

# Determinants of Farmers' Demand for Rice crop Insurance in the Ilocos Region

## RESULTS AND FINDINGS

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# Outline of Presentation

1. Research Objectives
2. Research Questions
3. Hypotheses of the Study
4. Conceptual Framework
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6. Results and Findings
  - *Descriptive Statistics*
  - *Logistic Regression Analysis*

# Research Objectives

- Identify the factors that influence farmers' decision to avail rice crop insurance in the Ilocos Region
- Assess the role of formal lending institutions to rice crop insurance availment
- Explore the relationship of other risk coping mechanisms to the uptake of rice crop insurance

# Research Questions

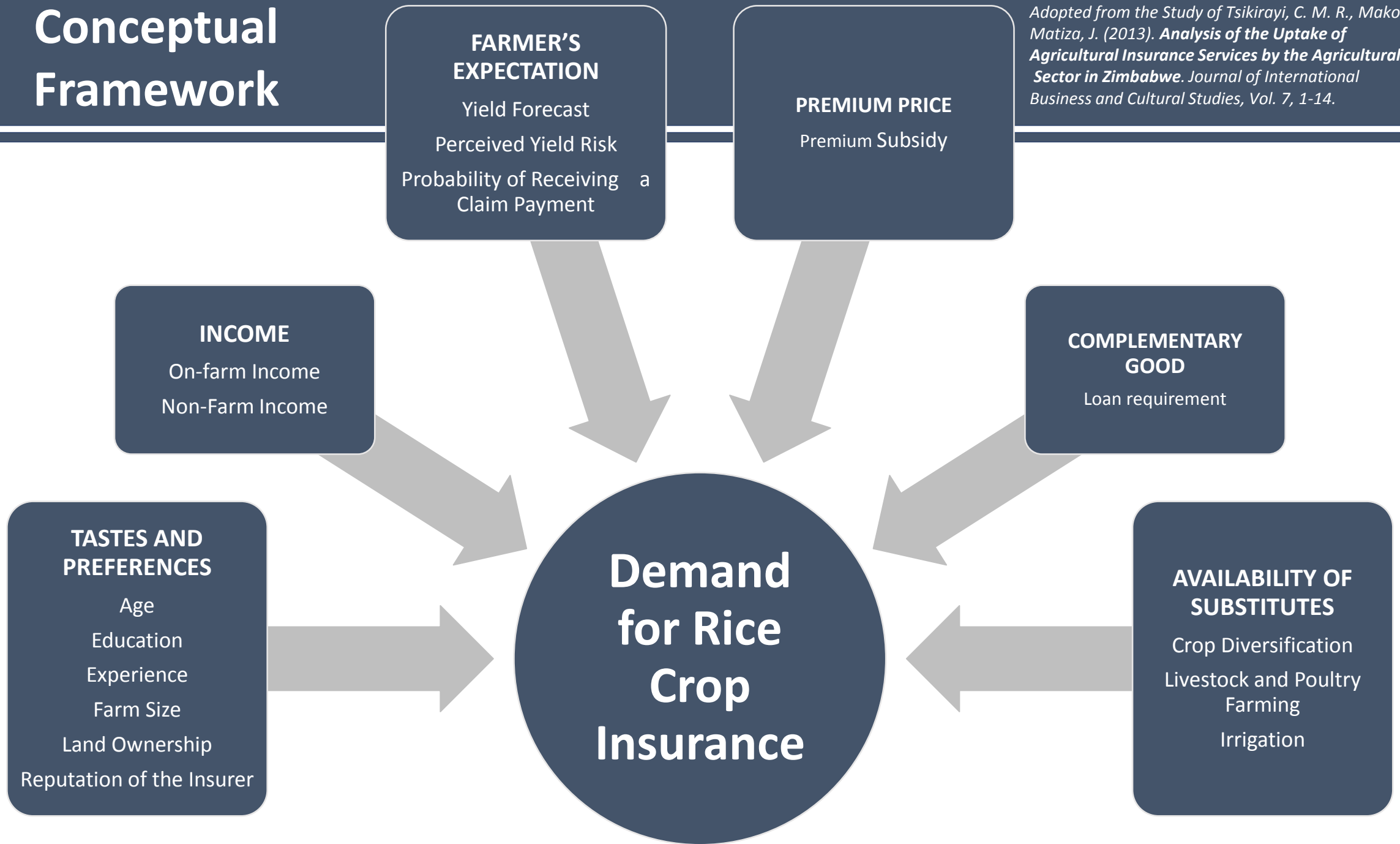
- What are the determinants of farmers' demand for rice crop insurance in the Ilocos Region?
  - *What are the most important factors that affect farmers' decision to avail rice crop insurance?*
- How does farmers' loan availment from formal lending institutions influence their demand for rice crop insurance?
- How does other risk coping mechanisms affect the decision of farmers to avail rice crop insurance?

