



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

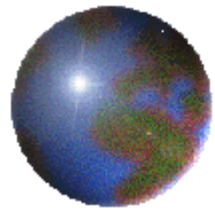
Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



*Competitiveness of Australia's
agricultural and resource sectors:
past and prospective*

Kym Anderson

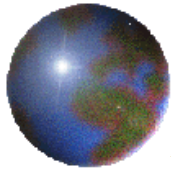
University of Adelaide & Australian National University

Opening Plenary Paper for the 60th Anniversary Conference of AARES,
Hyatt Hotel, Canberra, 2-5 February 2016



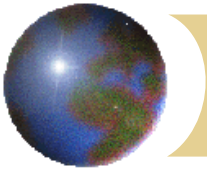
Lots of focus on ag. competitiveness in 2015

- ⊕ White Paper on **Agricultural Competitiveness**
- ⊕ White Paper on **Developing Northern Australia**
- ⊕ Report from Aust. Council of Learned Academies to Chief Scientist on **Australia's Agricultural Future**
- ⊕ Not surprising, given perception of prospective growth in demand (global popn and Asian income growth) & supply of Australia's farm products (A\$ depreciation)

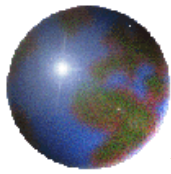


Outline

- ✚ What does trade **theory** suggest about agric supplies in an occasionally booming economy?
- ✚ What can be gleaned from **history**?
- ✚ Where to from here?
- ✚ What **policy implications** follow?



What does theory suggest?



Basis of competitiveness issue in presence of mining booms

✚ **Booming sector theory**

✚ also called Gregory thesis, or Dutch disease

✚ Max Corden (*OEP*, 1984) identified 2 effects:

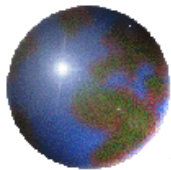
✚ **Direct pull** of mobile resources to mining

✚ **Additional resource pull** from sectors (including agric.) producing tradables to sectors producing **nontradables**

- ... due to rise in income & hence in demand for nontradables

=> Real exchange rate appreciation

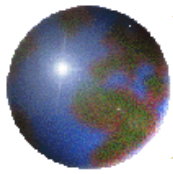
(rise in price of nontradables relative to tradables)



Australia's real exchange rate, 1970-2015

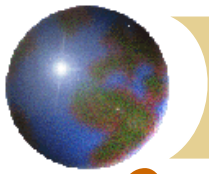
Source: RBA, 03/1995 = 100





Types of mining booms

- ⊕ Boom could be **demand- or supply-driven**
 - ⊞ Both cause real exchange rate appreciation
- ⊕ **Mining capital** could come in from abroad, which adds to initial currency appreciation
- ⊕ **Mining employment** is not large (<2%)
 - ⊞ it's the greater demand for labour in prod'n of nontradables that boosts real wages



3 stages of export price-driven boom

(Freebairn, *AJARE*, Oct 2015)

- ✚ Initial **price-rise stage**, which, if it persists for enough years, precedes a new
- ✚ **Investment stage**, which is likely to take several years before it is followed by the
- ✚ **Export stage**, which will continue while mining rewards remain profitable



1. *Initial price-rise stage*

- ✚ A price rise boosts mining revenue, plus national income and tax revenue, **before raising output and hence GDP**
 - ✚ Raises spending: imports rise, other exports fall, and price & quantity of **nontradables rise**
 - ✚ **Farming** and other tradable sectors are **squeezed by RER* appreciation** even before mining profits are invested in exploration

* *Real Exchange Rate* = price of nontradables/price of tradables



2. Investment stage

- ✚ Mining profits, supplemented by foreign capital inflows, finance the investments in exploration & infrastructure
- ✚ **That further appreciates the RER**
 - ▣ Also raises capital/labour ratio, so wages rise, hence household **incomes and price of nontradables rise further**
 - **prolonging the squeeze on farming** and manufacturing, other things equal



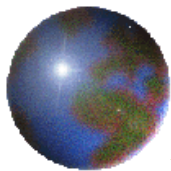
3. Export stage

- ✚ As/when Aust & other suppliers expand extraction and exports, & importers' desired inventories are reached, **export prices start to fall**
 - ❏ so **investment may slow/pause**
 - ❏ mining output and exports may **expand**, but not necessarily more than prices fall
 - ❏ **RER starts to fall**, esp. if dividends and repayments of capital flow to non-residents
 - $\approx 80\%$ of equity in mining firms is foreign-owned



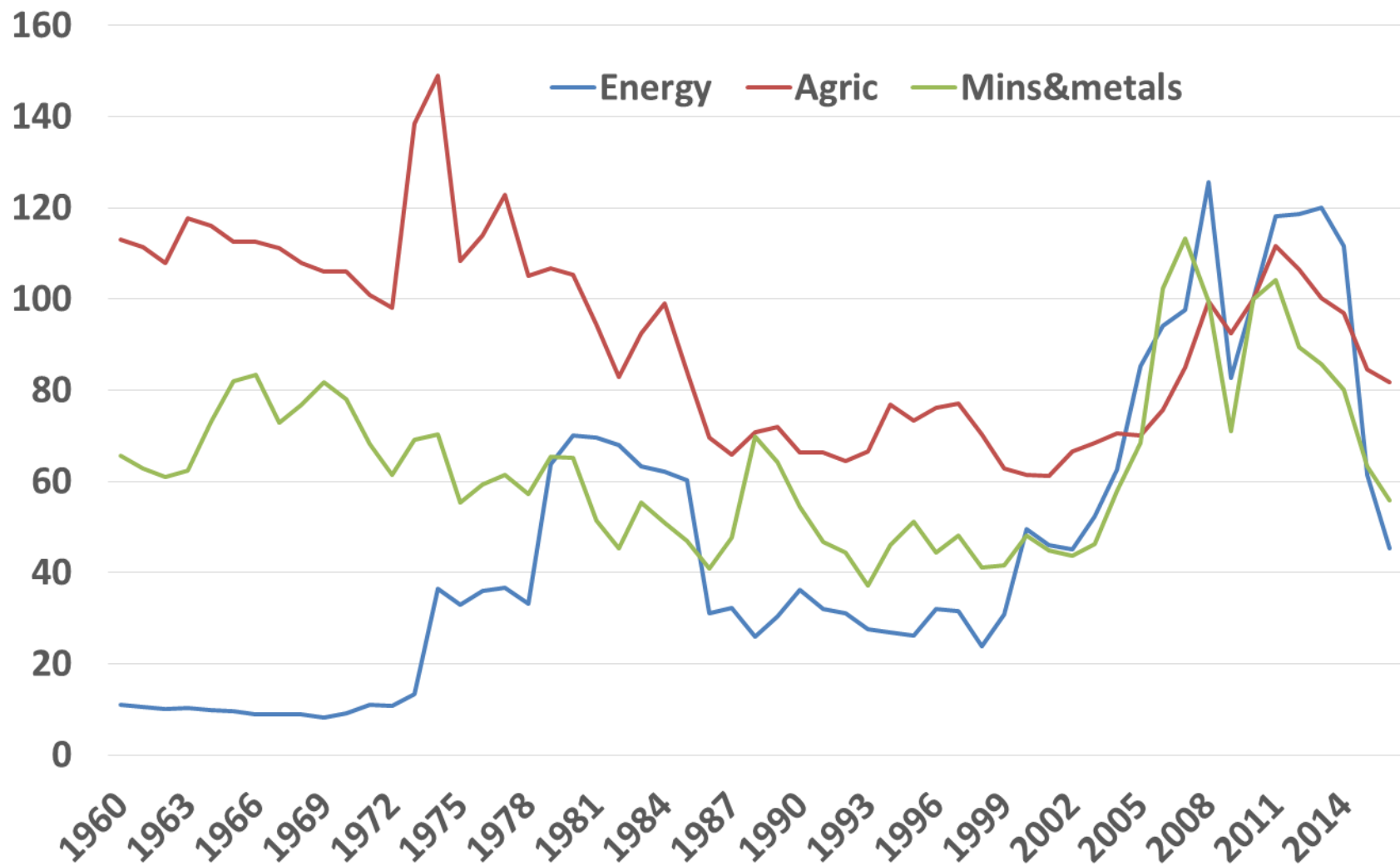
What if agric prices also rise?

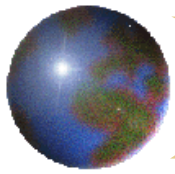
- ⊕ **Real int'l agric prices** (esp. grain) have moved in parallel with energy price spikes and troughs several times
 - ▣ 1973-74
 - ▣ 1985-86
 - ▣ 2002-16 (not least because of biofuel policies)



Real int'l prices, 1960 to 2015 and 2016f

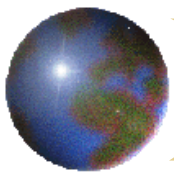
(World Bank, 2010 = 100)





