

# Poverty & the Agricultural Household in Timor-Leste



## *Some Patterns & Puzzles*

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## Overview

1. Poverty in Timor-Leste
2. The Agricultural Economy
3. Food Consumption and Income

## Background: Timor-Leste

- Strong economic growth due to expansion in the oil & gas industries.
- By most development measures, the people of Timor-Leste are among the poorest in Asia.
- A very new nation, emerging out of a long period of conflict, the early stages of development pose many challenges.

## Poverty in Timor-Leste

|                                  |  |
|----------------------------------|--|
| <b>Pervasive</b>                 | Approx. half the population classified as poor   |
| <b>Multi-Dimensional</b>         | Deprivation in many aspects: health, education, nutrition, lack of economic opportunity, vulnerability to risks, etc             |
| <b>Diverse</b>                   | Varies significantly across geographical, socioeconomic & demographic dimensions   |
| <b>Deep-Rooted</b>               | A long term phenomenon that requires the building of modern institutions, human capital & a vibrant economy from a very low base |
| <b>Potentially Destabilising</b> | High risk of social unrest in a post-conflict society with rapid population growth & limited economic opportunities              |

## Poverty in Timor-Leste

- Consumption Poverty, TLSLS 2007:
  - 49% poor
- Multidimensional Poverty Index (MPI), DHS 2009:
  - 68% classify as poor
  - Another 18% are at risk of poverty

## Multidimensional Poverty Index

| Household Indicator  | Points                            |
|--|-----------------------------------|
| At least one person has completed five years of schooling                                      | 3                                 |
| All school-age children enrolled in school   | 3                                 |
| No person is malnourished  | 3                                 |
| No children have died  | 3                                 |
| Has electricity  | 1                                 |
| Has access to clean drinking water   | 1                                 |
| Has access to adequate sanitation  | 1                                 |
| Has a floor material superior to dirt floor  | 1                                 |
| Does not use dirty cooking fuel (dung, firewood, charcoal)                                     | 1                                 |
| Has two of these assets:<br><i>bicycle, motorcycle, radio, refrigerator, phone, television</i> | 1                                 |
| <b>Poor: 12 points or less</b>   | <b>At Risk: 14 points or less</b> |

## Why Rural Poverty?

- More than 75% of the population are rural
- Agricultural development is important to inclusive growth in the short-to-medium term
- Economic activity in the agricultural sector has been stagnant (at best) over the past several years
- Need an understanding of the best strategies for agricultural development that are likely to yield best return in terms of poverty alleviation

## Aims & Focus

- **Understanding** the nature of the agricultural economy at the household level
- **Exploring** links between agricultural productivity & the household's mix of agricultural activity & household welfare
- **Providing** input into strategies for improving inclusive growth via the agricultural sector

## The Agricultural Household: Crops

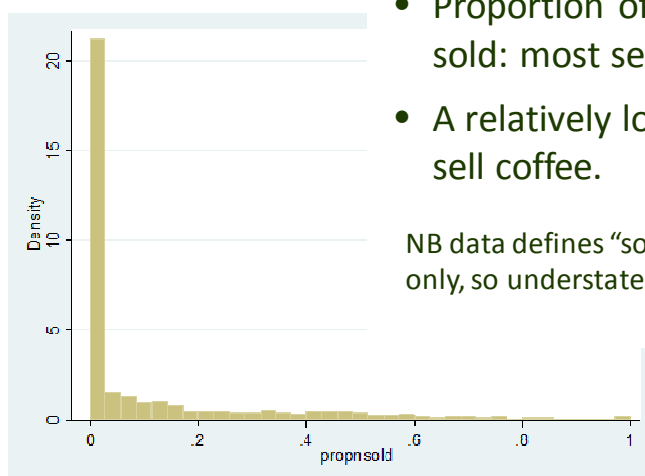
| Crop                | % of Crop-Growing Households who Grow this Crop | Median Kgs Harvested | % of Harvest that is Sold |
|---------------------|---|----------------------|---------------------------|
| Coffee (Cherries)   | 16 %  | 500                  | 88 %                      |
| Coffee (Dry Beans)  | 14 %  | 250                  | 84 %                      |
| Vegetables          | 33 %  | 150                  | 56 %                      |
| Other Fruit         | 17 %  | 100                  | 56 %                      |
| Kidney Beans        | 15 %  | 100                  | 46 %                      |
| Mung Bean           | 7 %   | 100                  | 36 %                      |
| Bananas             | 53 %  | 100                  | 35 %                      |
| Soy Bean            | 9 %   | 60                   | 23 %                      |
| Peanuts             | 21 %  | 100                  | 21 %                      |
| Potato              | 4 %   | 100                  | 13 %                      |
| Squash              | 59 %  | 72                   | 13 %                      |
| Gogo Rice           | 12 %  | 300                  | 11 %                      |
| Cassava             | 80 %  | 228                  | 10 %                      |
| Sweet Potato        | 43 %  | 200                  | 10 %                      |
| Taro (Talas/Kontas) | 41 %  | 150                  | 7 %                       |
| Coconut             | 24 %  | 100                  | 7 %                       |
| Maize               | 96 %  | 300                  | 6 %                       |
| Rice                | 17 %  | 750                  | 5 %                       |

