A close up of white straws

Description automatically generated

**PC productivity insights**

Quarterly productivity bulletin — September 2023

**Appendix**

A primer on productivity

Detailed productivity statistics

Productivity data revisions

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Appendix

This appendix contains supporting evidence for the September bulletin 2023.

### A primer on productivity

| Box 1 – A primer on productivity |
| --- |
| What is productivity?  Productivity measures the rate at which output of goods and services are produced per unit of input. It is calculated as the ratio of the quantity of output produced to some measure of the quantity of inputs used. Many factors can affect productivity growth such as: technological improvements, workforce skills, changes in other inputs (such as capital), competitive pressures and the business cycle.  What are the main measures?  Two metrics are commonly used to measure aggregate productivity. **Labour productivity** is the ratio of output to hours worked. Output is typically defined as gross value added (the total value of a firm’s production minus intermediate inputs). **Multifactor productivity** (MFP) is the ratio of output to a combined input of labour and capital. It is generally considered to be a better measure of technological change and efficiency improvements than labour productivity.[[1]](#footnote-2)  This bulletin does not include multifactor productivity because it is not included in the quarterly national accounts. Multifactor productivity data for 2022-23 will be released in December 2023.  What parts of the economy are we measuring?  The most accurate estimates of productivity are for those industries where prices are set in markets – known as the ‘market sector’ – and where it is therefore easier to measure output (in terms of real industry gross value added). This Bulletin provides estimates for the 16 market sector industries and the 3 non-market sectors industries.[[2]](#footnote-3) |
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### Detailed productivity statistics

Table 1 – Whole economy and market sector growth rates, per centa,b

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Latest Quarters | | Annual quarterly average | Five year quarterly average | Through the year |
| Mar 23 to Jun 23 | Jan 23 to Mar 23 | 2021-2022 | 2017-2018 to 2021-22 | Jun 22 to Jun 23 |
| Whole Economy | | | | | |
| Output (real GDP) | 0.4 | 0.4 | 0.6 | 0.6 | 2.1 |
| Hours worked | 2.4 | 0.7 | 1.4 | 0.6 | 6.2 |
| **Labour Productivity** | -2.0 | -0.4 | -0.9 | 0.0 | -3.6 |
| Market sector | | | | | |
| Output (gross value added) | 0.4 | 0.2 | 0.5 | 0.5 | 2.0 |
| **Hours worked** | 2.2 | -0.7 | 1.1 | 0.6 | 4.8 |
| **Labour Productivity** | -1.7 | 1.0 | -0.6 | -0.0 | -2.3 |

**a.** Some figures will not appear to add correctly due to rounding to one decimal place. Gross value added (GVA) output is Gross domestic product (GDP) less taxes less subsidies on products and the statistical discrepancy. Labour productivity is the growth in output per unit of labour input. **b.** All values are in real, chain weighted, terms. Through the year estimates show the change between the current quarter and the corresponding quarter of the previous year.

Sources: Commission estimates based on: ABS (2023, *Australian National Accounts: National Income, Expenditure and Product*, June 2023, Cat. no. 5206.0, table 1).