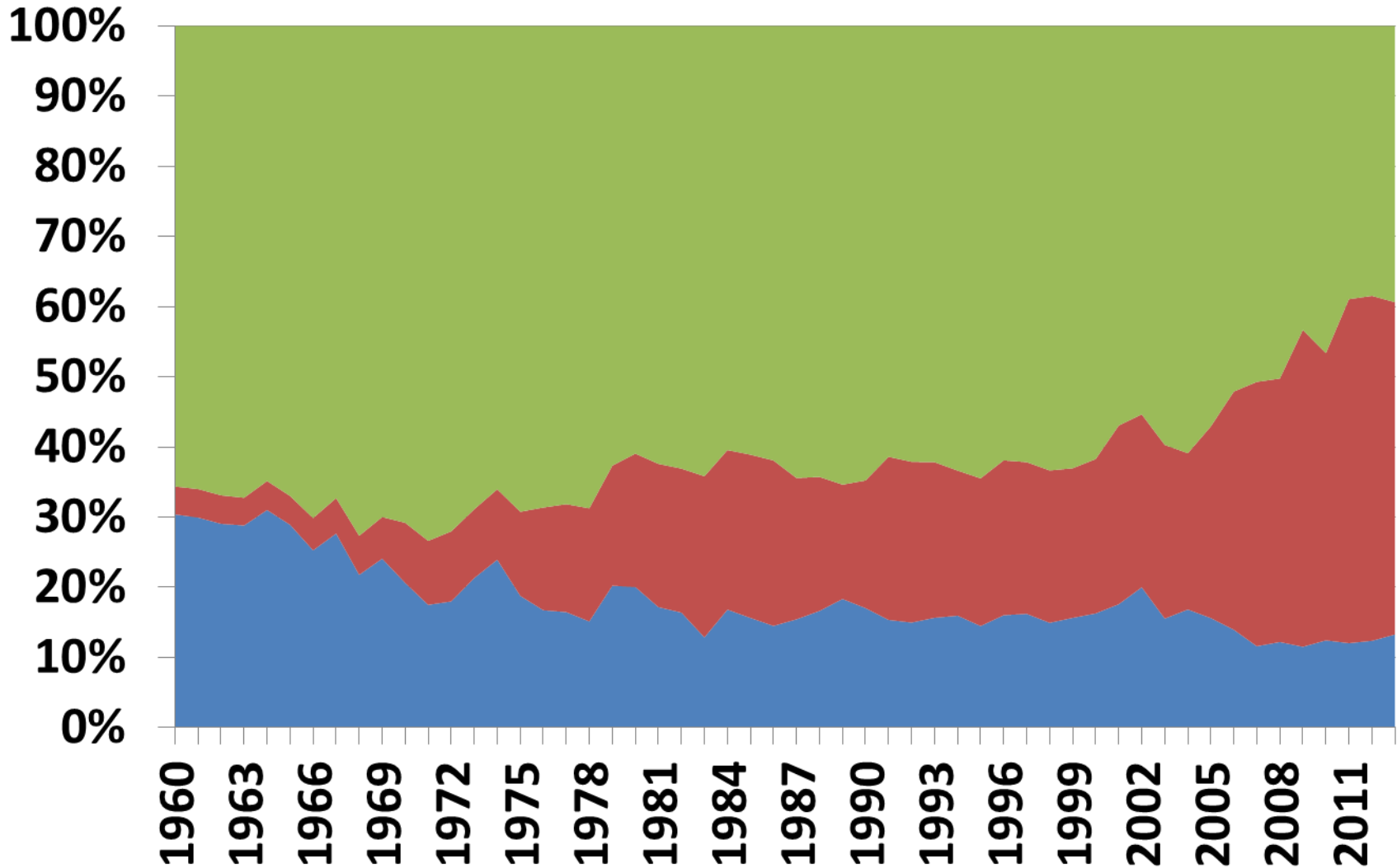
What if agric prices also rise?

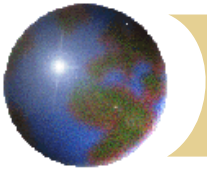
- ✚ Real **int'l agric prices** (esp. grain) have moved in parallel with energy price spikes and troughs several times
- ✚ Hence agric was able to maintain its share of non-services GDP during 1985-2005,
 - ✚ and has fallen only slightly since then,
 - ... while share of manuf has shrunk more rapidly



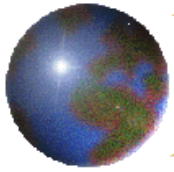
Sectoral shares of Aust merchandise GDP (i.e. excluding services), 1960 to 2013

Agriculture **Mining** **Manufacturing**



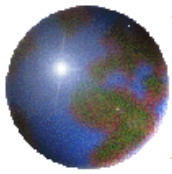


What can we learn from a longer historical perspective?

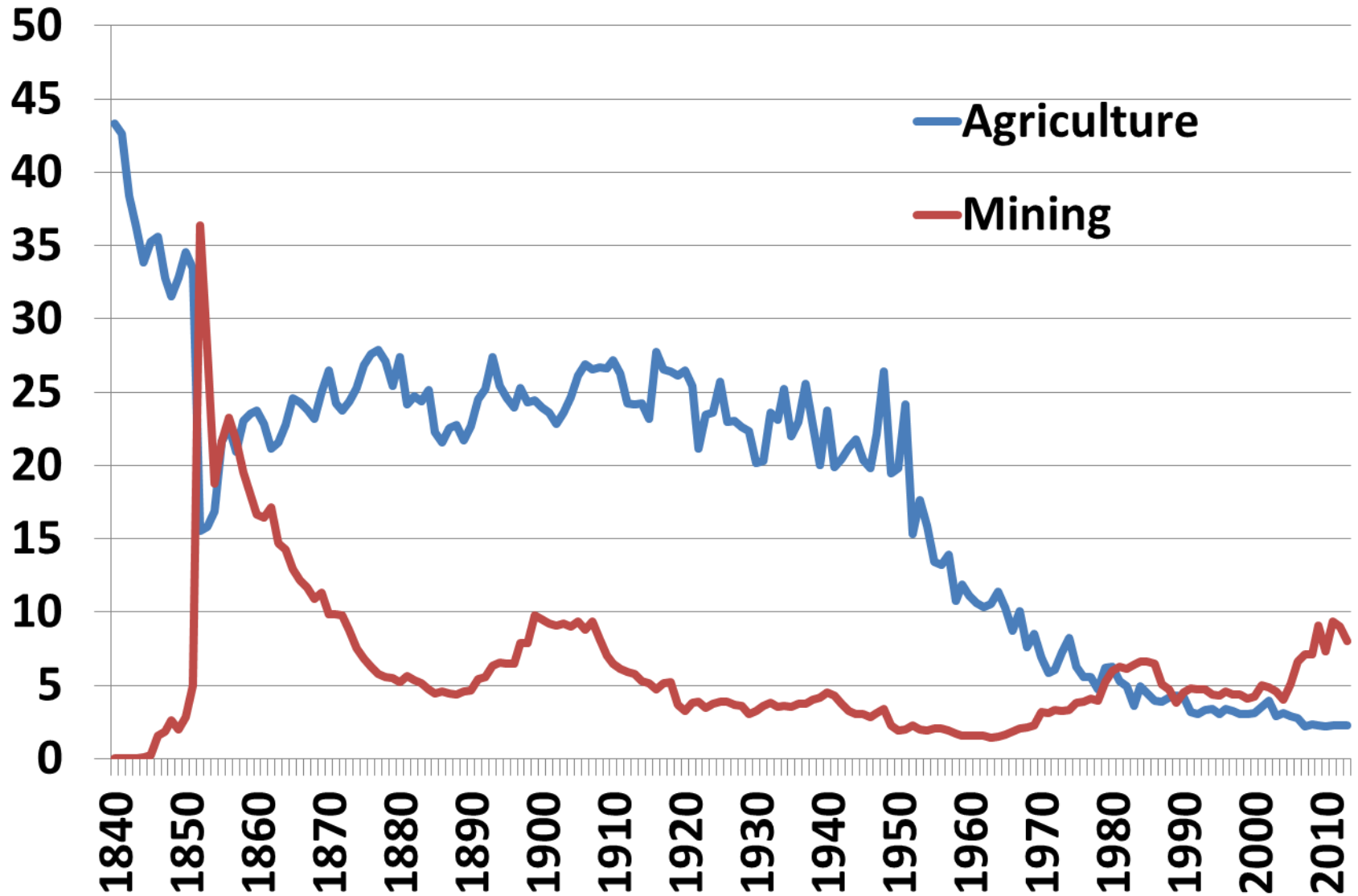


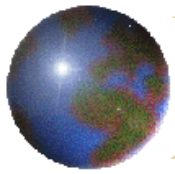
Longer historical perspective

- ✚ Agric inevitably declines as a share of GDP and employment
 - ▣ although, in Australia, not until after WW2
 - and agric dominated mining until 1980s



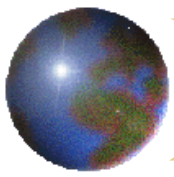
Sectoral shares of total GDP (%), 1840-2014





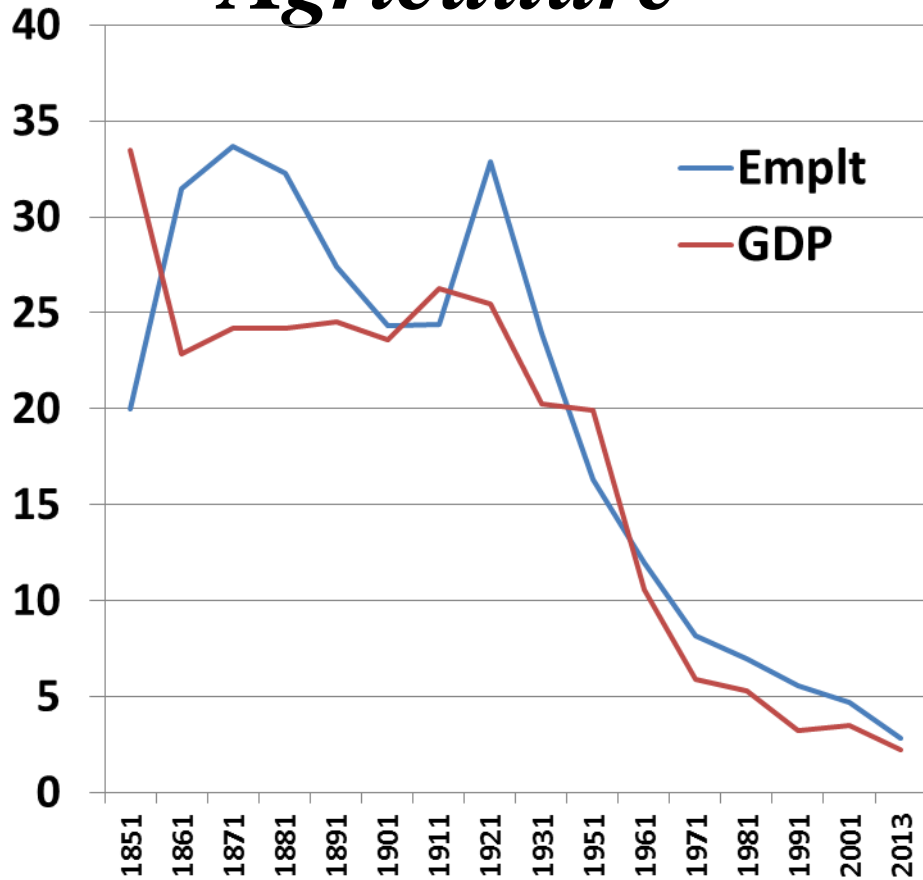
Longer historical perspective

- ❖ Three mining booms in 19th century:
 - ❖ 1840s copper boom in SA
 - ❖ 1850s gold rush in Vic (and NSW)
 - ❖ gold rush in WA from late 1880s
- ❖ Agric was **helped** during those booms by:
 - ❖ Rise in immigration and incomes, & so also in demand for **nontradable foods**
 - ❖ Expansion in **off-farm earning** opportunities
 - ❖ Increased investments in **infrastructure**

