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TAR User Guide: re-benchmarking tariff assistance estimates in TAR

TAR Process documentation

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The views expressed in
this **user guide** are those of the
staff involved and do not
necessarily reflect the views of the
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The Productivity Commission is required under its Act to report annually on industry assistance and its effects on the economy. In fulfilling this function, the Commission publishes estimates of assistance to Australian industry annually in its *Trade & Assistance Review* (TAR).

The estimates focus on the main forms of support — tariffs, budgetary outlays and tax concessions — that *selectively* assist firms, activities or industries and that can be quantified on an annual basis, subject to practical constraints in measurement and data availability.

The calculation of assistance through budgetary outlays and tax concessions requires collecting and processing of data on Australian Government budgetary assistance programs, and allocating them to industry. The allocation follows the criteria and processes described in details in the *TAR User Guide* (PC 2016).

The calculation of tariff assistance requires data on industry inputs, or cost structures. The estimation calls upon the use of ABS input-output (IO) tables.

The estimates are derived in a 'series', spanning a number of consecutive years that are anchored to one IO structure. The estimates reflect changes in tariff rates, but assume that the structures of trade and of the economy do not change. They are calculated in constant base year values, and are later updated to current values. This updating process is described in details in the *TAR User Guide* (PC 2016).

Periodically, the process is 're-benchmarked' to align with the latest input-output and trade data. The latest re-benchmarking of tariff assistance was undertaken for TAR 2015-16, producing tariff assistance estimates re-benchmarked to 2013-14 IO data.

The current paper documents the re-benchmarking process. Building on the *TAR User Guide* (PC 2016), it provides a link between TAR framework documents and the procedures by which the methodology is applied. The document explains the concepts and data used for re-benchmarking and the application of the two Commission models which are specifically designed for the re-benchmarking exercise.

Assistance estimates are prepared within the framework of the effective rates of assistance (ERA) model. In addition to measures of assistance, the ERA model requires a measure of unassisted value added, which is described in the *TAR User Guide* (PC 2016).

The document does not describe the actual implementation of the estimation process which is already available in earlier TAR publications.[1]

The document starts with a short review of what constitutes tariff assistance in TAR. The next section provides an overview of the re-benchmarking process and the stages involved. Section 3 details the data used, their processing and the derivation of the price impact of tariffs, expressed as price distortion vectors. These vectors are outputs from the Tariff and Import Database and Estimating System (TIDES) model. Section 4 documents how the price vectors, together with ABS IO tables are used in the Trade Assistance Model (TAM) to produce the published estimates of output and input tariff assistance by industry.

1 The concept of tariff assistance as used in TAR

Estimates of tariff assistance are divided into two parts —assistance on outputs and input assistance.

Tariff assistance on outputs also has two parts:

- for imported goods, the increase in costs that is attributable to tariffs; and
- recognising that tariff assistance enables domestic producers to increase their prices, tariff assistance on domestic output is estimated as the notional subsidy equivalent of the tariff imposed on the competing import.

Input assistance is calculated in an analogous way. As the tariff penalises local user industries by increasing the price of local and imported inputs, the assistance is negative and assessed as the tax equivalent imposed by tariffs (whether the inputs are locally produced or imported).

2 The re-benchmarking process

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 IO tables, data on imports and tariff schedule.

Since IO data are not published annually, a series of estimates are made, based on IO and trade data for one year.

The series of estimates are calculated in base year values, and subsequently updated to current values with scaling factors. The scaling factor for an industry is the growth in value added of the corresponding industry division as recorded in the national accounts. As mentioned, the updating process is detailed in TAR User Guide (PC 2016).

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[1] Table 1 in the annex lists the documents that describe the framework and implementation.

