

PRODUCTIVITY AND PAY:  
DEVELOPMENTS AND ISSUES IN  
LABOUR'S SHARE OF INCOME GAINS

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# 1. Introduction

The background to this lecture is that, over the past decade, there has been quite a substantial fall in the share of the economy's income that goes to labour.

Two key issues are:

- whether this means that labour has been missing out on its share of income gains; and
- whether some corrective action to raise wages is in order.

I wrote an article in the Australian Financial Review in January that said it was not clear that labour has been missing out. The big shift in Australia's terms of trade had complicated things, meaning we had to look at these issues in a fresh way.

So I am going to elaborate on that today. My central intention is to address the question, 'What do shifts in Australia's terms of trade mean for the usual 'rule of thumb' that links pay rises to productivity growth?'

I think the end point I reach is fairly straightforward. It may even seem obvious to some. But the path taking us there is a bit complex, with a few twists and turns -- which probably makes the talk today a bit hard going in places.

So let me give you an idea of the destination.

A shift in Australia's terms of trade opened up a wedge between the prices of the goods and services that Australia produces and the prices of the goods and services that Australians consume.

This means that there are two ways to define real wages:

- as a real cost to producers, referenced against movements in product prices, and
- as real income to labour, referenced against movements in consumer prices.

When we are looking at costs, competitiveness and production efficiency, we should reference real wages to product prices. When we are looking at distribution and fairness, we should reference real wages to consumer prices.

And the bottom line is, when we use consumer prices as the reference, the recent fall in the labour income share does not bring obvious fairness concerns.

However, before launching into the journey, I should raise two important disclaimers.

First, I have come to this topic from a productivity angle, since productivity has been my area of research for some time. I am aware that there are all sorts of complicating factors and considerations that go into wage setting. But I have the luxury of being able to put them aside today.

While I am taking a simplified view, I hope I can nevertheless provide those of you with background and expertise in the wage-setting area with some food for your thoughts.

Second, what I say today is based on work I did recently as a Visiting Researcher at the Productivity Commission. The Commission should be releasing my paper, *Labour's Share of the Growth in Income and Prosperity* in the near future.

However, what I say today should not be attributed in any way to the Productivity Commission. That would always be the case. But it is especially so, given that I am no longer at the PC and that I will take the discussion today a little further than I did in the Visiting Researcher paper.

## **2. Background: wages, productivity and the labour income share**

My specific focus today is on growth in real wages, growth in labour productivity and changes in the share of income from production that is allocated to labour.

It's a bit of a boring place to start, but to make sure we have a common understanding of concepts, let's run through some definitions.

### *Definitions*

When I refer to nominal values, these are the values observed in prices of the day. When I refer to real values, these are the values once price inflation has been stripped out.

Real wages are the nominal average hourly wage, deflated by an index of product price inflation. The use of product prices means that this real wage represents the real cost to producers of an hour of labour. This real wage, based on product prices, will be referred to as the Real Product Wage.

I will get onto consumer prices later.

Labour productivity is a 'real' or 'volume' concept. It is the volume of output of goods and services produced in aggregate, divided by the number of hours worked in aggregate.

It is a measure of all the things that affect the volume of output produced, apart from the number of hours worked. And so, labour productivity reflects many things, including the

amount of capital (such as machinery and equipment) that is used, changes in technology and the rate of innovation, the quality of management, the skills of workers and the work arrangements under which labour is organised.

Real unit labour costs are real labour costs divided by the volume of output – that is, real labour costs per unit of output.

They are also equivalent to the Real Product Wage – which is the cost of an hour of labour – divided by labour productivity – which is the output from an hour of labour.

Real unit labour costs increase when growth in real product wages exceeds growth in labour productivity and, conversely, real unit labour costs fall when growth in the real product wage does not keep pace with labour productivity growth.

Finally, with a little bit of mathematics, it can also be shown that the real unit cost of labour is equal to the labour share of income – that is, the nominal costs of labour, divided by the nominal value of income.

The key points from these definitions are that:

- the labour income share is equivalent to real unit labour costs;
- growth in the labour income share is equal to growth in the real product wage less growth in labour productivity; and
- rises and falls in the labour income share tell us about the relative growth in the real product wage and in labour productivity.

A fall in the labour income share, such as we have recently experienced, signifies that growth in the real product wage has not kept pace with growth in labour productivity. But a rise in the labour income share would mean that growth in the real product wage has exceeded growth in labour productivity.

### *A rule of thumb*

Now, to some, it is a 'stylised fact' that the labour income share remains constant, after it was branded as such by Kaldor in the 1950s.

However, international evidence since the Second World War suggests otherwise. That evidence shows there have been variations in the labour share in many countries, including Australia, that go beyond short-term fluctuations associated with the business cycle.

