

Research and Development for Asia Pacific Agricultural Competitiveness

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and

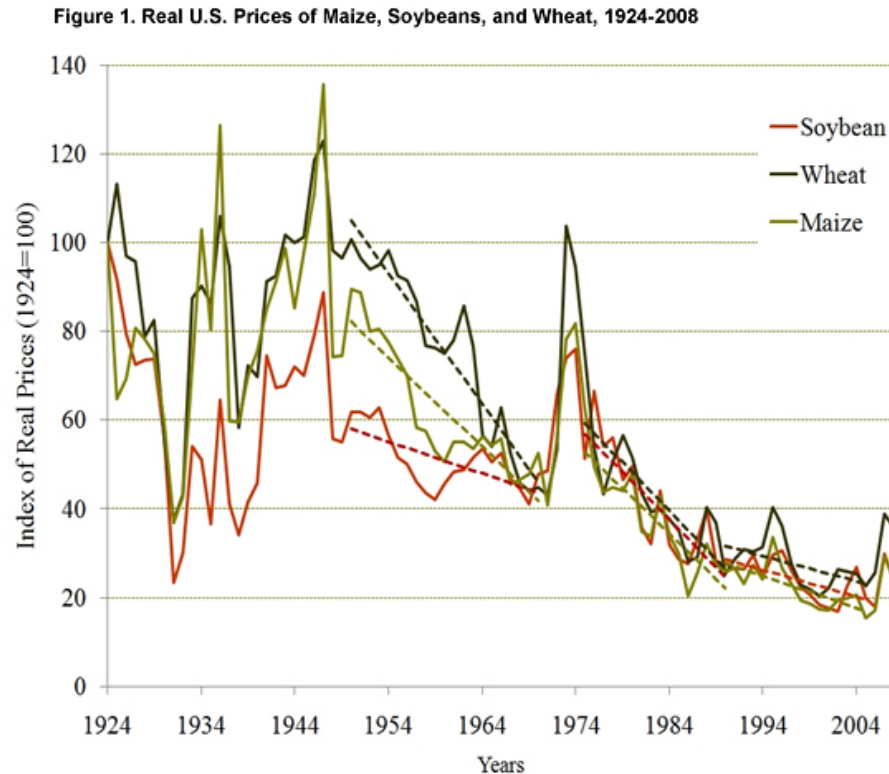
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Figure 1. Real U.S. Prices of Maize, Soybeans, and Wheat, 1924-2008

Source: Alston and Pardey, 2009.



Source: Compiled by the authors with data cited in Alston, Beddow and Pardey (2009b).

Notes: Nominal prices were deflated using the real farm price index. Dashed trendlines represent ordinary least squares regression lines of best fit where the respective commodity price was regressed against a linear time trend during each of the periods 1950-1970, 1975-1990, and 1990-2008.

