

Understanding Productivity

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Topics for today - Productivity

- What is productivity?
- Why it is important?

Main Objective is to assist you to

- appreciate the concept of productivity; and
- Interpret productivity statistics

Key messages

Productivity is simple in concept, but

- Interpretation is not straightforward; and
- It is very difficult to measure.

Influence on productivity are complex

- Influenced by a wide range of factors
- Can be inter-related
- Sometimes influences are not immediately obvious

Broad outline

1. The basics:
 - *What is productivity?*
 - *How is it measured?*
 - *How should it be interpreted?*
2. Why does productivity matter?
3. (briefly) How to improve productivity?

BASICS: What is productivity?

Productivity is a measure of producer's ability or efficiency to convert inputs into output.

- It can be measured as:

$$Productivity = \frac{Output}{Inputs}$$

Variants of Productivity Measures

$$\text{Labour Productivity} = \frac{\text{Output}}{\text{Labour input}}$$

$$\text{Capital Productivity} = \frac{\text{Output}}{\text{Capital input}}$$

$$\text{Land Productivity} = \frac{\text{Output}}{\text{Land}} (= \text{yield})$$

Partial
Productivity

$$\text{Multifactor Productivity} = \frac{\text{Output}}{\text{Labour} + \text{capital} (+\text{others})}$$

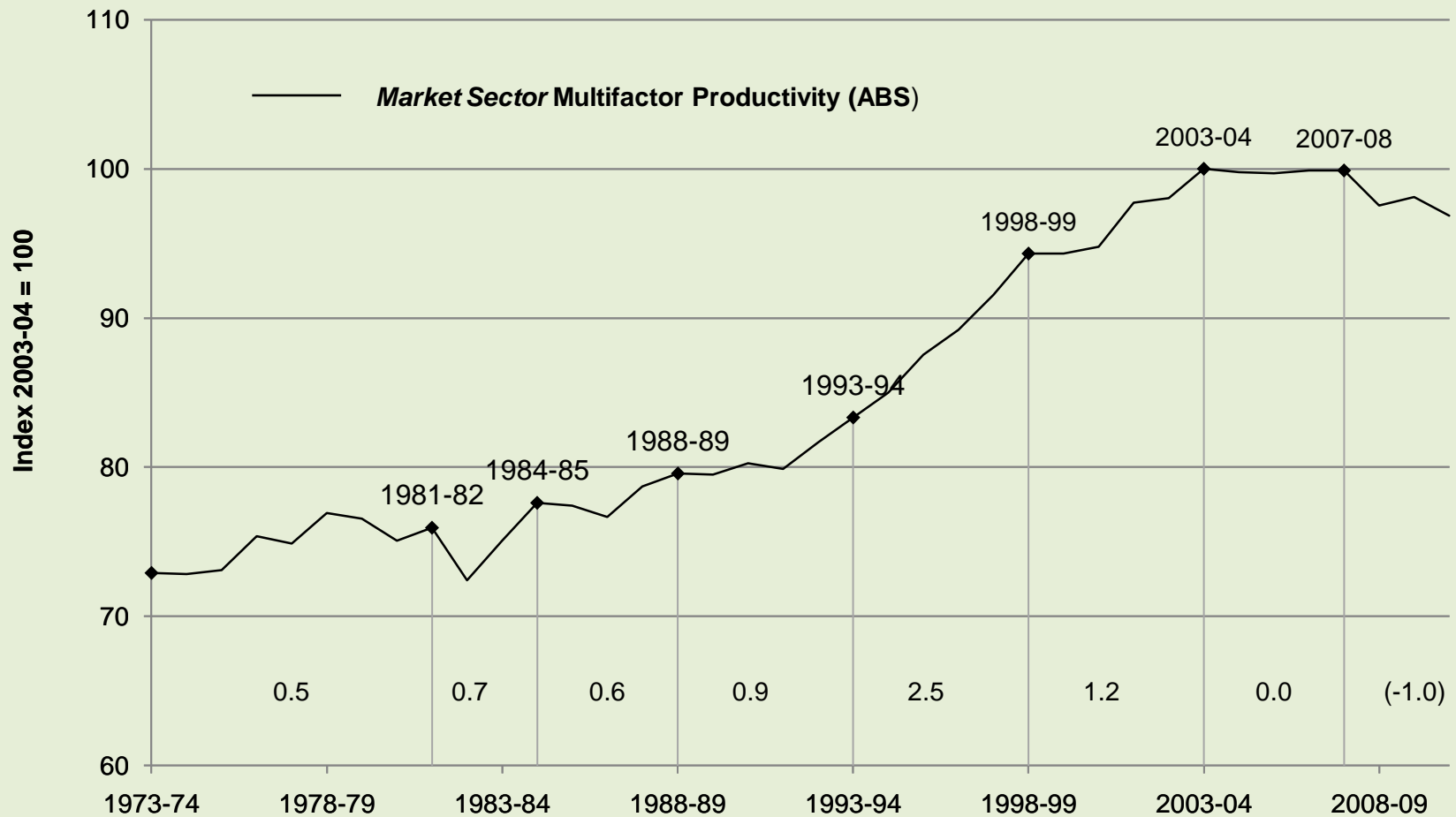
Output & inputs are “quantity” or “real” measures

