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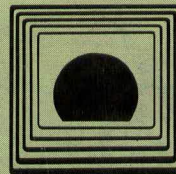
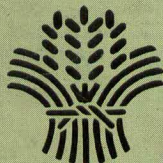
**DEREGULATION IN PHILIPPINE AGRICULTURE:
HAS IT BENEFITED THE RURAL POOR?**

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DEREGULATION IN PHILIPPINE AGRICULTURE: HAS IT BENEFITED THE RURAL POOR?

*Arsenio M. Balisacan**

1. INTRODUCTION

The 1970s saw an unprecedented rise of government interventions in Philippine agriculture. These interventions took the form of various levies and charges on agricultural commodities and the government's direct control of agricultural activities, including production, processing, domestic distribution, and international trade. The granting of monopolistic (or monopsonistic) rights to quasi-public and private entities was also an important feature of the decade. The Marcos Government's departure from the political scene and the ascension to power of the Aquino Government in 1986 brought a beam of light on the prospects for an undoing of policies towards a market-oriented, fairly unregulated agricultural economy, one relieved of the onerous burden of explicit as well as implicit taxation of the agricultural sector.

The paper examines the nature of deregulation policies in the agricultural sector and their impact on rural poverty. The focus is on deregulation efforts affecting directly the sector; the implications of reforms outside of agriculture as well as changes in economywide policies which have likewise important bearing on agriculture (e.g., exchange-rate and interest rate policies) are beyond the scope of this paper.

Deregulation in agriculture has meant the phasing out of price and quantitative controls as well as levies and taxes on agricultural inputs and outputs, the elimination of barriers to entry (and exit) in agricultural activities, and the realignment of government functions towards the provision of so-called public goods (and its exit from activities or areas in which the public-good argument for government intervention is fundamentally weak or non-existent) as well as the maintenance of food price stability. More concretely, the deregulation has taken the following forms: (1) the lifting of the copra export ban and the export tax on coconut oil; (2) the abolition of monopsonistic arrangements in sugar and coconut trading; (3) the liberalization of fertilizer importation and distribution; (4) the removal of retail price ceilings on rice, poultry products and pork; (5) the opening of import trade in wheat, flour, wheat products, and animal feeds to the private sector; (6) the divestment of the National Food Authority from nongrain activities and the reorientation of its primary function to price stabilization of rice and corn; (7) the discontinuation of direct lending programs and the consolidation of separate commodity-specific funds into the Comprehensive Agricultural Loan Fund; and (7) institutional reforms affecting various agencies involved with agriculture.

The paper focuses only on sector-specific policy changes in coconut, sugarcane, rice, and corn. Production activities in these crops directly contribute over one-half of the total

*Assistant Professor and Director of Graduate Studies and Fellowships, School of Economics, University of the Philippines, Diliman, Quezon City. The research assistance of Joseph Capuno, Ruby Asuncion, and Angelita Cortez is gratefully acknowledged.

crop value added and the bulk of employment in agriculture. The nature of government policies and their impact on farm prices and incomes are assessed. And to the extent that the deregulation has been pursued in light of the rural development and poverty alleviation thrusts of the Aquino government, the paper also examines the extent to which these policies might have changed the picture of rural poverty. Section 2 of the paper characterizes the political economy of agricultural policy regime in the 1970s and 1980s. Section 3 then employs a simple framework to measuring the impact of the deregulation on overall rural poverty. Finally, section 4 provides concluding comments.

2. THE RISE AND FALL OF REGULATION IN PHILIPPINE AGRICULTURE

The nature of government interventions in Philippine agriculture has been well described in a number of studies.¹ One major strand of the literature is that government interventions started to rise in unprecedented proportions in the early 1970s. Prior to the 1970s, direct government interventions in the food crop sector were largely limited to rice and corn. Market intervention primarily took the form of import disbursements in consuming centers. In the case of export crops (primarily coconut and sugar), direct marketing and policy intervention were limited largely to sugar. The intervention mainly involved the allocation of the Philippine share of the U.S. sugar import quota to local sugar producers. The import quota -- resulting from the Jones-Costigan Act of 1934 -- provided export premium to Philippine sugar, since the sugar price in the U.S. market was almost always higher than that in the world "free market". To cushion the effect of the import quota on the domestic price of sugar, exporters had to fill up a domestic sugar quota before they could be permitted to export. For most of the 1950s and 1960s, domestic prices were lower than average export unit values but higher than "world, non-U.S." prices (Intal and Power, 1990).

The 1970s and early 1980s saw an effort of the government to intervene more intensively in agricultural production, marketing, and international trade. The intervention in the rice sector was precipitated by the "rice crisis" of 1971-72 which resulted from a combination of local and international shocks. On the domestic front, poor weather, pest infestation, and the great flood that ravaged Central Luzon, the country's "rice bowl", led to a fall in rice production by about 20 percent. At the same time, commodity prices in the world market rose sharply to unprecedented levels, with the world price of rice rising three or four times. The government responded to this crisis by imposing price controls on rice and by embarking on a massive program aimed at achieving self-sufficiency in rice. Dubbed Masagana-99, the program called for government assistance in the form of credit, irrigation, extension, and fertilizer subsidy.

Government controls in the food sector expanded to include as well the effective monopolization of wheat (beginning in 1975) and soybean (beginning in 1978) imports. Marketing controls included all food commodities by the early 1980s. The government's food price stabilization arm, the National Food Authority, financed its expanded operations partly from price margins on its duty-free imports.