Figure 2. Agricultural Growth Components

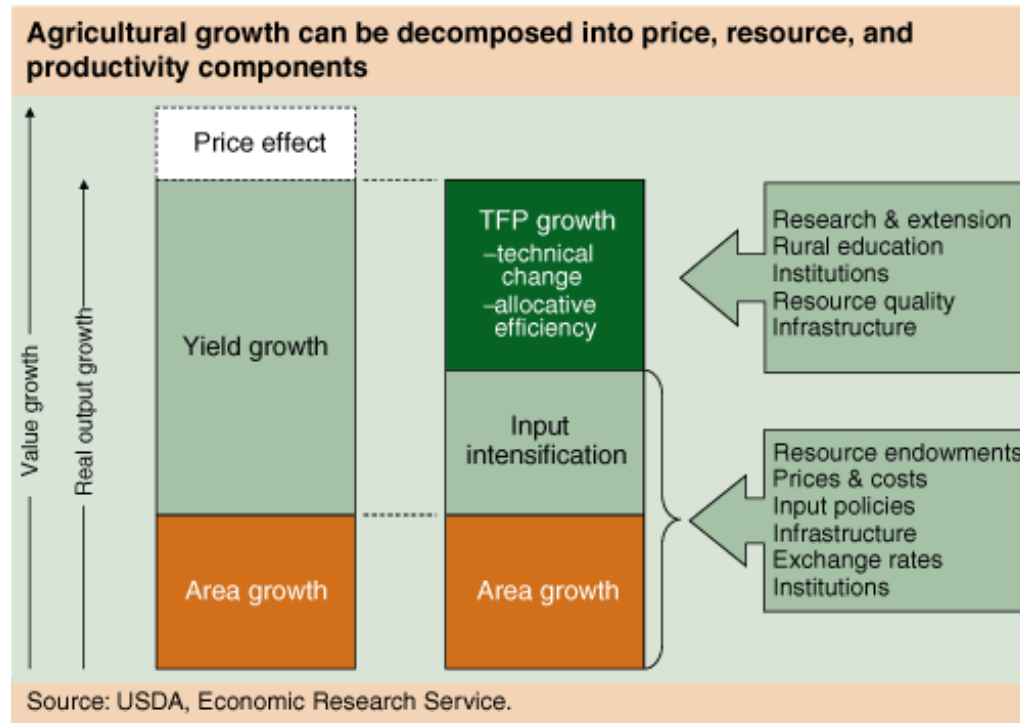
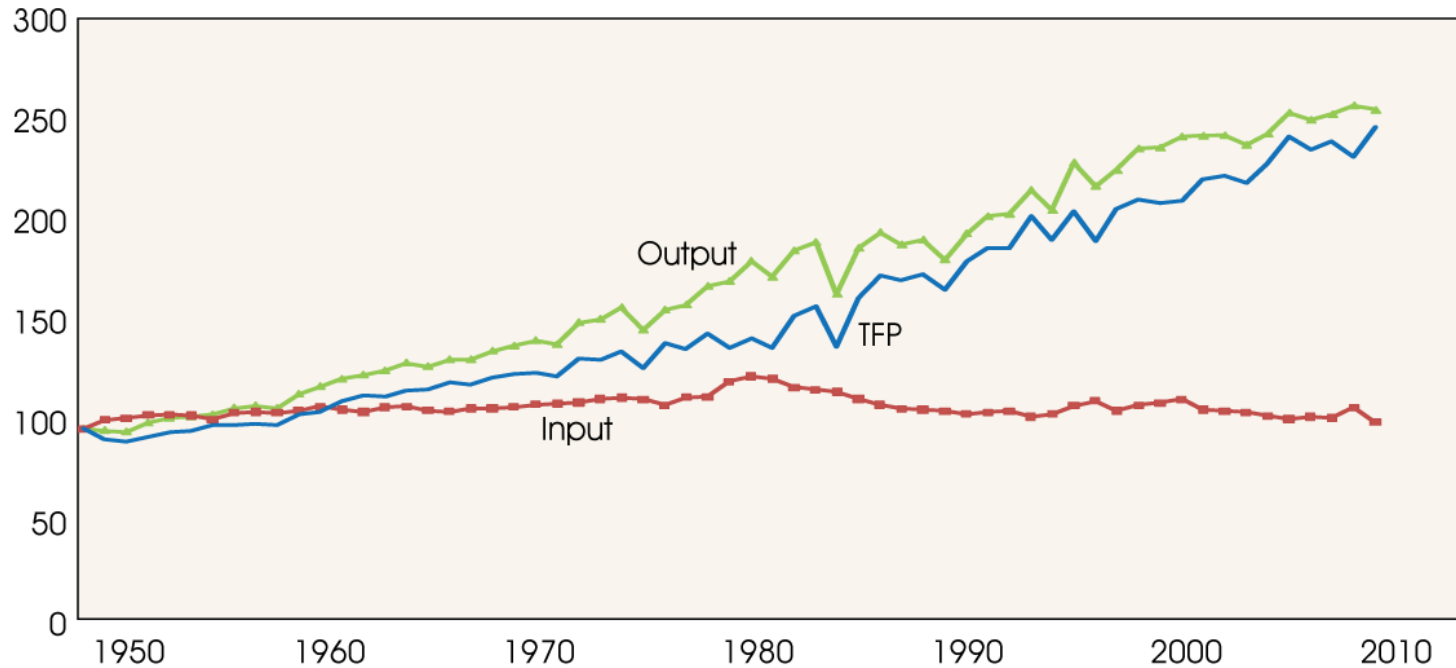


Figure 3. U.S. Agricultural Output, Input and TFP Indexes, 1948-2008

Figure 1

U.S. agricultural output, input, and TFP indexes

Base year 1948 = 100



Source: U.S. Department of Agriculture, Economic Research Service.