Periodically the Commission re-benchmarks the estimates to align with the latest ABS IO and trade data. This involves revising the IO relationships according to the new benchmarked year (decided by the availability of the latest IO tables), specifically:
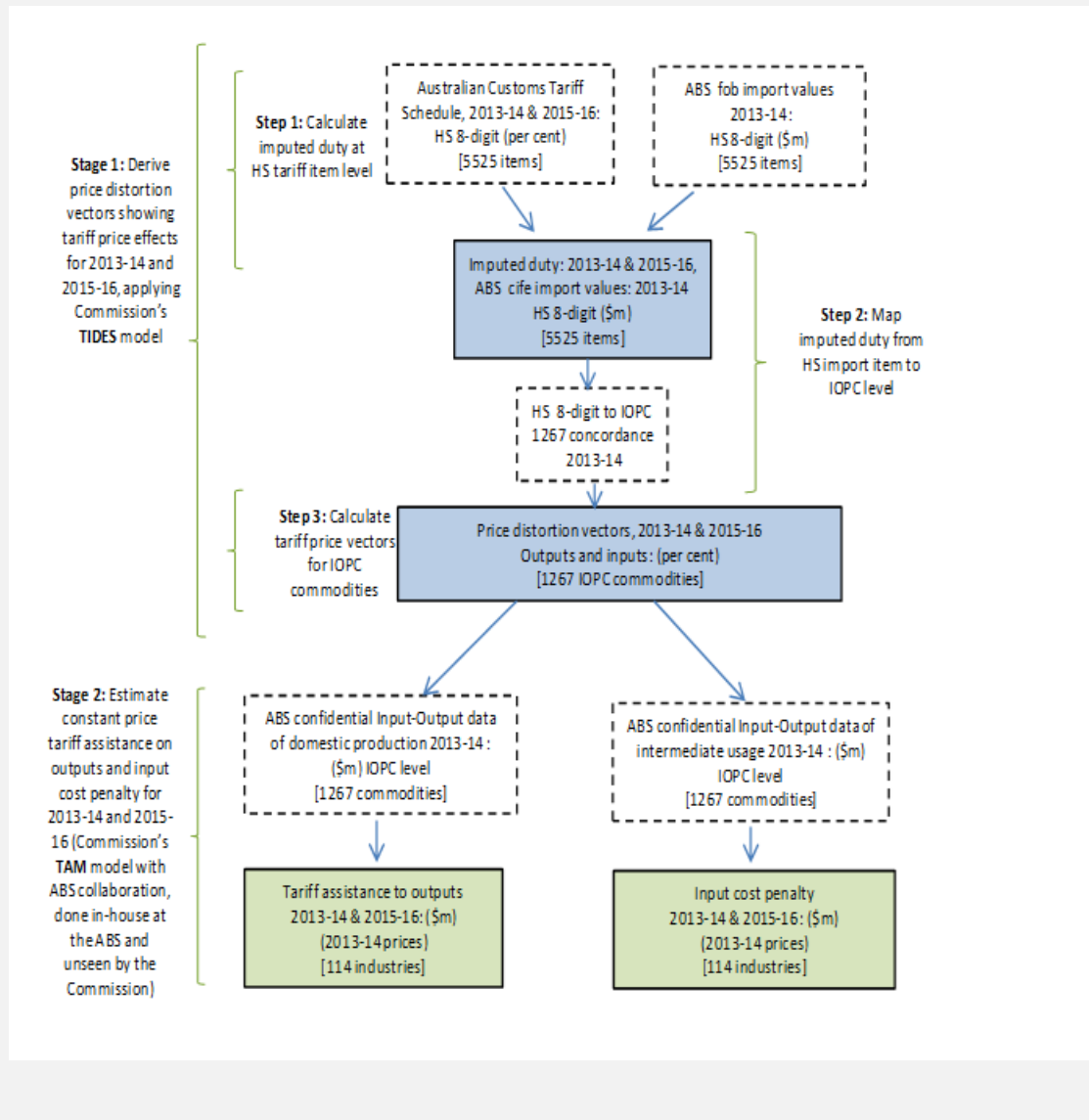
- the input structure used in production — from the domestic production and intermediate input usage; and

- the import structure used for both intermediate inputs and consumption — from the import data.

