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Overview

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| Key points |
| * The labour share of income fell by 4 or more percentage points in the 2000s. * However, labour was no worse off in the process. * Labour income grew at a faster rate in the 2000s than in the 1990s through stronger growth in both wages and employment. * The labour income share only fell because capital income growth accelerated even more. * The rise in the terms of trade meant that product prices rose faster than consumer prices. While labour received a smaller share of income at product prices, the slower growth in consumer prices meant that the real value of each dollar earned was worth more in terms of its purchasing power. This purchasing power effect (which was available to all income earners) more than outweighed the apparent reduction in labour’s share of national income. * The large rise in Australia’s terms of trade brought strong growth in real income —even stronger than the growth in the ‘productivity decade’ of the 1990s. * This provided scope for growth in both labour and capital income to rise. * Other high-income countries also experienced a decline in the labour income share, but driven by a different set of factors. In other countries, growth in labour income has suffered. * The mining boom was overwhelmingly responsible for the fall in labour share in Australia: * Development of mining and associated capacity added to the economy’s capital stock, leading to more capital-intensive production overall. * Higher output prices for minerals (and construction) reduced the real cost of labour so that growth in real wages fell behind labour productivity growth. * The two other industries most affected by the mining boom — Construction and Manufacturing — served to *increase* the labour income share. * In Manufacturing, a slowdown in capital income growth meant the industry contributed more to labour income than to capital income at the aggregate level. * Construction had stronger growth in capital income than in labour income. However, because the industry is labour intensive, growth in Construction’s labour income had a greater effect on aggregate labour income than growth in its capital income had on aggregate capital income. * As the terms of trade now decline, the labour income share will rise. But with a more capital-intensive economy, the share is unlikely to revert fully to previous levels. * Action to restore the old labour income share or to recover ‘lost’ income share through wage rises would probably only have adverse consequences for employment and inflation and for industries already facing adjustment pressures. * With the prospect of declining terms of trade, a focus on productivity growth will be the way to sustain growth in real wages. |
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# Overview

Labour’s share of income fell sharply in the 2000s.

However, labour was no worse off. Put succinctly, while labour got a proportionately smaller slice of the income pie, the real value of its slice continued to grow in absolute size and, indeed, at a faster rate. In fact, with more-rapid growth in employment and real wages, the real income of labour continued to grow unabated.

The labour income share fell because there was an even greater acceleration in capital income growth.

Over the first decade of the 2000s, the Australian economy benefited from one of the strongest lifts in its terms of trade ever seen. That shift in relative prices boosted growth in income for both labour and capital, changed the industry sources of income, lifted the rate of investment in capital and employment growth, and reallocated capital and labour between industries.

In the process, the rise in the terms of trade brought about the fall in the labour income share. Essentially, the economy became more capital-intensive through the mining boom.

The labour income share has fallen in other developed economies, and notably in the United States. But the experience is quite different from that in Australia. Growth in labour income in other countries has fallen and the reasons for the fall in labour share have to do with technological advance and globalisation, rather than the terms of trade.

This study finds that the same ‘rule of thumb’ — that labour and capital tend to share proportionately in the growth in income — do not seem to apply in an economy experiencing an improvement in its terms of trade.

There are aspects of the terms of trade shift that are still not fully understood. The implications for labour market adjustment, wage determination and income shares are important examples. In unpacking some of the drivers of change in the labour income share, this project is in large measure a foray into the ways in which the terms of trade shift brought structural change in the economy. The analysis is a start. It is not definitive and the details of findings should be taken as tentative and indicative.

## Context: income growth and its sources

Usually, growth in the volume of output (GDP) also indicates growth in real income. That is true when the terms of trade (the ratio of export prices to import prices) are stable.

However, Australia’s terms of trade jumped by over 80 per cent in 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 the prices of mineral exports, while import prices fell with appreciation of the exchange rate and lower world prices for some products.

