



Department of
Agriculture and Food



GRDC

Grains Research &
Development Corporation
Your GRDC working with you

Productivity improvement in the Grains Industry — how do we compare with our competitors?

Mick Keogh

Tuesday 25th February 2014





Productivity and why it matters

How does Australia compare ?

Factors affecting productivity growth

What should Australia do?





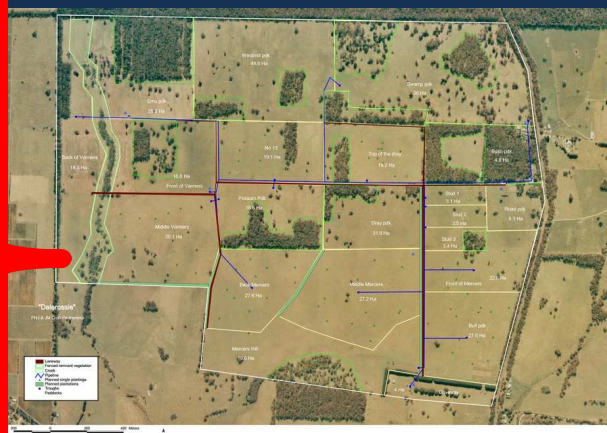
$$\text{Productivity} = \frac{\text{Volume of outputs}}{\text{Volume of inputs}}$$



What is (total factor) productivity ?



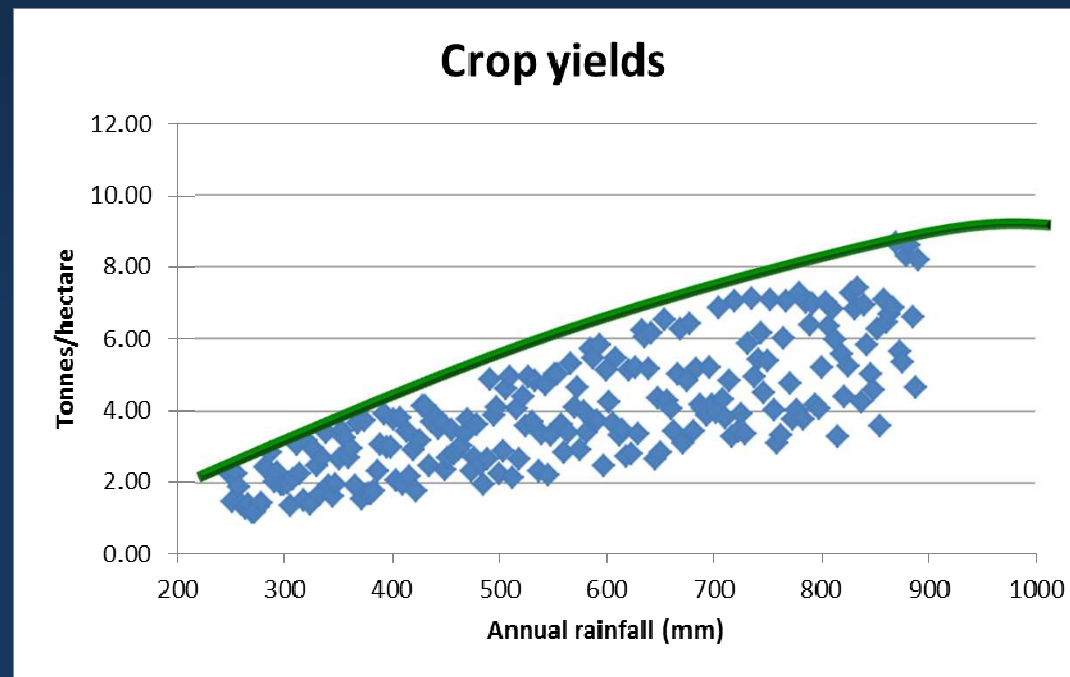
Volume of Inputs
Land
Machinery
Chemicals
Fertilisers
Labour
Seed
Fuel
Livestock



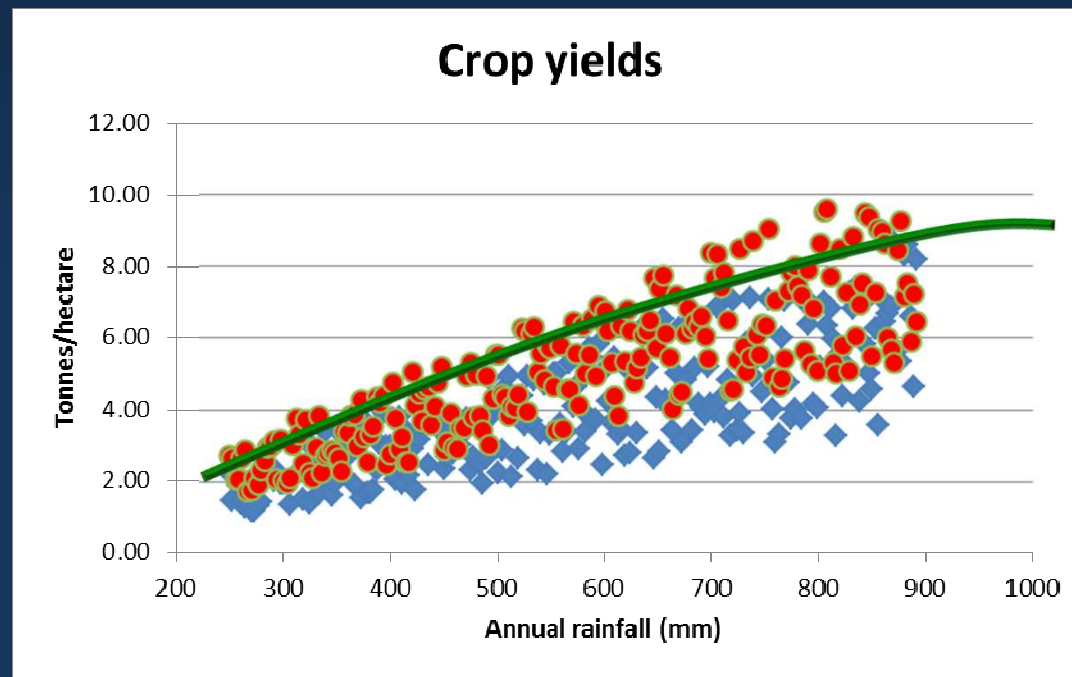
Volume of Outputs
Grain
Oilseeds
Livestock
Fodder
Fibres



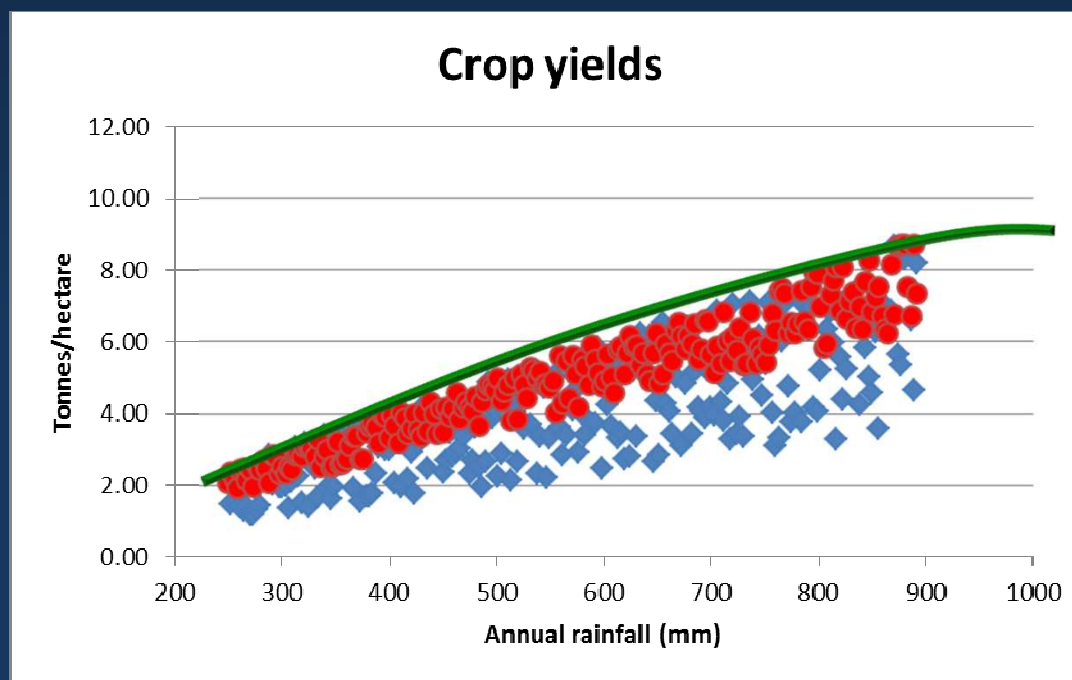
The productivity frontier



Technical change



Technical efficiency





Profitability =

Productivity

X

Terms of Trade

X

Management

Critical factors

R&D investment
Product development

Exchange rates
Commodity prices
Input prices
Infrastructure
Regulation

Education/training
Skill
Experience
Decision tools

Suppliers

Agrichemical companies
Gov't R&D services

Global markets
Logistics providers
Input manufacturers and
retailers

Farmers
Advisors

Public sector



Private sector





Productivity and why it matters

How does Australia compare ?

