“The Loop Survey: A retrospective view of technological and other changes in Central Luzon rice farms over five decades (1966-2012),”

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JOINT VENTURE
PART 1: The loop survey

PART 2:  Take-home message:  
Implications for Philippines

PART 3:  Take home game:  
The Game of Rice
What is the Loop Survey?

- The survey was initiated in 1966.
- It covers detailed records on the production systems in both wet and dry season.
- Conducted every four to five years until 2011-12, 23 rounds of survey.
The survey fields are observed at specific kilometer posts along the “loop” of national highway (e.g., the 50th, 100th, 150th etc.)
We overview changes in

1. Yields and varieties
2. Machine use and labor use
3. Profitability and its distribution
4. Macro level impact
5. Rice farmers’ characteristics
Yield growth over five decades

- Yields have more than doubled.
- Dry-season yields have been continuously increasing.
- Wet-season yields have plateaued at 4 t/ha in the past decade.
CHANGES IN CROP MANAGEMENT PRACTICES AND INPUT USE
Fertilizer price and use

N Price, WS

N P K application, WS

Similar in DS
Insecticide and herbicide use

Education campaigns & IPM → the reduction of insecticide use in the 80s.
Direct seeding in the 80s → herbicide use in DS > WS.
MECHANIZATION AND LABOR USE
Progress of small scale mechanization

Land preparation: WS

- Animal
- Power tiller (2W)
- Large tractor (4W)
- Rotavator

Threshing: WS

- Manual threshing
- Small thresher
- Big thresher

→ Similar in DS.
→ Small scale mechanization has proceeded successfully.
Labor use: historical trend

MV is labor using for crop care. → Labor use increased.

Mechanization, direct seeding (in DS only), short duration MVs

Substitute hired labor for expensive family labor

Similar in DS
CHANGES IN PROFITABILITY
Changes in profit

Declining profit in WS, almost zero in the 2000s.
Maintained profit in DS.

- Gross revenue = price x yield
- Total cost = paidout cost* + imputed cost**
  * fertilizer, hired labor, etc.
  ** family labor, owned tractor, etc.
CHANGES IN RICE FARMERS’ CHARACTERISTICS
Increasing number of high school and college graduates among young.
Rice farming was major income source.
Rice farming has become a side business.
TAKE HOME MESSAGES
Table 9.1. Changes in sources of household income (%), six selected case studies, Central Luzon Loop farmers, 1960 to 2000.

<table>
<thead>
<tr>
<th>Sources of income</th>
<th>1960s</th>
<th>1970s</th>
<th>1980s</th>
<th>1990s</th>
<th>2000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>67.9</td>
<td>86.1</td>
<td>37.3</td>
<td>37.8</td>
<td>17.1</td>
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<tr>
<td>Nonrice crop</td>
<td>16.2</td>
<td>9.7</td>
<td>5.0</td>
<td></td>
<td></td>
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<tr>
<td>Livestock and poultry</td>
<td>7.2</td>
<td>26.6</td>
<td>6.2</td>
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<tr>
<td>Off-farm employment</td>
<td>32.1</td>
<td>13.9</td>
<td>34.3</td>
<td>21.8</td>
<td>33.6</td>
</tr>
<tr>
<td>Remittances</td>
<td>3.3</td>
<td>4.1</td>
<td>27.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other sources (rentals, etc.)</td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
<td>10.2</td>
</tr>
</tbody>
</table>
sarap
mag
RC

LYDIA'S STORE

DON'T BE A MAYBE

NEW Coca-Cola
mismo!
300mL
TAKE HOME MESSAGE 1

→ MAN DOES NOT LIVE by RICE ALONE

→ PARTICULARLY in the WET SEASON in CENTRAL LUZON
Figure 3. Trends in the % of the labor force in agriculture and the % in GDP from 1960 to 2008 for (a) Taiwan and (b) the Philippines.

Source: Huang-hao Chang, National Taiwan University. (data for Taiwan)

Source: Christina David, Philippine Institute for Development Studies. (data for the Philippines)
TAKE HOME MESSAGE 2

THE PHILIPPINES

- IMPORTS RICE and
- EXPORTS LABOR
- AND THAT’S NOT SO BAD
<table>
<thead>
<tr>
<th>Years</th>
<th>Persons responsible</th>
<th>Researchers/ enumerators that conducted the interviews</th>
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<tbody>
<tr>
<td>1970-71</td>
<td>Randolph Barker, Violeta Cordova</td>
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<td>1974-75</td>
<td>Randolph Barker, Robert W. Herdt, Chandra Ranade</td>
<td>Ricardo Guino, Bonifacio Cayabyab</td>
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<td>1979-80</td>
<td>Robert W. Herdt, Ricardo Guino, Violeta Cordova</td>
<td>F. Gascon, Dolor Palis, Sylvia Sardido,</td>
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<tr>
<td></td>
<td></td>
<td>Perla Pantoja, Aida Papag</td>
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<td>1986-87</td>
<td>Keijiro Otsuka, Fe Gascon</td>
<td>Dolor Palis, Luisa Bambo, Esther Marciano</td>
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<td>1990-91</td>
<td>Cristina David, Fe Gascon</td>
<td>Joel Reaño, Alvaro Calara, Luisa Bambo,</td>
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<td></td>
<td></td>
<td>Milagros Obusan</td>
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<td>1994-95</td>
<td>Mahabub Hossain, Fe Gascon</td>
<td>Esther Marciano, Joel Reaño</td>
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<td>1998-99</td>
<td>Mahabub Hossain, Fe Gascon</td>
<td>Joel Reaño, Teodora Malabanan, Aida Papag, Nancy Palma</td>
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<td>2003-04</td>
<td>David Dawe, Kazushi Takahashi, Fe Gascon</td>
<td>Maria Shiela Valencia, Milagros Obusan, Violeta Cordova, Mary Rose San Valentin</td>
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<td>2007-08</td>
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<td>Fe Gascon, Mary Rose San Valentin</td>
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<td>2011-12</td>
<td>Sam Mohanty, Pie Moya</td>
<td>Joel Reaño, Mary Rose San Valentin, Teodora Malabanan</td>
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</table>
Comprehensive documentation of the changes in rice farming for half a century!


Data set is also downloadable at http://ricestat.irri.org/fhsd/php/panel.php?page=3
FACE THE CHALLENGE THAT FARMERS FACE

THE GAME OF RICE is an interactive simulation game designed to expose the player(s) to the many decisions that rice farmers must make and the nature of the risks they face – potential crop damage from typhoons, rats, insects, birds, snails etc.

WEBSITES TO VISIT

The Book is downloadable *for free* at

Data set is also downloadable at

The Game of Rice:
http://game-of-rice.munkeewired.com/