# 6 Other industry contributions

This chapter continues the exploration of the industry sources of the fall in the labour income share (LIS).

* Section 6.1 identifies the industry sources of the ‘quantity versus price’ explanation for the decline in the labour income share.
* Section 6.2 identifies the industries that contributed to the shortfall between market sector growth in real wages and labour productivity.
* Section 6.3 identifies industry contributions to the increased output price inflation in the 2000s, which was a major reason for the weaker real wage growth.

There is a summary in section 6.4.

## 6.1 Factor proportions and reward ratios

Chapter 4 noted that the fall in the LIS came about through a quantity effect, rather than a price effect (section 4.3). A step up in the rate of capital deepening was found to be the key.

Industry contributions to the market sector growth in factor proportions and growth in the reward ratio are now assessed.

The analysis of wage and return estimates, particularly at the industry level, should be treated with caution. They provide only prima facie evidence that needs further examination and confirmation. These wage and return estimates are based on national accounts data, which are not primarily designed to reveal wage and rate of return trends.[[1]](#footnote-1)

Industry contributions are calculated in a way that allows ‘additivity’ (see appendix A for details of the methodology). The industry contributions add to market sector rates of growth. But there is further additivity in that industry contributions to growth in the capital-labour ratio, for example, can be formed from the separate industry contributions to capital growth and to labour growth.

The industry contributions to the market sector developments in the two decades are shown in table 6.1, with three columns for each decade.

* The first column shows industry contributions to growth in the market sector reward ratio (wage rate to rate of return).
* The second presents the industry contributions to growth in market sector factor proportions (the capital-labour ratio).
* The third contains the industry contributions to the gap in growth between the reward ratio and factor proportions;
* that is, entries in column 1 less the entries in column 2
* these do not show magnitudes of contributions to change in the aggregate LIS, but they do indicate direction (negative entries in this third column indicate cases that contributed to the fall in the market sector LIS).[[2]](#footnote-2)

The industry contributions for the 2000s decade are also displayed visually in figure 6.1.

Table 6.1 Industry contributions to the gap in growth between reward ratios and factor proportions, 1990s and 2000s

per cent per year

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1989-90 to 1999-00 | | |  | 1999-00 to 2009-10 | | |
|  | w/r | K/L | Gap (pp) |  | w/r | K/L | Gap (pp) |
| Agriculture | 0.24 | 0.00 | 0.24 |  | -0.04 | 0.22 | -0.27 |
| Mining | -0.05 | 0.55 | -0.60 |  | -0.75 | 1.11 | -1.87 |
| Manufacturing | 0.72 | 0.85 | -0.13 |  | 1.04 | 0.84 | 0.20 |
| Utilities | -0.14 | 0.19 | -0.33 |  | 0.05 | 0.20 | -0.15 |
| Construction | 0.24 | -0.07 | 0.31 |  | 0.34 | -0.08 | 0.43 |
| Wholesale | 0.47 | 0.25 | 0.23 |  | 0.43 | 0.31 | 0.12 |
| Retail | 0.55 | 0.04 | 0.51 |  | 0.24 | 0.09 | 0.15 |
| Accommodation | 0.14 | -0.20 | 0.34 |  | 0.09 | 0.00 | 0.09 |
| Transport | 0.06 | 0.07 | 0.00 |  | 0.25 | 0.22 | 0.03 |
| Telecoms | 0.11 | 0.56 | -0.46 |  | 0.13 | 0.49 | -0.36 |
| Finance | -0.11 | 0.65 | -0.77 |  | 0.38 | 0.56 | -0.18 |
| Arts & rec | 0.07 | 0.02 | 0.05 |  | 0.02 | 0.00 | 0.01 |
| Market sector 12 | 2.3 | 2.9 | -0.6 |  | 2.2 | 4.0 | -1.8 |

Note: pp = percentage points.

*Source*: Author’s estimates based on ABS (Cat. no. 5260.0550.02).

Figure 6.1 Industry contributions to growth in the reward ratio, factor proportions and the gap between them, 2000s

percentage points

|  |
| --- |
| 1 Industry contributions to growth in reward ratio, factor proportions and the growth gap between the two. This figure shows that mining made the outstanding negative contribution to the difference between growth in the reward ratio and growth in factor proportions because of a combination of relatively large (negative) contribution to growth in the reward ratio and relatively large contribution to growth in factor proportions. |

*Data source*: Author’s estimates based on ABS (Cat. no. 5260.0550.02).