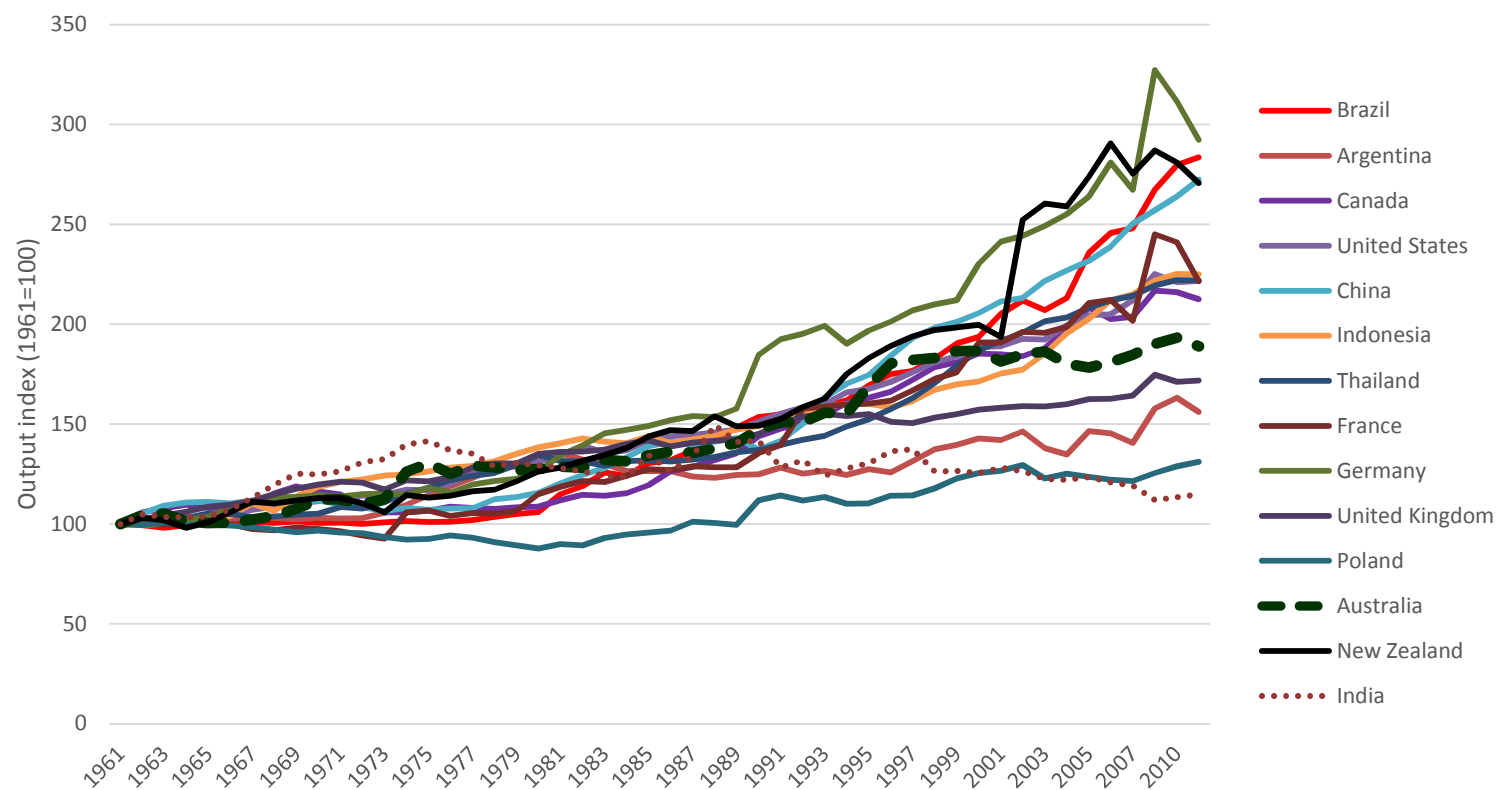
Factors affecting productivity growth

What should Australia do?



