

Productivity of the Australian Broadacre and Dairy Industries

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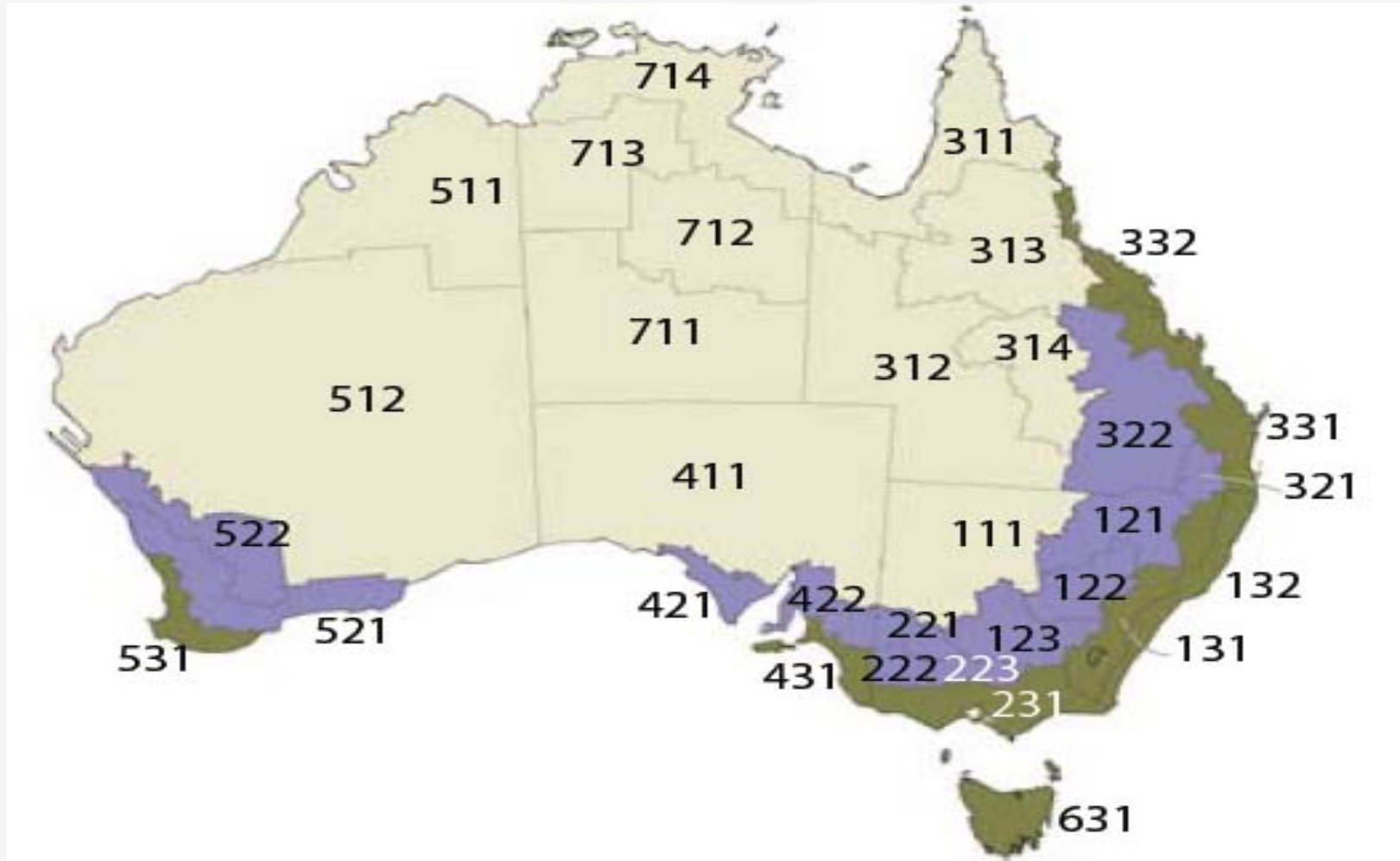
Agriculture in Australia

- **Agriculture Production - A\$42b**
 - 2.6 % of Australia's GDP
 - Agricultural exports A\$32b

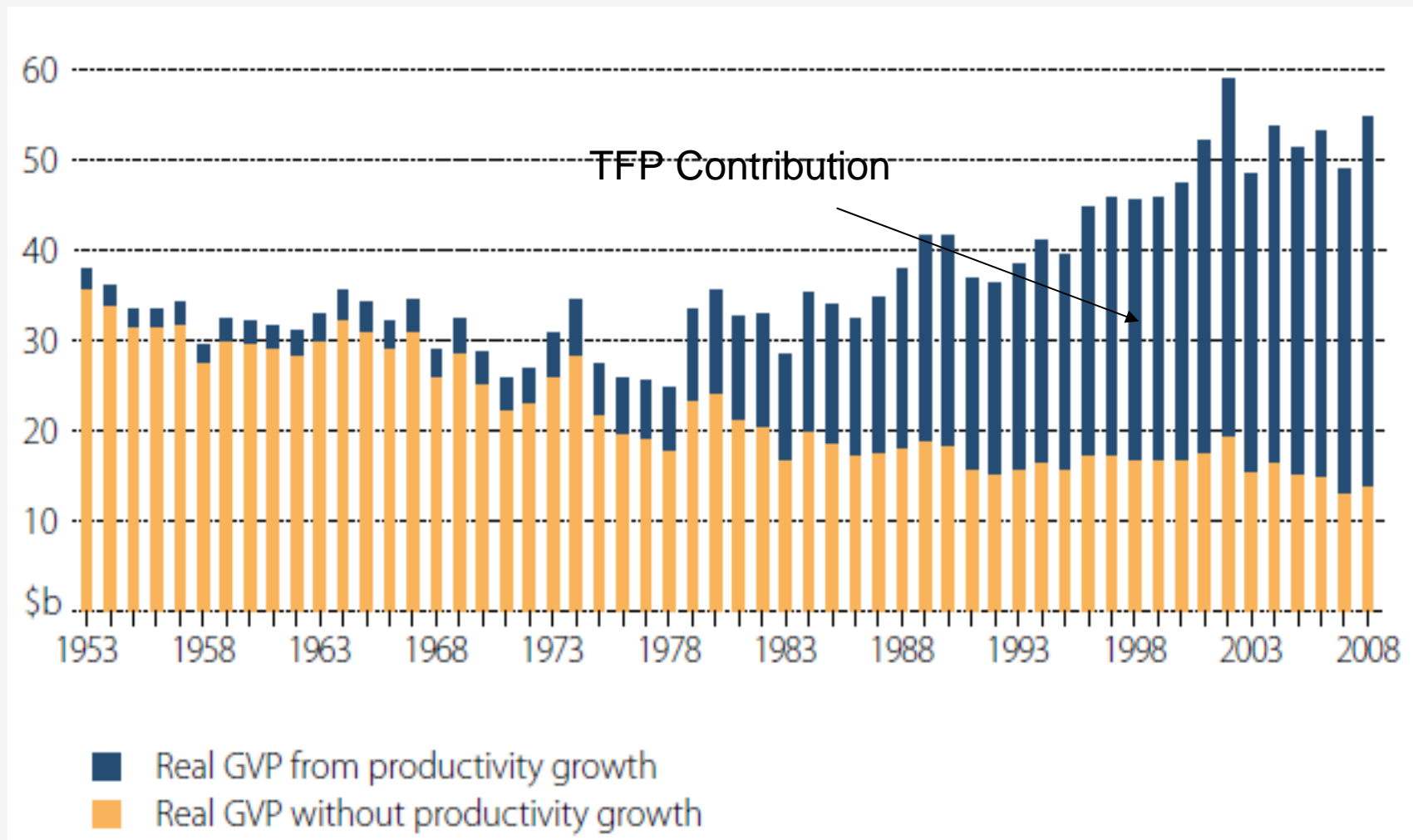
Broadacre and dairy industries

- 65 per cent of agricultural production
- 54 700 farms in the broadacre industry
- 7 500 farms in the dairy industry