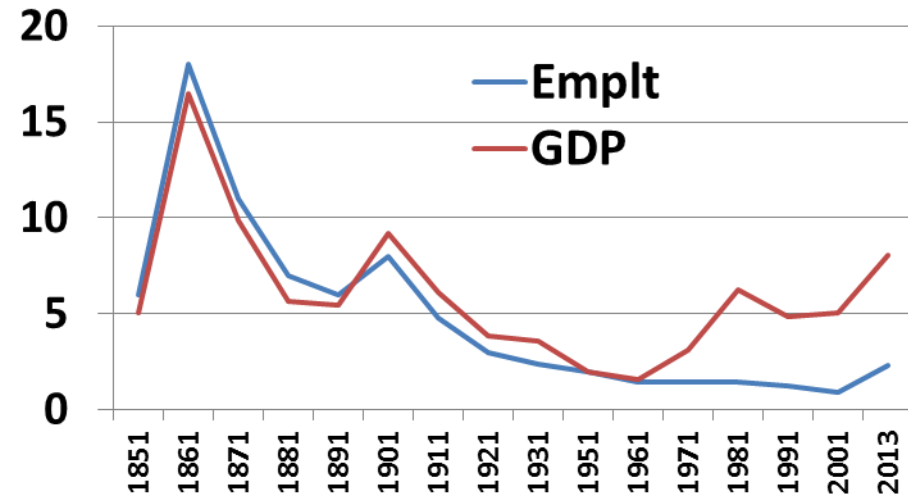


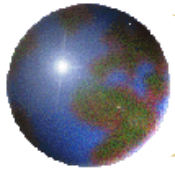
Sectoral shares of Aust. emplt & GDP (%): unusually, those agric shares are very close

Agriculture



Mining

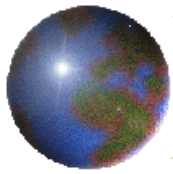




Australia's recent mining booms

✚ **Supply-driven:**

- ▣ Iron ore exploration from 1960s



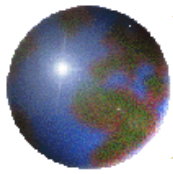
Australia's recent mining booms

✚ Supply-driven:

- ✚ Iron ore exploration from 1960s

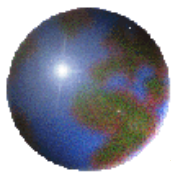
✚ Export price-driven:

- ✚ 1973 and 1979 petroleum price hikes (8x)
 - which were sufficient to launch our exports to Asia of **thermal coal**, as an oil substitute
- ✚ The past decade's primary product price rises (incl. **coking coal**), thanks to China



Why the long gap between mining booms of 19th century and recent ones ... ?

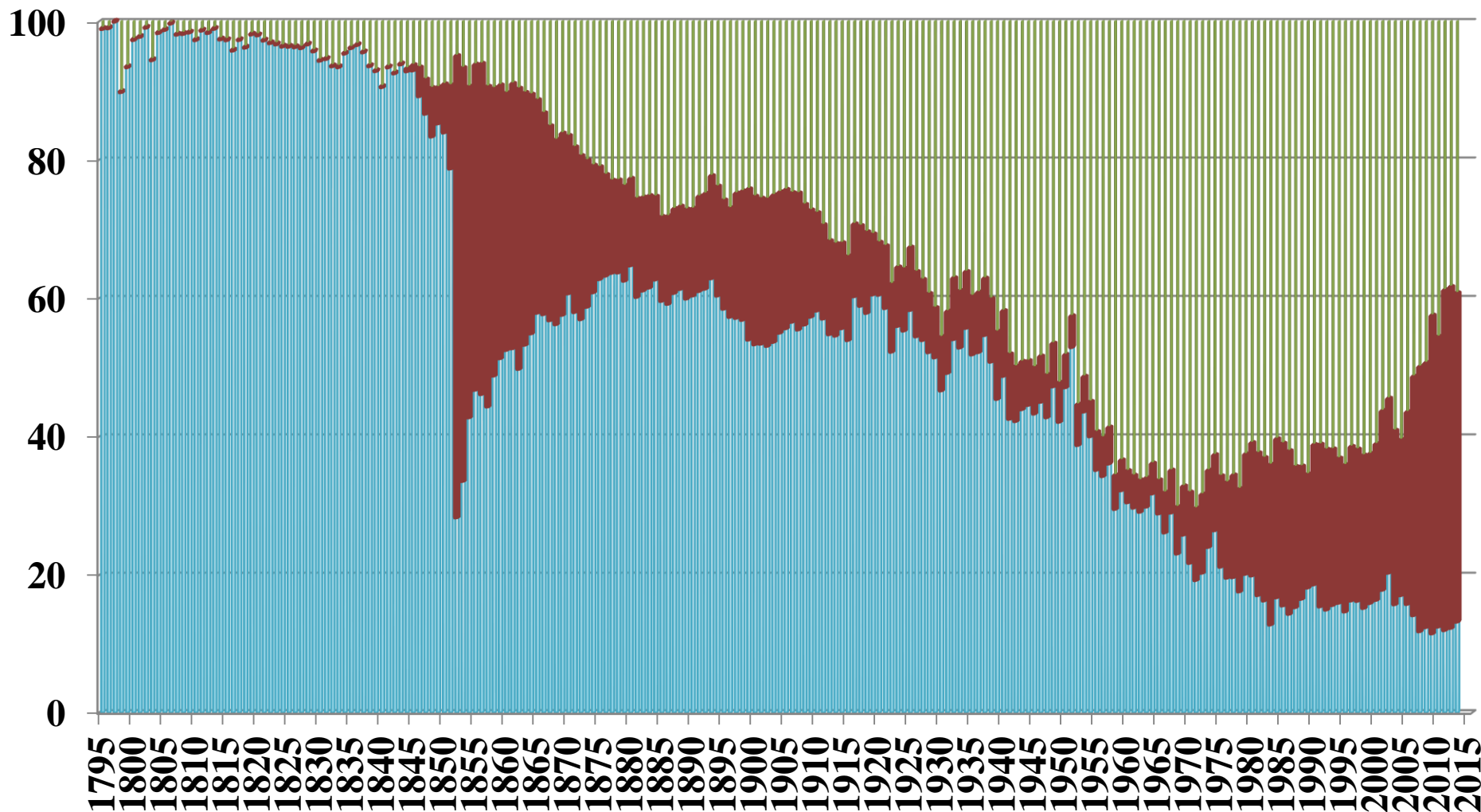
- ❖ ... and the rapid growth in Australian manufacturing, 1900 to 1970?



Sectoral shares of Aust merchandise GDP *(i.e. excluding services), %, 1795 to 2013*

(Butlin, Dixon and Lloyd, 2014)

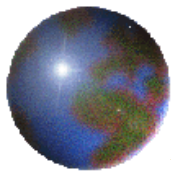
■ Agricultural ■ Mining ■ Manufacturing





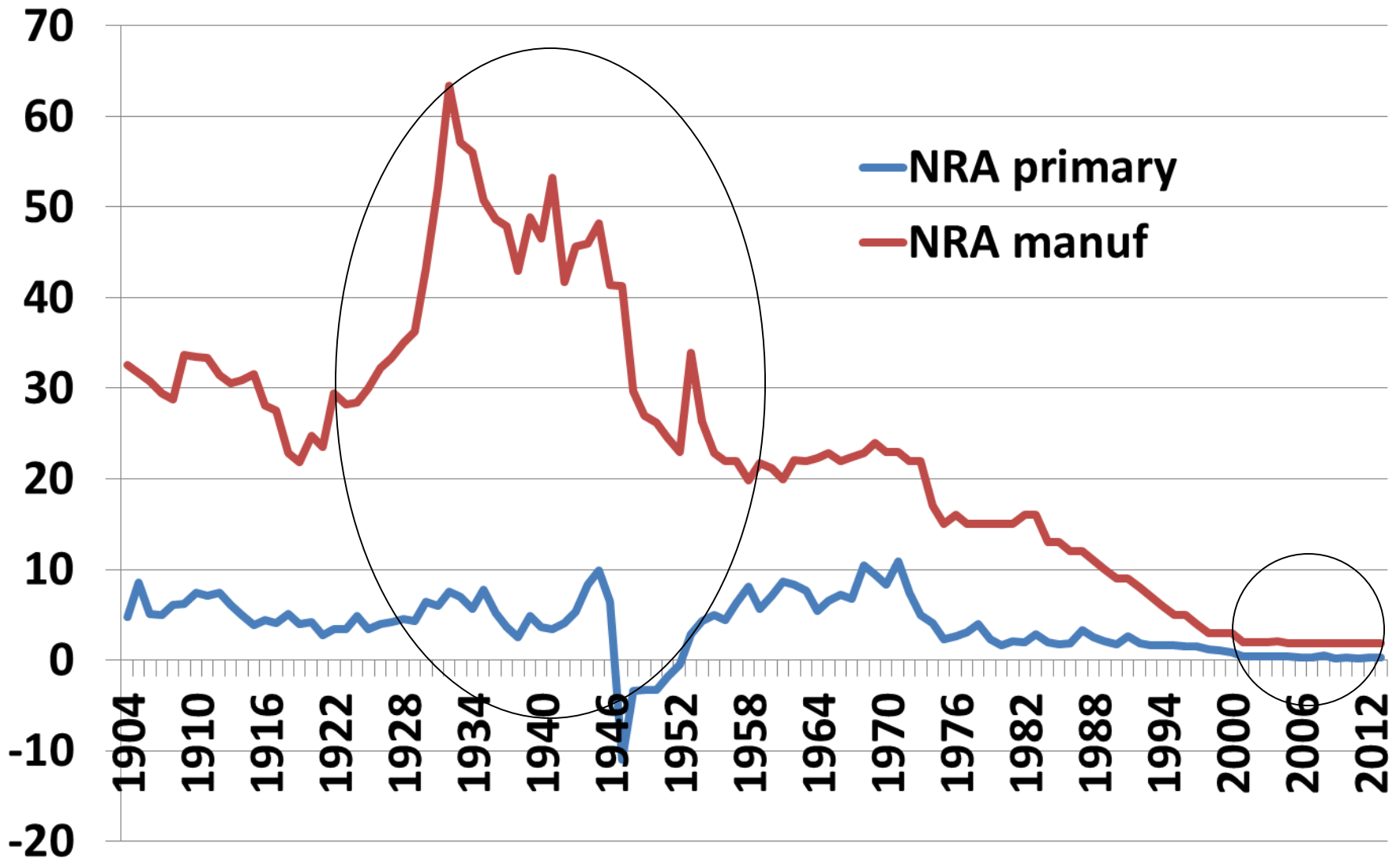
Why little mining, & rapid growth in manufacturing, during 1920-70?

- ✚ **Policies** were major contributors:
 - ▣ Growth of **protection to manufacturers** relative to primary producer assistance



Nominal rate of govt assistance to manuf and primary production (%), 1904-2013

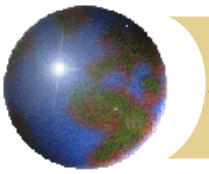
(based on data in Lloyd & MacLaren, AJARE, 2015)





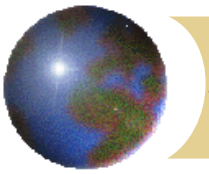
Why little mining, & rapid growth in manufacturing, during 1920-70? (cont.)

