Impact of Agrarian Reform on Poverty

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ABSTRACT

Using panel data from about 1,500 farm households and estimating from a logit model, the study shows that agrarian reform has had a positive impact on farmer beneficiaries. It has led to higher real per capita incomes and reduced poverty incidence between 1990 and 2000. Compared to nonagrarian reform beneficiaries, agrarian reform beneficiaries tend to have higher incomes and lower poverty incidence. Moreover, complementary inputs such as irrigation, credit and government services tend to increase the chances of farmer beneficiaries to be nonpoor.

BACKGROUND AND OBJECTIVES OF THE STUDY

The Comprehensive Agrarian Reform Program (CARP) has as its primary objectives both the improvement of equity and the increase in productivity and growth in the rural areas. These objectives should result in greater economic and political empowerment of the poorer section of the rural populace and increase their social capital. These in return should reduce rural poverty and, through its positive spillover effects, urban poverty. Poverty is generally defined here as an inability to attain a minimum standard of living and certain basic necessities of life, notably food.

After 12 years of implementing CARP, government must now undertake a study which will a) analyze the consistency of CARP

and the antipoverty strategies of the government from the late eighties till the present; and b) document the actual impact of CARP on rural poverty, and whether there are spillover effects on urban poverty.

SCOPE AND CONTENT OF THE STUDY

The study undertook the following:

a) Evaluate the antipoverty strategies and programs of the Aquino, Ramos and Estrada administrations and show if they are consistent with CARP and if there are coordination and links between CARP and the antipoverty programs.

b) Establish, through statistical analyses, whether CARP has made an impact on reducing poverty incidences and depths among targeted beneficiaries, their households and communities.

c) Give policy recommendations on how CARP can become more effective in poverty reduction and how the antipoverty programs can contribute more effectively toward this objective vis-à-vis CARP and its impact.

The study was also intended to establish the differential and total impact of the components of CARP on poverty incidence and depths among targeted beneficiaries, their households and communities. The components of CARP are a) land tenure improvement; b) land distribution, stewardship arrangements, stock options and production and profit sharing schemes; c) provision of support services; d) infrastructure building and improvements. However, the survey data gathered under the project did not get information on the components of CARP. Thus, the present study was not able to look into the impact of the different components of the agrarian reform program.

The panel data used in the study included the beneficiaries of CARP as well as those of earlier agrarian reform programs of the government. Thus, the observed impact on poverty may be attributable not just to CARP but to those programs as well.

METHODOLOGY AND DATA SOURCES

Data Sources

The study used survey data gathered by other groups. These were complemented by data coming from administrative reports and other secondary data. Specific survey data used were 1) those from the household survey of the CARP-Impact Assessment (CARP-IA) project being conducted by Dr. Gordoncillo's team; and 2) the 1990 agricultural household survey conducted by Dr. Gordoncillo and 3) the 1998 Annual Poverty Indicators Survey.

Policy and program pronouncements as contained in official documents (such as the Medium-Term Philippine Development Plans for 1986-1992, 1993-1998, 1999-2004) were the sources of information on poverty alleviation strategies and programs of the government. These provided the basis for evaluating the antipoverty strategies and programs of the Aquino, Ramos and Estrada administrations to see if they were consistent with CARP.

Method of Analysis

Household data from the 1990 and 2000 Gordoncillo surveys were utilized to examine the impact of CARP on the beneficiary households. A sample of about 1000 agrarian reform beneficiaries (ARBs) and 1000 non-ARBs were available from the two surveys. Key economic and sociodemographic characteristics were taken from the two surveys. These included:

Household size
Location
Income, by source (farm vs. nonfarm)
Expenditure, by type

Assets, by type
Educational attainment
Access to potable water
Access to sanitary toilet facilities
Housing structure
CARP status (ARB or non-ARB)
If ARB, type of ARB
Date of installation
Perceived welfare status (self-rated poverty)

To assess the impact of CARP on households, income-based as well as nonincome-based measures of poverty were used to reflect the multidimensional nature of poverty. For instance, income, consumption, ownership of durables, investment and savings, and housing were some of the variables examined.

Cross tabulations were done using the survey data. Comparison of means of the different variables was undertaken to see if the ARBs fared better than the non-ARBs in terms of the various measures of well-being.

Panel data were constructed by pooling the 1990 and 2000 surveys conducted by Dr. Gordoncillo's team. The panel data were used to determine changes in income and poverty status of the households. Linear regression analysis and multinomial logit models were used to determine which factors were significant determinants of household income and poverty status changes. The list of explanatory variables included CARP status, type of ARB and date of installation, size of parcel, and educational attainment of household head (or average years of schooling of household) and other sociodemographic characteristics.

Regression analysis was used to determine whether being an ARB is a significant determinant of income. The dependent variable was income and the independent variables included CARP status, type of ARB and sociodemographic characteristics of the household/household head.

Limited dependent variable models (logit) were also employed to determine how being an ARB affects the probability of being nonpoor. Poverty threshold for 2000 was estimated by updating the official poverty threshold for 1997 using the consumer price index.

1998 Annual Poverty Indicators Survey. In 1998, the Annual Poverty Indicators Survey (APIS) was conducted by the National Statistics Office. This household survey provided data on different measures of poverty as well as sociodemographic characteristics of the households. Since the survey could identify ARBs and non-ARBs, the survey was used to compare the well-being of the two groups in 1998 (when the Asian crisis was still raging and the impact of El Nino was still being felt).

The APIS contained data on the socioeconomic characteristics (such as income, expenditures, minimum basic needs indicators, etc.) of the agrarian reform beneficiaries and non-ARBs. The survey, however, did not provide information on the different components of the comprehensive agrarian reform program.

The following variables were obtained from the APIS data set:
Income
Expenditures
Assets
CARP status (whether ARB or not)
Access to potable water
Access to sanitary toilet facilities
Educational attainment
Household size
Coping mechanisms

While the APIS contained many variables that were also in the Gordoncillo surveys, there was no attempt to link the different surveys. This is because the differences in the survey instruments were likely to lead to incomparable measures of income and expenditure. Nevertheless, the APIS data, by itself, can provide information on how ARBs and non-ARBs fare in times of crisis. This could

indicate whether ARBs are less vulnerable to shocks than non-ARBs and whether their coping mechanisms to declines in incomes are different.

Estimation Models

 Logit models. Binary-choice models assume that individuals are faced with a choice between two alternatives and that the choice depends on identifiable characteristics. The purpose of a qualitative choice model is to determine the probability that an individual with a given set of attributes will belong to one category rather than the alternative category.

 In this case, we want to determine what is the probability that a household will be nonpoor, given a set of socioeconomic characteristics of the household.

 Let us assume there is an underlying response variable y_i^* defined by the regression relationship

$$y_i^* = \beta' x_i + u_i$$

In practice y_i^* is unobservable. What we can observe is a dummy variable y defined by

$$y = 1 \text{ if } y_i^* > 0$$
$$y = 0 \text{ otherwise}$$

In this formulation,

$$\beta' x_i = E(y_i^* / x_i)$$
$$\text{Prob}(y_i = 1) = \text{Prob}(u_i > -\beta' x_i)$$

$$\text{Prob}(y_i = 1) = \text{Prob}(u_i > -\beta' x_i)$$

$$= 1 - F(-\beta' x_i)$$

where F is the cumulative distribution for μ. In the logit model, the cumulative distribution of u_i is the logistic. In this case,

$$F(-\beta'x_i) = \frac{\exp(-\beta'x_i)}{1 + \exp(-\beta'x_i)}$$

$$= \frac{1}{1 + \exp(\beta'x_i)}$$

Hence,

$$1 - F(-\beta'x_x) = \frac{\exp(\beta'x_i)}{1 + \exp(\beta'x_i)}$$

The dependent variable, y, is the poverty status, where 0 indicates being poor and 1 indicates being nonpoor. Poor households are those whose per capita income is below the per capita poverty threshold. The poverty thresholds for 2000 were estimated by updating the 1997 poverty thresholds determined by the National Statistical Coordination Board. The thresholds are available by region and by urban-rural areas. The consumer price index for the region was used to bring the poverty thresholds to 2000 prices.

The explanatory variables to be used in the models include the following:

a) Educational attainment of household head
b) ARB status of household
c) If ARB, number of years that the household has been an ARB
d) Agricultural land size
e) Land type (irrigated vs. nonirrigated)
f) Location (in ARC vs. not in ARC)
g) Household size
h) Whether the household received assistance from government agencies

Multiple regression to determine per capita real income level in 2000. The dependent variable is real per capita income. The same set of explanatory variables used in the logit model is considered in estimating the regression model.

THE COMPREHENSIVE AGRARIAN REFORM PROGRAM (CARP)

Earlier Agrarian Reform Programs

The skewed agrarian structure of the country has long been a major problem, which originated from its 400-year history of colonization. Unequal land distribution and, worse, landlessness, following the establishment of the haciendas and the encomienda system during the Spanish period gave rise to numerous peasant uprisings. This prompted the American colonizers to establish land reform measures in the Philippines for the first time in the 1930s.

The first such effort was undertaken by then Civil Governor William H. Taft who was able to purchase 166,000 hectares of friar landholdings to be distributed to about 60,000 tenants. However, because of the tenants' ignorance of the law and the colonial government's policy of selling the lands at a very high price, the bulk of these estates went to American firms, businessmen and landlords (Adriano 1991).

The "Homesteading Program," also by the American administration, encouraged the migration and settling of Filipinos to unpopulated and uncultivated in an effort to help develop these places. But the program did not succeed since Filipinos preferred to stay in *sitios* and *poblaciones* (Adriano 1991).

The Rice Tenancy Act (Public Act No. 4054) of 1933 provided for a 50-50 sharing arrangement between the tenant and the landowner, a 10 percent interest ceiling on loans by the tenants and the nondismissal of tenants on tenuous grounds. One of the provisions, however, was that the majority of the municipal council members should petition for the implementation of the law in their place (Adriano 1991).

Because of the failure of past land reform measures, the government came up with the controversial Robert Hardie Report of 1952. It contained three recommendations: a) the abolition of the share tenancy; b) the establishment of owner-operated family-sized farms as the basis of the rural economy; and c) the establishment of fair tenancy practices for those who unavoidably continue to work on land as tenants. Unfortunately, the Quirino administration did not adopt these recommendations, preferring instead to continue through the creation of the Land Settlement and Development Corporation (LADESECO) the land resettlement program of the defunct National Land Settlement Administration (NSLA) under the American regime. LADESECO and several pieces of legislation were also employed by the Magsaysay administration in an attempt to solve the agrarian problems of Huk surrenderees. Two of these legislative measures were the Agricultural Tenancy Act (RA 1199) of 1954 and the Land Reform Code of 1955 (RA 1400), which also became ineffective as the landlord-dominated Congress cut down their reinforcement by providing only meager sums for the programs while watering down the provisions by raising retention limits and inserting additional requirements.

There were other efforts toward land reform in the early 60s. One of these was the Land Reform Code of 1963 (RA 384), which paved the way for the creation of the Agricultural Credit Administration (ACA) and the Agricultural Productivity Commission (APC). Both institutions were tasked to provide adequate support services to the land reform program, but due to mismanagement and manifest graft and corruption, these entities failed to accomplish their mandate (Adriano 1991).

Land Reform Under the Marcos Administration[1]

The first major attempt at land reform was the enactment of Presidential Decree No. 27, declared by President Marcos in 1972

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[1] This is based on the assessment in the 1987-1992 Medium-Term Philippine Development Plan.

under martial law. Data on land distribution in 1971 showed that over half (52 percent) of all agricultural lands were controlled by the top 15 percent of landowners. Like the Land Reform Code of 1963, PD 27's main features were the Operation Land Transfer and the Operation Leasehold programs. These programs and their implementation, however, remained limited in many aspects and, like the previous programs, had a number of flaws. These included the following: a) the coverage was severely limited to rice and corn lands; b) the lands covered were those used for farm production by 1972 but not those cultivated from 1973 onwards; c) the seven-hectare retention limit was still considered high compared to other East Asian countries whose programs were successful; d) the program allowed absentee landlords to retain seven hectares while other countries imposed zero retention limit; and e) the burdensome process of obtaining land was a major obstacle to the rapid implementation of PD 27 (Adriano 1991).

The agrarian reform program of the Marcos administration had four major components, i.e., the Leasehold Operation, Operation Land Transfer, Land Consolidation, and Settlements. The strategy was to overcome various constraints in agrarian reform such as administrative, financial, as well as managerial constraints. Still part of the strategy was to carry out the agrarian reform activities in such a way that it could increase the productivity and income of small farmers. The private sector could assist the government in modernizing the agricultural sector to complement the agrarian reform program.

