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Australia's Productivity Growth in the 21st Century

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Director's Note

Welcome to the twenty first of *Economic Issues*, a series published by the South Australian Centre for Economic Studies as part of its Corporate Membership Program. The scope of Economic Issues is intended to be broad, limited only to topical, applied economic issues of relevance to South Australia and Australia. Within the scope, the intention is to focus on key issues – public policy issues, economic trends, economic events – and present an authoritative, expert analysis which contributes to both public understanding and public debate. Papers will be published on a continuing basis, as topics present themselves and as resources allow.

For the information of members we are publishing a presentation by Dean Parham of the Productivity Commission, Canberra. Dean made this presentation to the School of Economics (University of Adelaide) and other invited guests on 24th August 2007 and has very kindly agreed to it being circulated to a wider audience through the Economic Issues Paper series.

We acknowledge the financial support of our Corporate members and the Department of Trade and Economic Development. It enables the preparation of this Economic Issues series.

Michael O'Neil
Executive Director
SA Centre for Economic Studies
September 2007

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Australia's Productivity Growth in the 21st Century

Overview

Dean Parham is the 'productivity specialist' within the Productivity Commission. As an assistant commissioner with the Productivity Commission based in Canberra, Dean has led a stream of research that has monitored Australia's productivity performance and that has sought to improve understanding of the causes and consequences of productivity trends. Dean is an Economics graduate from the University of Adelaide completing his studies in economics in 1974.

Dean has over 32 years experience in applied economic research on microeconomic policy issues. He commenced with the then Industries Assistance Commission in 1975 and has been through its various incarnations as Industry Commission and Productivity Commission. The Productivity Commission is internationally recognized for its research into productivity under the leadership of Dean Parham. Dean has also contributed to major projects on economic modelling (IMPACT project) and has worked with the OECD.

Dean's research work on productivity matters has a long history with over ten years research devoted to analysis of Australian and international productivity trends; the contributions to productivity growth of microeconomic policy reforms; productivity and the information, communications and technology (ICT) sector; the contribution of education, training, skill formation and the role of R&D in productivity growth; the role of infrastructure, the behaviour of firms; and the distribution of productivity gains. This research has led to numerous journal articles, books, conference volumes and contributions to daily newspapers (e.g., see 2004 *Economic Record* survey article on the "Sources of Australia's Productivity Revival", articles on Australia's productivity surge, distribution of the 1990s gains, ICTs and productivity, growth and productivity in East Asia).

Dean Parham is currently Vice-Chair OECD Working Party on Industry Analysis, Member of the International Executive Committee for Comparative Analysis of Enterprise Data and an International Advisory Panel member for the International Productivity Monitor.

An overview of four current research activities under the theme of productivity performance and its determinants, for which Dean is responsible and several helpful references are described below:

1) The influence of infrastructure on productivity

Background to Research Project

There is considerable interest in the influence that provision of economic infrastructure has on productivity performance. However, a number of issues need to be disentangled in order to clarify how, and to what extent, infrastructure has affected Australia's productivity performance.

The 1989 work of Aschauer highlighted the positive relationship between the free provision of public infrastructure and private sector productivity growth. What are the implications of infrastructure increasingly being provided on a commercial, fee-charging basis? Are there nevertheless 'spillover' benefits to other parts of the economy? Has productivity performance been affected simply by the level of infrastructure spending, or does the efficiency of infrastructure provision also matter?

Objectives of the Study

The objectives of the study are to:

- identify the relevant boundaries of economic infrastructure;
- improve the measurement of services delivered from infrastructure assets (compared with previous studies);
- analyse the effects of infrastructure on past Australian productivity performance, while taking account of
    - the distinction between free provision of public infrastructure (e.g. most roads) and charged provision of public or private infrastructure assets;
    - efficiency gains in provision of infrastructure, including through technological change; and
- identify the importance of infrastructure spillovers and interactions with other types of capital

2) Recent declines in productivity growth in the mining sector: causes and consequences

Background to Research Project

There has been intense interest in why Australia's productivity growth has slowed in the 2000s, after the record highs of the 1990s. The decline in mining productivity has been put forward as a contributing explanation. Various reasons have been suggested- compositional shifts within the sector, rapid investment in additional capacity which is yet to come on stream, and expansion based on less-productive workers and mines. However, the respective contributions of these possible explanations are not well understood.

Objectives of the Study

The main objective of the project is to identify the causes and consequences of the recent decline in mining sector productivity, and explain the significance of the developments for the sector and for the economy overall.

3) Migration, International Trade and Investment

Background

International trade and investment play a large role in the Australian economy. Research in recent years has focussed on barriers to these international economic flows, such as Australia's remoteness, and found that Australia's bilateral trade flows are larger than might be expected given these barriers. A possible explanation is the role played by Australia's migrant networks. Migrants are a larger share of the population and more highly educated in Australia than in most other OECD countries. They are also a larger share of the Australian population than at any time since the 19th century. However, the economic effects of Australia's migrant population are not fully understood. An established literature links migrant networks to trade flows and foreign direct investment. Movements of highly skilled workers may also facilitate flows of disembodied knowledge, as evidenced for example by patent citations. A number of international studies highlight links between trade, foreign investment, knowledge spillovers and productivity growth.