The rise in the terms of trade lifted real incomes through two mechanisms. First, higher export prices meant a given volume of exports earned more income. Second, lower import prices raised the purchasing power or real value of Australian incomes.

The terms of trade shift maintained — and in fact increased — the rate of growth in real income in the 2000s, despite a slowdown in output growth (figure 1). The terms of trade accounted for more than 20 per cent of real income growth over the decade.

Figure 1 The terms of trade lifted real income growth beyond output growth in the 2000s

per cent growth since 1959-60 (LHS), index 2010-11=100 (RHS)

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| The terms of trade lifted real income growth beyond output growth in the 2000s. This figure shows growth in GDP , GDI and the terms of trade since 1959-60. As the terms of trade started to rise strongly after 2002-03, growth in GDI rose faster than growth in GDP. |

### Within the market sector

As figure 2 shows, compared with the 1990s, the 2000s brought:

* faster growth in total income
* faster growth in both labour income and capital income
* a stronger acceleration in the rate of growth in capital income than in the rate of growth in labour income.

Figure 2 Growth in labour income lifted in the 2000s but growth in capital income lifted more

average annual rates of growth in nominal income (per cent)

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| Growth in labour income lifted in the 2000s but growth in capital income lifted even more. This figure shows the growth rate in labour income, capital income and total income in the 1990s and the 2000s. While labour income growth accelerated in the 2000s, capital income growth accelerated even more. |

The faster growth in income was not spread evenly over industries.

* Mining and Construction contributed about two-thirds of the acceleration in market sector income growth.
* Mining accounted for 40 per cent and Construction accounted for 25 per cent.
* Manufacturing, Accommodation, Telecommunications and the Arts reduced their contributions to market sector income growth, compared with the 1990s.
* Manufacturing had a small decline in contribution but, with strong growth elsewhere, its share of market sector income fell markedly over the 2000s.

The effects of the terms of trade boom are clearly evident in these relative industry movements. The more rapid income growth in Mining and Construction reflects higher minerals prices and the investment phase of the mining boom. The relative decline of Manufacturing partly reflects exchange rate pressures — a manifestation of the so-called ‘two speed economy’.

## The fall in the labour income share

The labour income share is the proportion of gross income generated from the production of goods and services that is paid in labour costs, either in wages or in on-costs.

The remainder of gross income is attributed to capital (assets owned by companies and proprietors). Capital income is gross income before any allowance for depreciation and before the payment of interest and tax.

Obviously, a fall in the labour share means an equal rise in the capital share.

The labour income share is not a ‘primary’ indicator of economic performance or economic wellbeing. Sometimes, however, a shift in share reflects underlying changes that can have important effects on employment, inflation and income distribution.

It is important therefore to understand the underlying reasons for a change in income share.

There was a large fall in the labour income share in Australia over the first decade of the 2000s. According to one Australian Bureau of Statistics (ABS) measure, the share fell by 4 percentage points from 57 per cent to 53 per cent over the first decade of the 2000s. According to other measures, the fall was even larger. The 2000s fall followed a period in which the share was stable through the 1990s.

The recent fall in the labour income share can be examined from different angles:

* relative rates of factor income growth
* changes in the relative quantities and prices of capital and labour
* changes in real wage rates relative to labour productivity.

While the three ways of looking at changes in labour’s share are simply alternatives, taking these different perspectives helps to ensure that a comprehensive and robust explanation is found. It turns out that all three angles generate the same result.

### Disparity in factor income growth

At its simplest, the labour income share fell in the 2000s because capital income grew faster than labour income (figure 2).

The Mining sector accounted for all of the disparity between growth in capital income and growth in labour income at the aggregate level. The growth in Mining was principally in the form of capital income and added much more to growth in aggregate capital income than it did to growth in aggregate labour income.

From this perspective, the mining boom accounted for all of the fall in the (market sector) labour income share. Other industries made much smaller positive and negative contributions that offset each other.

