

## The Effect of Warehouse Receipt Finance on Terms of Trade for Farmers

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*Can warehouse receipt finance improve trading terms for small farmers and reduce price seasonality? We study this question in the context of a warehouse receipt program in India using detailed market data and warehouse locations.*

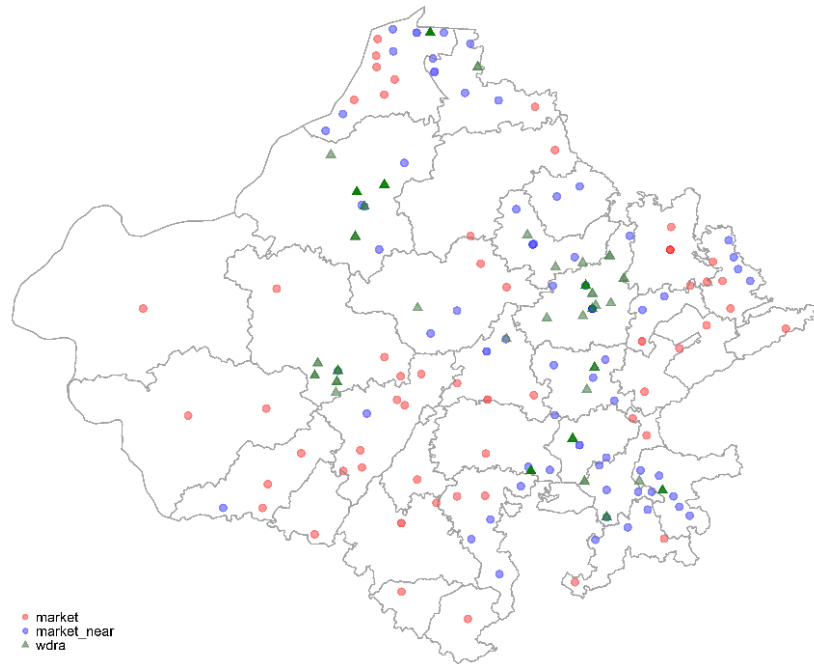
### Introduction

Insufficient access to institutional credit and adequate storage facilities impairs the ability of small-scale farmers to transfer wealth across time. To meet household consumption needs and repay production loans, farmers are often forced to sell their produce at an unfavourable price immediately after harvest. Moreover, a phenomenon of "selling low and buying high" has been noticed among poor farmers who effectively buy their produce back from the market at higher prices, as household stocks dwindle before the next harvest. The pattern of selling crops close to harvest also produces sharp seasonal price fluctuations, which are a common characteristic of staple crops in many developing countries. In this project, we study the role of a 2007 warehouse receipt credit system established in India in improving terms of trade for farmers, increasing price responsiveness of crop supply to the markets, and reducing seasonal price volatility.

### Data and Methodology

We use detailed price data from rural crop markets across India merged with GIS locations and timing of establishment of the program warehouses. The treatment group are *storable* crops sold in markets *near* a program warehouse in time periods *after* the warehouse registration. These are compared to 1) all crops sold in markets *far* from program warehouses in all time periods, 2) all crops sold in markets *near* a program warehouse in time periods *before* its registration, and 3) *non-storable* crops sold in markets *near* a warehouse *after* registration. The outcome variables we are interested in are market prices, market arrivals, price and arrivals seasonality, and price responsiveness of market arrivals.

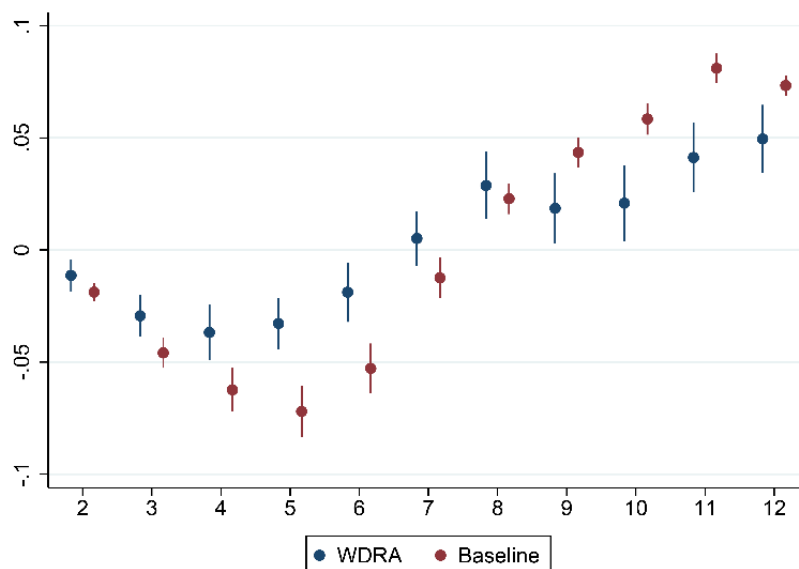
Figure 1: Markets *near* and *far* from program warehouses, Rajasthan



### Main Findings

The first companies in the WDRAs program were large public warehousing enterprises. Later on they were followed by several large private companies and many individual single-warehouse businesses. We find a substantial increase in prices for farmers of around 15% due to the program (7% per available WDRAs warehouse in the 10km vicinity). Private warehouses appear to have a larger effect compared to public warehouses, although further investigation is due into the different types of private enterprises and their available capacity vis-à-vis public warehouses. Initial results also indicate an attenuation (on average) of price and quantity seasonality due to the program.

Figure 2: Price seasonality for *treatment* and *control* (storable crops)



## Policy Impact

Multiple NGO's (mostly in Sub-Saharan Africa) have been involved in attempts to create such warehouse receipt systems which will include smallholder farmers more successfully than had the limited private enterprise systems which began operating in this sector during the 1980's and mostly catered to imported goods and large exporters. The rich rural commodity price data accessible to us in the case of India, and the regulated system, which was initiated following a government reform, provide us with a solid case study to examine the effect of warehouse receipt credit on crop market interactions. Our initial findings suggest that warehouse receipt credit does increase prices obtained by farmers in the market place and reduces price seasonality. These effects might be different for private vs. public warehouses.

## Moving Forward

This research studied the effect of a warehouse receipt finance system on market outcomes for farmers. We provided initial results on the differences between public and private warehouses in affecting market outcomes. Going forward, we will explore this further: what explains geographical patterns of public vs. private warehouses? How are large private warehouses different from small "one-warehouse" businesses in their effect on market outcomes?

*This note is based on research conducted as a part of PEDL [ERG 8516](#).*