## What is Grown?

- Widespread production of maize & cassava
- A small % of households grow rice
- Most households grow a wide range of crops

| Number of Crops Harvested by the Household | % of Households |
|--|-----------------|
| 0  | 17%             |
| 1-3  | 20%             |
| 4-6  | 34%             |
| 7-9  | 23%             |
| 10+  | 6%              |

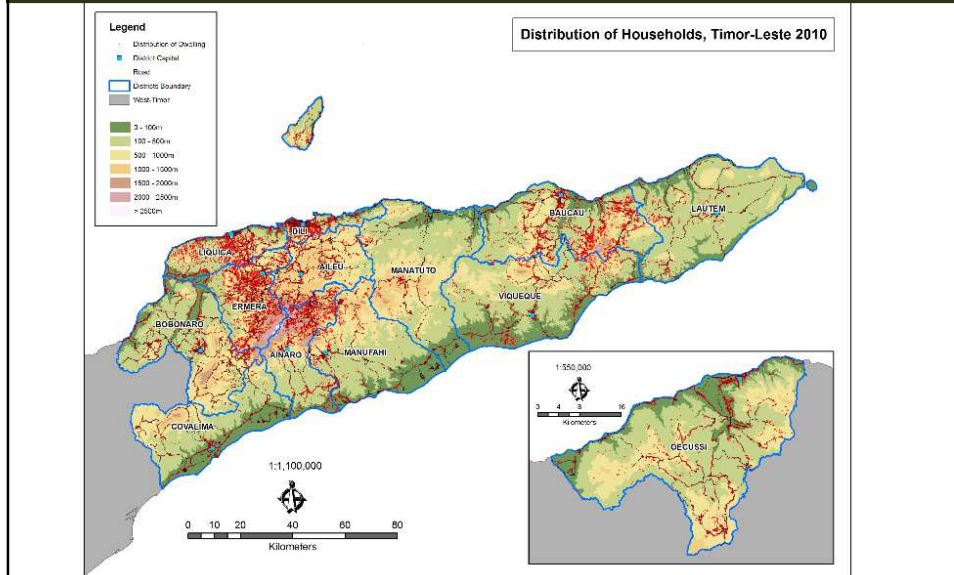
## What is Sold?



- Proportion of food crops sold: most sell nothing!
- A relatively low % grow & sell coffee.

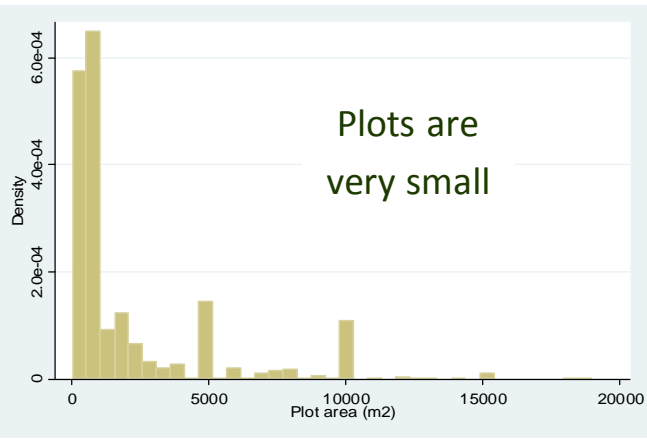
NB data defines "sold" as cash sales only, so understates level of trading