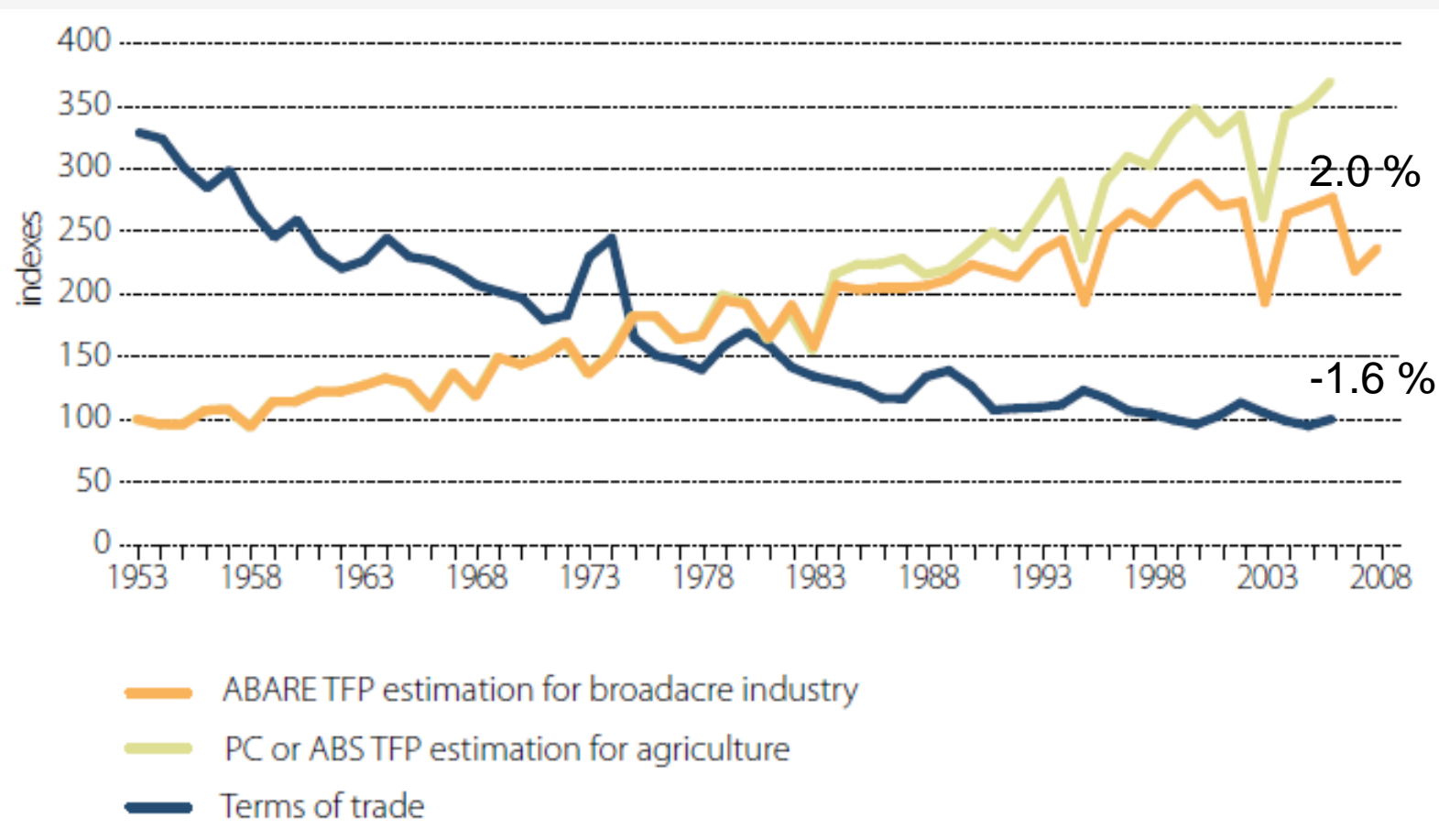
Broadacre farms in Australia



Contribution of TFP to broadacre GVP



Productivity growth and Australia's terms of trade



Outline

- ABARE's TFP estimation methods
 - Concept and methodology
 - Data Source
- TFP growth trends in Australia's broadacre and dairy industries
- Interpretation of Australian broadacre and dairy TFP indexes

Fisher index methods

- TFP is defined as the ratio of output to input.

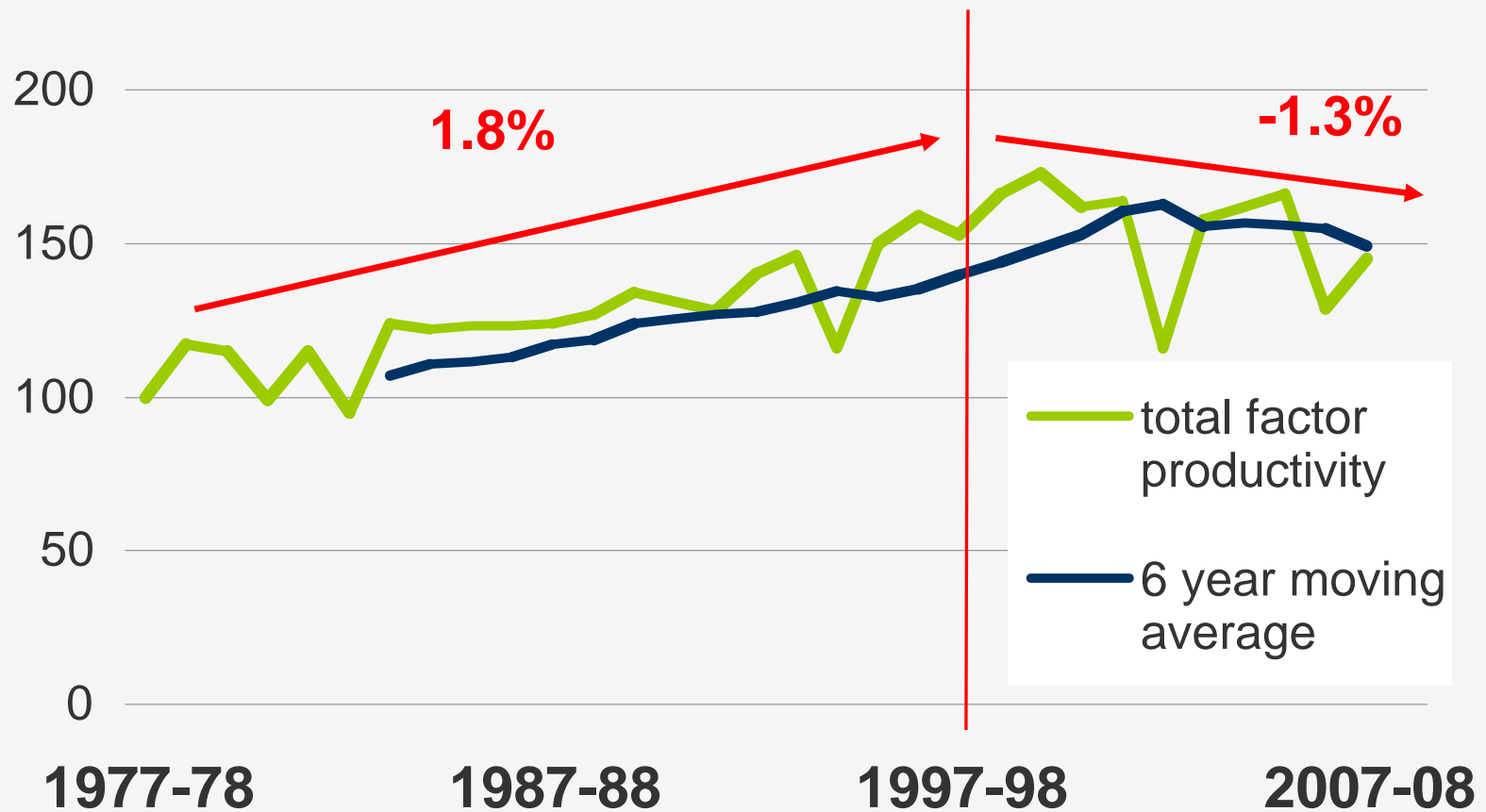
$$TFP_t = \frac{\text{Output Index}_t}{\text{Input Index}_t}$$