- ✚ **Policies** were major contributors:
 - ✚ Growth of **protection to manufacturers** relative to primary producer assistance
 - ✚ **Ban on iron ore exports, 1938-61**
 - ✚ **WA govt unwilling to issue leases** for prospecting or mining



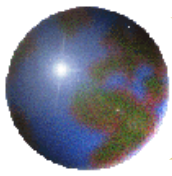
Policy makers not always well-informed

- ✦ As late as 1955, Minister for External Affairs R.G. Casey (later Lord Casey and G-G from 1965) claimed that Australia was poorly endowed with iron ore
 - ▣ a view shared by WA govt.

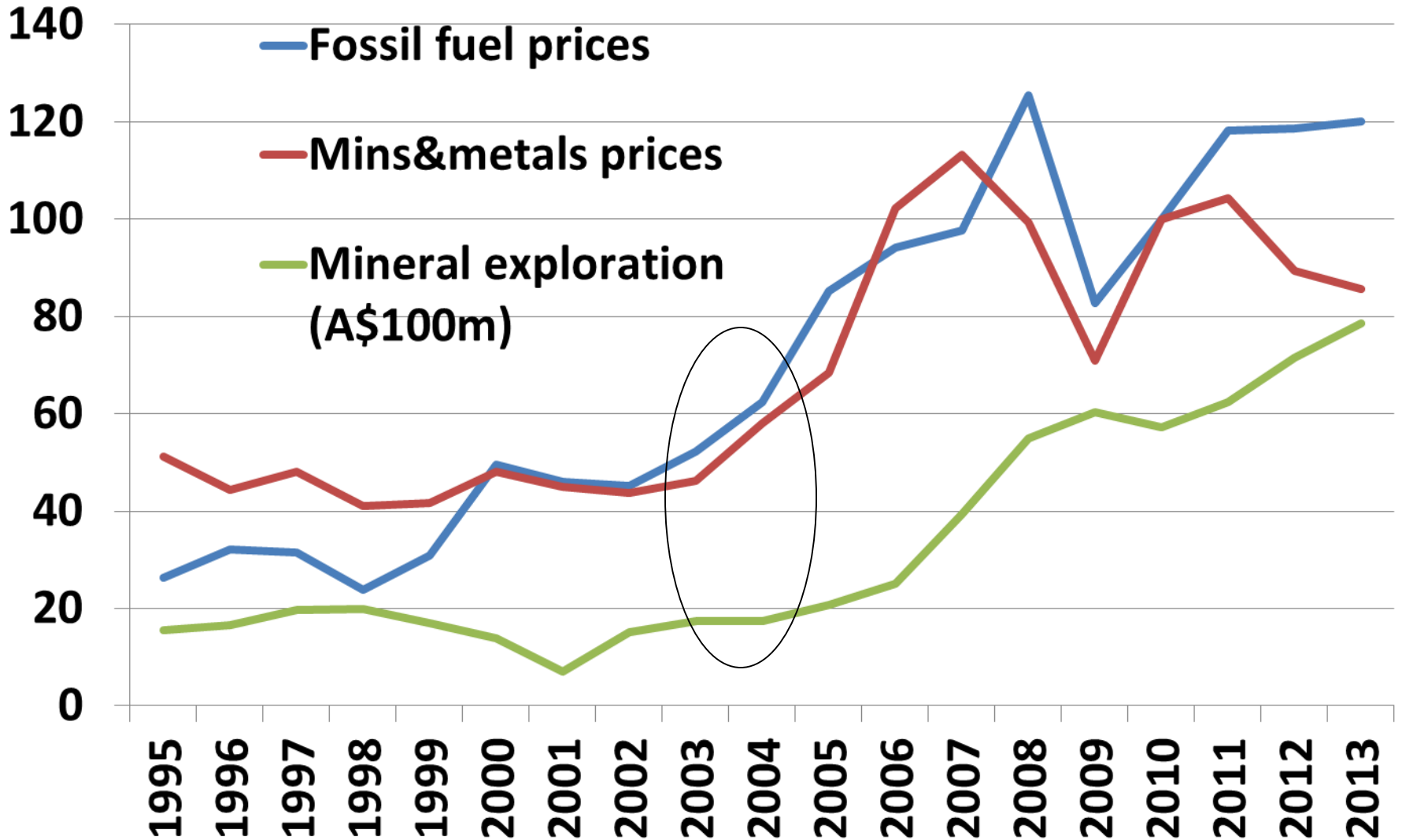


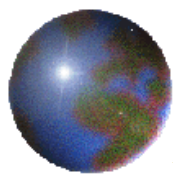
Mineral and energy raw material export prices also not attractive

- ❖ Int'l product prices low, and ocean transport costs from Aust. for such bulk commodities were high pre-1970



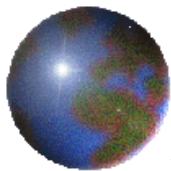
Were recent price rises unanticipated? Aust exploration didn't grow before prices rose



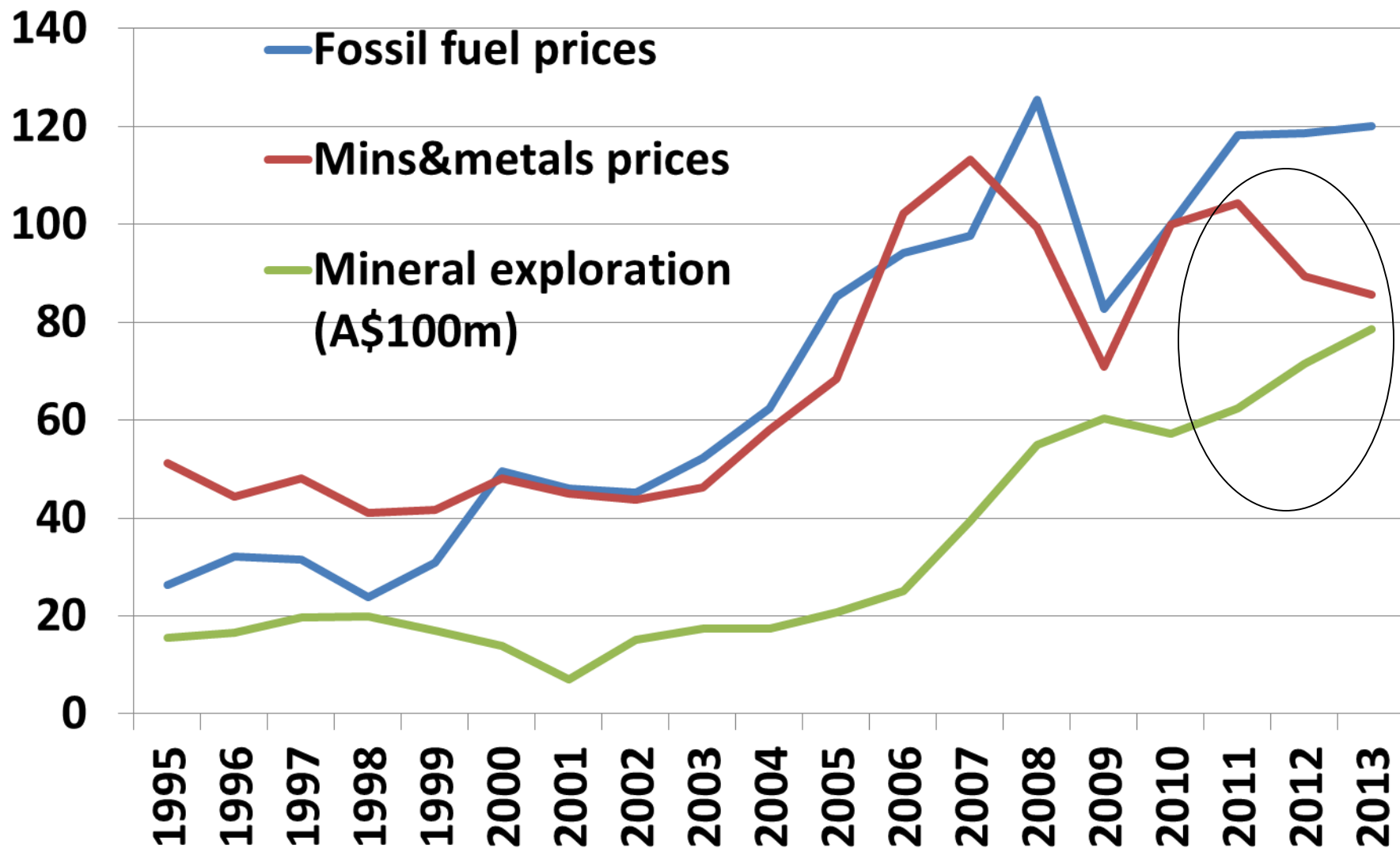


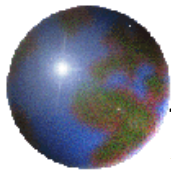
Why extent of recent price rises may have surprised investors

- ✚ Garnaut (2014) notes that China's devt in the past decade or so has been far more resource-intensive than normal for a country with its per capita income
- ✚ He also notes that China's high protection of its iron ore industry has been greatly reduced over the past 2 decades
- ✚ Have investors also been slow to anticipate the fall in int'l mineral prices?