Another equally important policy being imposed then was that agricultural credit must continue to flow to various priority projects of agrarian reform. Credit should also be extended to small farmers to induce them to participate in government programs and to promote social equity. It was also made imperative that the credit delivery system should be improved. The Marcos administration also focused on an intensified modernization program revolving around the formation of compact farms and the development of re-

settlement areas. Compact farming, complemented with land con-
solidation of big landed estates, reportedly brought about better
management and eventually resulted in the formation of coopera-
tive farms. It also allowed wider access to modern farm technol-
ogy and maximized the benefits of economies of scale. The devel-
opment of resettlement areas, on the other hand, had to be done
through total community planning, giving more emphasis to ef-
fective land usage with better market linkages.

The provision of various support services was also a major
concern. These services included the improvement of marketing
system, farm-to-market roads, irrigation and post harvest facilities,
extension, research and institutional development.

By the end of June 1986, the agrarian reform program of the
Marcos administration had the following physical accomplishments:

- *Leasehold operation.* The target date for the completion of
  the leasehold operation by the Marcos administration was
  at the end of 1978. By then, all tenants in rice and corn
  lands would have secured their written leasehold contracts.
  This target, however, was not met until the end of June
  1986, when that the total number of target farmers had
  been almost covered. A total of 538,758 farmers executed
  727,849 lease contracts with their respective landowners
  covering 567,078 hectares of rice and corn lands.
- *Land transfer.* The full documentation of land transfer and
  issuance of Certificates of Land Transfer (CLTs) were tar-
  geted for completion by 1980, which was not met, how-
  ever. As of the end of June 1986, a total of 657,623 CLTs
  had been issued to 440,239 farmer-tenants covering 755,172
  hectares. This translated to an accomplishment rate of 104.3
  percent out of the total CLTs to be issued. The landown-
  ers' compensation, on the other hand, was targeted for
  completion by the end of 1987 as indicated by the 10-
  year plan (i.e., 1978-1987) of the Marcos administration.
  This plan covered 37,100 landowners and 678,000 hect-

ares. However, at the end of June 1986, only 12,391 landowners (or 33 percent of the target) were given compensation claims, covering 262,357 hectares (or 39 percent of the target). Moreover, only around 4,339 landowners, or 35 percent, had been actually paid. As for the issuance of emancipation patents (EPs), 22,187 EPs were distributed to only 13,590 farmers, or around 4 percent of the 373,100 farmers targeted, covering a total of 11,087 hectares, or 1.5 percent of the 719,700-hectare target area.

- *Land consolidation.* The target for land consolidation was 54,000 hectares of rice and corn lands to be accomplished by the end of 1987. By the end of 1986, 154 landed estates developed for land consolidation and with an area of 99,928 hectares were being tilled by 52,983 farmers. However, only 19,709 deeds of sale were given to 12,320 farmers. This figure was used as basis for the issuance of transfer certificates of title (TCTs). The percentage of farmers who actually received deeds of sale against the targeted number stood at 29 percent.
- *Settlements.* The administration had set the end of 1987 as the target date for the resettlement of some 106,020 families and 71,740 pioneer settlers in Mindanao, particularly regions IX and XII. By end of 1986, however, only 58,662 families were resettled in 46 settlements covering an area of 746,000 hectares. Various infrastructure facilities, including 2,667 kilometers of roads, 327 bridges, 3,204 culverts, 2,670 settlers' houses, 468 school buildings, 73 health centers, 116 irrigation dams, 989 irrigation pumps and 127 motor/tractor pools, were also constructed.

The agrarian reform program under the Marcos administration was complemented by various support projects such as the launching of 775 compact farms, seven cooperative farms, and 135 intensive rice farming projects, which had benefited 27,682 farmers tilling an area of 50,894 hectares.

Assessment of the agrarian reform program under the Marcos government indicated that it was limited in both scope and thrust, as it failed to reach the majority of the farmers. Covering only rice and corn areas, the program managed to issue EPs to only 3.2 percent of its target beneficiaries based on the original estimation in 1972. More so, there was inadequate support to the ARBs. Problems in land valuation, landowners' resistance and final surveys caused delays in program implementation.

Land Reform Under the Aquino Administration[2]

The predecessor of CARP was the Accelerated Land Reform Program (ALRP), implemented after the ratification of the Constitution in February 1987. The ALRP, like PD 27, imposed a ceiling of seven hectares for all croplands, and mandated the distribution of large privately owned farms, rice and corn lands, small farms, alienable as well as disposable lands exempting areas such as ancestral tribal lands and those that were used for public service. Other features of the program were tenancy regulation and voluntary land sharing and corporate stock sharing as alternative schemes to land reform.

Recognizing the flaws of ALRP, the Aquino government drafted Executive Order No. 229, which focused on the administrative procedures and not on the substance of an agrarian reform measure. It outlined the mechanics of land registration, private land acquisition and the compensation procedures to landowners. It also specified the composition and functions of the governing entities, which would coordinate and supervise the implementation of the program. Land reform issues like retention limit and priority areas were left for the Congress to define. The Upper and Lower Houses produced their own agrarian bills. These two bills eventually mirrored the contrasting interests of both Houses. While the landlord-dominated Lower House reflected the interests of landowners, the

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[2] This is based on the assessment in the Medium-Term Philippine Development Plan, 1993-1998.

urban-based Senators emphasized the need for a land reform to attain economic development. These disputes and the fact that there was diversity among the landowners themselves when it came to land reform measures paved the way a compromise between the two legislative chambers. It was within this context that the Comprehensive Agrarian Reform Law (CARL) was enacted.

As mentioned earlier, the CARP is so far the most comprehensive agrarian reform program ever formulated. Unlike PD 27, which included only rice and corn lands, CARP covers all private and public agricultural lands regardless of commodity produced and tenurial status of the tiller, including other lands of the public domain suitable for agriculture.

CARP recognizes as beneficiaries of the agrarian reform program not only farmers but all workers in the land, who are landless and willing to cultivate the land. The two agencies tasked with land acquisition and distribution were the Department of Agrarian Reform (DAR) and the Department of Environment and Natural Resources (DENR). The program used variable retention limits: seven hectares for rice and corn lands; five hectares for nonrice and noncorn lands; and three hectares for each of the heirs, 15 years old and above, of the landowner, provided they are actually cultivating or managing the land.

Aside from land acquisition and distribution, which is the very essence of CARP, the program also provided for the delivery of support services such as rural development projects, human resources development activities and infrastructure facilities. It also ensures the tenurial security of farmers and farm workers by giving them options like leasehold arrangement, stock distribution option, and production and profit sharing scheme. It also extended legal assistance to beneficiaries to help resolve agrarian disputes. To effectively channel these support services to the agrarian reform beneficiaries (ARBs), CARP adopted the strategy of creating agrarian reform communities.

CARP, in general was able to attain its land distribution target for the period 1987-1992. During this period, a total of 898,420

landless tenants and farm workers became legitimate recipients of either land titles or free patents and support services.

Land Reform Under the Ramos Administration[3]

The agrarian reform policies of the Ramos administration focused on accelerating the direct land transfer and nonland transfer programs by adopting more rational and simpler operating procedures and a fair, expeditious and inexpensive settlement of agrarian disputes. It stressed the adoption of a fair land valuation formula and prompt payment of just compensation to encourage landowners to support agrarian reform. The administration also encouraged the development of alternative schemes of landowner compensation to motivate them to invest in rural-based industries that have strong linkages with agriculture. It also adopted a progressive agricultural land tax to encourage smaller landholdings among large landowners, and a land conversion tax to discourage land conversion and idle land tax to encourage landowners to cultivate the land. These taxes were also needed to augment the agrarian reform fund (ARF) alongside efforts to tap local and foreign resources. The administration also pursued the amendment of Section 63 of CARL, making the ARF a revolving fund and increasing the fund to P100 billion. It also called for an increase of the composition of the DAR's Adjudication Board's full-time members from three to nine, aside from upgrading their salaries. The budget of DAR therefore had to be increased to cover reorganization costs. The protection of ARBs whose lands were converted to commercial, industrial or residential use by making them shareholders or co-investors of the industrial/commercial venture was also one of CARP's major agenda. Also, the CARP bureaucracy had to be motivated further to produce more concrete results, while its partnership at the provincial level with various government and nongovernment organizations, local government units, farmer-beneficiaries, landowners, legislature, media and the academe had to be enhanced.

[3] This is based on the assessment in the Medium-Term Philippine Development Plan, 1999-2004.

Strengthened coordination among agencies implementing CARP, the legislature, judiciary and LGUs was also pursued. The use of an integrated and area-focused approach in implementing CARP through the ARCs remained a major strategy. Lastly, the Ramos administration emphasized that the various activities of CARP should be attuned to the modernization of agriculture and the promotion of industrialization in the country.

The Ramos administration set a target of 3.4 million hectares of land to be distributed to farmer-beneficiaries. Of this figure it was able to accomplish 2.6 million hectares, or 33.3 percent of the total CARP scope of 7.8 million hectares. It had brought the total accomplishment for land acquisition and distribution at the end of June 1998 to 4.7 million hectares, or 60 percent of the scope.

Land Reform Under the Estrada Administration

The Estrada administration focused on fast-tracking land acquisition and distribution (LAD). It aimed to reduce distortions and uncertainties in land market in the rural areas to help increase farmers' productivity and the private sector investment. Another major step was the intensification of the delivery of support services and social infrastructure to boost the incomes of ARBs. It also prioritized the improvement and protection of the tenure status of stakeholders and the promotion of agri-industrialization in CARP areas through joint ventures, corporatives, contract farming and other types of production and marketing arrangements. It also aimed for the completion of land parcel mappings covered by collective Certificate of Land Ownership Awards (CLOAs). The Estrada administration also focused on the strengthening of the databases of the implementing agencies, (i.e., DAR and DENR) on the location of lands to cover and on the potential beneficiaries of CARP. It also promoted the use of market-based instruments in land distribution such as progressive agricultural land tax and direct land transfer. Lastly, the Estrada administration worked to accelerate the resolutions of agrarian-related cases.

The Estrada administration committed to complete the distribution of the CARP scope of 7.8 million hectares by 2004. From July 1998 to September 2000, the total number of beneficiaries of CARP under the Estrada administration was estimated at 182,762.

THE COMPREHENSIVE AGRARIAN REFORM LAW: LEGAL BASIS OF CARP

The Comprehensive Agrarian Reform Program was a response to the people's clamor for a more effective land reform program that would correct the many flaws in the previous land reform programs.

Republic Act 6657, signed into law on June 10, 1988 by President Corazon Aquino, otherwise known as the Comprehensive Agrarian Reform Law of 1988, is a legislative act instituting a Comprehensive Agrarian Reform Program to promote social justice and industrialization by providing the mechanism for its implementation and for other purposes.

The law's salient features are the following:

a) It provides for the coverage of all agricultural lands regardless of crops produced or tenurial status of the tiller;

b) It recognizes as beneficiaries of the program all workers in the land, provided that they are landless and willing to till the land;

c) It provides for the delivery of support services to program beneficiaries;

d) It provides for arrangements that ensure the tenurial security of farmers and farmworkers such as the leasehold arrangement, stock distribution option and production and profit sharing; and

e) It creates an adjudication body that will resolve agrarian disputes.

Scope

Regardless of tenurial arrangement and crop produced, the CARL of 1988 covers all public and private agricultural lands as

provided in Proclamation No. 131 and Executive Order No. 229, including other lands of the public domain suitable for agriculture. Originally, the total area of this coverage was calculated to be 10.3 million hectares. The latest CARP Scope Validation (CSV) however, has pegged the total program area at 8,169,545 hectares. Of this total area, 54 percent (4.4 million hectares) falls under the responsibility of DAR while the remaining 46 percent (3.8 million hectares) comprises the DENR's jurisdiction.

The law designated that land acquisition and distribution are to be done in a period of ten (10) years following the effectivity of the law. Phase one covers rice and corn lands under PD 27; all idle or abandoned lands; all privately owned lands voluntarily offered by the landowners for land reform; all lands foreclosed by government financial institutions; all lands acquired by the Presidential Commission on Good Government (PCGG); and all other lands owned by the government devoted to or suitable for agriculture (RA 6657). Phase two covers all alienable and disposable public agricultural lands; all arable public agricultural under agro-forest, pasture and agricultural leases that are cultivated and planted to crops in accordance with Section 6, Article XIII of the Constitution; all public agricultural lands which are to be opened for new development and resettlement; and all private agricultural lands in excess of 50 hectares. Phase three includes private agricultural landholdings above 24 hectares up to 50 hectares; and landholdings from the retention limit up to 24 hectares.

Lands that are exempted from CARP are those with a slope of more than 18 percent; reserved lands such as forest reserves, watersheds, national parks, fish sanctuaries, church and mosque sites, and cemeteries; and lands that are used for national defense, education and experimental farms. The law also states that ancestral lands inhabited and used in a culturally appropriate way by indigenous cultural communities will be protected and therefore would not be distributed.