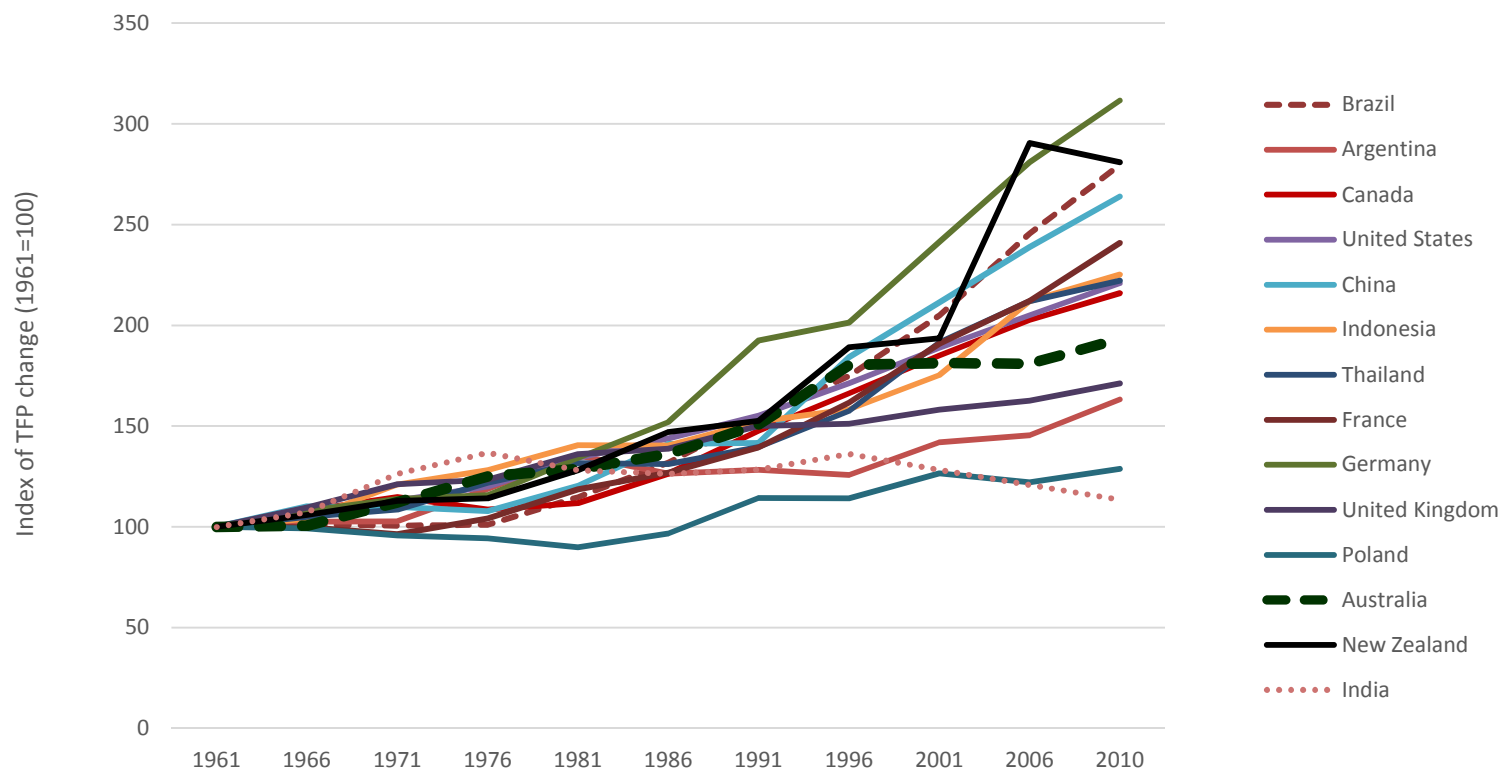


Index of agricultural output, major exporters

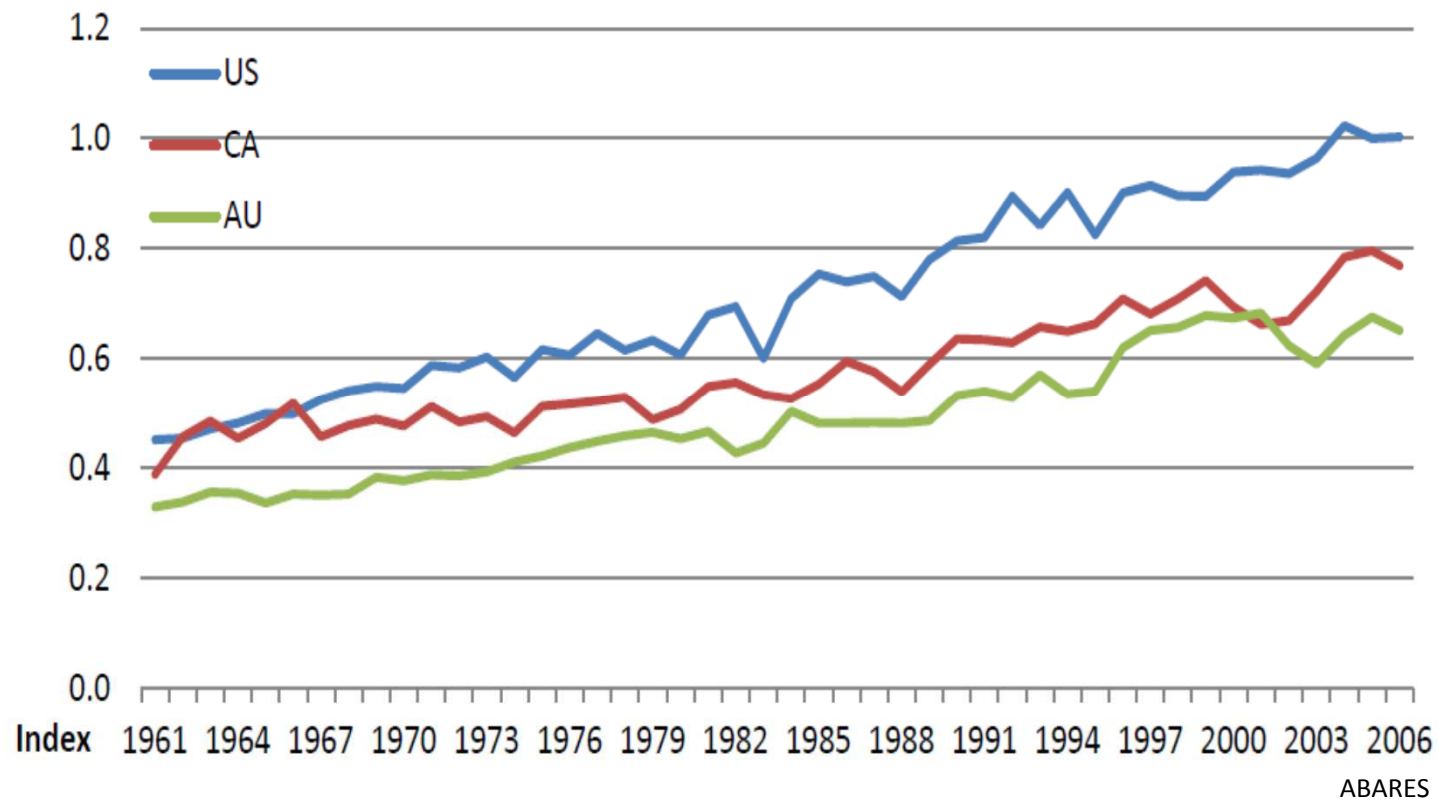




TFP index - major agricultural exporters



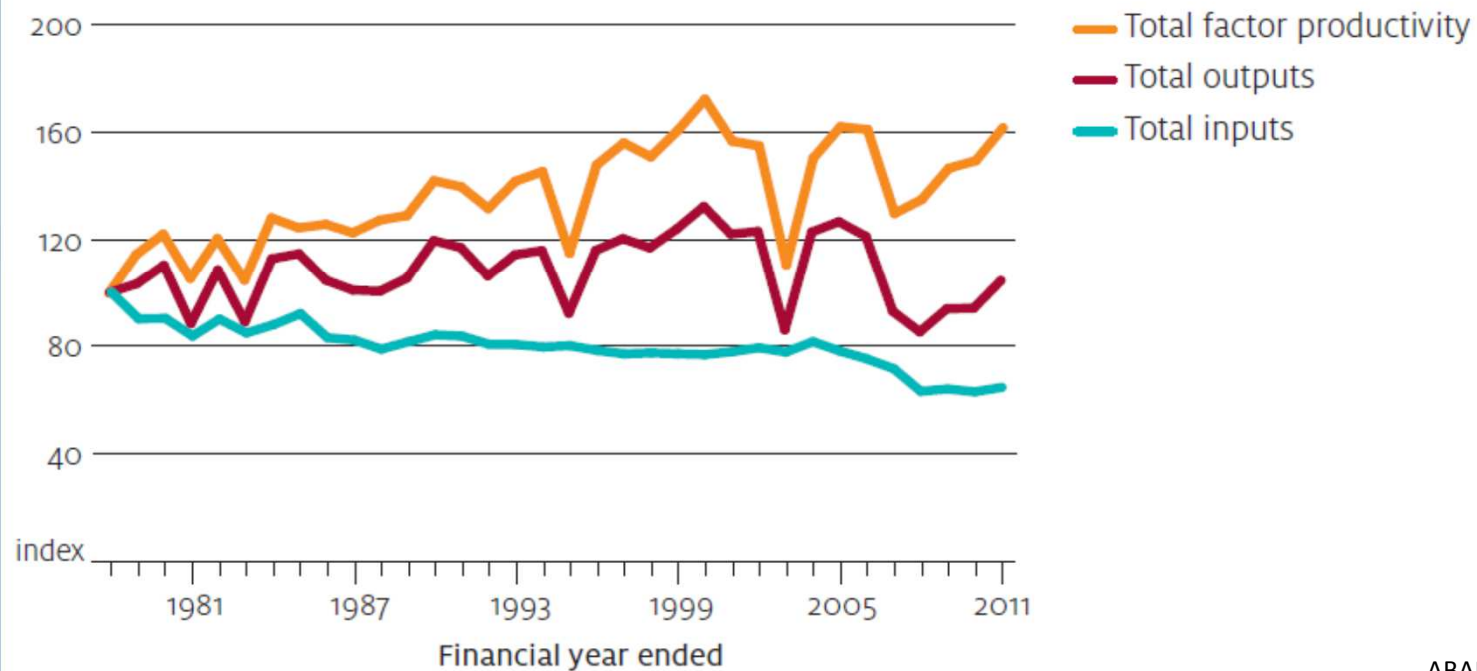
TFP comparison, Australia, USA, Canada



Australia



