



Australian Government
Productivity Commission



Trade and assistance review: Methodological annex

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The Productivity Commission

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An appropriate reference for this publication is:
Productivity Commission 2022, *Trade and assistance review: Methodological annex*, Annual Report Series, Canberra

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About this annex

This annex provides an overview of the Productivity Commission's industry assistance measurement framework and information about how the Commission produces annual assistance estimates. From 2020-21, this annex replaces the annual annexes, published since 2000, which are reported on the Commission's website.¹ (A full list of the Commission's annual *Trade and Assistance Reviews* (TARs) can be found at www.pc.gov.au/research/ongoing/trade-assistance.)

The methods, scope and data sources for assistance estimates have changed over time. For example, early estimates by the Commission's predecessors reflected the importance of the costs of protecting the manufacturing sector against imports, and of domestic marketing arrangements for the agricultural sector. Subsequent estimates have expanded to include budgetary outlays and tax concessions.

The Commission's estimates have been derived in several 'series', each spanning a number of consecutive years. The data sources and methodologies used to produce the assistance estimates are consistent for years within a series. The estimates published in the TAR each year are re-benchmarked to a particular 'series' to reflect the underlying Australian Bureau of Statistics (ABS) input-output data used to benchmark the estimates. The Methodological Annex to the *Trade and Assistance Review 2018-19* explains the re-benchmarking process that underlies the 2016-17 series.

¹ This Methodological Annex (2022) replaces the annual Methodological Annex and will be updated only if the methodology changes. The last annual Methodological Annex was for 2019-20.

1. Overview of the Commission's assistance measurement framework

Assistance measures covered

Section 10(3) of the *Productivity Commission Act 1998* (Cwlth) 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, measures that assist industry include:

- tariffs, quotas, anti-dumping duties and regulatory restrictions on imported goods and services, such as local design rules and quarantine requirements
- policies that lower the effective price of goods and services below their supply price (the price that producers need to supply that good or service)
- grants and subsidies that are selectively available for domestic producers
- grants and subsidies that are selectively available for specific industries
- tax expenditures and offsets that are selectively available for domestic producers
- tax expenditures and offsets that are selectively available for specific industries
- 'in kind' assistance provided by publicly funded intermediaries, such as certain research undertaken by the Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- regulatory restrictions on domestic competition, such as those provided by some statutory marketing arrangements and legislation that reserves markets for particular groups (for example, pharmacies)
- services provided by government agencies at concessional prices
- preferences for domestic producers under government procurement policies.

It is not practicable to cover all forms of government assistance to industry in the estimates. Rather, the estimates focus on the main forms of assistance for particular businesses, activities or industries that *can be quantified* on an annual basis given the practical constraints of measurement and data availability. Some examples of the types of assistance that are not included in the estimates are in box 1.1.

Box 1.1 – What is not included in the Commission’s assistance estimates

The Commission’s assistance estimates cover measures that are available to particular firms, industries or activities, and that can be quantified given practical constraints in measurement and data availability. Some significant government measures that selectively confer industry assistance are not included in assistance estimates because they cannot be adequately or easily quantified. Examples include:

- regulatory restrictions on competition such as those relating to pharmacies, air services, media and broadcasting, and importing books and second hand cars
- government purchasing preferences and local content arrangements, such as defence procurement
- concessional debt and equity finance
- State, Territory and local government support to businesses
- anti-dumping and countervailing duties
- access to and pricing of resources (for example, mineral, forestry, fishery or water resources), on favourable economic terms
- support for professional sport (such as tax concessions for international tournaments in Australia and support for sporting venue redevelopment).

Some arrangements have been examined in Commission inquiries, reports and previous TARs. While certain businesses benefit significantly from some government measures, the benefit is not classified as industry assistance, because it is not preferential, or more generally because the purpose of the measure is to promote a broader public objective. Examples include:

- superannuation tax concessions and mandatory contributions
- private health insurance rebates
- government funding of non-government community service providers
- support for businesses owned or operated by Aboriginal and Torres Strait Islander people
- employment incentives for businesses
- remote housing concessions in mining regions
- expenditure on improved transport infrastructure, for example, an upgraded road in a concentrated beef producing area would be expected to lower logistics costs for beef producers, but the road is not for the sole use of beef producers.

