POVERTY REDUCTION, RURAL MARKETS AND HUMAN CAPITAL

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ABSTRACT
Despite the continuing efforts to eradicate poverty, material deprivation prevails in the world today, where more than one billion people are below the poverty line of 1 PPP dollar a day. It is well known that the poverty incidence as well as the poverty depth is more serious in rural areas where residents depend on agriculture than in urban areas. In rural areas of these low-income developing countries, markets for agricultural inputs and outputs are well-developed, while the development of credit and insurance markets has been lagging behind. This means that people in general, and particularly poor farmers, have few means to hedge against the vagaries of production and price shocks that may put their livelihood at risk. Under such environments, agricultural technologies that increase the expected profits but are associated with intensive use of inputs and variable output levels may not be beneficial to rural residents. Instead, the key for poverty reduction could be the balanced development of rural markets, especially credit and labor markets, and the improvement of human capital, which enables rural residents to utilize opportunities given by market forces.

In this presentation, I give evidence in support of this argument, based on my field work and microdata of rural households in India and Pakistan. Regarding labor markets, the development of rural non-farm labor markets, which are linked with urban labor markets through inter-regional migration, is important. Regarding credit markets, improved access to credit for assetless or asset-poor households is critical. This line of research has become possible through accumulation of high-quality household data in developing countries, including the famous ICRISAT panel data from India. One of the important role of social sciences in agriculture-related research focusing on poverty reduction could be to accumulate such data for regions not rigorously surveyed before but with high incidence of poverty, such as remote areas in Sub-Saharan Africa and conflict-ridden areas in Asia.

KEYWORDS
Poverty, vulnerability, human capital, non-farm employment, household models, household data

REFERENCES

1. Introduction

- Massive poverty in today’s world:
  - More than one billion people are below the poverty line of 1 PPP$/day.
  - Poverty more serious in rural and agricultural areas than in the urban.
  - Material deprivation correlated with human development deprivation.
- Characteristics of rural economies today:
  - Huge technology gap in agriculture production among farmers.
  - Existence of active markets for input and output.
  - Limited (but developing) markets for credit and insurance.
  - High risk of income fluctuations, linked with the global economy.
- This presentation: I discuss correlates of poverty reduction in rural areas in developing countries:
  - Geographical focus = South Asia (India and Pakistan) but aiming at general lessons from Asian experiences for Sub-Saharan Africa.
  - Conceptual focus = Development of labor, credit, and insurance markets, and its relation with human capital.

2. Analytical Framework

- Basic theoretical model = Agricultural Household Models (AHMs) [or Subjective Equilibrium Models of Farmers] under incomplete markets.
- Given constraints in endowments, market transactions, environments, etc., rural households maximize its expected utility over their life cycle, by choosing their crop portfolio, labor portfolio, current consumption, and investment (human, physical, monetary).
- Some theoretical predictions (individually rational; socially inefficient):
  - A firm/farm in the Third World adopts a new technology if it improves the welfare/utility of the firm/farm household (expected profit is not the objective!).
  - Crop, labor, and investment portfolio respond to risk factors so that they systematically deviate from the expected profit maximization portfolio.

3. Empirical Evidence

3.1. Farmers’ technology choice in poor countries

<table>
<thead>
<tr>
<th>Sources of Growth of Per-capita Income (Y/L)</th>
<th>54% due to technology</th>
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<tbody>
<tr>
<td>Technological innovations as an engine of growth</td>
<td>Potential of poverty reduction</td>
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- Data: 3 years (1988/89-90/91) x 97 farm households in Sheikhpura, Pakistan Punjab
- Farming: Irrigated, rice-wheat, fodder-dairy
- Technology contrasts:
  - Specialized dairy farm and Specialized grain farm
  - Traditional farming system w/ livestock
- Semi-structural econometric model focusing on crop portfolio, to identify risk-averse behavior in production decisions
Findings (1): Farmers’ technology choice is consistent with a risk-averse behavior. Our model of technology adoption by a risk-averse farmer with respect to both total income and consumption prices (food security concerns) performed much better than alternative models.