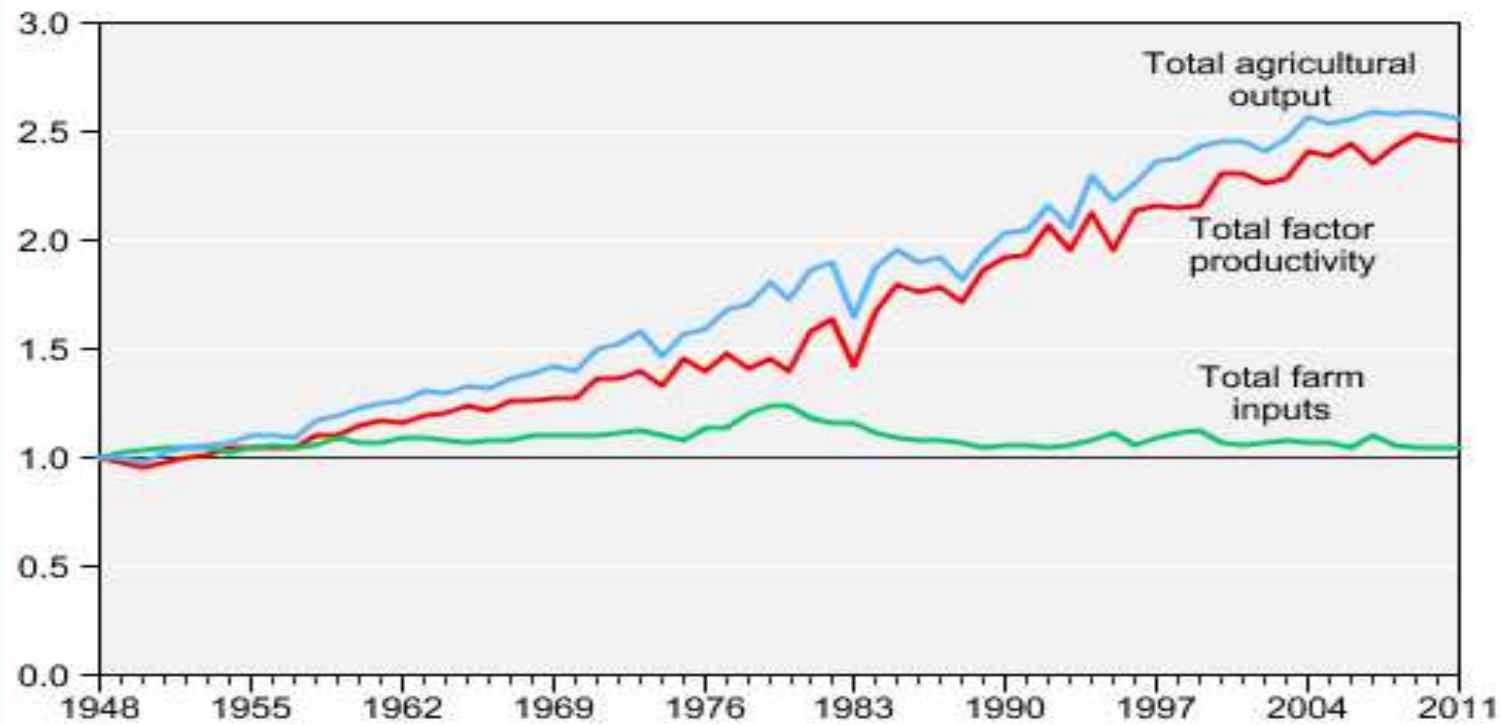
Broadacre inputs, outputs and total factor productivity, 1977-78 to 2010-11



ABARES



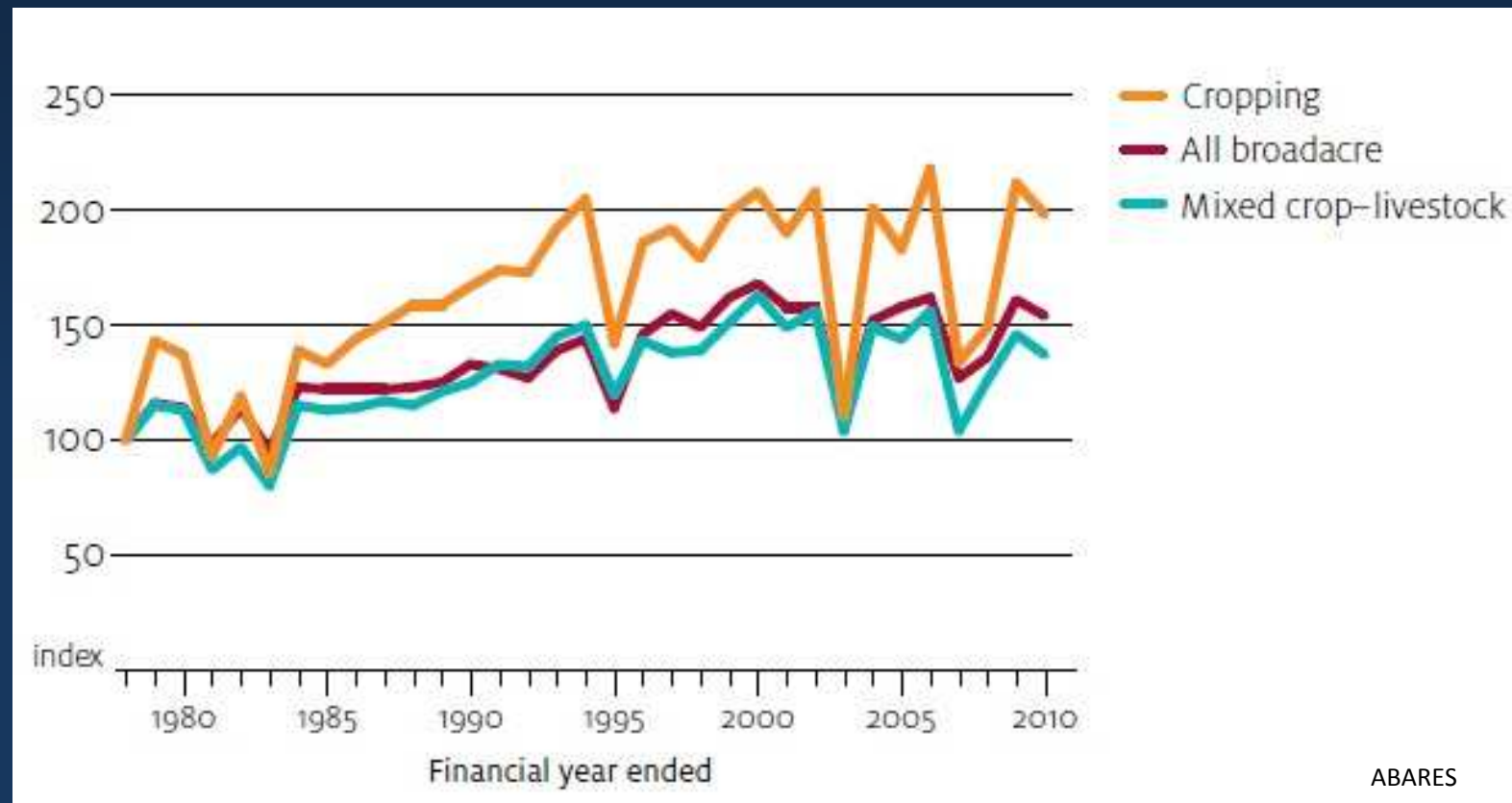
USA



Source: USDA, Economic Research Service, Agricultural Productivity in the U.S. data product.