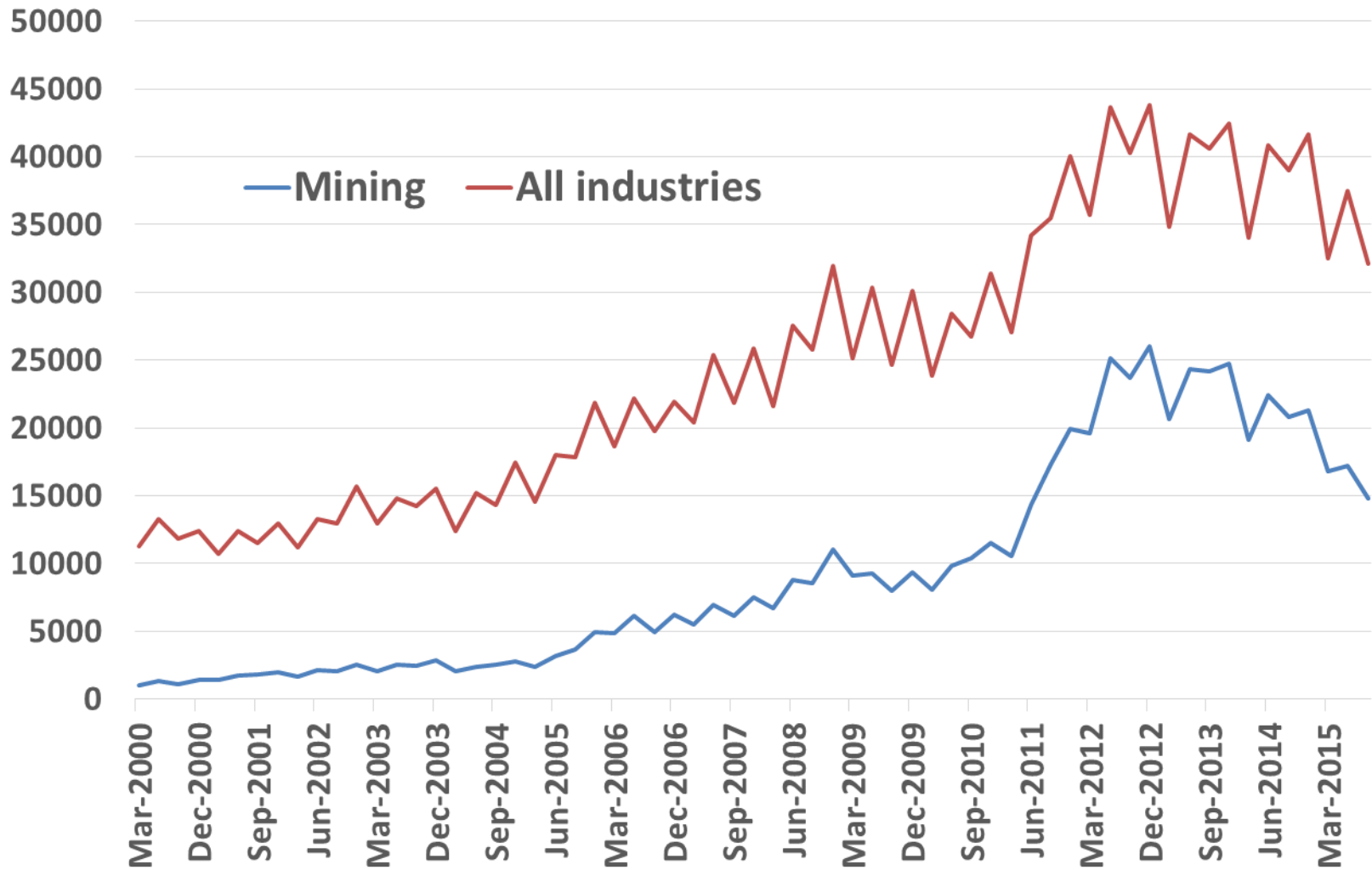


Were recent price rises unanticipated? Aust exploration didn't grow before prices rose





Mining dominated private capital expend. trends in Aust during 2006-2015 (A\$m/qtr)

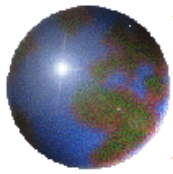




Bottom line on inter-sectoral competition for productive resources in Australia:

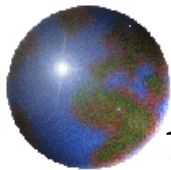
- ⊕ **Policy** setting: now much closer to level playing field in domestic demand for mobile resources
- ⊕ **A\$** setting: much-reduced pressure since downturn in mining investment after 2012, and RER may fall further yet

=> time for agric. exports to thrive again?

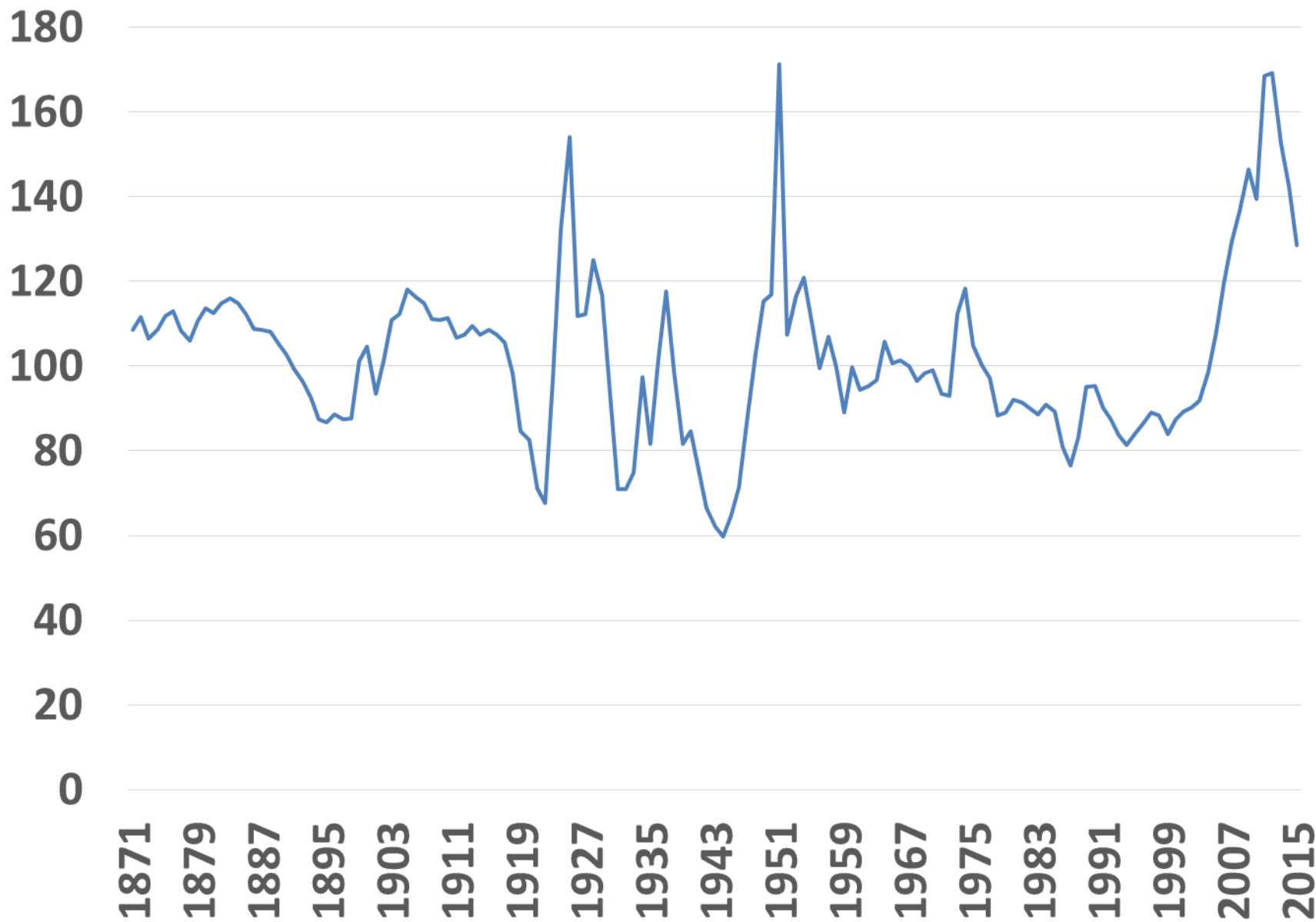


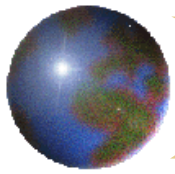
Long historical perspective again

- ✿ Agric is subject to **cycles in int'l prices**
 - ❏ Clear from Australia's terms of trade, given that ag share of merchandise exports (excl. gold) was $>75\%$ until mid-1960s
 - ❏ 6 cycles during 1895-1999, averaged 14 yrs



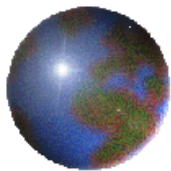
Australia's terms of trade, 1871-2015





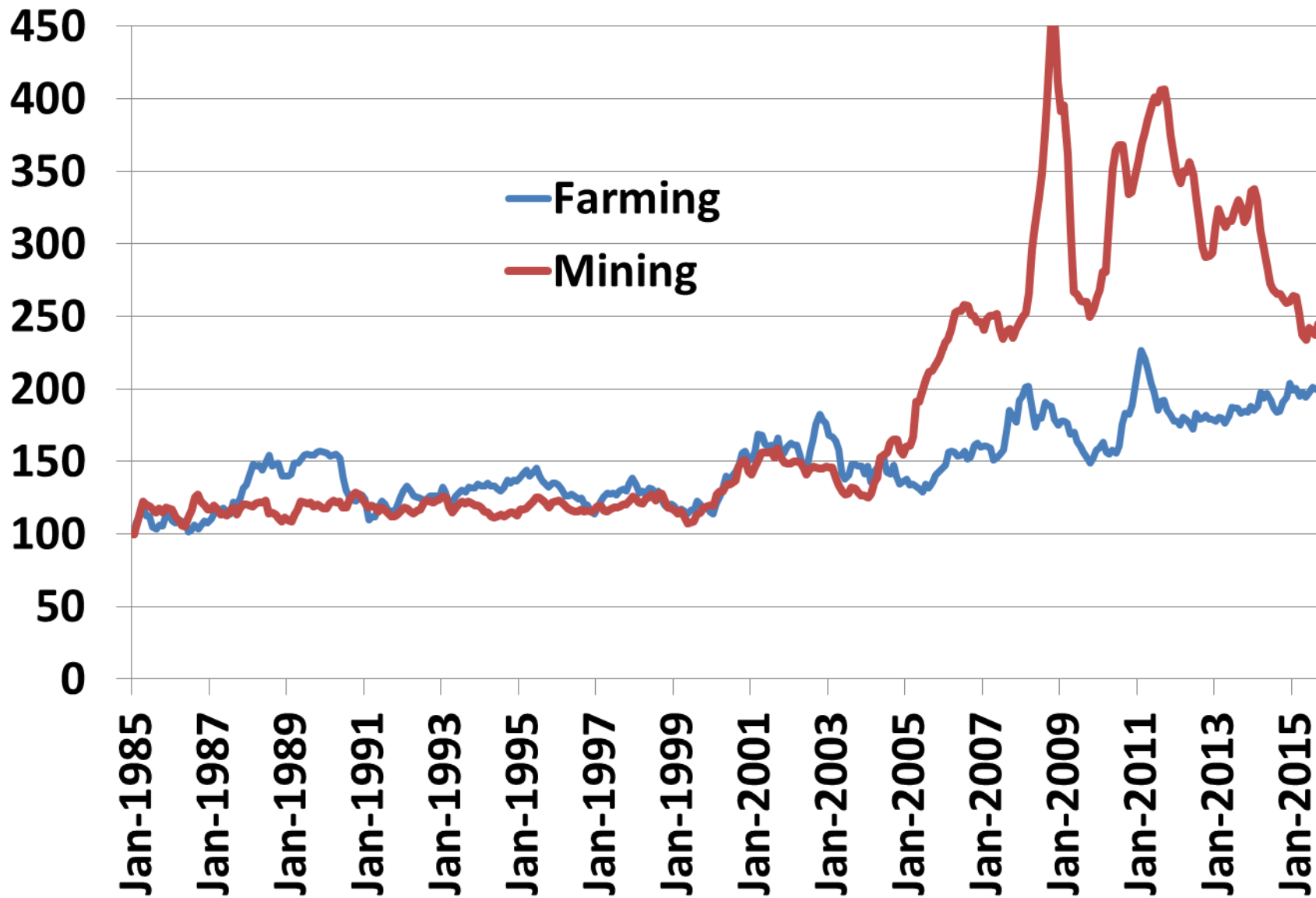
Latest cycle

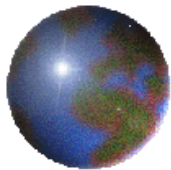
- ✚ Present cycle began at turn of century for Aust. farmers, but also soon after – and more extremely – for miners:
 - ▣ Aust. **export price ratio** (farm to mineral products) **halved during 2003-06** and remained low during 2006-13
 - ... but has risen since 2013