Construction and Manufacturing — the two other industries most affected by the terms of trade rise — worked in the direction of *increasing* the labour income share. They made stronger contributions to aggregate labour income growth than to aggregate capital income growth.

This industry pattern is explained further in box 1.

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| Box 1 Industry contributions to growth in labour and capital income |
| Mining and Construction were the key sources of additional growth in income in the 2000s. Manufacturing’s importance dwindled.  Mining accounted for the entire fall in the labour income share  Labour and capital both benefited in the mining sector. Mining is a capital intensive industry and is now the major source of capital income, receiving one in five dollars of capital income in the market sector. The growth in capital income in mining added much more to aggregate growth in capital income than its growth in labour income added to aggregate growth in labour income. And so, the Mining sector brought about a fall in the aggregate labour income share.  Construction increased the labour income share  Labour and capital both benefited in the Construction sector. The labour income share within the industry declined because growth in capital income exceeded growth in labour income. However, Construction is labour intensive and is now the most important source of labour income in the market sector. Its growth in labour income had greater effect on aggregate labour income than its growth in capital income had on aggregate capital income. And so, the sector served to increase the aggregate labour income share.  Manufacturing increased the labour income share  Manufacturing made a stronger contribution to labour income growth than to capital income. The sector is an important (but declining) source of both labour and capital income, but is more important to labour than it is to capital income. Since there was stronger growth in labour income than capital income, the sector served to increase the aggregate labour income share. |
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### ‘Quantity’ versus ‘price’ effect

The second way to view income shares is through changes in the ‘quantity’ ratio (capital-labour ratio) relative to the ‘price’ ratio (the wage rate to the rate of return on capital). The labour income share falls if the quantity ratio increases more rapidly than the price ratio. A fall could come about through capital deepening (more capital relative to labour) or an increase in returns to capital (relative to wages).

From this perspective, the 2000s fall in labour income share was due overwhelmingly to a quantity effect, rather than a price effect. This is based on the findings that:

* growth in the capital-labour ratio was greater than growth in the price ratio in the 2000s decade (figure 3)
* growth in the capital-labour ratio accelerated from the 1990s, whereas growth in the price ratio was virtually the same as it was in the 1990s.

Figure 3 The fall in the labour income share was due to a quantity effect rather than a price effect

growth in the capital labour ration () and in the wage rate of return ration

(per cent per year)

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| The fall in the labour income share was due to a quantity effect rather than a price effect. This figure shows rates of growth in the capital-to-labour ratio and in the wage-to-return ratio in the 1990s and the 2000s. Growth in the capital-labour ratio accelerated in the 2000s, but growth in the wage-return ratio did not. |

While the conclusion that additional capital deepening provides the main explanation remains firm, there is some uncertainty about the exact size of the quantity and price effects. Capital measurement issues suggest that the extent of capital deepening in the 2000s may be overstated and consequently the growth in the price ratio is overstated in the estimates based on the ABS National Accounts. A measurement problem arises where there are lengthy lags between investment in capital and its use in production combined with the very large acceleration in investment. This has been the case with the mining boom and the scale of investment has been so large that it may have affected aggregate estimates of capital growth.

The additional capital deepening was primarily due to more rapid growth in capital. While use of capital and labour both grew more rapidly in the 2000s than in the 1990s, the acceleration in use of capital was greater than the acceleration in use of labour.

The nominal wage rate and the nominal rate of return both grew more rapidly in the 2000s than in the 1990s, according to the data used, but the acceleration in the two was equal in size.

The Mining sector accounted for the entire gap between growth in the quantity ratio and growth in the price ratio. That was because investment in mining capacity added so much to the aggregate capital stock (much more than its increased use of labour added to aggregate hours worked). Mining did also lift the aggregate rate of return (relative to the wage rate), but this effect on the aggregate was neutralised by contributions in favour of wages in other industries.