Figure 4. Total Factor Productivity Share of Agricultural Growth, 1961-2007

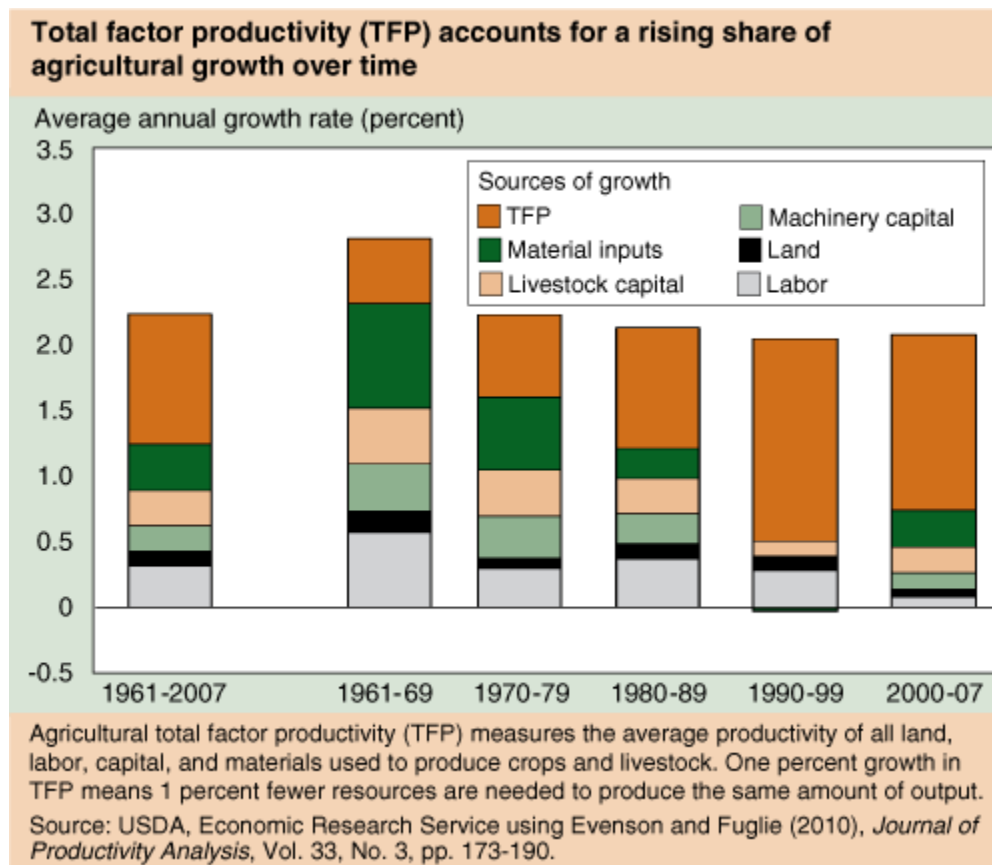


Figure 5. Average Annual Agricultural TFP Growth Rates by Country, 1970-2007

Source: 2010 GAP Report.

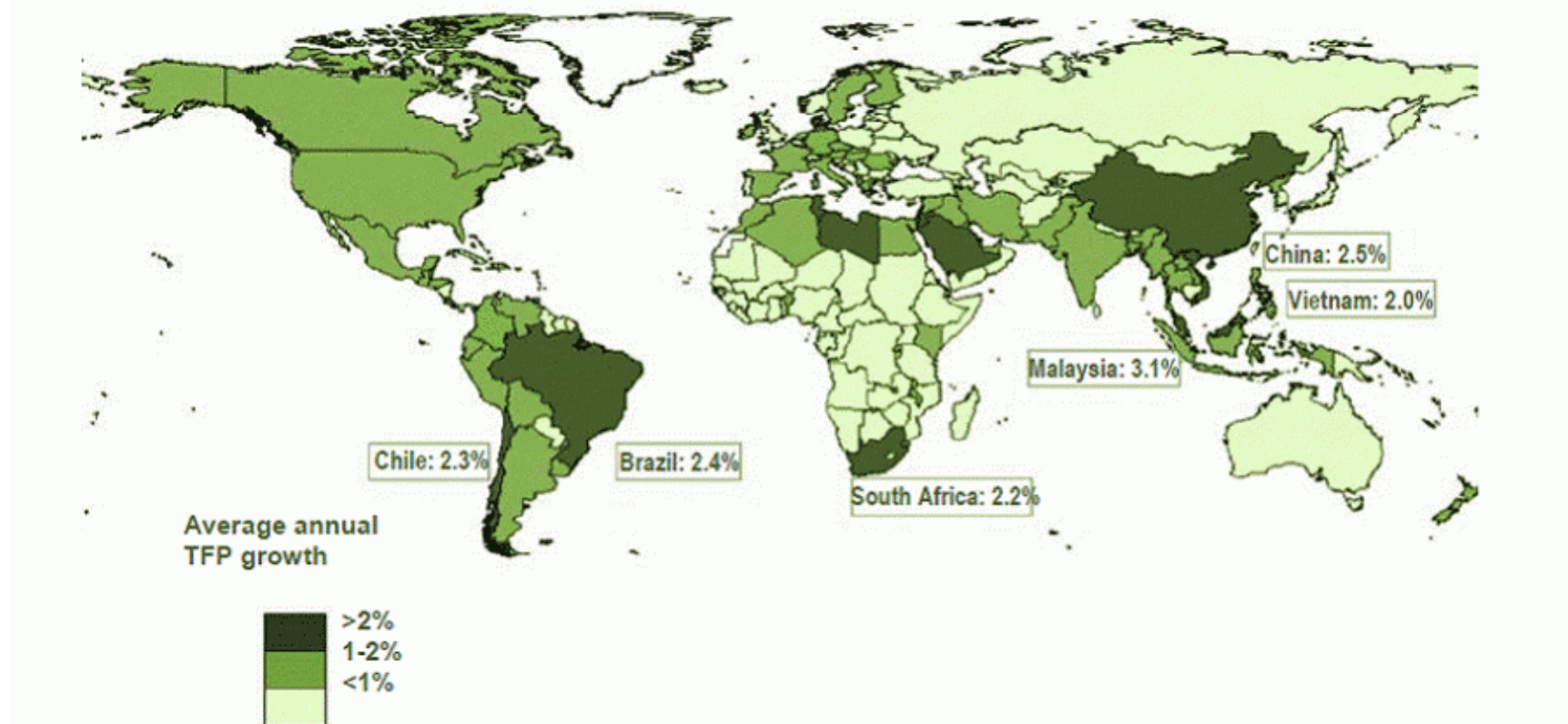


Figure 6. Agricultural TFP and Resources Growth in Developing and Transition Countries