- Fisher index approach is adopted.
- Growth rate is calculated by a regression with a time trend

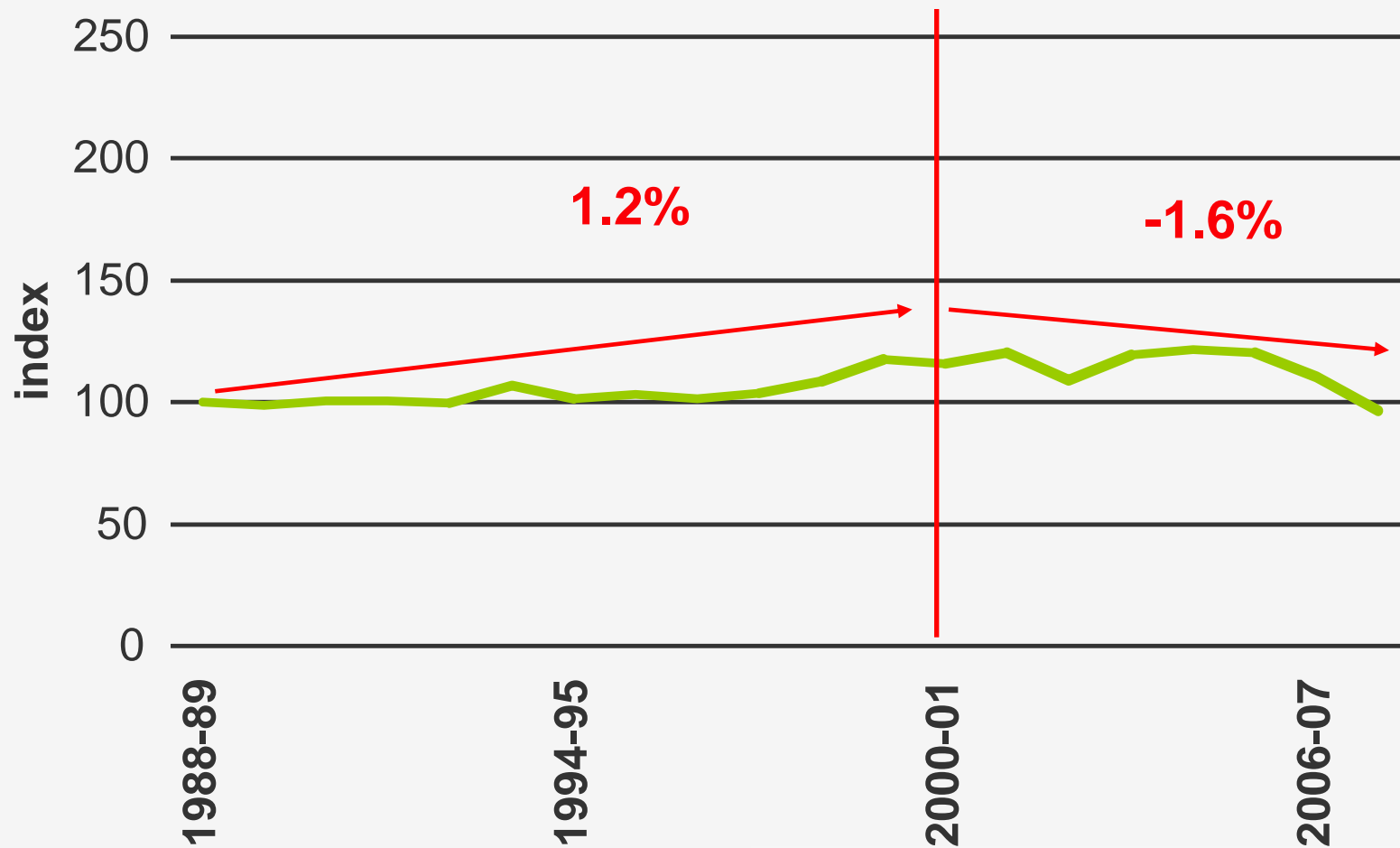
Inputs and Outputs

- A similar framework for different industries
 - Easy for comparison
 - Consistency for aggregation
- Outputs (19 items)
 - Crops, Livestock, Wool and Other Outputs
- Inputs (29 items)
 - Land, labour, capital and materials&services

Agricultural productivity growth is slowing down...



Dairy productivity growth has the similar pattern...