The labour income share and the equivalent relationship between real wages and labour productivity growth have also been of vital interest in the context of reviewing aggregate wage trends and in assessing parameters for wage setting.

Although there are many complications and extenuating factors, it has been something of a rule of thumb that productivity growth provides a benchmark for nominal wage rises.

The comparison of nominal wage growth against labour productivity – or growth in nominal unit labour costs – helps in the assessment of potential inflationary pressures.

The comparison of real wage rises against labour productivity growth – or change in the labour income share – helps in the assessment of pressures on employment and competitiveness.

A fall in the labour income share can be advantageous for employment and the competitiveness of producers. A rise in the labour income share can be deleterious for employment and competitiveness.

I say it is a rule of thumb because there is no economic law that pins real wage growth to labour productivity growth.

We have seen times when real wage growth was in excess of labour productivity growth – that is, there was a rise in the labour income share -- and there were adverse consequences.

This was the case, for example, in the 1970s when the labour income share rose in association with what was referred to at the time as ‘the real wage overhang’. This was widely considered to have raised production costs and added to rising unemployment.

The subsequent fall in the labour income share was seen as a correction. The Prices and Incomes Accords helped to bring down the labour income share through the 1980s as some growth in nominal wages was traded off for improvements in the ‘social wage’.

However, putting aside episodes of ‘correction’, a fall in the labour income share has raised concerns about ‘fairness’ – whether labour is sharing equitably in the gains from productivity growth.

This is the case, for example, in the US where there has also been a fall in the labour income share over the last decade – but for different reasons.

Economic efficiency and equity are both important considerations – and they are interrelated to some extent.

In the absence of other major considerations, the usual rule of thumb has been to go for a ‘Goldilock’s solution’—a constant labour share where real wage rises are neither ‘too hot’ nor ‘too cold’ in relation to labour productivity growth.

Again, though, it is not a law and there are no set guidelines about what weight should be given to this rule of thumb among other considerations.

*Let me give a high level summary so far:*

- *A fall in the labour income share means real wage increases have not kept pace with labour productivity growth.*
- *While this might be good for business and employment, it ordinarily raises concerns about fairness – whether labour is getting its share of economic gains.*

### **3. The 2000s: the terms of trade, productivity and income growth**

I now want to turn to the more-recent experience over the past decade.

Before looking into distribution, it is important to have in mind what happened to growth in total income over the 2000s. Here we see a massive shift in the terms of trade, which lifted the growth in total income.

The terms of trade are the ratio of export prices to import prices. Australia's terms of trade surged by around 80 per cent over the first decade of the 2000s, to levels hardly seen over the last 140 years. Export prices rose on the back of steep rises in minerals prices on world markets, and import prices fell with appreciation of the dollar and lower world prices for some products.

This jump in the terms of trade provided strong growth in real income through two mechanisms.

- First, higher export prices meant a given volume of exports brought in more income.
- Second, lower import prices raised the purchasing power, or real value, of each dollar earned.

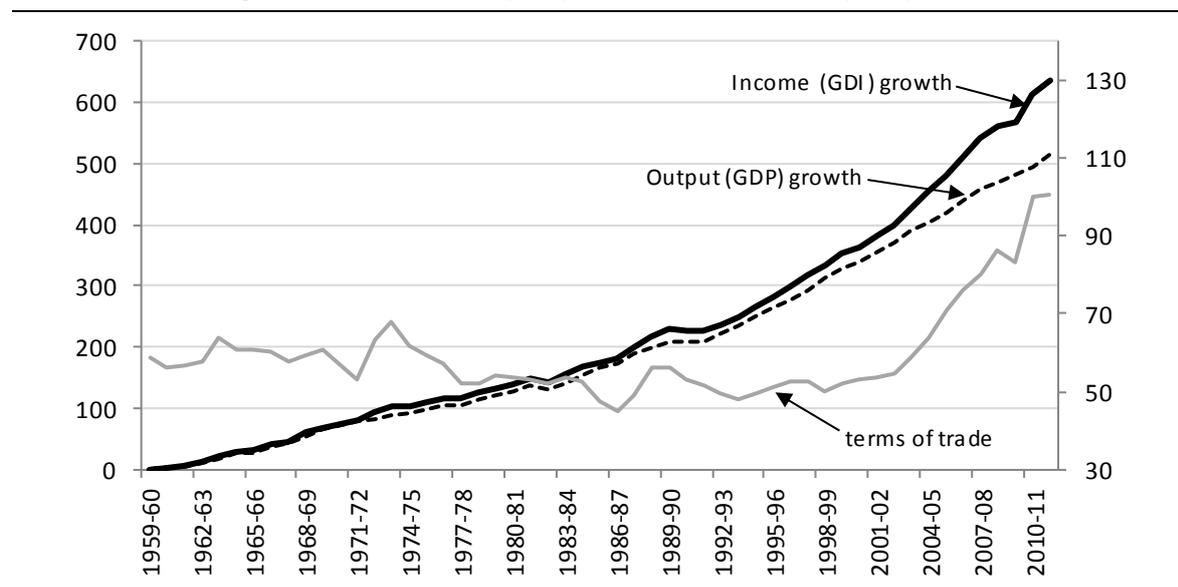
And so, more TVs and smartphones could be bought per ton of iron ore mined or per week of work.