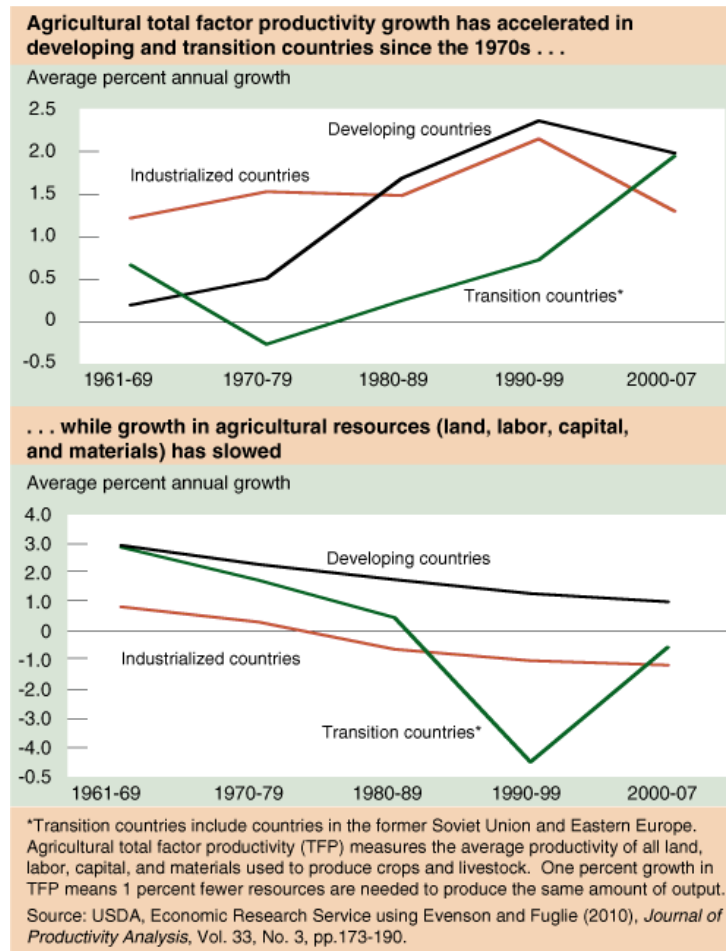


Figure 7. Agricultural Total Factor Productivity Indexes

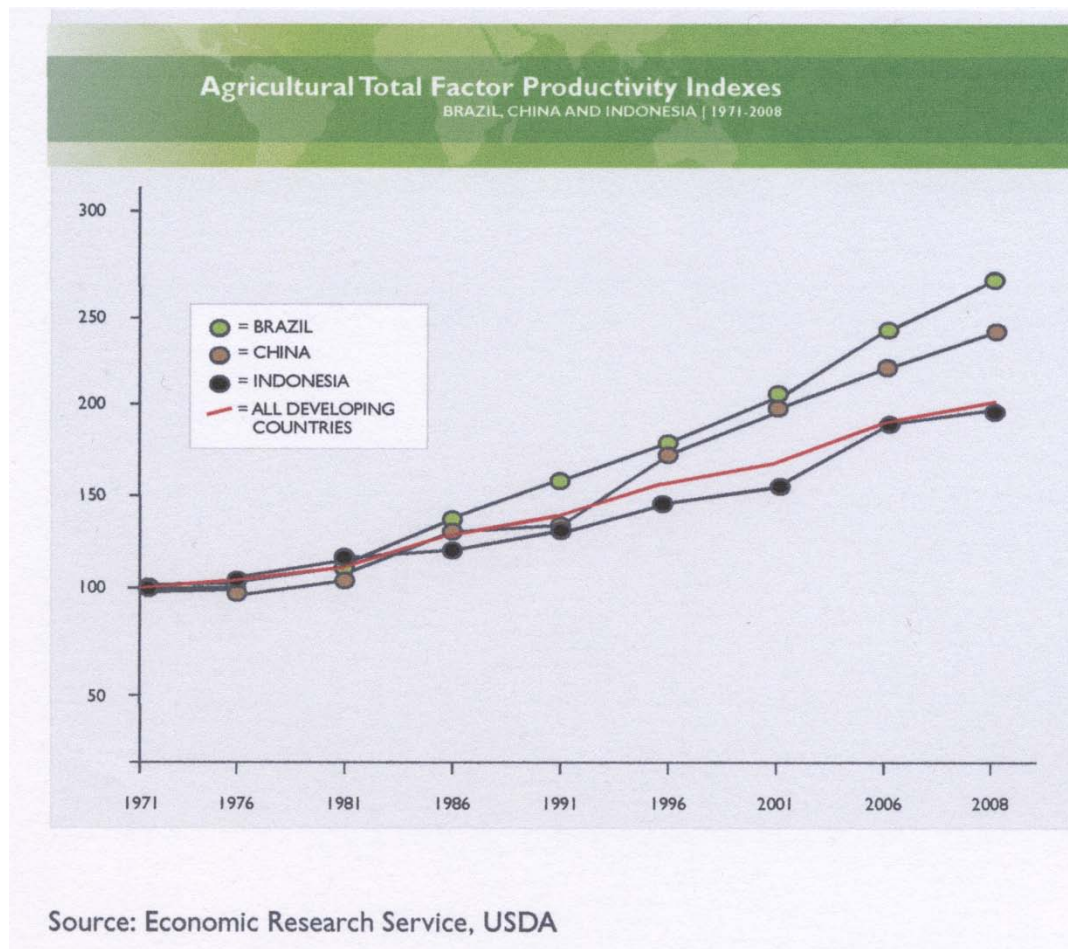


Figure 8. Public Agricultural R&D Spending Trends

Source: Pardey et al. 2006.

