

# Observations on the Export Boom

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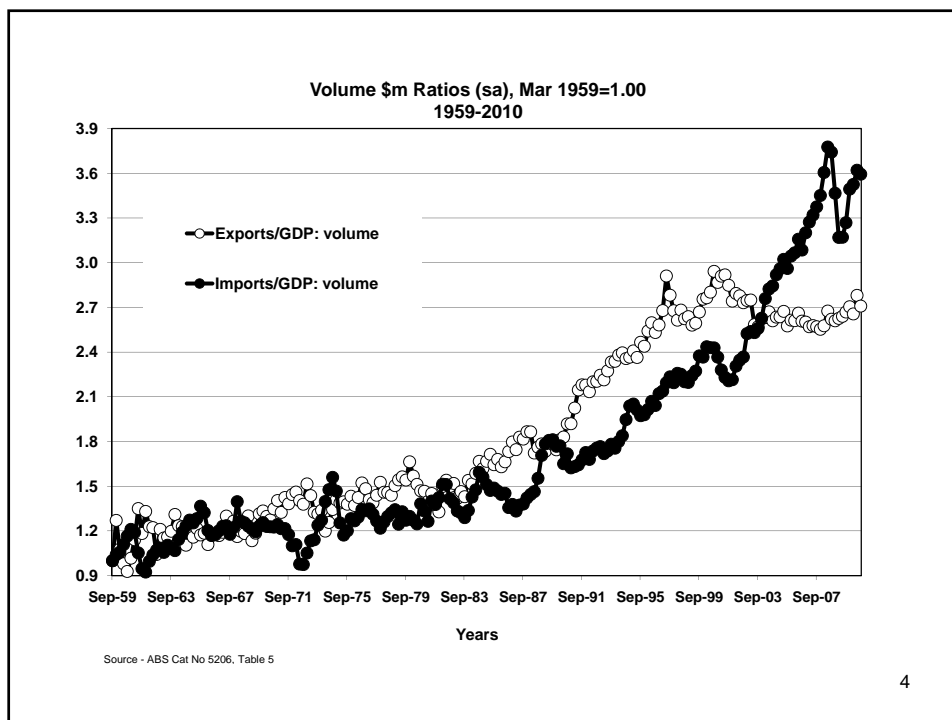
Presentation to Conference  
[The Resources Boom: Understanding  
National and Regional Implications](#)

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Melbourne  
23 February 2011

- The 1970s booming export sector model focuses well on resource competition between sectors and played a key role in explaining the key policy issues of the day. Now it needs to be extended to focus on different issues that are specific to terms of trade effects.
- Income effects need to be more fully explored
- So do dynamics. It is important to think of a terms of trade mining boom in three stages each of which has very different implications for the evolution of the economy

- The three stages are
  - (i) A large increase in export prices, terms of trade and large income gains to who own mineral resources or those who tax the income
  - (ii) A significant investment boom which is transitory (?) in nature
  - (iii) A return to a mining export sector which makes few direct demands on resources and operates as an enclave except to the extent that it is taxed or owned by Australians who spend their income here. In this stage most of the resource issues revolve around competition among sectors other than mining.
- The following figure – which emphasizes the current slump in export volumes and an *import* boom - provides an illustration of the need to think about mining boom in stages

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- I will focus on three issues each of which has a dynamic element and which are mainly of interest in the first two stages
- First, the empirical importance of distinguishing between productivity growth as typically measured and income effects from the terms of trade
- Second, comparisons between RGDP and RGDI between Australia and the US and over different decades in Australia
- Third the large changes in relative prices that are occurring

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## Productivity Growth and Terms of Trade

### The Production-Income Gap

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- Large terms of trade changes generate large real income changes. How should they be measured?
- In a closed economy production and income are equal to each other in real or nominal terms. To calculate the real value of production current values are deflated by their own output price deflator.
- In an open economy the relationship between production and income in “real” terms is more complex. Although the concept of real **physical** production remains unchanged, whether the economy is closed or open, there is more than one definition of “real” income that can be adopted. The complexities arise in the treatment of the contribution of “real:” exports to “real “ national income

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- Suppose there is no increase in export volume of the nation but the export value doubles on world markets. Assume the exchange rate is fixed and nothing else changes.
- The calculation of **real physical output**, for example the number of units of coal produced, is the same in a closed or an open economy,. Current export values are deflated by the export price deflator.
- But what about **real income for the nation**? How should real income measurement accommodate increasing export values not matched by increasing volumes
- This is not just a national accounting issue but of fundamental importance for our understanding of the operation of the economy

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- From a national income viewpoint increases in productivity or increases in the terms of trade share many common features
  - Both deliver real income increases
  - Both may involve resource reallocation effects which may further add to national income
- But the understanding of the analytics of terms of trade effects is much weaker than our understanding of productivity changes, presumably because terms of trade on average, have changed only marginally in the past.