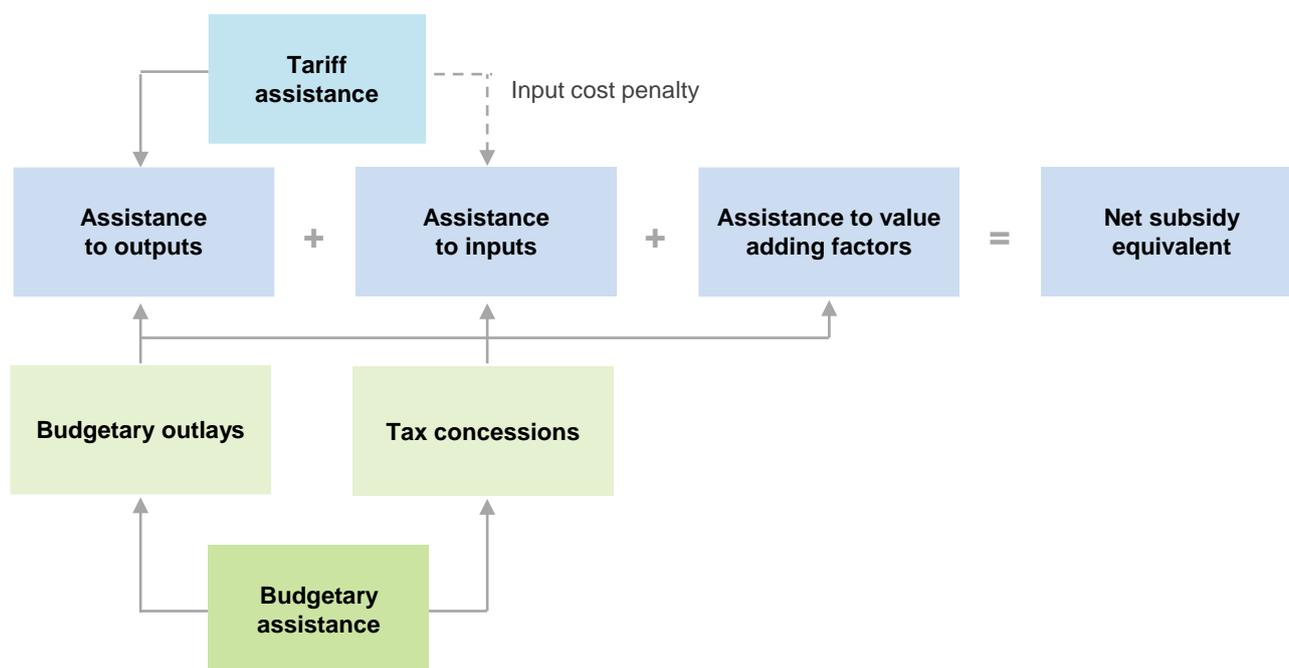
The Commission recognises the role that government plays in managing fluctuations in the business cycle and mitigating the fallout from acute shocks. As a result, the Commission does not regard emergency policy measures designed to protect employment and business viability during economic crises, and that are broadly available, as industry assistance. This treatment differs from emergency measures that selectively favour an industry or that prove more enduring over time.

In practice, the above criteria mean that the *Trade and Assistance Review 2020-21* estimates exclude those COVID-19-related programs that were broad-based, short in duration, and designed to support a large part of the economy, (despite excluding some sectors). Examples include JobKeeper, Boosting Cashflow for Employers, Backing Business Investment, and Instant Asset Write-Off . Conversely, measures that were more selective and enduring were included as industry assistance, accounting for a notable proportion of the \$4 billion increase in industry assistance included in the estimates of total industry assistance in 2020-21.