Retention Limit

Similar to PD 27, the CARL's retention limit for rice and corn lands is seven hectares; and for nonrice and noncorn lands retention limit is five hectares while the heirs of the landowner who are 15 years old and above can retain three hectares each given they are actually tilling or managing the land. The original homestead owners and their heirs are allowed to keep and cultivate their homestead lands of up to 24 hectares while agrarian reform beneficiaries (ARBs) can own and till as much as three hectares.

Beneficiaries

RA 6657 includes all agricultural lessees and share tenants regardless of crops grown as well as regular, seasonal and other farm workers, and farmers' organizations or cooperatives. Other potential beneficiaries are agricultural graduates, rural women, veterans and relatives of enlisted men and women, retirees of the AFP and the Integrated National Police, and rebel returnees and surrenderees.

COMPONENTS OF CARP

Land Tenure Improvement

CARL aims to promote social equity and justice by restructuring landownership patterns. Through land distribution, the government ensures that the tiller has power over his tillage, his own productivity and economic viability.

Land distribution. Land acquisition and distribution are the main essence of the CARP. Tasked to undertake these responsibilities are at least four government agencies mandated to participate in the land acquisition and distribution process. These are DAR, DENR, Land Bank of the Philippines (LBP) and the Land Registration Authority. DAR is involved in land distribution of private and government-owned lands and settlement areas. DENR is responsible for land survey and approval of survey plans; land distribution of public lands; and the distribution of stewardship contracts

in forestry areas. However, starting from 1993, DAR assumed the task of land survey except for the survey of public alienable and disposable lands and integrated social forestry areas. LBP, on the other hand, is responsible for land valuation and landowners' compensation while the Land Registration Authority is for land titling and registration.

Under RA 6657, land acquisition and distribution shall be accomplished within a period of 10 years, commencing on June 10, 1988 and ending on June 10, 1998. By June 1998, however, DAR performance reports showed that only 56 percent of its target of 2.7 million beneficiaries had been accomplished. This figure went up slightly to 63 percent by September 2000. DENR, on the other hand, had an accomplishment of 77 percent, or 1,273,845 farmer beneficiaries, out of the 1.7 million target beneficiaries as of July 1998 (Table 1). Because of these shortfalls in land distribution, the program's implementation was extended for completion in 2004.

Table 1. Accomplishments in land distribution: number of beneficiaries (as of 1998)

AGENCY	TARGET	ACCOMPLISHMENT	PERCENT ACCOMPLISHED
DAR	2,696,817	1,568,676	58.17
DENR	1,512,189	1,197,275	79.17

Source: DAR, Policy and Strategic Research Service.

Leasehold operation. Leasehold Operation is a nonland transfer program that protects the tenurial status of tenant farmers in tenanted lands. This is implemented when the tenant is working within the landowner's retention limit of five hectares and the CARP-covered lands that are not yet due for distribution. Under this program, the tenants are entitled to 75 percent of the net harvest after the deduction of production expenses. By September 2000, the leasehold operations have benefited a total of 1,060,144 ARBs nationwide. From January to September of 2000, 5,742 farmers benefited from the scheme.

Production and profit sharing. This is a temporary arrangement whereby corporate farms (operating under a lease or management contract with more than P5 million gross sales per annum) are to execute production and profit sharing plans with their farm workers. These include corporate agricultural landowners who availed themselves of deferment, as provided for under Section II of RA 6657.

Stock distribution option. Under this scheme, qualified beneficiaries are given the right to purchase from the landowning corporation capital stocks that are equivalent to the value of the land devoted by the company to agricultural activities. They are also entitled to dividends, other financial benefits and representation in either the company's board of directors, management or executive committee. As of December 2000, 14 stock distribution proposals covering an area of 8,388 hectares were approved by PARC while 20 applications are still under process.

Commercial farms deferment. Under this arrangement, several agricultural lands are listed for future acquisition and distribution. In this way, corporate landowners of newly established commercial plantations are given enough time to recover their investments. After the deferment period, these lands shall be subjected to immediate acquisition and distribution.

The beneficiaries under the different components of CARP totaled 4,079,334 as of 2000 (Table 2).

Program Beneficiaries Development

Land distribution alone is not enough to improve the productivity of ARBs. Hence the government recognizes the need for support services to complement land distribution such as credit facilities, technology and infrastructure.

Agrarian reform communities development. The DAR created the ARCs, or clusters of barangays, as convergence areas of development efforts by all government agencies, NGOs and other people's organizations. It is through these clusters that support

Table 2. Beneficiaries of the Agrarian Reform Program

Program	Number of Beneficiaries
Land Transfer of DAR	1,697,566 [1]
Land Transfer of DENR	1,273,845 [2]
Leasehold Operations	1,098,948 [3]
Stock Option	8,975 [4]
TOTAL	**4,079,334**

Notes:
[1] 1972 - September 2000.
  Source: DAR, Policy and Strategic Research Service (MIS and FOSSO-IMR Reports).
[2] This excludes 163,686 FBs prior to CARP in Integrated Social Forest areas.
  Period covered: July 1987- June 2000.
  Source: DAR, Policy and Strategic Research Service.
[3] As of September 2000.
  Source: BLAD Accomplishment Report.
[4] As of December 2000.

Source: Task Force on PPS,SDO, and CFD.

services are channeled to the farmer beneficiaries so they can productively perform their role in community development process. Farmers are organized into teams where they undergo various organizational capability building and strengthening activities, and training on ARB development. In this way, the DAR builds the capacity of ARCs to assume the responsibility for their own development. Moreover, to increase the income of farmer-beneficiaries in the ARCs, the DAR establishes links between farmers' organizations and agri-business enterprises to facilitate access to market opportunities, production inputs, technology and credit facilities.

The situationer report on ARCs showed that as of March 2000, there were 1,060 ARCs established nationwide. Comprising these ARCs are a total number of 2,596 organizations, with members totaling 223,273, who are being assisted by DAR. As of March 2000, the average number of organization per ARC stood at two.

On ARB empowering, a report for the first quarter of 2000 showed that 7 percent of the ARB population located in ARCs nationwide were trained on the different components of ARC development.

Infrastructure facilities. One vital way of improving the income of ARBs is by building physical and economic infrastructure such as farm-to-market roads, irrigation systems, bridges and postharvest facilities. As of the end of 1999, the number of DAR-initiated infrastructure projects being managed by the ARCs and local government units include 948 farm-to-market roads, 7,286 postharvest facilities, 571 irrigation systems and 346 bridges.

Credit facilities. To finance various agricultural and livelihood projects in the ARCs, the DAR put up its lending windows. These are the: a) DAR-Quedan and Rural Credit Guarantee Corporation (DAR-QUEDANCOR) CARP barangay marketing centers (for the construction, expansion and acquisition of on-farm warehouses with solar dryers, rice mill and other ancillary equipment and for marketing of grains); b) the DAR-LBP Countryside Marketing Partnership Program (for production credit and affordable ownership of pre- and postharvest facilities); c) DAR-KMI Peasant Development Fund (for agroindustrial development); d) Credit Assistance Program for Program Beneficiaries Development (CAP-PBD) (for agricultural production inputs, pre- and post-harvest facilities); e) DAR-ERAP Trust Fund (formerly the National Livelihood Support Fund) (for livelihood micro-projects); and f) DAR-Technology and Livelihood Resource Center (for viable nonrice livelihood projects like processing, manufacturing, crop production).

DAR reports show that as of the first quarter of 2000 DAR-LBP Countryside Partnership Program had extended loans worth P 309.222 million to 13,760 ARBs. The CAP-PBD, on the other hand, had funded 158 projects with a total loan value of P102.20 million benefited about 5,400 ARBs. The DAR-ERAP Trust Fund, since its implementation in 1997 had funded 64 projects worth P450 million, benefiting 28,500 ARBs.

Information campaign. DAR also disseminates information about CARP to the public to reach out to a greater number of program clientele, support groups and other sectors of society. This is done through different symposiums, briefings, distribution of

printed materials, maintenance of bulletin boards and the use of trimedia outlets.

Networking and linkages. To strengthen the implementation of CARP, various consultations and dialogues with peoples' organizations, NGOs and other concerned sectors are conducted. This is to foster tripartism, resolve different operational and policy-related problems and other issues, and speed up their resolution. In 1999 alone, the number of consultations totaled 5,095, involving 78,481 people's organizations and NGO members.

Resource mobilization. The national government's budget for CARP is limited. To finance the complex process of support service delivery, DAR has tapped foreign resources to raise additional funds necessary for the complex process of support service delivery. Projects funded by these agencies include the construction of infrastructure facilities, institutional building and cooperative development; credit delivery; agriculture and enterprise development; farm systems development; and the conduct of policy studies. The DAR's foreign partners include: the Governments of Japan, Sweden, Italy, Netherlands, Belgium, Canada, The Federal Republic of Germany, the European Union, and other foreign institutions such as the World Bank, United Nations Development Program, International Fund for Agricultural Development, among others. From 1992 to March 2000, DAR has mobilized P25.33 billion, which supports 30 development projects in ARCs.

Agrarian Justice Delivery

Agrarian legal assistance. Extending legal assistance during court hearings is a major support provided by the CARP to its farmer beneficiaries. DAR lawyers handle three types of cases: judicial, quasi-judicial and nonjudicial cases. Judicial cases may be civil or criminal in nature and are filed in the regular courts. Quasi-judicial, on the other hand, includes ejectment, reinstatement and termination of leasehold agreements, which fall within the jurisdiction of the DAR Adjudication Board (DARAB) and its adjudicators while nonjudicial cases are those arising from agrarian law

implementation and related implementing rules and regulations and personnel discipline cases. DAR reports show that as of the first quarter of 2000, 1,500 judicial and 4,680 quasi-judicial cases were pending nationwide.

Adjudication of cases. Through the DARAB, the Department is vested with quasi-judicial powers to determine and adjudicate disputes, cases, controversies and matters involving the implementation of RA 6657 and other related issuances.

PREVIOUS ASSESSMENTS OF THE COMPREHENSIVE AGRARIAN REFORM PROGRAM

Assessment of RA 6657

In a study made by Adriano (1991) entitled "A General Assessment of the Comprehensive Agrarian Reform Program," she noted that there were several loopholes in the legal basis of CARP that may worsen the already inequitable agrarian structure in the country. One of these is the limited area coverage of the law, which excludes a long list of land types that constitutes the nonreform sector. Such exclusion allows big landowners to devise different evasionary mechanisms to be excluded from the reform area. These landlords, for instance, convert their landholdings into "nonprofit" ventures since the law exempts areas used for nonprofit activities. Another flaw is that CARL endorses variable retention limit. This, however, is less efficient when it is compared to a single retention limit, which is substantially easier and less costly to implement. With a single retention limit, evasionary mechanisms may be reduced. Moreover, Adriano mentioned that the smaller the ceiling, the better since there would be more beneficiaries and a more even distribution of support services.

RA 6657 also stipulated provisions exempting agribusiness plantations from land reform with the belief that there is economies-of-scale in farm production. This may not be true because certain types of farms such as plantations are inefficient users of both scarce and abundant resources. The law also seems to promote

the co-existence of two extreme modes of production (i.e., small farms producing food and other cash crops; and large-sized farms devoted to the production of export crops). This bi-modal agrarian structure is also an inefficient arrangement for a country with a highly inelastic land supply. This is because large-sized farms tend to exploit the scarce land resource extensively and employ more scarce capital resource intensively while small farms, in contrast, use land more intensively employing more abundant labor resource (Adriano 1991).

As the law favors owner-operator type and direct administration contracts, tenancy regulation prohibiting share tenancy was imposed. Studies show that sharecropping arrangements help in the reduction of enforcement and transaction costs brought about by market imperfections. Thus, regulating such arrangements will prevent the majority of the landless farm workers from improving their income/status (Adriano 1991).

Geron (1994), in her study on the impact of CARP on the crop sector, noted that the law's article on nontransferability of ownership for a period of 10 years and nonenforceability (confiscation of land in case of defaults on land amortization) may prevent the access of ARBs to formal financial credit. The implementation of CARP resulted in the access of ARBs to institutional credit but this is because the LBP's mandate was to provide the ARB's credit needs with funds from the ARF. Geron's study showed that although the program has caused the displacement of abusive informal lenders because of the LBP's low rates, it still was not able to integrate the beneficiaries into the formal financial system since none of the study's respondents were able to borrow from other institutional sources other than LBP.

The cumbersome land valuation is another factor affecting the easy and quick implementation of the program. It is also vulnerable to landowners' evasionary tactics and causes aggravation of the government rent-seeking activities (Adriano 1991).

Lastly, Adriano (1991) noted that the CARL favors only a small portion of the landowning class. These are the corporate and

commercial farm owners and the rural middle class. CARL also tends to benefit renter-landowners so long as they convert their tenant-based arrangements to either owner-cultivatorship or direct administration arrangements, or change the land use type from agricultural to nonagricultural. While the law is intended to benefit agricultural lessees and share tenants, their chances of getting a larger share of the reformed area will depend on their ability to organize their sector and fight for their welfare. She also emphasized that the main losers of the CARL are the landless rural farm workers who have neither farms to rent nor permanent employment in plantations.