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### Comments on the T/T effect on national income

- An increase in the world export price, *ceteris paribus*, adds to the income of an exporting nation. For example, if the world oil price doubles real income increases in Saudi Arabia, assuming they own the oil wells and even if oil production remains unchanged.
- How “real” national income should be calculated to measure this income increase has been discussed for quite some time among economists and national accountants without arriving at complete agreement.
- The ABS measures the terms of trade impact on national income by deflating the current value of exports by the import price deflator rather than by the export price deflator.
- The rough logic underpinning this “real” income calculation is that from the nations viewpoint the purpose of exports is to buy imports. Hence the value of exports should be measured in import unit equivalents
- This calculation produces Real Gross Domestic Income (RGDI)

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- Export contribution to RGDP:

$$\frac{P_x * X}{P_x}$$

- Export contribution to RGDI:

$$\frac{P_x * X}{P_m} = \frac{P_x}{P_c} * \frac{P_c}{P_m} * X$$

where:  $P$  is price,  $X$  is volume, and subscripts  $x$ ,  $m$ , and  $c$  are exports, imports, and consumption, respectively.

### Notes on Export Deflation

- *Terms of Trade Matter:* The import price deflator is applied to the *value* of exports *hence* the terms of trade is applied to the export volume. “Real” income can increase because import prices fall or export prices rise.
- *Export Volumes Matter:* “real” income depends on the real volume of exports. Hence an export volume boom, in response to a terms of trade improvement, produces two sources of real income gain. The export deflation method implies that a “real” income gain from a 20 percent increase in export volume is equivalent to a 20 per cent increase in the terms of trade. But there is one important difference (not captured by the deflation) – the increase in the terms of trade increases income without the need for additional inputs. This may or may not be true of the increase in export volume.

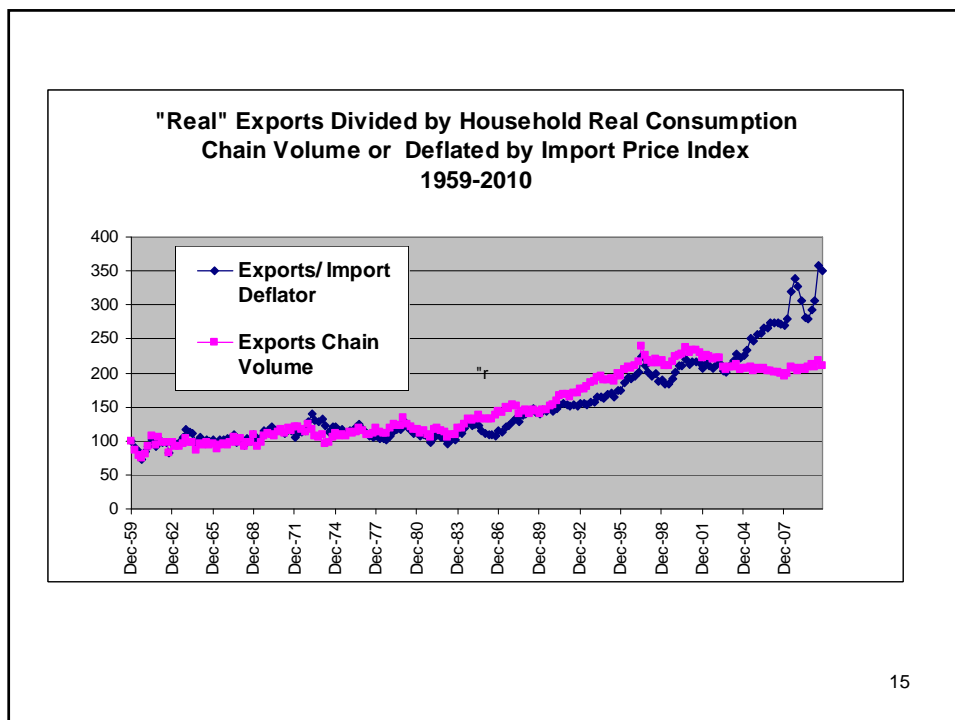
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- *Exchange Rates between Countries do not Matter:* An exchange rate change affects export and import prices equally, leaves both the terms of trade and the export deflation outcome unchanged.
- *Import composition does not Matter.* Only import prices enter into the “real” income calculation. There is no account of whether imports change in response to the terms of trade adjustment, whether the imports are consumer goods, capital equipment and so on, There is also no account of whether there is a domestic industry producing close substitutes for imports or whether the value of imports is greater or smaller than the value of exports.
- *Ownership of Export Sector Resources does not Matter:* Nor is there any account of whether the sector uses any Australian factors of production.