The estimates in the TAR are net combined assistance to industry, which covers industry assistance provided by the Australian Government through tariffs and budgetary assistance (figure 1.1). Assistance is further categorised by the form in which it is delivered:

- net tariff assistance comprises output assistance and an input cost penalty
- total budgetary assistance comprises outlays and tax concessions that advantage recipient businesses and industries over those not receiving them.

Figure 1.1 – Budgetary and tariff assistance in *Trade and Assistance Review* measures of assistance^a



a. Input tariff assistance is negative (implied by the dotted line). It represents the increased cost of inputs as a result of tariffs.

The estimates rely on several simplifying assumptions (box 1.2).

Box 1.2 – Assistance framework: key simplifying assumptions

The Commission uses a partial equilibrium and static analytical framework to estimate assistance. The simplifying assumptions underlying 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 the Industry Commission’s Information Paper on *Assistance to Agricultural and Manufacturing Industries* (IC 1995).

Data sources

Estimates of tariff assistance draw on Australian Customs tariff schedules 3 and 4, and ABS data on International Trade in Goods and Services, the Australian national accounts and input-output ratios.

Annual information about budgetary assistance programs comes from:

- the Treasury’s *Tax Benchmarks and Variations Statement*
- various departmental annual reports
- various media releases and program documentation
- information provided by relevant government departments on newly implemented assistance programs.

Industry groupings

The industry classification has changed over time. The initial focus was on assistance within the traded-goods sectors — particularly manufacturing and agriculture — where levels of assistance were high. Over time, trade protection measures assisting these sectors have declined, while budgetary assistance to both the goods and services producing sectors has increased. The Commission has included estimates of assistance to the services sector since the 2001-02 TAR, and has integrated these, as far as practicable, with estimates of assistance for other sectors.

The TAR estimates combined assistance for four sectors, which comprise 38 'industry groupings'² based on the classification of industries in the 2006 edition of the Australian and New Zealand Standard Industrial Classification (ANZSIC). The four sectors are:

- the primary production sector (nine industry groupings)
- the mining sector
- the manufacturing sector (12 industry groupings)
- the services sector (15 industry groupings).

There is also an 'unallocated other' sector. Each sector (other than mining) includes an 'unallocated' grouping (table 1.1).

Table 1.1 – Industry groupings used for reporting assistance in the *Trade and Assistance Review*

Sector/industry grouping	ANZSIC 2006 codes
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

(continued next page)

² Includes unallocated in three sectors plus unallocated other.

Sector/industry grouping	ANZSIC 2006 codes
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 insurance 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 derived industry groupings based on ABS (*Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006 (Revision 2.0)*, Cat. no. 1292.0).

2. How the assistance estimates are calculated

The Commission's approach to estimating assistance varies depending on the instruments used to provide support.

- Where governments impose tariffs on imports, the assistance to competing Australian producers is the subsidy equivalent inferred from the price increase allowed by the tariff on Australian producers' domestic sales; not by the dollar amount of tariff revenue collected on imports.
- Where goods protected by tariffs are used by other industries as inputs, the input cost penalty (that is, the negative assistance caused by tariffs on inputs) is the tax equivalent imposed by tariffs on inputs used in production (whether locally produced or imported).
- Where governments provide grants and subsidies directly to firms, the assistance is the value of the outlay. This excludes the cost of policy advice and general administration for the agencies that administer grants and other assistance programs.
 - Where governments fund services that indirectly assist an industry, the full funding (excluding any industry contributions) is deemed to be assistance. For the assistance provided to industry through the CSIRO, the Commission excludes appropriations for certain public research functions such as environmental research and development (R&D), some renewable energy R&D and general research towards expanding knowledge in various fields.
- Where governments provide tax concessions on a selective basis — such as exemptions, deductions, offsets, rebates, lower tax rates or tax liability deferrals — the value of the assistance provided is estimated as the amount of tax revenue forgone.

Estimating tariff assistance

Tariff assistance refers to assistance provided in the form of import taxes. The estimates of tariff assistance are divided into two parts — output assistance and input penalties (box 2.1). Output assistance allows Australian producers to increase prices. Input penalties are the cost penalties that Australian producers experience when they face higher input costs because of tariffs.

