



Australian Government
Productivity Commission

Trade & Assistance Review
2018-19

Methodological
Annex

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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).

Contents

1	About this annex	1
2	Overview of the Commission's assistance measurement system	3
3	Re-benchmarking the Commission's assistance estimates	13
4	Programs added to the assistance estimates in 2018-19	19
5	Programs previously included in the estimates that had zero assistance in 2018-19	27

1 About this annex

Under its establishing Act, the Productivity Commission is required to report annually on industry assistance and its effects on the economy. As part of fulfilling this function, the Commission publishes quantitative estimates of assistance to Australian industry each year in its *Trade and Assistance Review*. Quantifying industry assistance helps to show the winners and losers from industry assistance and can help governments to make better informed policy decisions, potentially leading to improvements in the allocation of the community's scarce resources and, through this, improve community welfare.

The Commission and its predecessors commenced publishing assistance estimates in the early 1970s. The estimates initially focused on the main forms of import protection for the manufacturing sector and domestic marketing arrangements for agriculture. Over time, the coverage has been expanded to include a broader range of measures, most notably budgetary outlays and tax concessions.

The Commission's estimates have been derived in several 'series', each spanning a number of consecutive years. Each series retains a common methodology, coverage of measures and data sources across those years.

In *Trade and Assistance Review 2018-19*, the Commission published the first of a new series of assistance estimates. The new series is called the '2016-17 series' to reflect the underlying Australian Bureau of Statistics (ABS) input-output data used to benchmark the estimates.

This Methodological Annex describes the new series, providing details of the changes made and information to assist the interpretation of the estimates.

Chapter 2 provides an overview of the Commission's assistance measurement system and is intended for readers seeking a general grasp of the system and published estimates.

Chapter 3 explains the re-benchmarking process undertaken for the *Review* in moving from the previous (2013-14) series of estimates to the 2016-17 series.

Chapter 4 lists new programs added to the estimates for 2018-19.

Chapter 5 lists programs that lapsed in 2018-19.

This annex is the latest in a series of papers providing information and updates on the Commission's assistance estimates and methodologies. Other relevant annexes, published since 2000, are listed in the following table.

Table 1.1 Previous methodological annexes to *Trade and Assistance Review*

<i>Date</i>	<i>Title</i>	<i>Details</i>
December 2000	Allocating Budgetary Assistance by 27 ANZSIC based Industry Groupings	Methodological Annex: Trade and Assistance Review 1999-2000
December 2002	The Commission's Assistance Measurement System	Methodological Annex A: Trade and Assistance Review 2001-02
December 2002	Allocating Budgetary Assistance to Primary Production by 10 ANZSIC based Industry Groupings	Methodological Annex B: Trade and Assistance Review 2001-02
June 2006	Allocating Budgetary Assistance by Industry Groupings: Recent Revisions	Methodological Annex: Trade and Assistance Review 2004-05
December 2008	The '2001-02' series of assistance estimates	Methodological Annex: Trade and Assistance Review 2005-06 and 2006-07
December 2011	Methodological Annex: for Reviews Commencing 2008-09	Methodological Annex: Trade and Assistance Review 2008-09
June 2012	Changes to the Commission's Assistance Estimates	Methodological Annex: Trade and Assistance Review 2010-11
February 2014	Estimation Framework, Coverage and Re benchmarking of Estimates	Methodological Annex: Trade and Assistance Review 2011-12
October 2014	Changes to the Commission's Assistance Estimates	Methodological Annex: Trade and Assistance Review 2012-13
November 2015	Changes to the Commission's Assistance Estimates	Methodological Annex: Trade and Assistance Review 2013-14
October 2017	Estimation Framework, Coverage and Re benchmarking of Estimates	Methodological Annex: Trade and Assistance Review 2015-16
May 2018	Methodological Annex	Methodological Annex: Trade and Assistance Review 2016-17
June 2019	Methodological Annex	Methodological Annex: Trade and Assistance Review 2017-18

Source: www.pc.gov.au/research/ongoing/trade-assistance.

A full list of the Commission's Trade & Assistance Reviews can be found at <http://www.pc.gov.au/research/ongoing/trade-assistance>.

2 Overview of the Commission's assistance measurement system

Coverage of assistance instruments

Section 10(6) of the *Productivity Commission Act 1998* defines assistance to industry as:

... any act that, directly or indirectly: (a) assists a person to carry on a business or activity; or (b) confers a pecuniary benefit on, or results in a pecuniary benefit accruing to, a person in respect of carrying on a business or activity.

Reflecting this broad definition, an array of different instruments can provide assistance to industry. These include:

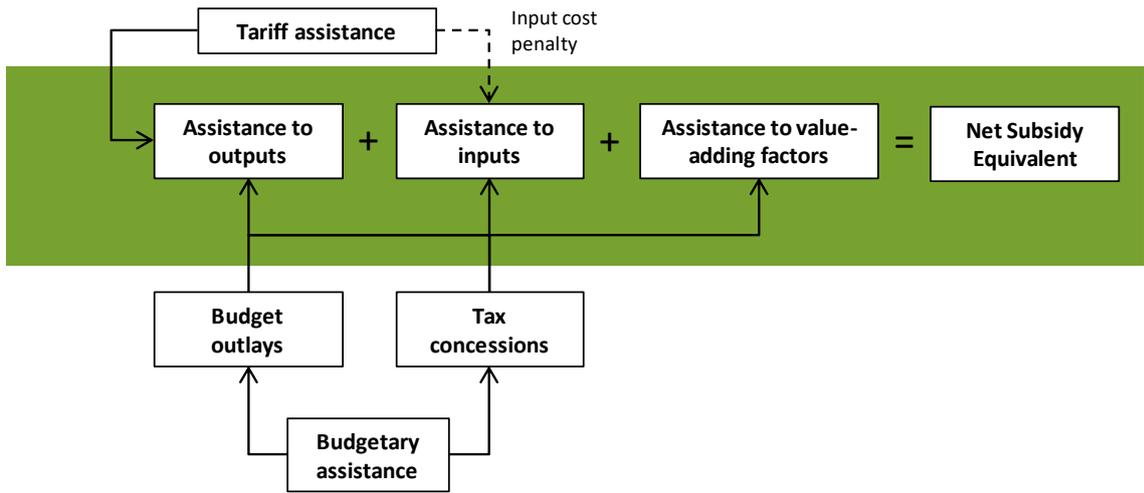
- tariffs, quotas, anti-dumping duties and regulatory restrictions on imported goods and services, such as local design rules and quarantine laws
- grants and subsidies for domestic producers
- tax expenditures and offsets for domestic producers
- 'in-kind' assistance provided by publicly-funded intermediaries, such as certain research undertaken by CSIRO
- regulatory restrictions on domestic competition, such as those provided by some statutory marketing arrangements and legislation that reserve markets for particular groups (for example, pharmacy service provision)
- the provision of services by government agencies at concessional prices
- government procurement policies.

