and private establishment; zero education up to third year high school
	rur2	worked for private household and private establishment; high school graduate and up
	rur3	worked for government/government corporation
	rur4	self-employed without employee; zero education up to third year high school; including unemployed during 1994 survey.
	rur5	self-employed without employee; high school graduate and up; including unemployed during 1994 survey.
	rur6	employed in own family-operated farm or business; worked with pay in own family-operated farm or business; and worked without pay in own family-operated farm or business

Source: 1994 Family Income and Expenditure Survey

Table 6. Household income, poverty line and poverty indices (1994 prices)

Households	Per capita Income (p)	Poverty Line (p)	Poverty Headcount,%	Poverty Gap,%	Poverty Severity,%
Philippines	15,730	8,897	40.7	13.7	6.2
urb1	13,000	9,688	41.7	12.9	5.6
urb2	26,954	10,181	15.5	3.7	1.3
urb3	26,468	9,665	10.2	2.5	0.9
urb4	14,472	9,584	42.3	14.9	6.9
urb5	27,980	10,138	16.9	4.8	2.1
urb6	35,650	9,647	18.2	6.0	2.8
rur1	8,247	7,827	58.7	19.7	8.8
rur2	13,723	8,177	31.3	9.7	4.3
rur3	18,123	8,106	22.4	6.8	2.9
rur4	8,559	7,984	61.0	21.9	10.3
rur5	13,756	8,259	37.5	12.0	5.0
rur6	13,641	7,607	39.9	12.0	5.2

Source: 1994 Family Income and Expenditure Survey

Table 7. Effects on household income, consumer prices, and poverty, in percent (SIM_1)

	Disposable Income	Consumer Prices /a/	Headcount	Gap	Severity
Philippines	-0.23	-0.34	-0.015	0.103	0.146
urb1	-0.56	-0.39	0.108	0.379	0.444
urb2	-0.01	-0.27	-0.478	-0.807	-0.893
urb3	0.06	-0.24	0.000	-0.915	-0.976
urb4	-0.25	-0.33	-0.144	-0.155	-0.188
urb5	0.02	-0.25	-0.827	-0.684	-0.774
urb6	-0.11	-0.19	0.000	-0.166	-0.216
rur1	-0.90	-0.51	0.247	0.785	0.984
rur2	-0.25	-0.40	-0.980	-0.339	-0.376
rur3	-0.01	-0.34	-1.357	-0.751	-0.908
rur4	-0.58	-0.48	0.146	0.173	0.224
rur5	-0.13	-0.39	-0.245	-0.569	-0.719
rur6	-0.37	-0.42	0.000	-0.125	-0.135
Change in Gini Coefficient	0.162				

Note: The Poverty columns (Headcount, Gap, Severity) fall under a "Poverty" header.

/a/ sectoral consumer prices weighted by household consumption weights

Table 8. Poverty effects under various scenarios (% from base)

		Headcount	Gap	Severity	Change in Gini Coefficient
Sim_2	Philippines	-0.339	-0.571	-0.729	-0.056
	Urb1	-1.818	-2.313	-2.699	
	Rur1	0.000	-0.086	-0.113	
	Rur4	-0.575	-0.953	-1.209	
Sim_3	Philippines	-1.150	-1.150	-1.474	-0.234
	Urb1	-1.624	-1.624	-1.882	
	Rur1	-3.385	-3.385	-4.206	
	Rur4	-1.605	-1.605	-2.038	
Sim_4	Philippines	-0.384	-0.615	-0.810	-0.143
	Urb1	-0.465	-0.758	-0.888	
	Rur1	-0.883	-1.089	-1.357	
	Rur4	-0.570	-0.830	-1.053	
Sim_5	Philippines	-0.219	-0.352	-0.454	-0.011
	Urb1	0.000	-0.325	-0.373	
	Rur1	-0.680	-0.674	-0.848	
	Rur4	-0.202	-0.429	-0.546	

Note: The Headcount, Gap, and Severity columns fall under a "Poverty" header.

ever, the drop in consumer prices is not significant enough to counter the negative income effects in critical households with a very high incidence of poverty or the poorest of the poor. For example, the headcount index for rur1 increases by 0.25 percent, for rur4 by 0.15 percent, and for urb1 by 0.11 percent. The worsening of poverty in these groups can also be observed from the larger increases in the poverty gap and severity indices. As these indices give more distributional weight to the poorest below the poverty threshold, this means that the average income of the poor in those household groups has deteriorated further away from the poverty threshold. This also means that the degree of their being poor has increased as the QR on rice is eliminated.