Assessment of the Implementation of CARP

Adriano, in her study entitled "DAR, Land Reform-Related Agencies and the CARP: Government and Alternative Approaches to Land Acquisition and Distribution," enumerated the factors contributing to the poor performance of CARP in land distribution: a) the slow pace in land survey process; b) backlogs in land registration; c) lack of support from landowners largely because of the slow processing of and low payment for their land; and d) cumbersome land acquisition and distribution process for each land type. Some features of the LAD also discourage rent-seeking activities, namely, a) numerous documents required in various phases; b) the difficulty in the coordination of land-reform-related activities by various agencies; and c) the multilayered countercheck systems. These features, however, affected the speedy enforcement of land reform, resulting in a decentralization of the decisionmaking process. She mentioned further that DAR's sluggish performance in land acquisition and distribution was a consequence more of the slow development in the land acquisition process than of the distribution component. One factor causing slow acquisition is limited funds. To address this, LAD and not non-LAD activities should be given priority in budgeting while personnel must be streamlined and realigned to bring down personnel costs.

Another way of evaluating the performance of CARP in up-lifting the quality of life of its beneficiaries is by looking at its effect on their income and productivity. A paper by Bravo et al. (2000) on the current state of ARBs found out that the average household income of the ARB households were low and generally just enough to meet the minimum basic needs of the household members. It also showed that more than half of their income already came from nonfarm sources. Poverty incidence remains high at 63 per-cent, which is even higher than the national rural poverty inci-dence. She further noted that the farms of the ARBs were rela-tively small (less than two hectares) and mostly rainfed in lowland and upland areas and that most of the farms operated with lim-ited areas of mechanization and meager amounts spent on mate-rial inputs for farm operations. This should help explain why agri-cultural income remained very low (Bravo et al. 2000).

A study done by Geron (1994) on the effect of CARP on the productivity of coconut and sugar lands in the Negros area indi-cated that the mere transfer of land ownership and its operation in smaller parcels without the corresponding adoption of appropriate production technology had no impact on productivity. Her study also stressed the importance of sustainable credit delivery for CARP's beneficiaries. Since the ARF is limited, allowing LBP to provide credit to ARBs at lower rates, the program may not be able to sustain CARP in the future.

IMPACT OF AGRARIAN REFORM ON POVERTY

Assessing the impact of agrarian reform on poverty re-quires the use of income-based measures of poverty, specifically poverty incidence, poverty gap index, real per capita income. In addition, nonincome-based measures must also examined. Changes between 1990 and 2000 in these indicators are used to determine improvements or deterioration over time. Further-more, differences in the indicators between ARBs and non-ARBs are examined to determine whether ARBs are better off or worse off than non-ARBs.

Findings from the CARP-IA Survey

Description of the sample. There were 1,854 households in the panel data. Respondents came from all regions except the Autonomous Region of Muslim Mindanao (ARMM). Forty percent of the respondents were from the Luzon area, another 40 percent from the Visayas area and 20 percent from the Mindanao area. Most of the respondents came from the Western Visayas Region—15 percent, and Cagayan Valley—14.3 percent. Eastern Visayas and Southern Tagalog were each represented by 10 percent of the total sample respondents. Central Mindanao and CAR are the least represented regions in the sample, with only 1.8 percent of the respondents coming from each region.

Description of ARBs

Location. The variable v12 corresponding to ARB status in the 2000 "Comprehensive Agrarian Reform Program Impact Assessment" survey was used to determine who among the respondents were agrarian reform beneficiaries. Only 1,834 households in the survey were examined for their ARB status. Twenty respondents were excluded from the sample due to data encoding error of variable v12.

A total of 853 ARB households made up the 1,834 sample households, representing about 47 percent of the total households surveyed. In terms of the proportion of ARB households to the number of sample households in the region, Central Luzon was found to have the largest proportion of ARB households while CAR and Central Visayas (23.5 percent) had the least. Of the 853 ARB households surveyed, 22 percent were from Cagayan Valley and 12 percent each are from Central Luzon and Western Visayas. The least number of ARBs were found in CARAGA (2.1 percent), Northern Mindanao (1.5 percent), Central Mindanao (1.2 percent) and CAR (0.9 percent) (Table 3).

Household size. For both ARBs and non-ARBs, the average household size was five, including the head of the family, his spouse, children and other members within the household.

Table 3. Distribution of ARB and non-ARB households by geographical location

Region	Distribution			Proportion	
	Total	NARB	ARB	NARB	ARB
Philippines	**100.0**	**100.0**	**100.0**	**53.5**	**46.5**
CAR	1.9	2.7	0.9	76.5	23.5
Ilocos	5.5	4.8	6.3	46.5	53.5
Cagayan Valley	14.4	8.3	21.5	30.7	69.3
Central Luzon	7.6	3.5	12.3	24.5	75.5
Southern Tagalog	10.7	12.7	8.4	63.5	36.5
Bicol	8.1	7.0	9.3	46.6	53.4
Western Visayas	14.8	17.0	12.3	61.4	38.6
Central Visayas	5.6	8.0	2.8	76.5	23.5
Eastern Visayas	11.6	14.6	8.1	67.5	32.5
Western Mindanao	5.8	6.6	4.9	60.7	39.3
Northern Mindanao	1.9	2.2	1.5	62.9	37.1
Southern Mindanao	8.1	8.0	8.3	52.3	47.7
Central Mindanao	1.9	2.4	1.2	70.6	29.4
CARAGA	2.2	2.2	2.1	55.0	45.0

Landholding size. On the average, households owned about 3.7 hectares of land. ARBs own larger lands than non-ARBs with an average landholding of 4.45 hectares against only 2.86 hectares for non-ARBs (Table 4).

Fifty two percent of the ARBs owned 2 hectares or less. About one-fourth of the ARBs had less than 1 hectare, while another one-fourth owned more than 1 hectare but less than 2 hectares. On the other hand, 78 percent of the non-ARBs possessed less than 2 hectares. More than half of non-ARBs owned less than 1 hectare.

Number of years as ARB. The average number of years that ARB households have benefited from agrarian reform is 17.

Table 5 shows the number of years that the households had been installed as ARBs for those households who responded to this question. In 2000, 13.5 percent of the ARBs had been beneficiaries for at most five years, while 17.3 percent have been ARBs

Table 4. Size of landholding (in hectares)

Total	1834	100.0
Less than 1	836	45.6
1 to less than 2	374	20.4
2 to less than 3	238	13.0
3 to less than 5	231	12.6
5 to less than 7	77	4.2
7 to 10	34	1.9
More than 10	44	2.4
NARB	**981**	**100.0**
Less than 1	617	62.9
1 to less than 2	146	14.9
2 to less than 3	77	7.8
3 to less than 5	73	7.4
5 to less than 7	30	3.1
7 to 10	22	2.2
More than 10	16	1.6
ARB	**853**	**100.0**
Less than 1	219	25.7
1 to less than 2	228	26.7
2 to less than 3	161	18.9
3 to less than 5	158	18.5
5 to less than 7	47	5.5
7 to 10	12	1.4
More than 10	28	3.3

for six to 10 years. About 23 percent have been ARBs for 11-15 years while 46.5 percent had benefited from earlier land reforms and had been ARBs for more than 15 years.

Average income by source. The average income of ARBs was 23 percent higher than the average income of non-ARBs. The average household income for the year 1990 were P49,594 for ARBs and P39,142 for non-ARBs. Average household incomes for the year 2000 were P98,653 for ARBs and P76,156 for non-ARBs (Table 6a).

A large part of total income was sourced from farming. However, the share of farm income declined from 1990 to 2000. Still, more

Table 5. Length of years households benefited from the
Agrarian Reform Program

Length in Years	Number	Percent Distribution
ARB Households	**695**	**100.0**
At most 5	94	13.5
6 - 10	120	17.3
11 - 15	158	22.7
16 - 20	92	13.2
21 - 25	82	11.8
26 - 30	106	15.3
31 - 35	14	2.0
More than 35	29	4.2

than half of total income of ARBs comes from farming. In contrast, more than half of total income of non-ARBs came from nonfarm sources.

In 1990, almost 71 percent of the total income of all farmers was sourced from farming. The average farm income of all farmers was P32,008 (Table 6b). The average farm income of the ARBs was P36,246, which was 72.1 percent of their total income. On the other hand, the average farm income of non-ARBs was P28,213, which was almost 69 percent of their total income.

In 2000, the average farm income of ARB households was P67,761. More than half (61.5 percent) of their total income was sourced from the farm. In comparison, the average farm income of non-ARBs is P46,508, which was 45 percent of their total income.

The average farm income of ARB households has risen by 87 percent from 1990 to 2000. In contrast, the average farm income of non-ARBs increased by 65 percent during the same period.

In 1990, the average off-farm income for ARBs was P7,555, relatively higher than the average non-ARB income of P6,442. For both ARBs and non-ARBs, the share of off-farm income was minimal. This was true as well for the average off-farm income for

Table 6a. Average income of households by source in 2000

Source of Income	Average Income	Share (percent)
Total	**86,608**	**100.0**
NARB	76,156	100.0
ARB	98,653	100.0
Farm	**57,407**	**53.8**
NARB	46,508	45.1
ARB	67,761	61.5
Off Farm	**6,591**	**2.0**
NARB	6,370	2.4
ARB	6,878	1.7
Non -Farm	**50,324**	**44.2**
NARB	51,057	52.7
ARB	49,419	36.7

Table 6b. Average income of households by source in 1990

Source of Income	Average Income	Share (percent)
Total	**43,997**	**100.0**
NARB	39,142	100.0
ARB	49,594	100.0
Farm	**32,008**	**70.6**
NARB	28,213	68.9
ARB	36,246	72.1
Off Farm	**6,898**	**3.9**
NARB	6,442	4.5
ARB	7,555	3.4
Non -Farm	**25,181**	**25.5**
NARB	22,348	26.6
ARB	28,780	24.5

ARBs and non-ARBs in 2000 (1.7 percent and 2.4 percent, respectively). The average off-farm income for ARBs was P6,878, slightly higher than the average non-ARB income of P6,370.

In 1990, the average nonfarm income of ARB households was P28,780 while the average non-ARB income was P22,348.

Nonfarm incomes of ARB and non-ARB households were 24.5 percent and 26.6 percent of their respective total incomes.

In 2000, the average nonfarm income of ARB households was P49,419, almost double the corresponding figure in 1990, while the average non-ARB nonfarm income was P51,057, more than the twice the 1990 figure. The share of nonfarm income of 52.7 percent to total for non-ARBs was higher than the nonfarm income share of 36.7 percent to total income for ARBs.

In addition, the major sources of income among ARBs and non-ARBS in 1990 came from their farms. In 2000, the major source of income of ARBs was from their farms while non-ARBs got their income mainly from nonfarm sources.

The incidence of households being agrarian reform beneficiaries was positively linearly related to their income (point-biserial correlation coefficient = 0.08 with p-value = 0.0004). This indicates that agrarian reform beneficiaries were more likely to have higher annual incomes than non-ARBs.

The average nominal income of households among ARB households in 1990 was P43,594, higher than the average income of P39,142 among non-ARBs (Table 7). The average nominal incomes of both ARB and non-ARB households were much higher in 2000. The average income of ARB households was P98,653 while that of non-ARB households was P76,156, lower than the average income of ARBs.

Table 8 shows that the average real income of ARB households based on 1994 prices was P73,488 in 1990 while that of non-ARBs was lower at P57,802. In 2000, the average real income of ARB households decreased to P64,626. The average real income of non-ARB households decreased as well to P50,258.

The average real per capita income based in 1994 prices of ARB households was P12,905 in 1990 (Table 9). The average real per capita income of non-ARB households was lower at P12,254. In 2000, both the average real per capita incomes of ARB and non-ARB households were lower than in 1990. The average real per

Table 7. Average income of households in current prices

Status	1990	2000
Total	43,997	86,608
NARB	39,142	76,156
ARB	49,594	98,653

Table 8. Average real income in 1994 prices

Status	1990	2000
Total	65,093	56,938
NARB	57,802	50,258
ARB	73,488	64,626

capita income of non-ARBs was P11,312 while that of ARBs was P14,485.

Average expenditure by commodity group. The average total expenditure of households was larger for ARBs by 8.5 percent than for non-ARBs (Table 10). Compared to non-ARBs, ARBs spent more on food, health and clothing, but less on education. More than 60 percent of total expenditure was spent on food, with ARBs allocating a slightly greater proportion than non-ARBs.