In the case of the export crop sector, the government's intervention shifted from its traditional role of allocating domestic sugar quota, collecting minor export taxes, and undertaking research and extension in tandem with the private sector, to one of monopolizing domestic and export marketing. In sugar, the government mandated the Philippine Exchange (Philex) -- a subsidiary of the Philippine National Bank which was the primary financial institution serving the sugar industry at that time -- to be the sole buyer of sugar from sugar mills as well as the sole exporter of sugar. The government further strengthened its control of the industry by acquiring and operating leading transport and bulk-storage enterprises. The Philippine Sugar Commission (Philsucum), which became the policy-making body for the industry, with the National Sugar Trading Corporation (Nasutra, created in 1977 to take over the function of Philex) as its trading arm, likewise operated sugar centrals and established new sugar refineries.

In coconut, the intervention moved from the collection of minor export taxes to include as well direct control on production, processing, and international trade. Like in rice, the sharp rise in the world price of coconut oil and copra in the early 1970s -- the so-called "cooking oil crisis" -- provided a major impetus to intervention. Another factor was the government's avowed desire to "rationalize" the coconut industry. The "material basis" of the intervention was the collection of the Coconut Consumer Stabilization Fund (CCSF) levy and the export premium and taxes on coconut products. From 1973 to 1982, the government through the Philippine Coconut Authority (PCA, created in 1973), managed to collect ₱9.7 billion of CCSF levy. Out of this, about ₱2.1 billion went to finance the subsidy of coconut-based consumer products, the original rationale for the imposition of the levy. The remaining amount provided financing to what later became controversial programs, including those on hybrid replanting and vertical integration. Finally, the government, through the United Coconut Oil Mills (UNICOM), controlled the industry's total milling capacity and the coconut oil exports. The justification for this control rested on the alleged presence of excess milling capacity and of market power in the world copra market.

The economic consequences and costs of the aforementioned interventions are by now well known.² In most cases, either the interventions were ineffective in achieving their avowed intentions or they yielded results quite contrary to these intentions. In rice, while increased government intervention during the 1970s reduced seasonal fluctuations in palay prices, the intervention was inadequate to maintain producer prices at the official floor price (Unnevehr, 1985). This inadequacy meant that the opportunities to sell at the official price had to be rationed, often at the disadvantage of small farmers. More importantly, because the difference between official ceiling and floor prices was insufficient to cover normal marketing margins, the intervention prevented the development of private trading and storage. The government's objective of reducing marketing margins could have been achieved with non-price policy interventions such as investment in transport and communication infrastructure.

Attempts to attribute the growth of rice production in the 1970s to the Masagana-99 Program are questionable. For instance, one can argue that the growth could have occurred even without the program, considering that the period was the height of the high-yielding rice varieties spreading in most rice-growing Asian developing countries. In this view, the

government simply rode on the "Green Revolution" wave -- conveniently. But even if this growth could be attributed to the program, the question of whether the benefits would outweigh the economic costs is similarly questionable. Sacay *et al.* (1985, p. 26), for example, argued that it could have cost less to achieve the same growth. The access to the program by intended beneficiaries -- the small farmers -- was also limited. For example, in the case of credit tied up with the program, while a substantial amount of resources was devoted to subsidizing formal credit institutions, the amount that trickled down to small farmers was negligible (Esguerra, 1981). Moreover, the credit policy induced lending (by formal commercial sources) away from agriculture, thereby reducing the overall flow of credit to the sector (Tolentino, 1986). In the case of fertilizer, the single most important input in rice production, the huge fertilizer subsidy for the period 1973-82 benefitted mainly the few local fertilizer producers cum importers, not the farmers (Balisacan 1990c). The domestic controls on fertilizer imports and on distribution led to increases in domestic fertilizer prices over and above those that would have prevailed in the absence of these controls.

In coconut, instead of higher prices for coconut farmers, the UNICOM's policy resulted in domestic prices of copra that were, on the average, 22 percent lower than export prices for the period 1973-82 (David, 1983). The agency's attempt to influence the world price also proved futile since the country's exports of copra and coconut oil accounted for only about 5 percent of the world's fats and oils market. The attempt to exploit monopoly power in the world market resulted, instead, in substitution away from coconut oil and depressed the country's earnings from coconut exports.

The interventions in sugar induced excessive inefficiencies and income transfers from sugar producers to a select few close to the ruling elite. The popularly known "White Paper" of the U.P. School of Economics (see de Dios, 1984) showed that the sugar trade monopoly resulted in: (a) a loss to producers of between ₱11 billion and ₱14 billion; (b) an addition to the marketing chain resulting in either increased mark-ups, a redistribution of income from actual traders to favored "paper traders", or both; (c) no increase in trading efficiency and in foreign exchange earnings; (d) a loss of foreign exchange due to the financing of operations through foreign loans; and (e) a loss to the economy because of the operating losses of the agencies, in spite of estimated gross profits enjoyed from the differential between export revenues and purchase costs.