Now, GDP is usually taken to be a measure of the size of the economy – the output of goods and services -- and the amount of real income that production activities generate. But that relationship between output and income only applies when the terms of trade are stable.

The macro effect of the terms of trade is evident in this first chart [Figure 1]. It shows growth in GDP since the 1960s and growth in Gross Domestic Income or GDI – which is a measure that adjusts GDP for changes in the terms of trade.

As the terms of trade took off in the 2000s, GDI growth departed from, and rose above, GDP growth. The terms of trade accounted for over 20 per cent of growth in real income in the 2000s.

**Figure 1 The terms of trade lifted real income growth beyond output growth in the 2000s**  
 % growth since 1959-60 (LHS), index 2010-11 = 100 (RHS)



The second chart I want to show you introduces labour productivity. [Figure 2]

Labour productivity is the most important source of growth in income per capita over the long term. There is usually a tight relationship between labour productivity growth and growth in GDP per capita, where GDP is used in its traditional role of representing real income.

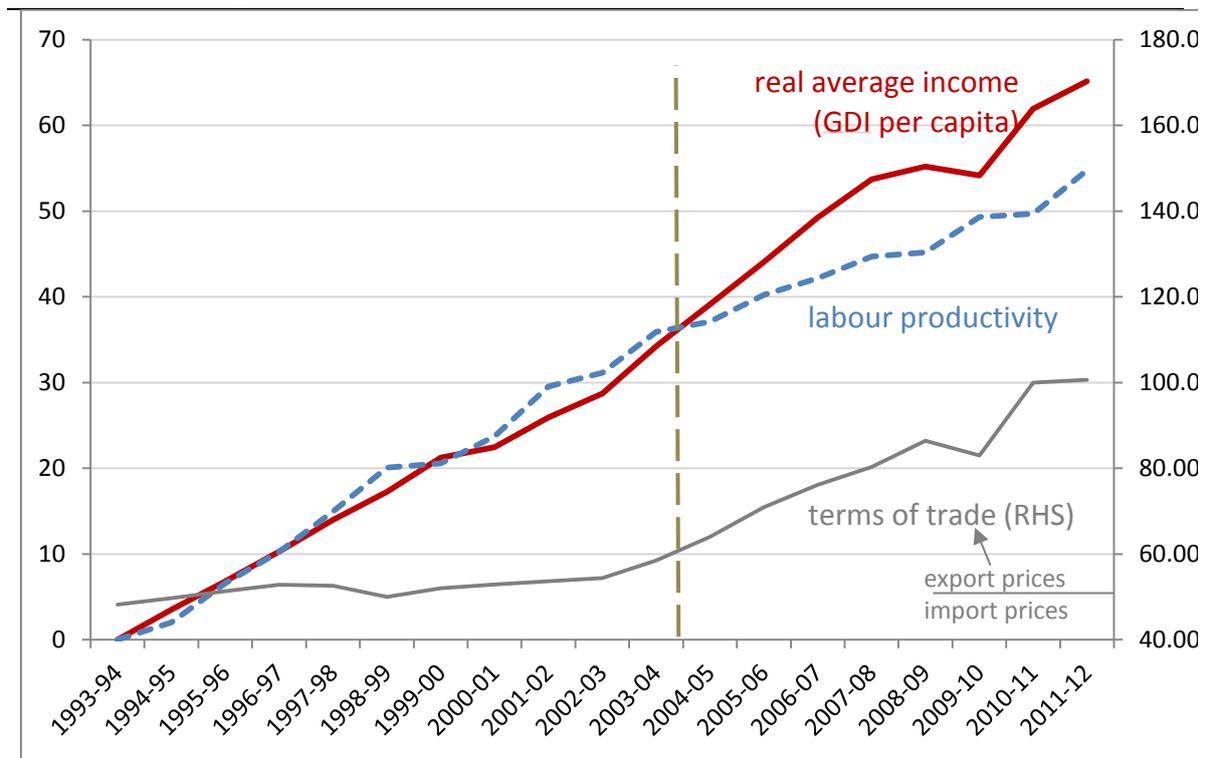
But because of the importance of terms of trade effects in the 2000s, real average income is captured in this chart by GDI per capita.

