Is there a Slowdown in Agricultural Productivity Growth in South America?

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Introduction

Some studies have estimated a slowdown on agricultural productivity growth in the U.S and in some European countries.

This article uses parametric and nonparametric methods to estimate **(TFP)** agricultural productivity growth in 10 South American countries in 1972-2006 with the objective of checking for a potential slowdown in these countries.

TFP is output per unit of input.

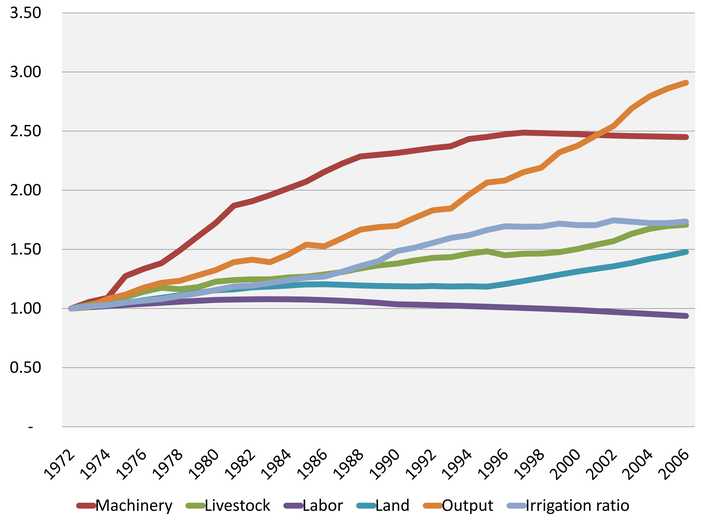
The model

We estimate a translog frontier production function and a Malmquist TFP index for a sample of 10 representative countries of the subcontinent:

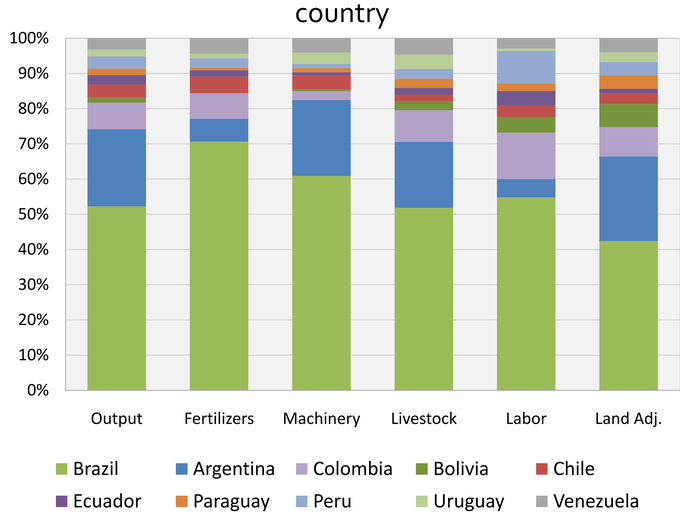
Inputs: Fertilizers, Machinery, Livestock, Labor and Land.

Quality variables: Infrastructure, Trade Intensity, Freedom, Life expectancy, Land quality and Irrigation ratio.

Growth of Output and Inputs (Index 1972)



Average Output and Input Share of each country



	TFP Malmquist				TFP Stochastic Frontier				Output Growth Rate			
Country	72-80	81-90	91-00	01-06	72-80	81-90	91-00	01-06	72-80	81-90	91-00	01-06
Argentina	3.05	-0.20	3.48	1.95	1.76	1.37	2.82	2.12	2.81	1.78	2.98	2.10
Bolivia	-2.69	0.47	2.80	2.35	-1.64	0.74	1.53	1.05	3.72	3.14	4.32	2.37
Brazil	1.80	3.13	4.31	4.72	1.90	2.35	2.88	2.92	4.48	2.89	3.93	4.48
Chile	1.93	3.65	1.25	2.92	2.58	2.41	2.52	3.15	3.19	3.53	3.29	3.74
Colombia	1.88	2.34	3.65	2.60	1.29	1.91	1.43	1.64	4.01	2.66	1.49	2.42
Ecuador	-1.46	0.55	1.20	2.37	1.77	1.29	1.96	2.24	2.59	3.25	3.70	1.75
Paraguay	1.23	1.49	-0.38	0.00	1.28	0.91	1.05	1.83	4.90	6.28	0.76	3.45
Peru	-0.49	2.13	4.92	2.18	-0.47	1.62	3.11	2.00	-0.22	2.43	6.08	2.68
Uruguay	1.54	1.98	2.73	2.95	0.77	1.40	2.09	2.02	1.47	1.82	2.78	2.94
Venezuela	2.44	1.07	3.39	0.38	1.57	1.24	2.09	1.94	4.51	1.80	3.14	0.10
Weighted Average	**2.02**	**2.16**	**3.75**	**3.61**	**1.71**	**1.98**	**2.64**	**2.55**	**3.60**	**2.55**	**3.43**	**3.44**