The disastrous consequences of the aforementioned interventions on agricultural incentives and farm incomes have formed the economic basis of calls for deregulation. The intellectual foundation of these calls did not come from so-called "instruments of transnational capitalists" (specifically the World Bank and the International Monetary Fund), as some critics of deregulation claim [see, e.g., Ofreneo (1987) and Broad (1988)], but largely from policy studies of serious students of Philippine economic development. Perhaps the most influential set of policy studies on agriculture were those done by a group of researchers led by the then U.P. at Los Baños Professor Cristina C. David. Following the assumption to power of the Aquino Government, these studies, collected in a volume entitled *Agenda for Action for the Philippine Rural Sector* (popularly referred to as the *Green Book*) became the "official bible" of the Department of Agriculture (DA) in its advocacy for sector-specific and economy wide reforms aimed at removing the substantial bias of

government policies against agriculture and the rural sector. Many of the contributors to this volume later became either consultants to the new DA leadership or technocrats of the department.

The "crisis monographs" of the U.P. School of Economics equally deserve to be mentioned. These monographs, particularly *An Analysis of the Philippine Economic Crisis* (popularly referred to as the *White Paper*) and its sequel, *Towards Recovery and Sustainable Growth*, attracted wide attention, both within and outside the government, not because they offered the only analysis in the area, but because of their "strong, but economically argued, advocacy of social reforms such as better income distribution, progressive taxes, land reform, etc." (Fabella, 1989, p. 207). These papers called for "new" policy directions toward greater reliance on markets. Moreover, they cogently argued that while adverse external developments (such as the oil shock of 1979-80 and the deterioration of the country's terms of trade) explained part of the chronic weakness of the country's economic performance, the stronger villain was found in domestic economic structures and policies.

It bears noting that the pressure for reforms in agriculture (as well as in the rest of the economy) intensified in the early 1980s owing to a confluence of factors. Among these were the oil shock of 1979-80, the deep recession in the country's trading partners, the emerging global debt crisis which capped off with a "big bang" in 1982, the soaring to new heights of interest rates, the sharp fall in the country's external terms of trade, and domestic political instability. These forced the economy to succumb to its structural weaknesses. Economic collapse was inevitable. The World Bank came forward for the needed resuscitation -- a structural adjustment loan (SAL) -- with the condition that the country would undertake a comprehensive structural reform program. Dismantling of the monopolistic structures in agriculture was part of the SAL arrangement. The major actors, even those in government who had been blocking past reform efforts, embraced the arrangement, but for different reasons. As Fabella (1989, p. 211) puts it:

The multilateral organizations saw an opportunity to run an experiment in a controlled atmosphere.... The academic technocrats saw an opportunity to implement its trade and industry ideas which thus far had been paid only lip service. The business technocrats saw financing for high ticket projects. The political leadership saw its fortunes rise with the major industrial projects. The business sector was either coopted or felt it prudent not to make noise. Thus, the SAL arrangement had two components as far as the players were concerned: the trade and industry reforms which were the conditions and the possible financing of the major industrial projects. These were, in fact, contradictory components and one could not really be pushed without hurting the other. Commitment by the political leadership did not mean implementation.

Reform measures affecting agriculture did come in. These eventually led to the withdrawal of cash subsidies to local fertilizer producers and the decontrol of fertilizer importation and distribution, the opening up of import trade in animal feeds and wheat, deregulation of interest rates, phasing out of subsidies for agricultural credits, the lifting of price controls on rice, poultry, eggs, and pork, and the restoration of free trading in rice and corn. Industrial tariff reforms and successive devaluations beginning in 1982 also somewhat reduced the implicit bias of tariff policy on agriculture. Reform measures were also announced for the coconut and sugar industries, but the measures remained cosmetic rather

than substantive changes. The ascension to power of the Aquino Government in February 1986 eventually led to the dissolution of monopolistic arrangements in sugarcane and coconut trading as well as the lifting (in July 1986) of the export tax of 10 percent on copra and 5 percent on coconut oil.

3. A SIMPLE APPROACH TO MEASURING THE IMPACT OF THE DEREGULATION ON RURAL POVERTY

In principle, the full impact of the deregulation policy on rural incomes can be analyzed by means of a fully specified model which takes into account the general equilibrium feedbacks of the policy. This approach is, however, impractical for many purposes. General equilibrium models, even if they are now computationally feasible to implement, yield results that are only as good as the specifications and the data they are based on. Moreover, "questions can be raised concerning *calibration* assumptions and about the basic intuitions behind conclusions that emerge as a result of the interaction of a large number of equations" (Kanbur, 1987, p. 1518). Another extreme approach is a qualitative description of the impact of the deregulation policy on rural incomes. In this approach, the impact of changes in relative prices owing to the change in policy, on relative factor rewards can be traced through well-received trade-theoretic models (e.g., the Stolper-Samuelson theorem). While reasonably useful as an organizing theme, this approach falls short of providing orders of magnitude on the consequences of the deregulation policy on poverty.

The approach taken here is a middle ground. We use a methodology that can be applied to existing household income and expenditure data. The general equilibrium effects of deregulation policy can not be fully captured, but the results obtained from our methodology are adequate for most policy purposes. Moreover, it is readily implementable using existing household income and expenditure information, thereby proving its usefulness in case studies to which it is applied.

We first describe the simple procedure we have applied in estimating farm price changes owing to the deregulation in the latter part of the 1980s.

Farm Price Changes

We can ask: *All other things being equal*, to what extent have farm-gate prices changed owing to the deregulation policy? In Figure 1, the policy is shown to cause a hypothetical departure of the domestic price (P_d) from its trend, say, at time t_0 . In the absence of government interventions, the domestic price net of normal marketing margins, will be approximately equal to the border price (P_b). Our use of the border price as a reference point is justified by the usual argument for border prices as "efficient prices" (Timmer, 1986).