Box 2.1 – Tariff assistance concepts applied to the food, beverage and tobacco products industry

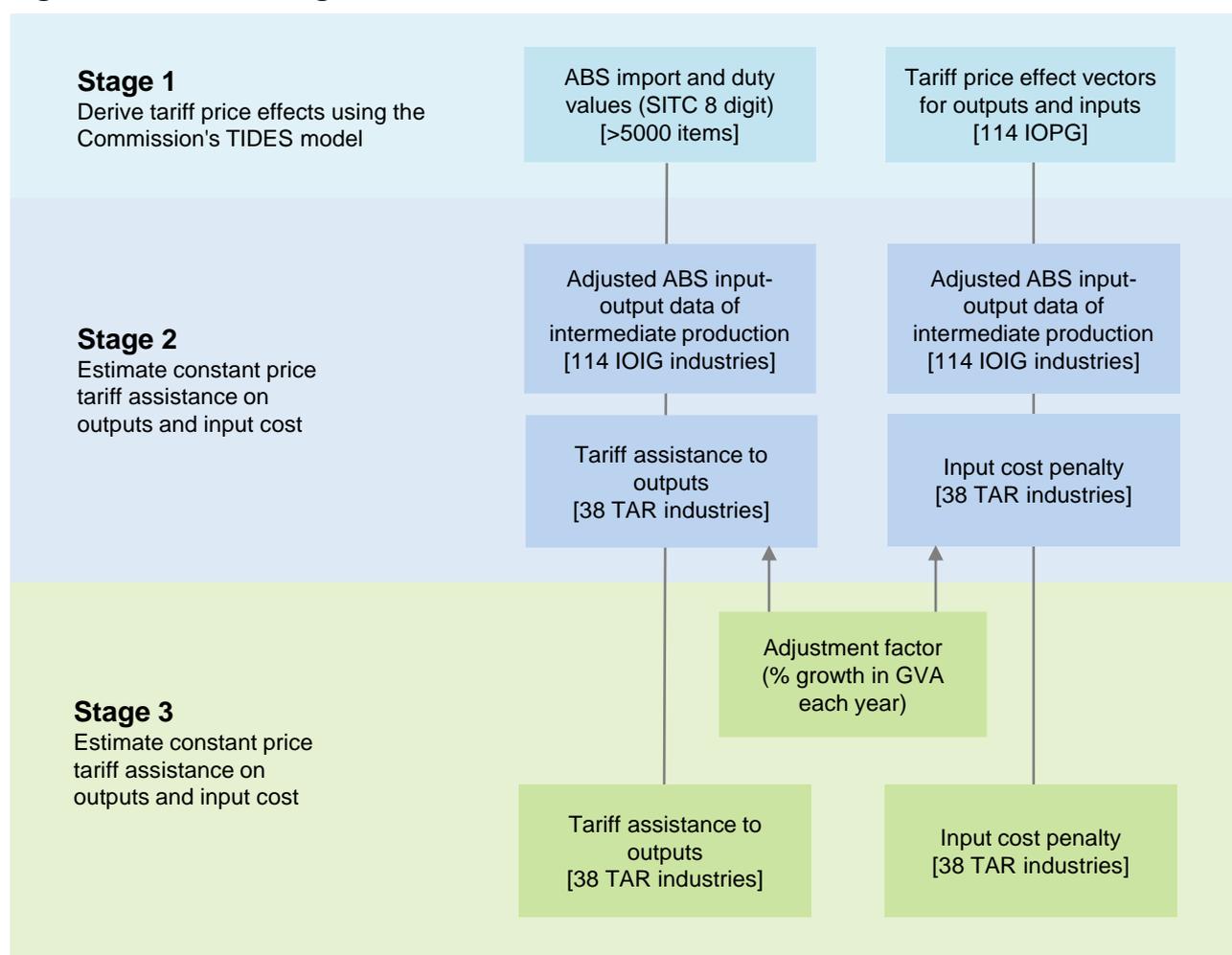
To illustrate the concepts of output assistance, input penalties and net tariff assistance, this box outlines the Commission's estimates for the food, beverage and tobacco products industry in 2019-20. The \$617 million output assistance for the industry is largely derived from 5 per cent tariffs on imports of chocolate products, selected wines, and bread and pastry products. The \$280 million input penalty imposed on the food, beverages and tobacco products industry is mostly the result of 5 per cent tariffs on imports of chocolate and sugar confectionary products, which local producers use as inputs. Net tariff assistance for the industry (the difference between the industry's output assistance and input penalty) was \$337 million in 2019-20.