Quick facts

Output growth healthy in 90-06 period, 3.4%

•TFP rates : 2% for whole period, 2.6% for 90-06

• Highest TFP rates Chile and Brazil

• Lowest TFP rates Bolivia and Paraguay.

• FTE's in agricultural research important in explaining differential perform.

•Average irrigation ratio 8.4%. Highest ratio Chile 55.9%

• Important impact of **irrigation** on **productivity growth.**

Conclusions

We found that there is **no such slowdown** in South American agriculture; the increase in agricultural output during the period is explained by factor accumulation, but also by higher Total Factor Productivity (TFP).

For further information

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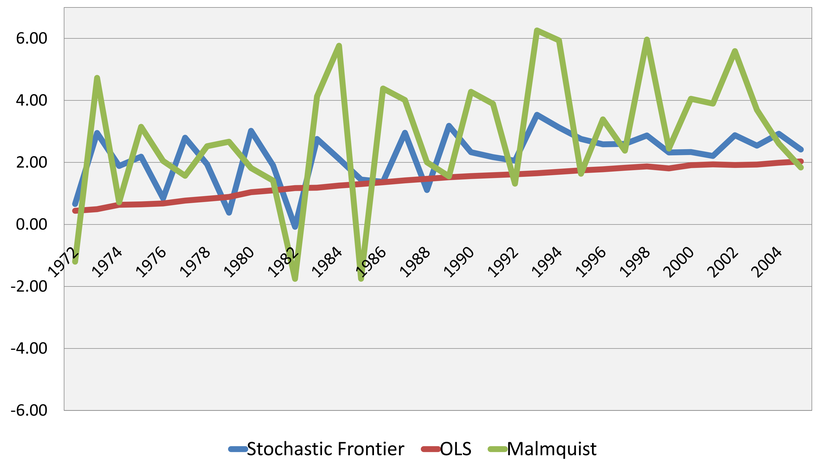
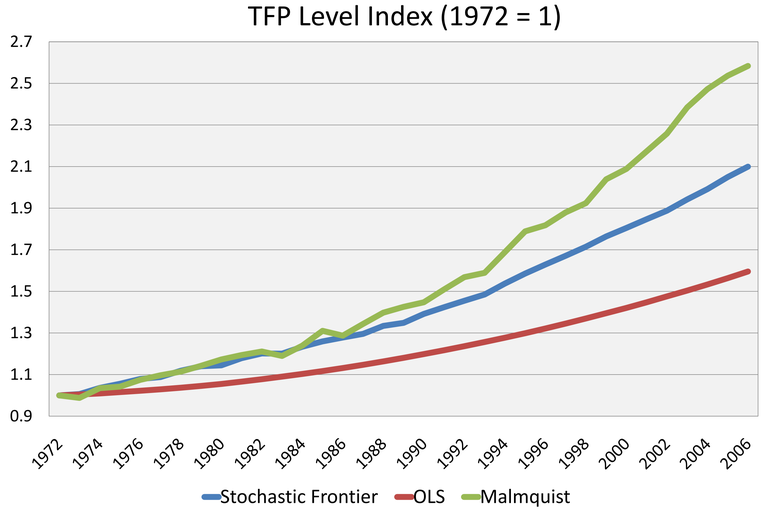
TFP Growth Rate



TFP Level Index (1972 = 1)



TFP Index - Stochastic Frontier (1972=1)