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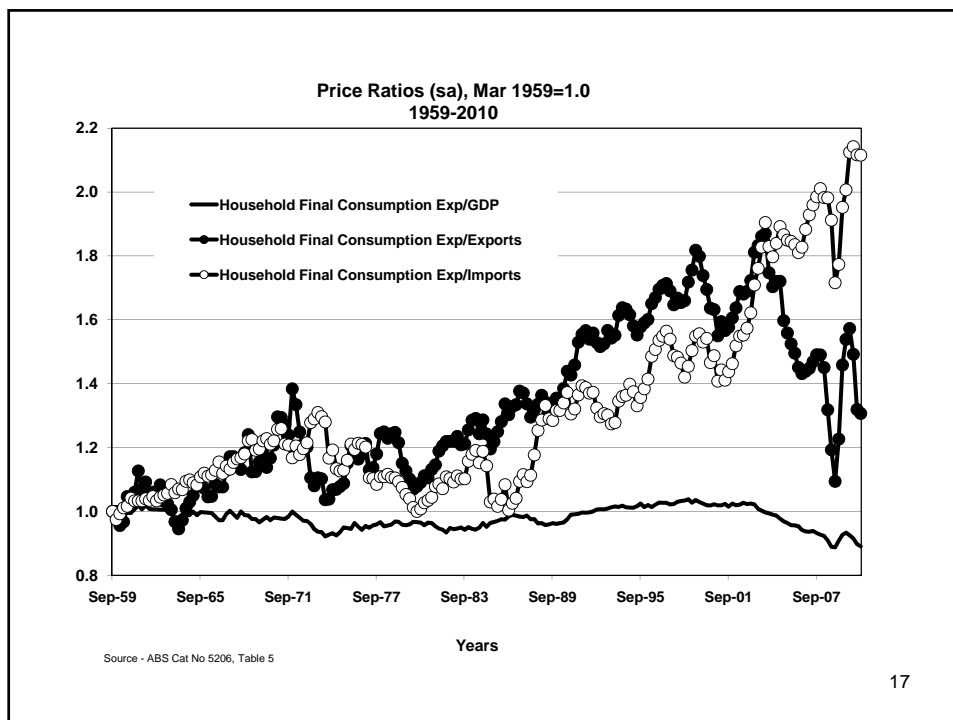
- The application of the terms of trade deflator can vitally affect our interpretation of history
- For example export stimulus to the economy – terms of trade adjusted - over the last five years is approximately equal to that of the export stimulus over the five years 1983 to 1988
- So why are we getting so excited?

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- The terms of trade may not change but there may be very large impacts on the economy occurring as a relative of import and export price changes relative to domestic prices but in the terms of trade adjustment import and export prices changes cancel out so there appears to be nothing of special interest occurring
- Does the large fall in export prices. relative to domestic prices, 1980-2001, hidden by the large fall in import prices if we terms of trade adjust, explain why the volume of exports, relative to GDP, has not increased over the last decade.