# What is the Land Like?



# What is the Land Like?

Land used for crops is mostly not steep sloped



| Slope of the plot | % of plots |
|-------------------|------------|
| Flat              | 45%        |
| Slight            | 37%        |
| Moderate          | 14%        |
| Steep             | 4%         |

## Livestock?

- A modest number of livestock

| Animal  | % of Rural Households who Sold One or More of this Animal | Average Amount Earned from Sales |
|---------|---|----------------------------------|
| Buffalo | 6 %   | \$ 351                           |
| Cow     | 12 %  | \$ 265                           |
| Horse   | 2 %   | \$ 116                           |
| Pig     | 40 %  | \$ 94                            |
| Goat    | 11 %  | \$ 55                            |
| Chicken | 42 %  | \$ 17                            |
| Other   | 4 %   | \$ 20                            |

## Other Observations

- Less than 4% of farming households use fertiliser, manure, herbicides, etc. Seeds are more widely used as inputs
- There is virtually no market for animal products except eggs. 5% of rural households sold eggs. 90% earned less than \$20pa
- Forestry: 10% of households earned income from forestry activities, mostly firewood. 95% earned less than \$200pa



## Food Consumption

- Food is the most basic of human needs!
- What is the relationship between food produced & food consumed?
- How do differences in income affect food consumption?

## Food Produced & Consumed: Do they Align?

| Crop         | Amount Produced                          | Amount Consumed | % Crop not Consumed | % Own Production or Gifts |
|--------------|--|-----------------|---------------------|---------------------------|
|              | <i>Average kg per household per week</i> |                 |                     |                           |
| Banana       | 2.2                                      | 1.7             | 25 %                | 77 %                      |
| Cassava      | 5.0                                      | 2.5             | 50 %                | 85%                       |
| Coconut      | 0.9                                      | 0.5             | 47 %                | 83 %                      |
| Maize        | 8.2                                      | 4.6             | 43 %                | 85 %                      |
| Peanuts      | 0.4                                      | 0.2             | 56 %                | 68 %                      |
| Potato       | 0.1                                      | 0.1             | 0 %                 | 16 %                      |
| Soybean      | 0.2                                      | 0.1             | 19 %                | 81 %                      |
| Squash       | 1.4                                      | 0.5             | 65 %                | 89 %                      |
| Sweet potato | 2.0                                      | 0.8             | 59 %                | 83 %                      |
| Taro         | 2.0                                      | 0.7             | 66 %                | 91 %                      |

## Production & Consumption

|  | % with income from this source | Annual Income if income from this source |          | Mean income (all households) |
|--|--------------------------------|--|----------|------------------------------|
|  |                                | Median                                   | Mean     |                              |
| Market value of crops harvested but not sold | 82.4 %                         | \$ 220                                   | \$ 459   | \$ 378                       |
| Livestock                                    | 66.0 %                         | \$ 105                                   | \$ 182   | \$ 120                       |
| Non-coffee crops sold                        | 37.7 %                         | \$ 65                                    | \$ 110   | \$ 41                        |
| Employment                                   | 22.3 %                         | \$ 150                                   | \$ 202   | \$ 45                        |
| Food assistance                              | 20.8 %                         | \$ 13                                    | \$ 23    | \$ 5                         |
| Coffee                                       | 16.2 %                         | \$ 160                                   | \$ 260   | \$ 42                        |
| Forestry                                     | 7.0 %                          | \$ 36                                    | \$ 131   | \$ 9                         |
| By-product                                   | 5.3 %                          | \$ 5                                     | \$ 16    | \$ 1                         |
| Enterprise                                   | 5.2 %                          | \$ 375                                   | \$ 1,069 | \$ 56                        |
| Fishing                                      | 3.0 %                          | \$ 290                                   | \$ 669   | \$ 20                        |
| Other assistance                             | 1.9 %                          | \$ 450                                   | \$ 1,107 | \$ 21                        |
| Pensions (mainly overseas)                   | 1.4 %                          | \$ 1,440                                 | \$ 5,068 | \$ 69                        |
| Cash assistance                              | 0.3 %                          | \$ 700                                   | \$ 2,646 | \$ 9                         |

## Income & Food Consumption

- The Question:
  - Do those with higher income also consume more food?
  