A\$ price of Aust. primary exports

(01/85 to 09/15, Jan. 1985 = 100. Source: RBA)

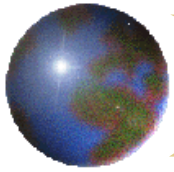




Price of agric. relative to mining exports

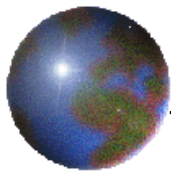
(01/00 to 09/15, Jan. 1985 = 100)





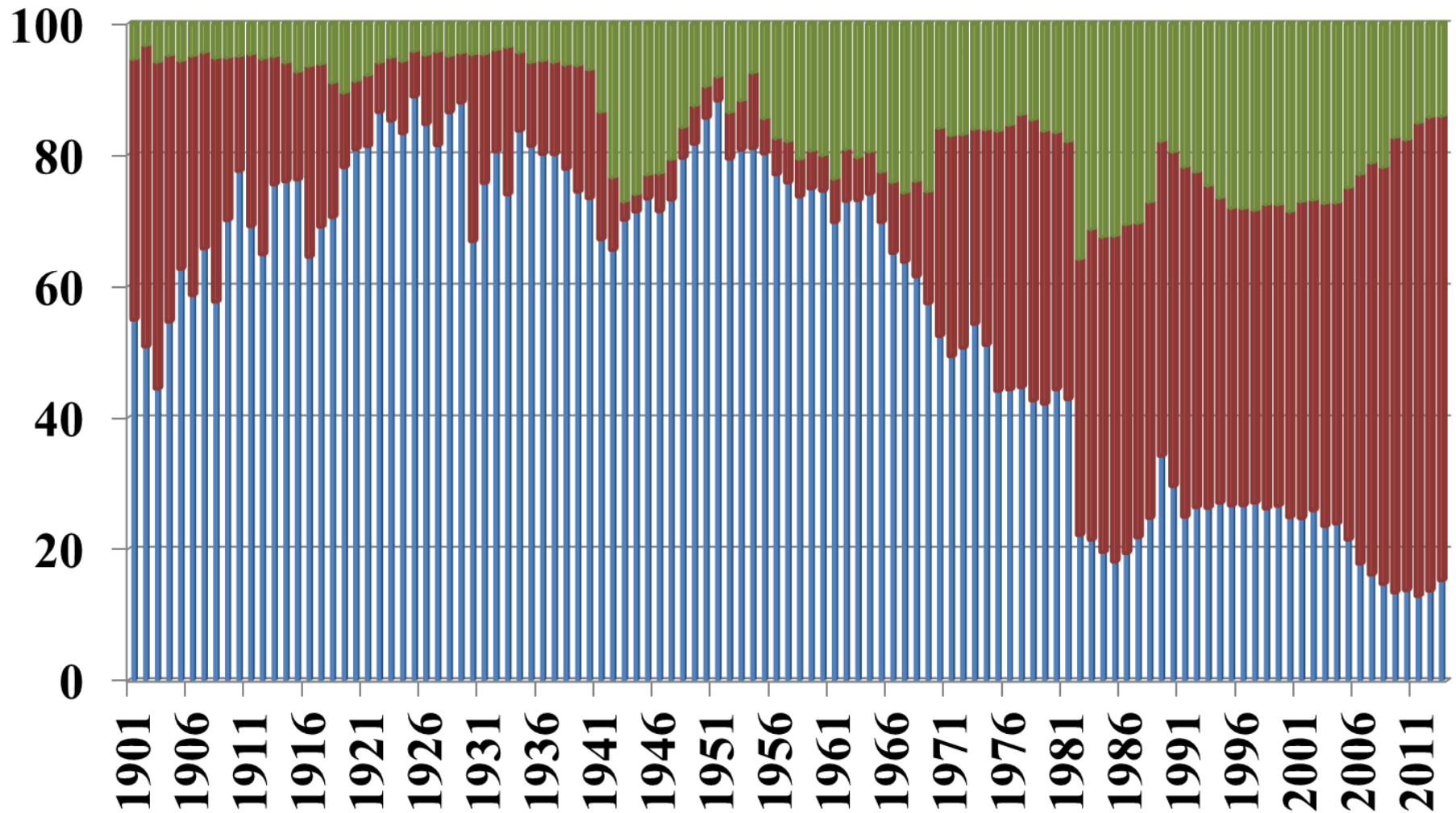
Latest cycle (continued)

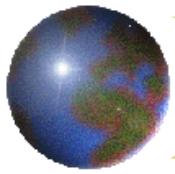
- ❖ As a result also of rapid supply response of miners, **mining's share of Aust. exports rose from 40% to 69%** during 2000-14
- ❖ while agric and manuf shares nearly **halved**



Relative importance of farming & mining in Australia's merchandise exports, 1901 to 2013

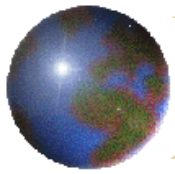
■ Farming ■ Mining ■ Other goods





Latest cycle (continued)

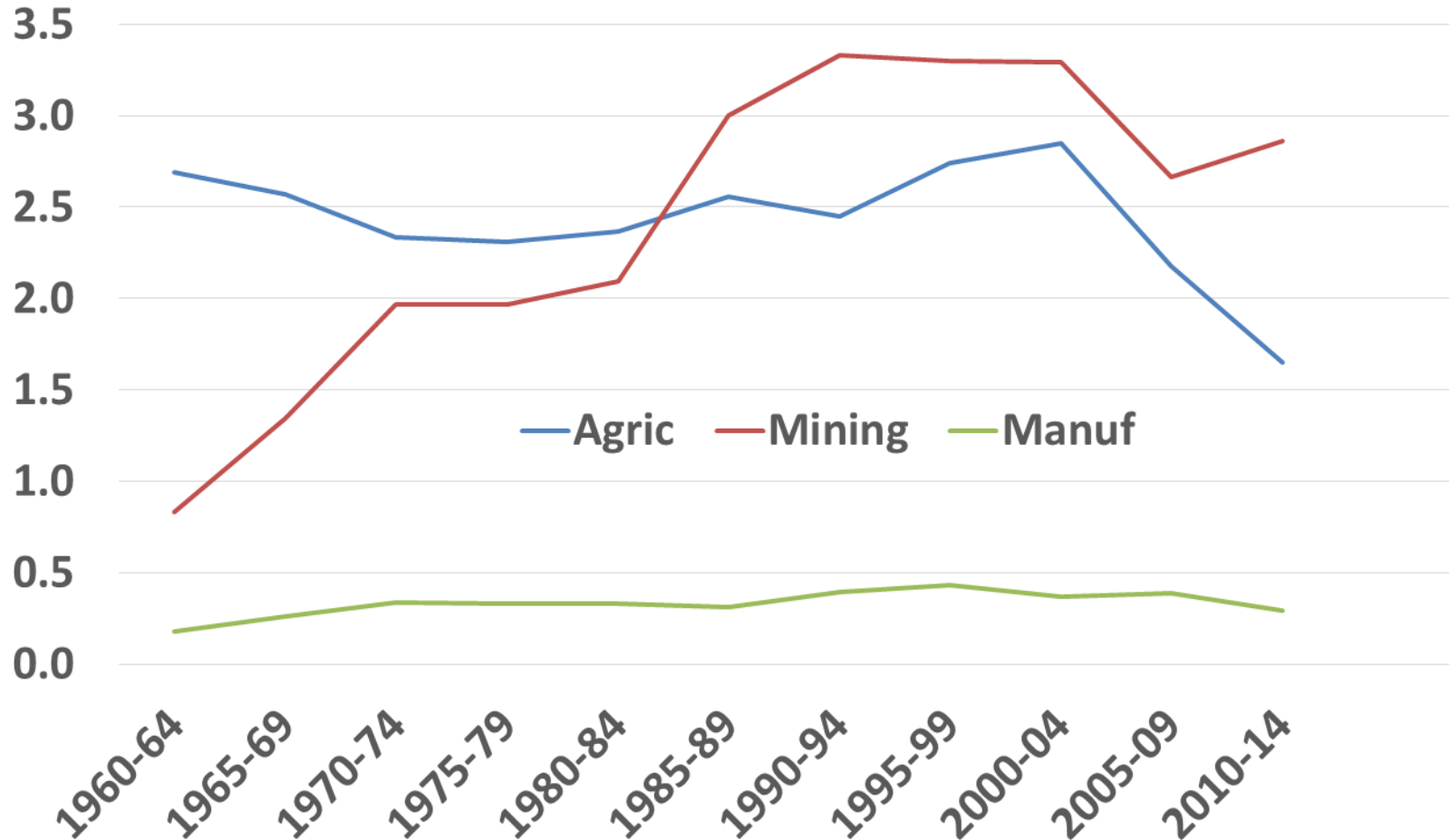
- ✚ But, **comparative** advantage depends on how Australia's export response (to changes in relative prices of sectors' outputs) **compares with rest of world's**
- ✚ Aust retained its agric comparative advantage through to end of 20th century, before slipping
 - and recent decline is partly because of long drought

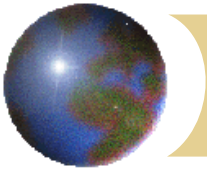


Revealed Comparative Advantage Index

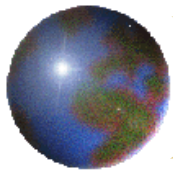
Australia, 1960-2014

(sector's share of Aust exports/sector's share of global exports)





Where to from here?