Table 2 – Industry-level growth rates, per centa

|  | Labour Productivity | | | GVA | | | Hours worked | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| All 19 industries | Q2  2023 | Q1  2023 | Average quarterly change (Annual) | Q2  2023 | Q1  2023 | Average quarterly change (Annual) | Q2  2023 | Q1 2023 | Average quarterly change (Annual) | |
| Agriculture, forestry and fishing | -3.3 | -0.7 | -0.1 | 0.9 | 1.8 | -0.8 | 4.3 | 2.5 | | -0.5 |
| Mining | -3.3 | -3.6 | -1.6 | -1.3 | -0.8 | 0.7 | 2.0 | 2.9 | | 2.5 |
| Manufacturing | -2.9 | 4.5 | -0.1 | 0.7 | 2.3 | 0.1 | 3.7 | -2.1 | | 0.3 |
| Electricity, gas, water and waste services | -3.3 | 5.3 | -1.7 | 2.9 | 1.9 | 0.1 | 6.4 | -3.3 | | 2.0 |
| Construction | -2.5 | 6.2 | 0.3 | 2.2 | 0.6 | 1.1 | 4.9 | -5.2 | | 0.9 |
| Wholesale trade | 0.7 | 2.8 | -2.5 | -1.5 | 1.7 | 0.0 | -2.2 | -1.1 | | 2.8 |
| Retail trade | -3.1 | 0.0 | -1.0 | -0.1 | -0.6 | -0.2 | 3.1 | -0.6 | | 0.8 |
| Accommodation and food services | 1.9 | -2.6 | -1.3 | 0.4 | 0.6 | 1.7 | -1.5 | 3.3 | | 3.1 |
| Transport, postal and warehousing | 0.9 | -1.8 | -1.1 | 1.1 | 0.3 | 1.2 | 0.1 | 2.1 | | 2.4 |
| Information media and telecommunications | -3.4 | 9.7 | 1.0 | 0.3 | 1.6 | 1.7 | 3.9 | -7.3 | | 1.0 |
| Financial and insurance services | -2.3 | 4.0 | -0.7 | 0.2 | 0.1 | 0.1 | 2.6 | -3.7 | | 0.9 |
| Rental, hiring and  real estate services | -1.6 | -1.5 | -0.5 | 2.6 | -1.2 | 0.5 | 4.3 | 0.3 | | 1.0 |
| Professional, scientific and technical services | -4.7 | 2.3 | -0.5 | -0.3 | -0.8 | -0.2 | 4.7 | -3.1 | | 0.6 |
| Administrative and  support services | 6.5 | -3.4 | 1.3 | 1.8 | -0.8 | 1.5 | -4.5 | 2.6 | | 0.4 |
| Public administration  and safety | -2.4 | -0.6 | -1.8 | 0.5 | 0.8 | 0.7 | 2.9 | 1.4 | | 2.6 |
| Education and training | -6.1 | -7.6 | -2.5 | 0.4 | 0.4 | 0.4 | 7.0 | 8.6 | | 3.2 |
| Health care and  social assistance | 0.0 | -4.2 | -1.3 | 0.9 | 0.9 | 0.5 | 0.9 | 5.4 | | 1.9 |
| Arts and recreation services | -7.6 | -4.9 | -1.4 | 0.9 | -0.7 | 0.5 | 9.3 | 4.5 | | 2.1 |
| Other services | -1.0 | -2.4 | 0.2 | 1.2 | 1.2 | 1.1 | 2.2 | 3.7 | | 1.0 |

**a.** All values are in chain volume terms.

Source: Commission estimates based on ABS (2023, *Australian National Accounts: National Income, Expenditure and Product*, June 2023, Cat. no. 5206.0, table 6) and ABS (2023, *Labour Account Australia*, June 2023, industry summary table).[Used for spacing, do not delete | Style: No Spacing]

### Productivity data revisions

Previous ABS account releases can be revised due to more up-to-date data and seasonal adjustments. It is important to examine these revisions in case they change Australia’s productivity story. The tables below show revisions from the March 2023 quarterly release for aggregate and industry statistics.

Table 3 – Revisions to whole economy and market sector growth ratesa

|  |  |  |  |
| --- | --- | --- | --- |
|  | Revision on Q1 2023 | | Difference  (percentage point) |
| Before | Now |
| Whole economy | | | |
| Output (real GDP) | 0.2 | 0.4 | 0.2 |
| GVA | 0.1 | 0.2 | 0.1 |
| **Hours worked** | 0.5 | 0.7 | 0.2 |
| **Labour Productivity** | -0.3 | -0.4 | -0.1 |
| Market sector |  |  |  |
| Output (Gross value-added) | 0.1 | 0.2 | 0.1 |
| **Hours worked** | -0.8 | -0.7 | 0.1 |
| **Labour Productivity** | 0.9 | 1.0 | 0.1 |

**a.** All values are in chain volume terms.

Sources: Commission estimates based on ABS (2023, Australian National Accounts: National Income, Expenditure and Product, March 2023, Cat. no. 5206.0, table 1) and ABS (2023, Australian National Accounts: National Income, Expenditure and Product, June 2023, Cat. no. 5206.0, table 1).