Industry size	Value of output \$115 billion		Value of input \$62 billion		
Categories of tariff assistance	Output tariff assistance	–	Input tariff penalty	=	Net tariff assistance
Food, beverages and tobacco products	\$617 million	–	\$280 million	=	\$337 million

Source: Commission estimates from *Trade and Assistance Review 2019-20* (2021, p. 95).

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. This model distinguishes between imported outputs and imported intermediate inputs, although some items can be both an output and an intermediate input. The duty rate on imports is calculated by dividing the duty value by the landed domestic value of imports for both imported outputs and imported intermediate outputs. In addition to the duty rates, the amount of assistance a tariff provides depends on the outputs produced domestically and inputs used in the production of that output. Input data are provided by industry cost structures, obtained through the ABS input-output (IO) tables (ABS, various years). The price impacts of tariffs on output (that is, the nominal rate of assistance on outputs) are combined with IO domestic production data to estimate the dollar value of output tariff assistance for six years (base year to current year). The price impacts of tariffs on inputs (that is, the nominal rate of assistance on inputs) are combined with IO intermediate usage data to derive estimates of input cost penalties (figure 2.1)³.

³ The procedure used by the Commission to estimate tariff assistance is described in more detail in earlier TARs — in particular in the 2011-12 and 2015-16 TARs — as well as in the *Trade and Assistance Review Estimates User Guide* (Salma, Wells and Forbes 2016). Since 2017-18, there has been a change in the methodology to better reflect the uptake of preferences provided under Australia's trade agreements (the 2017-18 Methodological Annex (pp. 11-12) includes a detailed description).

Figure 2.1 – Estimating tariff assistance^a

a. TIDES = Tariff and Import Database and Estimating System; SITC = Standard International Trade Classification; IOPG = Input Output Product Groups; IOIG = Input Output Industry Groups; TAR = *Trade and Assistance Review*; GVA = gross value added.

Tariff assistance is estimated for a benchmark year. A series of tariff assistance estimates are made for years adjacent to the benchmark year for which tariff policies and imports are known, using the benchmark year IO data.

The output of this exercise is a time series of tariff assistance estimates, expressed in the benchmark year's volumes and prices. These are reindexed to nominal values in the year for which estimates are published using a scaling factor for each industry. The scaling factors are based on ABS gross value-added data (current prices and chain volume measures) (ABS 2021a), agricultural production data (ABS 2021b), and input-output tables (ABS 2022).