Key factors likely to affect future competitiveness of Aust agric

- ❖ Price of agric relative to mining exports
- ❖ Real exchange rates for Aust, its trading partners, & agric competitor countries
- ❖ Agric protection growth in Asia
- ❖ Devts in preferential trade agreements
- ❖ Agric R&D investment in Aust vs ROW



Price of agric relative to mining exports

❖ Latest World Bank forecast (Jan 2016)
for 2020 vs 2015, in real terms:

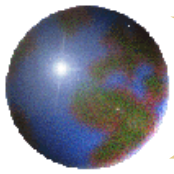
- ❖ Agric: -3%
- ❖ Energy: +6%
- ❖ Mins/metals: -3%

=> No improvement for agric by 2020

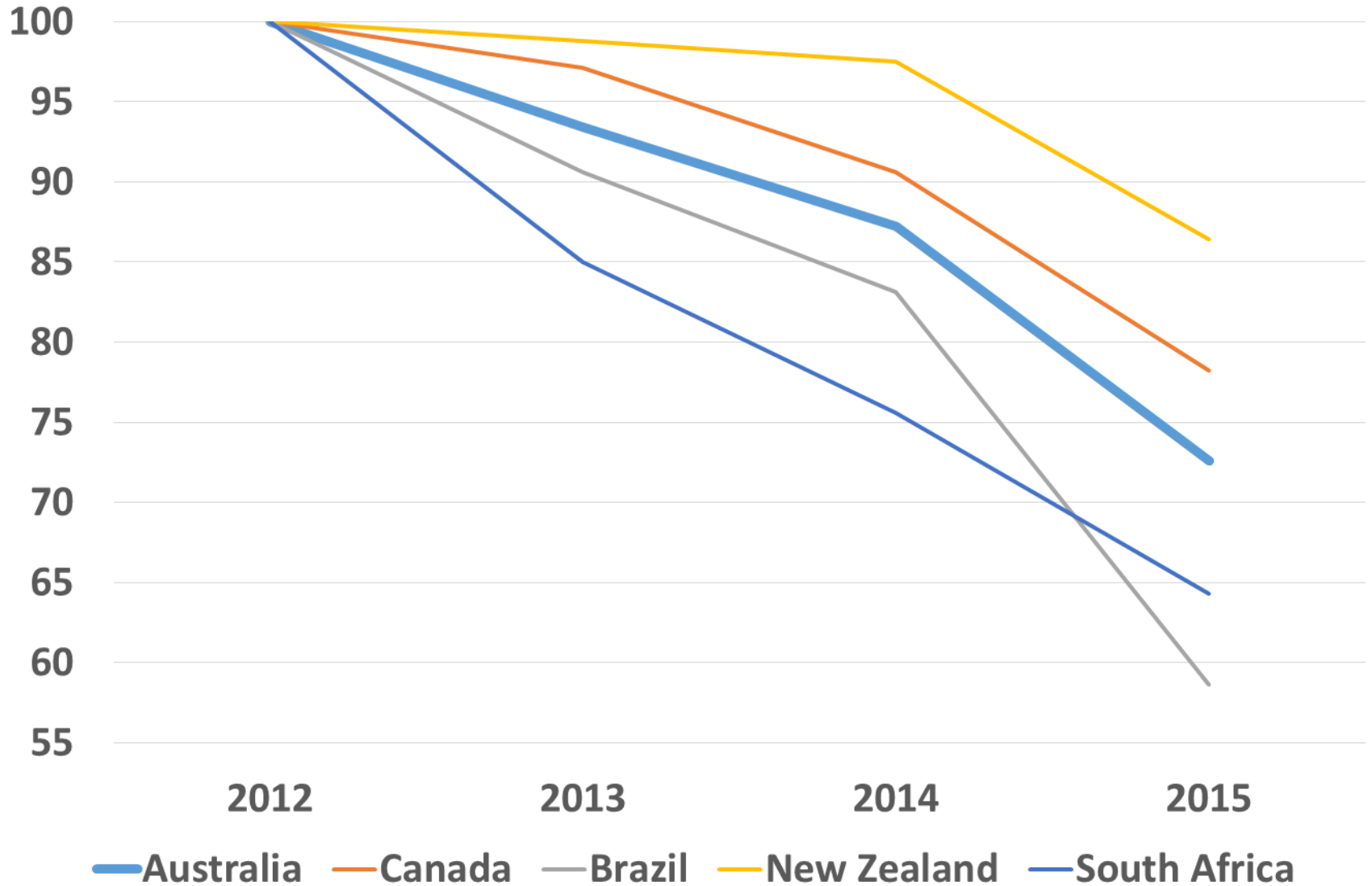


Real exchange rates (RERs)

- ✚ If mineral prices and prod'n remain flat, Aust RER may remain near current level
- ✚ But are Argentina, Brazil, Russia, Ukraine, South Africa, ... also likely to have low RERs?



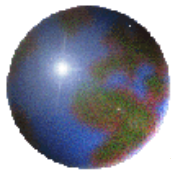
Nominal depreciations against US\$





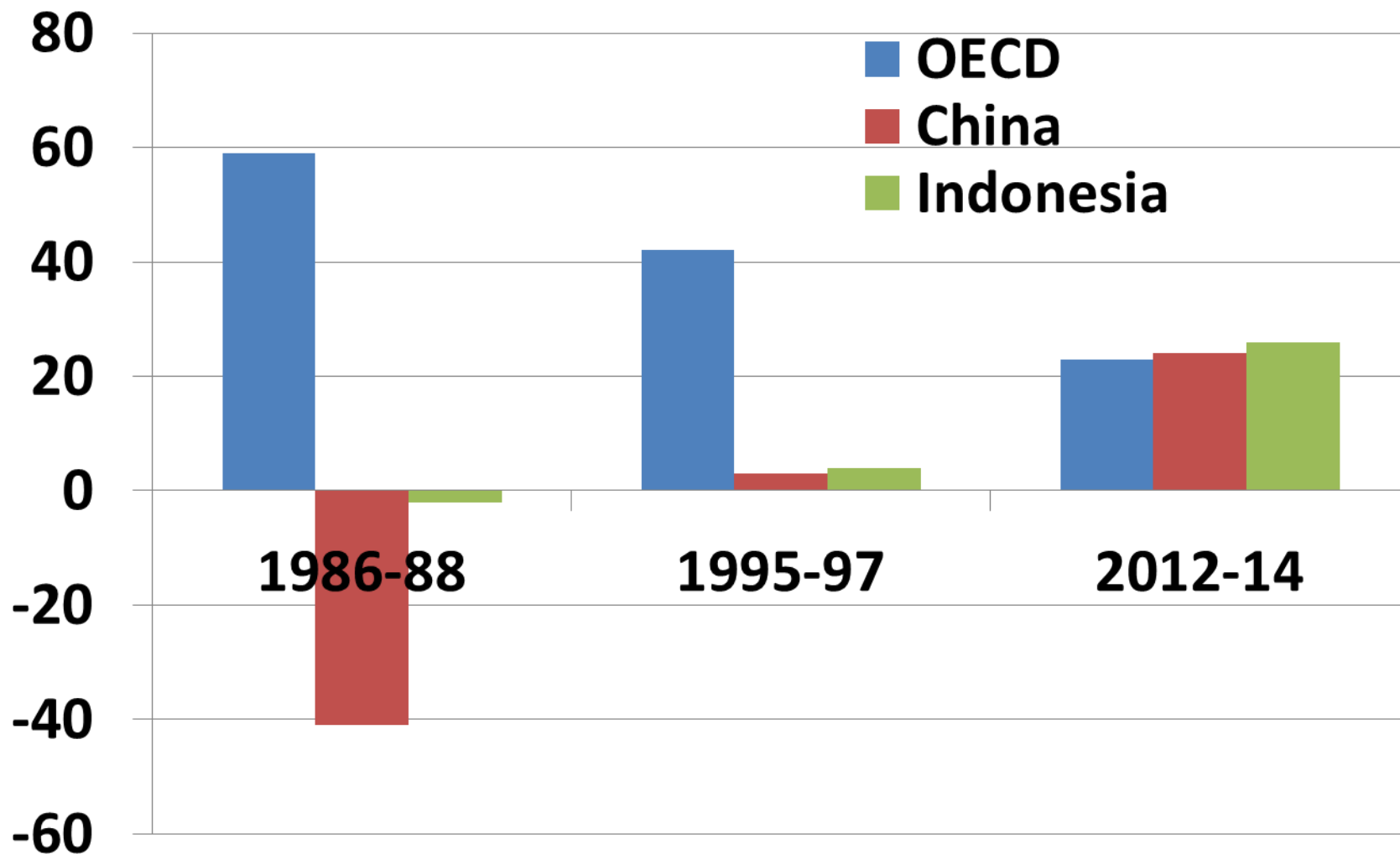
Agric protection growth in Asia

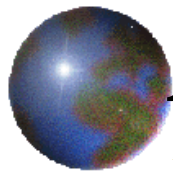
- ⊕ Food security concerns may increase as Asian industrialization proceeds
- ⊕ China, India and Indonesia may not allow food self-sufficiency to fall greatly
 - ⊕ and so may follow the agric protection growth path of Japan, Korea and Taiwan
 - ... reducing export prospects for Aust farmers



Agric nominal assistance: China & Indonesia already past average for OECD countries (%)

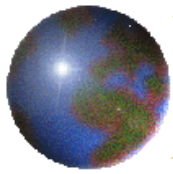
Source: World Bank (2013) and OECD (2015)





Altered agric. competition abroad due to bilateral Free Trade Agreements

- ❖ Australia's FTAs with **Japan, Korea** and **China**: lagged New Zealand's and Chile's
 - ❖ & Ja and Ko gains soon to be regionalized via **TPP**
- ❖ **FTA with China** will give Australia an edge over North America, given that **China is not part of TPP**
 - ❖ & may help slow **China's ag. protection growth**

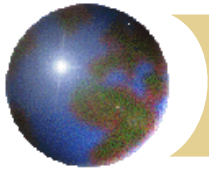


Free Trade Agreements: what next?