By definition, the farm-gate price, P_f , of a crop (or farm input) is simply the difference between the border price (c.i.f. if importable, f.o.b if exportable) in domestic

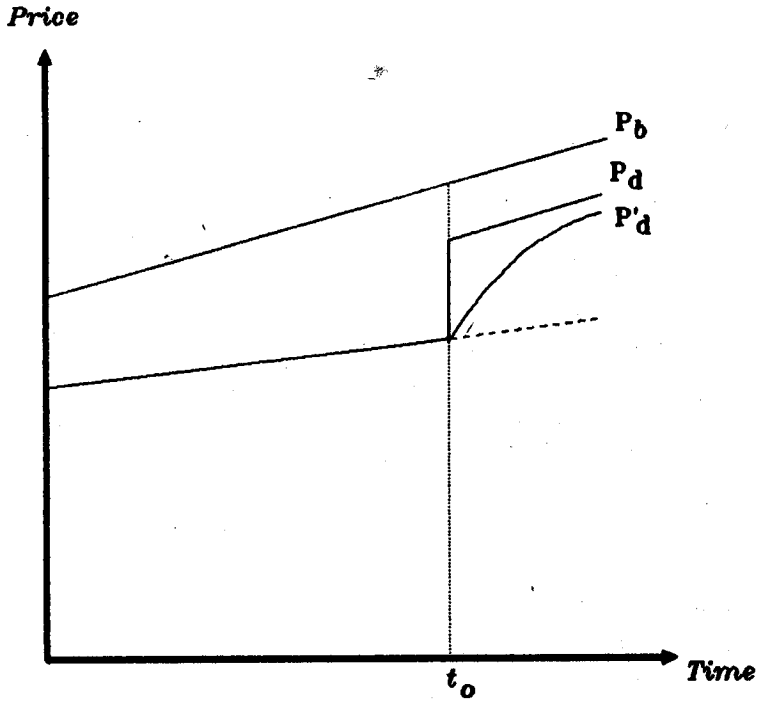


Figure 1
Hypothetical Effect of Deregulation Policy
on Domestic Price Trends

currency, P_b , and marketing margins (including price wedges due to domestic price policies), M . That is,

$$P_f = P_b + M. \quad (1)$$

Logarithmic differentiation leads to the proportionate change in the farm-gate price (represented by a caret over a variable):

$$\hat{P}_f = c\hat{P}_b + h\hat{M} \quad (2)$$

where $c = P_b/P_f$ and $h = M/P_f$.

Because $M/P_f = (P_b/P_f) - 1 = c - 1$, the coefficient c , which indicates the percentage change in the farm-gate price due to a one percent change in the border price, will be greater than (less than) unity as h is greater than (less than) zero. Therefore, if the elasticity of the farm-gate price is less than unity ($c < 1$), it implies that, over the specified period, marketing margins and price wedges due to domestic pricing policies on the commodity have increased more than the proportionate increase in the border price.

Estimates of c can be obtained for the crops included in the present study by regressing the logarithm of P_f on the logarithm of P_b , using annual data for 1975-1989. From the discussion in section 2, sharp rises in world commodity prices have drawn a particular government response justified by concern for price stability. Thus, we include a dummy variable, *SHOCK*, to capture the tendency of the government to systematically dampen the impact of world price shocks on domestic agricultural prices. This variable will have a value of unity for 1979 (for coconut) and 1980-81 (for rice, corn, and sugar). Another dummy variable, *DEREG*, is included to represent the impact of the change in the policy regime in the second half of the 1980s on farm-gate prices. This variable is hypothesized to be positively related with the movement in farm-gate prices in the late 1980s. The form of the regression equation is:

$$\ln P_f = \beta_0 + \beta_1 \ln P_b + \beta_2 \text{SHOCK} + \beta_3 \text{DEREG} + \epsilon \quad (3)$$

where $\ln P_f$ and $\ln P_b$ are the natural logarithm of P_f and P_b , respectively, and ϵ is the error term. Because serial correlation of the error terms appears to be significant in the initial regression for each crop, the Cochrane-Orcutt iteration technique is used to correct for first-order autocorrelation.

The regression estimates for rice, corn, coconut, and sugarcane are shown in Table 1. In almost all regression equations, the coefficients of the explanatory variables have the expected signs and are significantly different from zero at conventional levels of significance.

Table 1
REGRESSION ANALYSIS
 Dependent variable = natural logarithm of the farmgate price

Independent Variable	Rice (ordinary)	Rice (special)	Sugarcane	Coconut (fresh nuts)	Coconut (matured nuts)	Corn (white)	Corn (yellow)
Intercept	-5.911 (-5.09)	-6.574 (-3.73)	-2.058 (-1.56)	-3.927 (-2.72)	-4.877 (-7.44)	0.288 (5.65)	0.326 (4.42)
LNPB	0.789 (5.31)	0.880 (3.89)	0.377 (2.24)	0.936 (5.58)	1.053 (13.91)	0.890 (7.96)	0.820 (6.91)
SHOCK	-0.271 (-2.27)	-0.299 (-2.05)	0.073 (0.32)	-0.161 (-0.95)	-0.139 (-1.90)	-0.198 (-1.90)	-0.143 (-1.33)
DEREG	0.316 (2.22)	0.497 (1.87)	0.565 (2.11)	0.326 (1.88)	0.187 (2.64)	0.074 (0.56)	0.104 (0.71)
D.W.	1.88	1.98	2.45	1.648	1.83	1.91	1.91
Adjusted R-square	0.939	0.925	0.782	0.892	0.978	0.941	0.935
F-value	51.01	30.49	12.68	27.98	146.67	52.79	47.43

Note: Figures in parentheses are t-ratios.

