Accounting for Greenhouse Gas Emissions in OCDE Agricultural Productivity
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1. Background
Farming accounted for about a quarter of total OECD acidifying emissions, 8% of the use of potential ozone depleting substances, 8% of greenhouse gases (GHGs) (2002-04). 70% of nitrous oxide \( N_2O \) and over 40% of methane \( CH_4 \).

Consequences of GHGs Emissions:
- ozone depletion
- climate change,
- ... etc

2. Objective
To analyze the environmental performance of the OECD agriculture with respect to Greenhouse Gases Emissions

3. Approaches and Data
Data Envelopment Analysis: Malmquist-Luenberger (ML) Productivity Index
- Desirable output: Production/Ind (2000=100)
- Undesirable Output: Agricultural total GHGs (Tonnes CO2 equivalent)
- Inputs: Land; Labor, Machinery, Energy, Fertilizer

Source: OECD

4. Results
- Efficiency Change accounting for GHGs averaged 0.3% vs 0.7% while ignored
- Technical Change accounting for GHGs averaged 0.1% vs 1.8% while ignored

The ML productivity is driven by technical change and higher than the one ignoring the GHGs

ML vs M TFP change

5. Conclusion
Accounting for GHGs results in lower TFP. TFP is driven by technical change in both cases

This performance is explained by technical change.
Technical change is biased toward expansion of desirable outputs rather than contraction of the bads

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6. Selected References

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