Objectives of the Study

Identify, at a macroeconomic level, the economic effects of Australia's migrant and expatriate networks on trade and investment flows, and perhaps disembodied technological transfer. Identify the roles played by characteristics of the migrants (such as education and language skills) and characteristics of their countries of origin. Distinguish between potential mechanisms through which migrants may affect trade and foreign investment (e.g. information on foreign markets, consumer preferences) and identify the extent to which these mechanisms are trade-diverting or -creating.

4) The Distribution of Recent Economic Gains

Background

Australia is now in the 16th year of an economic expansion which has brought more rapid growth in aggregate prosperity than in any period since the 1960s. However, the sources of this prosperity may have changed over time in response to domestic and international developments in the economic environment. This study will consider which parts of the community have gained from these trends.

Objectives of the study

The main objectives of the study are to describe the sources of growth in Australian average income and the flow of that income through the economy and the community.

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AUSTRALIA'S PRODUCTIVITY GROWTH IN THE 21ST CENTURY

Dean Parham

Productivity Commission, Canberra

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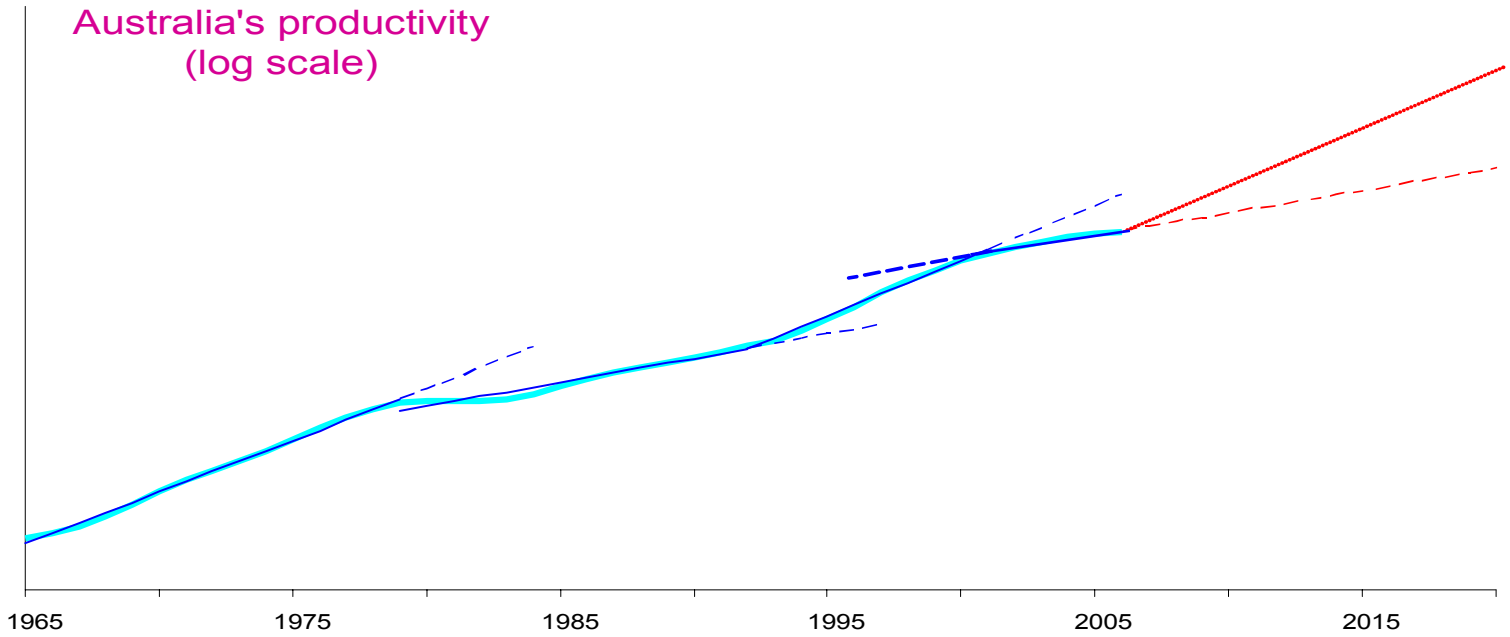
Focus of this presentation



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Outline

- Definitional/contextual stuff
- 5 major influences on Australia's productivity performance
- Conclusions, outlook and touchstones

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Definitional/contextual stuff

$$\text{Productivity} = \frac{\text{Output}}{\text{Input(s)}}$$

$$\text{Labour productivity (LP)} = \frac{\text{Output}}{\text{Hours worked}}$$

$$\text{Multifactor productivity (MFP)} = \frac{\text{Output}}{\text{Labour and capital}}$$