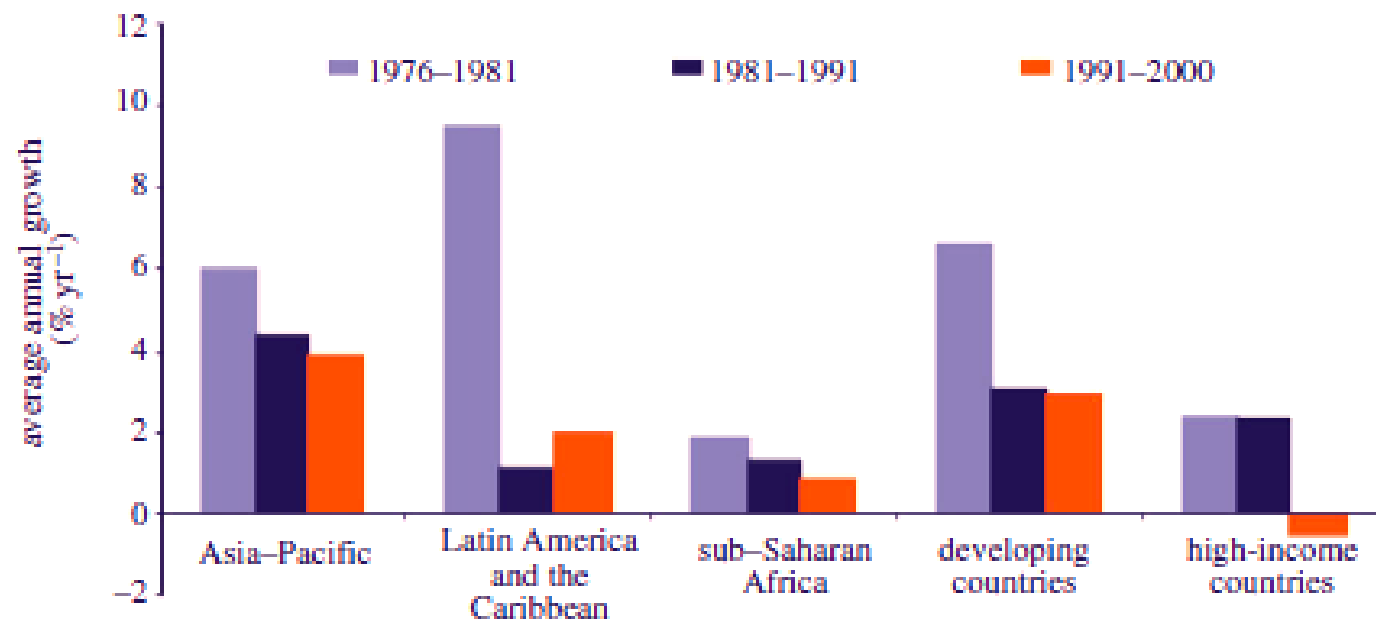


Figure 9. Farm Productivity Orientation of U.S. Public Agriculture R&D

Source: Pardey and Pingali, 2010.