Of particular interest here are the orders of magnitude of the DEREG coefficients. The implied percentage changes in farm-gate prices are obtained as:

$$\frac{\Delta P_f}{P_f} = e^{B_3} - 1 \quad (4)$$

For rice, the deregulation policy positively affected farm-gate prices by 37 to 64 percent, all other factors being equal. For sugarcane, the estimate is about 66 percent. The impact on coconut is about 21 percent for fresh nuts and 43 percent for matured nuts. Finally, for corn the impact is about 8-11 percent. In the succeeding discussion, we refer to the lower values as the "low deregulation" case and the upper values as the "high deregulation" case.³

Impact on Rural Poverty

In quantifying the impact of the changes in farm prices on overall measured rural poverty, we employ a class of additively decomposable poverty measures (see Foster, Greer, and Thorbecke 1984) given by:

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^\alpha \quad (5)$$

where z is the predetermined per capita poverty line, y_i is the per capita income of the i th family, q is the number of poor households (having no income greater than or equal to z), n is the total number of families, and $\alpha \geq 0$ is a measure of poverty aversion. The parameter α indicates the importance given to the poorest poor: the larger α is, the greater is the emphasis given to the poorest families. As the value of α becomes very large, P_α approaches a "Rawlsian" measure giving weight only to the poorest among the poor.

For $\alpha = 0$, (5) becomes

$$P_0 = \frac{q}{n} \quad (6)$$

which is the familiar headcount index (H). The disadvantage of this measure is that it is entirely insensitive to changes below the poverty line. A poor person may become poorer but measured poverty will remain the same. Furthermore, an income transfer from a person

below the poverty line to one above it, does not change measured poverty -- indeed an absurd property of a summary measure of poverty.

For $\alpha = 1$, (5) simply measures the arithmetic mean of the income shortfall (expressed in proportion to the poverty line) over the whole population:

$$P_1 = \frac{1}{n} \sum_{i=1}^q \frac{z-y_i}{z} \quad (7)$$

Defining the average income gap of the poor as

$$I = \frac{1}{q} \sum_{i=1}^q \frac{z-y_i}{z}, \quad (8)$$

it is also easy to see that $P_1 = HI$. Note that P_1 , referred to as average poverty gap (Sen, 1976), is sensitive to both the number of poor and to how poor they are. (In contrast, I measures the severity of poverty but is insensitive to the numbers involved. Both I and H are measures of *absolute* rather than *relative* poverty.) One objection to it, however, is that, because the poverty deficits are weighted equally, it is insensitive to redistribution of income within the poor units.

Where the weights are the income gaps themselves, the resulting P_α is distributionally sensitive. For example, for $\alpha = 2$, the resulting measure, P_2 , in (5) is then simply the mean of the squared poverty deficits. This measure satisfies the main axioms for a desirable summary measure of poverty.⁴ Unlike that in the H and I measures, measured poverty in P_α for $\alpha > 1$ decreases whenever a transfer of income takes place from a poor household to a poorer one.

The class of P_α measures is additively decomposable in the following sense: the aggregate (population) poverty level is simply a weighted average of the subgroup poverty levels, the weights being their population shares. That is,

$$P_\alpha = \sum_{j=1}^m \tau_j P_{\alpha,j}(y_j) \quad (9)$$

where τ_j is the proportion of population to be found in group j , and m is the number of mutually exclusive and exhaustive groups. This property proves to be extremely useful for our purposes. For example, for a policy change that increases the incomes of group i and reduces those of group j , we can work out the impact of the change on each group's average poverty level, and then use the groups' respective population share to estimate the new aggregate poverty level.

The proportional change in P_α as the y_i terms are allowed to vary while holding z fixed is:

$$\frac{dP_\alpha}{P_\alpha} = \hat{P}_\alpha = -\alpha \sum_j^m q_j \sum_i \left(\frac{z-y_{ij}}{z} \right)^{\alpha-1} dy_{ij} \sigma \quad (10)$$

where

$$\sigma = \sum_j^m q_j \sum_i \left(\frac{z-y_{ij}}{z} \right)^\alpha \quad (11)$$

For the poverty gap measure ($\alpha=1$), the proportional change in the average poverty gap for the whole population is

$$\hat{P}_1 = \frac{\sum_j^m q_j \sum_i dy_{ij}}{z \sum_j^m q_j \sum_i \left(\frac{z-y_{ij}}{z} \right)} \quad (12)$$

which simplifies to

$$\hat{P}_1 = \frac{\bar{dy}}{\bar{g}} \quad (13)$$

where \bar{dy} is the average change in income among the poor in all groups and \bar{g} is the poor's average income shortfall.

In implementing the above poverty measures, we classify farm households according to the crop activity which they mostly depend on for farm incomes and according to whether they are entrepreneurial farmers (including owner cultivators, tenants, and lessees) or landless agricultural workers. This distinction is important because, as we have seen in section 2, the impact of government policies on farm prices is quite different for the various crops, partly reflecting the political economy considerations in the design of agricultural

policy. Moreover, ownership of fixed farm assets (primarily land) would be expected to be an important determinant of household incomes.

