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The Role of Agriculture in Poverty Alleviation: Insights from Village Studies in South Asia and Southeast Asia

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The panel data provide insights into the changes in rural household economy over a decade, and the factors contributing to the change. The evidence are presented in the attached tables and figures.

Land, the dominant factor in agricultural production, is no longer an importance source of livelihood. Farm size is very small and has been declining under continued population pressure. Up to 50 percent of rural households are “functionally landless.” The average size of a holding is less than one hectare in many countries. The small and poor farmers, however, were able to increase land productivity and farm income by adopting high-yielding modern varieties of rice and wheat, the dominant food staples, supported by public sector investment for irrigation, flood control, and drainage. The shift of land from traditional to modern varieties contributes to an increase in income of US\$100-150 per hectare, which is less than 10 percent of annual rural household income. The technological progress has helped reduce the unit cost of food production, enabling farmers to market the surplus food to consumers at affordable prices without taking a cut in profits. The sectoral decline in the real price of staple foods was the main factor behind the moderate progress in poverty alleviation.

Technological progress, however, is running out of steam for the irrigated environment. But there is still some scope for increasing the food supply from the rainfed environment, where the yield is low (below 2.5 tons/hectare). This ecosystem still accounts for about 55 percent of Asia’s rice land.

Human capital is becoming an important source of livelihood. It has been the driving force behind the expansion of nonfarm rural activities, where greater productive employment opportunity is being generated. A large proportion of farm managers are illiterate; the secondary school enrollment ratio is low; average schooling for rural workers varies from three years to seven years, depending on the country, with higher levels in Southeast Asia and lower levels in South Asia. The investment in human capital development, however, depends on increases in agricultural productivity and income. Its effective utilization for fostering the growth of rural nonfarm income depends on the development of rural infrastructures, which requires investment from the public sector.

The educated human resources are moving out from rural areas to urban areas; the rate of return from education is higher in the service sector and the manufacturing sector than in the

agricultural sector. Thus, human capital development may not contribute much to agricultural growth. However, rural migration may help promote rural development through the consolidation of farm holdings as the migrants leave their land behind, and through remittances supporting capital accumulation in agriculture and rural nonfarm activities.

Nonfarm activities (trade, business, construction, transport, agroprocessing, and various kinds of rural services) are becoming major components of rural incomes. The incomes from these sources are growing faster than agricultural incomes, because of supply constraints to agricultural growth from limited natural resources, and strong income elasticity of demand for nonfarm goods and services. The share of income from the production of staple foodgrains declines faster than the share of income from noncereal crops, livestock, and fisheries. The speed of development of the nonfarm sector, however, depends on the rate of growth in agricultural incomes. The share of land-poor households in the expanding employment and income opportunities in the rural nonfarm sector—hence better distribution of the incremental income—would depend on their access to financial capital and the quality of human capital.

A poverty function was estimated using a PROBIT model to find out factors affecting the probability of a household being poor. The results varied by country/case study. For all cases, poverty has a strong positive association with the number of members in the household, suggesting the obvious point that increasing population pressure would hamper poverty alleviation efforts. Important factors associated with the reduction of poverty are (i) the household's access to land, (ii) the accumulation of nonland assets, (iii) the number of earning members, and the quality of human capital. The adoption of modern varieties had a positive impact on poverty alleviation when they were grown under irrigated conditions. If modern varieties are adopted under rainfed conditions, then the poverty reduction effect is insignificant. The adoption of technology and the development of rural infrastructures were found to have a synergetic effect on the reduction of poverty.

It appears from the above that agriculture's role in poverty alleviation depends on the state of development of the economy. The effect would be substantial at low levels of income, where food production is a major source of employment and income. But agriculture's importance as a source of livelihood and its poverty-reducing role decline with economic prosperity.

Food is a major component of the consumer basket of poor households and their entitlement to food depends not only on nominal incomes but also on the level of food prices. The role of agriculture in poverty alleviation should be seen in increasing foodgrain supplies on par with demand, and in reducing the unit cost of production through technological advancements so that the price of staple food is kept within affordable limits for the urban poor and rural poor. The growth in agricultural productivity is the base on which rural nonfarm sectors develop. It is a necessary condition for the accumulation of capital and the development of markets for nonfarm goods and services. Low, stable food prices are also necessary for the competitiveness of industries, the accumulation of industrial capital, socioeconomic stability, and political stability. Herein lies the role of agriculture in alleviating poverty.