Broadacre TFP by sub-sector



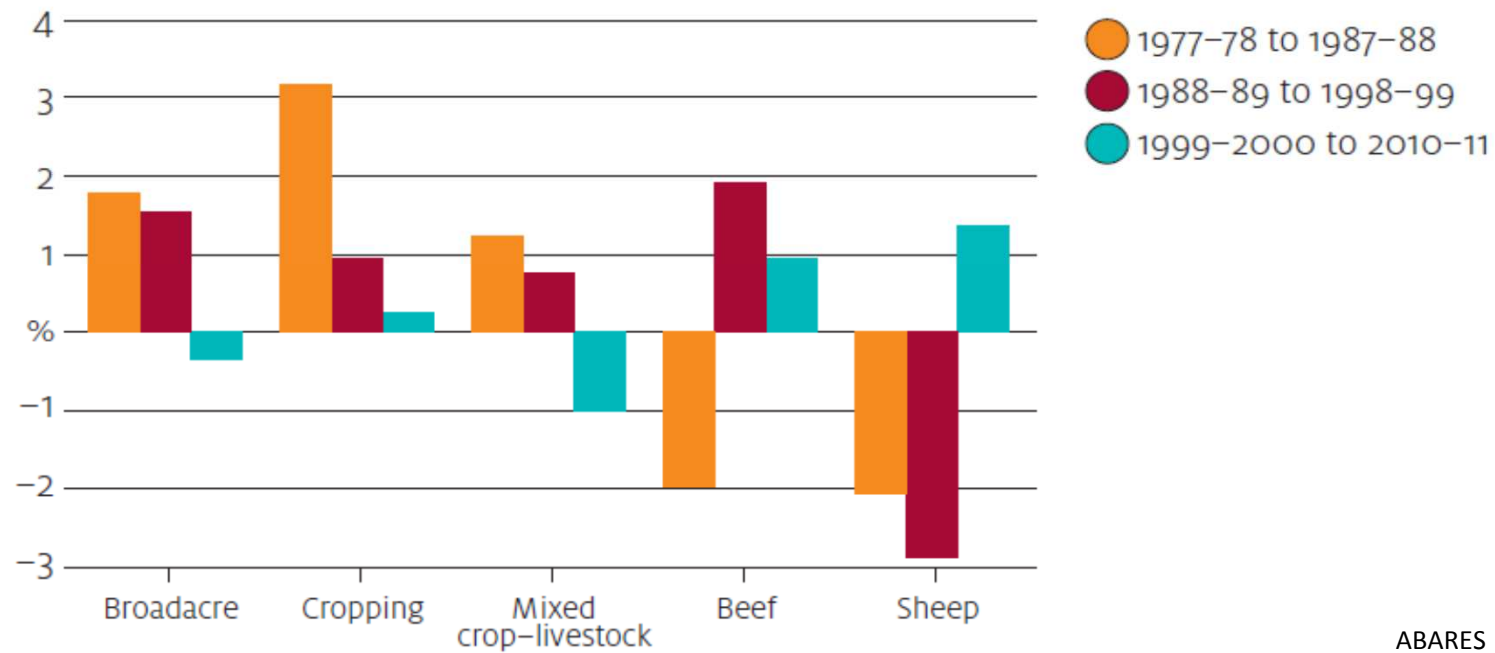
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Australia



Average annual broadacre productivity growth, by period



ABARES





Productivity and why it matters

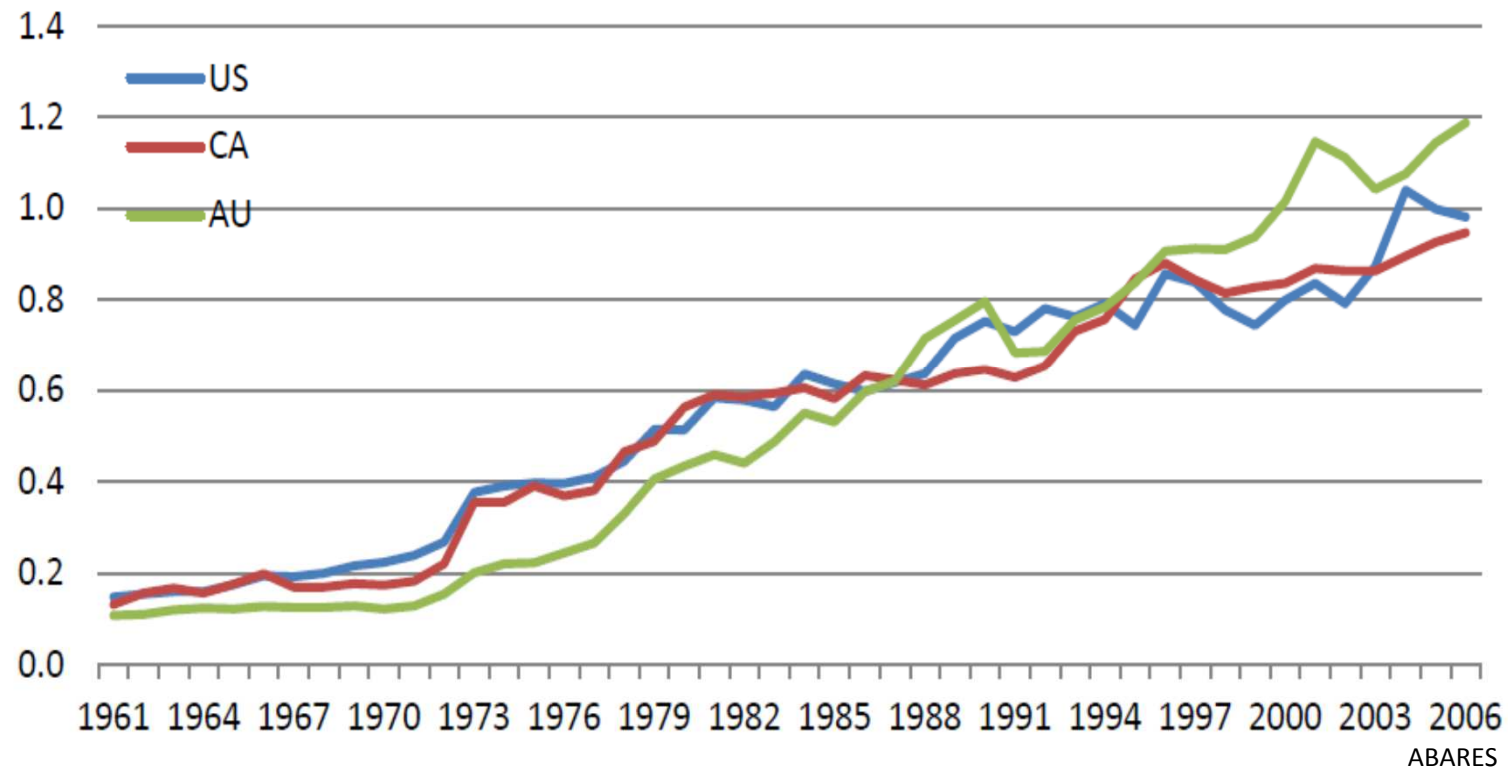
How does Australia compare ?

Factors affecting productivity growth

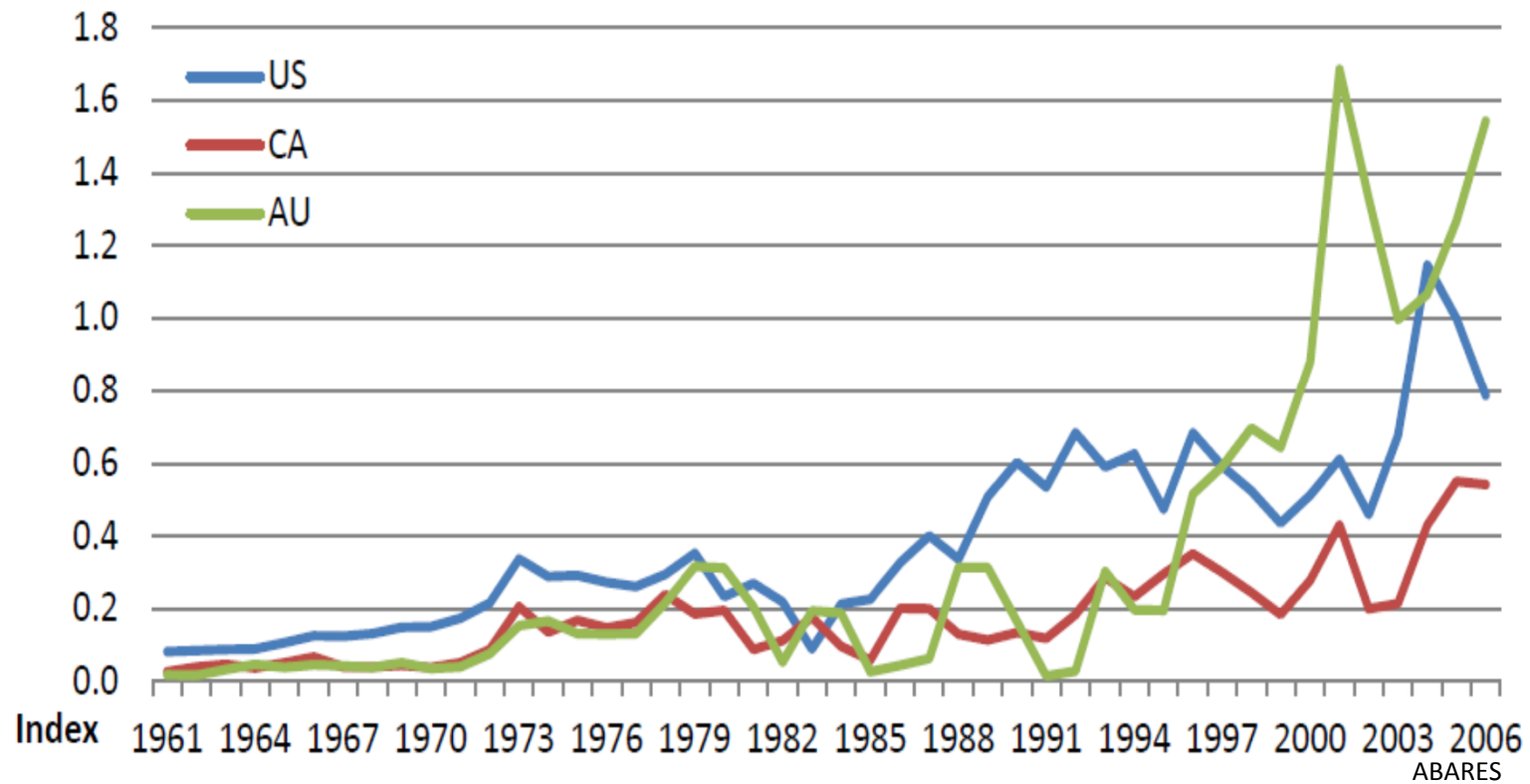
What should Australia do?