Once re-benchmarking takes place, future years for which tariff policies are known are added to the time-series of assistance estimates. For the period earlier than the new base year, there may be some years with overlapping constant value estimates: one based on the earlier IO and the other based on the latest IO. The difference between two overlapping estimates indicate the effects of changes in industry and trade structure.

Annual estimates of tariff assistance, covering the period between 2010-11 to 2015-16, were produced at 2013-14 constant values, using the structure of imports and IO data for 2013-14 and the respective years' tariff schedules. An overview of the process is presented in box 1.

Box 1   The re-benchmarking of tariff assistance in TAR 2015-16

Stage 1: Derive price distortion vectors showing tariff price effects for 2013-14 and 2015-16, applying Commission's **TIDES** model

Step 1: Calculate imputed duty at HS tariff item level

Australian Customs Tariff Schedule, 2013-14 & 2015-16: HS 8-digit (per cent) [5525 items]

ABS fob import values 2013-14 : HS 8-digit ($m) [5525 items]

Imputed duty: 2013-14 & 2015-16, ABS cife import values: 2013-14 HS 8-digit ($m) [5525 items]

Step 2: Map imputed duty from HS import item to IOPC level

HS 8-digit to IOPC 1267 concordance 2013-14

Step 3: Calculate tariff price vectors for IOPC commodities

Price distortion vectors, 2013-14 & 2015-16 Outputs and inputs: (per cent) [1267 IOPC commodities]

Stage 2: Estimate constant price tariff assistance on outputs and input cost penalty for 2013-14 and 2015-16 (Commission's **TAM** model with ABS collaboration, done in-house at the ABS and unseen by the Commission)

ABS confidential Input-Output data of domestic production 2013-14 : ($m) IOPC level [1267 commodities]

ABS confidential Input-Output data of intermediate usage 2013-14 : ($m) IOPC level [1267 commodities]

Tariff assistance to outputs 2013-14 & 2015-16: ($m) (2013-14 prices) [114 industries]

Input cost penalty 2013-14 & 2015-16: ($m) (2013-14 prices) [114 industries]

As the box illustrates, estimates of tariff assistance for outputs and tariff cost penalty for inputs are derived in two stages. These involve:

- using the Tariff and Import Database and Estimating System (TIDES) model to provide estimates of the 'price impacts' of tariffs for both output and input goods by producing a two column matrix of rows representing the imputed duty rate on outputs and on inputs of a tariff item.[2] The number of rows equals the number of items at the 2013-14 Input-Output Product Classification (IOPC) level (1267 products)

- using the Trade Assistance model (TAM) to combine the TIDES results with ABS input-output data to derive estimates of gross and net subsidy equivalents.

3   Calculating price distortions using TIDES

The Commission uses the Tariff and Import Database and Estimating System (TIDES) model to derive the price distortion vector of tariffs on both domestic and imported goods. The price impacts represent the increase in domestic prices caused by tariffs on imports.

Data processing

A number of adjustments and preparatory tasks are carried out before the import data and tariff schedules can be used in TIDES. These, along with the computer code used, are presented in appendix C.1 in Cobau and Wells (2002). In the main, they involve the following steps:

- aggregate monthly data to financial year;

- aggregate imports data from 10-digit HS to 8-digit HS to match the classification level in the Australian Customs tariff schedule;

- modify the constructed tariff schedule to add any missing tariff items and associated tariff rates.

Once the tariff and import data have been adjusted, they are ready to be incorporated into the TIDES data set.

Data sources

The two main data sources used to create the price distortion vectors are obtained from:

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2   Upon entry, import items are recorded according to the six–digit international HS classification, after which Australian Customs adds an extra 2-digit code to them. Each import item is then allocated a tariff item classification code which determines the import duty levied on it. The ABS adds a ninth and tenth digit for statistical purposes, to provide a finer level of detail (ABS 2011). In this document the expressions 'import item' and 'tariff item' are used interchangeably, independently of classification levels.

