A Industry classifications

This appendix outlines the various industry classifications used in this supplement’s analyses. First, section A.1 provides details of the industry breakdowns underlying chapters 2 to 5, and of the aggregations of industries into sectors also used in these chapters. Following this, section A.2 defines the scope of the data used in the case study of the natural resources sector in chapter 6, with particular emphasis on the correspondence between that sector, the industries it comprises, and the commodities that the sector produces.

## A.1 Classification of industries

ABS data on output, investment and employment are commonly reported at the industry ‘division’ level, which comprises 19 divisions labelled ‘A’ to ‘S’ (table A.1).

Table A.1 **List of industries, ANZSIC division level**

|  |  |
| --- | --- |
| *ANZSIC industry division code* | *ANZSIC industry division title* |
| A | Agriculture, forestry and fishing |
| B | Mining |
| C | Manufacturing |
| D | Electricity, gas, water and waste services |
| E | Construction |
| F | Wholesale trade |
| G | Retail trade |
| H | Accommodation and food services |
| I | Transport, postal and warehousing |
| J | Information media and telecommunications |
| K | Financial and insurance services |
| L | Rental, hiring and real estate service |
| M | Professional, scientific and technical services |
| N | Administrative and support services |
| O | Public administration and safety |
| P | Education and training |
| Q | Health care and social assistance |
| R | Arts and recreation services |
| S | Other services |

*Source*: ABS (*Australian and New Zealand Standard Industrial Classification (ANZSIC)*, Cat. no. 1292.0).

When analyses in chapters 5 and 6 present data by industry from the Household, Income and Labour Dynamics in Australia (HILDA) survey, the industry classification mirrors the ABS industry divisions shown in table A.1.

Some data are available at a more detailed level than divisions. For example, ABS labour force data are available at the ANZSIC industry ‘subdivision’ level (table A.3 provides an example).

For some of the ABS national accounts data used in this supplement, the ABS disaggregates the division‑level data into smaller categories known as TAUs (Type of Activity Units). The TAU categories do not overlap exactly with the ANZSIC subdivisions. Some TAUs represent a single subdivision, while others, due to data limitations, represent a combination of subdivisions (ABS 2011a, 2012b). The TAU classification applies only to some of the national accounts data reported in chapter 3 (for example, table 3.2).

**Aggregation of industries into sectors**

In some parts of this supplement, the industry division‑level data in table A.1 have been aggregated into ‘sectors’ (broad industry groupings). In some cases, this aggregation has been performed for presentational simplicity and to draw inferences about industries with similar functions. In other cases, it has been necessary to aggregate industry division data to produce statistically reliable estimates, given the small size of the dataset (for example, in chapter 5, Electricity, gas, water and waste services — collectively termed ‘utilities’ — were grouped with Construction).

The different levels of aggregation that have been used in this supplement (based on the 19 ANZSIC industry divisions) are outlined in table A.2.

At the broadest level of aggregation, analyses in this supplement look at four core sectors: agriculture; mining; manufacturing; and services (with the latter comprising the 16 ANZSIC industry divisions ‘D’ to ‘S’) (4-sector classification, table A.2, column 2). This aggregation was used in parts of chapters 3 and 4.

Two observations are important. First, the ‘Mining industry’ (division) and the ‘mining sector’ are equivalent (under all levels of aggregation), so that these terms may be used interchangeably, and are both equivalent to the ‘resources sector’. Second, some researchers combine the Agriculture and Mining industry divisions into a single sector, often termed ‘primary’. This approach was not adopted in this supplement, because the two industries have been subject to different forces of market demand and supply, and undergone demonstrably different patterns of growth, in recent decades. The rapid expansion of the Mining industry in the decade to 2012 (especially in terms of its share of total investment and employment) stands in stark contrast to the declining economic share of the Agriculture industry, for instance.