Input costs (index)

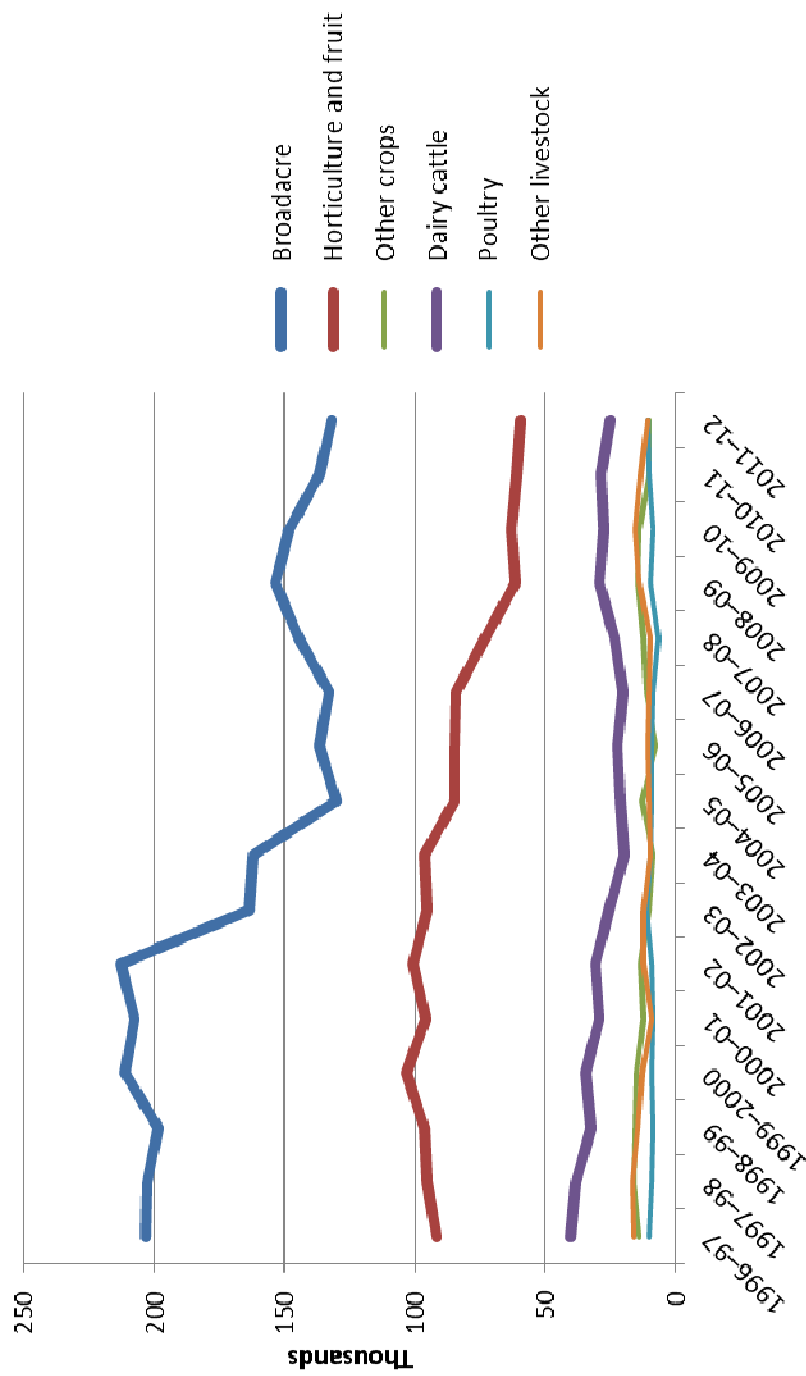


Relative labour costs

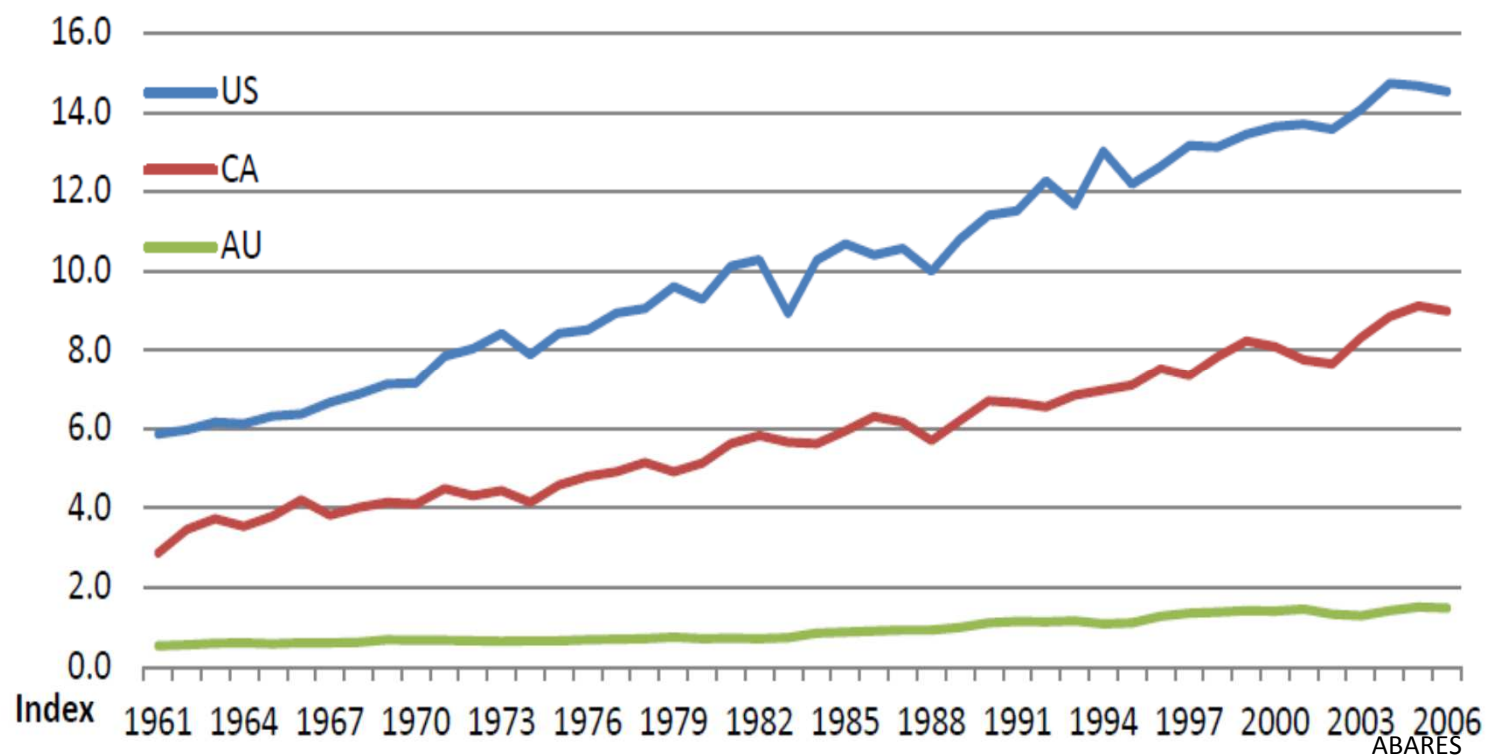


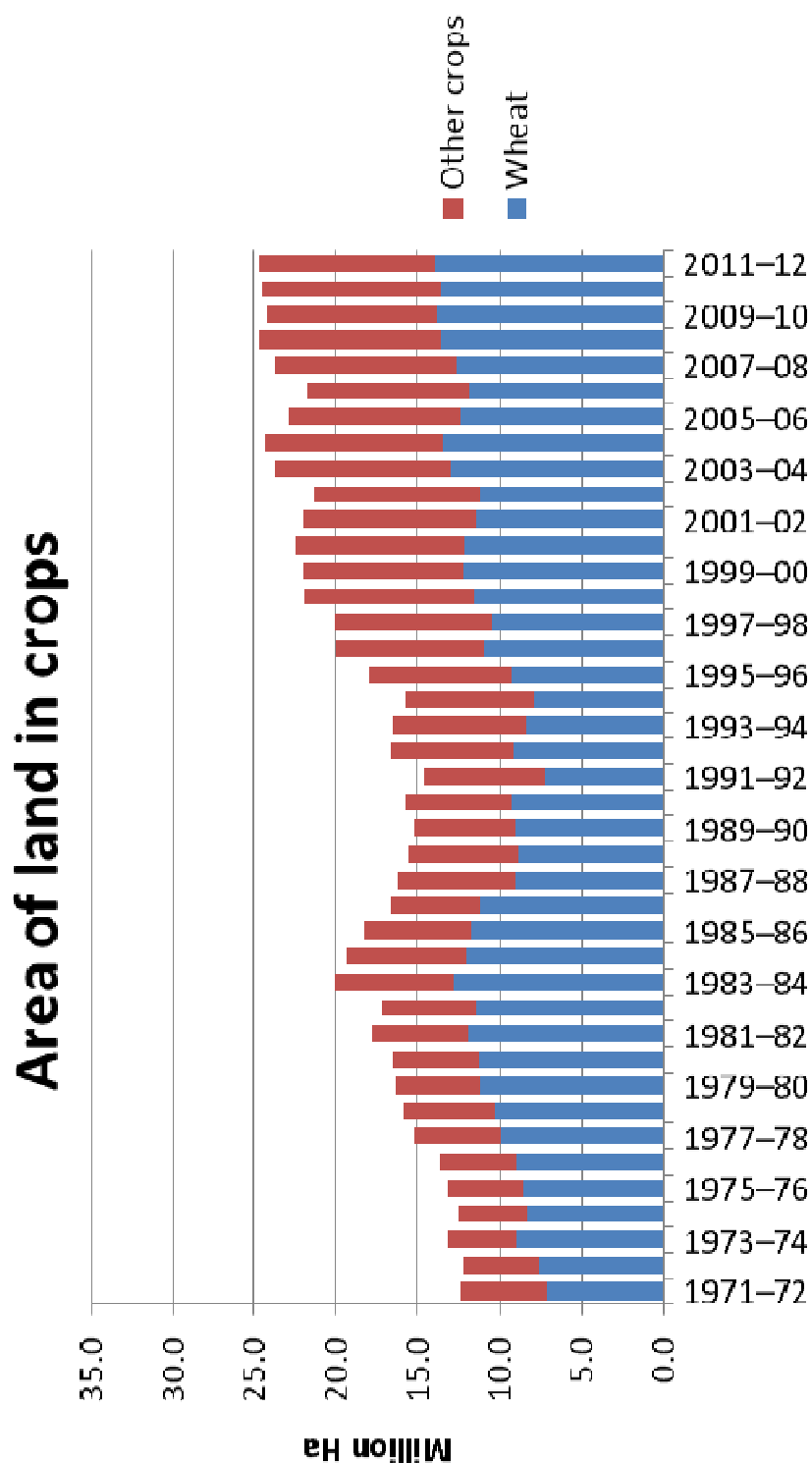


People employed in agriculture



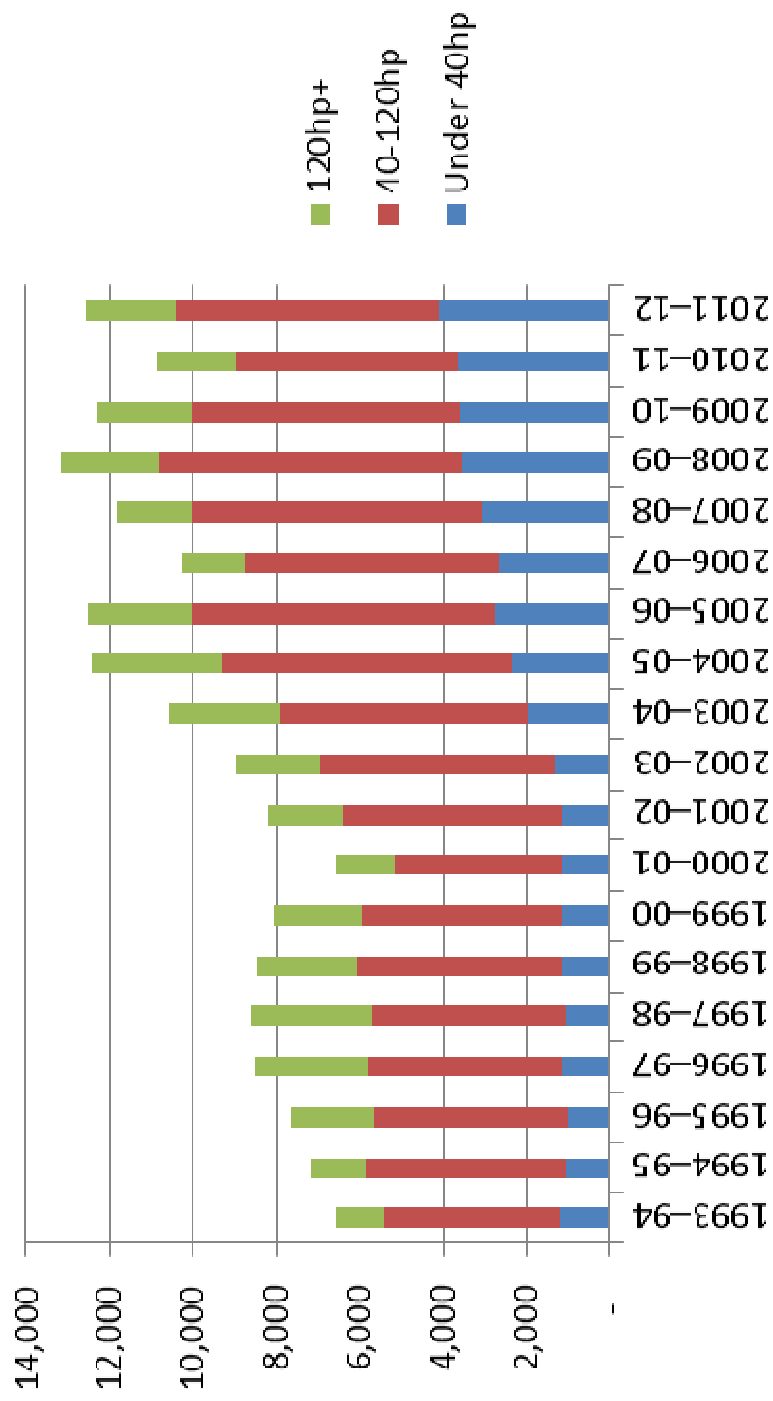
Land partial factor productivity





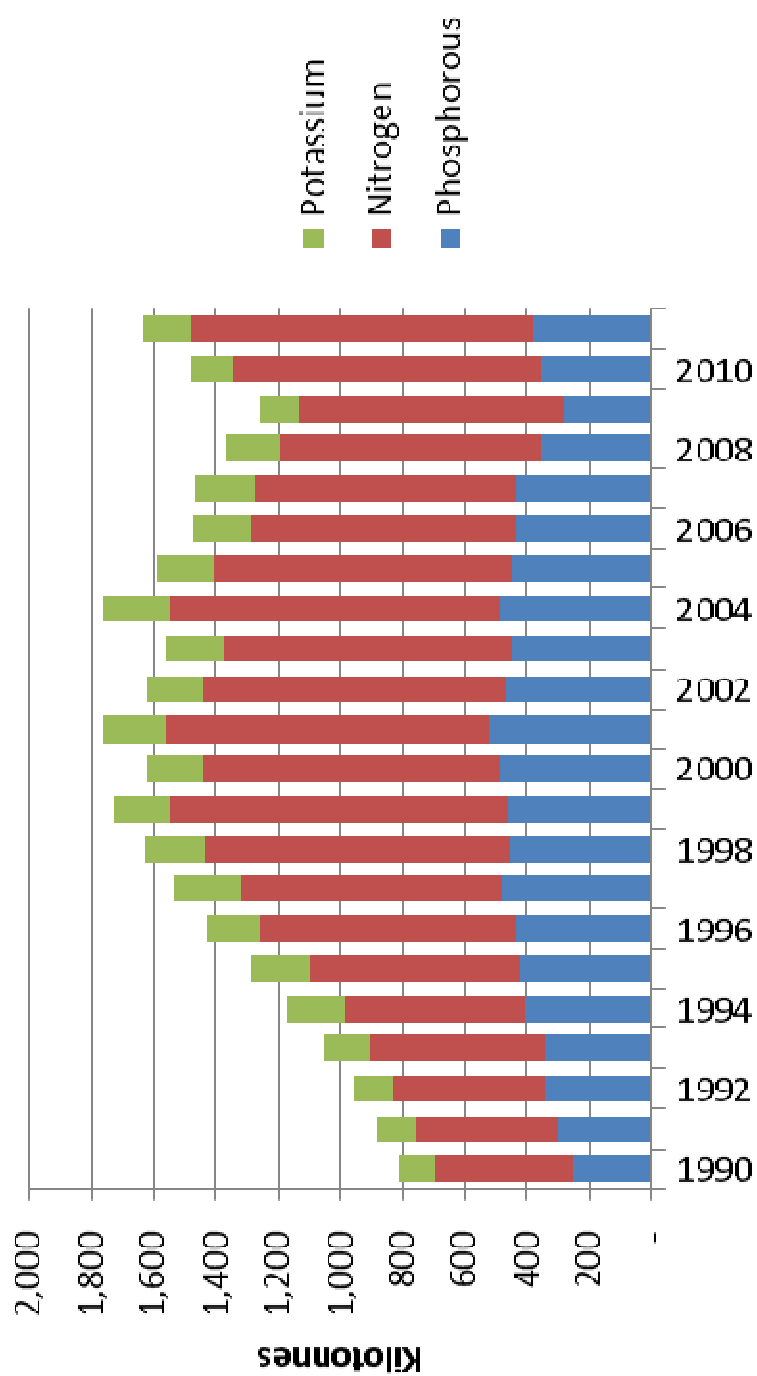


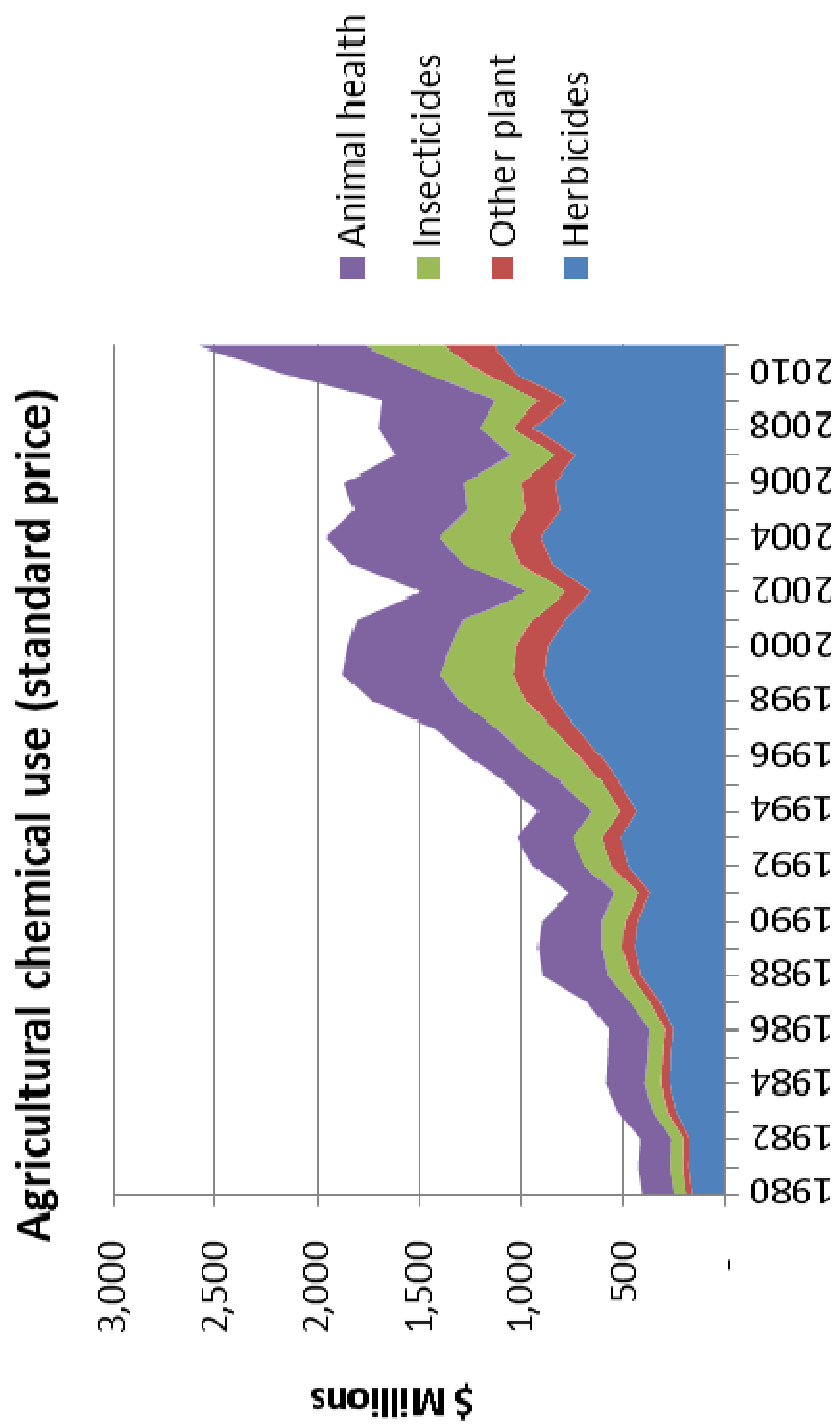