The average total expenditure of households in 1990 was P24,471 (in current prices). It went up to P56,805 in 2000. The ARBs had an annual expenditure of P26,507 in 1990, slightly higher than the P22,700 average household expenditures among non-

Table 9. Average real per capita income in 1994 prices

Status	1990	2000
Total	12,562	12,786
NARB	12,254	,312
ARB	12,905	14,485

ARBs. The total expenditure of ARBs in 2000 was P59,290, more than double their total expenditures in 1990. For non-ARBs, the average household expenditure in 2000 was slightly lower at P54,645.

In 1990, families spent an average of P12,864 for their food alone. This was more than half (52.6 percent) their total expendi-

Table 10. Average expenditure by commodity group in 2000

Commodity Group	Average Expenditure	Share (percent)
Total	**56,805**	**100.0**
NARB	4,645	100.0
ARB	59,290	100.0
Food	**35,874**	**63.2**
NARB	34,282	62.7
ARB	37,704	63.6
Education	**6,685**	**11.8**
NARB	6,739	12.3
ARB	6,623	11.2
Clothing	**2,428**	**4.3**
NARB	2,365	4.3
ARB	2,501	4.2
Health	**4,370**	**7.7**
NARB	3,811	7.0
ARB	5,014	8.5

tures. A small portion of their total expenditures were allotted for their children's education, which was 11.2 percent while only 6.8 percent and 4.6 percent were spent for their clothing and health care, respectively. Comparatively, the families spent almost P 36,000 on the average for food alone in year 2000. This was 63.2 percent of the household total expenditures while only 11.8 percent of their total expenditures were allotted for their children's education and 7.7 percent for health care. Expenditure on clothing was minimal at 4.3 percent.

Of the total expenditure of the ARB families in 1990, 52.1 percent was spent for food, or P13,798, while 53.1 percent was spent by the non-ARB families on food, or P12,052. On the other hand, households who benefited from the agrarian reform had an average expenditure of P37,704 for food in 2000, or 63.6 percent of their total expenditures, while nonagrarian reform beneficiaries spent P34,282 for food, or 62.7 percent of their total expenditures.

A small portion of the ARB and non-ARB families' total expenditures in 1990 is allotted to their children's education. ARB families spent an average of P3,103 which is only 11.7 percent of their total expenditures while non-ARB families spent only 10.6 percent of their total expenditures that is, P2,403. In year 2000, ARBs allotted only 11.2 percent (P6,623) while non-ARBs allotted 12.3 percent, slightly higher than ARBs.

In 1990, a small portion of the total expenditures of ARBs was allotted for their clothing and health care, making up 4.2 percent and 8.5 percent, respectively, of their total expenditures, while non-ARBs allotted only 4.3 percent and 7 percent of their expenditures for clothing and health care.

In 2000, 11.2 percent of ARBs total expenditures were spent for their children's education, 8.5 percent for health, and 4.2 percent for clothing. Non-ARBs spent 12.3 percent on education, 7 percent on health and 4.3 percent on clothing.

The 1990 expenditure of households was positively associated with the ARB or non-ARB status of households with a correlation coefficient of 0.08. Though relatively small, the association was significant for its probability of 0.0008 at a 5 percent level of significance. In 2000, expenditure of households was positively associated with the status of households being ARBs or non-ARBs with correlation coefficient of 0.05 and significance probability of 0.03 that is significant at the 5 percent level of significance. This implies that ARBs tend to have higher household expenditures than non-ARBs.

Poverty profile of ARB households. To determine the proportion of poor households, the study obtained the regional rural

income thresholds for the year 2000 using 2000 regional inflation rates to project the 1997 official rural income threshold estimates from NSCB (Table 11). Poor households are defined to be households whose annual per capita income falls below the required annual per capita income to meet the minimum basic food and nonfood requirements.

Based on this criterion, there were 930 poor households in the sample for 2000. This is about 51 percent of the 1,820 households considered for analysis. Of the total poor households, 41 percent were agrarian reform beneficiaries. The incidence of poverty among ARBs was lower compared to non-ARBs. About 45.1 percent of the ARBs were poor while the proportion of non-ARBs who were poor was higher at 56.3 percent (Table 12).

Furthermore, the incidence of poverty was prevalent in Northern Mindanao, where 82 percent of all households covered were found to be poor. Poverty incidence was relatively high in Western Mindanao. Among the households in Northern Mindanao, almost 73 percent were poor. On the other hand, Central Luzon had the

Table 11. Poverty thresholds, 1990 and 2000

REGION	1990	2000
CAR	7,308	14,789
Region 1	7,012	14,167
Region 2	5,963	11,616
Region 3	7,172	12,763
Region 4	7,000	14,417
Region 5	5,361	12,561
Region 6	5,461	12,665
Region 7	4,502	10,510
Region 8	4,652	10,068
Region 9	5,454	11,256
Region 10	5,680	12,217
Region 11	5,905	11,648
Region 12	6,314	12,393
ARMM	.	13,978

Table 12. Poverty incidence by location

Region	Total				NARB				ARB			
	Poor		Non-poor		Poor		Non-poor		Poor		Non-poor	
	Dist	Prop	Dist	Prop	Dist	Prop	Dist	Prop	Dist	Prop	Dist	Prop
	100.0	51.1	100.0	48.9	100.0	56.3	100.0	43.7	100.0	45.1	100.0	54.9
CAR	1.5	42.4	2.1	57.6	1.6	36.0	3.8	64.0	1.3	62.5	0.6	37.5
Ilocos	6.7	61.4	4.4	38.6	5.5	63.8	4.0	36.2	8.4	59.3	4.7	40.7
Cagayan Valley	10.1	36.2	18.7	63.8	5.5	37.0	12.0	63.0	16.8	35.8	24.8	64.2
Central Luzon	4.6	31.4	10.6	68.6	2.0	33.3	5.2	66.7	8.4	30.8	15.5	69.2
Southern Tagalog	11.1	53.1	10.2	46.9	12.0	53.7	13.4	46.3	9.7	52.1	7.3	47.9
Bicol	9.7	61.2	6.4	38.8	8.2	65.2	5.6	34.8	11.8	57.7	7.1	42.3
Western Visayas	15.8	54.2	13.9	45.8	19.3	63.9	14.1	36.1	10.8	39.0	13.8	61.0
Central Visayas	6.0	54.9	5.2	45.1	8.6	60.3	7.3	39.	2.4	37.5	3.2	62.5
Eastern Visayas	13.7	59.9	9.6	40.1	16.2	62.2	12.7	37.8	10.0	55.1	6.7	44.9
Western Mindanao	8.3	72.6	3.3	27.4	8.9	76.6	3.5	23.4	7.3	66.7	3.0	33.3
Northern Mindanao	3.0	82.4	0.7	17.6	3.1	77.3	1.2	22.7	2.9	91.7	0.2	8.3
Southern Mindanao	8.3	51.7	8.1	48.3	7.7	53.8	8.5	46.2	9.2	49.3	7.8	50.7
Central Mindanao	1.3	35.3	2.5	64.7	1.5	33.3	3.8	66.7	1.0	40.0	1.3	60.0
CARAGA			4.5	100.0			5.2	100.0			3.9	100.0

lowest poverty incidence with 31.4 percent, followed by Central Mindanao with 35.3 percent.

Among the ARBs, Northern Mindanao had the highest poverty incidence, with 91.7 percent of the households living in the region found to be poor, followed by Western Visayas with almost 66.7 percent poor households. Central Luzon had the lowest poverty incidence among the ARBs, both with 30.8 percent.

For non-ARBs, poverty incidence was highest in Northern Mindanao (77.3 percent) while Central Luzon and Central Mindanao still had the lowest poverty incidence, both with 33.3 percent.

A decline in the poverty incidence among ARB households was noted, that is, from 47.6 percent in 1990 to 45.2 percent in 2000 (Table 13). In contrast, there was an increase in the proportion of poor households among non-ARBs from 55.1 percent in 1990 to 56.4 percent in 2000. These changes led to a wider difference between the poverty incidence among the two groups — from 7.5 percentage points in 1990 to 11.2 percentage points in 2000.

Poverty gap is the difference between the poverty threshold and the average income of the poor. The poverty gap index is the ratio of the poverty gap to the poverty threshold. This provides a measure of the depth of poverty. Table 14 shows that the poor ARBs are less poor than the poor non-ARBs, as indicated by their lower poverty gap index. Over time, there has been little change in the poverty gap index.

Movements in and out of poverty. Of the 838 ARBs, 399 were found to be poor in 1990, of which 248 (62 percent) remained poor in 2000 while 151 (38 percent) became nonpoor (Table 15). Of the 439 ARBs who were nonpoor in 1990, 131 (30 percent) became poor and 308 (70 percent) remained nonpoor.

On the other hand, of the 934 non-ARBs, 515 families were poor and 419 families were nonpoor in 1990. Of the 515 poor non-ARBs in 1990, 362 (70 percent) remained poor in 2000 and 153 (30 percent) became nonpoor in 2000. Of the 419 nonpoor families in 1990, 165 (39 percent) families remained poor and 254 (61 percent) families became poor in 2000.

A greater proportion of ARBs who were poor in 1990 became nonpoor in 2000 compared to non-ARBs (38 percent vs. 30 percent). Moreover, a smaller proportion of ARBs, who were nonpoor in 1990, became poor in 2000 relative to non-ARBs (30 percent vs. 39 percent). These findings suggest that being an ARB

Table 13. Poverty incidence in 1990 and 2000

	1990	2000
ARB	47.6	45.2
Non-ARB	55.1	56.4

Table 14. Poverty gap index in 1990 and 2000

	1990	2000
ARBs	.4922	.4923
Non-ARBs	.5250	.5234

Table 15. Poverty status in 1990 and 2000

2000	1990		Total
	Poor	Nonpoor	
Total	**914**	**858**	**1,772**
NARB	515	419	934
ARB	399	139	838
Poor	**610**	**296**	**906**
NARB	362	165	527
ARB	248	131	379
Non-Poor	**304**	**562**	**866**
NARB	153	254	407
ARB	151	308	459

somehow improves one's chances of getting out of poverty if one is poor, and helps a nonpoor from falling into poverty.

Households' perception of their poverty status. In spite of being beneficiaries of the agrarian reform program, many ARB families still felt that they were poor. About 44 percent of the ARBs considered themselves either poor or very poor. This figure, however, is lower than the corresponding 57 percent for non-ARBs.

Among the poor (classified as such based on income) agrarian reform beneficiaries, 52.8 percent perceived that they were either poor or very poor, while 63 percent of the classified poor non-ARBs perceived that they were either poor or very poor.

Almost 35 percent of the classified poor ARB families said they were in fair condition and 12.7 percent perceived that they had good or very good condition. Among the poor non-ARBs, 28.6 percent perceived they have fair condition while only 8.46 percent felt they had good or very good condition.

Among the classified nonpoor non-ARB households, 39.4 percent said they were in fair condition while 39.9 percent still said they were either poor or very poor. In addition, only 20.7 percent considered their condition either good or very good. Among the classified nonpoor ARB households, 28.6 percent felt that they

were poor or very poor, lower than the classified nonpoor non-ARB families. On the other hand, around 71.4 percent of the nonpoor families not benefiting from agrarian reform sensed they either had fair, good or very good condition (Table 16).

While there seems to be a strong correlation between income-based measure of poverty and household's perception of poverty, Table 16 suggests factors other than income that determine a household's perception of being poor or nonpoor.

Asked how being an agrarian reform beneficiary had changed their economic conditions, 57 percent said that their economic conditions had improved while 37 percent said that their conditions remained unchanged. Only 6 percent said that their conditions worsened since they became ARBs (Table 17).

About half of those classified as poor said they were better off because of agrarian reform, while almost 70 percent of the nonpoor said they were better off.

Educational attainment of household heads and members. In 2000, heads of ARB households commonly finished only primary education. The same was true for heads of non-ARB households.

Among the total household members in year 2000, the majority of the household members had no formal schooling. This comprised about 43 percent of the total households. Only 8.2 percent were graduates of elementary and about 11.5 percent were high school graduates. The proportion of college graduates among the household members was minimal at 6.9 percent (Table 18).

Members of ARB households tended to have higher educational attainment than members of non-ARB households. Among the ARB households, almost 40 percent of all the household members have not attended school. However, this figure was lower by about 6 percentage points for the non-ARB household members. Almost 46 percent among non-ARB household members had not attended school.