#### Mining made the largest contribution

The mining boom stands out as the driver of the fall in the LIS from the quantity and price perspective.

The Mining sector had a profound effect. In a sense, it alone contributed all (strictly, a little more than all) of the gap between growth in the reward ratio and growth in the capital-labour ratio at the market sector level.[[3]](#footnote-3)

Mining’s contribution came, in large part, from a very strong contribution to growth in the market sector capital-labour ratio, as a result of the industry’s heavy capital investment. However, with strong growth in returns on the back of higher resource rents, Mining also made a strong negative contribution to the wage-return ratio.

It should be noted, however, that the growth in capital in Mining is overstated somewhat in ABS estimates. Topp et al. (2008) drew attention to the fact that the ABS assumption that mining investment is added to the capital stock as it occurs, rather than when development projects are completed means that growth in capital input in Mining occurs in advance of when it produces output. This becomes a problem when there is an acceleration in investment, as has occurred in the past decade. In reality, annual investment represents work-in-progress, until the project is completed and production then comes on stream. Topp et al. estimated the typical lag between commencement and completion of a project in the mining industry to be three years.

With a rapid acceleration in investment continuing through the latter part of the decade, the extent of growth in capital in Mining (and the market sector as a whole) is likely overstated. Since the capital stock is the base for calculating the rate of return, this also means that the growth in the rate of return on capital would be understated.

This measurement issue is likely to soften the conclusion, but is very unlikely to undermine the conclusion that the fall in the LIS was attributable to a quantity effect.

#### ‘Second-tier’ contributors

The set of second-tier contributors to the fall in LIS is the same set identified in the decomposition analysis of factor income growth (section 5.3 of the previous chapter). The set comprises Telecoms, Agriculture, Finance and the Utilities. The negative LIS effect in these industries was due to a dominant capital contribution. In the case of Finance, this was still the case even though the industry made the strongest contribution of all industries to growth in the average wage rate.

Construction, while it generated a lot more income via the mining boom, had a positive effect on the LIS. It made a stronger contribution to growth in use of labour than it did to growth in use of capital. It also made a stronger contribution to growth in the average wage than it did to the rate of return.

Manufacturing, which was negatively affected by the mining and terms of trade booms, also made a positive contribution to the LIS. That positive influence came despite a fall in its use of labour. Manufacturing made, by far, the largest contribution to the growth in the reward ratio, as well as a strong contribution to the growth in the capital-labour ratio. The reward ratio effect came about because Manufacturing was a strong source of growth in wages, whereas it had a negative impact on the rate of return. It was a source of growth in capital but reduction in use of labour.

#### Some broader implications

It would appear at face value from these results that some of the gains from the mining boom were captured by the Construction sector. Furthermore, it seems that labour captured more of the gains than capital in both quantity (employment) and price (wage) terms. It also appears that, in Manufacturing, capital has borne more of the burden of adjustment through lower returns than labour has through moderation of wage growth. There is no way to tell from the current analysis, but this may be because of a tendency for wage relativities to be maintained across industries.

The importance of wage growth in Finance is of interest. This could be a case of skill-biased technological change associated with information and communications technologies. Since there was little change in employment in the industry, the strong wage growth could reflect some substitution of more skilled for less skilled workers. Further research is needed to take this view beyond mere speculation.

## 6.2 Real product wage and labour productivity

Chapter 4 also analysed the LIS fall as a shortfall between growth in the real product wage and growth in labour productivity (section 4.4). From this ‘productivity and cost’ perspective, the fall in LIS was shown to be equivalent to a fall in real unit labour costs (RULC).

The industry contributions to growth in the real product wage (RPW) and labour productivity (LP) are now assessed. The details of the ‘additive’ methodology are set out in appendix A. Again, the wage estimates used here need to be treated with caution.

Table 6.2 presents the industry contributions to the decline in market sector labour income share as decompositions of the rate of growth in market sector RULC. The decline in market sector RULC at 0.7 per cent a year over the 2000s is (approximately) equivalent to the 4 percentage point fall in the LIS from 57 per cent to 53 per cent.

Again, there are three columns for each decade in the table. An industry’s contribution to market sector growth in the RPW, less its contribution to market sector LP growth equals its contribution to growth in market sector RULC. Industry contributions in each column sum to the market sector growth presented at the bottom of each column.

The contributions for the 2000s are also presented visually in figure 6.2.