For its annual estimates of industry assistance published in the *Trade and Assistance Review*, it is not practicable to cover all forms of government support to industry (for a list of assistance types not included, see box A.1 in main report). Rather, the Commission's estimates focus on the main forms of support that selectively assist firms, activities or industries and that can be quantified on an annual basis given practical constraints in measurement and data availability.

The key assistance measures covered in the annual estimates are tariff assistance (including tariff concessions) and Australian Government budgetary assistance (including grants, subsidies and tax expenditures) (figure 2.1).

Assistance is categorised by the form in which it is delivered (tariffs, budgetary outlays or tax concessions) and their direct effect (assistance to outputs, inputs or to value-adding factors).

Figure 2.1 **Budgetary and tariff assistance in *Trade and Assistance Review* measures of assistance^a**



^a Input tariff assistance is negative; it represents the increased cost of inputs as a result of tariffs levied on them.

These estimates of assistance are based on a ‘static’ model and focus on the value of assistance accruing to different activities. Implementation of the assistance estimation model is supported by a number of simplifying assumptions (box 2.1).

Box 2.1 Assistance framework: key simplifying assumptions

The analytical framework used for the Commission's assistance measures is static and partial equilibrium in nature. The main simplifying assumptions underlying the application of the framework are:

- perfect substitution between domestic and foreign goods of the same description
- the 'small country' assumption, whereby Australia does not influence the world price of its imports or exports (that is, the terms of trade are assumed to be exogenous)
- no substitution between nominally different goods
- infinite elasticities of export demand and import supply
- the prices of goods, services, and resources in the absence of assistance represent their opportunity cost to the community
- the direction of trade in the absence of assistance can be assessed, with import parity prices forming the benchmark for goods assessed to be import-competing and export-parity prices for export goods
- production relationships between inputs are unaltered by the assistance structure
- constant returns to scale

A detailed discussion of the framework is provided in Industry Commission Information Paper *Assistance to Agricultural and Manufacturing Industries* in 1995.

Data sources

In quantifying the tariff assistance provided each year by various measures, the Commission draws on a range of data sources, including:

- the Australian Customs tariff schedule
- ABS data on foreign trade flows, the Australian national accounts and input-output ratios.

Annual information about budgetary assistance programs comes from:

- the Treasury's Tax Benchmark and Variation Statement
- departmental annual reports
- email correspondence with contacts in relevant government departments asking for information about newly implemented assistance programs
- media releases, program documentation, and through requests to the relevant department.

Industry groupings

The level of industry detail at which the Commission reports on assistance, and the focus of its estimates, have changed over time. The initial focus was on assistance within the traded-goods sectors — particularly manufacturing and agriculture — where levels of

assistance were found to be high. Over time, assistance targeted to these sectors has been reduced, while the incidence of budgetary assistance to both goods producing and services sectors has increased. Services activities have increased in relative economic importance and now account for more than 80 per cent of value added in Australia.

Reflecting these developments, from the 2001-02 *Review*, the Commission has included estimates of assistance to the services sector, and has integrated these, as far as practicable, with estimates in relation to manufacturing and agriculture.

In *Trade and Assistance Review 2018-19*, estimates of combined assistance are presented for 38 'industry groupings', 9 in the primary production sector, 12 in the manufacturing sector, 15 in the services sector, a mining group, and an unallocated other group (there are also 'unallocated' groupings within each sector other than mining) (table 2.1). The industry groupings are based on the classification of industries in the 2006 edition of the Australia and New Zealand Standard Industrial Classification (ANZSIC).

Under ANZSIC, there are no separate categories for functional groupings such as tourism. Rather, such activities span parts of several ANZSIC industry categories. While the Commission does not report assistance to functional groupings such as tourism in its annual estimates, from time to time it undertakes studies that cover assistance to such groupings.¹

¹ The Commission published estimates of assistance to tourism, from Commonwealth and State Governments, for three years from 2000-01 to 2002-03, in its 2005 Research Paper *Assistance to Tourism: Exploratory Estimate*.

Table 2.2 Industry groupings used for reporting assistance in *Trade and Assistance Review 2018-19*

<i>Industry grouping</i>	<i>ANZSIC 2006 codes</i>
Primary production	A
Horticulture and fruit growing	011, 012, 013
Sheep, beef cattle and grain farming	014
Other crop growing	015
Dairy cattle farming	016
Other livestock farming	017, 018, 019
Aquaculture and fishing	02, 04
Forestry and logging	03
Primary production support services	05
Unallocated primary production	–
Mining	B
Manufacturing	C
Food, beverages and tobacco	11, 12
Textile, leather, clothing and footwear	13
Wood and paper products	14, 15
Printing and recorded media	16
Petroleum, coal, chemical and rubber products	17, 18, 19
Non-metallic mineral products	20
Metal and fabricated metal products	21, 22
Motor vehicles and parts	231
Other transport equipment	239
Machinery and equipment manufacturing	24
Furniture and other manufacturing	25
Unallocated manufacturing	–
Services	D-S
Electricity, gas, water and waste services	D
Construction	E
Wholesale trade	F
Retail trade	G
Accommodation and food services	H
Transport, postal and warehousing	I
Information, media and telecommunications	J
Financial and insurance services	K
Property, professional and administration services	L, M, N
Public administration and safety	O
Education and training	P
Health care and social assistance	Q
Arts and recreation services	R
Other services	S
Unallocated services	–
Unallocated other	–

Source: Commission estimates based on ABS (2013), *Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006 (Revision 2.0)*, Cat. no. 1292.0, Canberra

Procedures of assistance estimation

The approach adopted by the Commission in estimating the value of assistance varies depending upon the instruments used to provide the support.

- Where governments impose tariffs on imports, the assistance to competing Australian producers is determined as the subsidy equivalent inferred from the price increase allowed (in principle) by the tariff on Australian producers' domestic sales; not by the dollar amount of tariff revenue collected on imports.
- Where the protected goods are used by other industries as inputs, the negative assistance caused by tariffs on inputs is assessed as the tax equivalent imposed by tariffs on inputs (whether locally produced or imported) used in production.
- Where governments provide grants and subsidies directly to firms, the government expenditure on the subsidy is recorded as assistance. The annual estimates generally exclude the policy advice and general administration costs of government agencies that administer grants and other assistance programs.
- Where governments fund services that indirectly assist an industry, such as funding of CSIRO to conduct research activities, the full funding (excluding any industry contributions) is deemed to be assistance.
- Where governments provide tax concessions — exemptions, deductions, offsets, rebates, lower tax rates or tax liability deferrals — on a selective basis, the value of the assistance provided is estimated as the amount of tax revenue forgone by the government.