Annual tractor sales - Australia





Australian fertiliser use

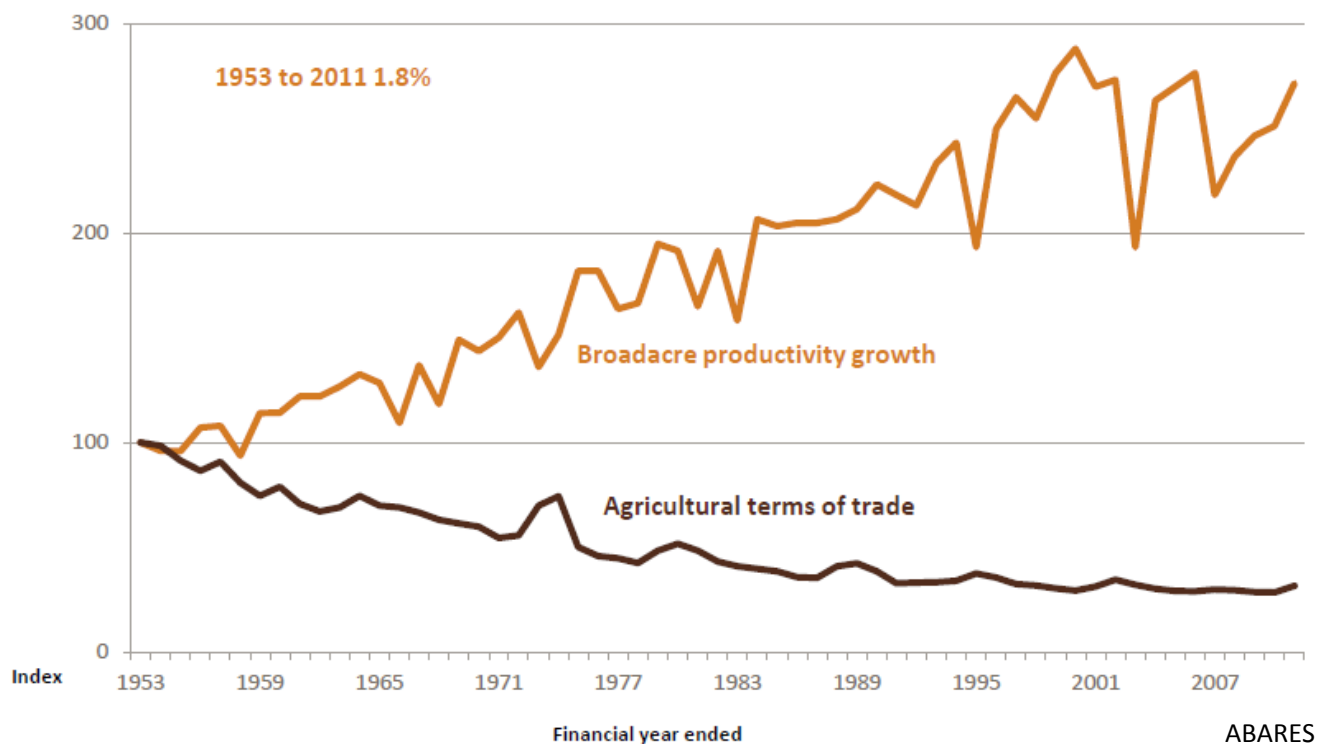






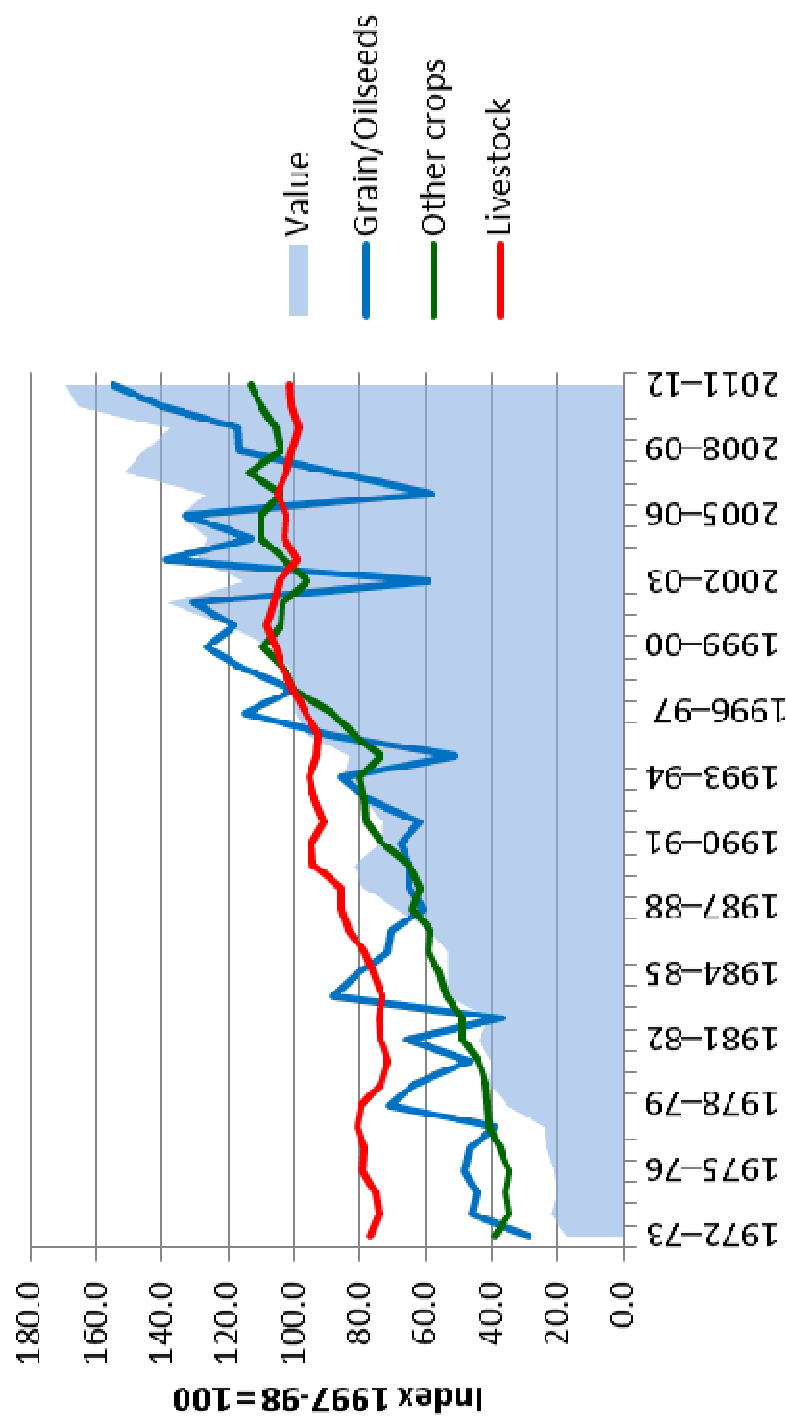
Productivity in Australian agriculture

Broadacre total factor productivity in Australia, 1953-2011





Volume and value of Australian farm production





Productivity and why it matters

How does Australia compare ?