Table 1. Endowment of land and the pattern of its distribution, percent of households)

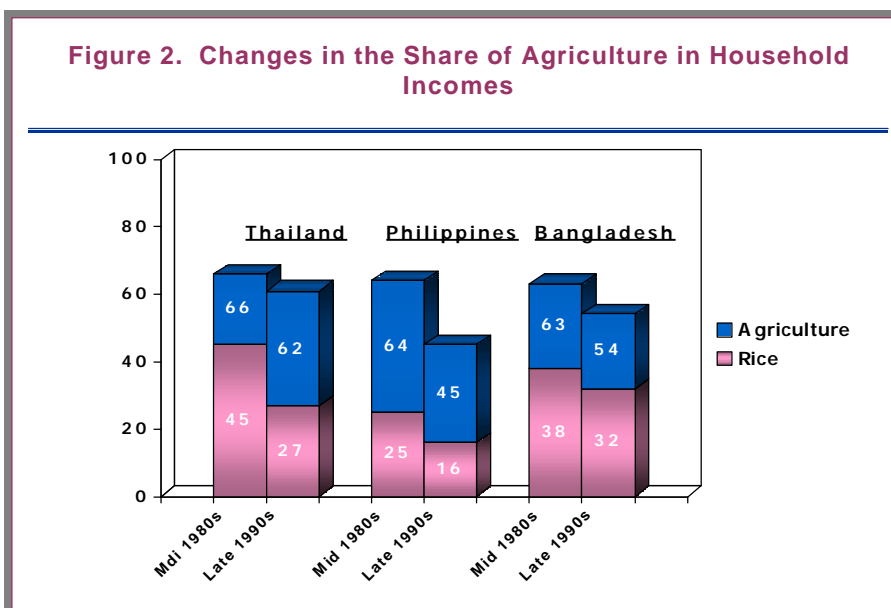
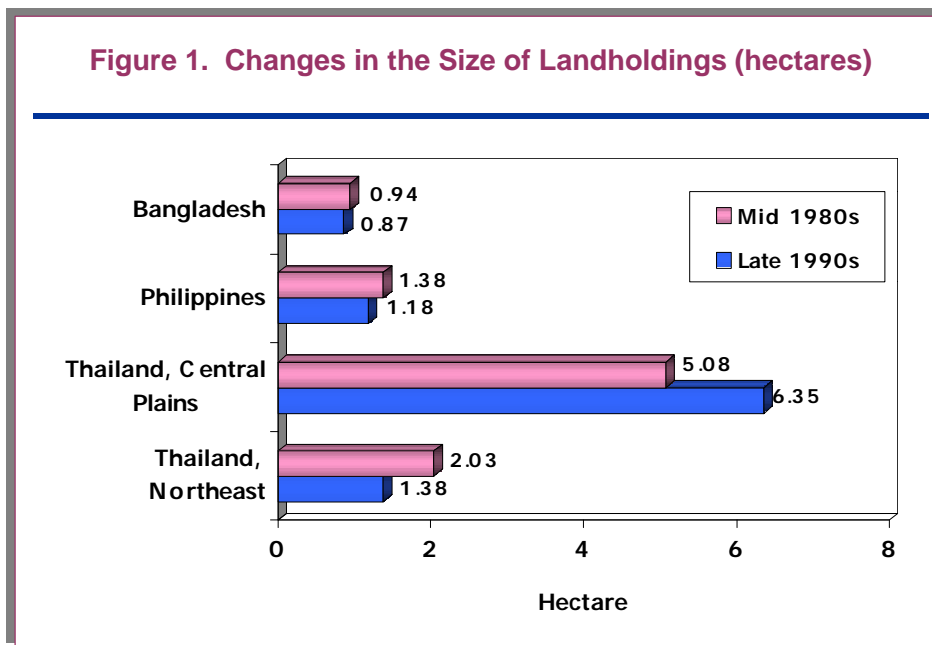
	Bangladesh	Bihar India	Philippines	Viet Nam	Thailand
Size of land owned (ha):					
Less than 0.2	50	33	51	56	0.0
0.2 to 1.0	33	39	31	22	22
1.0 to 3.0	14	25	16	22	48
3.0 and over	3	3	2	-	38
Total	100	100	100	100	100
Average size (ha)	0.58	0.89	0.72	0.78	3.72
Concentration coefficient	0.69	0.56	0.71	0.47	0.44

Source: IRRI-NARS household survey

Table 2. Expected increase in income from development of irrigation and adoption of modern varieties

Indicator	India		Philippines		Bangladesh		Vietnam	
	Rainfed	Irrigated	Rainfed	Irrigated	Traditional varieties	Modern varieties	Traditional varieties	Modern varieties
Rice yield (t/ha)	1.92	4.17	2.10	3.78	1.97	3.98	2.30	4.81
Gross value of production (US\$/ha)	291	647	442	717	325	597	289	654
Paid out cost (US\$/ha)	119	341	220	409	143	259	196	381
Family income (US\$/ha)	172	306	222	308	182	338	93	273
Unit cost (US\$/ton)	112	85	130	118	122	98	143	114
Paddy price (US\$/ton)	147	141	192	190	165	150	136	136
Rate of profit (percent)	22	66	48	61	35	53	-5	20