The eight-sector aggregation allows a deeper level of analysis (8-sector classification (i), table A.2, column 3). Under this approach, the 16 services divisions were collated into five sectors, based on the similarity of their function within the economy: distribution services; business services; social services; personal services; and another group combining utilities and construction. These groupings were used in chapter 5. The allocation of the services divisions into these broader groups was informed by the work of McLachlan, Clark and Monday (2002), in their study of Australia’s services sector (which itself was based on seminal work in this field by Browning and Singelmann (1978) and Elfring (1988)). Industry aggregation was also crafted, in some cases, to respond to the need for a sufficiently large sample with which to produce statistically reliable estimates.

In some parts of this supplement’s analysis, this first eight‑sector classification was modified, with utilities grouped with distribution services instead of with construction (8‑sector classification (ii), table A.1, column 4). This was due to the way in which the data required to undertake the analysis were made available, and follows the approach used by Connolly and Lewis (2010) and Connolly and Orsmond (2011). This modified eight‑sector classification applies to the structural change indexes presented in chapters 3 and 4.[[1]](#footnote-1)

Where the data permitted, utilities and construction were kept as separate sectors, corresponding to ABS divisions D and E, respectively (9-sector classification, table A.1, column 5). This was motivated by the fact that these two industries exhibited somewhat divergent patterns of growth over recent years. This nine‑sector classification was used in parts of chapters 3 and 4.

Table A.2 Different aggregations of industries into sectors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ANZSIC industry divisions | 4‑sector classification | 8‑sector classification (i) | 8‑sector classification (ii) | 9‑sector classification |
| Agriculture, forestry & fishing | Agriculture | Agriculture | Agriculture | Agriculture |
| Mining | Mining | Mining | Mining | Mining |
| Manufacturing | Manufacturing | Manufacturing | Manufacturing | Manufacturing |
| Electricity, gas, water & waste services | Services | Construction & Utilities | Distribution services & Utilities | Utilities |
| Construction | Services | Construction & Utilities | Construction | Construction |
| Wholesale trade | Services | Distribution services | Distribution services & Utilities | Distribution services |
| Retail trade | Services | Distribution services | Distribution services & Utilities | Distribution services |
| Accommodation & food services | Services | Personal services | Personal services | Personal services |
| Transport, postal & warehousing | Services | Distribution services | Distribution services & Utilities | Distribution services |
| Information media & telecommunications | Services | Distribution services | Distribution services & Utilities | Distribution services |
| Financial & insurance services | Services | Business services | Business services | Business services |
| Rental, hiring & real estate services | Services | Business services | Business services | Business services |
| Professional, scientific & technical services | Services | Business services | Business services | Business services |
| Administrative & support services | Services | Business services | Business services | Business services |
| Public administration & safety | Services | Social services | Social services | Social services |
| Education & training | Services | Social services | Social services | Social services |
| Health care & social assistance | Services | Social services | Social services | Social services |
| Arts & recreation services | Services | Personal services | Personal services | Personal services |
| Other services | Services | Personal services | Personal services | Personal services |
| *Usage in this supplement* | Chapters 3 & 4 | Chapter 5 | Chapters 3 & 4 | Chapters 3 & 4 |

## A.2 Mining industry (natural resources sector)

A major focus of this supplement is on structural change and adjustment experienced by the ‘natural resources sector’ (the ‘resources sector’). For this purpose, the natural resources sector extends to, and is limited to, those businesses producing minerals and energy, or providing specialised services such as exploration services.

The natural resources sector, as defined, aligns with the ABS Mining industry division (ABS ANZSIC industry division B, table A.1). For this reason, throughout the report (in particular in chapters 5 and 6), the terms ‘Mining industry’, ‘mining sector’, ‘natural resources sector’ and ‘resources sector’ are used interchangeably.

The mining industry data in this supplement are disaggregated into subdivisions using one of two approaches. The first uses the ABS’s standard subdivision classification, which distinguishes five industries, and the second uses the subdivision classification, but with iron ore identified separately from other metal ores (table A.3). Further details of the commodities and activities covered by each subdivision are provided in table A.4.