The proportion of household members who finished elementary was 9.4 percent among ARBs, slightly higher than non-ARB household members with 7.2 percent. The proportion of ARB house-

Table 16. Households' perception of their socioeconomic conditions, 2000

Status	Perception	Poor		Non -poor		Total	
		Number	Percent	Number	Percent	Number	Percent
NARB	Total	707	100.0	251	100.0	958	100.0
	Very						
	Poor	57	8.1	14	5.6	71	7.4
	Poor	388	54.9	86	34.3	474	49.5
	Fair	202	28.6	99	39.4	301	31.4
	Good	54	7.6	50	19.9	104	10.9
	Very Good	6	0.8	2	0.8	8	0.8
ARB	Total	523	100.0	311	100.0	834	100.0
	Very Poor	38	7.3	5	1.6	43	5.2
	Poor	238	45.5	84	27.0	322	38.6
	Fair	181	34.6	146	46.9	327	39.2
	Good	62	11.9	72	23.2	134	16.1
	Very Good	4	0.8	4	1.3	8	1.0

Table 17. Household's economic condition, 2000

Status		Poor		Nonpoor		Total	
		Number	Per cent	Number	Percent	Number	Percent
ARB	Total	505	100.0	303	100.0	808	100.0
	Better	256	50.7	208	68.6	464	57.4
	Same	213	42.2	86	28.4	299	37.0
	Worse	36	7.1	9	3.0	45	5.6

hold members who finished high school was higher than that of non-ARB household members. Around 14 percent of ARB household members had graduated from high school while 9.5 percent among non-ARB household members were high school graduates.

As for college graduates, only a slight difference between the ARBs and non-ARBs was noted. Among the ARB household members, 7 percent graduated from college. In comparison, 6.8 percent among the non-ARB household members were college graduates.

Table 18. Educational attainment of household members, 2000

Total	18674	100.0
None	7943	42.5
Elem. undergraduate	2430	13.0
Elem. graduate	1537	8.2
HS undergraduate	1841	9.9
HS graduate	2144	11.5
Vocational undergraduate	82	0.4
Vocational graduate	428	2.3
College undergraduate	957	5.1
College graduate	1280	6.9
Post graduate	32	0.2
NARB	**9956**	**100.0**
None	4557	45.8
Elem. undergraduate	1360	13.7
Elem. graduate	721	7.2
HS undergraduate	971	9.8
HS graduate	946	9.5
Vocational undergraduate	32	0.3
Vocational graduate	202	2.0
College undergraduate	479	4.8
College graduate	674	6.8
Post Graduate	14	0.1
ARB	**8718**	**100.0**
None	3386	38.8
Elem. undergraduate	1070	12.3
Elem. graduate	816	9.4
HS undergraduate	870	10.0
HS g raduate	1198	13.7
Vocational undergraduate	50	0.6
Vocational graduate	226	2.6
College undergraduate	478	5.5
College graduate	606	7.0
Post graduate	18	0.2

In terms of the average educational attainment among household heads, nonpoor household heads had higher educational attainment than poor household heads. On the average, household heads belonging to the poor families were elementary graduates while those belonging to the nonpoor families were high school graduates. Both poor ARBs and non-ARBs were mostly elementary graduates. On the other hand, both the nonpoor agrarian reform beneficiaries and nonagrarian reform beneficiaries were commonly high school graduates (Table 19).

Table 19. Average educational attainment of household heads

Status	Poor	Non-poor
Total	**Elementary graduate**	**High school undergraduate**
NARB	Elementary graduate	High school undergraduate
ARB	Elementary graduate	High school undergraduate

Among the total households members who were at least 12 years old, 83.1 percent were at least elementary graduates in 2000, higher than the 73.2 percent posted in 1990. Among the members of ARB households who are 12 years old and above, 74.8 percent were at least elementary graduates in 1990. This is 10 percentage points lower in 2000, where 83 percent were at least elementary graduates. On the other hand, among the members of non-ARB families belonging to the same age group in 1990, 71.4 percent were at least elementary graduates, slightly lower than the proportion of ARB members of the same year. In 2000, almost 82 percent of non-ARB children were at least elementary graduates, much higher than in 1990 (Table 20).

Among the household members who were at least 16 years old, almost 44 percent were at least high school graduates in 1990 while 56 percent were at least high school graduates in 2000. The proportion of ARB household members who were at least high

Table 20. Proportion of at least elementary graduates among 12 years and above

Status	1990		2000	
	Number	Percent Distribution	Number	Percent Distribution
NARB	1034	71.41	1304	81.76
ARB	1234	74.79	1132	84.73
Total	2268	73.21	2436	83.11

school graduates in 1990 was almost 45 percent, much lower than the 57.6 percent posted in 2000. Among non-ARB children, about 43 percent were at least high school graduates in 1990 while 54.5 percent were at least high school graduates in 2000. In both years, the proportion of ARB children who were at least elementary graduates was slightly higher than non-ARB children (Table 21).

The data show that members of ARB households tended to have higher educational attainment than members of non-ARB households, suggesting that ARB households were able and did, in fact, invest more on human capital.

Employment status of the household head. In 2000, 7.4 percent of the household heads were unemployed. Unemployment rate was higher among non-ARBs (8.1 percent) than for ARBs (5.5 percent).

ARB heads among poor and nonpoor households were most commonly employed, with 93 percent poor heads employed and 96 percent nonpoor heads employed (Table 22).

Table 21. Proportion of at least high school graduates among 16 years and above

Status	1990		2000	
	Number	Percent Distribution	Number	Percent Distribution
NARB	350	42.68	580	54.46
ARB	327	44.98	520	57.59
Total	448	43.94	1100	55.89

Heads among poor and nonpoor non-ARB households were also commonly employed. About 92 percent of heads were employed among poor and nonpoor non-ARB households.

Table 22. Employment status of poor and nonpoor household heads

Status	Number		Distribution		Proportion	
	Poor	Nonpoor	Poor	Nonpoor	Poor	Nonpoor
Total	**1232**	**602**	**100.0**	**100.0**	**67.2**	**32.8**
Unemployed	92	34	7.5	5.6	73.0	27.0
Employed	1140	568	92.5	94.4	66.7	33.3
NARB	**708**	**273**	**100.0**	**100.0**	**72.2**	**27.8**
Unemployed	3	22	8.1	8.1	72.2	27.8
Employed	651	251	91.9	91.9	72.2	27.8
ARB	**524**	**329**	**100.0**	**100.0**	**61.4**	**38.6**
Unemployed	35	12	6.7	3.6	74.5	25.5
Employed	489	317	93.3	96.4	60.7	39.3

About three fourths of the households had both head and spouse employed. The proportion of households with head and spouse both employed was 78 percent for nonpoor households and 75 percent for poor households (Table 23).

Among ARBs, the proportion of households whose head and spouse were both employed was around 78 percent for nonpoor households compared to 73 percent among poor households. Moreover, two-thirds of the households whose heads and spouses were employed were poor.

Access to potable water. ARBs had greater access to potable water than non-ARBs (77.7 percent vs. 76.1 percent, respectively). The proportion of households who were agrarian reform beneficiaries with access to potable water in 2000 was 77.7 percent, compared to 74.6 percent with access to potable water in 1990. On the other hand, the proportion of households who were not agrarian reform beneficiaries with access to potable water was 76 percent in 2000 and 74 percent in 1990 (Table 24).

Table 23. Employment status of household heads and their spouses

Status	Number		Distribution		Proportion	
	Poor	**Nonpoor**	**Poor**	**Nonpoor**	**Poor**	**Nonpoor**
Total	**1232**	**602**	**100.0**	**100.0**	**67.2**	**32.8**
Head and spouse unemployed	36	17	2.9	2.8	67.9	32.1
Head or spouse employed	270	116	21.9	19.3	69.9	30.1
Head and spouse employed	926	469	75.2	77.9	66.4	33.6
NARB	**708**	**273**	**100.0**	**100.0**	**72.2**	**27.8**
Head and spouse unemployed	20	11	2.8	4.0	64.5	35.5
Head or spouse employed	146	48	20.6	17.6	75.3	24.7
Head and spouse employed	542	214	76.6	78.4	71.7	28.3
ARB	**524**	**329**	**100.0**	**100.0**	**61.4**	**38.6**
Head and spouse unemployed	16	6	3.1	1.8	72.7	27.3
Head or spouse employed	124	68	23.7	20.7	64.6	35.4
Head and spouse employed	384	255	73.3	77.5	60.1	39.9

Access to sanitary toilet. ARBs had greater access to sanitary toilet facilities than non-ARBs (75.7 percent vs. 72.1 percent). The proportion of households who were ARBs with access to sanitary toilet was 75 percent in 2000 and 64.2 percent in 1990. The proportion of non-ARB households with access to sanitary toilet in 2000 stood at 72 percent in 2000 and 60 percent in 1990 (Table 25), for a difference of 12 percentage points.

Ownership of assets and house. Ownership of assets is an indicator of a household's economic well-being. In particular, certain assets are highly correlated with poverty status. For instance, Reyes (1998) finds that ownership of refrigerator is very strongly correlated with being nonpoor.

In 1990, the proportion of ARB families who owned a TV set was 27.2 percent, higher than the proportion of non-ARB families with a TV set.

The proportion of households who were agrarian reform beneficiaries who owned a TV set is 53.7 percent in 2000 (Table 26). This is almost twice the proportion of ARBs with a TV set own TV

Table 24. Access to potable water, 2000

Status	Nonpotable		Potable	
	Number	%	Number	%
Total	424	23.2	1407	76.8
NARB	234	23.9	745	76.1
ARB	190	22.3	662	77.7

Table 25. Access to sanitary toilet

Status	Nonsanitary		Sanitary	
	Number	%	Number	%
Total	482	26.3	1350	73.7
NARB	273	27.9	707	72.1
ARB	209	24.5	643	75.5

in 1990. The proportion of households who were not agrarian re-form beneficiaries with a TV set was 49.4 percent, more than double the proportion of non-ARBs who owned a TV set in 1990.

In 1990, the proportion of households, whether ARBs or not, who owned a refrigerator was fairly small. The proportion of ARB households who owned a refrigerator was 10.9 percent while the proportion of non-ARB households who with a refrigerator was only 9.4 percent.

In 2000, the proportion of households who are agrarian re-form beneficiaries that owned a refrigerator was 27 percent (Table 27), much higher than in 1990, while the proportion of house-holds who were not agrarian reform beneficiaries who own re-frigerator was 25.5 percent, almost triple the corresponding figure among non-ARBs in 1990.

In 1990, the majority of ARB households used wood and light materials for their homes. The proportions of ARB families who used wood and light materials were 35.8 percent and 37.6

Table 26. Ownership of television in 2000

Status	Without TV		With TV	
	Number	%	Number	%
To tal	**891**	**48.6**	**943**	**51.4**
NARB	496	50.6	485	49.4
ARB	395	46.3	458	53.7

Table 27. Ownership of refrigerator in 2000

Status	Without Refrigerator		With Refrigerator	
	Number	%	Number	%
Total	**1,354**	**73.8**	**480**	**26.2**
NARB	731	74.5	250	25.5
ARB	623	73.0	230	27.0

percent, respectively. Only 18.2 percent among the ARB families have used concrete materials. Among the non-ARBs, 41.6 percent used light materials and 36.5 percent used wood materials. Only 15.8 percent of non-ARBs used concrete materials.

In 2000, more than half (52.4 percent) of ARB households used concrete type of walling, almost three times as much the proportion in 1990. Only 23.7 percent among ARB households used wooden walling while 21.7 percent used light materials. On the other hand, 43.1 percent among non-ARB households used concrete walling, and 32.3 percent used wood materials and 23.3 percent used light materials (Table 28).

Crops planted. The most common seasonal crops planted by the farmers in 2000 were rice and corn. During the first cropping season, more than half (56.8 percent) of the total farmers who planted rice were agrarian reform beneficiaries. A large proportion of the ARBs (79.2 percent) planted rice while only 15.5 percent of them planted corn. Among the nonagrarian reform beneficiaries, 76.7 percent planted rice while 17.2 percent planted corn (Table 29).

Table 28. Type of housing materials in 2000

Status	Concrete		Wood		Light		Others	
	Number	%	Number	%	Number	%	Number	%
Total	**870**	**47.5**	**518**	**28.3**	**413**	**22.5**	**32**	**1.7**
NARB	423	43.2	316	32.2	228	23.3	13	1.3
ARB	447	52.4	202	23.7	185	21.7	19	2.2

Table 29. Crops planted (June - November 1999)

Crops Planted	NARB			ARB			Total
	Number	Col percent	Row percent	Number	Col percent	Row percent	Num ber
Total Crops	**772**	**100.0**	**44.0**	**983**	**100.0**	**56.0**	**1755**
Rice	592	76.7	43.2	779	79.2	56.8	1371
Corn	133	17.2	46.7	152	15.5	53.3	285
Coconut	1	0.1	100.0		0.0	0.0	1
Sugarcane	2	0.3	40.0	3	0.3	60.0	5
Banana	1	0.1	33.3	2	0.2	66.7	3
Coffee	1	.0	100.0		0.0	0.0	1
Pineapple		0.0	0.0	1	0.1	100.0	1
Peanut	6	0.8	42.9	8	0.8	57.1	14
Onion	1	0.1	20.0	4	0.4	80.0	5
Vegetables	25	3.2	50.0	25	2.5	50.0	50
Fruit trees		0.0	0.0	1	0.1	100.0	1
Root Crops	10	1.3	58.8	7	0.7	41.2	17
Abaca		0.0	0.0	1	0.1	100	1

During the second cropping season, 58.1 percent of the total farmers who plant rice are ARBs. Among the ARBs, 76.4 percent of them are planting rice, slightly higher than the proportion (73.9 percent) of non-ARBs who plant rice. The proportion of ARBs who are planting corn is only 17.1 percent while the proportion of non-ARBs that plant corn is slightly higher at almost 20 percent (Table 30).