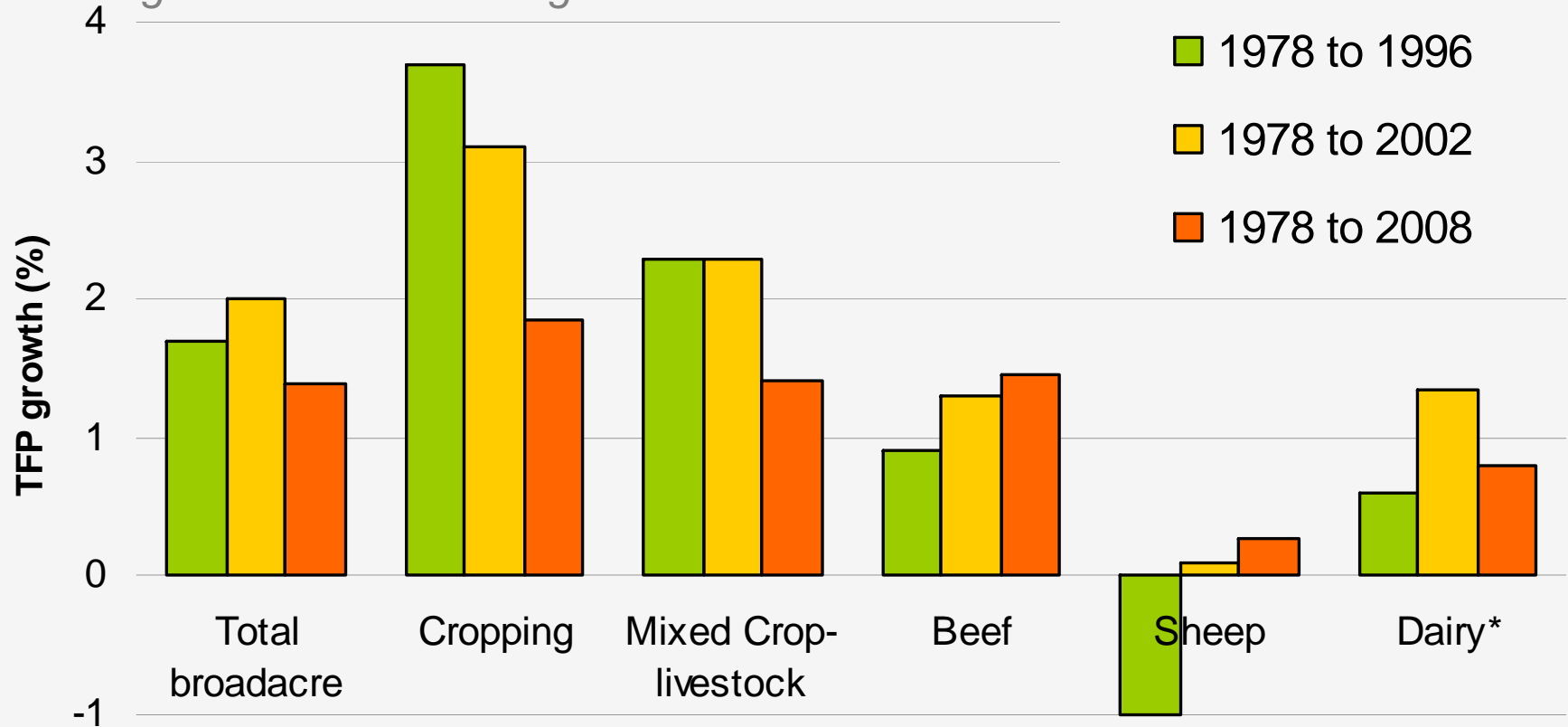


Three Questions to Answer

- What are main driving forces behind TFP growth?
- Why does the slowdown happen in recent years?
- How to deal with the problem?

The slowdown has been more obvious on cropping and dairy farms....