We have used the 1985 Family Income and Expenditure Survey (FIES) of the National Statistics Office. Unlike the 1988 FIES, the 1985 FIES allows a classification of farm households according to the major crop which they depend on for farm income. While the survey year was not a typical year owing to the severe contraction of the economy at that time, the immediate following years represented a period of agricultural pricing and institutional reforms which the Aquino administration undertook after taking the helm of the government. Moreover, while questions can be raised concerning the quality of the data, we believe that the general picture emerging from the data is not farfetched. At any rate, the exercise performed here can be easily replicated if better data become available.

The identification of the poor and the attendant aggregation which brings together the data on the poor into an overall measure of poverty, almost always involve a construction, albeit imprecise, of a poverty line.⁵ For practical purposes, we define a poverty threshold as the critical minimum amount of income below which a person cannot attain a predetermined consumption bundle of goods and services, as judged necessary for the fulfillment of certain basic consumption needs, most importantly (in the context of this paper) adequate nutrition. We have adopted the NEDA-FNRI-NSO technical working group's estimates of poverty lines for 1985 for the country's 13 regions subdivided into rural and urban areas. These estimates take into account regional price differences and consumption patterns (and thus avoid a major shortcoming of previous studies).

In an earlier paper (Balisacan 1990a), we have shown that the vast majority (62-68 percent) of the rural poor are engaged in farming. The paper also shows that the intensity of poverty, as indicated by average poverty gaps, among the self-employed is as severe as, if not more severe than, those households who depend mainly on wage incomes. Of the poor in agriculture in 1985, among the poorest were (i) farm workers in sugarcane, rice, corn, coconut, and forestry, and (ii) corn and "other crop" farmers, coconut farmers, and fishermen (Table 2). Rice producers had lower average income shortfall and smaller proportion of their group below the poverty threshold, but they contributed almost one-fourth of overall poverty in agriculture owing to the large proportion (28 percent) of rice farmers in agriculture.

Table 3 summarizes the major sources of incomes for the various groups of farm households. On the average, over two-thirds of farm households' incomes are derived from farming. It bears noting that rice and corn workers, forestry workers, and fishermen, have a more diversified sources of income compared with other agricultural workers as well as entrepreneurial farmers.

In estimating the changes in farm incomes owing to the changes in commodity prices, we have kept non-farm household incomes constant throughout the analysis. Moreover, we have assumed that only farm incomes (either entrepreneurial incomes or wage incomes) derived directly from the four commodities are affected by the changes in policy. Since the FIES data do not allow for a breakdown of farm incomes by crop activity, we have used extraneous information to approximate the share of crop activity in total farm income. For rice, we have employed the finding in a survey of rice farmers in East Laguna village, which shows that about 76 percent of the farm production income comes from rice farming

Table 2
POVERTY INCIDENCE IN AGRICULTURE BY MAIN OCCUPATION OF HOUSEHOLD HEAD, 1985
(In %, unless otherwise indicated)

Main Occupation of Household Head	Total Number of Families (in 1000)	Share of Group in Total Families	Head-count	Income gap	Poverty gap	FGT (a=2)	Contribution to Total Poverty		
							Head-count	Poverty gap	FGT (a=2)
All Agricultural Families	3962.3	100.00	72.86	41.36	30.13	15.82	100.00	100.00	100.00
Rice Farmers	1103.9	27.86	66.21	39.27	26.00	13.00	25.32	24.04	22.90
Corn Farmers	596.4	15.05	83.49	49.11	41.00	24.00	17.25	20.48	22.84
Sugarcane Farmers	19.4	0.49	60.73	29.64	18.00	7.00	0.41	0.29	0.22
Other Crop Farmers	203.4	5.13	84.40	42.65	36.00	22.00	5.95	6.13	7.14
Coconut Farmers	360.9	9.11	75.46	41.08	31.00	16.00	9.43	9.37	9.21
Fruit Tree Farmers	17.6	0.44	56.29	26.65	15.00	7.00	0.34	0.22	0.20
Livestock and Poultry	23.4	0.59	61.38	34.21	21.00	9.00	0.50	0.41	0.34
Other Farmers	9.2	0.23	73.04	38.34	28.00	13.00	0.23	0.22	0.19
Rice and Corn Workers	215.2	5.43	81.07	44.41	36.00	20.00	6.04	6.49	6.87
Sugarcane Farm Workers	88.5	2.23	93.81	43.71	41.00	20.00	2.88	3.04	2.82
Other Crop Farm Workers	16.4	0.41	84.69	42.51	36.00	20.00	0.48	0.49	0.52
Coconut Farm Workers	61.6	1.55	83.70	41.82	35.00	17.00	1.79	1.81	1.67
Livestock and Poultry Workers	13.8	0.35	62.69	33.50	21.00	8.00	0.30	0.24	0.18
Other Crop & Animal Husbandry	80.1	2.02	51.42	35.01	18.00	9.00	1.43	1.21	1.15
Forestry Workers	46.6	1.18	82.60	39.95	33.00	16.00	1.33	1.29	1.19
Fishermen	515.4	13.01	76.70	40.42	31.00	16.00	13.69	13.38	13.16
Other Occupation	590.5	14.90	61.74	35.63	22.00	10.00	12.63	10.88	9.42

Source: Authors' calculations.