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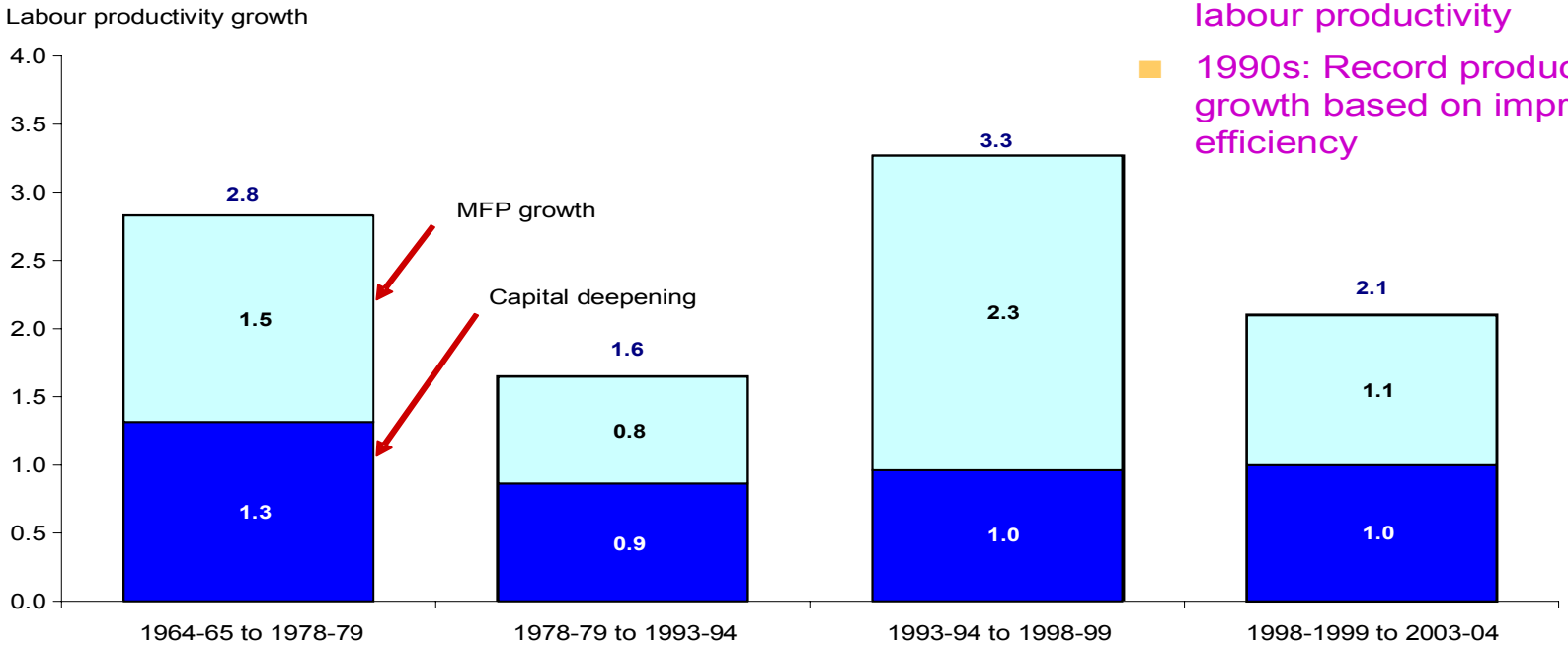
Sources of growth in labour productivity

- Improved efficiency is the main source of growth in labour productivity
- 1990s: Record productivity growth based on improved efficiency



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Why is productivity important?

$$\text{Average income} = \frac{\text{GDP}}{\text{Population}}$$

$$= \frac{\text{GDP}}{\text{Hours worked}} \cdot \frac{\text{Hours worked}}{\text{Population}}$$

Growth in income per capita = growth in labour productivity

\+ growth in labour utilisation

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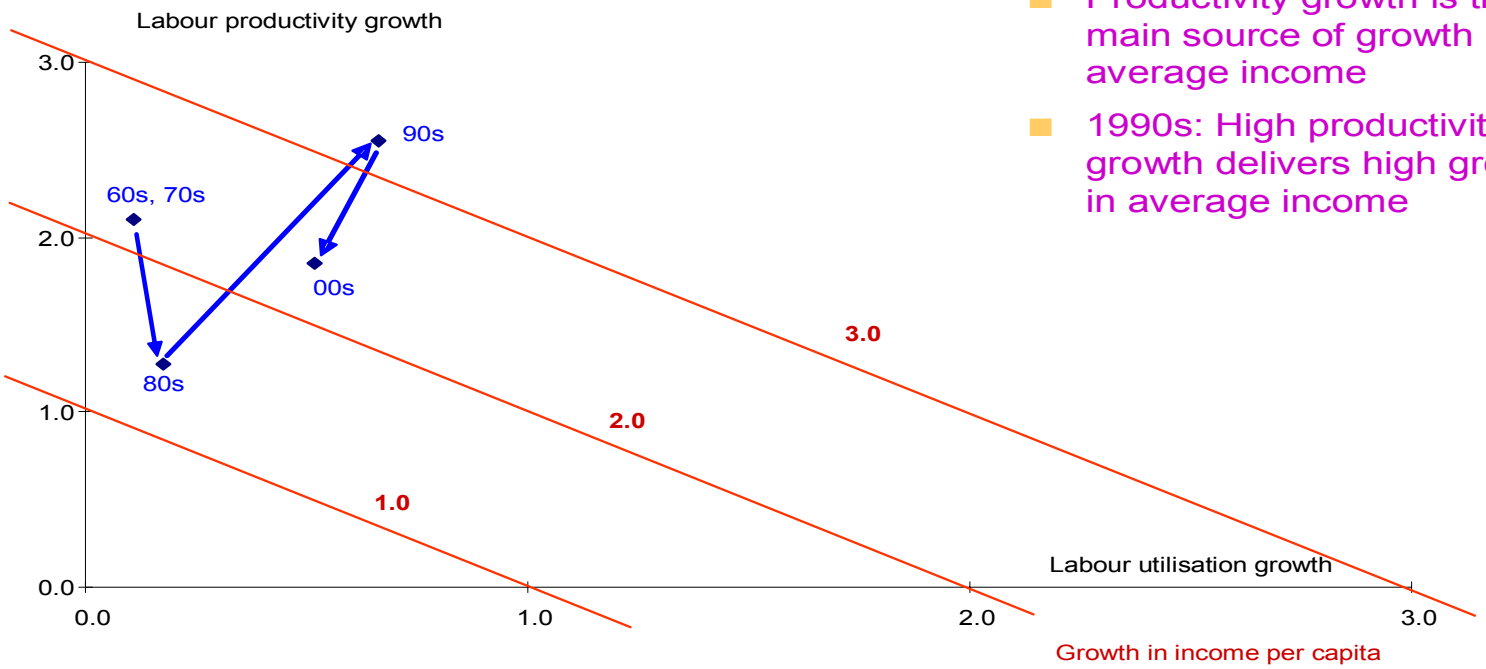
Productivity and income growth