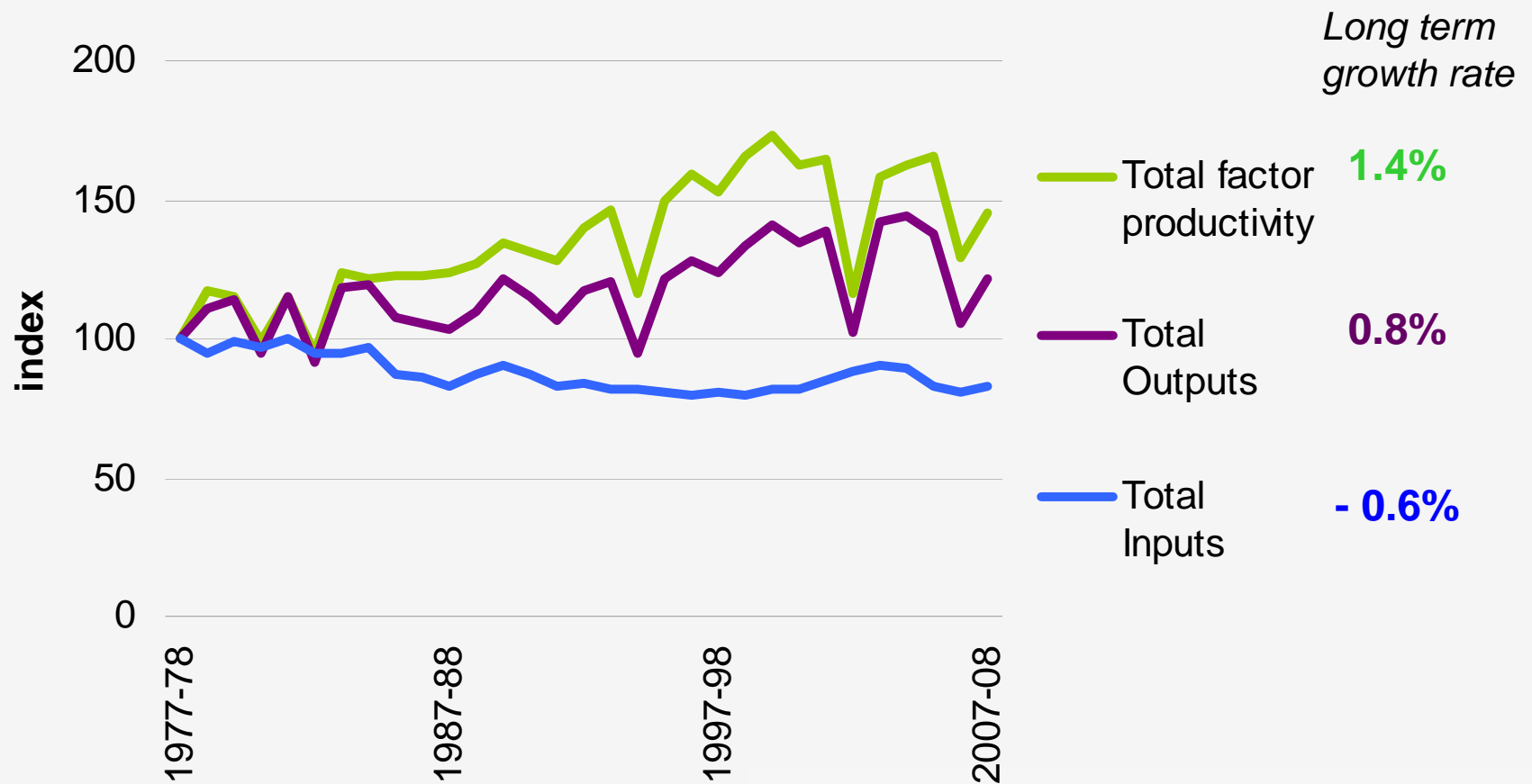
Long term trends in TFP growth



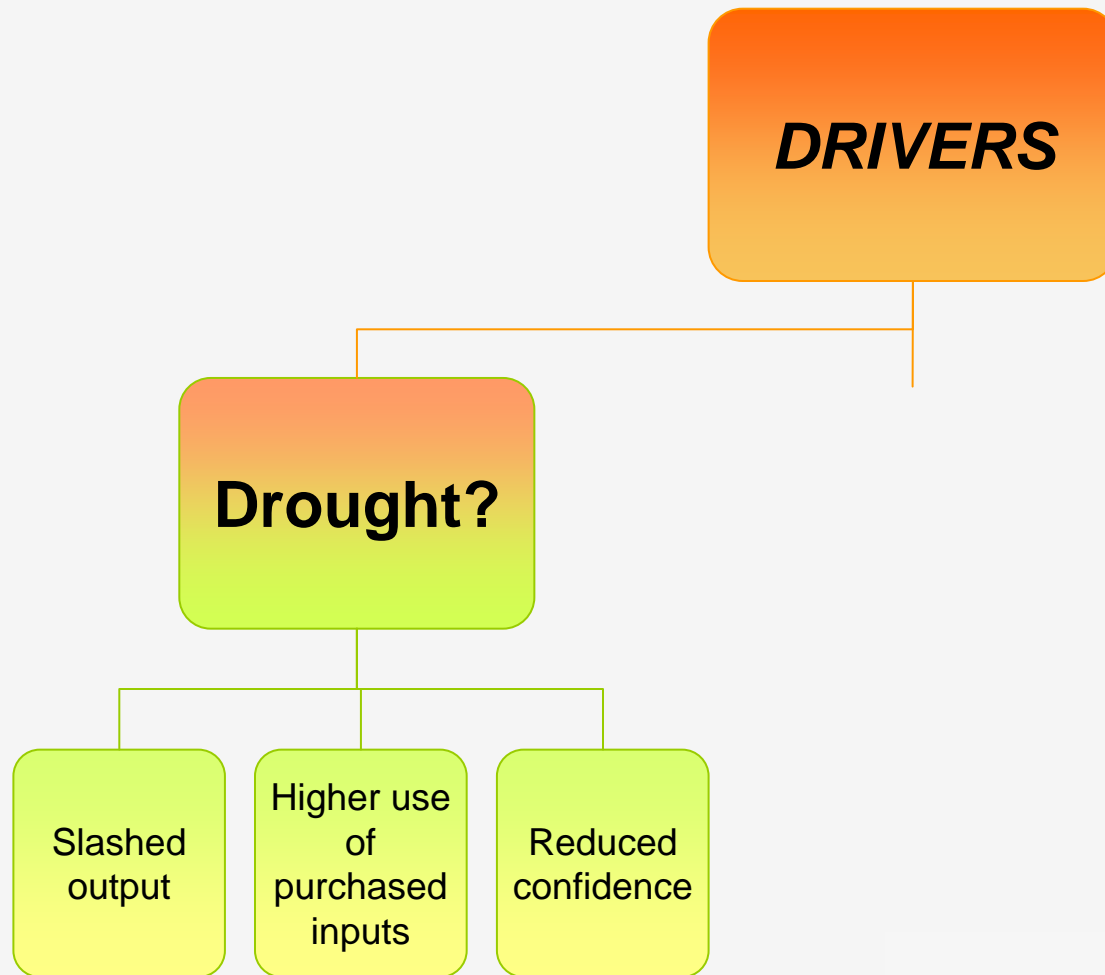
Note: Dairy trends begin from 1988-89 onwards

TFP growth is driven by both output and input movements...

