
1 An overview of the Commission's assistance measurement system

The Commission and its predecessors have published estimates of industry assistance since the early 1970s. The estimates initially were focussed on the main forms of import protection for the manufacturing sector and domestic marketing arrangements for agriculture. Over time, the Commission has expanded its coverage to include a broad array of assistance measures touching most sectors of the economy.

A key aspect of the Commission's assistance measurement system from its inception has been the use of the 'effective rate of assistance' (ERA) concept, and related measures, to gauge the extent to which the structure of assistance to industries affects the allocation of resources within the economy.

This section provides a basic introduction to the Commission's assistance measurement system and the meaning of ERA and related measures.

1.1 Coverage of assistance

Reflecting the broad definition of assistance in the *Productivity Commission Act 1998* (see above), an array of different mechanisms provide assistance to industry. These include tariffs, quotas, anti-dumping duties and regulatory restrictions on imported goods and services, as well as tax concessions and subsidies for domestic producers. Assistance also arises from the provision of underpriced services by government agencies and from government procurement policies.

For its annual estimates of industry assistance as published in *Trade & Assistance Review*, the Commission does not cover all forms of government support to industry. Rather, the Commission focuses on the main forms of government support to industry that *selectively* assist firms, activities or industries and that can be quantified given practical constraints in measurement and data availability.

The forms of assistance covered in the Commission's annual estimates are:

- Commonwealth budgetary assistance;
- tariff assistance; and
- agricultural pricing and regulatory assistance.

The coverage of assistance under each of these categories is described in detail in section 2.

Forms of assistance that are not covered in the Commission's annual ERA estimates include:

- *restrictions on trade in services* — the nature of these restrictions and the difficulties in establishing a 'benchmark price' for services means it is difficult to determine the level of assistance associated with these restrictions. The Commission has published specific studies of services barriers, and their price impacts, but does not incorporate these into its annual ERA estimates.
- *anti-dumping and countervailing actions* — lack of information means that the Commission does not include the assistance effect of these duties in its national ERA estimates, but monitors year-to-year usage.
- *state government assistance* — apart from nationally-significant agricultural pricing and regulatory assistance provided by State arrangements, the Commission does not include State government assistance as part of its annual ERA estimates. However, from time-to-time, the Commission has published broad estimates of the level of State government budgetary assistance to industry.¹
- various *other* forms of assistance, including government purchasing preferences; the underpricing of infrastructure; capital depreciation subsidies and the impact of tariffs on capital items; certain drought relief and any assistance effect that may be associated with quarantine restrictions, and government programs affecting a range of service industries relating mainly to the provision of health and welfare, where funding predominantly benefits consumers and individual citizens.

1.2 Coverage of industries

The level of detail at which the Commission reports on assistance, and the focus of its estimates, have changed over time. The initial focus was on assistance to the traded goods sectors — manufacturing and agriculture — where the levels of assistance measured by the Commission were found to be high. Over time, assistance to these sectors has declined and they have become more internationally competitive. At the same time, as in other countries, services have increased in importance — services now

¹ The Industry Commission published such estimates for the years 1994-95, 1995-96 and 1996-97 as part of its 1996 public inquiry into *State, Territory and Local Government Assistance to Industry* (IC 1996). The Productivity Commission has published similar estimates for the years 2000-01 and 2001-02 in *Trade & Assistance Review 2001-02* (PC 2002c).