- ABS merchandise trade imports (various years); and

- the Australian Customs tariff schedules (various years).

ABS merchandise trade imports

The ABS merchandise trade imports and clearances data (*Merchandise Trade Imports (various years)*, Cat. no. 5422.0), is obtained electronically from the ABS in a csv file. The file contains monthly data on a range of variables classified at the 10-digit harmonised system (HS) code, not all of which are necessary for running TIDES. Data on import values, quantities and duty payments are extracted. Imports are valued on fob basis and termed as Australian Customs Value in the file, and flows so valued are referred to as VFD value of imports in TIDES.[3] An additional variable termed as treatment code is also extracted. A treatment code is assigned to each tariff item on entry to Australia which shows if it is granted any special considerations such as some type of duty concessions.

Tariff schedules

TIDES for TAR 2015-16 used tariff schedules by 8-digit HS tariff item, covering the period 2011-12 to 2015-16.

These schedules are based on schedules constructed for earlier TARs, which were originally downloaded from the APEC tariff database web site.[4]

The original file contained annual data on tariff rates from 1996-97 to 2000-01. Specific rates and excise items were added to the schedule as obtained from the Australian Customs tariff schedules. Information on concessional tariff items, held by the Commission and available online from the Department of Immigration and Border Security were also added.

The tariff schedules used for later TARs were updated to reflect changes in tariff items and tariff rates that have happened since then. If there is any tariff item in the import data but not in the constructed tariff schedule, the schedule is extended to include the new tariff item. The Department of Foreign Affairs and Trade maintains a current version of the Australian tariff schedule and the Commission accesses it occasionally to supplement its constructed tariff schedules.

Steps involved in updating the tariff schedule are detailed in appendix C.1 in Cobau and Wells (2002).

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[3] The Australian Customs Value includes inland freight, insurance and other distributive services in the exporting country, up to the place of export and is usually the same as, or very close to, the f.o.b. value. In relation to Australia's import and import clearance statistics it is commonly referred to as Customs value (ABS 2001)

[4] The APEC tariff database is no longer available.

Stage 1: Calculating tariff price impacts using TIDES

The key task of TIDES is to estimate the price distortion effects of tariffs on domestic and imported products. As is shown in box 1, the operation is undertaken in three steps.

Step 1 in stage 1: calculate imputed duty for 8-digit HS classification

As a first step, TIDES derives an estimate of 'imputed duty' for each import item – that is, the notional duty payable for each tariff item, given its value of imports and operative tariff rate. The calculations are made at the 8-digit tariff line item level, the classification level at which tariffs are levied.

To take into account the effects of relevant tariff concessions and duty exemptions on imported goods, TIDES separates the import data into four treatment groups and then estimates imputed duty separately for each group.

There are around 250 treatment *codes* for imports in 2013-14, and the placement of a tariff item to one of the four treatment *groups* is primarily determined by assumptions made about the extent of the price raising effects of the tariff levied on the item.

For the *general* entry items which are assigned a 'zero' treatment code (approximately 50 per cent of all merchandise imports value in 2013-14), it is assumed that the landed price of imports is increased by the full amount of the tariff. These import items are grouped into treatment group 1. Judging by the nature of the items from the treatment code description, a similar assumption about their price raising effect is made about another 30 per cent, and they are added to treatment group 1.

Government entry items fall into treatment group 2. These items comprise goods imported by the government such as defence goods and goods for general government use. Imports under this group are usually negligible and are duty free.

The remaining 20 per cent of merchandise imports are *concessional* entry items. Within this group, there are two types of items:

- Tariff items for which a concessional tariff rate is specified in schedule 4 of the Australian Customs tariff schedule are classified into treatment group 3.

- Tariff items for which a concessional rate is not specified in schedule 4 are in group 4.

The price raising effects of items in group 3 are calculated with the concessional rate levied on them, whereas for group 4, the price raising effects are calculated as the actual duty paid.