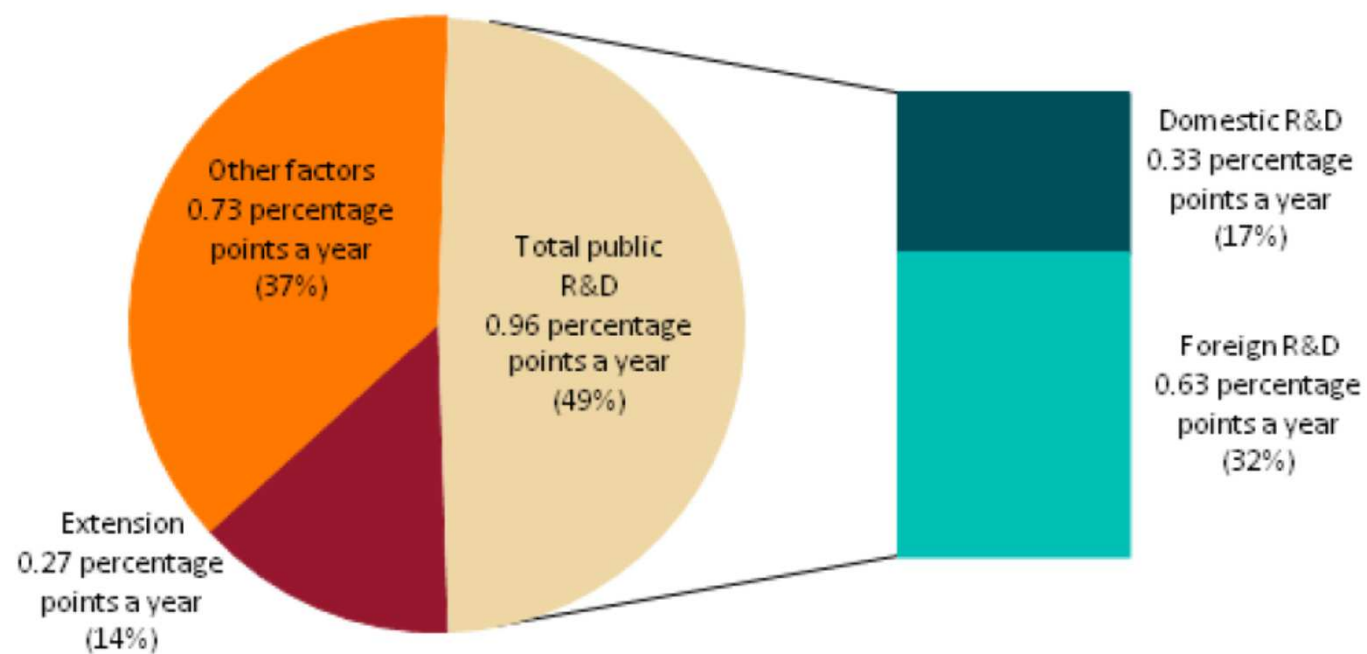
Factors affecting productivity growth

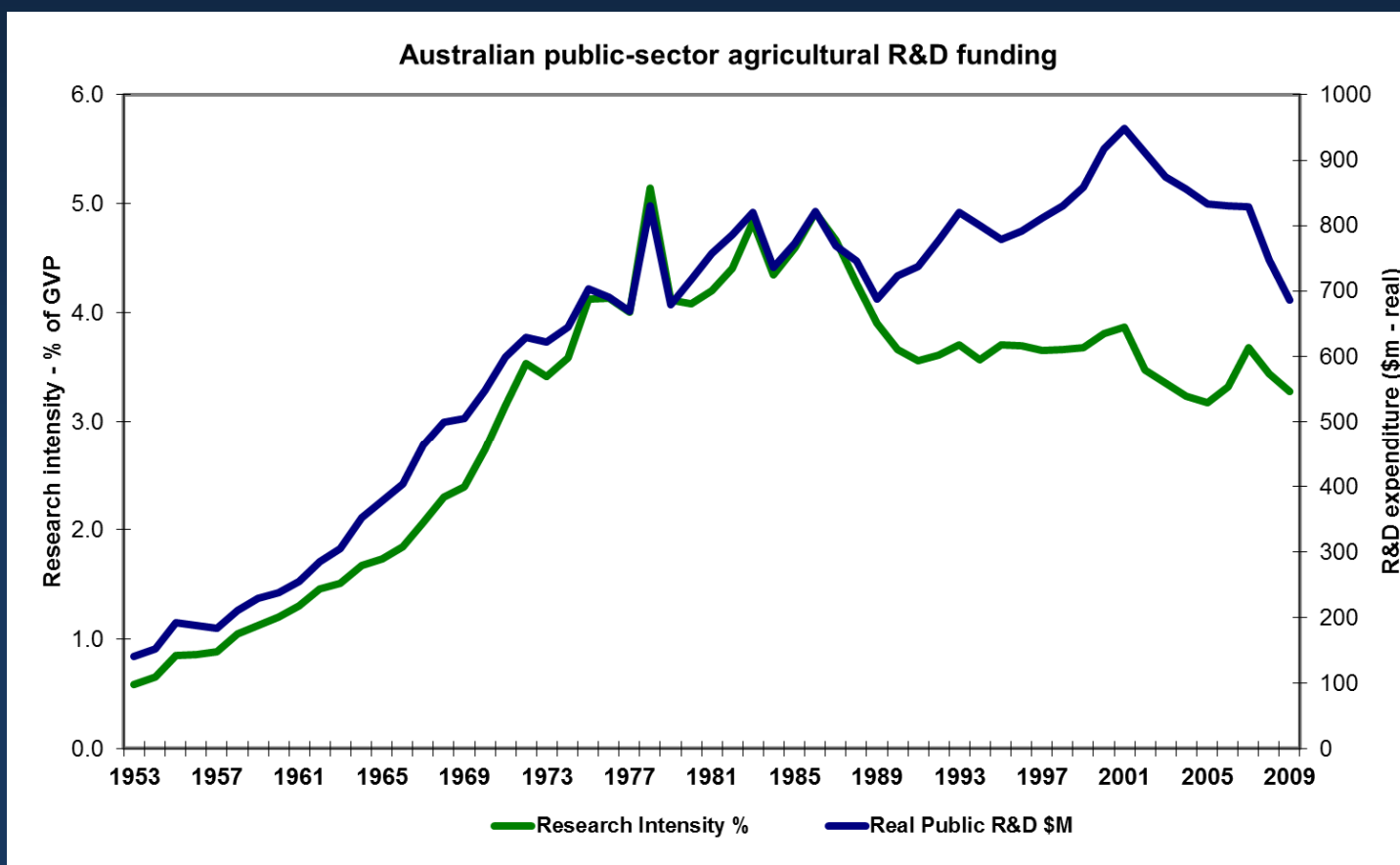
What should Australia do?



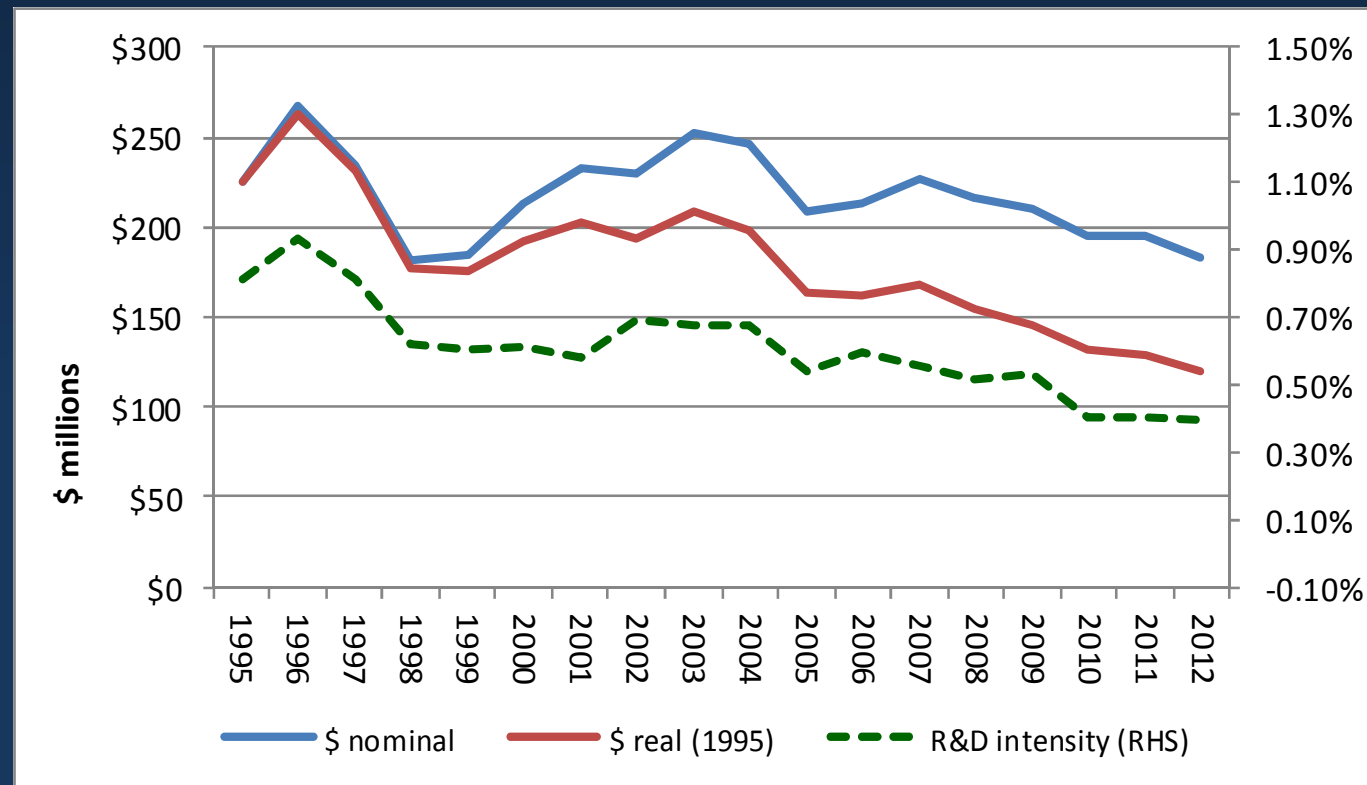


Contributions of Public R,D&E to TFP

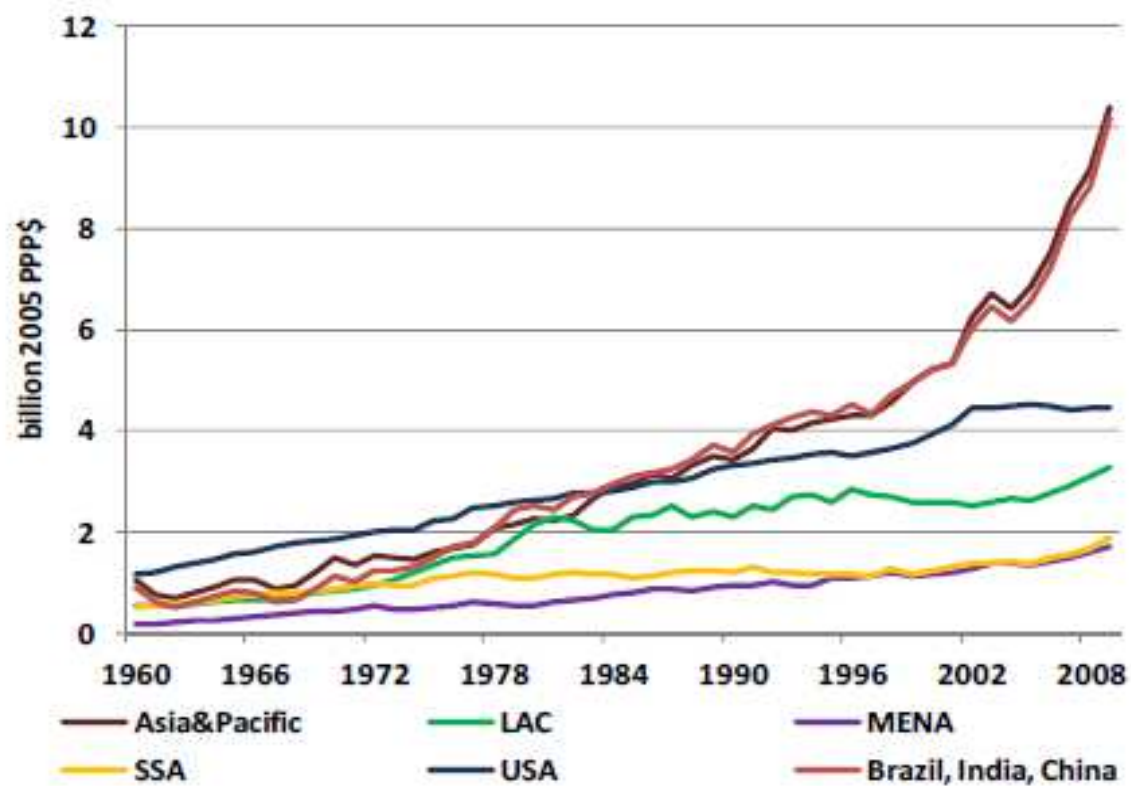




State government R&D expenditure



Public agricultural R&D spending by region.



Can the system be improved #1 ?



- Need for sustained public sector investment. National RDE strategies need associated funding agreement.
- Universities need changed incentive systems, longer-term projects that include strong extension component.
- RDCs/farmers need to understand the need for a longer-term focus, and more resources.
- RDCs need closer partnerships with private sector.



Can the system be improved #2 ?



- Grower groups an innovation catalyst, but small-scale grower groups will struggle to achieve meaningful results and sustain their business model.
- Private sector advisors play a key role, but struggle to access information and recognition. Time to consider accreditation?
- Identification of innovation catalysts a critical challenge.
- Consolidation and rationalisation of information sources would produce benefits.



Main message



Australian agriculture faces the option of passively allowing the RD&E system to continue its gradual decay ...

(and with it national agricultural competitiveness)

... or re-engineering it to create a vigorous new model capable of generating a surge of innovation and productivity growth.



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Questions?

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