Table 4 – Revisions to industry Gross Value Added (GVA)a

|  | Revision on Q1 2023 | | Difference  (percentage point) |
| --- | --- | --- | --- |
| Before | After |
| Market sector | | | |
| Agriculture, forestry and fishing | -0.2 | 1.8 | 2.0 |
| Mining | -0.3 | -0.8 | -0.5 |
| Manufacturing | 2.4 | 2.3 | -0.1 |
| Electricity, gas, water and waste services | 1.5 | 1.9 | 0.4 |
| Construction | 0.2 | 0.6 | 0.4 |
| Wholesale trade | 1.3 | 1.7 | 0.4 |
| Retail trade | -0.5 | -0.6 | -0.1 |
| Accommodation and food services | 0.7 | 0.6 | -0.1 |
| Transport, postal and warehousing | 0.4 | 0.3 | -0.1 |
| Information, media and telecommunications | 1.7 | 1.6 | -0.1 |
| Financial and insurance services | 0.0 | 0.1 | 0.1 |
| Rental, hiring and real estate services | -1.6 | -1.2 | 0.4 |
| Professional, scientific and technical services | -1.2 | -0.8 | 0.4 |
| Administrative and support services | -1.4 | -0.8 | 0.6 |
| Public administration and safety | 0.8 | 0.8 | 0.0 |
| Education and training | 0.4 | 0.4 | 0.0 |
| Health care and social assistance | 1.1 | 0.9 | -0.2 |
| Arts and recreation services | -0.7 | -0.7 | 0.0 |
| Other services | 1.2 | 1.2 | 0.0 |

**a.** All values are in chain volume terms.

Source: Commission estimates based on ABS (2023, *Australian National Accounts: National Income, Expenditure and Product*, March 2023, Cat. no. 5206.0, table 6) and ABS (2023, *Australian National Accounts: National Income, Expenditure and Product*, June 2023, Cat. no. 5206.0, table 6). [Used for spacing, do not delete | Style: No Spacing]

Table 5 – Revisions to industry hours worked

|  | Revision on Q1 2023 | | Difference  (percentage point) |
| --- | --- | --- | --- |
| Before | After |
| Market sector | | | |
| Agriculture, forestry and fishing | -1.5 | 2.5 | 4.0 |
| Mining | 2.7 | 2.9 | 0.2 |
| Manufacturing | -1.5 | -2.1 | -0.6 |
| Electricity, gas, water and waste services | -1.0 | -3.3 | -2.3 |
| Construction | -4.9 | -5.2 | -0.3 |
| Wholesale trade | -1.7 | -1.1 | 0.6 |
| Retail trade | 1.7 | -0.6 | -2.3 |
| Accommodation and food services | 2.7 | 3.3 | 0.6 |
| Transport, postal and warehousing | 1.2 | 2.1 | 0.9 |
| Information, media and telecommunications | -5.3 | -7.3 | -2.1 |
| Financial and insurance services | -0.6 | -3.7 | -3.1 |
| Rental, hiring and real estate services | -0.7 | 0.3 | 1.0 |
| Professional, scientific and technical services | -3.5 | -3.1 | 0.4 |
| Administrative and support services | 0.8 | 2.6 | 1.8 |
| Public administration and safety | -0.1 | 1.4 | 1.5 |
| Education and training | 7.2 | 8.6 | 1.4 |
| Health care and social assistance | 5.4 | 5.4 | 0.0 |
| Arts and recreation services | 5.2 | 4.5 | -0.7 |
| Other services | 2.0 | 3.7 | 1.7 |

Source: Commission estimates based on ABS (2023, *Labour Account Australia*, March 2023, industry summary table) and ABS (2023, *Labour Account Australia*, June 2023, industry summary table). [Used for spacing, do not delete | Style: No Spacing

1. Usually, the growth in labour productivity exceeds the growth in multifactor productivity. The difference between the two is the contribution from ‘capital deepening’.] [↑](#footnote-ref-2)
2. Labour productivity can also be measured for the whole economy (in terms of real GDP per hour worked). Labour productivity measured in this way contributes to growth in living standards but is a poorer indicator of technological change and efficiency improvement because of the difficulty measuring output in health, education and public administration. [↑](#footnote-ref-3)