Table 1.1 Industry groupings used for assistance evaluation purposes in Trade & Assistance Review 2001-02

<i>Industry grouping</i>	<i>ANZSIC codes</i>
Primary production	A
Dairy cattle farming	013
Grain, sheep and beef cattle farming	012
Horticulture and fruit growing	011
Other crop growing	016
Other livestock farming	015
Fisheries	04
Forestry	03
Other primary production ^a	02 & 014
Mining	B
Manufacturing	C
Food, beverages & tobacco	21
Textiles, clothing, footwear & leather	22
Wood & paper products	23
Printing, publishing & media	24
Petroleum, coal, chemical & assoc. products	25
Non-metallic mineral products	26
Metal product manufacturing	27
Motor vehicles & parts	281
Other transport equipment	282
Other machinery & equipment	283-286
Other manufacturing	29
Services	D-Q
Electricity, gas & water supply	D
Construction	E
Wholesale trade	F
Retail trade	G
Accommodation, cafes & restaurants	H
Transport & storage	I
Communication services	J
Finance & insurance	K
Property & business services	L
Government administration & defence	M
Education	N
Health & community services	O
Cultural & recreational services	P
Personal & other services	Q

^a Other primary production includes *services to agriculture, hunting and trapping and poultry farming*.

account for around 80 per cent of employment and GDP in Australia. In recent years, the Commission has begun focussing more on the services sector, and has rationalised its estimates in relation to manufacturing and agriculture. This rationalisation has also allowed the Commission to combine more forms of assistance into its ERA estimates

— while tariff assistance can be disaggregated to a fine level of commodity detail, this is not possible for much budgetary assistance, which tends to be provided more at the industry or sectoral level than at the commodity level.

In *Trade & Assistance Review 2001-02*, the Commission has presented estimates of combined assistance for 37 ‘industry groupings’ (table 1.1).

1.3 Assistance measures

The Commission has adopted several measures to help quantify and compare the diverse assistance arrangements which affect businesses in the different sectors of the economy, in particular in the agriculture and manufacturing sectors.

In brief, the basic measures are:

- the *gross subsidy equivalent (GSE)*, which is the dollar value of assistance to an industry’s or activity’s *outputs*;
- the *tax equivalent on materials (TEM)*, which is the dollar value of assistance to an industry’s or activity’s *inputs* — which penalises the industry/activity by raising its costs; and
- the *net subsidy equivalent (NSE)*, which is a measure of the dollar value of *net assistance* to an industry or activity’s value added (and is equal to the GSE *plus* any assistance to value-adding factors, *less* the TEM).

Each of these measures is accompanied by a ‘rate of assistance’ measure, namely:

- the *nominal rate of assistance on output* is the GSE divided by the industry’s value of production (measured in unassisted prices);
- the *nominal rate of assistance on inputs* is the TEM divided by the industry’s value of materials (measured in unassisted prices); and
- the *effective rate of assistance (ERA)* is measured by the NSE divided by the industry’s net output (measured in unassisted prices) or, more formally, its ‘unassisted value added’.

These and other measures used by the Commission are explained in more detail in section 3.

In essence, these measures help to explain how the overall assistance structure affects the allocation of resources between different industries or activities within the economy, as well as how different types of assistance affect the incentives to produce and, to a lesser extent, to consume, certain commodities. Box 1.1 provides a simplified example of how assistance can affect the allocation of resources and

how, in turn, this can affect the value that the community obtains from its use of resources. Box 1.2 provides a further example of how the provision of assistance can affect the structure of industry and the nature of consumption within an economy.

**Box 1.1 Assistance and the allocation of resources
— an illustration of red and green ‘widgets’**

Government assistance to a particular industry (or activity) can make investing in the industry more remunerative than it would otherwise be. In turn, this can attract economic resources away from other industries into the assisted one.

- To illustrate with a *highly simplified* example, imagine that the expected returns on investment are 10 per cent in the ‘red widget’ industry, but only 8 per cent in the ‘green widget’ industry – say because consumers prefer red widgets to green ones and are thus willing to pay more for them. In these circumstances, people would be expected to invest in red widgets rather than green widgets for as long as the gap remains. However, if the government provides a subsidy for green widgets such that the total returns (including the subsidy) rise to 12 per cent, people will be expected to invest in green rather than red widgets. As well, some existing red widget producers will probably switch to producing green ones.