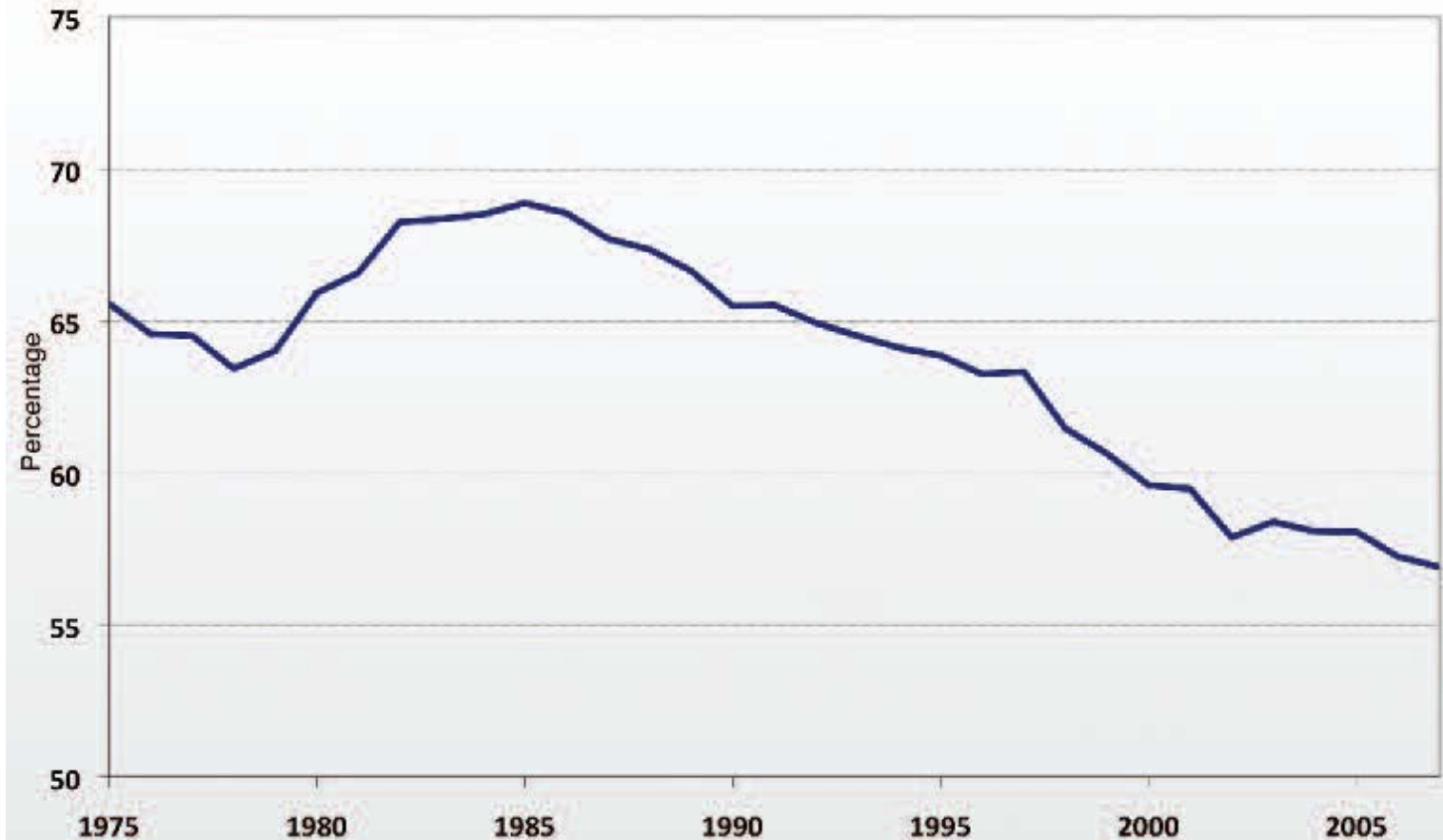


Figure 10. U.S. Total and Public Spending on Ag R&D, 1950-2007

Source: Agriculture Research and Productivity for the Future. 2009. Farm Foundation.

