

# **POVERTY REDUCTION, RURAL MARKETS AND HUMAN CAPITAL**

**Takashi Kurosaki**

Institute of Economic Research, Hitotsubashi University

2-1 Naka, Kunitachi, Tokyo, 186-8603 Japan

## **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**

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Kurosaki, T. and H. Khan, 2006, "Human Capital, Productivity, and Stratification in Rural Pakistan," *Review of Development Economics*, 10(1), 116-134.

Otsuka, K. and T. Yamano, 2007, "The Role of Rural Labor Markets in Poverty Reduction; Evidence from Asia and East Africa," Background paper for *World Development Report 2008: Agriculture for Development*.



## 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.

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## 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.

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## 3. Empirical Evidence

### 3.1. Farmers' technology choice in poor countries

Technological innovations as an engine of growth

=> Potential of poverty reduction

Sources of Growth of Per-capita Income (Y/L)

Hayami and Godo (2005), Table 5.2

## Large gap in crop technology (example from Pakistan)

Wheat Yield (kg/ha) in Pakistan, 1997

- Acute absolute poverty in the Third World: Growth in Y/L is not high enough.
- Huge technology gap (Fig.)
- Thus, seemingly-superior new technologies not adopted by many producers. This is a potential source of growth, if we can correctly understand the reason for low adoption.

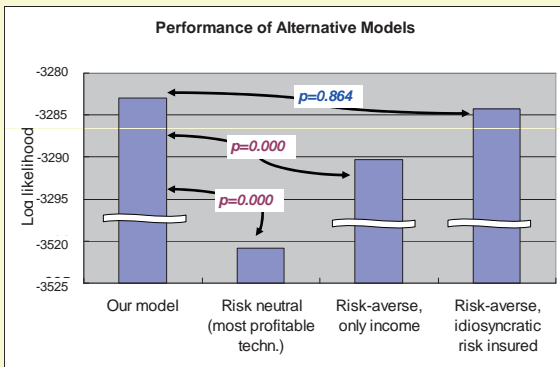
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Kurosaki and Fafchamps (2002) "Insurance Market Efficiency and Crop Choices in Pakistan." *Journal of Development Economics*, vol.67, no.2

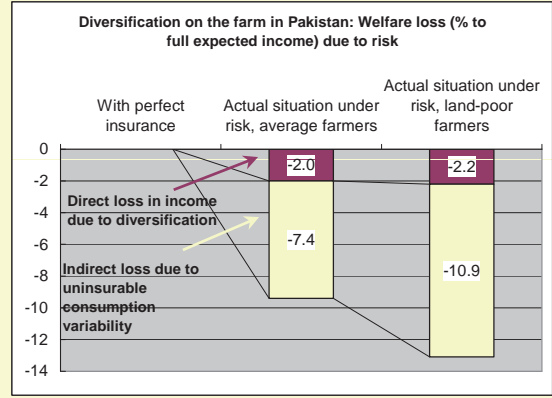
- Data: 3 years (1988/89-90/91) x 97 farm households in Sheikhpura, Pakistan Punjab
- Farming: Irrigated, rice-wheat, fodder-dairy
- Technology contrasts:
  - Specialized dairy farm and Specialized grain farm
  - Traditional farming system w/ livestock
- Semi-structural econometric model focusing on crop portfolio, to identify risk-averse behavior in production decisions

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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.



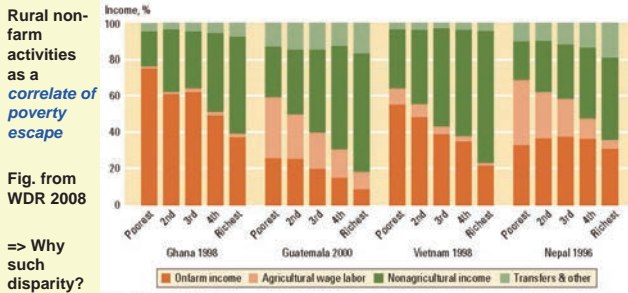
Findings (2): Income loss due to risk consideration is quite high, indicating social inefficiency due to less development of credit and insurance markets. The loss is smaller among more educated households.