# Hypotheses of the Study

- Higher educational attainment, positive perception of the insurer, higher premium subsidy, higher yield forecast, perceived yield risk, and probability of receiving a claim payment, and higher loan uptake from formal lending institutions (*insurance as a prior loan condition*) increases the probability that farmers will avail rice crop insurance.
- Older farmers with longer farming experience, larger farm size, and have higher on-farm and non-farm income are more reluctant to avail rice crop insurance.
- Farmers who are engaged in other forms of risk coping mechanisms such as crop diversification, livestock and poultry farming (*for commercial purposes*), and membership to Irrigators Association are less likely to purchase rice crop insurance.

# Conceptual Framework

Adopted from the Study of Tsikirayi, C. M. R., Makoni, E., & Matiza, J. (2013). *Analysis of the Uptake of Agricultural Insurance Services by the Agricultural Sector in Zimbabwe*. *Journal of International Business and Cultural Studies*, Vol. 7, 1-14.



# Logistic Regression Model

$$Z_i = \ln [P_i/(1-P_i)] = \alpha_0 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \dots + \alpha_{16} X_{16} + u_i$$

## Where:

$P_i$  = The probability of choice of farmer  $i$  to avail rice crop insurance

## Dependent Variable:

1 = Avail Rice Crop Insurance  
0 = Not Avail Rice Crop Insurance

$\alpha_0$  = Intercept

$u_i$  = Error term

## Independent Variables:

$X_1$  = Age  
 $X_2$  = Education  
 $X_3$  = Farming Experience  
 $X_4$  = Land Tenure  
 $X_5$  = Farm Size  
 $X_6$  = Reputation of the Insurer  
 $X_7$  = On-Farm Income  
 $X_8$  = Non-Farm Income  
 $X_9$  = Premium Subsidy  
 $X_{10}$  = Yield Forecast  
 $X_{11}$  = Perceived Yield Risk  
 $X_{12}$  = Probability of Receiving a Claim  
 $X_{13}$  = Lender Requirement  
 $X_{14}$  = Membership to Irrigators Association  
 $X_{15}$  = Crop Diversification  
 $X_{16}$  = Livestock Farming

# Logistic Regression Model

| Factors                       | Definition  |
|-------------------------------|---|
| <b>Tastes and Preferences</b> |   |
| Age                           | Number of years   |
| Education                     | Categorical Variable: 1 if elementary; 2 if secondary, 3 tertiary, 4 if vocational                |
| Farming Experience            | Number of years   |
| Land Tenure                   | Categorical Variable: 1 if owner; 2 if tenant; and 3 if both                                      |
| Farm Size                     | in hectares   |
| Reputation of the Insurer     | 1 if the farmer have positive perception of the insurer; 0 if otherwise                           |
| <b>Income</b>                 |   |
| On-Farm Income                | Amount of on-farm income ( <i>Average monthly income</i> )  |
| Non-Farm Income               | Amount of non-farm income ( <i>Average monthly income</i> )                                       |
| <b>Complementary Good</b>     |   |
| Lender Requirement            | 1 if insurance availment is a prior loan condition of formal lending institutions; 0 if otherwise |



# Logistic Regression Model

| Factors                              | Definition  |
|--------------------------------------|---|
| <b>Price of Insurance</b>            |   |
| Subsidized premium                   | 1 if subsidy is high; 0 if subsidy is low   |
| <b>Farmer's Expectations</b>         |   |
| Perceived Yield                      | 1 if a farmer's yield forecast is high; 0 if low                                    |
| Perceived Yield Risk                 | 1 if a farmer's perceived yield risk is high; 0 if low                              |
| Probability of Receiving a Claim     | 1 if a farmer expects to receive a claim payment; 0 if otherwise                    |
| <b>Availability of Substitutes</b>   |   |
| Membership to Irrigators Association | 1 if the farmer is a member of irrigators association; 0 if otherwise               |
| Crop Diversification                 | 1 if the farmer plants more than 1 crop; 0 if otherwise                             |
| Livestock and Poultry Farming        | 1 if the farmer raise livestock and poultry for commercial purposes; 0 if otherwise |