✚ An **Australia-EU28 FTA?**

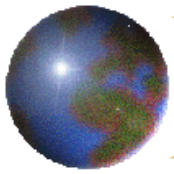
- ✚ Important if **TTIP** is signed and if WTO's Doha negotiations continue to languish

✚ An **APEC-wide FTA?**

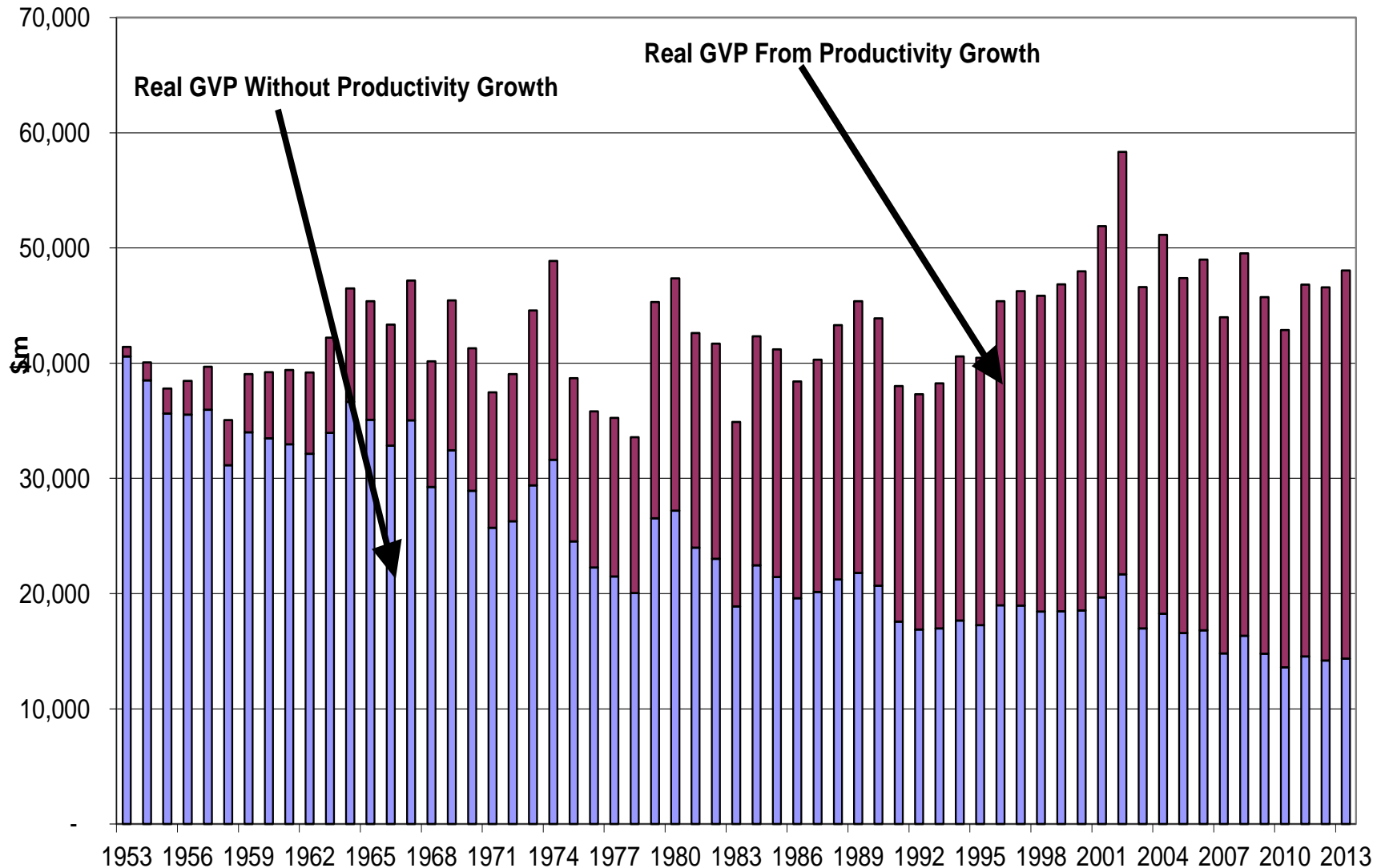


Agric R&D investment in Aust vs ROW

- ⊕ Is enough being invested by Australia in agricultural R&D?
- ⊕ Past returns to agric. R&D have been very high
 - ⊕ and ag. **productivity growth** has provided the majority of Aust. farm output growth since 1950s



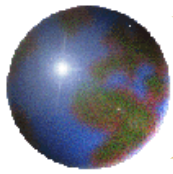
Aust agric output, & productivity growth's contribution since 1953





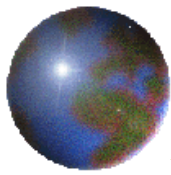
Agric R&D investment in Aust vs ROW

- ⊕ Is enough being invested by Australia in agricultural R&D?
- ⊕ Past returns to agric. R&D have been very high
 - ⊕ and ag. **productivity growth** has provided the majority of Aust. farm output growth since 1950s
- ⊕ However, real agric. R&D investment as % of agric GDP has plateaued since 1970s, & agric. productivity growth has slowed since 1990

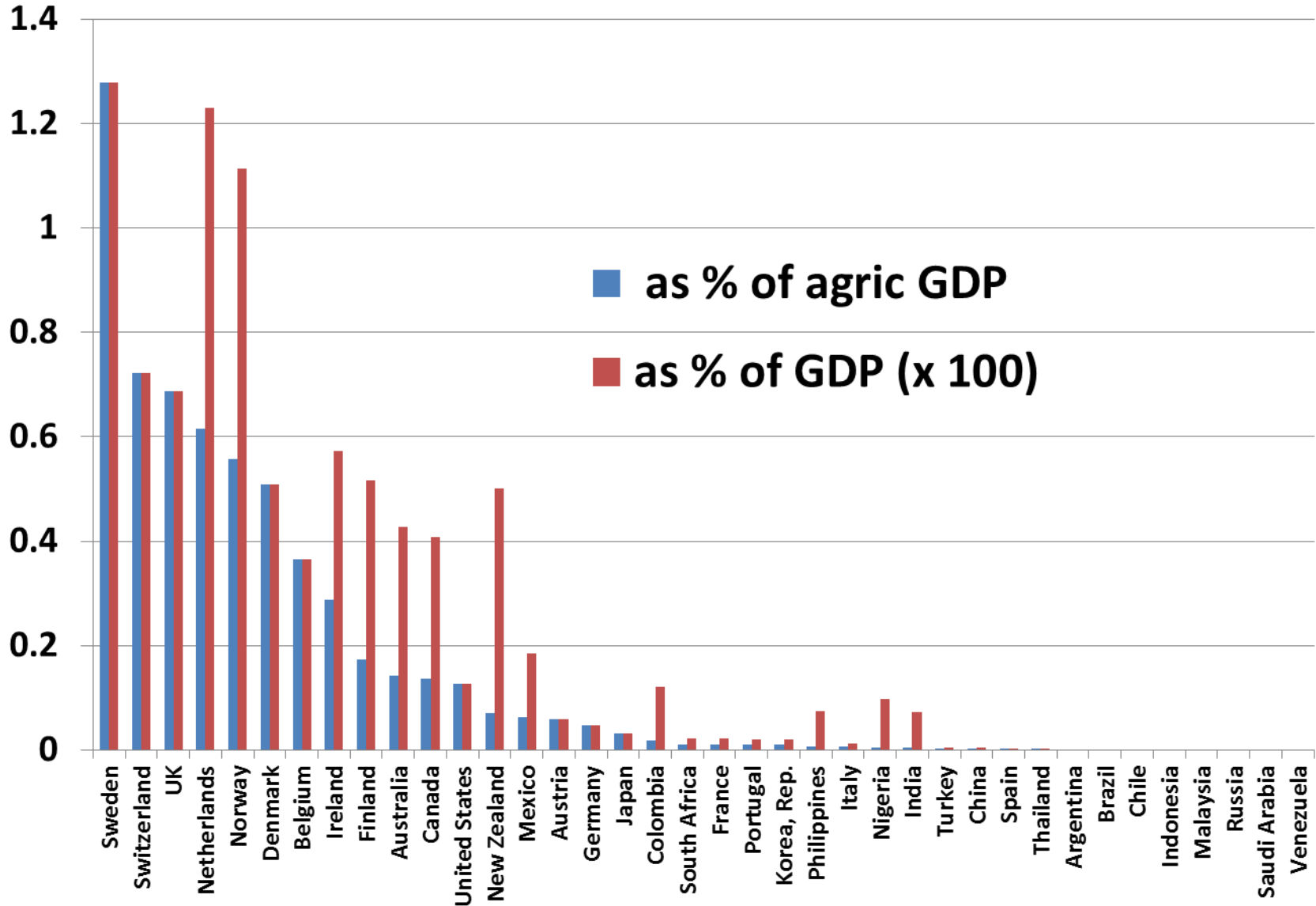


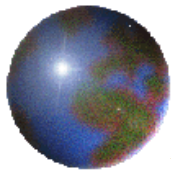
How to speed ag productivity growth?

- ⊕ Producers could vote to increase R&D levy
 - ⊕ Especially if not all **\$-for-\$ subsidy** is being used
- ⊕ **Private share of ag R&D** in Aust. would rise if **GM** technology was more-widely embraced
 - ⊕ and would **speed adaptation to climate change**
- ⊕ Aust could boost its investment in **CGIAR**, and encourage other countries to do likewise
 - ⊕ and thereby enjoy more technological spill-ins



Intensity of contributions to CGIAR in 2013-15 (relative to national GDP in 2014)

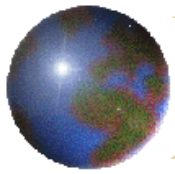




Messages from global economy-wide modelling projections

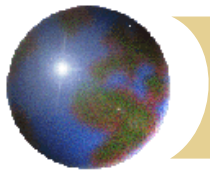
(e.g., Anderson & Strutt, *AJARE*, Oct 2014)

- ✚ By 2030, Asia could consume as much as **half the world's grain and fossil fuel**, and 3/4^{ths} of its other minerals
 - ✚ paid for by expanding manuf & services exports
- ✚ So bright LR prospects for **Aust mining exports** still, but would be dampened if Asia:
 - ✚ grows less rapidly than projected, or
 - ✚ taxes carbon emissions/supports renewable energy
- ✚ Extent of on-going benefit to **Aust farmers**, & our capacity to feed Asia, would be dampened the more Asia's emerging economies protect their farmers



Agric policy options for Australia

- ✚ More-liberal policy toward GMOs?
- ✚ More-liberal policy re. inward agric FDI?
- ✚ Relax limit on leased land to allow cropping, not just grazing, in our tropics?
- ✚ Raise \$-for-\$ limit on agric R&D investment above the current 1% GVAP?



References cited

- ✦ ACOLA, **Australia's Agricultural Future**, Expert Working Group Report from the Australian Council of Learned Academies to the Chief Scientist, Melbourne: ACOLA, July 2015 www.acola.org.au/index.php/projects/securing-australia-s-future
- ✦ Anderson, K. and A. Strutt (2014), 'Emerging Economies, Productivity Growth, and Trade with Resource-Rich Economies by 2030', *Aust Jou of Agric and Resource Econ* 58(3): 590-606, October.
- ✦ Corden, W.M. (1984), 'Booming Sector and Dutch Disease Economics: Survey and Consolidation', *Oxford Econ Papers* 36: 359-80.
- ✦ Freebairn, J. (2015), 'Mining Booms and the Exchange Rate', *Aust Jou of Agric and Resource Econ* 59(4): 533-48, October.
- ✦ Garnaut, R. (2014), 'Australia and Resources in the Asian Century', *Aust Jou of Agric and Resource Econ* 58(3): 301-13, July.