Estimating tariff assistance

Tariff assistance refers to assistance provided in the form of tariffs levied on imports. The estimates of tariff assistance are divided into two parts — output assistance and input assistance. Output assistance allows Australian producers to increase their prices. Input assistance is the cost penalty that Australian producers experience when they face higher input costs because of tariffs.

The Commission uses its Tariff and Import Database and Estimating System (TIDES) model to provide estimates of the 'price impacts' of tariffs for both output and input goods. The model produces a two-column matrix of rows representing the duty rate on outputs and on inputs of a tariff item, which are calculated by dividing the duty value by the landed domestic value of the tariff item.

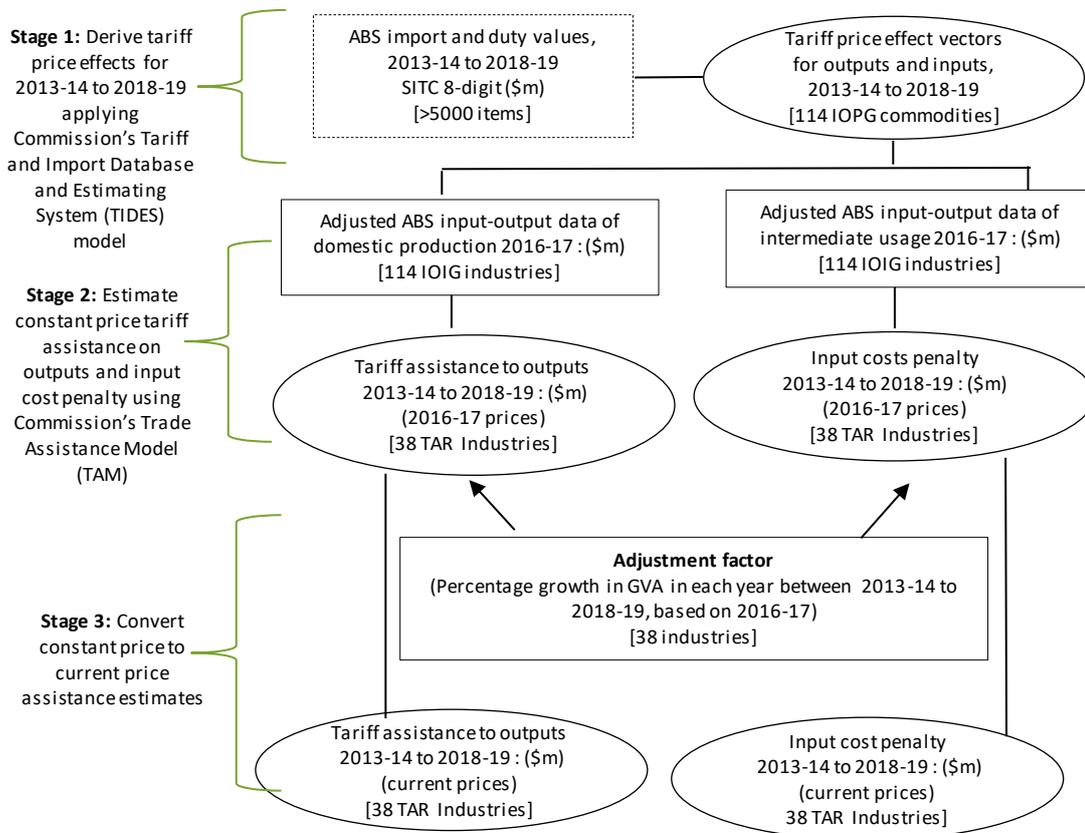
As tariff assistance operates through its impact on outputs produced domestically and on inputs used in the production of that output, its estimation requires data on industry cost structures as represented in input-output tables.

The Commission uses ABS input-output data in combination with the price distortion vectors derived from TIDES to produce estimates of tariff assistance for both output and input goods (figure 2.2) (see earlier *Trade and Assistance Reviews* publications particularly

for 2011-12, 2015-16, and 2017-18 and the User guide for details of the estimation procedure).

Since input-output data are not published annually, a series of estimates are made, anchored to one input-output structure. The estimates across years but using the same input-output data reflect changes in tariff rates and trade, assuming that the structures of the economy do not change.

Figure 2.2 Estimating tariff assistance



To reflect changes in the structure of the economy, the Commission periodically re-benchmarks the estimates to align with the latest ABS input-output data. The current *Review* has 're-benchmarked' its tariff estimates to align with the 2016-17 input-output data, the latest in the series.

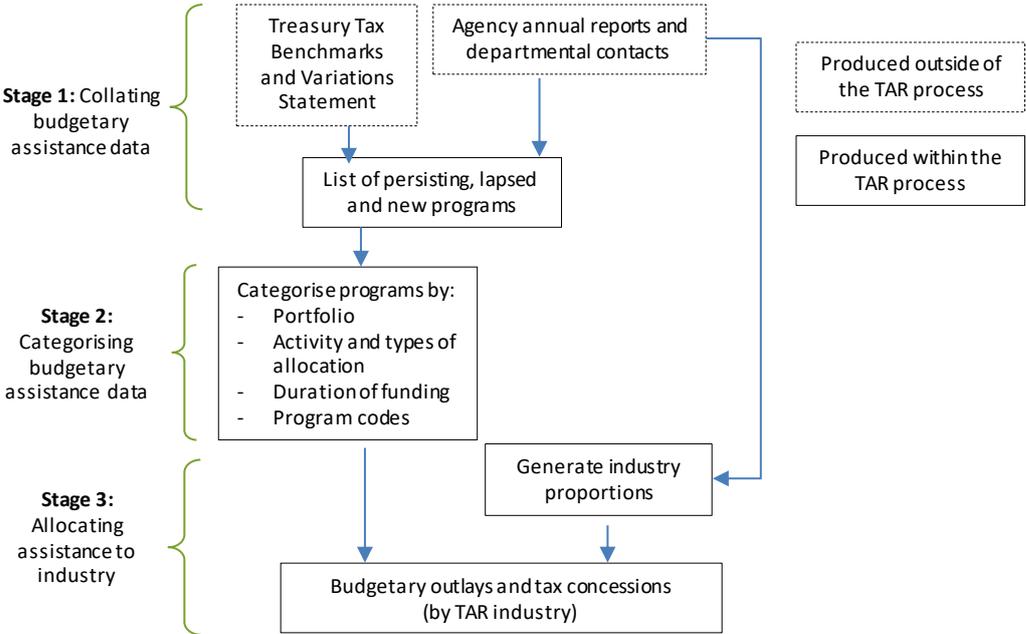
Chapter 3 describes the re-benchmarking process undertaken.