The calculation of imputed duty is different for each treatment group.

Imputed duty for general entry items (treatment group 1)

General entry items comprise imported items that are subject to the general most favoured nation (MFN) tariff rate and do not receive any form of tariff concession or exemption. Imputed duty for them is calculated as the VFD value of imports multiplied by the annualised published tariff rate (AVGRATE) for each 8-digit HS tariff item:[5]

$$IMPD = (AVGRATE/100)*(VFD) \tag{1}$$

For a small share of general entry imports (3 per cent in 2013-14), tariff rates are reported on *specific* rates basis (eg $A/tonne). These are converted to their *ad valorem* equivalent before applying the above formula to calculate imputed duty.

There are two *specific* rates: excisable and non-excisable. The entire amount of the non-excisable rate and only the non-excisable part (the protective component) of the excisable rate are used to estimate the tariff impact. The *specific* rates are converted to *ad valorem* rates by multiplying the *specific* tariff rate by the quantity imported, and dividing the value by the VFD value.

Imputed duty for government entry items (treatment group 2)

The imputed duty for import items under this category is zero.

Imputed duty for concessional entry items (treatment groups 3 and 4)

The calculation of imputed duty for *concessional* entry items is similar to that for *general* entry items except that the rate is adjusted to reflect the concession. However, the imputation depends on which of the two treatment groups the tariff item falls into.

For tariff item in treatment group 3, the tariff rate used to calculate imputed duty is lower of the concessional rate or the standard rate as in the schedule. The tariff rate used is termed as CRATE, and the imputed duty for each 8-digit tariff item in this group is:

$$IMPD = (CRATE/100)*(VFD) \tag{2}$$

For treatment group 4, in the absence of a scheduled rate, an implicit duty rate is estimated to provide an indication of the concession received. The implicit rate is calculated as duty paid divided by VFD. The tariff rate used to calculate imputed duty is IRATE, which is the lower of the implicit rate or the average rate:

$$IMPD = (IRATE/100)*(VFD) \tag{3}$$

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[5] Where a tariff rate changes during the year, a simple average of the old and the new rate is derived for that year. For example, when passengers motor vehicle (PMV) tariff rates declined from 10 per cent to 5 per cent on 1 January 2010, an average tariff rate of 7.5 per cent was used to represent PMV tariffs during the 2009-10 financial year.

Step 2 in stage 1: map 8-digit HS tariff item to IO product or industry classification

The second step is to map the CIFE value and imputed duty estimates at the 8-digit tariff schedule level (about 5500 items) to the 2013-14 Input-Output Product Classification (IOPC) level (1267 items). TIDES does this, first by using ABS concordances between 8-digit HS tariff code and 2004-05 IOPC classification, and then applying concordances between IOPCs of different years and linking them back to the 8-digit HS tariff items. This cumbersome process was necessary as the ABS stopped making concordances between tariff items and product or industry classification publicly available after 2004-05. As new tariff items are added to the list, the mappings are adjusted to reflect the additions. The mapping process is described in appendix C.1 in Cobau and Wells (2002).

The Commission also uses concordance between IOPC and IOPG (input-output product group – 114 industries) and ANZSIC (Australian and New Zealand Standard Industrial Classification – four-digit) to report results at the industry and sector levels.

Step 3 in stage 1: calculate price distortion vectors for both outputs and inputs (Imputed rate CIFE) for IOPC commodities

For calculating price effects of tariff assistance, TIDES revalues import flows at the point of entry into the domestic economy, that is, it revalues imports from FOB to CIFE (including international margins). This revaluation places imported flows on a consistent basis with domestic flows (Roberts 1990).

The adjustment is made by applying a CIFE/VFD ratio obtained from the ABS to recorded trade flows, where CIFE is valued in domestic currency.