- Output = a “real output” or volume measure
 - *Includes both goods and services*
 - *It is a “quantity” measure, meaning that effect of inflation needs to be removed, if monetary measure (i.e. “value”) is used*
- Labour input = hours worked
- Capital input = services from assets such as
 - *Buildings, plants and machinery*
 - *Land (?)*
- Other inputs = materials, energy and purchased services

Productivity

- Can be applied to (measure the efficiency for)
 - *Individual businesses (public or private)*
 - *An industry*
 - *A region*
 - *The whole economy*
- Is often expressed in *index form* and, sometimes, *growth rate*

MFP since 1973-74



ABS MFP coverage

- Measure covers the *market sector*
 - *where outputs and inputs can be independently measured*

12 industries

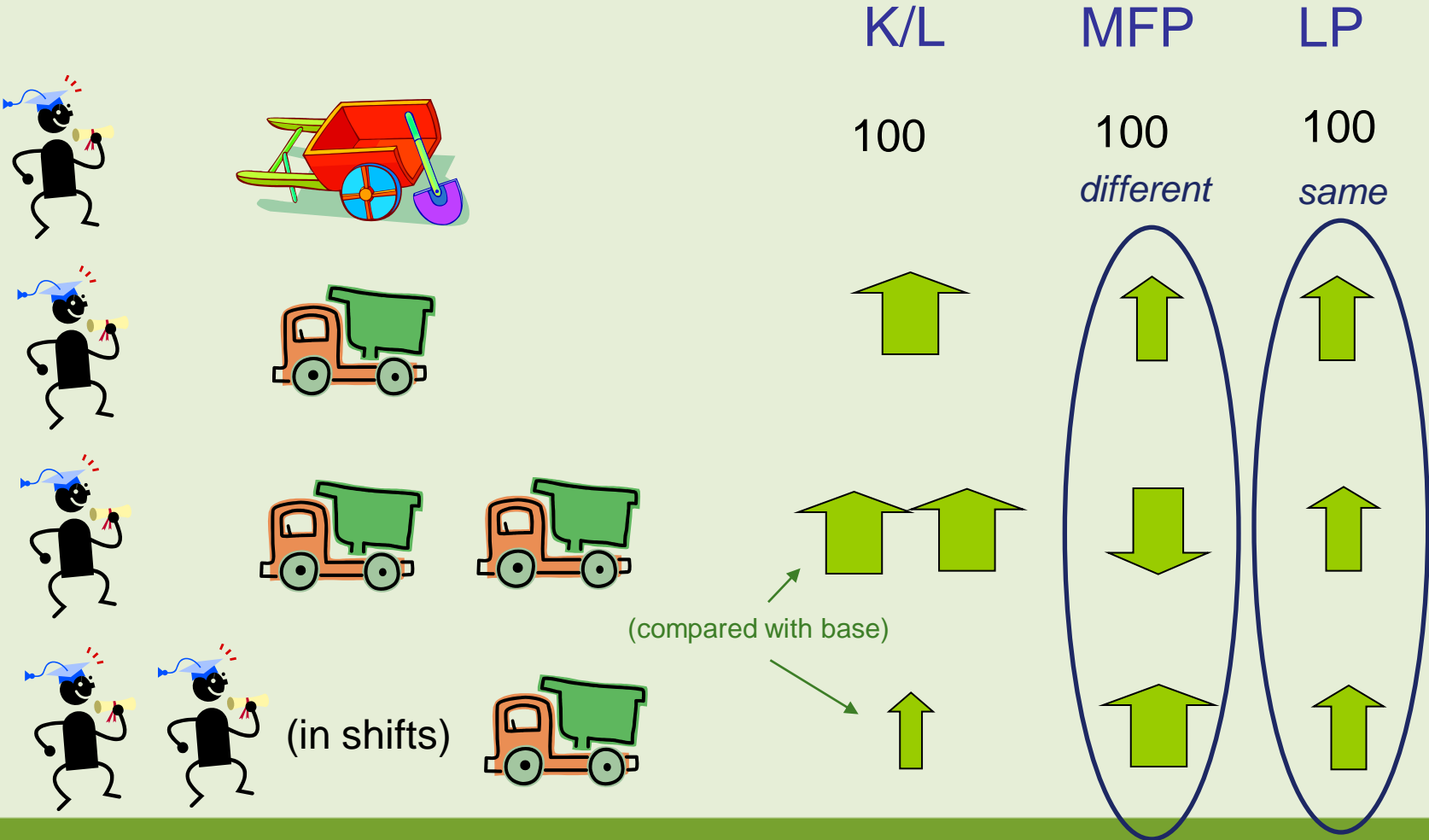
- Agriculture
- Mining
- Manufacturing
- Elec, gas, water & waste services
- Construction
- Wholesale trade