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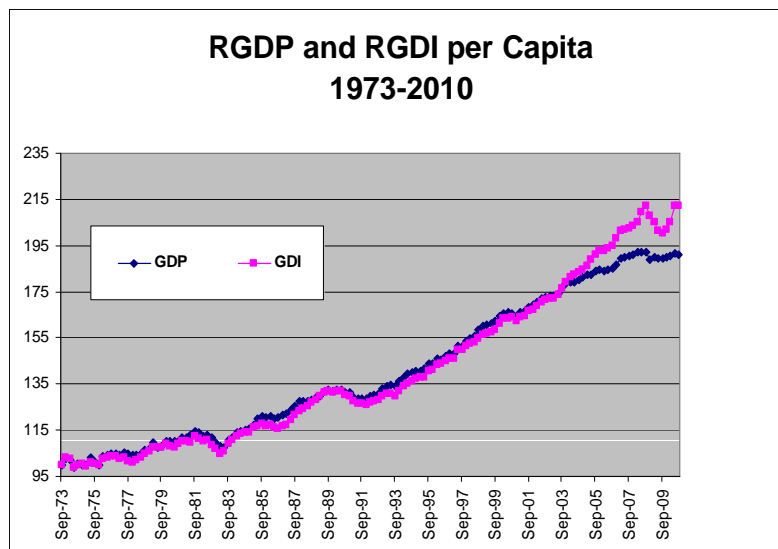
## Summary

- Which price index is used to deflate exports is important and affects the timing, and our understanding of the nature, of the export boom
- If the export price deflator is applied to export values it shows that the export volume boom is a phenomenon of the 80's and 90's and **not** an outcome of the last decade which has been a **sluggish** decade for Australian exports.
- If the import price deflator is applied to export values it shows that the current export boom is a modest addition to the continuation of the trend growth of the 80s and 90s.
- Which ever deflator is applied there is no extraordinary export boom over the last decade. It is yet to arrive

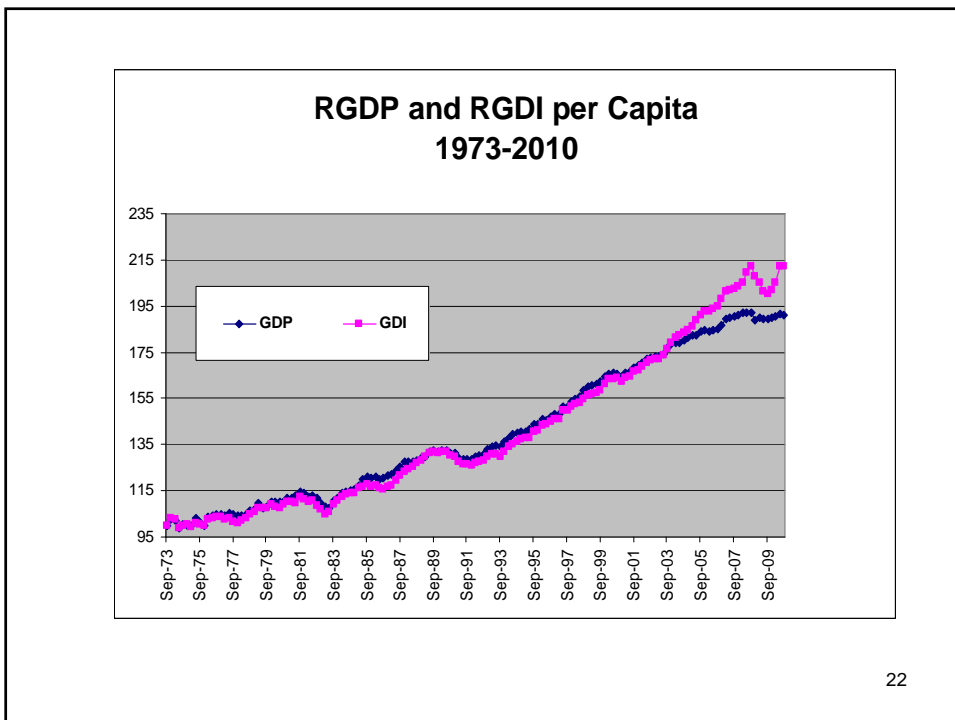
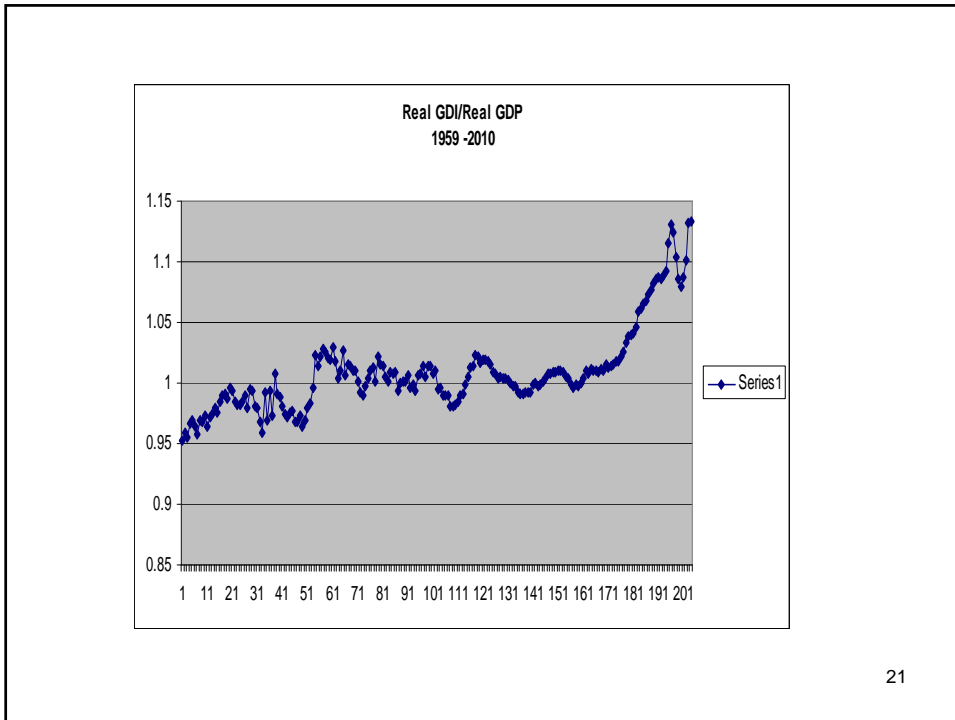
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- Lets return to the macro data, RGDP and RGDI per capita
- The following will illustrate the very large impacts on aggregate well being if we adopt the RGDI per capita measure

