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When can private sector prizes achieve agriculture development goals? -- Lessons from two impact evaluations.

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BACKGROUND

- **Pull mechanisms that provide prizes to private sector are a type of results-based payments that seeks to engage private sector innovation and investment to solve development problems.**
- **There is not as yet rigorous evidence if such mechanisms work to achieve development objectives.**
- **AgResults, a $152 million program is testing the use of pull mechanisms to increase agriculture technology adoption and creating smallholder inclusive markets for beneficial technologies.**

OBJECTIVES

- **This paper synthesizes lessons from two quasi-experimental evaluations of AgResults projects and two AgResults projects that closed early.**
- **It provides actionable recommendation to inform the design of future pull mechanisms.**

METHODS

- **Quasi-experimental evaluation to assess smallholder impact**
- **Structure-conduct-performance to assess the pull mechanisms' impact on development of markets**
- **Cost effectiveness analysis**
- **Synthesis of evidence to draw lessons learned**

FINDINGS

AgResults Project	Project Design and Objective	Smallholder impact	Market Impact
Nigeria	▪ **Objective:** Establish foundation for sustained, smallholder-inclusive market for maize treated with Aflasafe which is a biocontrol agent to prevent aflatoxin ▪ **Design:** Prize of $18.75 per metric ton of Aflasafe-treated maize aggregated to increase adoption of Aflasafe by farmers.	▪ Among targeted farmers, **AgResults increased the use of Aflasafe** by 56 percentage points. Farmers did not apply Aflasafe to all their plots. ▪ Among targeted farmers, **AgResults increased maize incomes** by16 percent ▪ **Majority of smallholder farmer using Aflasafe were not aware of the health risks** of aflatoxins.	▪ **24 private sector companies participated.** ▪ **A niche market for Aflasafe-treated maize was created.** Competitors aggregated 131,000 MT of Aflasafe treated maize, which accounted for **1 percent of the maize in the project target regions**.
Kenya	▪ **Objective:** Create a market for improved on-farm storage devices to improve food security among smallholder farmers. ▪ **Design:** Proportional prize corresponding to competitor's share of total storage capacity sold to smallholders. In one of two regions, early milestone prize for the first five competitors who sold 21,0000 MT of storage.	▪ **The theory of change was not validated.** Use of OFS did not reduce expenditure for maize for own consumption, and did not increase net revenue from sales of maize. ▪ Evidence suggests that **farmers substituted OFS for the use of pesticide dust** to mitigate against post-harvest loss**.** No data on health effects.	▪ **Nine private sector actors collectively reached 220,000 farmers,** 14% of smallholders in the two regions combined**, and sold more than 334,000 MT of improved storage capacity.** ▪ **A niche market for improved on farm storage was created.** It is fueled by smallholders' desire to move away from the use of pesticide dust.
Uganda	▪ **Objective:** Strengthen the market for quality legume seed, thereby increasing smallholder use and consumption of quality legumes. ▪ **Design:** Prize equal to 20% of legume sales if growth in sales exceeded 8%	▪ The project closed early, so **no smallholders were directly affected by this project.** ▪ Smallholder farmer legume consumption was high at baseline**.**	▪ **Lack of quality certification in Uganda meant that bad seeds were driving out the good from the market.** ▪ AgResults also needed quality certification, which it tried to initiate but the effort failed causing closure of the project.
Zambia	▪ **Objective:** Create a market for biofortified pro-Vitamin A maize in order to reduce vitamin A deficiency. ▪ **Design:** $35-$50K for qualifying business plans. In the first year, per-unit subsidy if miller met minimum production threshold. In subsequent years, proportional prizes if miller met minimum production threshold.	▪ **The project terminated before smallholder benefits could be realized.**	▪ **Maize millers did not see a sufficiently large business case in the market for biofortified maize.** ▪ Existing government policies favor white (not biofortified) maize.

KEY LESSONS

- **A neutral or supportive enabling environment is essential to pull mechanisms' success –** *Uganda and Zambia closed early because of adverse enabling environment, while Nigeria and Kenya's policies were supportive*
- **Technologies that result in positive externalities, or benefits that are not observed easily by consumers will be underprovided by pull mechanisms.** *Nigerian farmers did not learn about aflatoxin health impacts which may explain why they did not apply Aflasafe to all their plots.*
- **Engaging private sector actors who can address at least some of the constraints limiting of the development of a market is important.** *In Uganda and Zambia the key constraint limiting development was not in the private sectors' manageable interest.*
- **The size of the payment should adequately reduce private sector risks and attract a large pool of competitors. At the same time the prize needs to account for the cost-effectiveness of the pull mechanism and set a prize that, in the end yields a net positive return on investment.** *In Kenya the costs were greater than returns, at least in the short run.*
- **Developing a detailed theory of change that expands on potential strategic behavior of competitors, behavioral constraints in technology adoption, enabling environment and external factors is essential for a successful pull mechanism –** *deeper dive into the theory of change would have revealed these issues in all projects.*

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