- The Answer:
  - Some food consumption: yes; others: no
  - It depends on the source of the income

## The Result: Source of Income Matters

| An extra \$1 of Income from this Source: | Results in an Increase in Total Food Consumption of: | t-stat |
|--|--|--------|
| Sales of Food Crops                      | \$ 0.99  | 10.66  |
| Value of Crops Harvested but not Sold    | \$ 0.06  | 5.39   |
| Coffee Harvest                           | \$ 0.62  | 7.87   |
| Labour Employment                        | \$ 0.17  | 23.84  |
| Other Income (incl. transfers, pensions) | \$ 0.13  | 6.92   |
| Livestock Income                         | \$ 0.45  | 10.30  |
| Miscellaneous Agricultural Income        | \$ 0.31  | 5.89   |
| Profit from Enterprise Activity          | -\$ 0.02   | - 6.07 |

## Production & Consumption

- Is there an explanation for the big gap between production & consumption for most crops?
- Is it underused production?
- This finding is consistent with a lack of markets beyond local, informal exchange

## The Result: Source of Income Matters

- Sale of food crops has the most direct impact!
- Coffee & enterprise or employment income are next best
- Many other income sources yield very little on food consumption
- Link from food production (the portion not sold) to food consumption is low

## Why does Income Source Matter?

- In theory: money is fungible
- But:**
- Income from different sources received at different times
  - Imperfect capital markets
  - Incomplete pooling of resources at the household level
  - Cultural issues: celebrations, gifts & loans, etc.

## The Result: Source of Income Matters

| An extra \$1 of Income from this Source: | Results in Increased Consumption of: |   |                 |   |
|--|--------------------------------------|---|-----------------|---|
|  | Rice & Corn                          |   | Non-Cereal Food |   |
| Sales of Food Crops                      | \$ 0.20                              | * | \$ 0.73         | * |
| Value of Crops Harvested but not Sold    | \$ 0.02                              | * | \$ 0.03         | * |
| Coffee Harvest                           | \$ 0.02                              |   | \$ 0.54         | * |
| Labour Employment                        | \$ 0.01                              | * | \$ 0.14         | * |
| Other Income (incl. transfers, pensions) | -\$ 0.01                             |   | \$ 0.12         | * |
| Livestock Income                         | \$ 0.06                              | * | \$ 0.37         | * |
| Miscellaneous Agricultural Income        | \$ 0.09                              | * | \$ 0.18         | * |
| Profit from Enterprise Activity          | \$ 0.00                              |   | -\$ 0.01        | * |

## Income & Type of Food Consumed

- Rice & corn consumption are relatively insensitive to higher income from any source
- Non-cereal foods (includes fruit, vegetables, etc.) are much more responsive to income increases, especially from food crop sales & coffee income.

## The Overall Story

- If the aim is to reduce poverty & improve food consumption & nutrition, increasing incomes is important
- BUT the source of income increase can matter:
  - Non-labour income do little for rural household food consumption
  - Sale of food crops yields direct benefits in food consumption
  - Coffee income yields very good returns for food consumption

## The Overall Story (cont'd)

- As incomes rise, consumption of staple crops (rice and corn) does not increase much, but household consumption of other food increases
- i.e. Income is key to improving nutritional diversity.

## Policy Implications?

- Priority of developing local food markets to substantially increase trade in food, facilitate specialisation, economies of scale, etc. But what are the obstacles to these markets emerging?
- Cash crop income (coffee) serves valuable role in supporting food consumption.
- Smaller benefits of transfers & of nonlabour employment in addressing food poverty