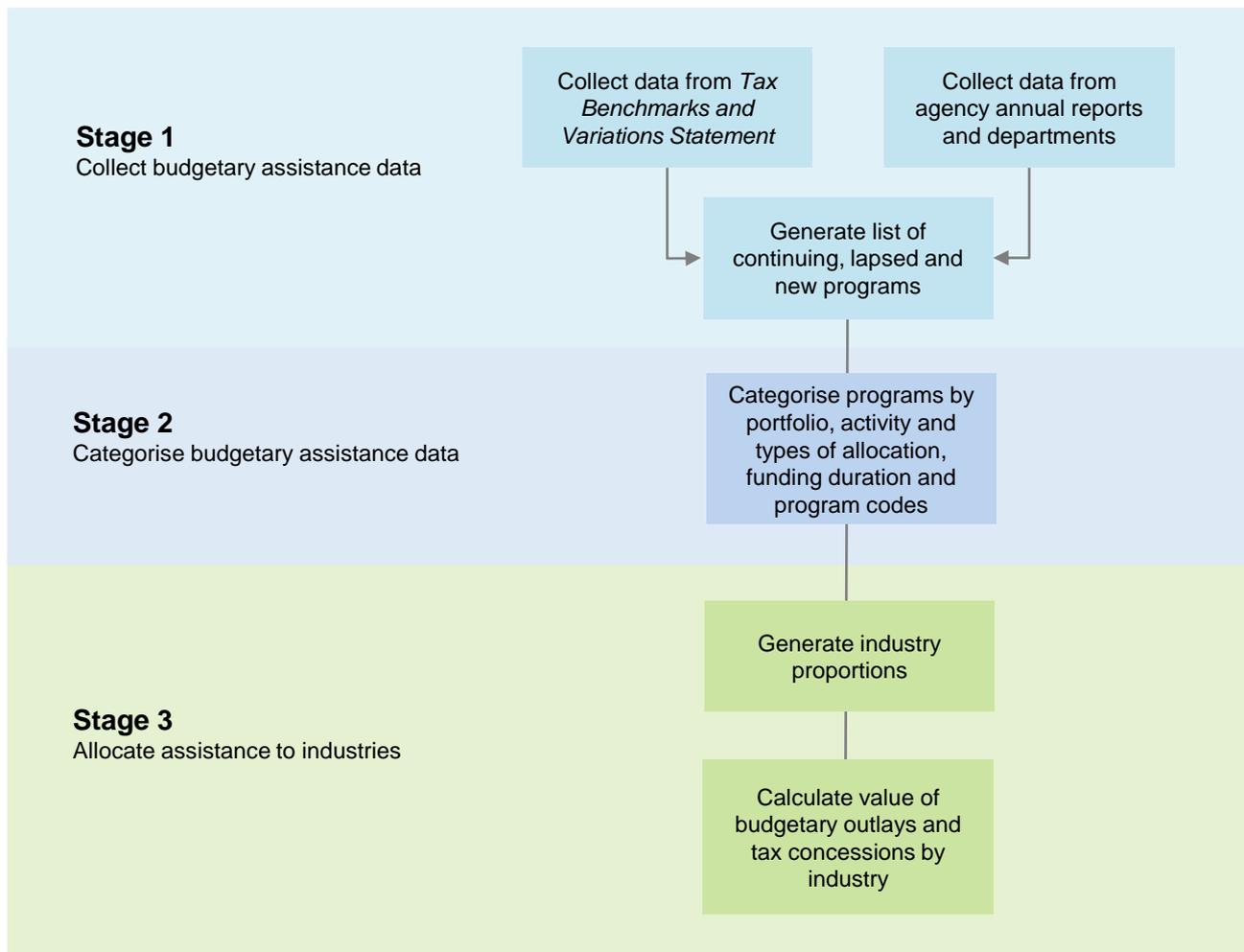
Using a benchmark year for IO data means that the size and the structure of the economy is held constant in a particular series, which in turn means it is possible to isolate and compare the tariff assistance that arises over time from changes in trade and tariff rates, as opposed to changes in the structure of the economy.

To account for changes in the structure of the economy, the Commission periodically re-benchmarks the estimates to align with the latest ABS IO data. The estimates since the 2018-19 TAR have been benchmarked to align with the 2016-17 IO data — the most recent ABS IO data at the time when the 2018-19 TAR was prepared.

Estimating budgetary assistance

Estimating the value of budgetary assistance — and allocating such assistance across industries — requires a detailed itemisation and classification of programs that qualify as Australian Government budgetary assistance for the purpose of the TAR. The Commission primarily uses the annual Treasury *Tax Benchmarks and Variations Statement*, agency annual reports and consultation with departmental staff to construct a database of programs that constitute budgetary assistance, which are then allocated to particular industry groupings on an ‘initial benefiting industry’ (IBI) basis (figure 2.2, box 2.2).