Again, other industries’ contributions offset each other and, again, Construction and Manufacturing had a positive effect on the labour income share. Construction added more to the use and reward of labour than to the use and reward of capital. Manufacturing reduced the use of labour, but increased wages, and increased capital, but reduced the rate of return.

### Real wage rates and productivity

Some simple mathematics shows that a fall in the labour income share emerges whenever growth in real wages falls short of growth in labour productivity. While there is no necessary reason for real wages to grow in line with labour productivity, there has been a tendency for it to happen over the long term in advanced economies.

The real wage in this context is the real cost to producers of employing labour. The nominal wage, deflated by product prices (the prices of goods and services produced), is referred to as the real product wage (RPW).

The RPW showed weaker growth than labour productivity in the 2000s decade, leading to a decline in the labour income share (figure 4). Compared with the 1990s, growth in the RPW slowed more in the 2000s than did labour productivity.

The same pattern of industry contributions is observed. Mining accounted for all the market sector disparity between growth in the RPW and in labour productivity (LP). Other industries offset each other. And Construction and Manufacturing made stronger contributions to RPW growth than to labour productivity growth.

Figure 4 The labour income share fell because of much weaker growth in the real cost of labour

growth in the real product wage (RPW), labour productivity (LP) and the labour income share (LIS) (per cent per year)

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| The labour income share fell because of much weaker growth in the real cost of labour. This chart compares the rate of growth in the real product wage, labour productivity and the labour income share in the 1990s and the 2000s. The labour income share fell because growth in the real product wage fell by more than growth in labour productivity. |

#### Product price inflation

Growth in the real product wage fell further than productivity growth, not because of any slowdown in growth in nominal wages, but because of higher product price inflation (figure 5).

The Mining sector was primarily responsible for the increase in product price inflation, as a result of the boom in mineral commodity prices. Construction also made a major contribution in the 2000s, well up on its 1990s contribution.

Figure 5 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 (per cent per year)

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| The lower cost of labour was due to higher product price inflation. This chart shows there was higher growth in nominal wages in the 2000s than in the 1990s. But, because there was much higher growth in output price inflation, the growth in real product wages fell. |

### The decline in share has not been a macro phenomenon

The Mining sector is so dominant in the explanations the question arises as to whether the fall in the labour income share can appropriately be considered a macro phenomenon.

Figure 6 shows the extent to which the gap in growth between market sector labour productivity growth and growth in the real product wage stemmed from the mining sector. Mining made such a strong negative contribution to the labour income share because its contribution to growth in the RPW was so strongly negative. There was only one other industry (the Utilities) to make a negative contribution to RPW growth and that was relatively mild. In turn, Mining’s RPW contribution was so strongly negative because of the large rises in relative output prices in the industry.

That is, the terms of trade effects on the labour income share were mostly played out in the Mining sector, where large rises in output prices sent the industry’s RPW contribution deeply negative. The effects of the terms of trade shift were not widespread.

Figure 6 The fall in labour share was a mining-specific rather than a general phenomenon

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| A mining-specific rather than a general phenomenon. This figure shows industry contributions to growth in the real product wage, labour productivity and the labour income share in the 2000s. The mining industry stands out as by far the main contributor to the fall in the labour income share. |

## Other perspectives

### Another terms of trade effect

Although labour received a lower share of total income, the real value of each dollar of income increased. For ease, the discussion reverts to considering the growth in the RPW as a macro phenomenon. However, the point being made here does not depend on taking that view.

The rise in the terms of trade drove a wedge between movements in product prices (prices of the goods and services that Australia produces) and consumer prices (prices of goods and services that Australians consume) (figure 7). Higher export prices, especially for minerals, fuelled strong growth in product prices, with little effect on domestic consumer prices, while cheaper imports helped keep rises in domestic consumer prices in check.

This disparity in prices also drove a wedge between growth in real wages as a cost to producers (the real product wage) and growth in real wages as income to labour (the real consumption wage). The real consumption wage (RCW) deflates nominal wages by the consumer price index, rather than product prices. Consumer price inflation is relevant to those employed as it determines the real value or purchasing power of their incomes.