Estimating budgetary assistance and their industry allocation

The estimation of the budgetary assistance measures requires a detailed itemisation and classification of programs regarded as Australian Government budgetary

assistance (figure 2.3). The result of this process is a database of Australian Government budgetary assistance items that are used to produce a set of tables detailing the assistance provided by individual programs to different industries.

Figure 2.3 Estimating budgetary assistance by industry



The Commission estimates the incidence of budgetary assistance by industry based on the concept of ‘initial benefiting industry’ (IBI) (box 2.2).

In allocating assistance to industry groupings, each program is examined individually. Programs that assist only a single industry, such as the Clothing and Household Textile Building Innovative Capability Program or the Grape and Wine R&D Corporation, are allocated directly to that industry (textile, leather, clothing and footwear and horticulture and fruit growing, respectively).

Box 2.2 **The ‘initial benefiting industry’ allocation method**

Under the ‘initial benefiting industry’ (IBI) concept for estimating the incidence of assistance, assistance is allocated to the industry hosting the firm that initially benefits from a program or measure. Where a number of firms, in different industries, initially benefit from a particular program or measure, the Commission seeks to apportion the assistance between those industries.

Thus, where a firm receives a direct payment or claims a tax concession, the assistance is recorded against the ANZSIC industry grouping that the firm’s principal activities belong to.

In cases where assistance is delivered via an intermediate organisation, such as Austrade export promotion services or CSIRO research, the initial benefiting industry is taken to be that in which the firms that utilise the services operate. For example, wheat research by CSIRO would be allocated as assistance to the wheat growing industry (part of the sheep, beef cattle and grain farming ANZSIC industry grouping).

Similarly, a small business program that uses consultants to provide business planning or IT advice to farmers would be classified as initially benefiting the agricultural industries, not the business services or IT industry (that the consultant is part of).

The Commission includes in its assistance some programs where the initial recipients are consumers (rather than firms or intermediary bodies). In such cases, the assistance is classified to the industry providing the good or service to the consumer. For example, in the case of assistance paid to convert cars to LPG, assistance is deemed to accrue to the industry providing the conversion service.

Similarly, where assistance is provided to an intermediary service, such as transport or financial services, and that assistance lowers the cost of a good or service to a user, the initial benefiting industry is deemed to be that of the user, rather than the intermediary.

Where the Commission cannot identify the initial beneficiary of a program, the assistance is recorded as ‘unallocated’. That is, it is included in the aggregate estimates, but not in the industry totals.

The IBI approach does not attempt to identify all of the ultimate beneficiaries of assistance that arise through flow-on effects. For example, budgetary assistance to the Australian film industry is allocated to the ANZSIC industry category of arts and recreational services. However, the benefits of this assistance could extend beyond this particular industry, say to construction services in the case where film production requires these services as inputs. Further, an increase in demand for construction services may increase demand in the wood and paper products industry, and so on.

Many programs assist multiple industries — for example, income tax averaging provisions. A variety of sources are used in determining to what extent each industry is likely to benefit from these programs.

- Where the Commission can obtain sufficiently detailed data for a program, it uses this information to distribute the program’s funding among the initial benefiting industries. For example, it obtains ANZSIC claims data for the Export Market Development Grants scheme which is sufficiently detailed to determine the initial benefiting industries for the program.

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- For programs that provide grants and where the Commission has details on the individual grants, it uses this information to assign each grant to a particular industry. For example, the Department Industry, Science, Energy and Resources published details of grant recipients for many of its administered programs. These details have been used to determine the initial benefiting industry for the program.
 - Where data indicating which industries initially benefit from a particular program are not available, the assistance given under that program has been recorded as ‘unallocated’. There are four ‘unallocated’ categories: one each for primary production, manufacturing and the services sectors (used when the initial benefiting sector can be identified but not the initial benefiting industry or industries within it), and an ‘unallocated other’ category for assistance that cannot be assigned to particular sectors based on available information. ‘Unallocated’ funding forms part of the Commission’s aggregate estimates of assistance.

The IBI approach does not attempt to identify all of the ultimate beneficiaries of assistance, through flow-on effects. Particular care is therefore required in drawing inferences about the resource allocation effects given the ‘static’ nature of the underlying model. This aspect of the model, and the IBI approach, means that only the initial effects of assistance are captured, while the responses of producers and consumers to the incentives created by the provision of assistance are not. Classification of assistance by IBI provides an indication of the point in a production and distribution chain where a government intervention initially bites.

Calculating combined assistance

Combined assistance is calculated as the sum of tariff and budgetary assistance that is provided to an industry. Combined assistance is expressed in dollar value and as a rate, which allows the comparison of assistance to industries of different sizes. The main measure of combined assistance is the effective rate of assistance, where the total value of combined assistance is divided by industry unassisted value added.

The key concepts involved in calculating rates of combined assistance and the procedure adopted are described in earlier *Trade and Assistance Review* publications.

3 Re-benchmarking the Commission's assistance estimates

The assistance estimates published in *Trade and Assistance Review 2018-19* are the first in a new series based on the 2016-17 input-output tables (reflecting the structure of the economy, which stays fixed for the series). The Commission's previous five series have been benchmarked to 1996-97, 2001-02, 2004-05, 2008-09 and 2013-14, respectively. The re-benchmarking of the assistance estimates to the 2016-17 input-output tables follows closely the methodology adopted for the 2013-14 re-benchmarking exercise. This chapter sets out the main steps and conventions adopted in the updating and assistance estimation process.²

Updating the underlying input-output data to the ABS 2016-17 tables

The calculation of effective rates of (tariff) assistance requires data on industry inputs, or 'cost structures'. In the formative years of assistance estimation the Commission benchmarked its estimates to economic census and survey information. From 2001-02, the assistance estimation methodology for manufacturing and agriculture was integrated and benchmarked to ABS input-output tables (box 3.1).

Modifications to ABS input-output data

Some aspects of the construction of ABS input-output tables have reduced their usefulness for estimating effective rates of assistance. This reflects that the ABS commenced the collection of data at a higher level of aggregation, which limits the availability of data for separating industries into more homogeneous activities.³ As a consequence of the change in ABS statistical unit conventions, the amount of 'off-diagonal production' of commodities reported in input-output tables increased materially from 1996-97.⁴

² Various earlier *Trade and Assistance Review* publications have details on the re-benchmarking process undertaken. Some examples are – *Trade and Assistance Review 2015-16* and the User guide.

