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Market Access and Plant Productivity in Indian Agriculture

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Abstract

Agricultural markets have been found to significantly affect aggregate productivity. Several studies covering a wide range of countries and agroclimatic conditions have quantified direct (specialization) and indirect (intensification) effects of market access on farms' productivity, using data from one shot surveys (cross sectional data collected from farms randomly selected in villages purposively chosen at different distances from input/output markets). These studies show significant relationships of productivity increasing with better market access. However, the causality cannot be proven. Markets might have developed in response to better productivity.

A data set from India offers the opportunity for studying agricultural change over a long time and across a wide diversity of districts. Statistical information available from 1966 to 1994 (29 years) for a total of 235 districts provides a time-series-cross-section data set containing 6815 observations. The observations include information for every district on area and production of 22 crops (food crops, oil seeds, commercial crops, pulses) and their prices; also data on inputs used (fertilizer, high yielding varieties) resources (irrigated area, farm size, credit, literacy, population) and market access (densities of roads and markets) are available. Out of 235 districts 12 highly populated urban agglomerations were distinguished as deficit districts and the remaining 223 districts were called surplus districts.

These data allow testing several hypotheses on market access affecting productivity with especially surplus districts. The data are tested with a model estimating simultaneously a system of equations (3SLS) expressing total productivity as a function of market access, inputs and resources; and also inputs as a function of market access, productivity and resources.

Results indicate that the lag with which productivity responds to market access is around five years.

Keywords: Market access, simultaneous equations system, aggregate productivity