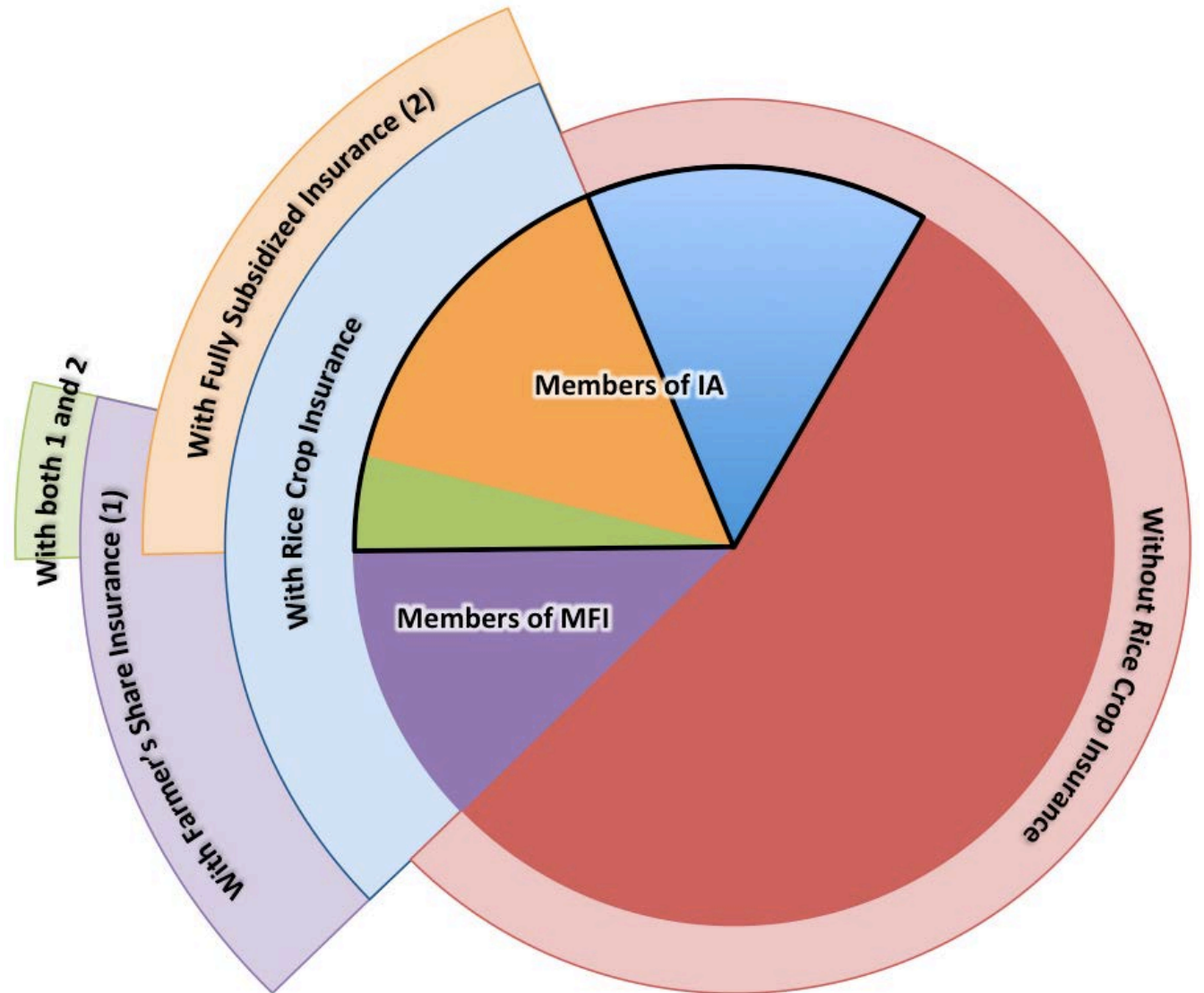
# **RESULTS AND FINDINGS**

## **Descriptive Statistics**

# Rice Crop Insurance Availment

## Sample: 70 Rice Farmers

|   |                     |
|---|---------------------|
| <b>A. With Rice Crop Insurance</b>        | <b>- 30, 42.86%</b> |
| 1. <i>With farmer's share insurance</i>   | - 18, 60.00%        |
| 2. <i>With fully subsidized insurance</i> | - 16, 53.33%        |
| 3. <i>With both (1) and (2)</i>           | - 4, 13.33%         |
| <b>B. Without Rice Crop Insurance</b>     | <b>- 40, 57.14%</b> |
| -----                                     |                     |
| 1. Member of IA                           | - 29, 41.42%        |
| 2. Member of MFI                          | - 18, 27.14%        |



# Socio-Economic Characteristics of Respondents

## *Sex, Marital Status and Education*

| Variables                 |                   | Availed (n=30) |            | Did not Avail (n=40) |            | TOTAL (n=70) |            |
|---------------------------|-------------------|----------------|------------|----------------------|------------|--------------|------------|
|                           |                   | Count          | Percentage | Count                | Percentage | Count        | Percentage |
| <b>Sex</b>                | <i>Male</i>       | 23             | 76.67%     | 38                   | 95.00%     | 61           | 87.14%     |
|                           | <i>Female</i>     | 7              | 23.33%     | 2                    | 5.00%      | 9            | 12.86%     |
| <b>Marital Status</b>     | <i>Married</i>    | 27             | 90.00%     | 33                   | 82.50%     | 60           | 85.71%     |
|                           | <i>Single</i>     | 1              | 3.33%      | 5                    | 12.50%     | 6            | 8.57%      |
|                           | <i>Widowed</i>    | 2              | 6.67%      | 2                    | 5.00%      | 4            | 5.71%      |
| <b>Level of Education</b> | <i>Primary</i>    | 5              | 16.67%     | 9                    | 22.50%     | 14           | 20.00%     |
|                           | <i>Secondary</i>  | 14             | 46.67%     | 23                   | 57.50%     | 37           | 52.86%     |
|                           | <i>Tertiary</i>   | 5              | 16.67%     | 4                    | 10.00%     | 9            | 12.86%     |
|                           | <i>Vocational</i> | 6              | 20.00%     | 4                    | 10.00%     | 10           | 14.29%     |