### Empirical Evidence

#### 3.2. Farmers' labor portfolio in poor countries

Figure 3.3 Sources of income vary between poor and rich



Rural non-farm activities as a correlate of poverty escape

Fig. from WDR 2008

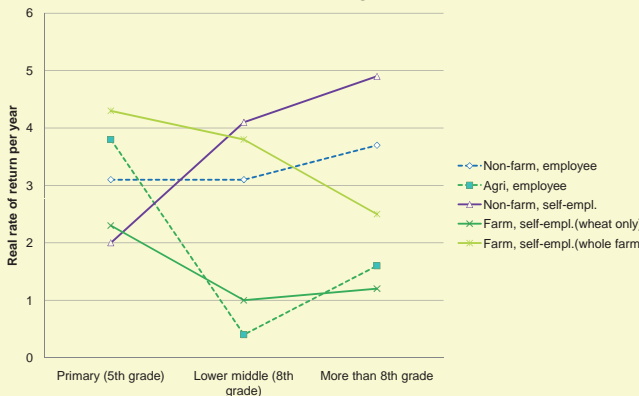
=> Why such disparity?

Source: Davis and others 2007. Note: For each country, columns represent the bottom fifth to the top fifth of the expenditure distribution.

#### Kurosaki and Khan (2006) "Human Capital, Productivity, and Stratification in Rural Pakistan," Review of Development Economics.

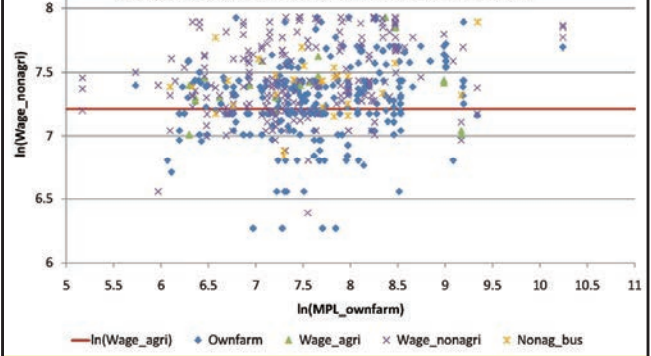
- Data: Panel data of rural households in three villages in NWFP, Pakistan (1996/97 and 1999/2000)
- Rain-fed farming + limited irrigation; Remittance-based economy; Tribal norms under pressure
- Mincer-model for the schooling returns, distinguishing agricultural vs. non-agricultural, and self-employment 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?

Estimates for Returns to Schooling, Rural NWFP, Pakistan



E[Marginal Product of Labor] on the farm, expected wage level, and labor allocation (NWFP Pakistan, 1996).

60% of observations are consistent with the E[Y] maximization.

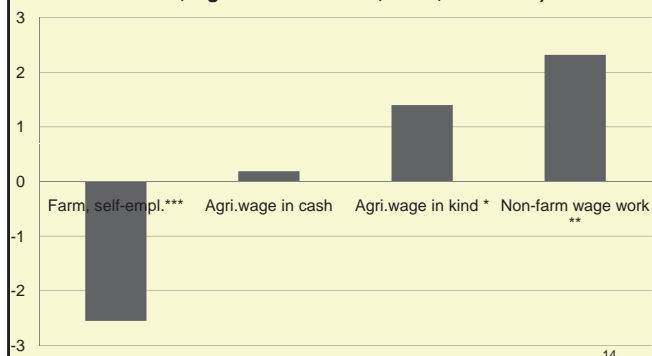


Ito and Kurosaki (2009) "Weather Risk, Wages in Kind, and the Off-Farm Labor Supply of Agricultural Households in a Developing Country," *American J. of Agric. Econ.*

- 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 *ex 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.

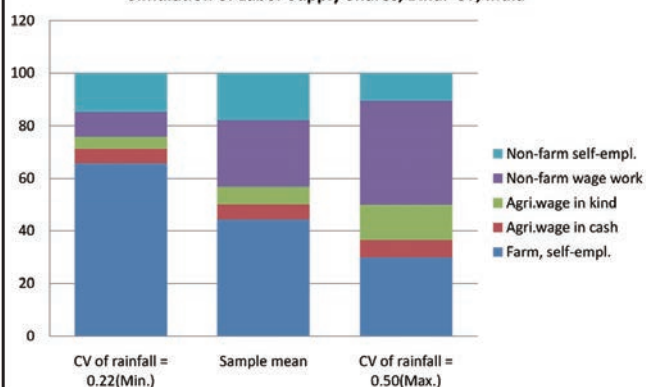
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Marginal impact of CV\_rainfall on the labor hour shares, Bihar-UP, India (Multivariate tobit estimation results, significant at 1% \*\*\*, 5% \*\*, and 10% \*)



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Simulation of Labor Supply Shares, Bihar-UP, India



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## 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.

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## 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.

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## 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.

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## 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*).



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## 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 micro finance 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*).

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## 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.*).

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