Source: IRRI-NARS household survey



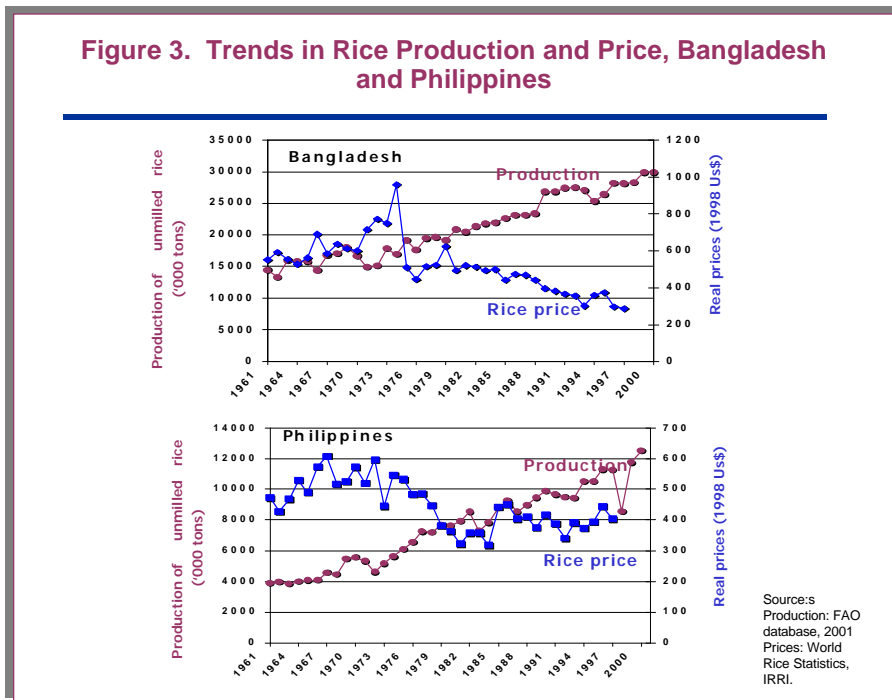


Table 3. State of Development of Irrigation, Modern Varieties and Rice Yield, Selected Asian Countries

Country	Coverage of irrigation (% of rice area)	Coverage of modern varieties (% of rice area)	Rice yield (t/ha) 1999
Bangladesh	48	65	3.2
India	51	73	2.9
Indonesia	54	81	4.3
Philippines	61	93	3.1
Viet Nam	75	90	4.2
China, People's Rep. of	92	100	6.3
Thailand	9	68	2.4

Source: IRRI World Rice Statistics

Table 4. Human Capital: Educational Attainment of Household Heads

Education status	Bangladesh	Bihar India	Philippines	Viet Nam	Thailand
No formal schooling	44	25	5	6	6
Attended primary school	26	18	41	48	85
Attended secondary school	18	16	36	40	7
Secondary school graduates and over	12	41	18	6	2
Total	100	100	100	100	100
Average year of schooling	3.3	6.5	7.2	5.1	5.0

Source: IRRI-NARS household survey

Table 5. Means of Livelihood by Level of Human Capital Development: Bihar, India

Occupation	No formal schooling	Attended primary school	Attended secondary school	Secondary school graduates
Crop farming	43	59	65	45
Livestock	5	4	2	1
Agricultural labor	23	4	2	0
Trade and business	9	8	15	19
Services	5	8	7	29
Non-agricultural labor	17	19	9	6
Total	100	100	100	100

Source: IRRI-NARS household survey

Table 5. Increase in Food Entitlement of Agricultural Laborers, Bangladesh and Philippines, 1986 to 1996

Country	1986	1996	Percent increase
<u>Bangladesh</u>			
Wage rate (Tk/day)	31.9	57.4	80
Rice price (Tk/kg)	11.49	13.43	17
Rice equivalent wage (kg/day)	2.8	4.3	54
<u>Philippines</u>			
Wage rate (P/day)	31.4	108.8	246
Rice price (P/kg)	6.81	17.13	152
Rice equivalent wage (kg/day)	4.6	6.4	39

Source: IRRRI World Rice Statistics database

Table 6. Marginal Returns from Investment in Human Capital, Rural and Urban Areas, Bangladesh

Level of education of that worker	Rural areas		Dhaka City	
	Share of total workforce (percent)	Marginal returns (US\$/annum)	Share of total workforce (percent)	Marginal returns (US\$/annum)
Nil	34.4	334	23.7	372
Primary school	26.6	584	10.1	650
Secondary school dropout	21.4	802	23.8	1276
Secondary school graduate	8.2	814	18.8	1962
Attended college/university	9.5	1184	23.8	3510

Source: Estimated by fitting income functions with the household level data collected by the Bangladesh Institute of Development Studies

Table 8. Factors Associated with Poverty

Factor	Bihar India	Chatigarh India	Thailand	Philippines	Viet Nam
Household size	++	++	++	++	++
Size of landholding	--	--	ns	--	--
State of development of technology	-	--	--	--	--
No. of workers in the family	--	--	--	ns	--
Value of nonland assets	-	--	--	--	ns
Education of workers	--	-	ns	--	ns

Note: (++) denotes positive association at less than 5% probability level and (+) denotes positive significance at less 10% level; (-) signs mean negative association. 'ns' denotes that the association is not statistically significant