# Socio-Economic Characteristics of Respondents

## *Primary and Secondary Occupation*

| Variables                   |                            | Availed (n=30) |            | Did not Avail (n=40) |            | TOTAL (n=70) |            |
|-----------------------------|----------------------------|----------------|------------|----------------------|------------|--------------|------------|
|                             |                            | Count          | Percentage | Count                | Percentage | Count        | Percentage |
| <b>Primary Occupation</b>   | <i>Farming</i>             | 30             | 100.00%    | 38                   | 95.00%     | 68           | 97.14%     |
|                             | <i>Agricultural Trader</i> | 0              | 0.00%      | 1                    | 2.50%      | 1            | 1.43%      |
|                             | <i>Private</i>             | 0              | 0.00%      | 1                    | 2.50%      | 1            | 1.43%      |
| <b>Secondary Occupation</b> | <i>Barangay Official</i>   | 2              | 6.67%      | 0                    | 0.00%      | 2            | 2.86%      |
|                             | <i>Market Vendor</i>       | 1              | 3.33%      | 0                    | 0.00%      | 1            | 1.43%      |
|                             | <i>Electrician</i>         | 0              | 0.00%      | 1                    | 2.50%      | 1            | 1.43%      |
|                             | <i>Driver</i>              | 0              | 0.00%      | 1                    | 2.50%      | 1            | 1.43%      |
|                             | <i>Farming</i>             | 0              | 0.00%      | 2                    | 5.00%      | 2            | 2.86%      |
|                             | <i>Store Owner</i>         | 0              | 0.00%      | 1                    | 2.50%      | 1            | 1.43%      |

# Socio-Economic Characteristics of Respondents

## *Age, Household Size and Farming Experience*

| Variables                 |                  | Availed | Did not Avail | TOTAL |
|---------------------------|------------------|---------|---------------|-------|
| <b>Age</b>                | <i>Average</i>   | 46.23   | 47.18         | 46.77 |
|                           | <i>Min.</i>      | 30      | 24            | 24    |
|                           | <i>Max.</i>      | 69      | 80            | 80    |
|                           | <i>Std. Dev.</i> |         |               | 11.46 |
| <b>Household Size</b>     | <i>Average</i>   | 4.30    | 4.83          | 4.60  |
|                           | <i>Min.</i>      | 3       | 2             | 2     |
|                           | <i>Max.</i>      | 7       | 10            | 10    |
|                           | <i>Std. Dev.</i> |         |               | 1.55  |
| <b>Farming Experience</b> | <i>Average</i>   | 22.67   | 23.95         | 23.4  |
|                           | <i>Min.</i>      | 6       | 4             | 4     |
|                           | <i>Max.</i>      | 52      | 60            | 60    |
|                           | <i>Std. Dev.</i> |         |               | 11.21 |

# Socio-Economic Characteristics of Respondents

## *Average Monthly Income – On Farm and Non Farm (in Pesos)*

| Variables             |                  | Availed   | Did not Avail | TOTAL     |
|-----------------------|------------------|-----------|---------------|-----------|
| <b>On-Farm</b>        | <i>Average</i>   | 6,133.33  | 5,656.25      | 5,860.72  |
|                       | <i>Min.</i>      | 2,000.00  | 1,750.00      | 1,750.00  |
|                       | <i>Max.</i>      | 12,500.00 | 16,500.00     | 19,000.00 |
|                       | <i>Std. Dev.</i> |           |               | 3,841.75  |
| <b>A. Main Crop</b>   | <i>Average</i>   | 6,958.33  | 6,550.00      | 6,725.00  |
|                       | <i>Min.</i>      | 2,000.00  | 2,000.00      | 2,000.00  |
|                       | <i>Max.</i>      | 15,000.00 | 23,000.00     | 23,000.00 |
| <b>B. Second Crop</b> | <i>Average</i>   | 5,308.33  | 4,762.50      | 4,996.43  |
|                       | <i>Min.</i>      | 2,000.00  | 1,500.00      | 1,500.00  |
|                       | <i>Max.</i>      | 10,000.00 | 10,000.00     | 15,000.00 |
| <b>Non-Farm</b>       | <i>Average</i>   | 2,725.00  | 8,875.00      | 5,800.00  |
|                       | <i>Min.</i>      | 2,200.00  | 1,000.00      | 1,000.00  |
|                       | <i>Max.</i>      | 3,500.00  | 18,000.00     | 18,000.00 |
|                       | <i>Std. Dev.</i> |           |               | 6,694.99  |