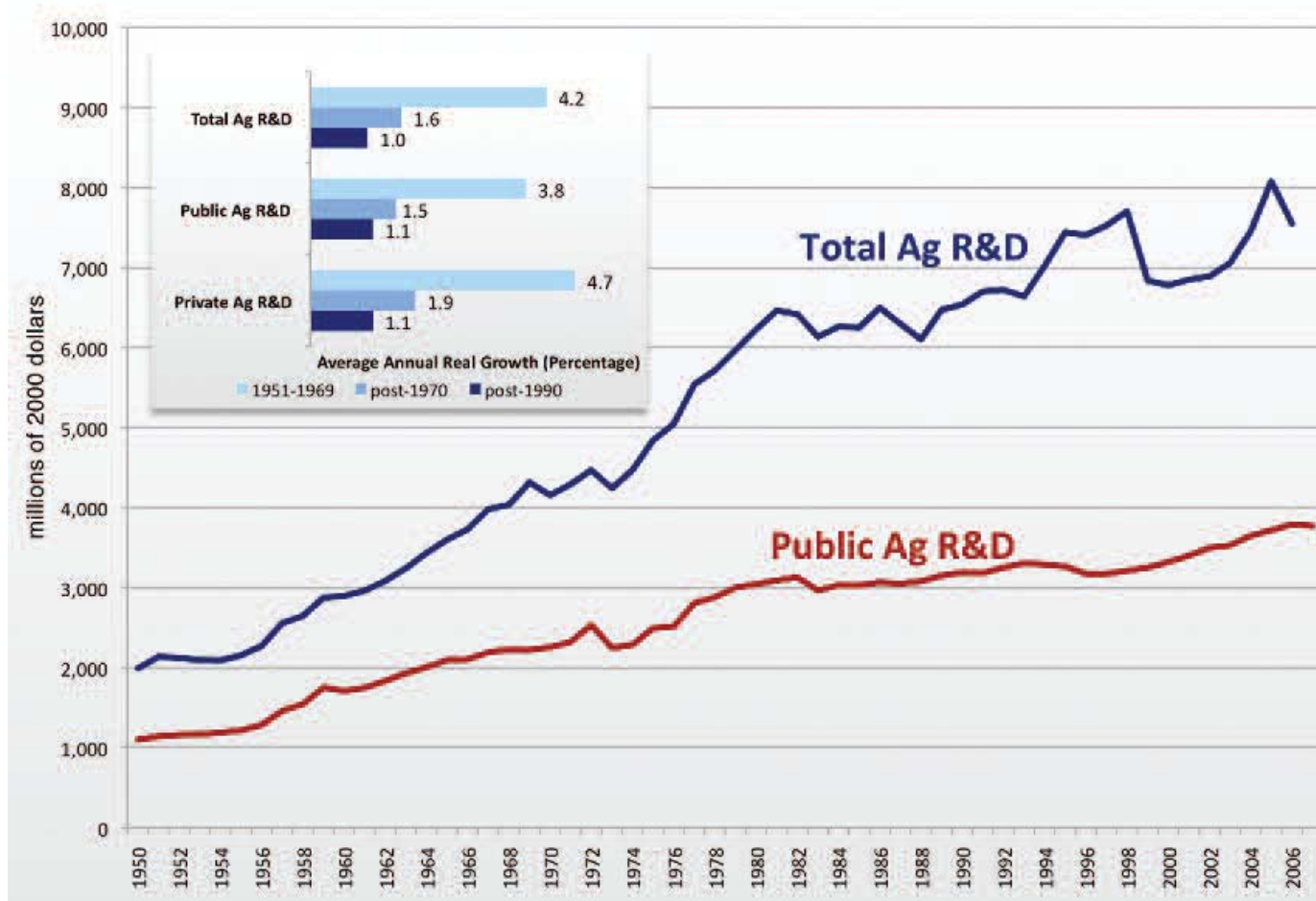


Figure 11. Recent Trends in U.S. Research and Development Funding

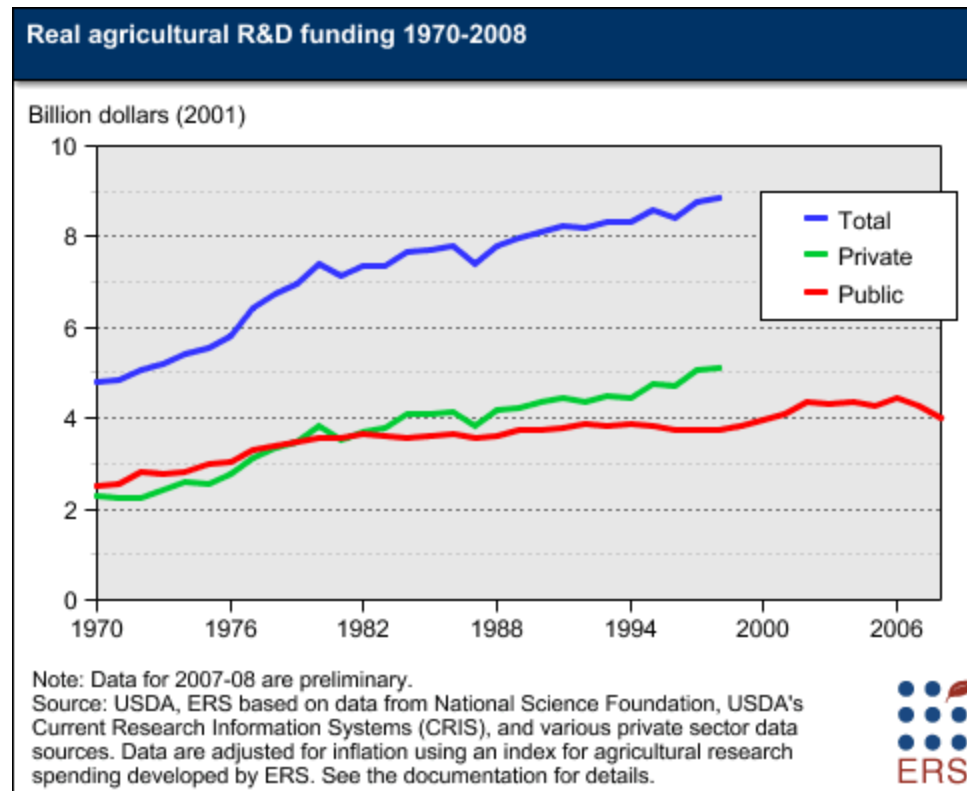


Figure 12. Changing Orientation of Food and Agricultural Research in Rich Countries

Source: Pardey and Pingali, 2010.

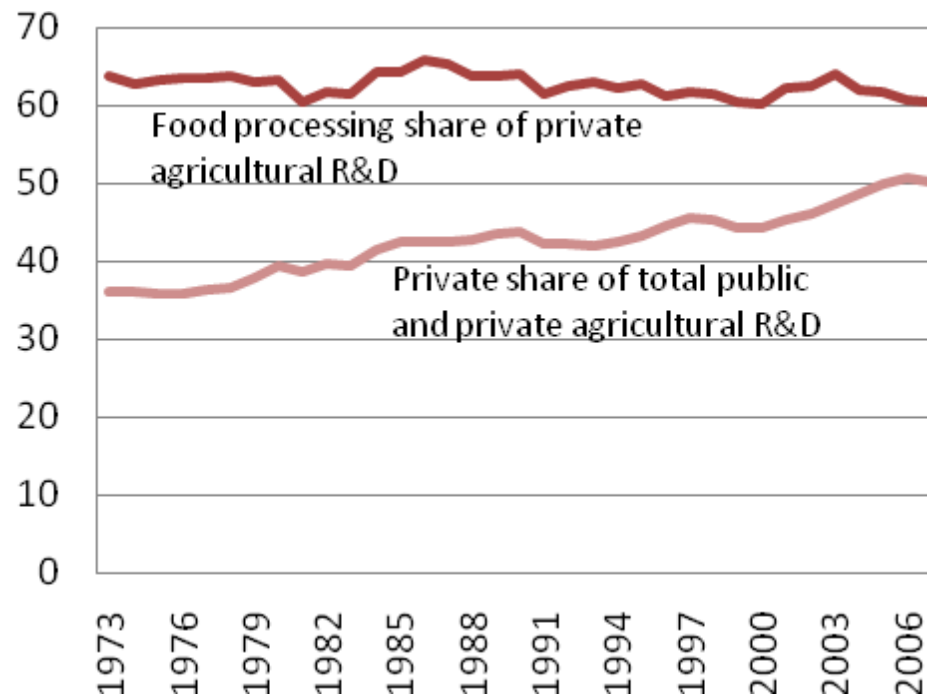
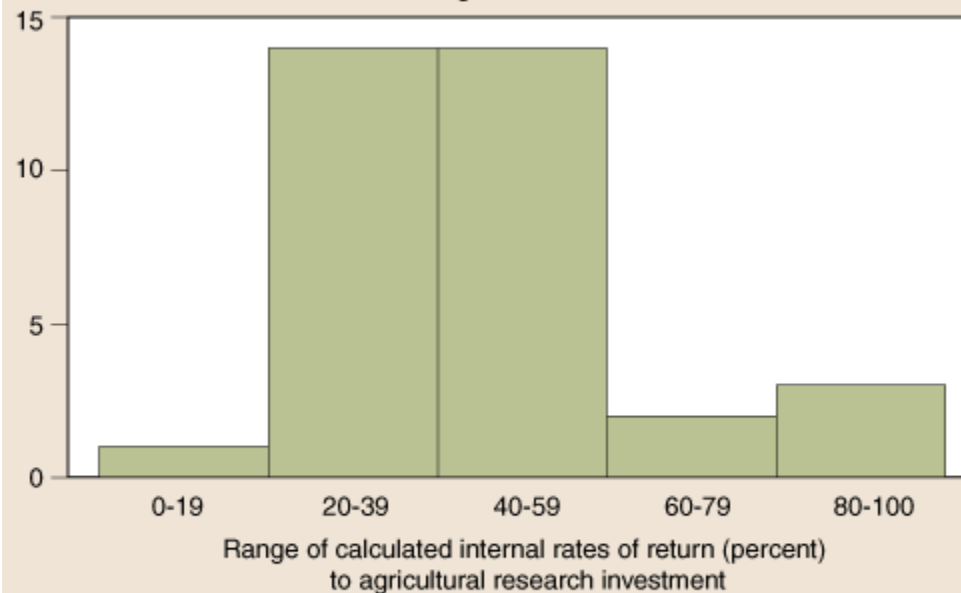