- Productivity growth is the main source of growth in average income
- 1990s: High productivity growth delivers high growth in average income

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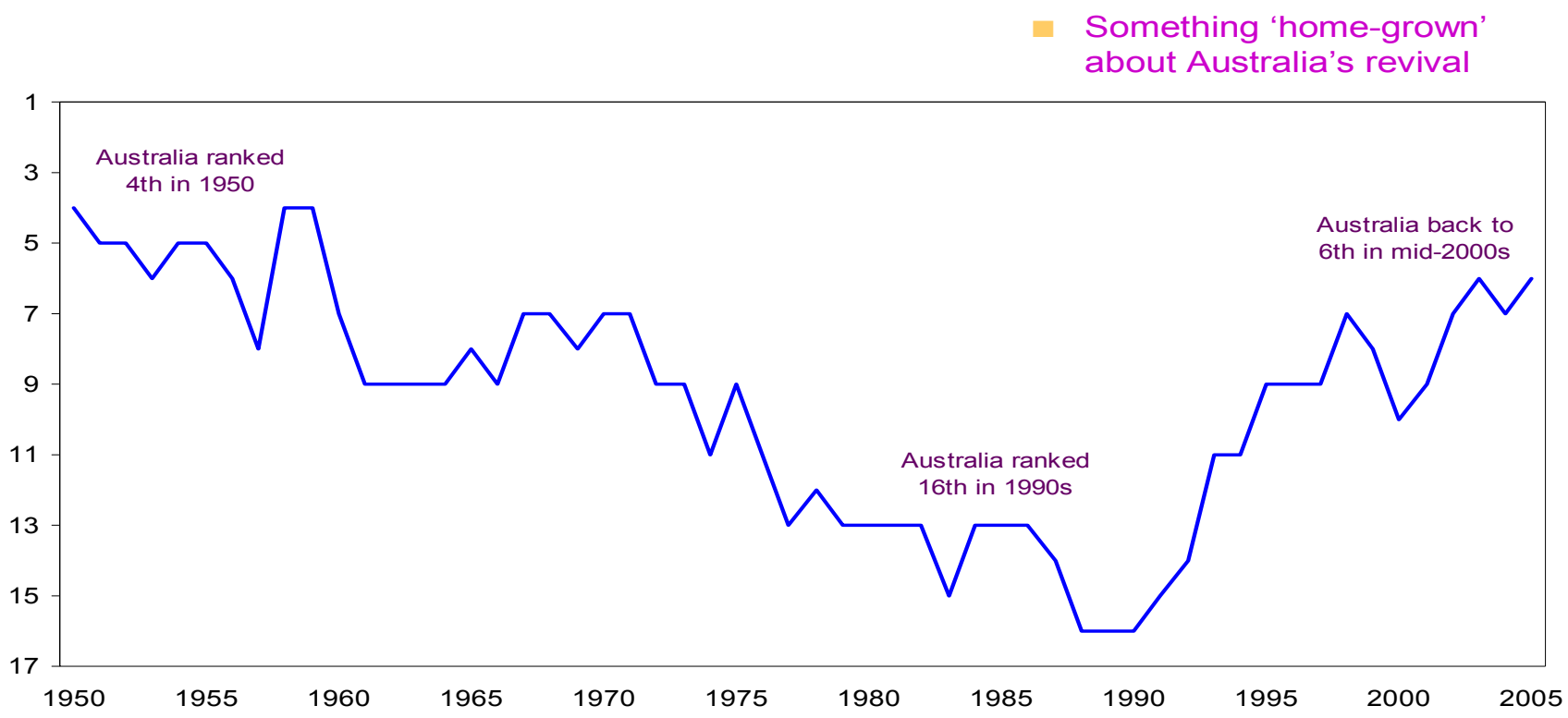
Australia's lifted its game internationally in the 1990s



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Outline

- Definitional/contextual stuff
- 5 major influences on Australia's productivity performance
- Conclusions, outlook and touchstones

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5 major influences on Australia's productivity performance

- Catch-up
- Technology and innovation
- Some 'one-off' factors
- A mystery
- Commodity prices

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1. Catch-up

- 'Follower' countries with lower levels of productivity can achieve faster productivity growth than, and thereby catch up to, the productivity 'leader'
  - *by adopting the technologies and practices developed and proven by the leader*
- Strong evidence in 2nd half of 20th Century
  - *US productivity leader*
  - *European countries, Japan and, later, Asian Tigers moved closer to the US*
    - until the 1990s!