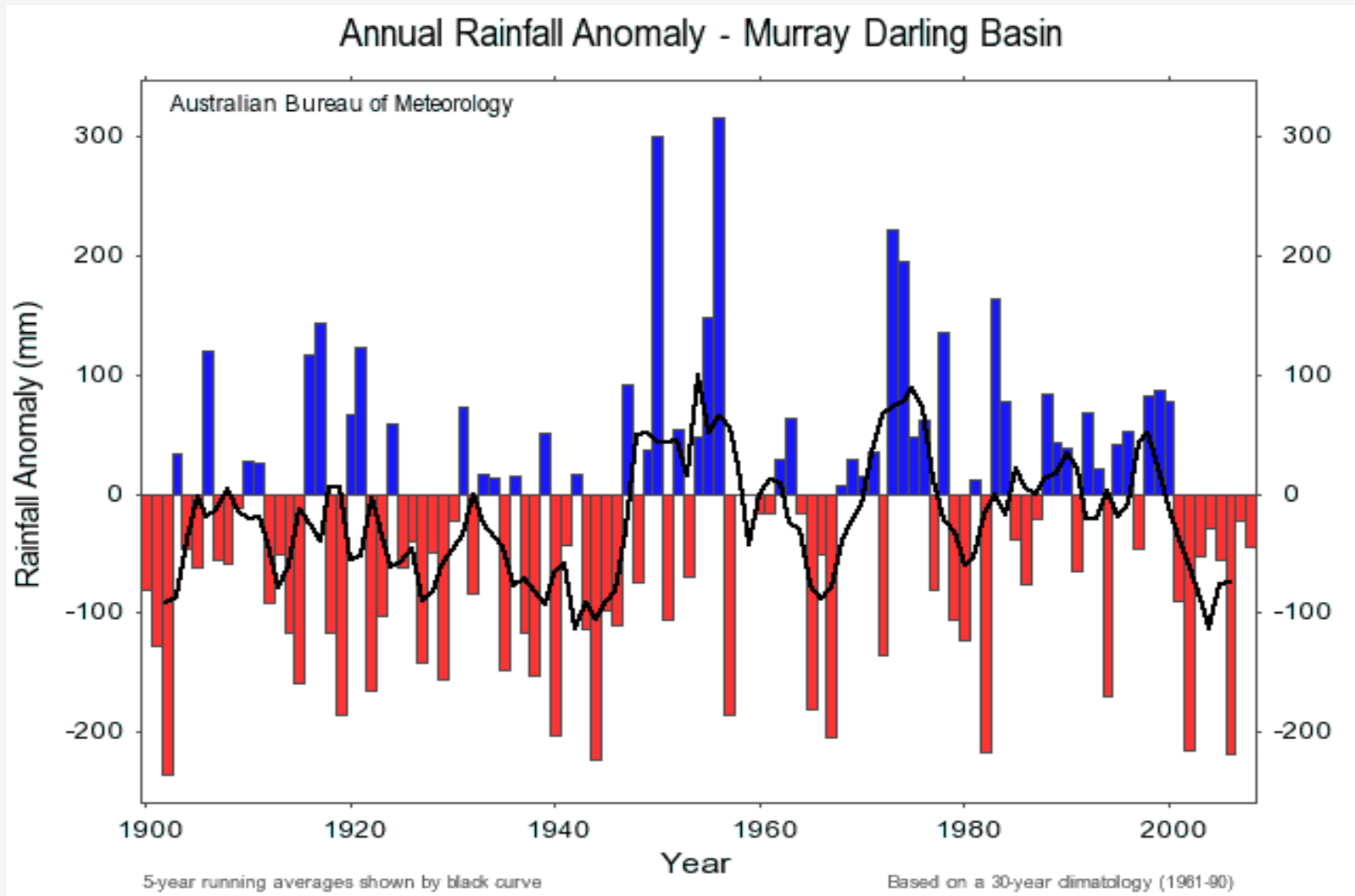
Broadacre input, output and TFP indices



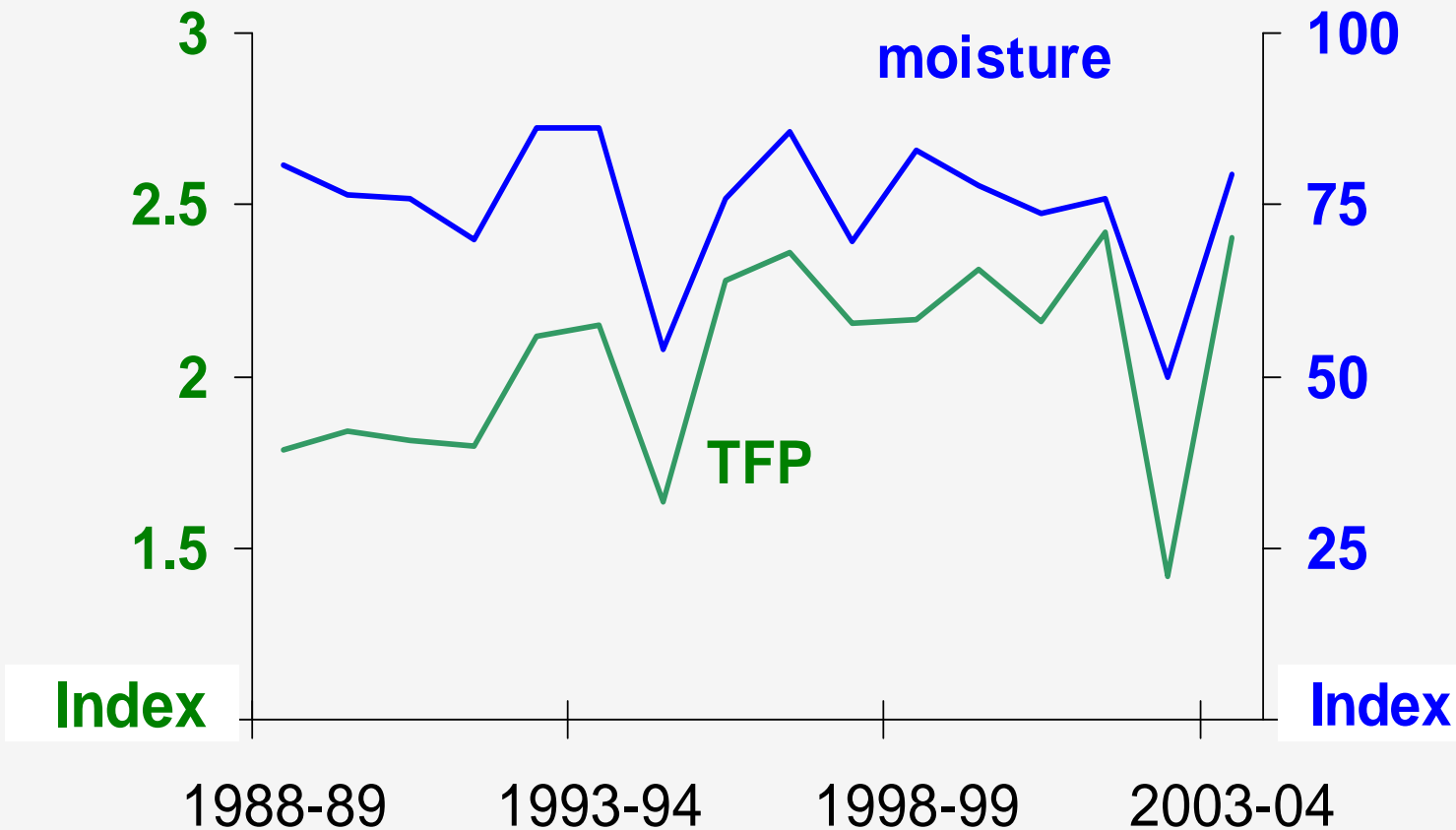
Poor Seasonal Condition and TFP Slowdown