**Note:**  
P1 = \$0.0224  
\$1 = P44.57

# Agricultural Characteristics

| Variables                    |                    | Availed (n=30) |            | Did not Avail (n=40) |            | TOTAL (n=70) |            |
|------------------------------|--------------------|----------------|------------|----------------------|------------|--------------|------------|
|                              |                    | Count          | Percentage | Count                | Percentage | Count        | Percentage |
| <b>Land Tenure</b>           | <i>Owner</i>       | 4              | 13.33%     | 3                    | 7.50%      | 7            | 10.00%     |
|                              | <i>Tenant</i>      | 20             | 66.67%     | 29                   | 72.50%     | 49           | 70.00%     |
|                              | <i>Both</i>        | 6              | 20.00%     | 8                    | 20.00%     | 14           | 20.00%     |
| <b>Crops Cultivated</b>      | <i>Rice</i>        | 30             | 100.00%    | 40                   | 100.00%    | 70           | 100.00%    |
|                              | <i>Corn</i>        | 16             | 53.33%     | 16                   | 40.00%     | 32           | 45.71%     |
|                              | <i>Vegetables</i>  | 1              | 3.33%      | 2                    | 5.00%      | 3            | 4.29%      |
| <b>Livestock and Poultry</b> | <i>Subsistence</i> | 8              | 32.00%     | 15                   | 42.86%     | 23           | 38.33%     |
|                              | <i>Commercial</i>  | 17             | 68.00%     | 20                   | 57.14%     | 37           | 61.67%     |



# Agricultural Characteristics

| Variables  |                  | Availed | Did not Avail | TOTAL |
|--|------------------|---------|---------------|-------|
| <b>Farm Size</b><br><i>(in Hectares)</i>         | <i>Average</i>   | 2.28    | 1.85          | 2.04  |
|  | <i>Min.</i>      | 0.80    | 0.50          | 0.50  |
|  | <i>Max.</i>      | 8.00    | 11.00         | 11.00 |
|  | <i>Std. Dev.</i> |         |               | 1.18  |
| <b>Insured Farm Size</b><br><i>(in Hectares)</i> | <i>Average</i>   | 1.26    |               |       |
|  | <i>Min.</i>      | 0.80    |               |       |
|  | <i>Max.</i>      | 3.00    |               |       |
|  | <i>Std. Dev.</i> | 0.60    |               |       |

# Type of Farmer and Borrowing

| Variables                |                              | Availed (n=30) |            | Did not Avail (n=40) |            | TOTAL (n=70) |            |
|--------------------------|------------------------------|----------------|------------|----------------------|------------|--------------|------------|
|                          |                              | Count          | Percentage | Count                | Percentage | Count        | Percentage |
| <b>Type of Farmer</b>    | <b><i>Self-financed</i></b>  |                |            | 12                   | 30.00%     | 12           | 17.14%     |
|                          | <i>Financed by Landowner</i> |                |            | 4                    | 33.33%     |              |            |
|                          | <i>On-Farm Income</i>        |                |            | 6                    | 50.00%     |              |            |
|                          | <i>Remittance</i>            |                |            | 2                    | 16.67%     |              |            |
|                          | <b><i>Borrowing</i></b>      | 30             | 100.00%    | 28                   | 70.00%     | 58           | 82.86%     |
| <b>Type of Borrowing</b> | <i>Individual</i>            | 0              | 0.00%      | 28                   | 70.00%     | 28           | 40.00%     |
|                          | <i>Group</i>                 | 30             | 100.00%    | 0                    | 0.00%      | 30           | 42.86%     |

# Loan Availment from Formal and Informal Sources

| Variables                     |                                     | Availed   | Did not Avail |
|-------------------------------|-------------------------------------|-----------|---------------|
| <b>Amount of Loan Availed</b> | <b><i>MFI - TSPI</i></b>            |           |               |
|                               | <i>Average</i>                      | 27,888.89 |               |
|                               | <i>Min.</i>                         | 15,000.00 |               |
|                               | <i>Max.</i>                         | 40,000.00 |               |
|                               | <i>Std. Dev.</i>                    | 6,858.99  |               |
|                               | <b><i>Landbank - Sikat Saka</i></b> |           |               |
|                               | <i>Average</i>                      | 35,687.50 |               |
|                               | <i>Min.</i>                         | 17,000.00 |               |
|                               | <i>Max.</i>                         | 98,000.00 |               |
|                               | <i>Std. Dev.</i>                    | 19,417.24 |               |
|                               | <b><i>Informal Moneylender</i></b>  |           |               |
|                               | <i>Average</i>                      |           | 28,846.15     |
|                               | <i>Min.</i>                         |           | 10,000.00     |
| <i>Max.</i>                   |                                     | 50,000.00 |               |
| <i>Std. Dev.</i>              |                                     | 15,576.12 |               |