Table 3
MAIN SOURCES OF INCOME OF FARM HOUSEHOLDS, 1985

	Wages		Entrepre- neurial Income		Netsh	Other Sources				Total In- come
	Farm	Non- Farm	Farm	Non- Farm		Conab	Condo	Ifams	Other	
Rice Farmers	5.72	4.03	70.81	2.40	1.99	0.77	1.97	9.61	2.71	100.00
Corn Farmers	7.72	2.12	69.08	2.21	2.79	0.06	1.34	12.48	2.21	100.00
Sugarcane Farmers	10.44	4.56	75.93	0.29	0.34	0.00	1.26	6.05	1.14	100.00
Other Crop Farmers	7.65	2.57	65.84	3.59	1.87	0.24	2.82	12.12	3.29	100.00
Coconut Farmers	8.09	2.66	67.76	2.76	2.62	0.74	2.04	10.27	3.05	100.00
Fruit Tree Farmers	19.68	0.93	57.30	2.61	3.16	0.84	2.76	8.60	4.13	100.00
Livestocks & Poultry	4.09	3.18	70.40	3.64	3.28	1.24	1.58	7.48	5.11	100.00
Other Farmers	1.54	7.00	76.86	2.09	1.70	0.00	1.19	7.56	2.06	100.00
Rice & Corn Workers	63.75	3.93	8.76	1.66	0.69	0.73	2.35	13.32	4.81	100.00
Sugarcane Farm Workers	70.34	2.99	4.24	1.41	1.93	0.25	2.03	14.04	2.78	100.00
Other Crop Farm Workers	54.89	6.29	9.74	1.83	0.61	0.59	5.65	11.99	8.40	100.00
Coconut Farm Workers	62.89	5.64	11.50	3.29	1.34	0.00	2.77	9.79	2.78	100.00
Livestock & Poultry Workers	66.20	5.47	12.02	0.60	0.24	0.00	0.29	6.90	8.28	100.00
Other Crop & Animal Husbandry	62.18	3.47	18.83	1.16	1.42	0.20	0.53	10.22	1.98	100.00
Forestry Workers	20.96	1.96	58.83	5.22	1.15	0.12	1.47	7.26	3.02	100.00
Fishermen	27.39	2.27	52.86	3.63	0.78	0.10	2.84	6.87	3.25	100.00
Other Occupation	77.11	1.83	5.65	2.89	0.75	0.18	0.72	6.47	4.40	100.00

NOTE: Netsh is net share of crops.
Conab is cash receipts from abroad.
Condo is cash receipts from domestic source.
Ifams is income from daily sustenance activities.

Source: NSO Family Income and Expenditure Survey data tape.

(Hayami et al., 1989). For corn and sugar, we have used Bouis and Haddad's (1990) data for Bukidnon. In the latter study, Bouis and Haddad found that, for corn farmers, about 50 percent of farm production income is derived from corn farming. For sugarcane farmers, the share is a bit higher -- 55 percent. For agricultural workers, we have simply assumed that all farm wage incomes are derived from the crop activity which they are mostly engaged with.

The magnitude of the effects of price policies on agriculture depends partly on the responsiveness of farmers to relative price changes. In Philippine agriculture, ample evidence shows that farmers respond well to changing economic environment (Mangahas et al., 1966; Quizon, 1981; Bautista, 1986; Bantilan, 1988). In this paper, we have used two sets of elasticity estimates derived from representative studies on supply response in Philippine agriculture (Table 4). These sets represent the lower and the upper bounds of typical elasticity values reported in the literature.

The results of the exercise are summarized in Tables 5 and 6. All other things being equal, the deregulation in the four major crops has resulted in substantial reduction in average poverty incidence, as indicated by the percentage changes in the P_a poverty indices. Using the "low deregulation" estimates, the average impact of the deregulation for all four crops is a reduction in the headcount of about 8 percent for the low elasticity case and 10 percent for the high elasticity case. The "high deregulation" estimates give a reduction in the headcount of 12 percent and 16 percent for the low elasticity case and high elasticity case, respectively. And since the number of households in the four crops represents nearly two-thirds of the total agricultural households, the impact of the reduction in poverty in the four crops on overall poverty in agriculture is likewise significant (shown in the last row of Tables 5 and 6).

The percentage reduction in poverty incidence is greater the higher is the weight given to the income shortfalls of the poor. For the low deregulation case, the percentage reduction in poverty for all agricultural households is over 50 percent higher for the FGT measure ($\alpha=2$) than that for the headcount index. Clearly, the benefits (costs) of price reforms in terms of the percentage reduction (increase) in the overall measured poverty are dependent on the poverty measure being used, i.e., sensitive to the weights given to the income shortfalls of the poor.

Farm households whose incomes are derived mainly from sugar and rice farming have the largest gains in terms of the percentage reduction in the groups' average poverty. The sugar farmers' (and workers') contribution to the overall poverty in agriculture is, however, small, partly owing to the small share of this group in total farming population. The rice farm households, on the other hand, account for nearly 30 percent of all farm households (see Table 3); the reduction in their poverty contributes about two-thirds of the total poverty reduction for all households engaged in the four major crops. This finding has an important implication for poverty alleviation policy: A policy that targets the numerically large not-so poor group more than it does the small poorest group is not necessarily inconsistent with a development goal centered on reducing overall poverty.