³ Input-output tables up to the reference year 1993-94 were based on data collected at the establishment level. Subsequent input-output tables have been based on data collected at the business unit or enterprise level. see Gretton, P. 2005, 'Australian Input-Output Tables', *Australian Economic Review*, vol. 38, no. 3, pp. 319–32.

⁴ In the input-output tables, each industry produces a 'predominant' commodity but often also some 'additional' commodities. For example, paper stationery and other converted paper products are produced mainly by the paper stationery and other converted paper products industry but some are also produced by

Box 3.3 Cost structures information

Manufacturing estimates

Prior to 2000, ABS manufacturing census data was used to derive measures of inputs and outputs for manufacturing industries.

ABS input-output cost-structure data for 1994-95 were used for the *Trade and Assistance Review 1999–2000* and *Trade and Assistance Review 2000-01*.

The input-output data were updated to 1996-97 for the manufacturing estimates published in *Trade and Assistance Review 2001-02*. The ABS data were also adjusted to incorporate the Commission's preferred treatment of transport margins — see Methodological Annex A to that Review.

The input-output benchmark for the assistance estimates updated to 2001-02 was first published in the *Trade and Assistance Review 2005-06*. For the 2001-02 series, the Commission reclassified manufacturing work undertaken by wholesale and retail service industries to the manufacturing sector so as to maintain comparability with the previous series of estimates (see the Methodological Annex to the *Trade and Assistance Review 2005-06* and *2006-07*).

The input-output benchmark updated to 2004-05 was first published in the *Trade and Assistance Review 2008-09*. For the 2004-05 series, the Commission carried out a more comprehensive modification of the ABS input-output data to further enhance comparability with earlier series of estimates (see Methodological Annex to the *2008-09 Review*).

The input-output benchmark updated to 2008-09 was first published in the *Trade and Assistance Review 2011-12*.

The input-output benchmark updated to 2013-14 was first published in the *Trade and Assistance Review 2015-16*.

For the 2008-09 and 2013-14 series, the Commission reported the estimates according to the latest ANZSIC industry classification — ANZSIC 2006 — and introduced further adjustments to the data and methodology used (see *Methodological Annex to the 2015-16 Review*).

Agricultural estimates

Prior to 2001, a combination of ABARE farm survey and ABS agricultural finance survey and commodities data were used to derive measures of inputs and outputs by agricultural commodity. For the '1996-97 series' introduced in *Trade and Assistance Review 2001-02*, the Commission adopted a cost-structure for agriculture based on the average of four years input-output data: 1992-93, 1993-94, 1994-95 and 1996-97. Multiple years were selected in order to reduce the impact of the cyclical nature of agricultural production. A single year approach was adopted for the '2001-02' series of assistance estimates, as the Commission had found that estimates for the 2001-02 (and subsequently 2004-05, 2008-09, 2013-14 and 2016-17) series using a single year of agricultural data was not significantly different from those based on an average of a number of years.

The ABS adjusted earlier input-output tables to improve the homogeneity of industries. However, these adjustments have largely been discontinued in more recent editions of the

the sawmill product industry. Similarly, the petroleum and coal industry is recorded as producing some iron and steel products besides its predominant petroleum and coal commodities.

input–output tables. More specifically, the ABS has discontinued the practice of ‘grossing–up’ (adjusting of) manufacturing work undertaken by other industries on a commission or fee–for–service basis — as commission work involves one industry (such as wholesale or retail trade) engaging another industry (usually a manufacturing industry) to produce output on its behalf (frequently using inputs supplied by the commissioning industry) — whereby the commissioned output is reclassified from the commissioning industry to the producing industry.

The ABS has also discontinued the practice of ‘re–defining’ secondary production — whereby secondary production is ‘allocated’ to the *industry* in which the activity is primarily undertaken, so as to improve industry ‘homogeneity’ (under this convention, wholesaling work undertaken by manufacturers would be re–defined in the input–output tables from the manufacturing sector to wholesale trade).

For the Commission’s assistance estimates, the use of (unadjusted) published data could give rise to estimated changes in effective rates of assistance between series without *any* statutory changes in tariffs or budgetary assistance.⁵ For example, for both the textile, leather, clothing and footwear and motor vehicles and parts industries, the relative importance of secondary production (such as wholesale trade) has increased in recent published series. As there are no tariffs on wholesale trade, the change in statistical conventions alone would dilute the reported level of tariff protection afforded to the relevant manufacturing activities across assistance series.

With the objective of maintaining comparability across series and maintaining the industry homogeneity assumptions that underpin the input–output tables, following the methodology established for the previous series, the Commission adjusts the published ABS input–output tables. The process has been carried out in two parts — first, a ‘grossing up’ adjustment (to address commissioned work) and then, a ‘full redefinition’ of the ABS’s input–output industry groupings (to address secondary production).

The grossing up adjustment involves removing petroleum produced on behalf of the wholesale trade industry from wholesale trade, together with the crude oil and other inputs purchased by wholesalers to produce this output, and then adding this production and associated inputs to the petroleum and coal products industry.⁶ In the 2016–17 year, the adjustment reduced wholesale trade industry production by around \$3.8 billion (or around 3 per cent of wholesale trade production), and increased petroleum and coal products output by the same dollar amount. The adjustment accounted for around 17 per cent of the (adjusted) output of the petroleum and coal products industry.

⁵ Increasing off-diagonal production can lead to changes in effective rates of assistance between series even where tariffs or budgetary assistance remain unchanged. This is especially the case where production shifts from traditionally more highly assisted industries, such as textiles, clothing and footwear, to more lowly assisted industries like wholesale trade (and vice versa).

⁶ There are other examples of commission work that, in principle, could also be similarly adjusted, but were not adjusted for the 2008–09, 2013–14 or 2016–17 updates, including, meat processing undertaken on commission for predominantly retail enterprises.

The full redefinition involves reclassifying all remaining secondary production to the industry in which the activity is primarily undertaken. Some significant examples of this adjustment include the shifting of wholesale activity undertaken in the manufacturing and other non-wholesale trade industries to the wholesale trade industry and shifting all clothing production by non-clothing industries (particularly wholesale and retail trade) to the Input-Output Industry Group (IOIG) clothing manufacturing industry.

As a result of these adjustments, inputs used in production also need to be adjusted (table 2 of the ABS's input-output data). Ideally, the adjustments to the inputs would reflect the production technology of the goods. However, detailed information on the inputs used to produce the secondary production is not available. The Commission has therefore adjusted the inputs used in each of the 114 industry groups in proportion to the change in production for each industry by reallocating intermediate and primary inputs in proportion to the reallocation of outputs (that is, the industry technology assumption is adopted to re-allocated inputs). For example, where IOIG clothing manufacturing industry output declines by 10 per cent then the clothing industry's usage of inputs is also reduced by 10 per cent. Those inputs are added to the inputs of the industry to which the output is redefined.