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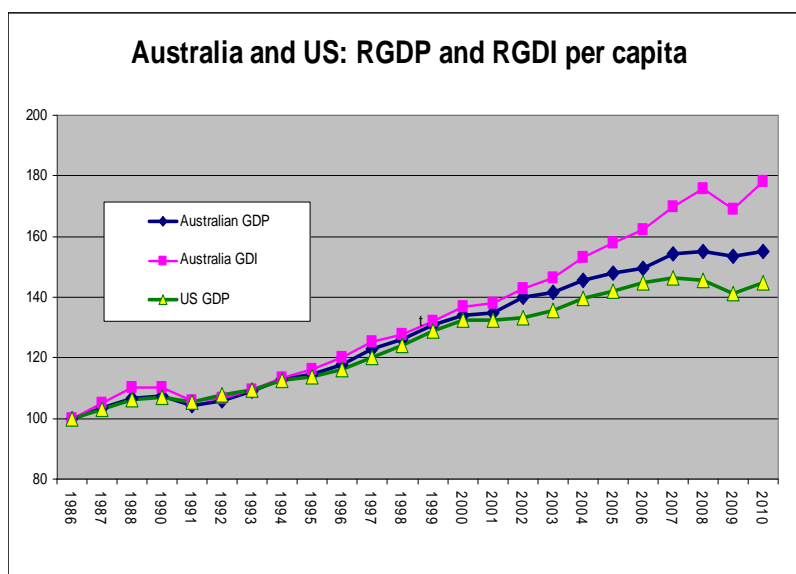


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- Recessions generate losses in output per capita. Positive T/T effects generate per capita income increases.
- How does this positive T/T effect compare to the negative recession effects when unemployment increased to 10 per cent?
- The positive T/T effect is large relative to the negative effects of the 1980s and 1990s recessions
- Note how very little real per capita income growth has occurred over the last five or six years apart from the T/T effect
- Note that there is GFC slowdown but the timing and level is very different for RGDP and RGDI per capita.
- Look at the US for a moment because they are experiencing a recession and no positive terms of trade effects.