The most common perennial crop among the farmers was coconut. Among the farmers who planted coconut, 51.1 percent

Table 30. Crops planted (December 1999 - March 2000)

Crops Planted	NARB			ARB			Total
	Number	Col percent	Row percent	Number	Col percent	Row percent	Number
Total Crops	**593**	**100.0**	**42.8**	**794**	**100.0**	**57.2**	**1387**
Rice	438	73.9	41.9	607	76.4	58.1	1045
Corn	118	19.9	46.5	136	17.1	53.5	254
Sugarcane		0.0	0.0	3	0.4	100.0	3
Peanut	5	0.8	33.3	10	1.3	66.7	15
Onion	2	0.3	50.0	2	0.3	50.0	4
Vegetables	23	3.9	44.2	29	3.7	55.8	52
Root Crops	7	1.2	50.0	7	0.9	50.0	14

were nonagrarian reform beneficiaries while 48.9 percent were agrarian reform beneficiaries. Among the ARB farmers, 52.6 percent planted coconut, slightly lower than the corresponding proportion of non-ARBs who did the same (59 percent) (Table 31).

Banana was also a common perennial crop among farmers. Among the total farmers who planted banana, slightly more non-ARBs (51.4 percent) did so than the ARBs who did (48.6 percent). However, only 14.4 percent among the ARB farmers who planted this crop while only 16.3 percent of non-ARBs planted banana.

In general, among the farmers who planted seasonal crops, slightly more ARBs did so than non-ARBs. On the other hand, among those farmers who planted perennial crops, the proportion of non-ARBs who did so was slightly higher than the proportion of ARBs.

Farm cultural practices. Farmers commonly used chemical fertilizers to produce good and abundant crops. Almost three-fourths (74.1 percent) of farmers adopted the use of modern technology in improving yield. Of the total farmers engaged in the practice of using chemical fertilizers, more than half (55.9 percent) were agrarian reform beneficiaries. Also, among ARB farmers, almost 80 percent used chemical fertilizers while almost 70 percent of non-ARB farmers did the same (Table 32).

Table 31. Perennial crops planted

Crops Planted	NARB			ARB			Total
	Number	Col percent	Row percent	Number	Col percent	Row percent	Number
Total Crops	466	100.0	48.2	500	100.0	51.8	966
Rice	17	3.6	37.8	28	5.6	62.2	45
Corn	13	2.8	48.1	14	2.8	51.9	27
Coconut	275	59.0	51.1	263	52.6	48.9	538
Sugarcane	11	2.4	34.4	21	4.2	65.6	32
Banana	76	16.3	51.4	72	14.4	48.6	148
Coffee	13	2.8	52.0	12	2.4	48.0	25
Peanut	3	0.6	30.0	7	1.4	70.0	10
Citrus	1	0.2	25.0	3	0.6	75.0	4
Onion		0.0	0.0	2	0.4	100.0	2
Tobacco	1	0.2	25.0	3	0.6	75.0	4
Vegetables	13	2.8	48.1	14	2.8	51.9	27
Fruit trees	21	4.5	35.0	39	7.8	65.0	60
Root Crops	19	4.1	48.7	20	4.0	51.3	39
Abaca	3	0.6	60.0	2	0.4	40.0	5

More farmers engaged in the traditional way of manual plowing while about 66 percent of farmers still practiced animal-drawn plowing. Among the traditional practitioners, 57.6 percent were ARB farmers. Slightly more than 70 percent of the ARB farmers and 58.4 percent of the non-ARB farmers still practiced animal-drawn plowing.

The use of chemicals to control crop pests and diseases was found to be a popular practice among farmers. Almost 60 percent of farmers used chemicals to protect their crops. Such practice was found to be more common among ARB farmers; 57 percent of all farmers who used chemicals were ARBs. In addition, among the ARB farmers, 65 percent engaged in such practice. The proportion of pesticide users was slightly lower among non-ARB farmers. Less than half (47.5 percent) of non-ARB farmers were engaged in such practice.

Table 32. Farm cultural practices

Farm Cultural Practices	Number			Proportion			Distribution4	
	NARB	ARB	Total	NARB	ARB	Total	NARB	ARB
Animal-drawn plot	596	810	1406	58.4	71.8	65.5	42.4	57.6
Power tillers	484	700	1184	47.5	62.1	55.1	40.9	59.1
IPM	105	159	264	10.3	14.1	12.3	39.8	60.2
Four -wheel tractors	64	60	124	6.3	5.3	5.8	51.6	48.4
Chem. pest & disease control	552	728	1280	54.1	64.6	59.6	43.1	56.9
Contour p	15	17	32	1.5	1.5	1.5	46.9	53.1
Slash & burn	54	42	96	5.3	3.7	4.5	56.3	43.8
Hedgerows	11	6	17	1.1	0.5	0.8	64.7	35.3
Crop rotation	60	54	114	5.9	4.8	5.3	52.6	47.4
Mulching	18	22	40	1.8	2.0	1.9	45.0	55.0
HYVs	195	213	408	19.1	18.9	19.0	47.8	52.2
Azolla	6	10	16	0.6	0.9	0.7	37.5	62.5
Certified seeds	393	569	962	38.5	50.5	44.8	40.9	59.1
Composting	79	105	184	7.7	9.3	8.6	42.9	57.1
Terracing	39	24	63	3.8	2.1	2.9	61.9	38.1
Chemical fertilizer	705	892	1597	69.0	79.1	74.3	44.1	55.9
Cover cropping	21	13	34	2.1	1.2	1.6	61.8	38.2
Traditional varieties	417	487	904	41.9	43.6	42.8	46.1	53.9

The use of power tillers has also become a common practice among farmers, of whom about 55 percent already used such modern gadgets. About 59 percent of these farmers were ARBs. Among ARBs, 62 percent used power tillers in farming while only 48 percent among non-ARBs use power tillers.

Moreover, the use of certified seeds was a popular practice among farmers. Near half of the farmers (45 percent) use certified seeds in farming. This proportion is slightly higher than the 43 percent farmers who use traditional varieties in farming. Still, more ARB farmers availed themselves of these farming techniques than non-ARBs.

In sum, the use of machinery in farming was not a common practice among farmers. More farmers did manual plowing. The use of chemicals, such as fertilizers to increase yield and pesticides to protect their crops, had already been adopted by many farmers.

Among the 12 farming techniques enumerated in the survey, those that were not commonly practiced by farmers were azolla, hedgerows, contour plowing and cover cropping.

Land productivity. The study measured land productivity by dividing the peso value of farm output over the total farm size. The average land productivity among the beneficiaries of agrarian reform was more than twice the average land productivity of nonagrarian reform beneficiaries. The mean land productivity of ARBs was P20,429.87 per hectare and P8,032.36 of per hectare for non-ARBs (Table 33). The higher land productivity among ARBs could partly explain the observed lower poverty incidence among ARBs.

Models for Determining Poverty Status of Households

A logit model is estimated to determine significant factors affecting the poverty status of households in 2000. Among the variables considered to explain the poverty status were a) number of years that households had benefited from the agrarian reform program; b) whether they had received government assistance or not; c) household size; d) per capita land size within their ownership; e) educational attainment of the household head; f) poverty status in 1990; g) whether the community to which they belong was an agrarian reform community or not; and h) if the land they tilled was irrigated.

The probability of a household being nonpoor is represented by the model:

$$P(nonpoor) = \frac{e^{0.26+0.11ARBYR-0.32V22+0.21HHEDUC+0.22V16A+1.08IRRI+0.54CREDIT}}{1+e^{0.26+0.11ARBYR-0.32V22+0.21HHEDUC+0.22V16A+1.08IRRI+0.54CREDIT}}$$

The model, including these eight variables aimed at explaining the poverty status of households, is significant at the 5 percent level of significance, with significance probability of 0.0001.

The Hosmer and Lemeshow goodness-of-fit test was performed to test for model adequacy. With a significance probability of 0.2308 of the model, there is no sufficient evidence to say that the model is not adequate. Thus, household characteristics considered for inclusion in the model adequately described the tendency of households to be poor or nonpoor.

Table 33. Land productivity (PhP/ha)

| Status	Average
NARB	8,032.36
ARB	20,429.87

Chi-square test on the individual effects of each characteristic on poverty status was performed on the model. Effects of the characteristics were all found to be significant at the 5 percent level, except V16a (whether agrarian reform community or not), which is significant at the 10 percent level.

Table 34 shows parameter estimates using the maximum likelihood estimation technique and statistics on the individual variables in the model.

Interpretation

ARBYR (length of time as ARB). The length of years that ARB households have benefited from the agrarian reform program of the government increases their chances of being nonpoor by as much as 0.11 points, (i.e., the likelihood of a household being nonpoor increases by as much units when the household has been an ARB for a longer period of time). Furthermore, each five-year increase in the length of time that ARB households have benefited from CARP, results in an increased probability of being nonpoor by approximately 0.014 to 0.022 units at an exponential but almost linear trend (Figure 1). The largest increase in probability of being nonpoor is exhibited by the shift from zero to one year with a 0.022 unit increase in probability. This implies that the advantages of being an ARB can already be felt by households even at an early period of one year. The increase in probability slowly dampens at each five-year addition in the length of time that ARB households have benefited from agrarian reform. Minimal increase in probability of being nonpoor can be observed when the household has been a beneficiary of CARP for more than 35 years.

Figure 1. ARB households by length in years as beneficiaries
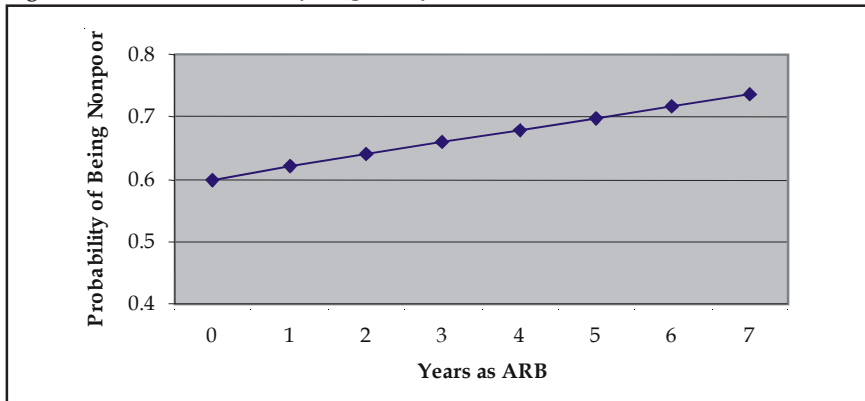
This suggests that a household's chances of being nonpoor increases the longer the household has been an ARB. This could be because being an ARB allows the household to accumulate savings and physical capital, as manifested by higher incomes (relative to non-ARBs) and ownership of consumer durables and other assets. Also, ARB households tend to invest more in human capital, as shown by a higher educational attainment of its members compared to non-ARB household members. These could have positive effects on the earning capacity of the household and consequently on household income.

V22 (household size). Poor households are characterized by a large family size. Households tend to be poorer as the number of family members increases. The likelihood that a household with a large family size will be nonpoor is 0.73, which is 27 points lower than a household with a smaller family size.

HHEDUC (educational attainment of the household head). The head of a family who has attained a high level of education is likely to belong to a nonpoor household. The likelihood of a household, whose head has a high level of educational attainment, being nonpoor is around 22 points higher than of households with heads having a low level of educational attainment.

Table 34. Parameter estimates of logit model

| Variable	DF	Parameter Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square	Standardized Estimate	Odds Ratio	Variable Label
INTERCPT	1	0.2644	0.1540	2.9480	0.0860	.	.	Intercept
ARBYR	1	0.1117	0.0267	17.5275	0.0001	0.134076	1.118	Length of years as ARB
V22	1	-0.3169	0.0256	153.2131	0.0001	-0.56433	0.728	Household size
HHEDUC	1	0.2039	0.0346	34.7661	0.0001	0.192948	1.226	Educational attainment of HH head
V16A	1	0.2231	0.1330	2.8170	0.0933	0.051955	1.250	Agrarian reform community
IRRI	1	1.0836	0.1226	78.0672	0.0001	0.280109	2.955	Irrigated land
CREDIT	1	0.5433	0.1134	22.9498	0.0001	0.148538	1.722	Access to credit

V16A (agrarian reform community). A household living in a community that is an agrarian reform community is more likely to be nonpoor with odds ratio of 1.25. The probability that a household is nonpoor increases by 0.22 points when the household lives in an agrarian reform community.