In the 1990s, and up to 2003-04, there was a close correlation between growth in labour productivity and growth in real average income. That was when growth in real income was still closely aligned with growth in output or GDP.

After 2003-04, however, there was a rather large slowdown in labour productivity growth. For the two periods shown here, growth almost halved – from 3.1 per cent a year to 1.6 per cent a year.

But, as we can see from the chart, growth in average income – measured by growth in GDI per capita -- hardly suffered. The terms of trade essentially filled the gap left by slower productivity growth.

Figure 2 **The terms of trade filled the gap in growth in average income left by slower productivity growth**  
 % growth since 1993-94 (LHS), index 2010-11 = 100 (RHS)



The key take-away messages from this quick ‘helicopter’ tour of the terrain are that:

- The 2000s were a period of continued strong growth in income and prosperity.
- They were an unusual period in terms of the drivers of income growth. The surge in the terms of trade ‘filled a gap’ left by slower productivity growth.
- The terms of trade had a major effect on the total amount of income available and the rate of improvement in income per capita.

I think we can take those points as non-contentious background.

#### 4. The fall in the labour income share in the 2000s

I turn now to the labour share of income, which fell quite sharply in the 2000s. I used ABS numbers in my paper and these showed a 4 percentage point fall.

This might be on the low side. An ACTU working paper put the fall closer to 6 percentage points. While there might be some uncertainty about the exact magnitude of the fall, there is no dispute that there was a fall of significance.

This fall followed a period of strong productivity and income growth in the 1990s, when the labour income share was stable.

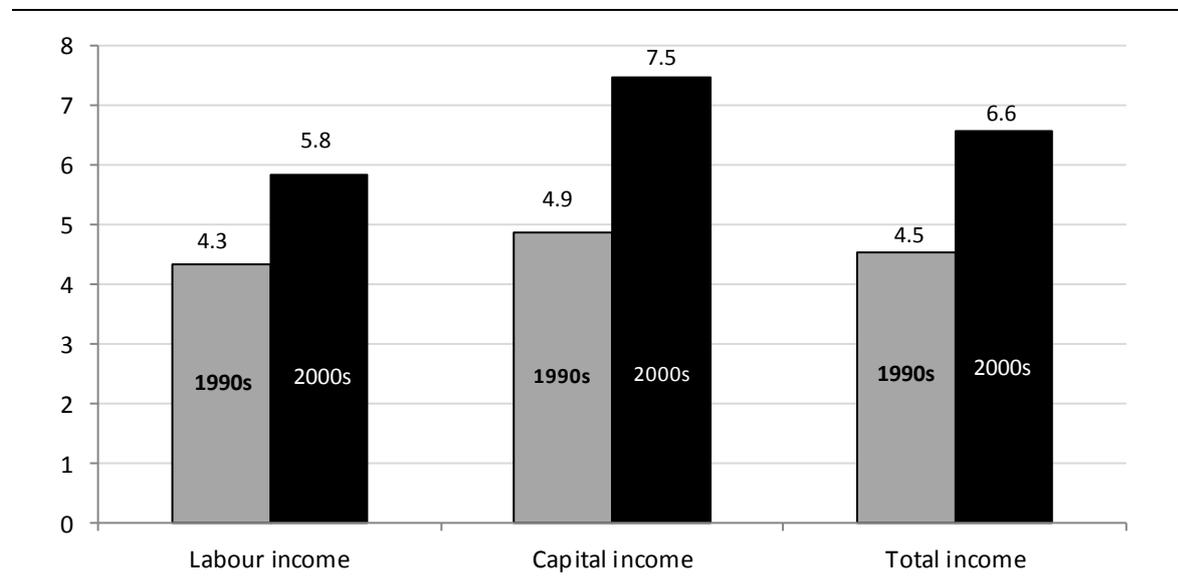
So how did this fall in the labour income share in the 2000s come about?

This next chart [Figure 3] shows that it was not because of any shrinkage in labour income growth.

- It can be seen from the left-hand set of bars that labour income in fact grew more rapidly in the 2000s than it did in the 1990s.
- There was stronger growth in both hours worked and wages.

The labour income share fell because there was even stronger growth in capital income.

**Figure 3 Growth in labour income lifted in the 2000s but growth in capital income lifted even more**  
average annual rates of growth in nominal income (%)



And it was not because of slower growth in nominal wages [Figure 4]. It was because of stronger output price inflation.