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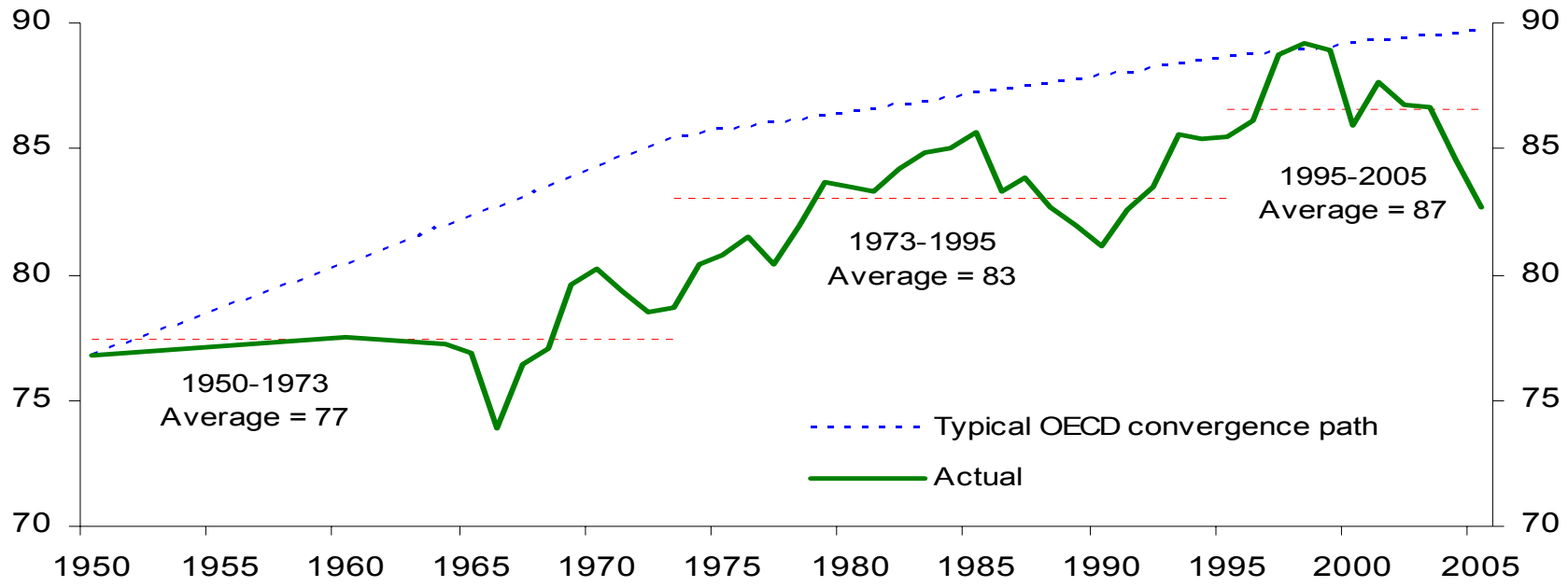
Australia chasing the frontier



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Observations

- Evidence consistent with at least some catch-up
- Policy reforms unleashed earlier (policy-induced) constraints on productivity growth
  - *Capital markets, foreign and domestic competition, work practices*
  - *Static or dynamic effect?*
- But there are still other constraints on Australia's catch-up
  - *Industry mix—endowments, geography, education*

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2. Technology and innovation

- Information and communications technology (ICT), the internet, etc—from the mid-1990s
- 3 sources of productivity gain
  - *Production of ICTs*
  - *Substitution especially for labour*
  - *Platform for user innovations—new products and processes*

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ICT and productivity

- Productivity gains based on use seen (internationally) in **services**
  - *financial services, wholesale and retail trade*
- Australia has gained on the use side—and is one of the few countries to do so
- Critical factors are competition, skills, flexibility
- Could be seen as a dynamic gain from policy reforms

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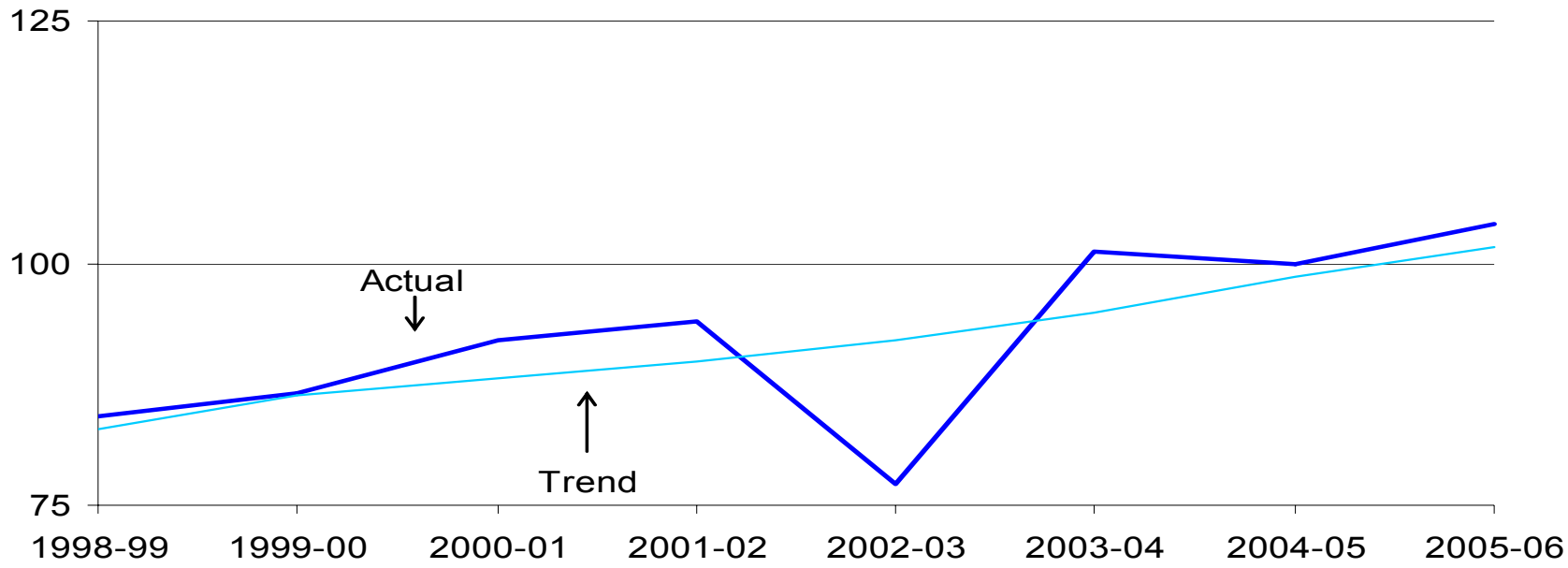
3. 'One-offs'

