“INCLUSIVE BUSINESS FOR RURAL DEVELOPMENT AND POVERTY ALLEVIATION”

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APEC Peru 2016
Background

• Transformation of agriculture
  – Declining importance of grains & other staple foods
  – Rising importance of high-value agricultural commodities
  – Green Revolution was supply-led, but this transformation is largely demand-driven

• Widespread implications
  – Change in marketing channels – more coordination
  – Opportunities and challenges for small farmers
  – New roles for government
4 Drivers of shift to high-value agriculture

- Rising income
- Urbanization & population growth
- Outward-oriented trade policy
- Foreign direct investment
Emergence of farmer-buyer linkages

• Causes
  – Perishability of commodity
  – Specific demand requirements of consumers
  – New crops and varieties not familiar to farmers

• Need for formalized links with farmers
  – To ensure quantity, quality, timing, etc
  – To transmit information, inputs, credit, etc.
  – To establish trust regarding safety & quality through coordination from inputs to table

• Institutional solutions
  – Contract farming
  – Farmer organizations & cooperatives that link to industrial processing or retailing
  – Private and public standards for quality and safety
Paradox of smallholders

Efficiency argument

• Lipton (1993) points that there is extensive empirical literature that point to the ‘inverse relationship’ between farm size and production per unit of land
• Lipton (2005) says economies of scale are weak
• Poulton (2005) says scale of farm operations affects transactions costs for different activities in different ways
• Cornia (1985), Heltberg (1998) show small farmers employ more labor than large farmers (labor markets are imperfect)

Problems faced by small farmers

• Changes in production methods are not scale neutral as were with the Green revolution
• Economies of scale in agriculture may apply in input supply, processing of harvests and in transport
• Modern food value chain impose new restrictions for smallholders as a result they are not linked to dynamic markets (e.g. auditing and certification costs, Raynolds 2004, and many papers of Reardon)
• Market imperfections imply higher transactions costs
# Reducing bottlenecks to link farmers to markets

<table>
<thead>
<tr>
<th>Production</th>
<th>Supply Chain</th>
<th>Processing</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor extension</td>
<td>Weak road infrastructure</td>
<td>Low processing</td>
<td>Poor infrastructure</td>
</tr>
<tr>
<td>Quality inputs</td>
<td>Lack of storage</td>
<td>Lack of quality</td>
<td>Lack of grading</td>
</tr>
<tr>
<td>Low productivity</td>
<td>High wastages</td>
<td>Poor returns</td>
<td>Non linkages</td>
</tr>
<tr>
<td>Non demand linked production</td>
<td>Multiple intermediaries</td>
<td>Low capacity utilization</td>
<td>Non transparency in prices</td>
</tr>
</tbody>
</table>
Suitable for all categories

Stages of progression

Public goods called for at each stage

Social and Economic benefits

PPPs (Public-private)

• Public sector, governments, NARS, CG centers (AFS)
• Ngo & foundations
• Other civil society organizations

• Private for-profit sector
• Private not-for-profit sector (i.e. foundations)
• Public sector
• Civil society organizations

PPPs (Private-private)

• R&D partnerships
• Extension partnerships
• Seed system
• Financial services
• Connectivity
• Contract farming
• Market access

Subsistence smallholders

• Private for-profit sector
• Public sector
• Civil organizations

Semi-commercial Small holders

• Private for-profit sector through BOP sales
• Public sector
• Civil organizations

Advanced farmers

• Private for-profit sector
• Public sector
• Civil organizations

Subsistence smallholders

• Subsistence smallholders
• Semi-commercial Small holders
• Advanced farmers

Stages of progression
What do we aim for?

- Identify market failures and bring sustainable solutions
- Use the best possible economics
- Use Experimental Methods to bring about the best possible solutions
Identify market failures and bring sustainable solutions
Use Experimental Methods to bring about the best possible solutions
Use the best possible economics
Examples of interventions to strengthen value chains

- Policy reforms; tax and trade
- Third party validation of quality in milk marketing in Vietnam
- Contract farming incentives to increase regularity of delivery of milk in Senegal, with added incentives for child nutrition
- Quality grading of onions in Senegal
- Design of working capital loans for farmers’ organizations in Uganda to support aggregation for marketing and secure higher prices
Case 1

Contract Farming – Use of Incentives

Contracting out of Poverty
Contract farming two extreme models

Dynamic markets – exports, supermarkets, etc

Food processor

Big producer

Medium

Medium

Medium

Small

Cooperative of associations

Asoc 1

Asoc 2

Asoc 3

Dynamic markets – exports, supermarkets, etc
Incentive-Compatible contracts

• Costs of monitoring
• Abuse of monopsony power
• Price schemes
• Quality standards
• Access to credit
• Productivity

• Club formation
• Developing strong rural farmer associations and tied products
• Price schemes with incentives on delivery, productivity and quality
• Joint definition of quality
• Double ransom model
• Clear price incentives
Identify market failures and bring sustainable solutions

Use best possible economics and experimental methods

Scale up through partnerships

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**Contract farming: Risks and Benefits of Partnership Between Farmers and Firms**

(Nicholas Minot and Lorene Ronchi)