Deflating nominal wage growth by even stronger growth in output price inflation meant that growth in the real product wage was weaker (as shown by the orange bars in the chart)

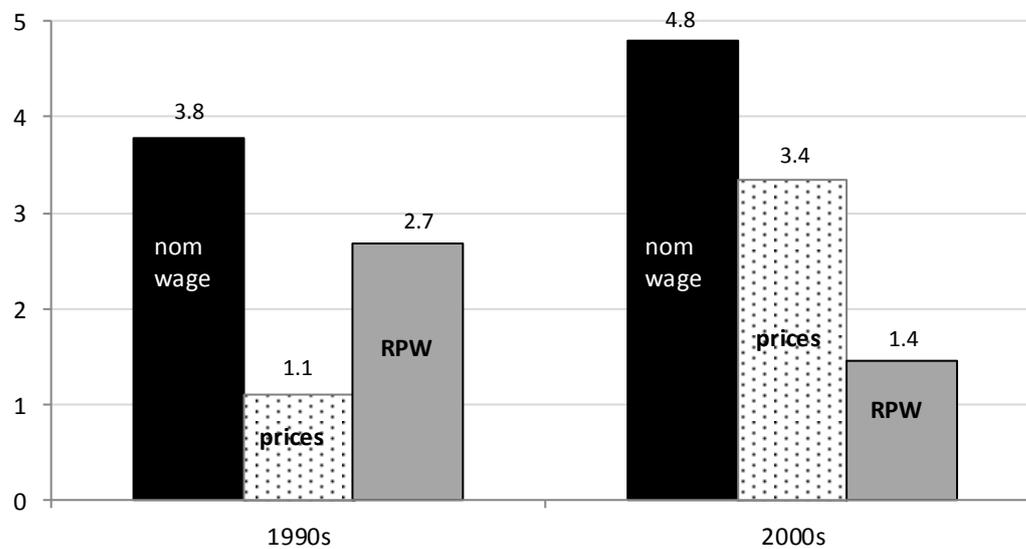
- weaker than it was in the 1990s; and
- weaker than labour productivity growth in the 2000s.

Now, before we run the 'productivity and pay' rule of thumb over this result, we should have a look at another effect of the terms of trade boom.

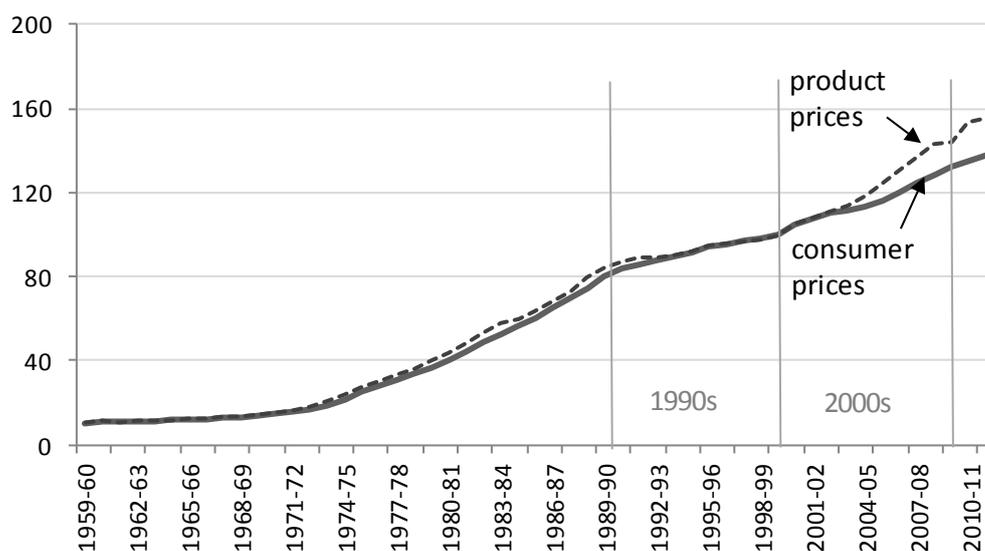
That was to drive a wedge between product prices and consumer prices.

The next chart [Figure 5] shows the inflation in product prices, as represented by the GDP deflator, and consumer prices, as represented by the CPI, since the early 1960s.

**Figure 4 The lower real cost of labour was due to higher product price inflation**  
 growth rates in nominal wages, output prices and the real product wage (%pa)



**Figure 5 The terms of trade drove a wedge between product prices and consumption prices**  
 the GDP implicit price deflator and the consumer price index, 1999-00 = 100



The wedge between product and consumer prices opened up in the 2000s, once the terms of trade started to lift,

The wedge came about because:

- First, higher prices for minerals were felt much more in export markets and product prices than they were in domestic consumption prices.

- That is, higher prices for coal and iron ore on export prices did a lot to raise product prices for Australian-produced goods and services, but did little to raise Australian consumer prices.
- Second, cheaper imports helped to keep growth in domestic consumer prices in check – that is, below product prices

The wedge also meant that it was meaningful – and important -- to view growth in real wages in two quite distinct ways.