Agriculture



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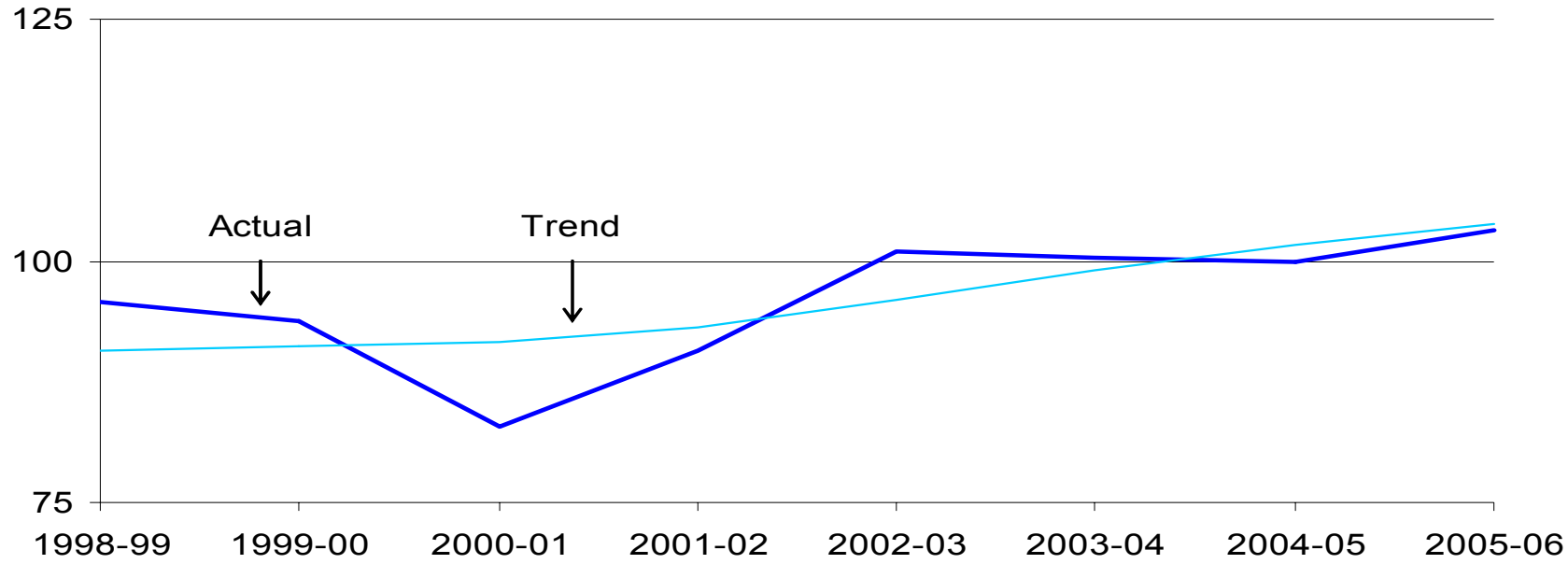
Construction