The lower growth in consumer prices meant that growth in the RCW was greater than growth in the RPW in the 2000s. While growth in the RPW fell behind growth in labour productivity, growth in the RCW did not (figure 8). This was especially true once the terms of trade started to rise from 2002-03

And so, while labour received a less-than-proportionate share of income growth in the 2000s (measured at product prices), each dollar earned was worth more in purchasing power terms. The increase in purchasing power more than compensated for the gap between the growth in the RPW and in labour productivity (and therefore the fall in the labour income share).

It is important to note, however, that this purchasing power gain was available to all income earners and from all sources of income. It was not confined to labour income, nor to workers in particular industries.

### Broader distribution and wellbeing

As previously noted, shifts in the labour income share can reflect developments that have broader implications:

* a decline in the labour income share can reflect conditions that are more favourable to employment growth
* while demand conditions are usually the most important determinant of employment, a lower real cost of labour (relative to labour productivity) can lead to increased labour demand at the margin
* a shift against labour can lead to a more unequal distribution of personal income
* capital income is distributed more unequally than labour income
* other research at the Productivity Commission has shown that, while the distribution of market incomes has become more unequal in Australia, the effects on the household distribution of income have been mitigated to a large extent by an increased rate of employment
* a shift in share toward capital can also affect government tax revenues
* capital income is taxed at a lower rate than personal income
* however, a ‘scale’ effect appears to have dominated in Australia, with government revenues boosted by the strong growth in capital income.

Foreign participation also has a bearing on what the income growth means for the wellbeing of Australians. The Mining sector has a high degree of foreign ownership and a large slice of the additional capital income accrues to foreign investors.

Figure 7 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

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| The terms of trade drove a wedge between product prices and consumption prices. This figure shows that product prices rose more than consumption prices in the 2000s. |

Figure 8 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 (per cent per year)

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| Growth in real wages as income was stronger than growth in the real cost of labour. This figure shows that, while growth in the real product wage was weaker than growth in labour productivity in the 2000s, growth in the real consumption wage was not. This effect—of stronger growth in the real consumption wage—was much stronger after 2002-03. |

### The fall in Australia’s labour share is distinct from falls in other countries

The labour share has fallen in a number of advanced economies in the 2000s, reinforcing concerns about a fundamental shift in the distribution of income.

Two explanations are prominent — globalisation and technological change. Globalisation is seen to have reduced employment opportunities and wage growth in advanced economies, especially for middle-income and middle-skill workers, through a large increase in the world supply of cheap labour and of cheaper goods. Technological change is seen to have brought substitution of capital (especially information and communications equipment) for unskilled labour.

The way in which the pain of the global financial crisis has been distributed has undoubtedly also had an effect.

But the Australian case is not part of the international trends. A few comparisons between Australia and the US, a prominent overseas case of a sharp decline in the labour income share, clearly indicate that different sets of factors have been at work in the two economies.

It was the distribution of pain versus the distribution of plenty. The US had the burden of slow growth and contraction, whereas Australia had the bounty of even stronger expansion.

There was a slowdown in growth in labour income in the US, but not in Australia. The labour income share fell in the US because labour income decelerated more than capital income did. The labour income share fell in Australia because the acceleration in labour income was overshadowed by the acceleration in capital income.

The industry footprints of change in output and income growth were also very different. In the US, manufacturing was the major industry source of the 2000s income slowdown and shift in income share away from labour. In Australia, the mining boom was the principal source of additional income and of the fall in labour income share. And Manufacturing served to increase the labour income share in this country.

While the presence of the structural pressures that have been at work in other economies cannot be ruled out, if they are present in Australia, they have been swamped by the effects of the mining boom.

### Capital productivity and income growth

Ordinarily, productivity growth is the prime source of improvements in average living standards. This can be seen in the 1990s trends (when growth in real income per capita was closely aligned with growth in labour productivity (aside from the early-1990s recession).