- Retail trade
- Accom & food
- Transp, post & warehousing
- Info media & telecomms
- Financial
- Arts & recreation

+4 = 16

- Rental, hiring, real estate
- Prof, scientific & tech services
- Admin & support
- Other services

MFP and LP



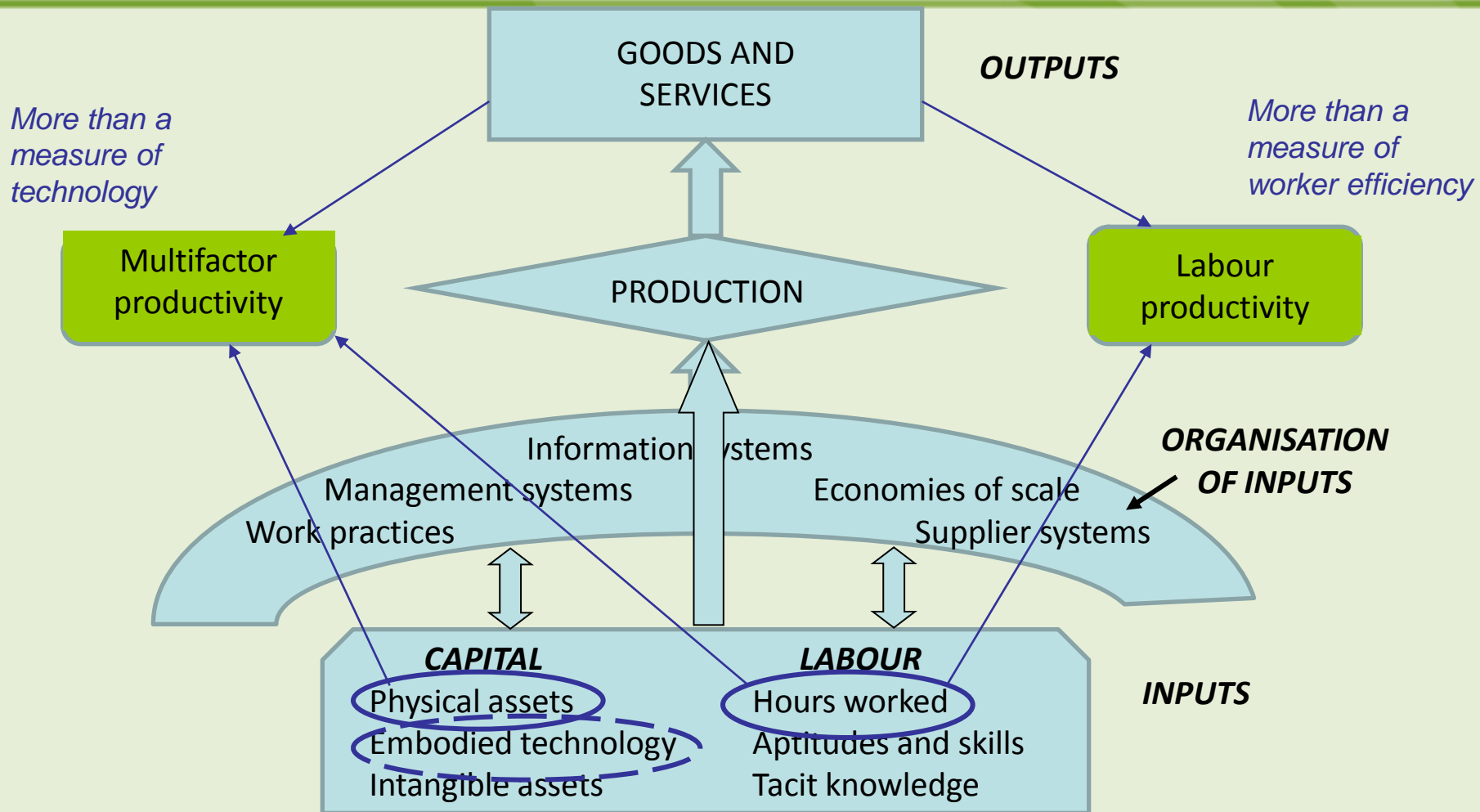
Profit and productivity

$$\pi = pQ - wL$$

Interpretation of productivity measure (statistics)

- Productivity statistics are an imperfect measure of the concept