Communications similar



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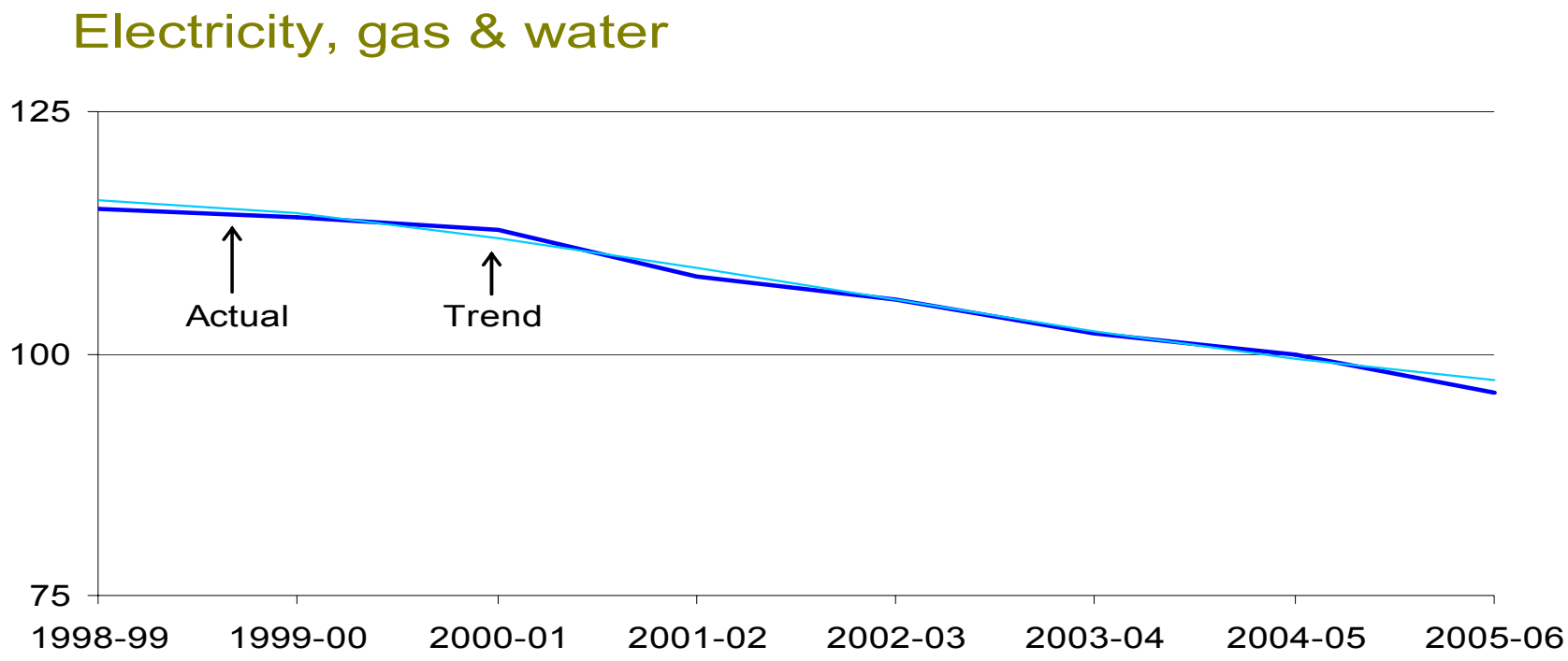
4. A mystery



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Possible explanations

- Overdid the labour-shedding
- Increased skill requirements in more complex operating environment
  - *Investment in intangible assets (comms also)*
- Energy/water conservation
- Measurement error
  - *Refurbishment*
  - *Output quality*
- In any case, likely to be transitional

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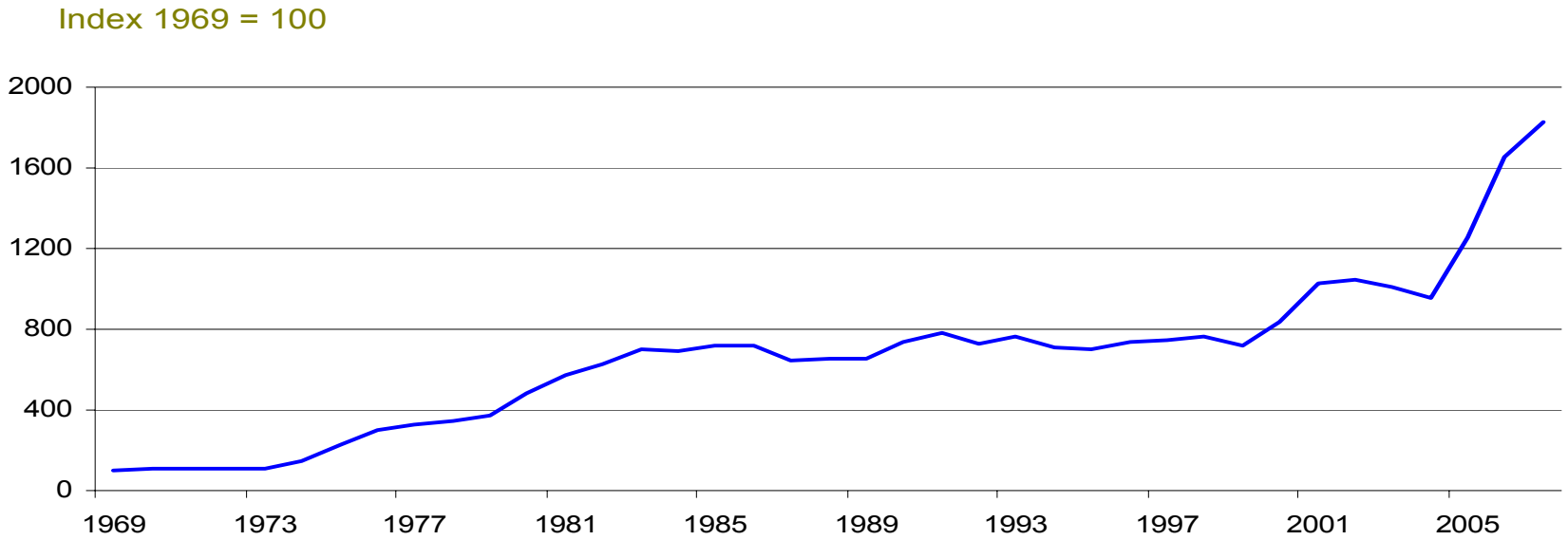
5. Commodity prices (and the terms of trade)