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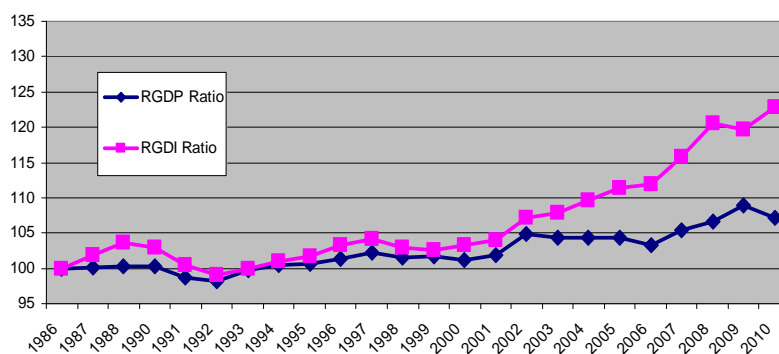


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- This Australian-US comparison is really quite remarkable
- It may be better understood if I subtract the Australian performance from that of the US over the period 1986-2010
- In terms of RGDP per capita Australia has improved relative to the US by 7-8 per cent
- In terms of RGDI Australia has pulled away by the order of 22-25 per cent, an extra-ordinary change, and a change that has occurred in the context of very slow real export growth in Australia
- If this improvement is maintained Australia's "real" income per capita is about the same as the US, maybe even higher
- The terms of trade effect is more important than any productivity catch up produced by technical change or from avoiding the current recession

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Australia - US Ratios  
RGDP and RGDI Per Capita  
1986-2010



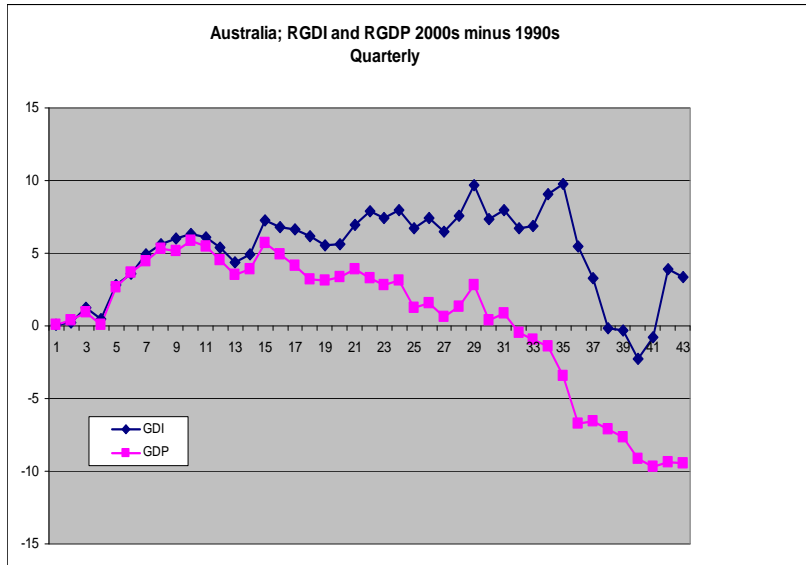
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- Now I return to Australia and compare the changes in RGDP and RGDI over the last three decades
- The technique adopted is the same as in the Australia-US comparison

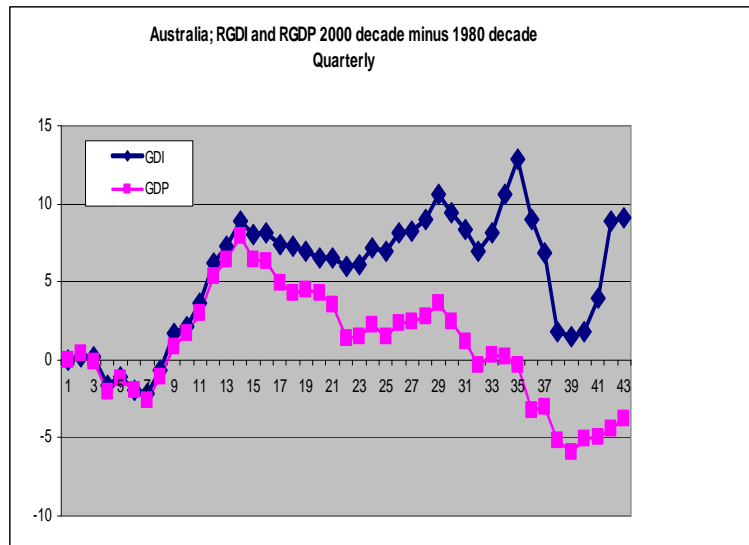
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- First, we take GDP per capita for three periods beginning at 1980, 1990 and 2000. In each instance the starting date is set at one hundred.
- Then for the first two periods the evolution of GDP and GDI per capita is subtracted from the time path of GDI and GDP per capita from 2000.
- The two figures plotting these comparisons across decades are remarkably similar and tell similar stories