The price effect of tariff assistance, termed 'Imputed rate CIFE' in TIDES, is calculated by dividing the imputed duty value by the landed domestic value of the tariff item; where the imputed duty value is calculated in step 1. The formula used is:

$$\text{Imputed rate CIFE} = (100*\text{IMPD})/(\text{CIFE}) \qquad (4)$$

TIDES produces two such price vectors: one showing the distortionary effects of tariffs on prices of outputs, and the other, on prices of inputs.

For outputs, only data from the general entry group (treatment group 1) are used to estimate the domestic price impacts of tariffs for each item of trade. Government and concessional entry items are excluded as they are assumed not to be competing with domestically supplied items.

For input goods, data from the general and concessional entry groups (Treatment groups 1, 3 and 4) are used to estimate the domestic price impacts of tariffs for each item of trade.

Model implementation

Raw imports and tariff data received from the ABS and customs are extracted using STATA. These data are subsequently processed in TIDES using Microsoft Access97 together with Excel. The mechanics are described in detail in the appendices C.1 and C.2 in Cobau and Wells (2002).

The current data extraction process suffers from size limitations imposed by Excel. It requires splitting the raw data into several sections and moving between Access and Excel. A parallel execution of TIDES to produce tariff price effects was programmed in R software for which the data size was not an issue. The results matched the estimates for TAR 2015-16.[6]

4   Estimating subsidy and tax equivalents using TAM

In this second stage, the Commission combines the price distortion vectors with the ABS IO data and uses the Tariff Assistance Model (TAM) to derive estimates of tariff assistance for both output and input goods.

Adjustments made to IO tables

The Commission makes a number of changes to the underlying IO data prior to its use in TAM. The first set of adjustments takes place in the output sector, followed by adjustments carried out in the input sector for maintaining a balanced data set.

Adjustments to industry outputs

The output adjustment 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 IO industry groupings (to address secondary production).

Grossing up adjustment

It involves reclassifying output from the commissioning industry, produced on a commission or fee-for-service basis, to the producing industry. It removes petroleum produced on behalf of the wholesale industry from *Wholesale trade*, together with the crude oil and other inputs

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6   The parts of the process that have been implemented in R are listed in the table in the annex. The entire system could be implemented, should it prove necessary. The advantages of R programming over Excel and Access include increased speed of execution, and increased transparency, which facilitates the ability to audit the process and to transmit the system to other staff with R programming skills. As mentioned, the R programming approach does not suffer from the size limitations that make Excel less efficient as a means of processing some of the relatively large files involved in the process.

purchased by wholesalers to produce this output, and adds this production and associated inputs to the *Petroleum and coal products* industry.

In the 2013-14 year, the adjustment reduced *Wholesale trade* industry production by around $3.5 billion (or around 3 per cent of *Wholesale trade* production), and increased *Petroleum and coal products* output by the same dollar amount. Without the adjustment, which accounts for around 11 per cent of the (adjusted) output of the *Petroleum and coal products* industry, the estimated effective rates of assistance to the *Petroleum and coal products* industry would appear to be decreasing because of the statistical treatment rather than as a results of decreasing assistance.

Secondary production adjustment

It involves 'returning' secondary production to the *industry* in which the activity is primarily undertaken, so as to improve the homogeneity of industry outputs. Some significant examples of this adjustment include shifting wholesale activity undertaken in the manufacturing and other non-wholesale trade industries to the *Wholesale trade* industry; and shifting all clothing production reported under non-clothing industries (particularly *Wholesale* and *Retail trade*) to the IOIG *Clothing manufacturing* industry.

As for the grossing up case, the secondary production adjustment also avoids reporting changes in estimated effective rates of assistance between series, without any statutory changes in tariffs or budgetary assistance. For example, for both the *Textile, leather, clothing and footwear* and *Motor vehicles and parts* industries, the importance of secondary production (such as wholesale trade) has increased in recent times in published series. As there are no tariffs on wholesale trade, the change in statistical conventions alone would reduce the reported level of tariff protection afforded to the relevant manufacturing activities across assistance series.