IRRI (irrigated land). The type of land that farmers till helps determine the poverty status of the households. The probability of being nonpoor for farmers (households) increases by 1.08 points when they till irrigated land. Farmers who till irrigated lands are thrice (2.96 times) more likely to be nonpoor than those who till nonirrigated lands.

CREDIT (credit profile). Households who have access to credit are more likely to be nonpoor. The odds of a household being nonpoor is .72 points higher when the household has access to credit. A household is said to have access to credit if it was able to obtain credit, or did not because it had no need to.

To compare the probability of being nonpoor of ARBs and non-ARBs, one computes the probability using the estimated equation for a family of six and with the household head not having any schooling. Figure 2 shows that the probability of being nonpoor is higher for ARBs than for non-ARBs. Given the same input, irrigation, credit and being in an agrarian reform community, ARBs consistently have higher chances of being nonpoor.

Figure 2. Comparison between ARBs and non-ARBs with a family size of 6
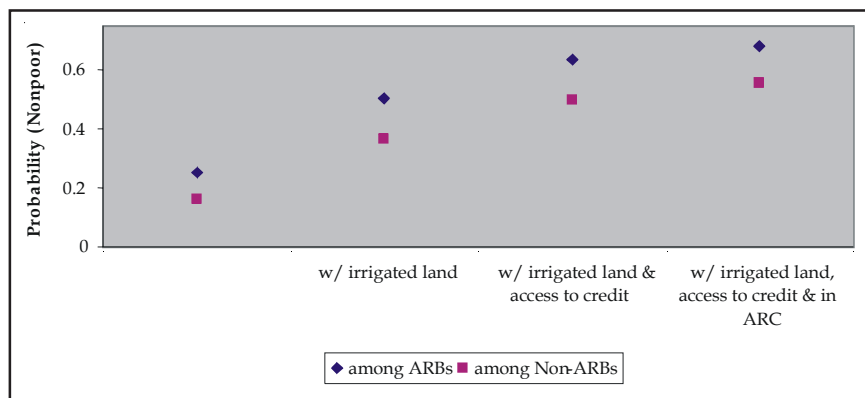
To show the effect of credit, irrigation and being in an ARC on ARBs, one computes the probability of an ARB being nonpoor with or without these inputs using the estimated equation. Figure 3 shows the probability of being nonpoor for households who are ARBS, with particular inputs. The probability of being nonpoor for an ARB who has no credit, no irrigation and is not in an ARC is the lowest. When he is provided with irrigation, his probability of being nonpoor increases by 24 percent on the average. Furthermore, when he is give credit, his probability of being nonpoor increases by 15 percent. Finally, when his community becomes an ARC, then his probability of being nonpoor increases further by 5 percent.

Figure 3. ARB households with varying inputs
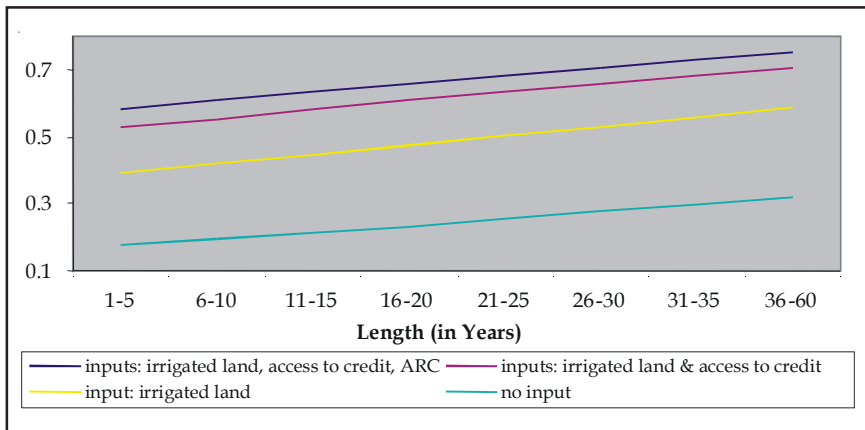
The results indicate that being an ARB tend to increase one's chances of being nonpoor. Moreover, we find that providing the necessary inputs like credit, irrigation and being in an agrarian reform community tends to further increase one's chances of being nonpoor.

Model Classification

A probability level of 50 percent has been chosen as a cut-off level at which households will be classified as nonpoor based on the characteristics they possess. The 50 percent cut-off point was chosen since the model is after the percentage of observations correctly classified into their corresponding poverty status.

A total of 541 out of the 810 actual nonpoor households that were classified as nonpoor based on model simulations. This translates to around 66.8 percent correctly classified nonpoor households (Table 35).

Table 35. Actual vs. simulated

Actual	Simulated	
	Nonpoor	Poor
Nonpoor	541	269
Poor	255	598

Moreover, 598 out of 853 actual poor households that were classified as poor based on model simulations. This translates to about 70 percent correctly classified poor households.

Around 32 percent of actual poor households are falsely classified as nonpoor households by the model while 31 percent actual nonpoor households are falsely classified as poor households.

On the overall, the model, including the abovementioned household characteristics, correctly classifies as much as 68.5 percent of the observations or households into their corresponding poverty status for the year 2000. The results also suggest that other variables, in addition to those included in the present model, may help explain further the poverty status of households.

Regression Models

Two regression models have been constructed with nominal income of households for the year 2000 as the dependent variable.

The explanatory variables considered for the first model were household characteristics such as whether they were agrarian reform beneficiaries, whether they availed themselves of government service, whether they live in an agrarian reform community, educational attainment of the household head, and if they tilled irrigated lands. The second model used the same variables but considered the years that households had benefited from the agrarian reform program in place of whether they were agrarian reform beneficiaries or not.

For model 1, the positive signs of the parameter estimates indicate an increase in income of households if they are of the desired characteristics (Table 36). This implies that households gain higher income and are thus better off when they are beneficiaries of the agrarian reform program, have received or are receiving assistance from the government, and if they live in an agrarian reform community. In addition, income also increases as household heads become more educated. Farmers who till irrigated lands also earn higher income. All household characteristics have probability values less than 10 percent indicating that each characteristic has significant contribution to the income of households for 2000.

For model 2 as well, the positive signs of the parameter estimates indicate an increase in income (Table 37). Households who have received assistance from the government and live in an agrarian reform community gain higher income. Furthermore, income is also higher if farmers till irrigated lands. Income is higher for households with heads who have attained a high level of education. Moreover, households who have benefited from the agrarian reform program earn higher income. All the variables used in the model have significant contribution to income at 10 percent level of significance.

IMPACT OF SHOCKS ON AGRARIAN REFORM BENEFICIARIES

While the APIS is not designed to look at CARP, it contains a few questions that may provide some indications of how ARBs

cope with the economic crisis in 1997-1998 brought about by the Asian financial crisis and the El Nino phenomenon. The huge capital outflow in some of the East Asia countries and the ensuing depreciation of the regional currencies caused economies to contract and unemployment to soar. The Philippines was one of those affected by the financial crisis, specifically the industry and services sectors. On the other hand, the drought induced by the El Nino adversely affected the agriculture sector of the country.

The ARBs are defined as those who have acquired agricultural land through the CARP's land distribution program. Non-ARBs are those who own agricultural land but did not acquire it through CARP.

Coping with the Asian Crisis

The Asian financial crisis that hit the country caused a downturn in the Philippine economy. Its negative impact was felt even at the household level. Soaring prices of food and other basic commodities, loss of jobs and reduced incomes were among the adverse effects that households had to cope with.

Both non-ARBs and ARBs had to contend with the rising prices of food and other basic commodities with 92 percent of non-ARBs and 89 percent ARBs saying that they felt the increase.

The El Nino crisis affected the ARB households. Around 84 percent of them claimed that the crisis affected them financially, while 79 percent of non-ARB households said they felt the effects of El Nino.

The problem of loss of jobs within and outside the country due to retrenchment was felt more by the non-ARB households.

Reduction in wages was both felt by ARBs and non-ARBs (Table 38).

To cope with the effects of the Asian crisis, many households were forced to change their eating patterns. Among households, 46.9 percent and 43 percent of ARB and non-ARB households did so, respectively (Table 39).

Table 36. Parameter estimates of Model 1

Dependent Variable: PCINC00

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	127087118944	25417423789	46.477	0.0001
Error	1812	990944397079	546878806.34		
C Total	1817	1.1180315E12			

Root MSE	23385.44005	R-square	0.1137
Dep Mean	19493.45344	Adj R-sq	0.1112
C.V.	119.96561		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variable Label
INTERCEP	1	17059	1472.8923209	11.582	0.0001	Intercept
ARB00	1	3980.867795	1135.2634824	3.507	0.0005	Agrarian Reform Beneficiary
V74A	1	4060.534104	1197.8038315	3.390	0.0007	Government Service Beneficiary
PCHAS1	1	389.508560	216.67791213	1.798	0.0724	Per Capita Hectarage of Land
V22	1	-1807.032438	175.00200967	-10.326	0.0001	Household Size
HHEDUC	1	3197.044396	326.88258325	9.780	0.0001	Educational Attainment of HH Head

Table 37. Parameter estimates of Model 2

Model: MODEL1
Dependent Variable: PCINC00

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	131310820683	26262164137	46.938	0.0001
Error	1656	926550783584	559511342.74		
C Total	1661	1.0578616E12			

Root MSE	23653.99211	R-square	0.1241	
Dep Mean	19590.98496	Adj R-sq	0.1215	
C.V.	120.73917			

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variable Label
INTERCEP	1	16569	1518.2359275	10.913	0.0001	Intercept
ARBYR	1	1374.799381	274.40119667	5.010	0.0001	Years being ARB
V74A	1	4097.074269	1265.3736526	3.238	0.0012	Government Service Beneficiary
PCHAS1	1	389.362664	218.94081127	1.778	0.0755	Per Capita Hectarage of Land
V22	1	-1771.712412	180.91398116	-9.793	0.0001	Household Size
HHEDUC	1	3267.116864	342.25628230	9.546	0.0001	Educational Attainment of HH Head

Table 38. Proportion of families affected by problems caused by the financial crisis

Proportion of families affected by:	ARB	NARB
Increasing price of food and other basic commodities	88.6	91.7
Loss of job (within the country)	13.4	14.6
Loss of job (due to retrenchment) of the migrant worker/overseas worker of the family	2.6	3.9
Reduced wages	12.0	12.2
Drought or El Nino	83.6	78.8

Table 39. Coping strategies of ARB and non-ARB households

Proportion of families who:	ARB	NARB
Changed eating patterns	46.9	43.0
Taken the children out of school	9.3	5.9
Household members migrated to other cities or countries	10.4	6.8
Received assistance from friends/relatives locally/abroad	11.7	17.2
Received assistance from the government	15.7	8.8
Increased working hours	27.2	31.1

Moreover, among households, 31 percent non-ARBs and 27 percent ARBs had to work overtime to augment their family incomes.

A larger proportion of ARB households (9.3 percent) pulled their children out of school compared to non-ARBs (5.9 percent). Moreover, a larger proportion of ARBs (10.4 percent) also migrated to cities and other countries compared to 6.8 percent of non-ARBs who did the same.

Sixteen percent of ARB households benefited from government assistance while only 9 percent of non-ARBs received the same. A larger proportion of non-ARB households (17.2 percent) received assistance from their friends and relatives compared to 11.7 percent among ARBs.

The findings from the 1998 Annual Poverty Indicators Survey show that agrarian reform beneficiaries are vulnerable to shocks.

Access to land is not enough to minimize consumption and income risks to agrarian reform households. Moreover, some of the coping strategies employed by households may have long-term impact on their human capital.

CONCLUSION

The results show that agrarian reform has had a positive impact on farmer-beneficiaries. It has led to higher real per capita incomes and reduced poverty incidence between 1990 and 2000. Compared to non-ARBs, ARBs tend to have higher incomes and lower poverty incidence. They also tend to fare better in terms of the other indicators of well-being. ARB households have higher access to safe water, and sanitation facilities, higher educational attainment than members of non-ARB households.

Complementary inputs are necessary to maximize the benefits from agrarian reform. Irrigation, credit and government services tend to promote higher incomes. Moreover, agrarian reform communities tend to increase the chances of a farmer-beneficiary to be nonpoor.

The results of this study show that it is important that the agrarian reform program be completed as soon as possible. Moreover, agrarian reform communities should be expanded to benefit not just ARBs but non-ARBs as well. Infrastructure support should also be extended to farming communities. Credit and extension services by government agencies should also be made accessible to farmers.

The study also highlights the vulnerability of farmers to shocks, particularly weather-related ones. Owning land is not sufficient to minimize risks. While higher incomes from diversified sources and higher savings are effective toward minimizing risks, there is also a need for some safety nets, particularly for the very poor. These safety nets would ensure that those hit by shocks need not resort to coping mechanisms that would have long-term negative impact on their human capital as well as their productive capacity.

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