<table>
<thead>
<tr>
<th>Category</th>
<th>Study</th>
<th>Country</th>
<th>Commodity</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of corn farming on income or revenue</td>
<td>Bellemare, 2012</td>
<td>Madagascar</td>
<td>Fruit</td>
<td>A 1.1% increase in the likelihood of participating in contract farming is associated with a 0.5 percent increase in household income. This implies 5.6% of income. The study also found that participation also increases income from non-contract.</td>
</tr>
<tr>
<td>Grain</td>
<td></td>
<td></td>
<td>Grain</td>
<td>A 1.1% increase in the likelihood of participating in contract farming is associated with a 0.5 percent increase in household income. This implies 5.6% of income. The study also found that participation also increases income from non-contract.</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td>Vegetables</td>
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</tr>
<tr>
<td>Positive revenue effect for contract farmers compared to a control group on non-contracting farmers. With full information maximum likelihood revenue increase of 75% in net coffee revenue relative to no contract participation.</td>
<td>Dowling, Gibbon, and J., Uganda</td>
<td></td>
<td>Coffee</td>
<td></td>
</tr>
</tbody>
</table>
Case 2

Upward
Intergenerational transfer of information
Happy Phaces
- Traditional Agricultural Extension: costly, hard to reach remote areas, accountability of extension worker
- ICTs can solve many of these shortcomings.
- Problem: Computer-illiterate adult population in rural areas.
Intervention

- One school in the Northern Highlands of Peru (enrollment ≈ 210)
  - Students involved in farm chores: 95% help in agricultural activities ($\bar{x}=3.1$ hrs/week) and 96% help in animal rearing ($\bar{x}=12$ hrs/week).
- Most severe problems for farmers: blight & flea beetle (potato), earworm (corn), ticks & bloating (guinea pigs), and cold (chicken)

- Cost-effective and simple mechanisms.
- Randomize information (individually) among students.
How to identify the problem?

Simple Solution (Molasses Trap)

Explain the problem

How does the solution work?
Not any type of knowledge...

- Include variable indicating if the student in the household was assigned to watch ANY video:
  \[ Y_{ij} = \beta_1 \text{Video}_{ij} + \theta \text{AnyVideo}_i + \alpha_j + \epsilon_i + \mu_{ij} \]

- Effect only coming for practices taught through videos.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag Practice</td>
<td>0.078***</td>
<td>0.100***</td>
<td>0.079***</td>
</tr>
<tr>
<td>Video (Video$_{ij}$)</td>
<td>(0.023)</td>
<td>(0.030)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Any video</td>
<td>0.004</td>
<td>-0.005</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.038)</td>
<td>(0.038)</td>
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<tr>
<td>Constant</td>
<td>0.600***</td>
<td>0.589***</td>
<td>0.623***</td>
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<tr>
<td></td>
<td>(0.034)</td>
<td>(0.036)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Observations</td>
<td>3,045</td>
<td>2,415</td>
<td>2,565</td>
</tr>
<tr>
<td>Households</td>
<td>203</td>
<td>161</td>
<td>171</td>
</tr>
<tr>
<td>Sample</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both BL and EL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Only BL</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Only EL</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
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</table>
Adoption of Agricultural Practices

- 17 questions about agricultural practices explained in the videos.
- ITT estimate: videos increased adoption of agricultural practices by 3.5 pp.

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<tbody>
<tr>
<td>Video_{ij}</td>
<td>0.035*</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
</tr>
<tr>
<td>Constant</td>
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<tr>
<td></td>
<td>(0.026)</td>
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<tr>
<td>Observations</td>
<td>3,451</td>
</tr>
<tr>
<td>Households</td>
<td>203</td>
</tr>
</tbody>
</table>
Case 3

Poverty Score Card for Lending
The Problem

In underdeveloped markets lending risks for smallholders are high because contracts are difficult to enforce and higher probability of adverse selection (wrong choices when the type of the borrower is unknown)
What is missing

- In developed financial markets a system of score cards are used to mitigate the problem of adverse selection by identifying creditworthiness.
- Riskiness of a borrower or a grantee is not the only criterion in case of development lending.
- **If the objective is development** the menu of projects has to be assessed also in terms of their potential for reducing poverty.
- Thus, for the optimal use of funds there might be a possible trade off between profitability and poverty impacts.
What we have done

- We have implemented a two dimensional score card:
  - risk score of the grantees
  - poverty score card

- We combine both score cards so that project selection will not only focus on targeting the poor but also in assuring sustainability
### Impact pathways

#### Outputs – Poverty Score card
- 2 Academic papers
- Poverty scorecard web-based tool
- Implementation of a fund with IADB and Austrian cooperation
- Impact evaluation of tool

#### Outcomes
- Tool implemented in a web base platform for competition for projects valued in US$ 4,469,400
- Building capacities in 5 central American countries
- Expansion of the concept to Asia and Africa
- Institutionalize development of tool in Peru within the Ministry of Finance

#### Impacts
- Change in practices on how public resources are use to promote interventions in value chains
- More transparency in the selection of projects in value chains upgrading
Cost-benefit analysis

- Total cost of projects $1,630,633.
- If changes in income reported by farmers is only during duration of projects, total net benefit of $2,929,187 and net benefit per farmer of $1,840.
- Total net benefits increase by 3 times in a time horizon of 5 years and by 5 times in a time horizon of 10 years.
Tools 4 Value Chains
www.tools4valuechains.org

PIM Value chains knowledge warehouse provides tools and best practices customized by researchers, development practitioners, private sectors, and farmers.

AGRODEP
www.agrodep.org

AGRODEP is an initiative aimed at positioning African experts to take a leadership role in the study of strategic development questions and the broader agricultural growth and policy debate facing African countries.

Ag incentives
www.ag-incentives.org

This Ag-Incentive website seeks to bring together agricultural policy researchers, analysts, and practitioners from various international organizations and agencies.