Findings (2): Income loss due to risk consideration is quite high, indicating social inefficiency due to less development of credit and insurance markets. The loss is smaller among more educated households.

Empirical Evidence

3.2. Farmers’ labor portfolio in poor countries


- Rain-fed farming + limited irrigation; Remittance-based economy; Tribal norms under pressure
- Mincer-model for the schooling returns, distinguishing agricultural vs. non-agricultural, and, self-employment vs. employee (wage work)
- Potential for labor portfolio:
  - How decisive the human capital factor?
  - How large is the deviation of the actual labor portfolio from the expected income maximization portfolio?

- Data: LSMS household micro data from Eastern UP and Bihar, India, 1997
- Bihar and Eastern UP = Poorest region in India
- Examines labor market participation both as an *ante* and an *ex post* response to rainfall variability,
  1. Distinguishing the type of market work: agricultural and non-agricultural wage work.
  2. Incorporating the food security concerns in labor market participation choices.
  3. Estimating the labor supply function and testing whether these two additions significantly improve the precision of the estimation. Multivariate tobit model with rainfall risk, hh, and community level explanatory variables.
  4. Simulating the impacts of rainfall risk on labor supply.

**Marginal impact of CV_rainfall on the labor hour shares, Bihar-UP, India (Multivariate tobit estimation results, significant at 1% ***, 5% **, and 10% *)**

**Interpretation of empirical results from the two papers**

- The labor portfolio pattern in NWFP Pakistan is significantly different from the expected income maximization pattern.
- Estimation results for labor supply in rural Bihar and UP, India, showed that the theoretical prediction (labor portfolio choice should respond to various types of risk associated with each labor, depending on the covariance of shocks to these sectors and shocks to own farm work) holds in the empirical setting.
- Implications:
  1. Although labor diversification, especially into non-farm labor and migration, is effective in poverty reduction, households cannot materialize the full potential due to the necessity of risk aversion.
  2. Human capital benefits households in two routes: Directly enhancing income through Mincerian returns; Indirectly enabling households to choose labor portfolio closer to the expected income maximization portfolio.
  3. Empirical and theoretical studies on farmers’ labor supply response to risk should distinguish between the types of off-farm work involved.

**Related work by Otsuka and Yamano (Background paper for the WDR 2008)**

Four long-term panel datasets from the Philippines, Thailand, Bangladesh, India; three cross-section datasets from Kenya, Uganda, Ethiopia are investigated, yielding three conclusions:

1. Reliance on agricultural labor markets alone will not reduce poverty much.
2. Increased non-farm income is decisively important in reducing rural poverty.
3. Labor markets are segmented according to the schooling levels so that investment in children’s schooling is important. This investment was facilitated by Green Revolution in Asia.

**4. Conclusion and Implications**

- Why seemingly-superior new technologies have not been accepted well by Third World producers? Why rural households do not adopt labor or crop portfolio that maximizes the expected income? These could be an outcome of rational response of poor and risk-averse households to incomplete markets and asymmetric information, not an irrational behavior of the poor and illiterate.
- Among rural markets, non-farm labor markets and credit markets play the key role in poverty reduction. Households with higher human capital have advantage in accessing these markets.
Implication 1

In developing a new technology, we should take into consideration these constraints faced by Third World producers (e.g.: developing a millet variety that meets farmers’ demand both for fodder and grains).

Implication 2

Faster economic growth and more poverty reduction are possible with the available set of technologies if the constraints of market incompleteness and information asymmetry are reduced (e.g.: credit access to the poor by microfinance institutions).

Implication 3

To utilize opportunities given by market forces, human capital is critical. To avoid widening inequality, the public sector should provide basic quality education to all (e.g.: developing a scheme to reward teachers’ effort in rural schools).

Implication 4

To go further (analytics as well as policies), accumulation of high-quality household data is important (e.g.: surveys in remote areas in Sub-Saharan Africa and conflict-ridden areas in Asia, coordinated by CGIAR, or surveys focusing on new issues such as farmers’ suicide, etc.).