Has the provision of legume seeds subsidies affected dietary diversity? Household survey evidence from Malawi Farm Input Subsidy Program (FISP)

Presented by

Mirriam Matita (doctoral student, University of Malawi)
email: mirriammatita@gmail.com
Twitter: @Miry58n

Study Supervisors: Prof. E. W. Chirwa, Dr J. Mazalale, Ass. Prof., H. Walls
Introduction

• Malawi FISP started decade ago (2005/6)
  – 900,000 beneficiaries; Two 50 kgs bags fertilizer
  – Improved maize & later legume seeds (2009)

• Stated FISP Objectives – increase productivity, incomes

• Policy has reinforced
  – emphasis on national maize self-sufficiency (45% of cereals, grown in 75% of plots)
  – Legumes production has also risen (though only 5% of national crop production)
Introduction

However, programme costs remain huge

– 10% national budget; 40-70% Agriculture Budget

• Nutritional consequences
  – Diets dominated by maize
  – Inadequate diet diversity
    o Associated with lack of essential nutrients
    o High undernutrition
Malnutrition remains a challenge
Study Objectives

• To investigate effects of inclusion of legumes in FISP on Dietary Diversity (DD) in Malawi.

• Specifically,
  – To assess whether receipt of any subsidy coupon affects DD
  – To determine influence of redemption of specific FISP package (maize or legumes) on DD

Previous research shows input subsidies have potential to support DD
Methods

• Estimated Panel Poisson regression
  \[ DD_{it} = \alpha_0 + \delta_t + \beta_i(FISP_i) + X_{it} + \epsilon_{it} \]

• \( i \) individual HH, \( t \) season of when consumption data was collected

• \( \delta_t \) accounts for seasonality

• \( X_{it} \) - control variables [assets, social, economic variables, production diversity]

• Used Integrated Household Panel Surveys data 2013 & 2016
Seasonal variation in food consumption

Food consumption group:

- Post-harvest
- Pre-planting
- Lean

Proportion reporting:

Cereals, roots, vegetables, fruits, meat, eggs, fish, pulses/legumes, milk, oils/fats, sugar
**Redemption of legume coupon influences dietary diversity**

- Receipt of any subsidy coupon was not associated DD
- Redemption of legume coupon +vely & sig associated with DD.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Model 1</th>
<th></th>
<th></th>
<th>Model 2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>Z</td>
<td>Coef.</td>
<td>Z</td>
<td></td>
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<tr>
<td>Any subsidy coupon</td>
<td>-</td>
<td>-</td>
<td>0.005</td>
<td>0.72</td>
<td></td>
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<tr>
<td>Legume coupon</td>
<td>0.042</td>
<td>2.31**</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Maize coupon</td>
<td>-0.014</td>
<td>-0.85</td>
<td>-</td>
<td>-</td>
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</table>
Household Wealth drives dietary diversity

<table>
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<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>Z</td>
<td>Coef.</td>
<td>Z</td>
</tr>
<tr>
<td>Asset index</td>
<td>0.179</td>
<td>7.57*</td>
<td>0.179</td>
<td>7.36*</td>
</tr>
<tr>
<td>TLU</td>
<td>0.025</td>
<td>3.50*</td>
<td>0.024</td>
<td>3.93*</td>
</tr>
<tr>
<td>Poor</td>
<td>-0.076</td>
<td>-6.28*</td>
<td>-0.077</td>
<td>-5.95*</td>
</tr>
<tr>
<td>Yrs educ HH</td>
<td>0.010</td>
<td>8.85*</td>
<td>0.010</td>
<td>7.65*</td>
</tr>
<tr>
<td>Wage_e</td>
<td>0.101</td>
<td>3.99*</td>
<td>0.100</td>
<td>4.67*</td>
</tr>
<tr>
<td>Business_e</td>
<td>0.079</td>
<td>3.06*</td>
<td>0.081</td>
<td>3.46*</td>
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</table>
**Market participation drives dietary diversity**

<table>
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<tr>
<td></td>
<td>Coef.</td>
<td>Z</td>
<td>Coef.</td>
<td>Z</td>
</tr>
<tr>
<td>Sold maize</td>
<td>0.031</td>
<td>3.16*</td>
<td>0.031</td>
<td>2.62**</td>
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<tr>
<td>Sold legume</td>
<td>0.003</td>
<td>0.27</td>
<td>0.003</td>
<td>0.23</td>
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<tr>
<td>Credit (0/1)</td>
<td>0.024</td>
<td>2.71*</td>
<td>0.024</td>
<td>2.91*</td>
</tr>
<tr>
<td>Prod. diversity</td>
<td>0.010</td>
<td>3.04*</td>
<td>0.011</td>
<td>2.20**</td>
</tr>
</tbody>
</table>
Conclusion

• Inclusion of legumes in FISP influences dietary diversity
  – Even when accounting for market access, production patterns, seasonality
• Complicated picture – maize seems to affect DD through market; legumes through consumption pathway
• Might need to disaggregated the data further – rural/urban; 2013/2016; seasons
• Suggest increasing legume component under FISP has benefits so is addressing varied availability of legume seeds in FISP markets.
Acknowledgements

• **Drivers of Food Choice Competitive Grants funded by Bill & Melinda Gates Foundation, DFID (UK)**

• **University of South Carolina, London School of Hygiene and Tropical Medicine**

• **University of Malawi, Economics Department**

• **Study Supervisors: Prof. E. W. Chirwa & Dr. J. Mazalale at the University of Malawi & Ass. Prof. H. Walls at LSHTM**

• **National Statistical Office for data access**
Acknowledgments

This research has been funded by the Drivers of Food Choice (DFC) Competitive Grants Programs, which is funded by the UK Government’s Department for International Development and the Bill & Melinda Gates Foundation, and managed by the University of South Carolina, Arnold School of Public Health, USA; however, the views expressed do not necessarily reflect the UK Government's official policies.
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Thank you

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