# **RESULTS AND FINDINGS**

## **Logistic Regression Analysis**

# 1<sup>st</sup> Stage: Result of Logistic Regression Analysis

| Factors                     | Independent Variables            | B              | Exp(B)          |
|-----------------------------|----------------------------------|----------------|-----------------|
| Taste and Preferences       | Age                              | .060           | 1.062           |
|                             | Educational Level                |                |                 |
|                             | <i>Primary</i>                   | -2.655         | .070            |
|                             | <i>Secondary</i>                 | -.656          | .519            |
|                             | <i>Tertiary</i>                  | -.517          | .596            |
|                             | Years of Farming                 | -.080          | .923            |
|                             | Land Tenure                      |                |                 |
|                             | <i>Owner</i>                     | 3.761          | 42.977          |
|                             | <i>Tenant</i>                    | .659           | 1.932           |
|                             | Farm Size                        | -.087          | .917            |
| Income                      | <b>Reputation of the Insurer</b> | <b>3.988**</b> | <b>53.931**</b> |
|                             | Ave. Monthly Income - On Farm    | .000           | 1.000           |
|                             | Ave. Monthly Income - Non Farm   | -.001          | .999            |
| Premium Price               | Premium Subsidy                  | 1.837          | 6.276           |
| Farmer's Expectations       | <b>Yield Forecast</b>            | <b>2.910**</b> | <b>18.360**</b> |
|                             | <b>Perceived Yield Risk</b>      | <b>2.970**</b> | <b>19.495**</b> |
|                             | Probability of Receiving a Claim | 1.783          | 5.949           |
| Complementary Good          | <b>Lender Requirement</b>        | <b>4.396**</b> | <b>81.112**</b> |
| Availability of Substitutes | Membership to Irrigators Assoc.  | 1.521          | 4.575           |
|                             | Crop Diversification             | 1.223          | 3.398           |
|                             | Livestock Farming                | 1.528          | 4.608           |
|                             | Constant                         | -13.472        | .000            |

## Model Summary

|                      |      |
|----------------------|------|
| Cox & Snell R Square | .544 |
| Nagelkerke R Square  | .731 |

## Classification Table

| Observed           |               | Predicted          |       |           |
|--------------------|---------------|--------------------|-------|-----------|
|                    |               | Insurance Purchase |       | % Correct |
|                    |               | Did Not Avail      | Avail |           |
| Insurance Purchase | Did Not Avail | 35                 | 5     | 87.5      |
|                    | Avail         | 5                  | 25    | 83.3      |
| Overall Percentage |               |                    |       | 85.7      |

Note: Significance Level - \*\*\*(.01), \*\*(.05), \*(.001)