- In theory
 - *Productivity measures technology*
 - Technological progress (over time)
 - Differences in the technology between businesses/industries/regions/economies
- In practice
 - *It captures anything that effect the output/input ratio*

Stylised production: Coverage of productivity measures



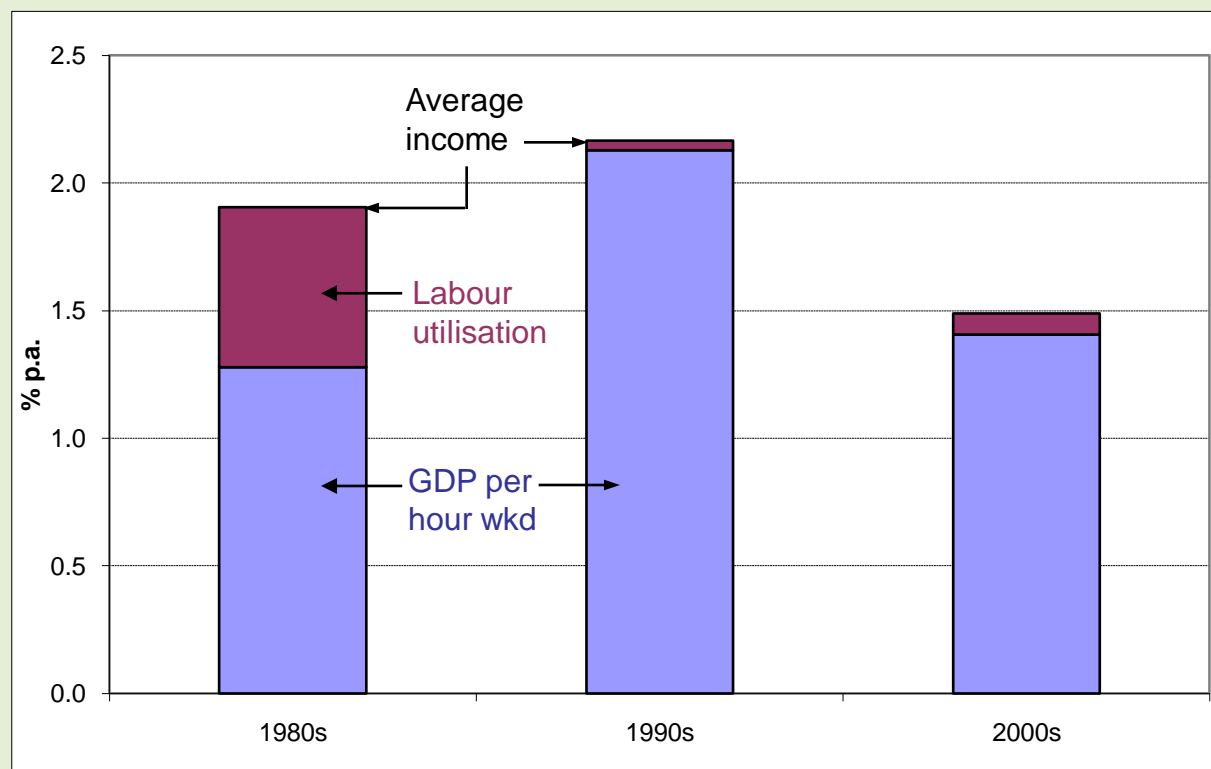
Other determinants of productivity “statistics” – beyond technology