Adjustments to industry inputs

The adjustments to industry output discussed above necessitate adjustments in inputs used in production. In the absence of detailed information on the inputs used to produce the secondary production, the adjustment is made in proportion to the change in production for each industry by reallocating intermediate and primary inputs in proportion to the reallocation of outputs. For example, where IOIG *Clothing manufacturing* industry output is reduced by 10 per cent, its 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 reallocated.

Chapter 4 (PC 2014, pp.37-39) describes the steps in the adjustment process in greater details.

Calculating tariff assistance by using TAM at the ABS

Once the IO data are adjusted, they are combined with price distortion vectors, available from running TIDES, to calculate tariff assistance. The procedure is undertaken through running TAM.

However, the adjustments to the IO are made at IOPC level (around 1285 items) which is confidential. As such, the tasks of making the adjustments and running TAM with the adjusted data are undertaken at the ABS on request from the Commission.

The Commission uses blank IO tables at IOPC level to locate where the adjustments will take place and inserts appropriate formula in the spreadsheets to carry out the adjustments. The model is then handed over to the ABS to populate with their confidential data and undertake the adjustments.

After making the required adjustments to the IO, the ABS subtracts exports from domestic supply in the IO data and multiply the new column by the output price vector to calculate the dollar value of output tariff assistance — the Gross Subsidy Equivalent (GSE).

In the IO, input tariff assistance is calculated by sources of supply of the intermediate inputs. Intermediate inputs are tabled as two separate matrices, one sourced from imports and the other sourced domestically. Each column in both matrices is multiplied by the input price vector and summed across rows. The first row sums in the first and second matrix show the cost penalty on producers in industry 1 from using, respectively, imported inputs and their domestically produced equivalent, that are subject to the price-raising effects of tariffs. The dollar value of input tariff assistance on industry 1 — the Tax Equivalent on Materials (TEM) is — derived by adding these two row sums.

The confidential results of tariff assistance at unpublished IO classification are aggregated to the 114 industry ABS Input-Output Industry Group (IOIG) classification, checked for confidentiality, and returned to the Commission.

The Commission then calculates, at the 114 industry level, net tariff assistance, the Net Subsidy Equivalent (NSE) of tariffs, as the GSE less the TEM.

For publication in TAR, the Commission aggregates the 114 industry results to the ANZSIC-based 38 industry level and combines these estimates with estimates of budgetary assistance at that level.

The ABS repeats the exercise with unadjusted IO and provides an alternative set of results to the Commission. However, these numbers are used for cross-checking purposes and not reported.

The computer package *Microsoft Excel 2010* is used to carry out the main operations or procedures of TAM. The process is fully automated with a VBA macro behind it and the

model is run from an on-screen menu providing the user with a selection of tasks to perform or simply to run the full model (PC 2014).

Annex

Table 1.1   Concordance between procedures and references
With indication of which procedures have been replicated in R to date

Procedure	Source	Software used	Replicated in R
Operation of TIDES		SAS, Microsoft Access97 and Excel	R
Data processing for use in TIDES	Appendix C.1 in (a), p. 6-7		R
Extracting import data from ABS csv files	Appendix C.1 in (a), pp. 48-63	SAS, Microsoft Access97 and Excel	R
Adjustments to the import data	Appendix C.1 in (a), pp. 64-75	Microsoft Access97 and Excel	R
Creating a concessional tariff table	Appendix C.1 in (a), pp. 75-78	Microsoft Access97 and Excel	R
Constructing a tariff schedule	Appendix C.1 in (a), pp. 78-89	Microsoft Access97 and Excel	R
Creating a concordance table	Appendix C.1 in (a) pp. 89-90	Microsoft Access97 and Excel	R
Data storing and linking data tables	Appendix C.1 in (a), pp. 90-102	Microsoft Access97 and Excel	R
Running TIDES: estimate the price distortion vectors	Appendix C.2 in (a), describes how TIDES was run automatically for TAR 2011-12. TAR 2015-16 did not use the automated process as it required adjustments and the system was not flexible enough to accommodate the changes easily. TIDES was run manually.	Microsoft Access97 and Excel	R
Operation of TAM	(b)	Excel	
Adjustments to IO database	(b), p. 2	Excel	
Running the model by linking the price distortion vectors and IO tables: estimates tariff assistance on outputs and input cost penalty	This procedure is undertaken at the ABS with instructions from the Commission. The process is fully automated with a VBA macro. The ABS populate disaggregated blank IO tables at the IOPC level with confidential data. The model is run twice, once with original data, and once with Commission adjustments.	Excel	