Figure 2.2 – Estimating budgetary assistance by industry



Box 2.2 – The ‘initial benefiting industry’ allocation method

The Commission allocates budgetary assistance to industries on an ‘initial benefiting industry’ (IBI) basis. This means that assistance is allocated to the industry of the businesses that benefit initially from a program or measure.

The IBI approach does not attempt to identify all the beneficiaries of assistance from flow-on effects. For example, budgetary assistance to the Australian film industry is allocated to the ‘arts and recreation services’ industry group. However, the benefits of this assistance could extend beyond this industry, such as 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.

When a measure initially benefits businesses in a single industry, the entire value of assistance is assigned to that industry. When a measure initially benefits businesses in multiple industries, the value of the assistance is apportioned across multiple industries as well.

Where assistance is delivered via an intermediate organisation — such as Austrade providing export promotion services or the CSIRO undertaking industry-benefiting research — the initial benefiting industry is the industry in which the businesses that use the services operate. For example, wheat research by the CSIRO would be allocated as assistance to the wheat growing industry (which is part of the ‘sheep, beef cattle and grain farming’ industry grouping).

Some programs where the initial beneficiaries are consumers (rather than businesses or intermediary bodies) are included in the Commission’s estimates of assistance. In such cases, the assistance is allocated to the industry providing the good or service to the consumer. As an example, in the past, assistance has been provided to consumers to convert cars to LPG, with the Commission classifying this assistance as accruing 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 consumer, the initial benefiting industry is deemed to be that of the consumer, rather than the intermediary.

Where the initial beneficiary cannot be identified, the assistance is ‘unallocated’. This means that the assistance is included in the aggregate estimates, but not in industry totals.

In allocating assistance to industry groupings, each measure is examined individually. Programs that assist a single industry, such as the Automotive Transformation Scheme or the Grape and Wine R&D Corporation, are allocated directly to that industry (motor vehicle and parts, and horticulture and fruit growing, respectively).

Many programs assist multiple industries. The Commission draws on a variety of sources to allocate the assistance provided by such programs across the benefiting industries.

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, the Commission obtains claims data by ANZSIC industry for the Export Market Development Grants scheme from the Australian Taxation Office, and these data are sufficiently detailed to determine the initial benefiting industries for the program. Similarly, the Department of Industry, Science, Energy and Resources has published details of grant recipients for many of its administered programs.

Where there are no data identifying the industries that initially benefit from a particular program, the assistance given under that program is recorded as 'unallocated'. There are four 'unallocated' categories: one each for primary production, manufacturing and the services sectors (used when the initial benefitting sector can be identified but not the initial benefitting 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 the industries that might ultimately benefit from a program because of its 'flow on' effects. Care is therefore required when drawing inferences about the resource allocation effects of budgetary assistance given the static nature of the underlying model. This aspect of the model, coupled with the IBI approach of allocating assistance, means that only the initial effects of assistance are captured, while the responses of producers and consumers to the incentives created by the assistance are not.

Calculating combined assistance

Combined assistance⁴ is calculated as the sum of tariff and budgetary assistance provided to an industry. Combined assistance is expressed both as a dollar value and as a rate, with the latter allowing for a comparison of the amount of assistance provided to industries of different sizes. The main measure of combined assistance is the effective rate of assistance, where the total value of combined assistance provided to an industry is divided by that industry's unassisted value added.

⁴ The key concepts involved in calculating rates of combined assistance — along with the procedure used by the Commission to calculate rates — are described in more detail in earlier TAR publications and in Salma, Wells and Forbes (2016).

Abbreviations

ABS	Australian Bureau of Statistics
ANZSIC	Australian and New Zealand Standard Industrial Classification
CSIRO	Commonwealth Scientific and Industrial Research Organisation
COVID-19	Coronavirus Disease 2019
ERA	effective rate of assistance
GVA	gross value added
IBI	initial benefitting industry
IO	input-output
IOIG	Input-Output Industry Groups
IOPG	Input-Output Product Groups
LPG	liquefied petroleum gas
R&D	research and development
SITC	Standard International Trade Classification
TAR	Trade and Assistance Review
TIDES	Tariff and Import Database and Estimating System

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