As I set out before, there was growth in the real cost of labour, measured by the real product wage. This real wage measure is based on product prices.

However, the real value of a wage as income to labour is determined by its purchasing power – its command over goods and services. In this regard, it is movements in consumption prices that matter.

Nominal wages deflated by movements in consumption prices are referred to as the Real Consumption Wage.

Obviously, when product prices and consumer prices are moving together, as they traditionally have done, there is no difference between growth in the Real Product Wage and growth in the Real Consumption Wage. The distinction does not matter.

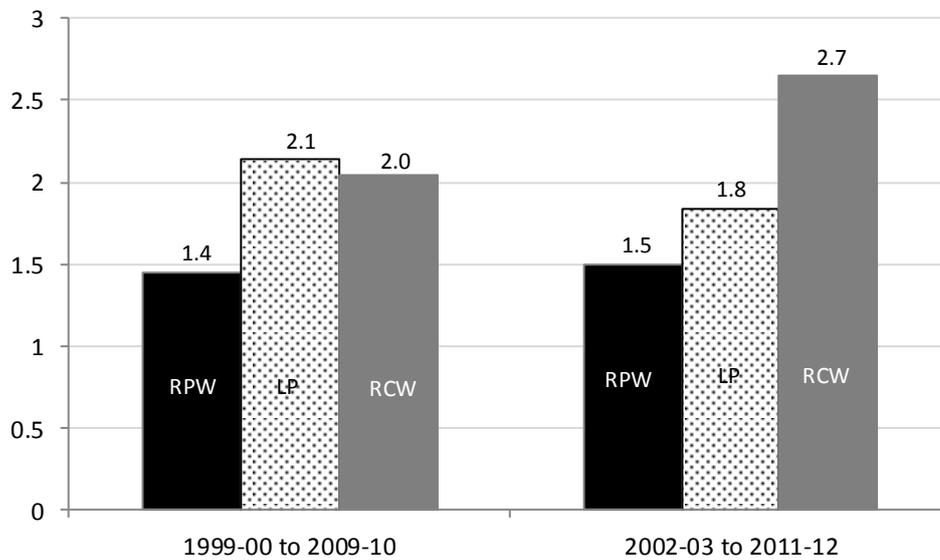
But the next figure [Figure 6] shows that growth in the real product wage and growth in the real consumption wage diverged in the 2000s. And, while growth in the real product wage fell behind growth in labour productivity, growth in the real consumption wage did not.

This was especially true after the terms of trade started to take off after 2002-03, as shown in the right hand set of columns. Over that period, the growth in the real consumption wage was well in excess of growth in labour productivity.

*Time for another high level summary point:*

- *The shift in the terms of trade meant that, while growth in the real product wage did not keep pace with labour productivity, growth in the real consumption wage outpaced growth in labour productivity.*

Figure 6 **Growth in real wages as income was stronger than growth in the real cost of labour**  
 rates of growth over the first decade of the 2000s and from 2002-03 (% pa)



*What does this mean for the application of the rule of thumb?*

Well, from the producers’ perspective, it is not a problem that growth in the real product wage is less than growth in labour productivity. This would mean that real unit labour costs are lower and that producers’ competitiveness is higher.

All other things equal, cost conditions would also favour expansion of employment.

What about the ‘fairness’ angle though? Ordinarily, concerns would be raised if growth in real wages is less than growth in labour productivity.

But it is the rise in the real consumption wage that matters to those employed. And growth in the real consumption wage kept up with labour productivity growth in the 2000s, and in fact has surpassed it since the mid-2000s.

Comparing growth in the real consumption wage with labour productivity growth appears to be the appropriate way to assess the fairness criterion, consistent with previous practice, when there was no distinction between real product and consumption wages.

It might be argued that, nevertheless, labour did not get as much share as capital did and that there is still some ‘headroom’ to grant further wage rises to rebalance the labour share.

- By ‘headroom’ I mean there is scope to raise the real product wage and yet keep its growth within the bounds of growth in labour productivity.

- That is, the labour income share could be raised without raising cost and unemployment pressures.

It could be counter-argued immediately that this would take fairness too far, as judged by the growth in the real consumption wage. But let's put aside that counterargument and just consider the scenario from the real product wage point of view.

To take this perspective further, we first need to look into the sources of the fall in the labour income share.

## 5. Sources of the fall in the labour income share

The acceleration in income growth in the 2000s was narrowly focussed on two industries. [Figure 7]

- Mining and Construction brought in two-thirds of the additional growth in income over the decade.
- Mining 40 per cent and Construction 25 per cent.