Figure 13. Rates of Return to Public Agricultural Research

Most studies have found high rates of return to public agricultural research in the United States

Number of studies with estimate in range



Studies were published between 1958 and 2006.

Source: USDA, Economic Research Service based on Huffman and Evenson, *Science for Agriculture: A Long-Term Perspective*, Iowa State University Press (2006).

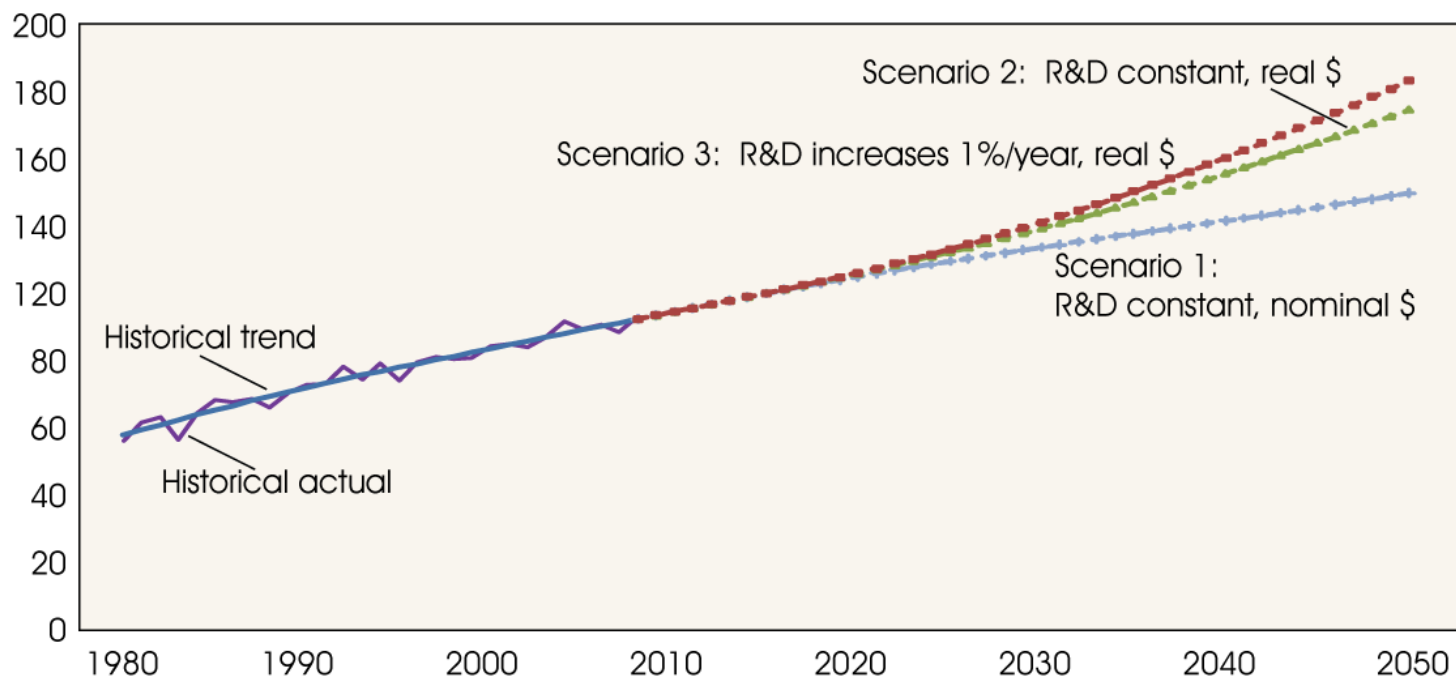
Figure 14. TFP Index Projections

Source: Heisey, Wang and Fuglie, 2011.

Figure 4

TFP index projections

Base year 2008 = 100



Policy Implications

- Public sector funding for R&D must increase
- Public and private sector collaboration needed
- Science based technologies are necessary
- Infrastructure investments needed to handle large agricultural output increases
- Remove of barriers to trade to increase productivity growth