- “hard-to-measure” inputs/outputs
 - *E.g. water in agriculture*
 - *Changes in the quality of resource inputs (e.g mineral deposits)*
- Business cycles (that affect capacity utilisation)
- Market competition
- Changes in regulatory environment
 - *Product (both outputs and inputs), labour & financial markets*
- Measurement errors
- Many others

Importance of productivity

- Income of the population
 - *Wages and salaries*
 - *Returns to investment*

Growth in average income in Australia



Labour Productivity growth accounts for the bulk of growth in average income

Importance of productivity

- Income of the population
 - *Wages and salaries*
 - *Returns to investment*
- Price for consumer
- International competitiveness
- Governments' ability to
 - *Fund welfare payments*
 - *Develop infrastructure*
 - *Run schools, hospitals etc.*

A Nobel Laureate's mantra

'Productivity isn't everything, but in the long run, it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.'

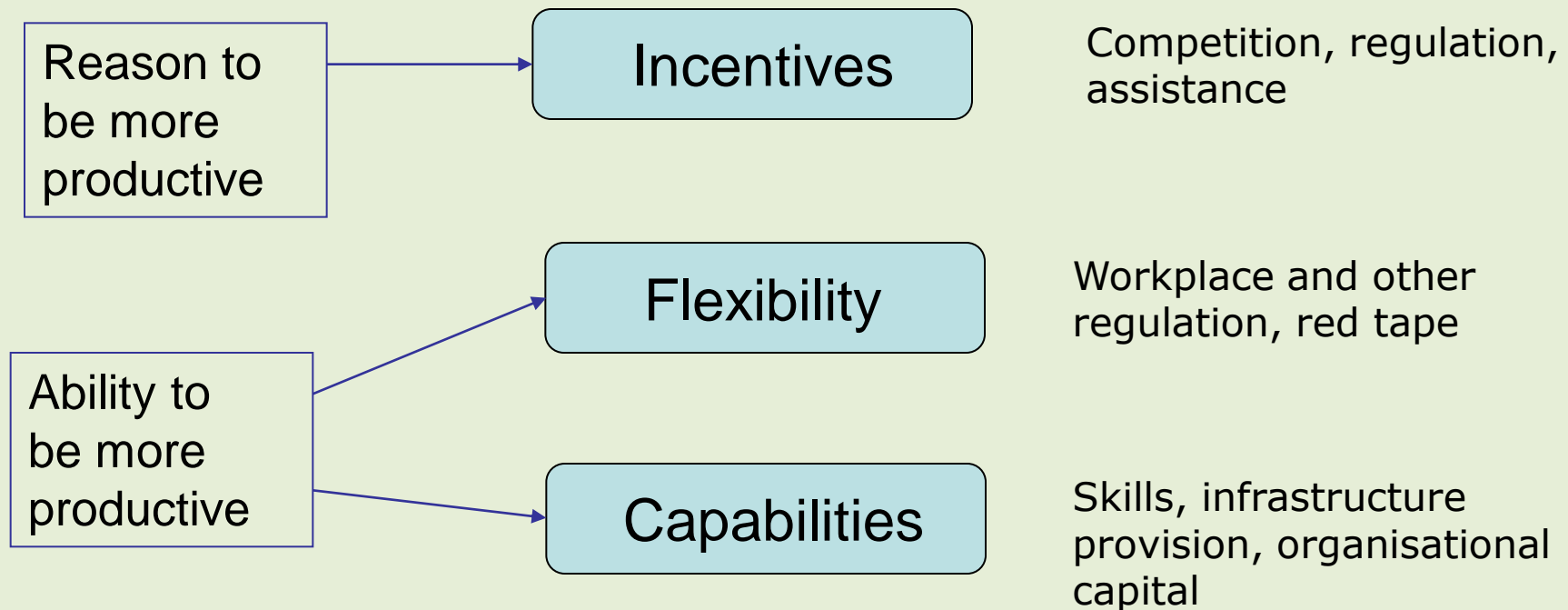
- Paul Krugman, *Age of Diminished Expectations*

Another famous quote

'Nothing contributes more (than productivity growth) to reduction of poverty, to increases in leisure, and to the country's ability to finance education, public health, environment and the arts'

- Alan Blinder and William Baumol 1993, Economics: Principles and Policy

Enterprise productivity: drivers and enablers both matter



Further information (www.pc.gov.au)

- ***Annual Report***, 2010-11, Appendix A
- ***Australia's Productivity Performance***
 - *A submission to the House of Representatives Standing Committee on Economics Inquiry (2009)*
- Staff working papers
- 'Chairman's speeches'

Questions ?