Mining obviously benefited from the rise in commodity prices. Construction benefited from the investment phase of the mining boom.

Manufacturing had a small increase in income growth but, because other industries grew so much more rapidly on average, it lost the most in share terms. The additional pressure on the Manufacturing sector was a manifestation of the so-called 'two-speed economy'.

This produced mixed results in terms of industry contributions to the change in the aggregate labour income share.

- Mining is capital-intensive and became more so over the decade. Its growth in income increased the capital income share.
- Since Construction is labour intensive, the growth in its income would have increased the labour income share.
- The income pressure on Manufacturing fell more on the capital side than on the labour side and so it also worked in the direction of increasing the labour income share.

A quantitative assessment of these income flows, broken down into labour and capital components, shows that the growth in the mining industry explains the entire fall in the labour income share. Several other industries made much smaller contributions, and their contributions were offset by the positive effects of other industries.

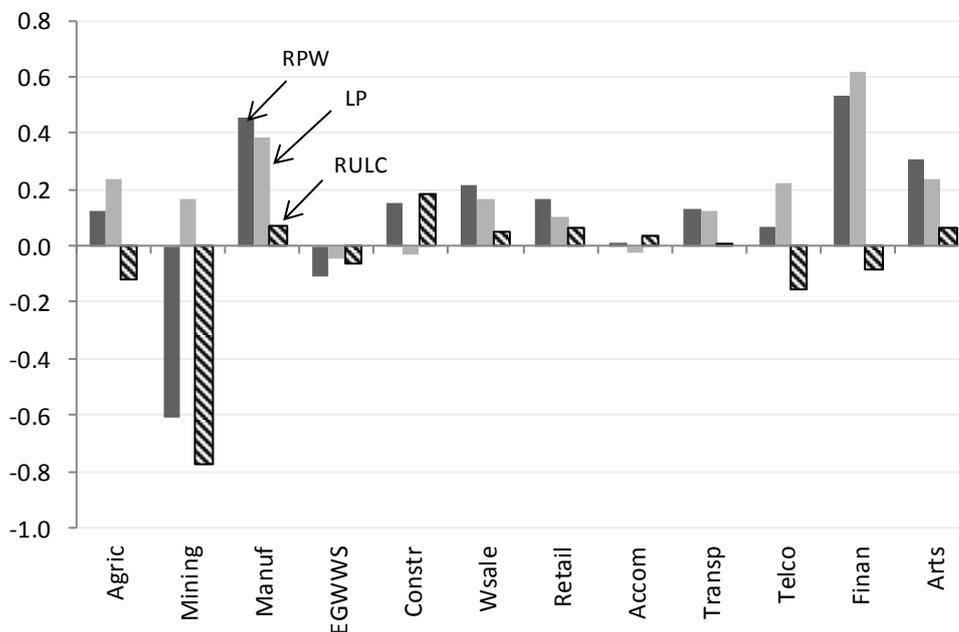
This result is replicated in a number of different assessments of the industry sources of the fall in the labour income share.

It suggests the fall in income share essentially happened in the mining industry. The fall is not so much a macro-economic phenomenon, as it is a mining story.

Let's look at the industry sources of the gap between growth in the real product wage and growth in labour productivity. [Figure 7]

This chart shows how different industries contributed to growth in the aggregate real product wage (blue), labour productivity (yellow) and the labour income share (red). Those industries with a negative red column contributed to a decline in the labour income share.

**Figure 7 Industry contributions to market-sector growth in RPW, LP and RULC, 2000s**  
Percentage points



Source: Author's estimates based on ABS Cat No 5260.0550.02.

There are two important points here.

- First, this breakdown shows that the mining industry was overwhelming the source of the fall in the labour income share.
- Second, the headroom to raise the real product wage within the scope of labour productivity growth is essentially confined to the mining industry.
  - There are four other industries – Agriculture, the Utilities or Electricity, gas, water & waste services, Telecommunications and Finance -- that provided some headroom but the headroom was small.

*High level summary:*

- *The terms of trade brought about the fall in the labour income share by working through the mining boom.*

## **6. Implications for wage setting**

What are the implications of all this for wage setting?

The narrowness of industry contributions poses problems for exploiting the headroom between the real product wage and labour productivity through further wage rises.

Unless the wage rises could effectively be quarantined to the mining industry, it is difficult to make general wage determinations when it is an industry-specific development.

Even though there was less of a general 'wages breakout' in the current boom than in previous booms, it is unlikely that wage rises could be fully quarantined to the mining sector.

And so, attempting to exploit the headroom would raise risks to the competitiveness of other industries, and to inflation and unemployment via the non-mining industries.

There are further relevant issues in my view.

First, there was only headroom in the up-phase. And it only continues to arise so long as prices continue to rise. The headroom disappears as prices come off.