# 2<sup>nd</sup> Stage: Result of Logistic Regression Analysis

## Backward Stepwise Procedure

| Independent Variables                   | Exp(B)          |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |
|---|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|   | M1              | M2              | M3              | M4              | M5               | M6              | M7              | M8              | M9              | M10             | M11             |
| Age                                     | 1.062           | 1.062           | 1.063           | 1.019           |                  |                 |                 |                 |                 |                 |                 |
| Educational Level                       |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |
| <i>Primary</i>                          | .070            | .070            | .067            |                 |                  |                 |                 |                 |                 |                 |                 |
| <i>Secondary</i>                        | .519            | .518            | .507            |                 |                  |                 |                 |                 |                 |                 |                 |
| <i>Tertiary</i>                         | .596            | .598            | .567            |                 |                  |                 |                 |                 |                 |                 |                 |
| Years of Farming                        | .923            | .923            | .922            | .925            | .940             | .946            | .951            | .950            | <b>0.943***</b> | .955            |                 |
| Land Tenure                             |                 |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |
| <i>Owner</i>                            | 42.977          | 43.154          | 35.289          | 15.389          | 15.564           |                 |                 |                 |                 |                 |                 |
| <i>Tenant</i>                           | 1.932           | 1.776           | 1.485           | 1.401           | 1.375            |                 |                 |                 |                 |                 |                 |
| Farm Size                               | .917            |                 |                 |                 |                  |                 |                 |                 |                 |                 |                 |
| <b>Reputation of the Insurer</b>        | <b>53.931**</b> | <b>53.995**</b> | <b>51.412**</b> | <b>26.950**</b> | <b>26.709**</b>  | <b>13.543**</b> | <b>10.888**</b> | <b>11.348**</b> | <b>9.679**</b>  | <b>9.472**</b>  | <b>8.129**</b>  |
| Ave. Monthly Income - On Farm           | 1.000           | 1.000           |                 |                 |                  |                 |                 |                 |                 |                 |                 |
| Ave. Monthly Income - Non Farm          | .999            | .999            | .999            | .999            | .999             | .999            |                 |                 |                 |                 |                 |
| <b>Premium Subsidy</b>                  | 6.276           | 6.275           | 6.412           | <b>7.372***</b> | <b>7.5208***</b> | <b>5.336***</b> | 4.305           | 4.111           | 3.779           | <b>4.438***</b> | <b>4.716**</b>  |
| <b>Yield Forecast</b>                   | <b>18.360**</b> | <b>18.390**</b> | <b>18.635**</b> | <b>11.191**</b> | <b>11.434**</b>  | <b>9.453**</b>  | <b>6.941**</b>  | <b>7.203**</b>  | <b>6.860**</b>  | <b>6.519**</b>  | <b>5.128**</b>  |
| <b>Perceived Yield Risk</b>             | <b>19.495**</b> | <b>19.507**</b> | <b>18.940**</b> | <b>11.585**</b> | <b>11.429**</b>  | <b>11.564**</b> | <b>11.307*</b>  | <b>11.210*</b>  | <b>10.560*</b>  | <b>11.970*</b>  | <b>10.079*</b>  |
| <b>Probability of Receiving a Claim</b> | 5.949           | 5.945           | 6.928           | 6.428           | 6.249            | <b>8.579***</b> | 7.325           | <b>7.863***</b> | <b>10.896**</b> | <b>11.236**</b> | <b>9.845***</b> |
| <b>LenderReq</b>                        | <b>81.112**</b> | <b>81.294**</b> | <b>79.902**</b> | <b>66.974**</b> | <b>72.526*</b>   | <b>55.671**</b> | <b>35.919*</b>  | <b>36.308*</b>  | <b>29.352*</b>  | <b>29.134**</b> | <b>24.447**</b> |
| Crop Diversification                    | 4.575           | 4.577           | 4.645           | 3.826           | 3.705            | 3.319           | 2.930           | 2.871           |                 |                 |                 |
| Livestock Farming                       | 3.398           | 3.384           | 3.924           | 6.680           | 6.888            | 5.772           | 2.226           |                 |                 |                 |                 |
| Irrigation                              | 4.608           | 4.603           | 4.348           | 4.083           | 3.936            | <b>4.596***</b> | 4.147           | 4.022           | 3.055           |                 |                 |

Note: Significance Level - \*\*\*(.10), \*\*(.05), \*(.01)

# Model Selection: Result of Likelihood Ratio Test

## Summary 1

| Model     | Comparison  | -2 Log likelihood | No. of IVs | DF | Chi Square | P Value |
|-----------|-------------|-------------------|------------|----|------------|---------|
| 1         |             | 40.580            | 17         |    |            |         |
| 2         | 2 vis-a-1   | 40.580            | 16         | 1  | -          | 1.000   |
| 3         | 3 vis-a-2   | 40.611            | 15         | 1  | 0.031      | 0.860   |
| 4         | 4 vis-a-3   | 42.713            | 14         | 1  | 2.102      | 0.156   |
| 5         | 5 vis-a-4   | 42.770            | 13         | 1  | 0.057      | 0.811   |
| 6         | 6 vis-a-5   | 44.926            | 12         | 1  | 2.156      | 0.142   |
| 7         | 7 vis-a-6   | 45.941            | 11         | 1  | 1.015      | 0.314   |
| 8         | 8 vis-a-7   | 46.175            | 10         | 1  | 0.234      | 0.629   |
| 9         | 9 vis-a-8   | 47.727            | 9          | 1  | 1.552      | 0.213   |
| 10        | 10 vis-a-9  | 49.701            | 8          | 1  | 1.974      | 0.160   |
| <b>11</b> | 11 vis-a-10 | 52.063            | 7          | 1  | 2.362      | 0.124   |



# Model Selection: Result of Likelihood Ratio Test

## Summary 2

| Model     | Comparison  | -2 Log likelihood | No. of IVs | DF | Chi Square | P Value |
|-----------|-------------|-------------------|------------|----|------------|---------|
| 1         | 11 vis-a-1  | 40.580            | 16         | 10 | 11.483     | 0.3211  |
| 2         | 11 vis-a-2  | 40.580            | 15         | 9  | 11.483     | 0.2472  |
| 3         | 11 vis-a-3  | 40.611            | 14         | 8  | 11.452     | 0.1774  |
| 4         | 11 vis-a-4  | 42.713            | 13         | 7  | 9.350      | 0.2285  |
| 5         | 11 vis-a-5  | 42.770            | 12         | 6  | 9.293      | 0.1578  |
| 6         | 11 vis-a-6  | 44.926            | 11         | 5  | 7.137      | 0.2106  |
| 7         | 11 vis-a-7  | 45.941            | 10         | 4  | 6.122      | 0.1902  |
| 8         | 11 vis-a-8  | 46.175            | 9          | 3  | 5.888      | 0.1172  |
| 9         | 11 vis-a-9  | 47.727            | 8          | 2  | 4.336      | 0.1140  |
| 10        | 11 vis-a-10 | 49.701            | 7          | 1  | 2.362      | 0.1243  |
| <b>11</b> |             | 52.063            | 6          |    |            |         |