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## The 1980-2010 comparison

- The GDP comparison indicates the severity of the 1982 recession during which 8 per cent of GDP per capita was lost relative to the uninterrupted growth of the 2000 decade during the early years.
- This is a clear indication of the cost of recessions.
- Then the recovery from the 1980s recession begins to claw back the differential between the decades until the relativity at the start of each decade is restored nine years after the start of the 1980s recession

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- Over the last few years RGDP has dropped below the 1980s outcome
- If the 2000 decade is accepted as a counterfactual then the area between the RGDP comparison and the axis is the accumulated cost of the recession. The cost is about 20 per cent of lost GDP
- Over the last two years GDP is below what it would have been if it had followed the 1980s path
- There are similar outcomes for the 1990s 2000s comparison

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- In both instances the comparisons show that Australian RGDP per capita growth performance over the last decade is now worse than in the previous decades even though the current decade avoided the output loss of a recession
- The RGPI of the current decade is better of course but the terms of trade effect has just offset the RGDP that has been lost this decade, relative to the others. The T/T effect has kept in place the income gained in this decade from avoiding a recession similar to that which occurred in the 1980s and 1990s

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## Summary and conjectures

- The export volume response to export prices has not begun yet. Indeed relative to the trends of the 80s and 90s export volumes are well below trend.
- If the terms of trade remain where they are or improve further then once export volumes begin to increase the mineral boom will become very substantial indeed.
- But the direct resource requirements may not increase so substantially because these requirements are driven by investments in infrastructure rather than export production

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- Calculations suggest that the positive effect of the T/T boom has been greater than the negative effects of the recessions of the early 1980s and 1990s
- Does this mean that a substantial reversion of the T/T will generate a substantial recession? Or
- Export volume increases will offset any potential terms of trade fall

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- The key questions to be answered
- Is it right to compare a dollar gained from the terms of trade with a dollar from productivity growth?
- Will a 10 per cent increase in exports cancel out a 10 per cent fall in the terms of trade as implied by the calculations?
- What are the income allocation effects of the terms of trade increase?

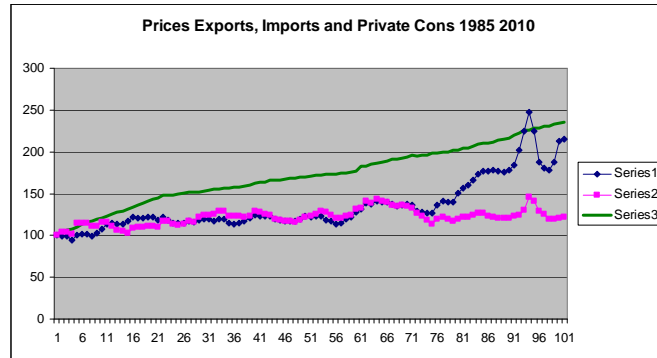
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- Over to Peter for the answers to these and so many other questions

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- Phase one
  - improvement in the terms of trade, increased profits of the mining sector, large potential income gains to the nation depending on how much of an enclave the mining sector is
  - the exchange rate appreciation will reflect the enclave nature and the allocation of some of the gains to those who consume imports