Table A.3 Mining industry at different levels of aggregation**a**

|  |  |  |
| --- | --- | --- |
| Industry division | Industry subdivision | Industry subdivision with iron ore separately identified |
| Mining | Coal mining | Coal mining |
| Oil and gas extraction | Oil and gas extraction |
| Metal ore mining | Iron ore mining |
| Non‑ferrous metal mining |
| Non‑metallic minerals mining | Non‑metallic minerals mining and quarrying |
| Exploration and services to mining | Exploration and services to mining |
| Mining (not further defined) | Mining (not further defined) |

a ‘Mining (not further defined)’ refers to industry activity that cannot be classified due to insufficient detail being provided. This category came into use from 2000 onwards. Prior to 2000, unclassifiable observations were included as a fixed share of other subdivisions. The ABS advises that the ‘Mining (not further defined)’ category can include ‘new’ types of industry activity that are yet to be formerly classified.

*Source*: ABS (*Australian and New Zealand Standard Industrial Classification (ANZSIC)*, Cat. no. 1292.0).

Non‑ABS data are also presented in chapter 6 of this supplement, for individual minerals such as manganese, uranium oxide and thermal coal. These detailed data are intended to illustrate production and price trends occurring within the disaggregated industries. For example, data for liquefied natural gas, liquefied petroleum gas and crude oil condensate are reported to distinguish trends occurring within the Oil and gas extraction industry. The data were obtained from the Bureau of Resources and Energy Economics (and its predecessor, the Australian Bureau of Agriculture and Resource Economics and Sciences), the Organization of the Petroleum Exporting Countries and the Reserve Bank of Australia. Detailed sources are indicated in notes underlying the relevant tables and figures in chapter 6.

Table A.4 Main commodities and activities represented in the Mining industry, by subdivision

|  |  |  |  |
| --- | --- | --- | --- |
| Industry subdivision | ABS Group Code | ABS Class Codes | Main commodities and activities |
| Coal mining | Coal mining | Coal mining | Black (thermal and metallurgical) coal, brown coal, lignite and peat |
| Oil and gas extraction | Oil and gas extraction | Oil and gas extraction | Crude oil, natural gas, petroleum gas, and shale oil |
| Metal ore mining | Iron ore mining | Iron ore mining | Iron ore and iron sand |
| Non‑ferrous metal mining | Bauxite mining | Aluminium ore and bauxite |
| Copper ore mining | Copper ore |
| Gold ore mining | Gold ore |
| Mineral sand mining | Ilmenite, leucoxene, mineral sands, monazite sand, rutile sand, synthetic rutile and zircon sand |
| Nickel ore mining | Nickel ore |
| Silver‑Lead‑Zinc ore mining | Lead, silver and zinc ore |
| Other metal ore mining | Antimony, beryllium, bismuth, iron pyrite, manganese, molybdenite, platinum, tantalite, tin, tungsten and uranium |
| Non‑metallic minerals mining and quarrying | Construction material mining | Gravel and sand quarrying | Pebble, river gravel, ornamental rock and sand |
| Other construction material quarrying | Aggregate, bentonite, blue stone, brick shale, building stone, cement clay, chalk, clay, earth or soil filling, granite, limestone, marble, sandstone, slate, stone and tile clay |
| Other non‑metallic mineral mining and quarrying | Other non‑metallic mineral mining and quarrying | Alabaster, alunite, barite, chrysoprase, diatomite, felspar, flint, fluorspar, gemstone, glauconite, graphite, gypsum, jade, kyanite, lithium, magnesite, mica, opal, phosphate, quartz, salt, silica, talc, vermiculite and zeolite |
| Exploration and services to mining | Exploration | Petroleum exploration | Petroleum, and natural gas |
| Mineral exploration | Mineral exploration |
| Other mining support services | Other mining support services | Cementing oil and gas well castings, directional drilling and redrilling, mining draining and pumping nec, and oil and gas field support nec |

**nec** Not elsewhere classified

*Source*: ABS (*Australian and New Zealand Standard Industrial Classification (ANZSIC)*, Cat. no. 1292.0).

1. This supplement’s calculation of structural change indexes uses extended time series data supplied on request by Connolly (Connolly, E., RBA, Sydney, pers. comm., 13 August 2012, unpublished data). [↑](#footnote-ref-1)