LIVELIHOOD OPTIONS AND AGRICULTURAL DEVELOPMENT IMPACT ON HOUSEHOLD FOOD SECURITY IN RWANDA

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by

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Outline

- Background
- Methodology
- Findings and discussion
- Conclusion
- Recommendation
Household Food Security in Rwanda

National Agricultural Development
- Production (proxy for development)
  - 33% GDP
- Import & export
- Employment
  - 77% of Rwandans work in agriculture
  - 80% of HH income is from agriculture

Household Livelihood Options
- Employment
  - 23% work in non-agriculture
  - 20% HH income non-agriculture

Government Policies
- Coop Initiation
- EDPRS1 (2008-12)

Household Food Security
- Availability
- Access
- Utilization
- Stability
Challenges

- It seems that agriculture diminish its role to sustain the food security at household level;
- Climate change agri.practices due rainfed Result to decline the land productivity
- Population growth small plots;
- High unemployment rate face to educated people;
- Low creation of new opportunity to replace the gaps for securing the food;
- Income diversity at household level often pose problems for socio-econ. Into policy prescriptions about household income, availability,...
1. What was the contribution of national agricultural production to household food security between 1980 – 2010?

2. What was the contribution of livelihood options to food security in 2014?
Conceptual framework

LIVELIHOOD OPTIONS STRATEGIES
- Risk coping strategies
- Income generating
- Migration
- Loss management strategies

AGRICULTURAL DEVELOPMENT
- Agriculture production

STABILITY
- Vulnerability and resilience

FOOD AVAILABILITY

FOOD ACCESSIBILITY

FOOD UTILIZATION

HOUSEHOLD FOOD SECURITY
Methodology

The study employed two kind of data: **Time series data analysis** and **cross sectional data analysis**

- **Time series data**: data collected during the 1980-2010 Rwanda from WDI

  Granger Causality was used to confirm the causes of the main determinants affecting food security at household level after performing long run and short run dynamics between variables

  Data analysis was conducted using E-views 8

- **Cross sectional data**: Primary data collected during July 2014 using close-ended questionnaires in Nyamagabe District as the case study.

  Logit model regression was used to assess and analyse the main determinants affecting food security at household level

  Data analysis was conducted using Stata 13.0
Findings and discussion

1. What was the contribution of national agricultural production to household food security between 1980 – 2010?

- The estimated coefficients have the expected positive sign, indicating a positive long run relationship between: food exports, and food security.

Further, the long run relationships between food security, food exports, food imports and agricultural production are statistically significant, but the income per capita was not associated to the outcome for a period of time.

- The error correction term of our short run model is also statistically significant with a negative sign.

With a very low speed of convergence towards equilibrium of only 2.1% for correction. This indicates that given any disturbance in the system in the long-run.
## Findings and discussion

### Long-run relationship

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFS(-1)</td>
<td>1.433107</td>
<td>0.197676</td>
<td>7.249787</td>
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<td>LFS(-2)</td>
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<td>LAP(-2)</td>
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<td>LFM(-2)</td>
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<td>LFX(-1)</td>
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<td>LGDPD(-1)</td>
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<tr>
<td>LGDPD(-2)</td>
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<td>-2.998346</td>
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</tbody>
</table>

R-squared: 0.997749
Adjusted R-squared: 0.996498
S.E. of regression: 0.043097
Sum squared resid: 0.029330
Log likelihood: 58.84908
F-statistic: 797.6793
Prob(F-statistic): 0.000000

### Short-run relationship

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
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<tbody>
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<td>D(LGDPD(-1))</td>
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<tr>
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<td>-0.046302</td>
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</tr>
</tbody>
</table>

R-squared: 0.850610
Adjusted R-squared: 0.731177
S.E. of regression: 0.035237
Sum squared resid: 0.015485
Log likelihood: 65.27137
F-statistic: 6.646908
Prob(F-statistic): 0.000592
Findings and discussion

2. What was the contribution of livelihood options to food security in 2014?

- Accordingly, variables assumed to have influence on household food security in different contexts were tested in the model and out of nine variables five of them were found to be significant.

- Among variables fitted into the model and associated with the outcome, age of household head, education for household head, off-farm/ non-farm income, use of chemical fertilizer, and livelihood options activities in determining household food security.
## Findings and discussion

| Variables | Coefficient | Std. Err. | z-value | P>|z| | Marg. Effects (dy/dx) |
|-----------|-------------|-----------|---------|-----|----------------------|
| Hsize     | 0.0305      | 0.1032    | 0.34    | 0.698 | 0.0094               |
| Sex       | 0.33291     | 0.5808    | 0.57    | 0.351 | 0.1268               |
| Age       | -0.1057     | 0.0183    | -5.76** | 0.000 | -0.0269              |
| Education | -1.3942     | 0.4304    | -3.24** | 0.000 | -0.3617              |
| Land      | -0.01989    | 0.123     | -0.16   | 0.981 | 0.0007               |
| Credit    | 0.5839      | 0.4348    | 1.34    | 0.215 | 0.1292               |
| Options   | 1.06811     | 0.8017    | 1.33*   | 0.028 | 0.1981               |
| Fertilizer| 1.0349      | 0.4809    | 2.15*   | 0.022 | 0.2677               |
| Income    | -0.4861     | 0.2286    | -2.13*  | 0.040 | -0.1120              |
Conclusion

The analysis for the implications of livelihood options and agricultural development on household food security proved that:

• Agriculture sector continue to dominate other alternative activities vis-a-vis on household food security but it decline progressively its role.

• The contribution of livelihood options determinants show more impact for food security on future generation in Rwanda.
Recommendation

✓ Make an intervention in employment program in rural areas regarded to generate cash income;
  ▪ Ubudehe/VUP
  ▪ Marshland preparation

✓ Expend mechanization, not land, for production
  ▪ Intercropping methods

✓ Expand the partnership with foreign industries for increasing migratory wage labor or for creating the new opportunity for the young professionals program;

✓ Introducing funding for food security, and linking health and agriculture
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