In specific instances, such assistance will lead to a more efficient allocation of resources between the various industries and activities within the economy. This will be the case if: normal commercial incentives fail to reflect the real benefits and costs that people and society more broadly get from producing or consuming the goods and services in question; and the assistance provided by the government sways incentives in the right direction.

- For example, if red widgets when used emit far more pollution than green widgets, and environmental laws are unable to make users of red widgets pay for, or clean up, their pollution, then government assistance which increases the proportion of green widgets consumed may improve community welfare.

However, in other cases, assistance to a particular business or activity will worsen the allocation of resources.

- If the only difference between red and green widgets is their colour then assistance to the green widget industry will make society worse off, given consumers’ preference for red widgets.

**Box 1.2 Production and consumption responses to assistance:
an illustration of oranges and grapes**

To understand how assistance can change production and consumption patterns, consider a *highly simplified* situation in which some farmers in an area grow grapes and some grow oranges, and returns in these two industries are about the same – say around a 4 per cent return on investment. All oranges and grapes grown in this economy are consumed in it too, with no imports or exports.

If a subsidy is provided to producers of oranges such that returns from oranges increase, say to 12 per cent, existing orange farmers will receive the full value of this windfall gain in the short-run.

However, over time, some grape farmers are likely to start switching to growing oranges (and existing orange farmers, or other investors, may bring more land into production). This will cause the supply of oranges to increase and, to clear their stock, producers will need to cut the price. As the price falls, consumers will start buying more oranges, but returns in the orange industry will fall too.

Meanwhile, in the grape industry, supply is declining putting upward pressure on the price. As the price increases, consumers cut back their purchases of grapes, but the returns to grape growing increase.

However, as long as the returns to orange production exceed the returns to grape growing, farmers have a continuing incentive to switch from grapes into oranges. This will go on until the returns in both industries are around the same – say at 9 per cent return on investment.

Another factor though is that, to finance the subsidy for orange producers, the government needs to raise extra revenue (through higher taxes or higher charges for services it provides), cut its spending, or incur a higher budget deficit or lower surplus. Say it raised more revenue through a tax on electricity (although either of the other options would have similar ultimate effects). This would increase orange and grape growers' power bills and further reduce, although only slightly, the returns in those industries. It would also reduce the returns to other industries which rely on electricity to produce their output, particularly energy-intensive industries. And because householders would have to pay slightly higher electricity bills, they would have slightly less left to spend on other goods and services.

With other industries facing slightly higher power bills and slightly lower demand for their products, some 'borderline' businesses in these industries may need to close or reduce their production (unless they are able to make offsetting gains in productivity).

Overall, the effect of providing assistance in this illustration is to cause more oranges to be produced, mainly at the expense of a cut in the production of grapes, and for production in other industries to fall slightly (without productivity improvements). Consumers finish up eating more fruit (but a different mix thereof) and consuming less of other products.

While in practice the world is far more complex than this highly simplified illustration, it nevertheless provides an indication of the nature of some of the effects that can flow from the provision of assistance to industry.

Notwithstanding the usefulness of the Commission's ERA and related measures, care is required when using them to draw inferences about the allocation of resources between different industries or activities. The key qualifications are that:

- the measurement methodology uses a 'static' framework, so the estimates do not take account of the responses of producers and consumers to the incentives created by the provision of assistance (such as those illustrated in box 1.2);
- nominal rates of assistance, unlike effective rates, do not take into account the *net* impacts of assistance on inputs and outputs; and
- the net subsidy equivalent simply measures the transfers of income to producers from consumers, taxpayers and intermediate suppliers — it does not indicate the 'welfare' costs to the community of assistance.

With the constraints of these qualifications, the Commission's annual estimates of government assistance to industry are intended principally to aid transparency and facilitate analysis. They do not of themselves indicate the policy merits, or the actual resource allocation effects, of different government assistance measures. The derivation and interpretation of these measures is discussed further in section 3.