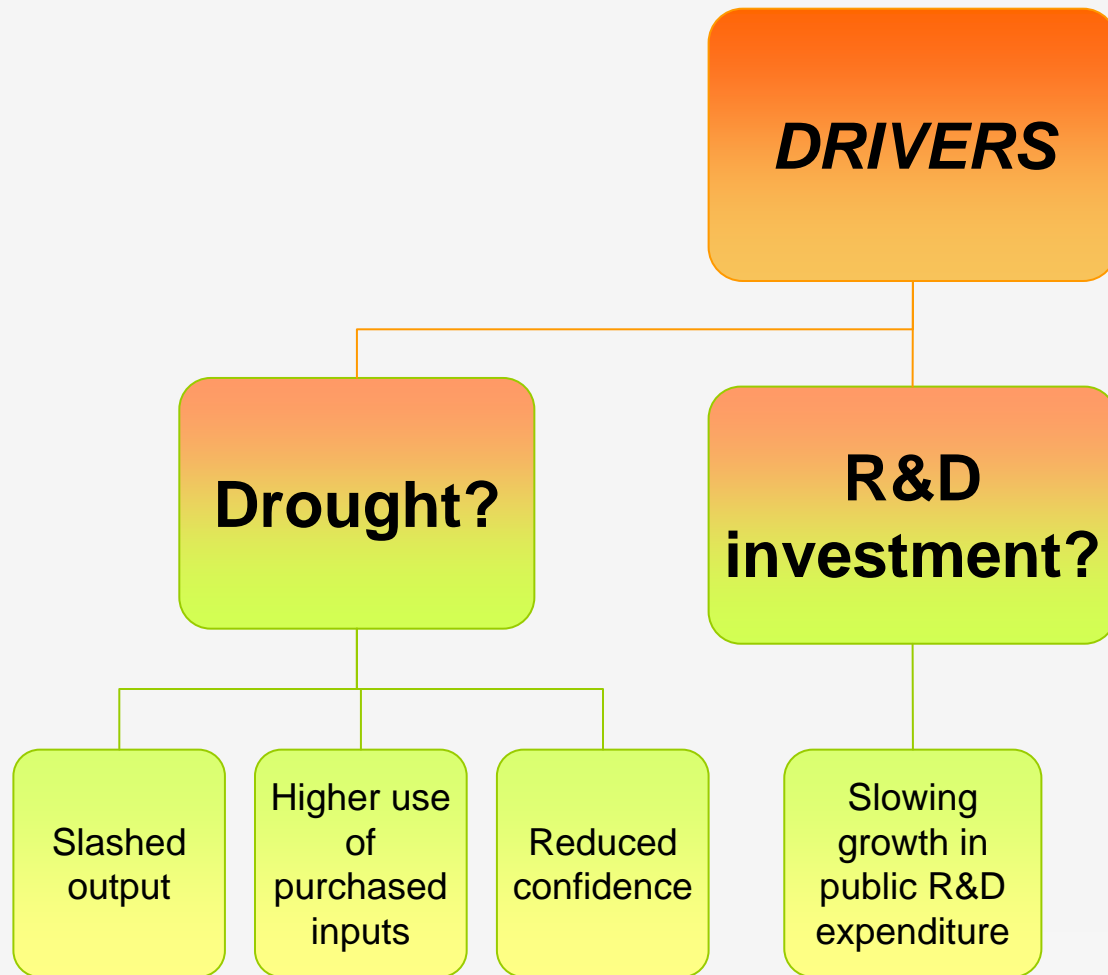
Severe droughts in recent years



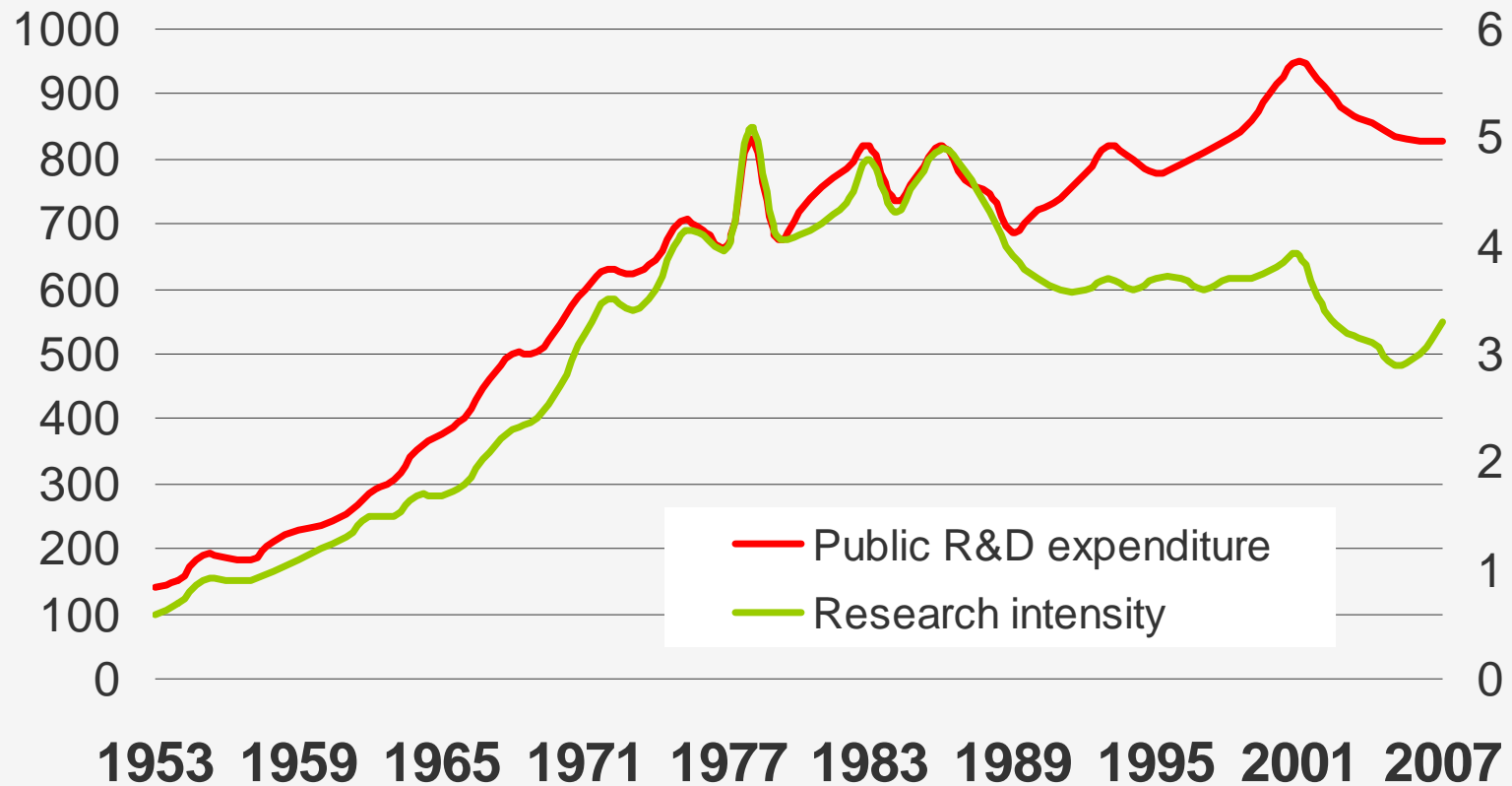
High Correlation between TFP and Soil Moisture Index



