Economic Efficiency and Land Rights -A Stochastic Frontier Analysis of Agricultural Production in China

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Introduction

The rural reform started in the late 1970s improved farmers' incentives and had great impacts on China's agricultural production and productivity growth. Many empirical studies show, while productivity improvement and technological progress have been spectacular over the last two decades, the performance of efficiency change is not so inspiring, and there seems to be lack of greater institutional incentives to arouse farmers' enthusiasm for agricultural production when entering the 1990s. Meanwhile, the remaining ambiguity over land tenure rights seems to show a robust explanation power for the source of unexpected efficiency performance. Considering the currently hot dispute about institutional reform related to land issues in China, the question whether it is the suitable choice and right timing for the creation of new institutions will be an interesting topic to explore.

Preliminary Results

Figure 1: Level of technical efficiency (1979-2000)
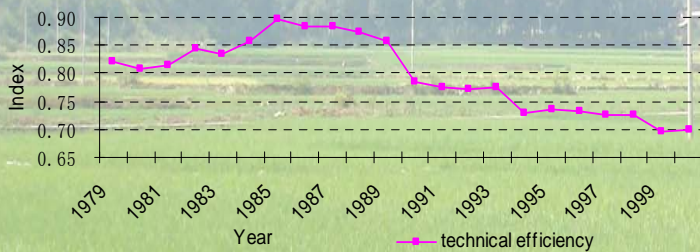

Figure 2: Indices of TFP change and its components (1979-2000)
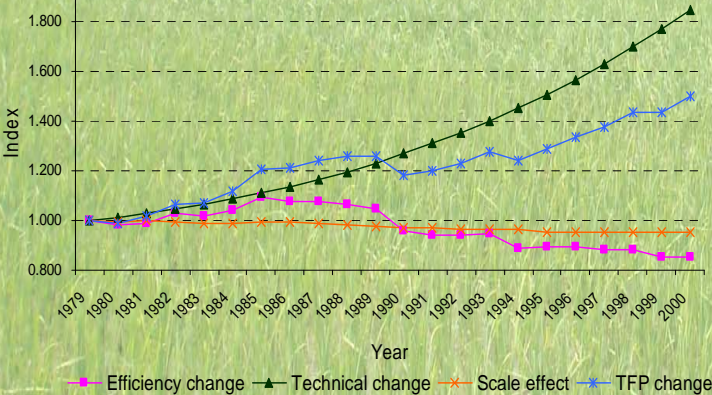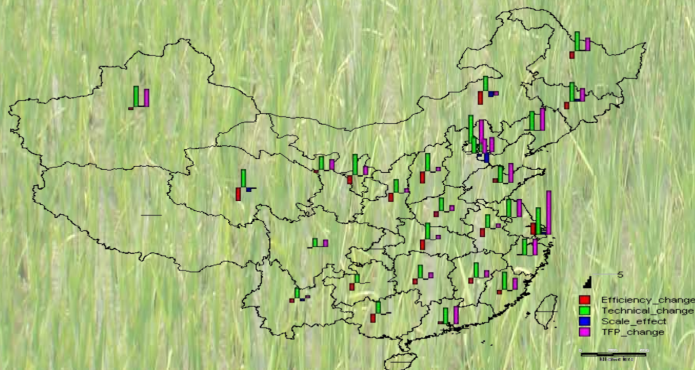

Figure 3: Analysis of average annual growth rate across regions (1979-2000)

Research Objectives

How effective have the existing land tenure and related property rights systems been in providing households with incentives to ensure the development of agricultural production and productivity progress? To what extent have they affected the farmers' efficiency?

Land Rights in Rural China

• Before 1949: feudal land ownership, 10% of landlords controlling 70-80% of agricultural land.
• 1949-1952: large-scale land reform, confiscating those landlords' land without compensation and redistributing to peasant farmers.
• 1953-1979: collective-based system of agricultural production, collective ownership of land.
• Since 1979: household responsibility system (HRS). Land use rights and residual income rights are granted to individual farm households.

Theoretical Framework
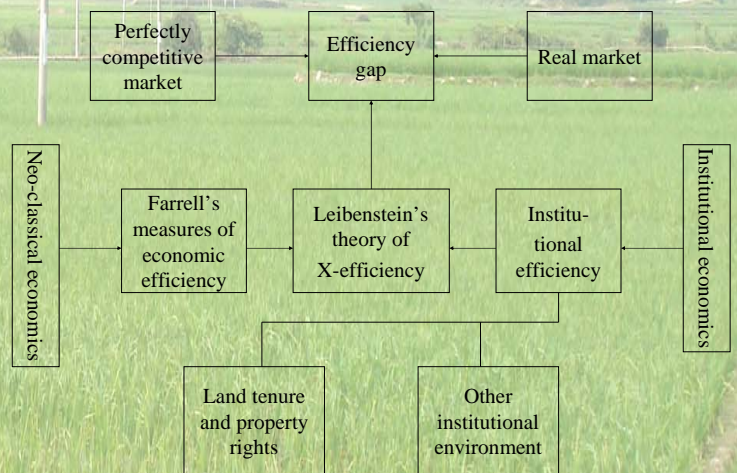
Methodology

• Stochastic frontier analysis (SFA)
• Decomposition of productivity change

Scale component   Techincal change   TE change

$$\dot{TFP}=\sum_{m=1}^{M}(R_m-\mu_m)\dot{q}_m+\sum_{k=1}^{K}(\lambda_k-S_k)\dot{x}_k+(\dot{RTS}-1)\sum_{k=1}^{K}\lambda_k\dot{x}_k-\frac{\partial\ln D_O}{\partial t}-\frac{\partial u}{\partial t}$$

Allocative effects for outputs   Allocative effects for inputs