Table 6.2 Industry contributions to the real product wage (RPW), labour productivity (LP) and real unit labour costs (RULC), 1990s and 2000s

percentage points

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1989-90 to 1999-00 | | |  | 1999-00 to 2009-10 | | |
|  | RPW | LP | RULC |  | RPW | LP | RULC |
| Agriculture | 0.27 | 0.19 | 0.08 |  | 0.12 | 0.24 | -0.12 |
| Mining | 0.08 | 0.31 | -0.23 |  | -0.61 | 0.16 | -0.78 |
| Manufacturing | 0.40 | 0.45 | -0.06 |  | 0.45 | 0.38 | 0.07 |
| Utilities | 0.03 | 0.15 | -0.12 |  | -0.11 | -0.05 | -0.06 |
| Construction | 0.16 | 0.05 | 0.11 |  | 0.15 | -0.03 | 0.18 |
| Wholesale | 0.32 | 0.24 | 0.08 |  | 0.22 | 0.17 | 0.05 |
| Retail | 0.30 | 0.11 | 0.19 |  | 0.17 | 0.10 | 0.07 |
| Accommodation | 0.00 | -0.12 | 0.13 |  | 0.01 | -0.02 | 0.04 |
| Transport | 0.17 | 0.18 | -0.01 |  | 0.13 | 0.12 | 0.01 |
| Telecoms | 0.21 | 0.38 | -0.18 |  | 0.07 | 0.22 | -0.15 |
| Financial | 0.35 | 0.66 | -0.30 |  | 0.53 | 0.62 | -0.09 |
| Arts & rec | 0.27 | 0.19 | 0.08 |  | 0.31 | 0.24 | 0.07 |
| Market sector 12 | 2.7 | 2.8 | -0.1 |  | 1.4 | 2.2 | -0.7 |

*Source*: Author’s estimates based on ABS (Cat. no. 5260.0550.02).

Figure 6.2 Industry contributions to market sector growth in RPW, LP and RULC, 2000s

percentage points

|  |
| --- |
| Industry contributions to market-sector growth in RPW, LP and RULC. This figure shows that Mining contributed most to the decline in RULC mostly because of its strong negative contribution to growth in RPW. |

*Data source*: Author’s estimates based on ABS (Cat. no. 5260.0550.02).

#### Again Mining stands out

The Mining sector stands out as the major contributor to the fall in LIS from the productivity and costs point of view:

* On its own, Mining accounted for more than all of the decline in RULC.
* That large negative contribution came about mostly through a negative contribution to RPW growth.
* It was not just that Mining’s RPW contribution failed to keep up with its LP contribution. Its RPW contribution was strongly negative.
* Its contribution to labour productivity growth was moderate.[[4]](#footnote-4)

This is the main industry, from the market sector perspective, that led to real wage growth trailing labour productivity growth. It was the industry that contributed most to the decline in RULC.

Mining also had the largest effect on the change in market sector RULC growth between the two decades. A sharper decline in the RPW contribution was the reason. The sector’s contribution to growth in market sector labour productivity fell between the decades.

#### Other industries made largely offsetting contributions

The ‘second-tier’ contributions to the LIS fall came from the same set of industries as appeared in the price-quantity analysis. They each were relatively small and, as a group, were offset by the industries that made positive contributions.

Again Construction and Manufacturing are found to have made positive contributions to the aggregate LIS. From the market sector point of view:

* the activities in Construction added to growth in real wages but added nothing to labour productivity
* Construction added equally to output growth and growth in use of labour
* Manufacturing added to both RPW growth and LP growth, with the balance leaning a little toward the former
* while the industry only made a small output contribution, its labour contribution was negative.

## 6.3 Industry sources of product price inflation

Chapter 4 drew attention to the fact that an increase in product price inflation in the 2000s was the main reason for growth in the real product wage to trail growth in labour productivity.

The industry contributions to product price inflation are shown in table 6.3 and figure 6.3.

The Mining industry made the most important contribution to product price inflation. It accounted for 25 per cent of the market sector inflation in the 2000s and for over a third of the additional inflation in the 2000s, compared with the 1990s.

Other industries also made important contributions. Manufacturing, Construction, and Finance each contributed around 0.4 percentage points or 13 per cent of the 2000s product price inflation.