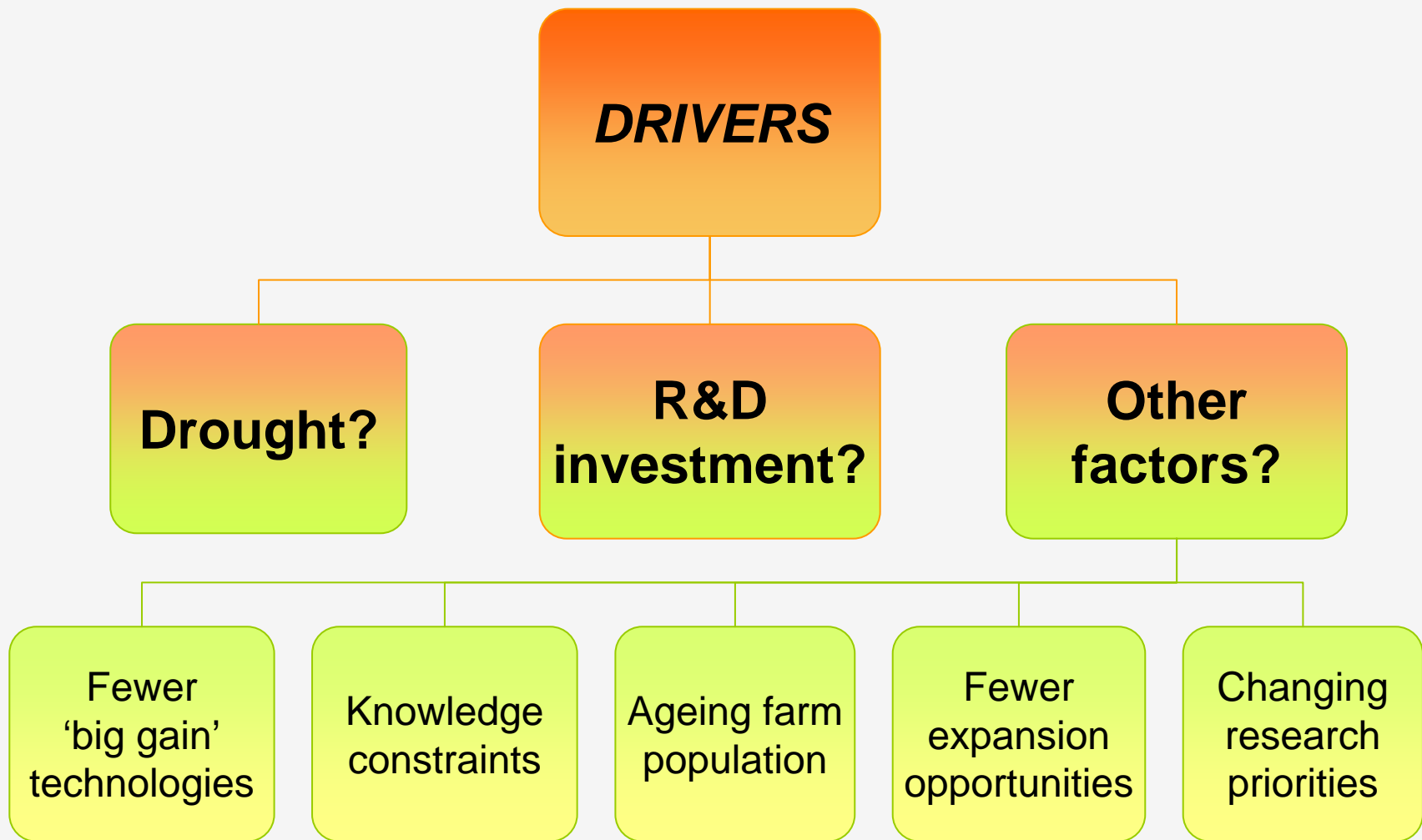
Public R&D Investment and TFP Growth



Slowdown in Public R&D Investment



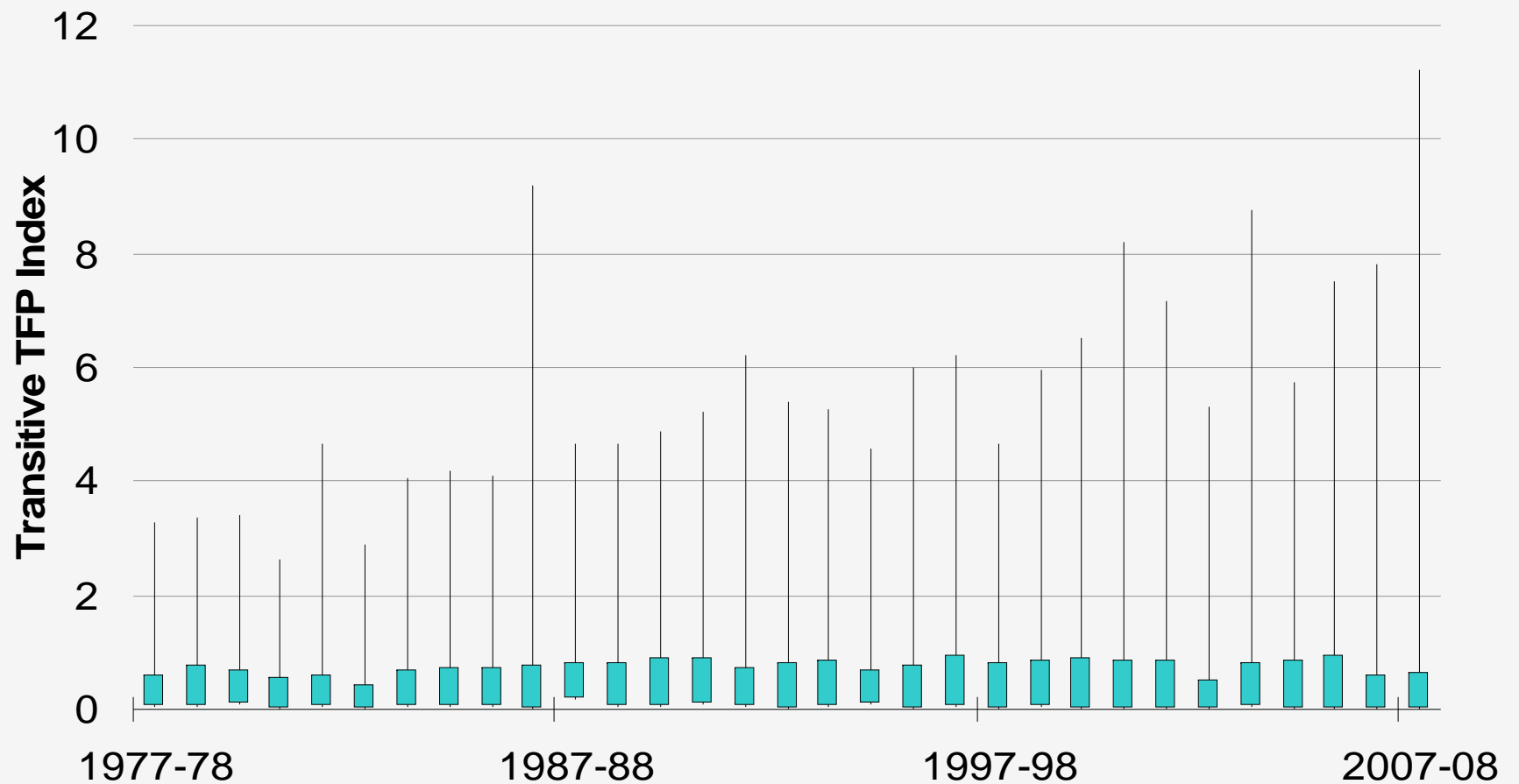
Why might productivity growth be slowing?



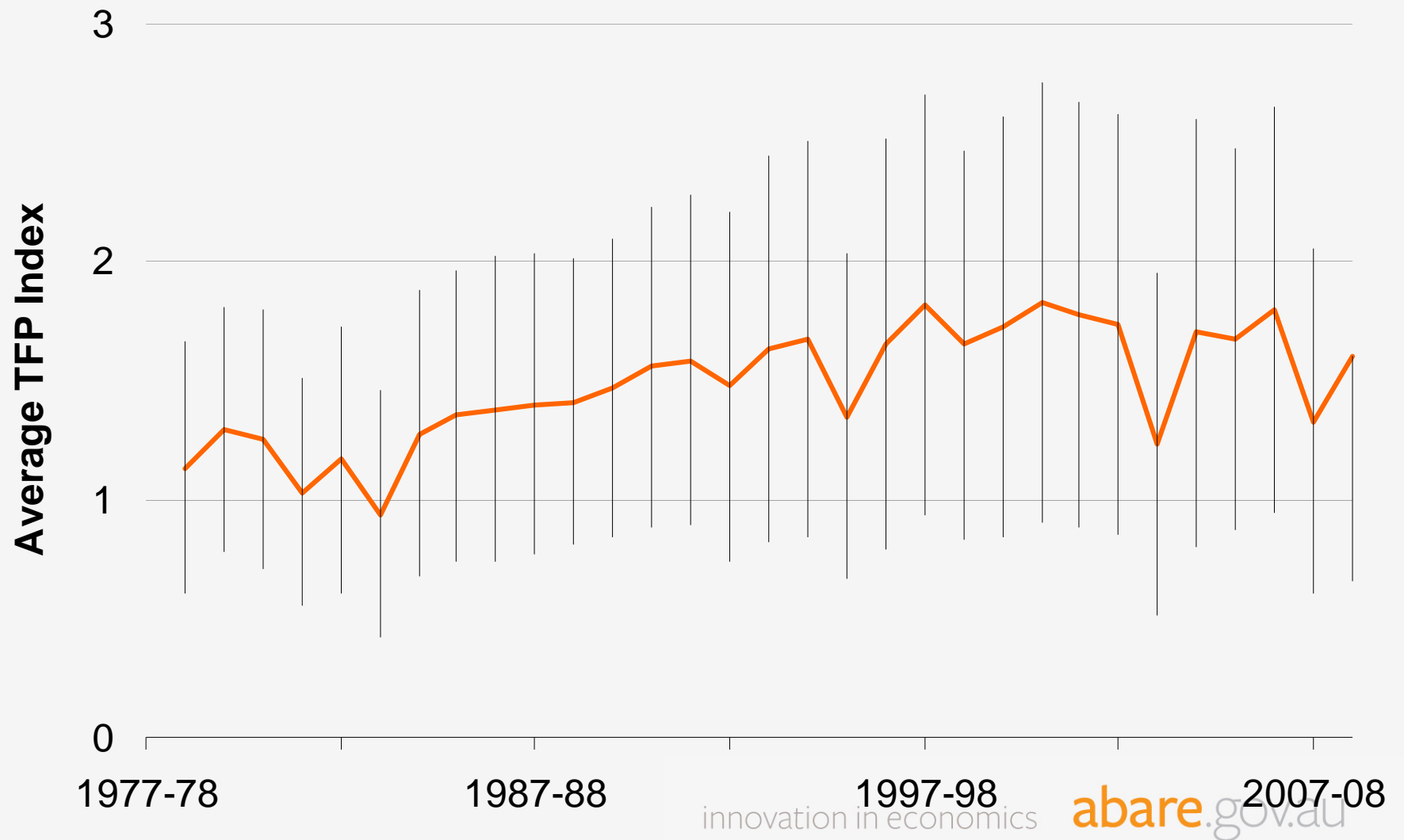
How to Improve TFP Growth?

- **1. *INNOVATE* - develop new technologies**
- **2. *ADOPT* - increase uptake of existing technologies**
- **3. *REFORM* - facilitate structural adjustment**

Efficiency change reflected in farm-level TFP estimation



Efficiency change reflected in farm-level TFP estimation



ABARE's Future Work

- Improve TFP estimation methodology
- Collect more data
 - Farm practices survey
 - Enterprise level input data
- Analytical projects
 - R&D and TFP
 - Pathways to productivity growth (frontier analysis)
 - International comparisons

Comments and Questions?



thankyou

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