Valuing State Level Funding for Agricultural Research: Results for the Southeastern United States and the Cornbelt

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1. Motivation
- The current debate on the Farm Bill has brought the continuation of several “safe” programs into question including crop insurance and the funding for agricultural research.
- Research into agriculture has historically been supported on a variety of grounds.
  - Funding agricultural research reduced food prices which provided significant benefits for poor and lower middle class households.
  - Funding agricultural research through state and federal funding of each state’s agricultural experiment stations provided a mechanism to benefit small and family farms.
  - Federal and state funding could be focused on basic research with long-term payoffs outside the scope of private research interests.

2. Economic Model
- Moss (2006) presents a decomposition of the change in profit which provides insight into question of investment in agricultural research. Specifically, Moss decomposes the change in profit into total factor productivity and changes in relative prices

\[
\Delta \ln(\Pi) = \Delta \ln(TFP) + \Delta \ln(p)
\]

- Moss concludes that the increases in Total Factor Productivity largely accrue to producers (i.e., \(\Delta \ln(p) \) is significantly larger than \(\Delta \ln(TFP)\)).
- Hence, Moss concludes that changes in Total Factor Productivity largely accrue to consumers (i.e., \(\Delta \ln(p) \) is significantly larger than \(\Delta \ln(TFP)\)).

3. Data and Methods
- This study extends the analysis of Moss by considering the panel of Cornbelt (i.e., Illinois, Indiana, Iowa, Missouri, and Ohio) and Southeastern (i.e., Alabama, Florida, Georgia, and South Carolina) states.
- Following Moss, we use the Total Factor Productivity computed at the state level for 1960-2004 (updated based on Baltagi, Buatwitz, and Nehring 2002).
- Research and Development stocks at the state level for 1960-1999 are taken from Huffman, McGinn and Xu (2001).
- In order to provide a common level of measurement, we depart from Moss by dividing the Research and Development stocks, Net Cash Income and Farmland Values by the number of acres in each state.

4. Empirical Results
- Table 1 presents the panel results indicating that increased investment in research and development are associated with higher levels of productivity.
- Following Moss we use a cointegration approach that allows for multiple cointegrating relationships.

5. Discussion
- The state level results indicate that increases in the stock of agricultural research and development are associated with higher levels of productivity.
- In the southeastern states, increases in research and development stock are also associated with higher levels of profit (i.e., net cash income). However, in contrast states increased levels of research and development are associated with lower levels of profit.
- The panel results indicate that increased investment in research and development are associated with increased agricultural profitability. However, the panel results do not support a positive relationship between research and development and productivity.

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