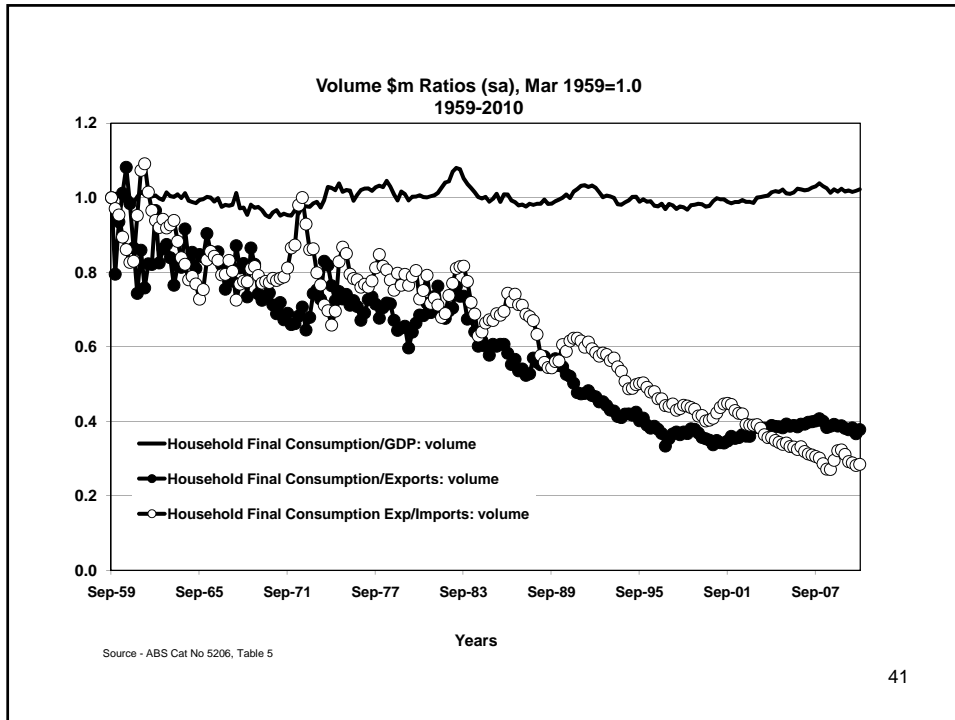
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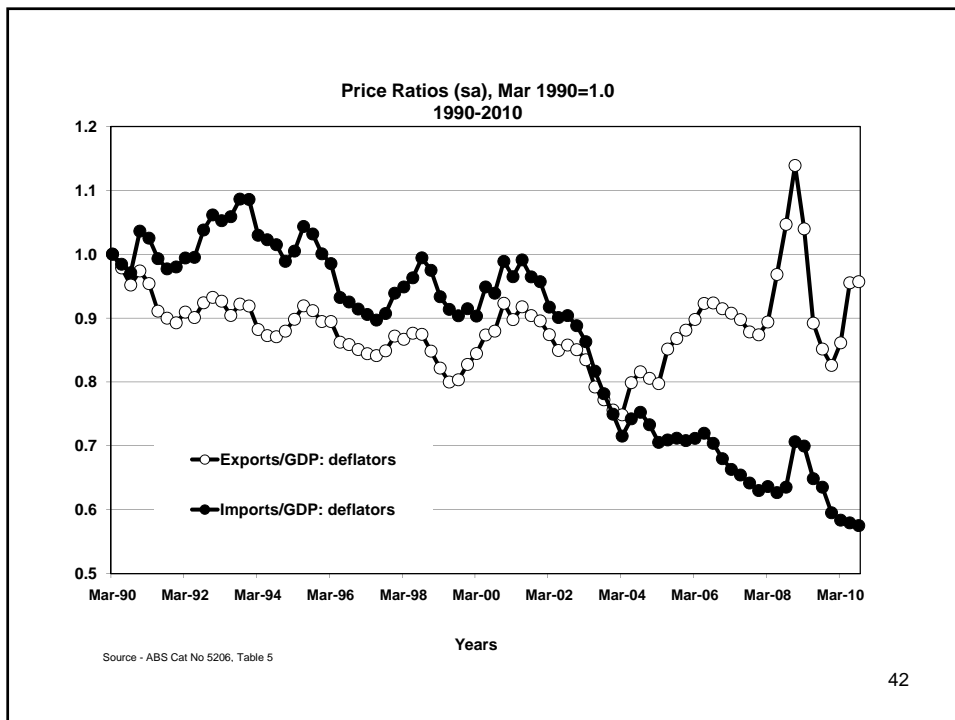
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- The T/T have increased real income relative to real GDP by 9-11 per cent
- The export/GDP volume has not changed so the resource flow to exports, relative to the past has not increased. This increase in national income from the T/T is a **free** gift to the nation
- Have not seen anything like this free gift over the last half century
- Much bigger than the mid 1970s gain which tended not to last

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