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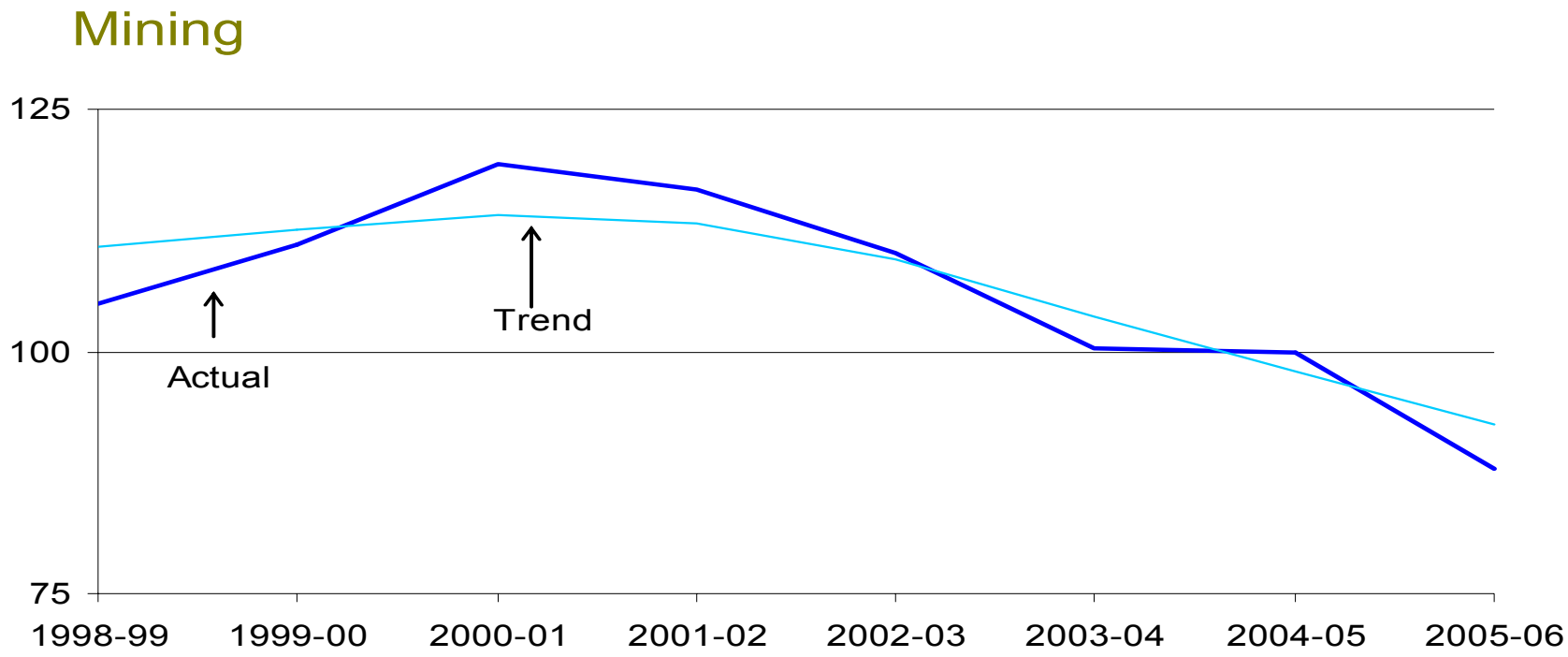
A decline in mining sector productivity



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Influences on mining productivity

- Decline in oil production from turn of century
- More recent massive investment
  - *Increased production to follow?*
  - *Or just more-marginal deposits?*
- But positive effects on other industries
  - *Construction*
  - *Processing (manufacturing)*

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Outline

- Definitional/contextual stuff
- 5 major influences on Australia's productivity performance
- Conclusions, outlook and touchstones

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Conclusions on interpretation of trends

- Favourable events came together in the 1990s
  - *Catch-up, technology and conditions for technology-based innovation*
  - *More open, competitive, capable and flexible economy—more suited to the challenges of the 21st Century*
- A range of factors have impinged on productivity growth in the 2000s
  - *Likely slowdown in some static catch-up gains*
  - *A couple of one-off factors*
  - *Some 'secular shifts' – transitional element*
- More underlying strength than numbers indicate

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Outlook

- There are more catch-up possibilities
  - *Would be supported by further reforms*
  - *Won't be as strong as the 1990s*
- Prospects for ongoing strong productivity growth due to ICT-based innovation
  - *In services especially*
- Who knows about one-offs?
  - *But economy is more resilient*
- Halt to secular declines
- Mining probably ongoing negative, but not so strongly
  - *Drag on aggregate productivity if commodity prices sustained*
  - *But don't forget the terms of trade gains!*
  - *Benefits to related industries*

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Touchstones for productivity growth going forward

- Firms not industries
- Innovative services (not just technologies)
- Foster experimentation and innovation, adaptation
- Bring up the rear
  - *Better (average) productivity comes from improving poorer performers as well as 'frontier' firms*
- Integration with national and international production and markets
- Promote general conditions for productivity growth
  - *Incentives (competition, regulatory barriers, rewards)*
  - *Capabilities (skills, infrastructure, knowledge)*
  - *Flexibility (company, work arrangements)*
  - *Related and several – no 'single-bullet theory'*

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The end

Questions and discussion

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