# Final Model – Most Significant Factors

| Independent Variables                   | B      | Exp (B)  |
|---|--------|----------|
| <b>Premium Price</b>                    |        |          |
| <i>Premium Subsidy</i>                  | 1.551  | 4.716**  |
| <b>Farmer's Expectations</b>            |        |          |
| <i>Yield Forecast</i>                   | 1.635  | 5.128**  |
| <i>Perceived Yield Risk</i>             | 2.310  | 10.079*  |
| <i>Probability of Receiving a Claim</i> | 2.287  | 9.845*** |
| <b>Tastes and Preferences</b>           |        |          |
| <i>Reputation of the Insurer</i>        | 2.095  | 8.129**  |
| <b>Complementary Good</b>               |        |          |
| <i>Lender Requirement</i>               | 3.197  | 24.447** |
| <b>Constant</b>                         | -8.397 | .000     |

| Model Summary        |      |
|----------------------|------|
| Cox & Snell R Square | .463 |
| Nagelkerke R Square  | .622 |

| Observed           |               | Predicted          |       |           |
|--------------------|---------------|--------------------|-------|-----------|
|                    |               | Insurance Purchase |       | % Correct |
|                    |               | Did Not Avail      | Avail |           |
| Insurance Purchase | Did Not Avail | 33                 | 7     | 82.5      |
|                    | Avail         | 7                  | 23    | 76.7      |
| Overall Percentage |               |                    |       | 80.0      |

Note: Significance Level - \*\*\*(.10), \*\*(.05), \*(.01)

# Equation of the Final Logistic Regression Model

$$Z_i = \ln [P_i/(1-P_i)] = \alpha_0 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \dots + \alpha_{16} X_{16} + u_i$$



$$Z_i = \ln [P_i/(1-P_i)] = -8.397 + 2.095X_1 + 1.635X_2 + 2.310X_3 + 2.287X_4 + 1.551X_5 + 3.197X_6$$

## Where:

$Z_i$  = Reaction Index  
 $P_i$  = The probability of choice of farmer  $i$  to avail rice crop insurance

## Dependent Variable:

1 = Avail Rice Crop Insurance  
0 = Not Avail Rice Crop Insurance

## Independent Variables:

$X_1$  = Reputation of the Insurer  
 $X_2$  = Yield Forecast  
 $X_3$  = Perceived Yield Risk  
 $X_4$  = Probability of Receiving a  
 $X_5$  = Premium Subsidy  
 $X_6$  = Lender Requirement

# Timetable

**DL: Submission of Master's Thesis Evaluation Form**

| Month   | Mon   | Tue                                    | Wed  | Thu  | Fri                                   | Sat | Sun |
|---|---|--|--|--|---------------------------------------|-----|-----|
| May   | 18  | 19                                     | 20   | 21   | 22                                    | 23  | 24  |
|   | Thesis Writing (Methodology, Results and Findings)                                      |  |  | Pres. of Results and Findings  | Thesis Writing (Results and Findings) |     |     |
| June  | 25  | 26                                     | 27   | 28   | 29                                    | 30  | 31  |
|   | Thesis Writing (Results and Findings, Conclusion and Recommendation, Literature Review) |  |  |  |                                       |     |     |
| June  | 1   | 2                                      | 3  | 4  | 5                                     | 6   | 7   |
|   | Thesis Writing (Introduction, Country Profile, Abstract, Appendix)                      |  |  |  |                                       |     |     |
|   | 8   | 9                                      | 10   | 11   | 12                                    | 13  | 14  |
|   | Submit 1 <sup>st</sup> draft to Shinkai Sensei and Peddie Sensei (for English Check)    | Plagiarism Check (1) and English Check |  | Revision of thesis (based on the result of Plagiarism Check and English Check) |                                       |     |     |
|   | 15  | 16                                     | 17   | 18   | 19                                    | 20  | 21  |
| Revision of thesis (based on Shinkai Sensei's comments and Peddie Sensei's English Check) |   |  |  |  |                                       |     |     |
| June  | 22  | 23                                     | 24   | 25   | 26                                    | 27  | 28  |
|   | Final Plagiarism Check (2)  |  | Final Revision of thesis (based on the result of Plagiarism Check) |  |                                       |     |     |
|   | 29  | 30                                     |  |  |                                       |     |     |
| Final Revision of thesis  |   |  |  |  |                                       |     |     |
| July  |   |  | 1  | 2  | 3                                     |     |     |
|   |   |  | Submit Thesis  |  | DL: Thesis Submission                 |     |     |

*Thank you for*  

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*listening!*