Conversely, a 5 per cent increase in metal products output results in a 5 per cent increase in the usage of inputs by the metal products industry. Those inputs would be transferred from the industry initially recorded as producing the output.

It is important to note in this redefinition process, that the total usage of inputs across all industries is unchanged as inputs are only reallocated between industry groups in proportion to the changes in outputs. As no net change in total industry output occurs, there is also no net change in the total usage of inputs by industry.

The impact of modifying the input-output tables on the effective rates of assistance has been found to be materially insignificant at the sectoral levels.

Tariff rate data — services sector adjustment

In deriving the price impacts of tariffs for both output and input goods, the Commission uses an ABS concordance from the trade classification to the ABS input-output product classification. This concordance maps imports of merchandise goods (around 5650 items of product categories) first, to the corresponding categories in the ABS's input-output product classification (1267 products), and finally, to the ABS's input-output industry classification (114 industries).

Direct application of the ABS concordance between the merchandise traded goods and the ABS input-output classification would result in a non-zero average tariff rate for some broad service industry groupings. Such 'average' tariff rates would not be considered representative of the majority of the main service activities in that industry grouping. For example, the ABS partly classifies re-imported medical waste products as health care and

social assistance services. Direct application of the concordance would generate a non-zero average tariff rate for the entire health care and social assistance services grouping.

Thus, following the practice adopted in previous series, the 2016-17 series has set tariff rates on merchandise products mapped to services industries by the ABS equal to zero.

Combining tariff and budgetary assistance estimates — updating constant value tariff assistance estimates to current year values

The tariff assistance estimates are initially derived for all years in the series in 2016-17 input-output base-year dollars. That is, different imports and duty data over a number of years are combined with the same 2016-17 ABS input-output data. This approach provides multiple year estimates of output and input tariff assistance in constant 2016-17 dollars.

In contrast, expenditure under budgetary assistance programs are in current year dollars.

In order to combine the value of the two estimates, the 2016-17 constant price estimates of tariff assistance are adjusted or scaled from input-output base-year dollars to current-year dollars.

The Commission uses ABS gross value added (GVA) data by national accounts industry division to make this adjustment. Implicit in this approach is the simplifying assumption that the values of inputs and outputs have moved proportionately between the base year and current year. As the rate of growth is different across industries, the relativities between the current and constant price estimates will be different.

The concordance between trade and assistance industry groupings and the national accounts division used in the scaling process is provided in table 3.1.

Table 3.1 Concordance between Trade and Assistance industry group and national accounts

<i>Trade and Assistance industry group (ANZSIC 2006)</i>	<i>National accounts industry division (ANZSIC 2006)</i>
Horticulture and fruit growing; Sheep, beef cattle and grain growing; Other crop growing; Dairy cattle farming; Other livestock farming; and Primary production support services	Agriculture
Aquaculture and fishing; Forestry and logging	Forestry and fishing
Mining	Mining
Food, beverages and tobacco	Food, beverage and tobacco products
Textile, clothing, footwear and leather	Textile, clothing and other manufacturing
Wood and paper products	Wood and paper products
Printing, publishing and recorded media	Printing and recorded media
Petroleum, coal, chemical and associated products	Petroleum, coal, chemical and rubber products
Non-metallic mineral products	Non-metallic mineral products
Metal products	Metal products
Motor vehicles and parts; Other transport equipment; Machinery and equipment manufacturing; and Furniture and other manufacturing	Machinery and equipment
Electricity, gas, water and waste services	Electricity, gas, water and waste services
Construction	Construction
Wholesale trade	Wholesale trade
Retail trade	Retail trade
Accommodation and food services	Accommodation and food services
Transport, postal and warehousing	Transport, postal and warehousing
Information, media and telecommunications	Information media and telecommunications
Financial and insurance services	Financial and insurance services
Property, professional and administrative services	Rental, hiring and real estate services; Professional, scientific and technical services; Administrative and support services; and Ownership of dwellings
Public administration and safety	Public administration and safety
Education and training	Education and training
Health care and social assistance	Health care and social assistance
Other services	Other services

Sources: Commission estimates; ABS (2019), *Australian System of National Accounts*, cat. no. 5204.0 (table 5).

4 Programs added to the assistance estimates in 2018-19

This chapter describes Australian Government budgetary programs added to the assistance estimates for *Trade and Assistance Review 2018-19*. Assistance provided by these programs was \$58.5 million in 2018-19 (table 4.1).

Table 4.3 Budgetary measures added to the assistance estimates for Trade and Assistance Review 2018-19

<i>Program</i>	<i>Form^a</i>	<i>Initial benefiting industry</i>	<i>Assistance value 2018-19 (\$m)</i>
Regional Investment Corporation	BO	Unallocated primary production	12.6
Assistance for Farmers and Farm Communities in Drought— Drought Pests and Weeds	BO	Unallocated primary production	15.0
Assistance for Farmers and Farm Communities in Drought— Farm Hub	BO	Unallocated primary production	0.5
Package Assisting Small Exporters	BO	Unallocated primary production	0.1
Industry 4.0 Testlabs for Australia	BO	Education and training	5.7
SME Export Hubs	BO	Primary production support services, Other transport equipment, Professional, scientific and technical services, Administrative and support services	1.3
Thermochemical Conversion Technology Trial Facility	BO	Electricity, gas, water and waste services	4.5
Bait Prawn Industry Irradiation Support	BO	Fishing, hunting and trapping, wholesale trade	0.5
National Forest Industries Plan	BO	Forestry and logging	1.0
Defence Global Competitiveness Grants - Centre for Defence Industry Capability (CDIC) Program	BO	Unallocated manufacturing	1.2
Sovereign Industrial Capability Priorities Grants - Centre for Defence Industry Capability (CDIC) Program	BO	Unallocated manufacturing	15.2
National Institute for Forest Products Innovation	BO	Forestry and logging	1.0
TOTAL			58.5

^a BO: budgetary outlay.

Sources: Australian Government department and agency reports (various years) and departmental personal communications.

Regional Investment Corporation (RIC)

In July 2018, the Australian Government established a new agency called Regional Investment Corporation (RIC) under the RIC Act 2018. Its two main objectives were to provide loans to eligible farm businesses and support government on water infrastructure projects.

The RIC administers the delivery of \$2 billion for farm business loans. It offers two types of farm business loans to farm businesses — farm investment loans and drought loans. It also offers a disaster recovery loan to flood impacted producers in North Queensland.

The farm investment loans are intended for farmers who want to invest in a better future. They are designed to make farm businesses stronger, more resilient and more profitable.