On the whole, while the overall poverty headcount drops, *the elimination of the QR on rice imports can be described as generally not pro-poor*. It worsens the income inequality problem. The drop in consumer prices is not significant enough to mitigate the negative effect on income, especially in household groups where the problem of poverty is severe.

Possible safety net
The four experiments summarized in this section show the effects of implementing policy measures that can offset the negative poverty effects on households adversely affected, particularly urb1, rur1, and rur4 (Table 8).

SIM_2 involves a 50 percent reduction in the direct income tax rate of the three household groups that is financed by a compensatory indirect output tax. It shows a favorable effect on the overall poverty situation as the three poverty indices indicate negative changes. However, the effects on rur1 households are small. This is because this group has very small direct tax rate; thus, a 50 percent reduction in the rate would not make much difference.

SIM_3 involves a 10 percent increase in government transfers to the three groups that is financed by a compensatory indirect output tax. The overall improvement in poverty is better here than in the previous case as indicated by a larger reduction in all poverty indices. The largest improvement is observed in rur1 because being the poorest group, it has a larger amount of government transfer. Thus, a 10 percent increase would have greater benefit to this group than to the other two. There is also an improvement in the distribution as indicated by a reduction in the Gini coefficient.

Policy Notes

SIM_4 involves a 50 percent fertilizer price subsidy by the government that is financed by a progressive compensatory direct income tax. This experiment also brings about a favorable poverty effect as the three indices show reduction for the three groups. Income distribution also improves. However, the improvement in poverty and distribution is lower compared to SIM_3.

SIM_5 also involves a 50 percent fertilizer price subsidy by the government. However, the subsidy is financed by a compensatory indirect output tax that creates another round of distortionary effects. The results indicate that while the overall poverty as well as the poverty for the three groups improves, the effect is lower compared to SIM_4. This is because the increase in the indirect tax creates an additional wedge between the domestic price and local price[4] in all commodities. Thus, it reduces the full price effects of the removal of the QR and the fertilizer price subsidy. This additional price wedge is not created in SIM_4.

Thus, the results of the experiments indicate that the policy that would lead to higher poverty-offsetting effects for the three poorest household groups that are adversely affected by the market reforms in rice *is an increase in the direct government transfers to these groups (SIM_3)*.

Conclusion and policy recommendation

QR on rice will be phased out by the end of 2004. While this policy reform may be justified for efficiency purposes, the displacement effects of the expected surge in rice imports will translate into larger negative income effects for household groups where the problem of poverty is severe. This is because these groups rely heavily on agriculture, particularly palay rice production, which is expected to contract when QR is removed.

As a result, factor demand and factor prices in agriculture drop. Factor incomes derived from agricultural pro-

duction decline as well. While all household groups enjoy reduced prices of rice as QR is removed, the drop in consumer prices is not significant enough to mitigate the decline in income for those groups that are adversely affected. Thus, all poverty indicators for these groups show higher values, which means a worsening of their poverty situation. Furthermore, the overall Gini coefficient increases, which indicates worsening of income inequality.

The policy lesson that may be drawn from the exercise is that while market reform is generally necessary, it has to be carried out carefully, especially if implemented in a critical commodity such as rice. Although market reforms in rice can potentially have favorable effects on consumer prices in general, some household groups may be adversely affected by the expected surge in rice imports. Policy measures may have to be designed to counter these effects.

Among the various poverty-offsetting measures experimented in the paper, the results indicate that an increase in direct government transfers to these adversely affected household groups can provide a better safety net. However, this is more of a short-run policy measure and not a substitute for policy measures that have favorable longer term implications. Among these measures with longer term effects are productivity improvement through a vigorous program of intensified use of high-yielding rice varieties, irrigation, better farm-to-market roads, and measures to encourage the growth of other nonrice crops.

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[4] Local price is without local taxes and can be considered as cost of production. Domestic price is with local taxes and can be considered as sales price.