Table 6.3 Industry contributions to market sector product price inflation, 1990s and 2000s

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1989-90 to 1999-00 | |  | 1999-00 to 2009-10 | | |  | | decadal change | |
|  | pp | % |  | pp | % |  | | pp | | % |
| Agriculture | -0.12 | -11 |  | 0.10 | 3 |  | | 0.22 | | 10 |
| Mining | 0.03 | 3 |  | 0.78 | 23 |  | | 0.75 | | 33 |
| Manufacturing | 0.38 | 35 |  | 0.40 | 12 |  | | 0.02 | | 1 |
| Utilities | -0.04 | -4 |  | 0.18 | 5 |  | | 0.22 | | 10 |
| Construction | 0.10 | 9 |  | 0.40 | 12 |  | | 0.30 | | 13 |
| Wholesale | 0.08 | 7 |  | 0.22 | 6 |  | | 0.14 | | 6 |
| Retail | 0.12 | 11 |  | 0.16 | 5 |  | | 0.04 | | 2 |
| Accommodation | 0.13 | 12 |  | 0.16 | 5 |  | | 0.02 | | 1 |
| Transport | 0.06 | 6 |  | 0.24 | 7 |  | | 0.18 | | 8 |
| Telecoms | -0.05 | -4 |  | 0.07 | 2 |  | | 0.12 | | 5 |
| Finance | 0.35 | 32 |  | 0.41 | 12 |  | | 0.06 | | 3 |
| Arts & rec | 0.15 | 14 |  | 0.23 | 7 |  | | 0.08 | | 3 |
| Market sector 12 | 1.1 | 100 |  | 3.4 | 100 |  | | 2.3 | | 100 |

*Source*: Author’s estimates based on ABS (Cat. no. 5260.0550.02).

Figure 6.3 Industry contributions to growth in product prices in the 1990s and the 2000sa

percentage points

|  |
| --- |
| Industry contributions to growth in product prices in the 1990s and the 2000s. This figure shows that Mining greatly increased its contribution to growth in product prices in the 2000s. Construction showed the next highest increase in contribution. |

a 1999-00 to 2009-10.

*Data source*: Author’s estimates based on ABS (Cat. no. 5260.0550.02).

## 6.4 Key point summary

* There are some data measurement issues that caution against taking the findings as being precise.
* Nevertheless, the mining boom, and specifically the mining industry, were the principal drivers of the fall in the LIS, according to the analysis in this chapter.
* From both the ‘quantity and price’ and ‘productivity and cost’ points of view, Mining alone accounted for more than the entire changes associated with the fall in market sector LIS.
* Mining was not assisted in this role by the other two industries most affected by the mining boom. Construction and Manufacturing worked in the direction of increasing the LIS.
* The same set of ‘second tier’ contributors to the fall in LIS were observed.
* Telecoms, Agriculture, Finance and the Utilities.
* Mining had a profound effect on the Market sector LIS through:
* growth in its capital stock
* it also contributed to relatively strong growth in the rate of return, but this was offset by relatively strong growth in wage contributions in other industries (relative to their rate of return contributions)
* its negative effect on the real product wage
* its role in lifting product price inflation, which was the main factor holding back growth in the real product wage.
* It would seem, at first glance, that Construction may have captured some of the rents from mining.
* It further appears that labour captured more of the rents than capital, and so the sector had a positive effect on the LIS.
* Manufacturing had a positive effect on the LIS because capital bore more of the adjustment than labour.
* There was downward adjustment in employment but not wages, which may be because wages are determined by broader conditions than those facing the industry itself.

1. As discussed in chapter 3, the ‘wage’ is the cost of labour to the industry. It will vary across industries with the skill mix of employees as well as any variations in labour on-costs. It will also vary with the utilisation rate of labour employed in the industry. As a result of these factors there can be substantial variations in the real wage (cost of labour) across industries. [↑](#footnote-ref-1)
2. The entries are not a reliable indicator of the extent of an industry’s contribution to the fall in LIS because the gap in growth between the reward ratio and factor proportions is equal to the growth in the LIS less the growth in the capital income share. See box 4.1 in chapter 4. [↑](#footnote-ref-2)
3. There is a small approximation or rounding error between the market sector growth gap reported here (‑1.8 percentage points) and that reported in chapter 4 (‑1.7 percentage points). [↑](#footnote-ref-3)
4. Labour productivity declined within the industry in the 2000s. Nevertheless, it made a stronger contribution to market sector output growth than it did to market sector labour growth. [↑](#footnote-ref-4)