The drought loans are to help farm businesses to prepare, manage and recover through drought. The maximum amount of loan and the terms are same as for farm investment loans.

The AgRebuild loan is a disaster recovery loan to help flood-affected Qld farmers restock, replant and recover. Maximum amount of loan is up to \$5 million with a concessional rate repayment structure. The loan is available until 30 June 2020.

The RIC also administers the delivery of \$2 billion loans to state and territory governments for eligible water infrastructure projects that improve water security and support regional economic growth. With Australian government funding no more than 49 per cent, the rest is co-funded by state and territory governments. The value of Australian Government administered expenses for this scheme in 2018-19 was \$12.6 million (Department of Agriculture Annual Report 2018-19, p.80).

The program is assessed as initially benefiting primary production activities. However, information on the specific industry incidence of the program has not been readily available. Accordingly, the budgetary outlay has been classified to the Unallocated primary production industry grouping.⁷

Assistance for Farmers and Farm Communities in Drought— Drought Pests and Weeds

The Australian Government, under the Communities Combating Pests and Weed Impacts During Drought Program - Biosecurity Management of Pests and Weeds - Round 1, provided grants in selected Local Government Areas (LGAs) in 2018–2019. The grant program was

⁷ The Commission's assistance estimates cover only those measures that selectively benefit particular firms, industries or activities, and that can be quantified given practical constraints in measurement and data availability. Arrangements that may have assistance implications but are not currently part of the estimates include State and Territory government support to industry, although state-based agricultural marketing arrangements were included in earlier Commission assistance estimates.

intended to fund projects that control/manage priority pest animals and weeds in eligible drought affected local government areas and initiate strategic management to significantly reduce population numbers of these pest animals and weeds.

The value of Australian Government administered expenses for 2018-19 was \$15 million (Department of Agriculture Annual Report 2018-19, p.80).

The program is assessed as initially benefiting primary production activities. However, information on the specific industry incidence of the program has not been readily available. Accordingly, the budgetary outlay has been classified to the Unallocated primary production industry grouping.

Assistance for Farmers and Farm Communities in Drought — Farm Hub

Farm Hub was developed by the National Farmers' Federation using funding from the Commonwealth Government and in partnership with numerous government and non-profit agencies which provide support to farmers. This collaboration was announced by Prime Minister Scott Morrison at the National Drought Summit in October 2018.

The program initially launched as a portal through which farmers could access information about assistance and advice to manage hardship, with an initial focus on drought. Recently, its scope has been broadened to include more information relevant to farmers and farming communities, including training and climate information.

The value of Australian Government administered expenses for 2018-19 was \$0.5 million (Department of Agriculture Annual Report 2018-19, p.81).

The program is assessed as initially benefiting primary production activities. However, information on the specific industry incidence of the program has not been readily available. Accordingly, the budgetary outlay has been classified to the Unallocated primary production industry grouping.

Package Assisting Small Exporters

In 2013, the Australian government established the Package Assisting Small Exporters with approximately \$10 million available for funding projects to improve market access for small exporters. In 2019, the government announced \$6.1 million over four years to extend the program to continue to support small exporters to overcome barriers to market access. \$5 million is available for distribution over the period 2019-20 to 2022-23.

Under the program, grants are available to organisations and individuals for projects that support small exporters in the dairy, fish, eggs, grain, plant, horticulture, meat and animal

products industries to overcome barriers to market access. However, grant recipients will not be limited to small exporters, but projects must primarily be for the benefit of small exporters.

The value of Australian Government administered expenses for 2018-19 was \$0.1 million (Department of Agriculture Annual Report 2018-19, p.83).

The program is assessed as initially benefiting primary production activities. However, information on the specific industry incidence of the program has not been readily available. Accordingly, the budgetary outlay has been classified to the Unallocated primary production industry grouping.

Industry 4.0 Testlabs for Australia

This pilot program was a result of the principles and framework explored by the Prime Minister's Industry 4.0 Taskforce for the adoption of Industry 4.0 in Australia. The aim of the testlabs is to provide innovation support for SMEs in priority industry growth sectors, including those in regional areas, to improve their skills and capabilities to incorporate technology and innovation associated with Industry 4.0 into their businesses.

The program supports the setup of testlabs at 6 Australian universities: Swinburne University of Technology; University of Queensland; University of South Australia; University of Tasmania; University of Technology Sydney; and University of Western Australia.

The maximum grant amount is up to \$1 000 000 and can cover up to 50 per cent of eligible project costs.

The value of Australian Government administered expenses for the project was \$5.7 million in 2018-19 (Department of Industry, Science, Energy and Resources contact).

Funding for the grant has been allocated to the *Education and training* industry grouping.

SME Export Hubs

The \$20.0 million Small and Medium Enterprises (SME) Export Hubs Initiative is funded for four years from 2018-19. They are expected to boost the export capability of local and regional businesses, through supporting activities such as developing collective brands, leveraging local infrastructure to scale business operations, and positioning regional businesses to participate in global supply chains.

The Initiative is aimed to support export hubs in the priority Growth Centre sectors: advanced manufacturing; cyber security; food and agribusiness; medical technologies and pharmaceuticals; mining equipment, technology and services; and oil, gas and energy resources.

The available grant amount is between \$150 000 and \$1.5 million. It can cover up to 50 per cent of eligible project costs. The maximum grant period is 2 years 5 months and projects have to be completed by 30 June 2022.

The value of the Australian Government administered expenses for the project was \$1.3 million in 2018-19 (Department of Industry, Science, Energy and Resources contact).

This program is assessed as initially benefiting businesses engaged in primary production support services, other transport equipment, professional, scientific and technical services, and administrative and support services.

Defence Global Competitiveness Grants - Centre for Defence Industry Capability (CDIC) Program

Defence Global Competitiveness Grants, announced in the 2018 Defence Export Strategy, are a dedicated annual grants program of up to \$4.1 million each year supporting eligible Australian SMEs to build export capability.

The grant program will be delivered through the Centre for Defence Industry Capability, by providing matched funding grants to eligible projects. Eligible activities may include: buying, leasing, constructing, installing or commissioning of capital equipment including specialist software to enhance cyber security; design, engineering and commissioning activities; and/or workforce training and accreditations.

Ongoing funding of up to \$4.1 million each year will be available from November 2018 through to June 2029. The grant amount will be up to 50 per cent of eligible project costs. The minimum grant amount is \$15 000 and the maximum grant amount is \$150 000.

The value of Australian Government administered expenses for 2018-19 was \$1.2 million (Australian Government's Grants Connect website, <https://www.grants.gov.au/?event=public.home>, accessed 21 Nov 2019).