But growth in real income per capita continued unabated in the 2000s, even though labour productivity growth slowed (figure 9). That, of course, was due to the rise in the terms of trade.

Capital productivity became a drag on overall productivity growth (figure 9). The decline in capital productivity reflects the fact that the economy has shifted to more capital-intensive production, especially through the Mining sector.

Figure 9 Productivity growth needs to pick up if the same rate of growth in living standards is to be maintained

cumulative growth since 1993-94 (per cent)

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| Productivity growth needs to pick up if the same rate of growth in living standards is to be maintained. This figure shows that, while growth in real income per capita and growth in labour productivity were closely aligned in the 1990s, they drifted apart in the 2000s, when growth in labour productivity declined. The figure also shows that capital productivity declined substantially in the 2000s and multifactor productivity stagnated and fell slightly. |

While in isolation a fall in capital productivity would imply a poor allocation of capital leading to a loss of income and a deterioration in living standards, this does not appear to have happened over the past decade. First, the rise in the terms of trade has offset the effect of the decline in capital productivity on income growth. Second, these two developments are at least partly linked, as much of the investment in increased capital capacity was implemented to take advantage of the terms of trade (mineral price) gain.

## Looking ahead

### Income growth

Real income growth is unlikely to be boosted further by the terms of trade. If the terms of trade were to remain stable, income (and prosperity) would move in line with output growth. Any fall in the terms of trade, which is more likely, would detract from real income growth.

Reinvigorated productivity growth will be needed to maintain the rate of improvement in Australian living standards. Labour productivity growth would have to return to something in the order of 2.5 to 3 per cent a year for growth in real average income to continue at around the same pace as it has over the past two decades. That would be the case if the terms of trade remained stable. If the terms of trade fall, additional productivity growth will be required.

Some multifactor and more labour productivity growth will return whenever capital productivity eases its decline. The decline in mining’s capital productivity should ease, once major developments in the pipeline are completed and output comes fully on stream. The decline in capital productivity in other industries will slow to the extent that utilisation of infrastructure capacity rises, further infrastructure investments are economically wise, and the restructuring of industries and firms underway sees out its course.

However, the extent to which capital productivity will halt its slide, and the timing, are quite uncertain.

There are reports that, as minerals prices have started to come off, miners themselves are starting to focus more on containing costs and improving productivity. There are also reports that those firms and industries subject to adjustment pressures, especially from a higher exchange rate, are looking for avenues to improve productivity.

### The labour income share

The labour income share is likely to rise. The extent of falls in commodity prices will be crucial. All other things being equal, price falls will:

* reduce profits associated with resource rents
* reduce incentives for further mining investment and expansion in capital capacity
* raise the real cost of employing labour and thereby reduce the tendency for growth in real product wages to fall behind growth in labour productivity.

However, the share is unlikely to recover to its former level, at least in the medium term. The chief factor here will be the extent to which the economy remains more capital intensive. A greater intensity of capital use will command a greater proportion of income. When the dust settles and some new equilibrium is reached, a capital income share higher than it used to be is likely to be an offset for a level of capital productivity lower than it used to be.

#### Should anything be done about the decline in labour income share?

As noted, there is likely to be a partial recovery in the labour income share.

Any attempts to restore the labour share (or catch up for past lost share) through general wage increases are likely to have negative impacts on employment and add to any inflationary pressures. They are likely to exacerbate the adjustment pressures that non-mining industries face.

To the extent that labour did not share proportionately with capital in the gains over the 2000s, this was largely confined to the mining sector. Many of the gains to capital are likely to be transient and will fall away with lower terms of trade. If there is an issue, it is probably more to do with how transient gains from resource rents have been shared across the community.

Wage growth without productivity growth is not sustainable. With declining terms of trade, a focus on reinvigorating productivity growth would provide the conditions for sustainable growth in real wages.