A caveat is in order. Our estimates of poverty reduction for the poor agricultural workers tend to be on the high side. While the demand for their major assets, their labor, expands with the deregulation, the real price of basic commodities which they consume

Table 4
ELASTICITIES AND RATE OF FARMGATE PRICE CHANGES

	Rice		Sugarcane		Coconut		Corn	
	Low	High	Low	High	Low	High	Low	High
Output price elasticity	0.30 a/	0.70 a/	0.20 b/	0.40 b/	0.20 b/	0.40 b/	0.30	0.70
Elasticity of labor demand with respect to output price a/	0.60	1.00	0.60	1.00	0.60	1.00	0.60	1.00
Proportional change in the farmgate price of output c/	0.37	0.64	0.30	0.66	0.21	0.43	0.08	0.11

a/ Based on Bantilan's estimates for Laguna and Central Luzon rice farmers. Assumed to be the same for corn.

b/ Based on Bautista's (1986) estimates for export crops.

c/ Based on Table 2.

Table 5
**PERCENTAGE REDUCTION IN POVERTY INCIDENCE:
 LOW DEREGULATION**

Main Occupation of Household Head	Share of Group in Total Families	Low Elasticity Case			High Elasticity Case		
		Head- count	Poverty gap	FGT (a=2)	Head- count	Poverty gap	FGT (a=2)
Rice Farmers	27.86	9.70	27.61	31.69	25.54	34.91	39.74
Sugarcane Farmers	0.49	16.31	23.51	32.82	16.31	26.96	36.99
Coconut Farmers	9.11	7.08	8.29	9.96	8.26	10.17	12.32
Corn Farmers	15.04	5.78	3.20	2.21	6.22	4.19	3.59
Rice & Corn Workers	5.43	8.60	13.49	19.85	12.25	23.14	31.62
Sugarcane Workers	2.23	9.94	30.10	36.20	24.76	47.30	54.71
Coconut Workers	1.55	5.36	10.49	12.64	7.20	17.07	21.31
All Above Families	61.71	7.85	10.61	12.31	10.21	13.99	16.18
All Agricultural Families	100.00	4.85	6.55	7.60	6.30	8.63	9.99

Table 6
**PERCENTAGE REDUCTION IN POVERTY INCIDENCE:
HIGH DEREGULATION**

Main Occupation of Household Head	Share of Group in Total Families	Low Elasticity Case			High Elasticity Case		
		Head- count	Poverty gap	FGT (a=2)	Head- count	Poverty gap	FGT (a=2)
Rice Farmers	27.86	33.44	43.37	48.89	42.00	52.16	58.04
Sugarcane Farmers	0.49	27.58	46.14	57.57	33.18	50.75	63.11
Coconut Farmers	9.11	12.84	19.46	23.65	13.85	22.85	27.55
Corn Farmers	15.04	6.48	4.40	3.88	6.77	5.74	5.71
Rice & Corn Workers	5.43	8.60	24.03	32.63	21.56	38.76	48.45
Sugarcane Workers	2.23	9.94	30.10	36.20	24.76	47.30	54.71
Coconut Workers	1.55	7.20	20.74	25.84	16.50	32.58	39.76
All Above Families	61.71	12.40	17.04	19.62	16.12	21.39	24.32
All Agricultural Families	100.00	7.65	10.52	12.11	9.95	13.20	15.01

increases (i.e., they are net buyers of the basic agricultural commodities affected by the reform). The necessary and sufficient condition for an agricultural worker to benefit from a small increase in the price of food is that the elasticity of the wage rate to the price of food exceeds the ratio of worker's net food expenditure to labor earnings (Ravallion, 1990).

4. CONCLUDING REMARKS

We have asked: *All other things being equal*, to what extent has the deregulation in agriculture affected rural incomes and, hence, poverty? Our analysis has shown that the benefits of the deregulation, expressed in terms of the reduction in overall measured poverty in agriculture, could have been substantial. This result runs counter to the claim of some quarters (see, e.g., Ofreneo, 1987) that the deregulation has not been beneficial to the agricultural sector, particularly to small farmers. It is, of course, possible that the other factors held constant in the analysis -- but which have nothing to do with the deregulation *per se* -- might have actually changed. If ^{this} ~~these~~ were the case, the observed changes in farm incomes, and hence poverty, might have not moved in the direction shown by the present analysis. The high growth of the labor force, for example, has continued to exert a downward pressure on real wages in rural areas. Related to this has been the continued environmental degradation of lowland as well as upland agricultural areas owing partly to high population pressure and, more importantly, to the slow growth of productive employment opportunities outside of agriculture. The effects of these factors on farm incomes and poverty have to be distinguished from those of the deregulation policy.

The current economic crisis has put pressure on the revival of economic regulation. There are moves, for example, to re-impose price controls on major agricultural products. While these controls and similar government interventions in agriculture (as well as, to be sure, in other sectors of the economy) are relatively easy to impose, removing them later when there are no longer strong justifications for their existence, is often difficult to do. Those who benefit from the *status quo* often erect formidable barriers to policy reform. Policymakers should resist efforts to put back in place a regime that took more than a decade to unmake.

NOTES

1. See, in particular, David (1983), David et al. (1986), Bautista (1987), and Intal and Power (1990). This section draws largely from Balisacan (1989).
2. See, among other studies, the citation in note 1.
3. In the ~~use~~^{case} of sugarcane, we assume a "low deregulation" value of 0.30.
4. See Foster (1984) for a review of the literature on aggregate measures of poverty.
5. For an excellent discussion on this issue, see Hagenars (1986) and Srinivasan (1990).

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