The program is assessed as initially benefiting firms predominately in the manufacturing sector. However, information on the specific industry incidence of the program has not been readily available. Accordingly, the budgetary outlay has been classified to the Unallocated manufacturing industry grouping.

Thermochemical Conversion Technology Trial Facility

In 2019, the Australian Government announced that it would provide \$4.5 million towards a thermochemical conversion technology trial facility. Thermochemical conversion involves using superheated water to convert organic matter to bio-oil. The bio-oil can be used as a

heating fuel or can be further converted to advanced biofuels (<http://www.etipbioenergy.eu/everyone/fuels-and-conversion/thermochemical-conversion>).

The value of Australian Government administered expenses for 2018-19 was \$4.5 million (Department of Industry, Science, Energy and Resources contact).

Funding for the trial is assessed as initially benefiting firms in the Electricity, gas, water and waste services industry grouping.

Bait Prawn Industry Irradiation Support

The Australian Government is committed to provide \$5.0 million over three years from 2018-19 to assist the Queensland bait industry to manage the risk of the spread of the white spot syndrome virus. The white spot syndrome virus affects crustaceans, such as prawns, crabs and yabbies, causing high prawn mortality, but does not pose a threat to human health or food safety.

This funding is intended to help industry to meet costs associated with the required irradiation of bait caught in the Moreton Bay region of Queensland. The funding will also be used to help educate commercial and recreational fishers on the disease risks to Australian waterways of using non-commercial bait. The measure complements the Australian Government support provided to affected prawn farmers and builds on efforts to support agribusiness.

The value of Australian Government administered expenses for 2018-19 was \$0.5 million (Department of Industry, Science, Energy and Resources contact).

The program is assessed as initially benefiting firms in fishing, hunting and trapping and wholesale trade.

National Forest Industries Plan

The Australian Government's National Forest Industries Plan intends to help the sustainable forest industries as long-term growth engines for regional Australia. The implementation of the Plan is supported through the 2018-2019 Federal Budget with a \$20 million commitment over four years between 2018-19 and 2021-22.

The funding will focus on regional forestry hubs where there is the potential to create regional jobs and support regional communities while adding value to wood and fibre industries.

The Plan includes funding to:

-
- transform farm forestry as a commercial enterprise supplying timber to Australia's forestry sector
 - enable the identification, improvement and use of existing forest resources on Indigenous owned and managed land, and privately owned land
 - drive further innovation, research and development of new products and value-adding in forest industries
 - determine opportunities and gaps in key Regional Forestry Hubs.

The value of Australian Government administered expenses for 2018-19 was \$1.0 million (Department of Agriculture Annual Report 2018-19, p.76).

The program is assessed as initially benefiting firms in forestry and logging.

Sovereign Industrial Capability Priorities Grants - Centre for Defence Industry Capability (CDIC) Program

The Sovereign Industrial Capability Priority Grants, announced in the 2018 Defence Industrial Capability Plan, is a dedicated annual grants program of up to \$17 million supporting eligible Australian SMEs. Grants will be funded by Defence and delivered through the Centre for Defence Industry Capability.

Eligible activities may include:

- buying, constructing, installing or commissioning of capital equipment - including specialist software to enhance cyber security
- design, engineering and commissioning activities
- workforce training and accreditation.

Grants ranging from \$50 000 to \$1 million are available to fund the acquisition of capital equipment that enables the SMEs to contribute to at least one of the Sovereign Industrial Capability Priorities. Successful grant applications are subject to the requirements of 50:50 matched funding.

While there is no limit on the number of grants a business can apply for and receive over the life of the program, the dedicated grants program is capped at \$3 million over a three year period per business.

The value of Australian Government administered expenses for 2018-19 was \$15.2 million (Australian Government's Grants Connect website, <https://www.grants.gov.au/?event=public.home>, accessed 21 Nov 2019).

The program is assessed as initially benefiting firms predominately in the manufacturing sector. However, information on the specific industry incidence of the program has not been readily available. Accordingly, the budgetary outlay has been classified to the Unallocated manufacturing industry grouping.

National Institute for Forest Products Innovation

The establishment of the National Institute for Forest Products Innovation, and its regional centres in South Australia and Tasmania, was a 2016 election promise. The South Australian Centre will be headquartered at the University of South Australia in Mount Gambier and the Tasmanian Centre at the University of Tasmania in Launceston. Both centres aim to grow Australia's forest and forest products industry by exploring and facilitating innovation in the forest products sector in areas such as forest management, timber processing, wood fibre recovery, value adding, advanced manufacturing and the bio-economy.

Both State Governments committed \$2 million over the initial four years towards the operations of their local Centre, while the Australian Government committed \$4 million at the project level between the two. Additional financial support is anticipated to be received from industry.

The value of Australian Government administered expenses for 2018-19 was \$1.0 million (Department of Agriculture Annual Report 2018-19, p.83).

The program is assessed as initially benefiting firms in forestry and logging.

5 Programs previously included in the estimates that had zero assistance in 2018-19

This chapter presents information on 7 programs that were included in the assistance estimates for 2017-18 (and earlier years where applicable), but that had zero assistance in 2018-19. Assistance provided by these programs was \$67.0 million in 2017-18 (table 5.1).

Table 5.4 Assistance programs in 2017-18 with zero assistance in 2018-19

<i>Program</i>	<i>Form^a</i>	<i>Initial benefiting industry</i>	<i>Assistance value 2017-18 (\$m)</i>
Farm Co-operatives and Collaboration Pilot - Stronger Farmers, Stronger Economy	BO	Unallocated primary production	6.4
Funding for major films - Alien: Covenant and Thor: Ragnarok	BO	Arts and recreation services	29.7
Data Retention Industry Grants Programme	BO	Information media and telecommunications	18.3
Automotive Diversification Programme	BO	Motor vehicle and parts	1.7
Victorian Innovation and Investment Fund - Ford Assistance	BO	Food products; Beverage and tobacco products; Wood products; Basic chemical and chemical products; Non-metallic mineral products; Motor vehicle and parts; Other transport equipment; unallocated manufacturing;	4.6
Toyota Major Facelift Vehicle and Supplier Grant	BO	Motor vehicle and parts	0.7
Tasmanian Jobs and Investment Fund	BO	Mushroom and vegetable growing; Fruit and tree nut growing; Primary production support services; Food products; Beverage and tobacco products; Textile, leather, clothing and footwear; Wood products; Fabricated metal products; Other transport equipment; Machinery and equipment manufacturing; Unallocated manufacturing; Accommodation and food services; Transport, postal and warehousing; Education and training; Arts and recreation services	5.7
TOTAL			67.0

^a BO: budgetary outlay.