Discussion of

Accounting for Growth in Global Agriculture

Keith Fuglie

by Ornella Wanda Maietta

Innovation, productivity and growth: towards sustainable agri-food production, 4th AIEAA Conference
Ancona 11-12 June 2015
How much has total factor productivity (TFP) grown in world agriculture over the 1961-2012 period?

A relevant question:

Expo 2015 – Feeding the planet, Energy for Life

G7: world temperature reduction
Empirical procedure

**Growth Accounting**: a deterministic non-frontier methodology applied to macro units to obtain a primal measure

Assumptions:
- constant returns to scale technology
- perfect competition
- absence of factor hoarding
- absence of inefficiency
Data

FAO data 1961-2012 years
country coverage: 99.9% of world agricultural output

plus

data sourced from
- International Fertilizer Association
- International Labor Organization
- National Bureaus of Statistics or other national

in case of need

agricultural input cost shares borrowed from similar countries reported in other papers/sources
• Physical input accumulation is no longer a driver of output growth

• Immaterial inputs (public and private R&D and human capital investment) are the drivers
The contribution of physical input accumulation to output growth is disentangled and quantified
TFP growth measures crucially depend upon the cost shares that are used: the assumption is of a common technology of the alike country (not the same state of technology)
Some robustness checks?

- labour share underestimated in presence of self-employment (Gollin, 2002)

- use of shadow prices
Suggestions about input

agricultural labour:
- female work is equal to male work (some handbooks suggest a coefficient conversion equal to 0.6: 0.8?)
- could the % of pedestrian tractors on total tractors be a good proxy of small farms and of part-time employed agricultural labour (Schmitt, 1988)?

land quality:
- the region definition is based on geographical proximity but some climatic proximity (temperate zone, etc.) could be also taken into account
- some information about specialization vs diversification could be obtained from the crops that are cultivated