Even if the headroom was used contemporaneously, that would only set up problems for later. Wages tend to be 'sticky' downwards. That is, they would tend to stay in place while prices declined. Adverse effects would still emerge.

Second, even if the wage rises could be quarantined to the mining industry, this would surely raise another fairness issue. Why should the benefits of commodity price rises, which really raise the resource rents on the community's resource deposits, only be shared with workers in mining? What about other workers? What about the community more generally?

There are broader issues about sharing the resource rents, including how they are shared between mining companies and the community through royalties and taxes. In my view, if there is a problem with the way resources rents are shared, especially as these rents tend to be transient, the issue should be tackled at that broad royalty/tax level. In other words, I am not convinced that wages are the right mechanism to deal with distribution of resource rents.

Third, it is not clear that labour actually did miss out on a share through wage rises. I haven't gone into it today, because of time limits, but it is in my soon to be released paper. The details of this have yet to be fully tested, but there is evidence that the increase in capital income share is attributable to an increase in capital stock – a quantity effect – rather than an increase in profits.

Sure, profits increased markedly in mining and more so than wages in mining. But there is evidence that, from an overall point of view, this was counteracted by the opposite effect in other industries – that is, other industries added more to wage growth than to profit growth.

On balance, there do not appear to me to be strong equity or efficiency grounds to take wage action to maintain the labour income share when there is a strong rise in the terms of trade.

It follows that there do not appear to be grounds for any 'catch-up' rise in future to make up for any 'lost share' during the 2000s. If there are insufficient grounds for taking restorative action during the 2000s, there are insufficient grounds for taking catch-up action now.

*High level summary?*

- *It is not at all clear that there is either an efficiency or equity issue in this terms of trade induced fall in labour income share. Besides, trying to do something about it would likely only bring adverse consequences, especially for non-mining industries, inflation and employment.*

## 7. Looking forward

There are even further considerations.

Looking forward, the labour income share is likely to rise, without any deliberate corrective or restorative action.

If we look at it from the real product wage and labour productivity perspective, the likely further softening in commodity prices will mean that the growth in the real product wage will not be held in check to nearly the same extent.

Consistent with a rise in the labour income share, the growth in the real product wage will be in excess of labour productivity growth.

However, I would not expect the labour income share to fully revert to its former level. The main reason is that the economy has become more capital-intensive, especially in the mining sector, but also in the Utilities.

That increased capital intensity of production is likely to persist for some time and, even with a normal rate of return, it will command a higher share of income than was previously the case.

From now on, consumption and product prices are likely to have the opposite relativity to the one they showed in the past decade. That is, to the extent that the terms of trade decline, the growth in product prices will be less than the growth in consumption prices.

In turn, growth in the real consumption wage will be less than the growth in the real product wage.

As just noted, growth in the real product wage will be in excess of labour productivity growth. Growth in the real consumption wage is likely to be more in line with growth in labour productivity. But there is no necessary reason for it to be shackled to labour productivity growth.

*High-level summary*

- *It is important to look at both the up-side and the down-side of a terms of trade shift.*

## 8. Concluding remarks

To conclude, I started out by posing the question, ‘What do shifts in Australia’s terms of trade mean for the usual ‘rule of thumb’ on linking pay to productivity growth?’

I think one important point is that a shift in the terms of trade of the magnitude we have seen makes a lot of difference and means we have to be a lot more careful about how the usual ‘rule of thumb’ is applied.

One of the keys is that, when there are shifts in the terms of trade, we have to distinguish between growth in real wages as a cost to producers and growth in real wages as income to labour.

Growth in the real product wage is the relevant indicator, when we are considering issues of production efficiency, competitiveness and employment pressures.

Growth in the real consumption wage is the relevant indicator when we are considering the distribution of income gains and 'fairness' to labour.

So, from this point of view, the fall in the labour income share over the past decade seems like a good thing from the production efficiency point of view, but not a bad thing from a distribution and equity point of view.

That's not quite the full distribution story, as it is true that capital income is distributed more unevenly to households than labour income is. But that is the story as far as the 'rule of thumb' focus I have used today.

Finally, it would be remiss of me to say nothing about the productivity side of the rule of thumb. Going forward, the nation needs productivity growth to promote growth in real average income as the terms of trade retreat. Productivity growth now has to fill the gap in income growth and growth in income per capita that has been left by a turnaround in the terms of trade.

And strong productivity growth will be the way to sustain strong growth in wages in the future.

*High level summary*

- *When there are movements (up or down), use the real product wage in assessment of efficiency effects and the real consumption wage in the assessment of equity effects.*
- *Continued strong growth in real wages can only be sustained, going, forward, by securing strong productivity growth*