



Australian Government
Productivity Commission

PC productivity insights

Quarterly productivity bulletin — September 2023

Appendix

A primer on productivity

Detailed productivity statistics

Productivity data revisions

The Productivity Commission acknowledges the Traditional Owners of Country throughout Australia and their continuing connection to land, waters and community. We pay our respects to their Cultures, Country and Elders past and present.

The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).

© Commonwealth of Australia 2023



With the exception of the Commonwealth Coat of Arms and content supplied by third parties, this copyright work is licensed under a Creative Commons Attribution 4.0 International licence. In essence, you are free to copy, communicate and adapt the work, as long as you attribute the work to the Productivity Commission (but not in any way that suggests the Commission endorses you or your use) and abide by the other licence terms. The licence can be viewed at: <https://creativecommons.org/licenses/by/4.0>.

The terms under which the Coat of Arms can be used are detailed at: www.pmc.gov.au/government/commonwealth-coat-arms.

Wherever a third party holds copyright in this material the copyright remains with that party. Their permission may be required to use the material, please contact them directly.

An appropriate reference for this publication is:
Productivity Commission 2023, *Quarterly productivity bulletin — September 2023: Appendix*, PC Productivity insights, Canberra, October

Publication enquiries:
Phone 03 9653 2244 | Email publications@pc.gov.au

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

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

¹ Usually, the growth in labour productivity exceeds the growth in multifactor productivity. The difference between the two is the contribution from 'capital deepening'.]

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.

Detailed productivity statistics

Table 1 – Whole economy and market sector growth rates, per cent^{a,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 cent^a

	Labour Productivity			GVA			Hours worked		
	Q2		Average quarterly change	Q1		Average quarterly change	Q2		Average quarterly change
	2023	2023	(Annual)	2023	2023	(Annual)	2023	2023	(Annual)
All 19 industries									
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	-1.6	-1.5	-0.5	2.6	-1.2	0.5	4.3	0.3	1.0

	Labour Productivity			GVA			Hours worked		
	Q2	Q1	Average quarterly change	Q2	Q1	Average quarterly change	Q2	Q1	Average quarterly change
All 19 industries	2023	2023	(Annual)	2023	2023	(Annual)	2023	2023	(Annual)
real estate services									
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).

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 rates^a

	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

Market sector	Revision on Q1 2023		Difference (percentage point)
	Before	After	
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).

Table 5 – Revisions to industry hours worked

Market sector	Revision on Q1 2023		Difference (percentage point)
	Before	After	
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).