Sources: (a) Cobau and Wells 2002, (b) Wells and Gretton 2011.

References

ABS (Australian Bureau of Statistics) 2006, *Australian and New Zealand Standard Industrial Classification (ANZSIC)*, 2006 - Codes and Titles, Cat. no. 1292.0.55.002.

—— 2011, *International Merchandise Trade*, Australia, Concepts, Sources and Methods, Cat. no. 5489,0.

Cobau, D. and Wells, R. 2002, *TIDES: Documentation of the Commission's Tariff and Import Database and Estimating System*, Internal Research Memorandum, Cat. No. GA 509.

PC (Productivity Commission) 2014, *Methodological Annex: Estimation Framework, Coverage and Re-benchmarking of Estimates*, Trade & Assistance Review 2011-12, Productivity Commission, Canberra.

—— 2016, *Trade and Assistance Review user guide*, Canberra.

—— 2017, *Trade and Assistance Review 2015-16*, Annual Report Series, Canberra.

Roberts, P. 1990, *The Estimation of Price Effects of border Assistance Arrangements: Agriculture*, Mining and manufacturing, Industry Commission, Canberra.

Wells, R. and Gretton, P. 2011, N*otes on the Productivity Commission Tariff Assistance Model*, Internal working paper. Not for quotation.

1   Required data

This appendix presents a list of the data sources used to derive the Commission's assistance estimates.

Production, materials and value added data

ABS National Accounts Input-Output data

The ABS's Input-Output (IO) data is used to derive estimates of production, material usage and value added. This data is then used to derive estimates of tariff assistance, effective rates and also as an input to the Adjustment Factor workbook.

Source

ABS (Australian Bureau of Statistics) 2012, *Australian National Accounts: Input-Output Tables 2008-09*, Cat. no. 5209.0.55.001 (tables 1, 2 and 3), ABS, Canberra.

> http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5209.0.55.0012008-09?OpenDocument — tables 1, 2 and 3.

ABS (Australian Bureau of Statistics) 2014, *Australian System of National Accounts*, *2013-14*, Cat. no. 5204.0 (table 5), ABS, Canberra.

> http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5204.02012-13?OpenDocument — table 5.

Tariff assistance estimates

Tariff schedules

Source

Department of Immigration and Border Security, *Current tariff classification*, www.border.gov.au/Busi/Tari/Curr (accessed 21 September 2016).

ABS Merchandise Trade Data Imports

Source

Australian Bureau of Statistics (ABS), *International Merchandise Imports, Australia (various months)*, Cat. No. 5439.0, ABS, Canberra.

> http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/5439.0Main+Features1Dec%202015?OpenDocument

Other data requirements

ANZSIC classification

In the *Trade & Assistance Review*, estimates of combined assistance are presented for 38 'industry groupings' including 4 'unallocated' groupings (table A.2). The industry groupings are based on the classification of industries in the 2006 edition of the Australian and New Zealand Standard Industrial Classification (ANZSIC).[7]

Source

ABS (Australian Bureau of Statistics) 2006, *Australian and New Zealand Standard Industrial Classification (ANZSIC)*, Cat. No. 1292.0, ABS Canberra.

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[7] The Commission's combined assistance estimates are derived for 50 ANZSIC-based 'industry groupings' including four 'unallocated' groupings. For presentation in the *Trade & Assistance Review* these groupings are aggregated to the 38 industry groupings level.